City of Commerce

Office of the
City Administrator

June 27, 2013

Mr. Sam Unger
Executive Officer
California Regional Water Quality Control Board
Los Angeles Region, Suite 200
320 W. Fourth St., Suite 200
Los Angeles, CA 90013

RE: Notice of Intent for a Watershed Management Program and Coordinated Integrated Monitoring Program for the Los Angeles River Upper Reach 2 Gateway Sub Watershed.

Dear Mr. Unger:

The Permittees listed in Table 1 below that are party to this Notice of Intent (NOI) hereby notify the Los Angeles Regional Water Quality Control Board (Regional Water Board) of their intent to develop a Watershed Management Program (WMP) for the Los Angeles River Upper Reach 2 Sub Watershed (LAR UR2 Sub Watershed) which includes the Cities of Bell, Bell Gardens, Cudahy, Commerce, Huntington Park, Maywood, Vernon, and the Los Angeles County Flood Control District. This NOI is hereby submitted in accordance with Part VI.C.4.b.i of Order R4-2012-0175. Permittees meet the LID and Green Streets conditions and will submit the Draft WMP within 18 months of the effective date of Order R4-2012-0175 (June 28, 2014).

In addition, the same permittees listed in Table 1 hereby notify the Regional Water Board of their intent to develop a Coordinated Integrated Monitoring Program (CIMP) as part of their WMP. The Permittees intend to follow a CIMP approach for each of the required monitoring plan elements including Receiving Water Monitoring, Storm Water Outfall Based Monitoring, Non-Storm Water Outfall Based Monitoring, New Development/Re-Development Effectiveness Tracking, and Regional Studies and will submit the CIMP within 18 months of the effective date of Order R4-2012-0175 (June 28, 2014) with the WMP.

SECTION 1. PROGRAM TYPE AND PERMITTEES

Table 1 lists the permittees who have agreed to work cooperatively and to jointly develop a WMP and CIMP under a Memorandum of Understanding (MOU) with the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority for administration and cost sharing.

Table 1. Watershed Management Program Permittees

City of Bell
City of Bell Gardens
City of Commerce
City of Cudahy
City of Huntington Park
City of Maywood
City of Vernon
Los Angeles County Flood Control District (LACFCD)

SECTION 2. TOTAL MAXIMUM DAILY LOADS ESTABLISHED WATER QUALITY BASED EFFLUENT LIMITATIONS:

Table 2 lists applicable interim and final Water Quality Based Effluent Limitations (WQBELs) and receiving water limitations established by Total Maximum Daily Loads (TMDLs) and identified by Section VI.C.4.B.ii of the Order that occur prior to the anticipated approval of the WMP.

Table 2. Applicable Interim and Final Trash WQBELs and all other Final WQBELs and Receiving Water Limitations Occurring Before Watershed Management Program Approval

TMDL Order	WQBEL	Interim or Final	Compliance Date
Los Angeles River Trash	80% reduction of baseline	Interim	09/30/2013
	90% reduction of baseline	Interim	09/30/2014
	96.7% reduction of baseline	Interim	09/30/2015
	100% reduction of baseline	Final	09/30/2016

Los Angeles River Nitrogen Compounds and Related Effects TMDL	100% of MS4 drainage area complies with waste load allocations	Final	03/23/2004
Los Angeles River Bacteria Implementation Schedule for Dry Weather – upper and middle reach 2 (Figueroa St. to Rosecrans Ave.) R4-2012-0175	Submit a Load Reduction Strategy (LRS) for Segment B (or submit an alternative compliance plan)	Interim	09/23/2014

SECTION 3. IDENTIFY TMDL CONTROL MEASURES:

Table 3 identifies the control measures being implemented by each Permittee for each TMDL that have interim and final WQBELs that occur prior to the anticipated approval of the WMP. The Permittees will continue to implement these measures during the development of the WMP.

Table 3. Control Measures that will be Implemented Concurrently with WMP Development for TMDLs

TMDL	Permittees	Implementation Plan and Control Measures	Status of Implementation
Los Angeles River Trash R4-2012-0175	Cities of: Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon	Install Full Capture Systems or other BMPs to reduce baseline by 80%	Completed
		Install Full Capture Systems or other BMPs to reduce baseline by 90%	Completed
		Install Full Capture Systems or other BMPs to reduce baseline by 96.7%	Completed
Los Angeles River Bacteria Implementation Schedule for Dry Weather – upper and middle reach 2 (Figueroa St. to Rosecrans Ave.) R4-2012-0175	Cities of: Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon	Developed a Coordinated Monitoring Plan (CMP) for the Los Angeles River Watershed.	Submitted the CMP to the LA Regional Water Quality Control Board on March 23, 2013 with the expressed intention of integrating the CMP with a future CIMP.

SECTION 4. DEMONSTRATION OF MEETING LID ORDINANCE AND GREEN STREETS POLICY REQUIREMENTS:

The Permittees that are party to this NOI developed LID Ordinances and Green Streets Policies that are in the process of being adopted by their governing board.**Table 4** summarizes the status of the Permittees' LID ordinances and Green Streets policies. More than 50% of the MS4 watershed area that will be addressed by the WMP is covered by LID Ordinances and Green Streets Policies.

Table 4. Status of LID Ordinance and Green Streets Policy Coverage of the MS4 Watershed Area Addressed by the WMP

Permittee	Land Area (mi^2)	LID Ordinance Status	Green Streets Policy Status
City of Bell	2.64	Developed	Developed
City of Bell Gardens	2.49	Adopted	Adopted
City of Commerce	6.57	Adopted	Adopted
City of Cudahy	1.12	Developed	Adopted
City of Huntington Park	3.03	Developed	Adopted
City of Maywood	1.18	Developed	Adopted
City of Vernon	5.16	Developed	Developed
LACFCD	0	N/A	N/A
Total MS4 Watershed Area	22.19		

The listed permittees are diligently working together and making progress towards compliance with Order R4-2012-0175. Please contact the individual permittees should you have questions pertaining to their jurisdiction's compliance measures. A list of contact information is enclosed. Please direct all inquiries regarding the LAR UR2 Sub Watershed's WMP/CIMP development to Ms. Claudia Arellano at carellano@ci.vernon.ca.us or (323) 583-8811, ext. 258. Thank you.

Sincerely,

The LAR UR2 Sub Watershed Permittees
(Individual signatures enclosed)

cc: Ms. Renee Purdy, California Regional Water Quality Control Board
Mr. Ivar Ridgeway, California Regional Water Quality Control Board

6330 Pine Avenue
Bell, California 90201
(323) 588-6211
(323) 771-9473 fax

CITY OF BELL

June 12, 2013

Mr. Samuel Unger, P.E., Executive Officer
California Regional Water Quality
Control Board – Los Angeles Region
320 West Fourth Street, Suite 200
Los Angeles, CA 90013

Attention: Ms. Renee Purdy

Dear Mr. Unger:

LETTER OF INTENT – LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
LOS ANGELES RIVER UPPER REACH 2 SUB WATERSHED
WATERSHED MANAGEMENT PROGRAM
AND COORDINATED INTEGRATED MONITORING PROGRAM

The City of Bell submits this Letter of Intent to participate in and share the cost of the development of a Watershed Management Program (WMP) and a Coordinated Integrated Monitoring Program (CIMP) with the Los Angeles River Upper Reach 2 Sub Watershed Group. This Letter of Intent serves to satisfy the WMP notification requirements of Section VI.C.4.b. of Order No. R4-2012-0175 (Municipal Separate Storm Sewer System Permit) and the CIMP requirements of Section IV.C.1 of Attachment E of the Municipal Separate Storm Sewer System Permit.

The Los Angeles River Upper Reach 2 Sub Watershed Group consists of the following agencies: the cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the LACFCD. The City of Bell intends to submit a final Memorandum of Understanding to the City Council for approval on July 17th, 2013.

If you have any questions, please contact Mr. Terry Rodrigue at (323)588-6211 or trodrigue@cityofbell.org.

Sincerely,

Doug Wilmore
City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6/19/13

CITY OF BELL GARDENS
Mr. Philip Wagner
City Manager
7100 Garfield Avenue
Bell Gardens, CA 90201

Philip Wagner, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 06/13/2013

CITY OF COMMERCE
Mr. Jorge Rifa
City Administrator
2535 Commerce Way
Commerce, CA 90040

Jorge Rifa, City Administrator

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6/19/13

CITY OF CUDAHY
Mr. Hector Rodriguez
City Manager
5220 Santa Ana Street
Cudahy, CA 90201

Hector Rodriguez, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6/24/13

CITY OF HUNTINGTON PARK
Mr. Rene Bobadilla, P.E.
City Manager
6550 Miles Avenue
Huntington Park, CA 90255

Rene Bobadilla, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6-25-13

CITY OF MAYWOOD
Ms. Lilian Myers
City Manager
4319 East Slauson Avenue
Maywood, CA 90270

Lilian Myers, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6-20-13

CITY OF VERNON
Mr. Samuel Kevin Wilson, P.E.
Director of Community Services & Water
4305 Santa Fe Avenue
Vernon, CA 90058

Samuel Kevin Wilson, Director of
Community Services & Water

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

GAIL FARBER, Director

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE
REFER TO FILE: WM-7

June 24, 2013

Mr. Samuel Unger, P.E.
Executive Officer
California Regional Water Quality
Control Board – Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Attention Ms. Renee Purdy

Dear Mr. Unger:

LETTER OF INTENT – LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
LOS ANGELES RIVER UPPER REACH 2 SUB WATERSHED
WATERSHED MANAGEMENT PROGRAM
AND COORDINATED INTEGRATED MONITORING PROGRAM

The Los Angeles County Flood Control District (LACFCD) submits this Letter of Intent to participate in and share the cost of the development of a Watershed Management Program (WMP) and a Coordinated Integrated Monitoring Program (CIMP) with the Los Angeles River Upper Reach 2 Sub Watershed Group. This Letter of Intent serves to satisfy the WMP notification requirements of Section VI.C.4.b. of Order No. R4-2012-0175 (Municipal Separate Storm Sewer System Permit) and the CIMP requirements of Section IV.C.1 of Attachment E of the Municipal Separate Storm Sewer System Permit.

The Los Angeles River Upper Reach 2 Sub Watershed Group consists of the following agencies: LACFCD and cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. The LACFCD intends to submit a final Memorandum of Understanding to the County of Los Angeles Board of Supervisors (which is the LACFCD's governing body) for approval prior to December 28, 2013.

If you have any questions, please contact Ms. Terri Grant at (626) 458-4309 or tgrant@dpw.lacounty.gov.

Very truly yours,

for GAIL FARBER
Chief Engineer of the Los Angeles County Flood Control District

TA:jht
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cc: City of Bell
City of Bell Gardens
City of Commerce
City of Cudahy
City of Huntington Park
City of Maywood
City of Vernon

Watershed Permittee Contact List

Permittee	*Contact*	*Contact Mailing Address*	*Contact Telephone and Email Address*
City of Bell	Young Park Terry Rodrigue	6330 Pine Ave. Bell, CA 90201	(323) 588-6211 Ext 228 ypark@cityofbell.org trodrigue@cityofbell.org
City of Bell Gardens	Chau Vu	7100 Garfield Ave. Bell Gardens, CA 90201	(562) 334-1790 cvu@bellgardens.org
City of Commerce	Gina Nila Environmental Services Manager	2535 Commerce Way Commerce, CA 90040	(323) 722-4805, ext. 2839 ginan@ci.commerce.ca.us
City of Cudahy	Aaron Hernandez-Torres Assistant City Engineer	5220 Santa Ana St. Cudahy, CA 90201	(323) 773-5143 ahernandez@cityofcudayca.gov
City of Huntington Park	James A. Enriquez Director of Public Works/City Engineer	6550 Miles Ave. Huntington Park, CA 90255	(323) 584-6253 jenriquez@huntingtonpark.org
City of Maywood	Andre Dupret	4319 E. Slauson Ave. Maywood, CA 90270	(323) 562-5700 andre.dupret@cityofmaywood.org
City of Vernon	Samuel Kevin Wilson, P.E. Director of Community Services & Water Claudia Arellano Project Engineer	4305 Santa Fe Ave. Vernon, CA 90058	(323) 583-8811, ext. 245 kwilson@ci.vernon.ca.us (323) 583-8811, ext. 258 carellano@ci.vernon.ca.us
LACFCD	Gary Hildebrand	900 S. Freemont Ave. Alhambra, CA 91803	(626) 458-4300 ghildeb@dpw.lacounty.gov

DRAFT
GREEN STREETS POLICY

Intent: Develop a City Policy to provide an outline of green streets strategies for the City of Vernon consistent with the requirements of the Municipal Separate Storm Sewer System (MS4) Permit for the Los Angeles Region, Order No. R4-2012-0175 (hereinafter referred to as the MS4 Permit).

Purpose: The City of Vernon Community Services and Water Department shall implement green streets Best Management Practices (BMPs) for transportation corridors associated with new and redevelopment street and roadway projects, including Capital Improvement Projects (CIPs). This policy is enacted to demonstrate compliance with the MS4 Permit.

Green Streets are enhancements to street and road projects to improve the quality of storm water and urban runoff through the implementation of infiltration, bio-treatment, xeriscaping parkways and tree lined streets. Green streets are also an amenity that provide many benefits including groundwater replenishment, creation of attractive streetscapes, creation of parks and wildlife habitats, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain, or detain stormwater runoff as well as a design element that creates attractive streetscapes.

Policy

A. Application: The City shall require new development and/or redevelopment streets and roadway projects and CIPs conducted within the right-of-way of transportation corridors to incorporate green street BMPs. Transportation corridors projects are roadway projects that add at least 10,000 square feet of impervious surface. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are maintained, as required by the MS4 Permit.

B. Amenities. The City shall consider opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs.

C. Guidance. The City shall use the City of Vernon Green Streets Manual for use in public and private developments.

D. Retrofit Scope. The City shall use the City's Watershed Management Program to identify opportunities for green streets BMP retrofits. Final decisions regarding implementation will be determined by the City Engineer based on the availability of adequate funding.

E. Training. The City shall incorporate aspects of green streets into internal annual staff trainings.

This Green Streets Policy was approved and adopted at a regular meeting of the City Council of the City of Vernon, on [DAY], [MONTH] 2013.

Name: _____
Title: Mayor / Mayor Pro-Tem

ATTEST:

_____
Interim City Clerk / Deputy City Clerk

APPROVED AS TO FORM:

_____
Scott Porter,
Deputy City Attorney

DRAFT

LOW IMPACT DEVELOPMENT ORDINANCE

AMENDING SECTION(S) OF CHAPTER 21, SEWERS AND STORM DRAINS

Purpose and Intent: TO EXPAND THE APPLICABILITY OF THE EXISTING DEVELOPMENT PLANNING PROGRAM REQUIREMENTS BY IMPOSING STORMWATER LOW IMPACT DEVELOPMENT (LID) STRATEGIES ON PROJECTS THAT REQUIRE BUILDING, GRADING AND ENCROACHMENT PERMITS

WHEREAS, the City of Vernon is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity; and

WHEREAS, the Clean Water Act provides the statutory basis for the NPDES permit program and the basic structure for regulating the discharge of pollutants from point sources to waters of the United States under the National Pollutant Discharge Elimination System (NPDES) Program; and

WHEREAS, the State Water Resources Control Board is authorized by the United States Environmental Protection Agency to enforce the NPDES Program; and

WHEREAS, the City of Vernon is a permittee under the California Regional Water Quality Control Board, Los Angeles Region Order No. R4-2012-0175, issued on November 08, 2012 which establishes Waste Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4 (hereinafter referred to as the MS4 Permit); and

WHEREAS, the MS4 Permit contains compliance requirements for municipalities to establish a LID Ordinance in order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program; and

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region has adopted Total Maximum Daily Loads (TMDLs), which are maximum amount of pollutants that a receiving water can accept and still meet water quality standards, that must be achieved through effective LID implementation; and

WHEREAS, the City of Vernon has the authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity that might degrade receiving waters; and

WHEREAS, the City of Vernon is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental, social and economic considerations; and

WHEREAS, urbanization has led to increased impervious surface areas resulting in increased water runoff and less percolation to groundwater aquifers causing the transport of pollutants to downstream receiving waters; and

WHEREAS, it is the intent of the City of Vernon to expand the applicability of the existing Development Planning Program requirements by providing stormwater LID strategies for Development and Redevelopment projects as defined under “Applicability”; and

WHEREAS, Chapter 21 of the Code of the City of Vernon pertains to sewers and storm drains; and

WHEREAS, by memorandum dated June 18, 2013, the Director of Community Services & Water has recommended that Section ____ of Chapter 21, Sewers and Storm Drains, of the Code of the City of Vernon be amended to comply with the new requirements of the MS4 Permit; and

WHEREAS, it is the intent of this Ordinance to amend Section _____ of Chapter 21 of the Code of the City of Vernon.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF VERNON HEREBY ORDAINS AS FOLLOWS:

SECTION 1: Recitals. The City Council of the City of Vernon hereby finds and determines that the recitals contained hereinabove are true and correct.

SECTION 2: Exempt from CEQA. The City Council of the City of Vernon finds that this action is exempt under the California Environmental quality Act (CEQA) in accordance with:

a) Section 15308, actions by regulatory agencies for the protection of the environment; and

b) Section 15061(b)(3), the general rule that CEQA only applies to projects that may have an effect on the environment.

SECTION 3: Code Amendments. The City Council of the City of Vernon hereby amends Section _____ of Chapter 21, Sewers and Storm Drains of the Code of the City of Vernon, as set forth in Exhibit "A" which is attached hereto and made a part hereof by reference.

SECTION 4: Severability. The City Council declares that should any portion of this Ordinance be rendered or declared invalid by any final court action in a court of competent jurisdiction or by reason of any preemptive legislation, the remaining portions of this Ordinance shall remain in full force and effect.

SECTION 5: Publication. The Interim City Clerk, or Deputy City Clerk, shall attest and certify to the adoption of this Ordinance and shall cause this Ordinance and such certification to be entered in the Book of Ordinances of the City Council. Pursuant to Section 36933 of the Government Code, within 15 days of the adoption of this Ordinance, the Interim City Clerk, or Deputy City Clerk, shall cause this Ordinance to be published or posted with the names of those City Council members voting for and against the Ordinance as required by law.

SECTION 6. This Ordinance shall go into effect and be in full force and effect at 12:01 a.m. on the thirtieth (30^{th}) day after its passage.

APPROVED AND ADOPTED this _____ day of _____, 2013.

_____

Name: _____

Title: Mayor / Mayor Pro-Tem

ATTEST:

_____

Interim City Clerk / Deputy City Clerk

APPROVED AS TO FORM:

_____

By: Scott Porter, Deputy City Attorney
Nicholas G. Rodriguez

STATE OF CALIFORNIA)

) ss

COUNTY OF LOS ANGELES)

I, _____, Interim City Clerk / Deputy City Clerk of the City of Vernon, hereby certify that Ordinance No. [ORDINANCE NO] was introduced at a regular meeting of the City Council of the City of Vernon held on the [DAY] of [MONTH] 2013, and thereafter was adopted by the City Council of the City of Vernon at a regular meeting held on the [DAY] of [MONTH], 2013, and that the same was adopted by the following roll call vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

_____

INTERIM CITY CLERK / DEPUTY CITY CLERK

Exhibit "A" to LID Ordinance
Chapter 21
Sewers and Storm Drains

Section _____ of Chapter 21, Sewers and Storm Drains shall be amended to add the following definitions in alphabetical order, and to renumber all existing definitions accordingly in alphabetical order. If the definition of any term contained in this chapter conflicts with the definition of the same term in MS4 Permit , then the definition contained in MS4 Permit shall govern:

"Automotive Service Facility" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes 5013, 5014, 5511, 5541, 7532-7534, and 7536-7539. For inspection purposes, Permittees need not inspect these facilities provided that they have no outside activities or materials that may be exposed to stormwater (Modified from MS4 Permit).

"Basin Plan" means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments (MS4 Permit).

"Best Management Practice (BMP)" means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water (MS4 Permit).

"Biofiltration" means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales (Modified from MS4 Permit).

"Bioretention" means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in this Ordinance, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by this Order as biofiltration (MS4 Permit).

"Bioswale" means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes (MS4 Permit).

"City" means the City of Vernon, California.

"Clean Water Act (CWA)" means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to the storm sewers and/or Waters of the United States unless the discharge is in accordance with an NPDES permit.

"Commercial Development" means any development on private land that is not industrial or residential. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities; mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes (Modified from MS4 Permit).

"Commercial Malls" means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers (MS4 Permit).

"Construction Activity" means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that result in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan (MS4 Permit).

"Control" means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities (MS4 Permit).

"Development" means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (MS4 Permit).

"Directly Adjacent" means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area (MS4 Permit).

"Discharge" means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance (Modified from MS4 Permit).

"Disturbed Area" means an area that is altered as a result of clearing, grading, and/or excavation (MS4 Permit).

"Executive Officer" means the Executive Officer of the California Regional Water Quality Control Board, Los Angeles Region.

"Flow-through treatment BMPs" means a modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain (MS4 Permit).

"Full Capture System" means any single device or series of devices, certified by the Executive Officer, that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate Q resulting from a one-year, one-hour storm in the sub-drainage area (MS4 Permit).

"General Construction Activities Storm Water Permit (GCASP)" means the general NPDES permit adopted by the State Water Resources Control Board which authorizes the discharge of stormwater from construction activities under certain conditions (Modified from MS4 Permit).

"General Industrial Activities Storm Water Permit (GIASP)" means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions (MS4 Permit).

"Green Roof" means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a

bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain (MS4 Permit).

"Hillside" means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes (MS4 Permit).

"Industrial/Commercial Facility" means any facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, and any facility involved and/or used in providing professional and non-professional services. This category of facilities includes, but is not limited to, any facility defined by either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS). Facility ownership (federal, state, municipal, private) and profit motive of the facility are not factors in this definition (MS4 Permit).

"Industrial Park" means land development that is set aside for industrial/commercial facility development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry (Modified from MS4 Permit).

"Infiltration BMP" means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement (MS4 Permit).

"Low Impact Development (LID)" consists of building and landscape features designed to retain or filter stormwater runoff (MS4 Permit).

"Municipal Separate Storm Sewer System (MS4)" means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) Designed or used for collecting or conveying stormwater;

(iii) Which is not a combined sewer; and

(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR Section 122.2.

(40 CFR Section 122.26(b)(8)) (MS4 Permit)

"**National Pollutant Discharge Elimination System (NPDES)"** means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA Section 307, 402, 318, and 405. The term includes an "approved program" (MS4 Permit).

"Natural Drainage System" means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system (MS4 Permit).

"New Development" means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision (MS4 Permit).

"Non-Stormwater Discharge" means any discharge to a municipal storm drain system that is not composed entirely of stormwater (MS4 Permit).

"Outfall" means a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances with connect segments of the same stream or other waters of the United Sates and are used to convey waters of the United States. (40 CFR Section 122.26(b)(9)) (MS4 Permit).

"Parking Lot" means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces (MS4 Permit).

"Planning Priority Projects" means development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, prior to completion of the project(s) (Modified from MS4 Permit).

"Pollutant" means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Section 13373 (MS4 Permit).

"Project" means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code Section 21065) (MS4 Permit).

"Rainfall Harvest and Use" means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department (MS4 Permit).

"Receiving Water" means "water of the United States" into which waste and/or pollutants are or may be discharged (MS4 Permit).

"Redevelopment" means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (MS4 Permit).

"Regional Board" means the California Regional Water Quality Control Board, Los Angeles Region.

"Restaurant" means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812) (MS4 Permit).

"Retail Gasoline Outlet" means any facility engaged in selling gasoline and lubricating oils (MS4 Permit).

"Routine Maintenance" includes, but is not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.

4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.

** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (MS4 Permit).

"Significant Ecological Areas (SEAs)" means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.
5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (MS4 Permit).

"Site" means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity (MS4 Permit).

"Storm Drain System" means any facility or any parts of the facility, including streets, gutters, conduits, natural or artificial drains, channels and watercourse that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the City.

"Storm Water or Stormwater" means runoff, snow melt runoff, and surface runoff and drainage related to precipitation events (pursuant to 40 CFR Section 122.26(b)(13); 55 Fed. Reg. 47990, 47995 (Nov. 16, 1990)) (MS4 Permit).

"Urban Runoff" means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial or industrial activities involving the use of potable and non-potable water.

SECTION _____ OF CHAPTER 21, SEWERS AND STORM DRAINS
LOW IMPACT DEVELOPMENT (LID) MEASURES FOR NEW DEVELOPMENT AND/OR REDEVELOPMENT PLANNING AND CONSTRUCTION ACTIVITIES.

A. Objective. The provisions of this Section establish requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current MS4 Permit, lessen the water quality impacts of development and redevelopment by using smart growth practices, and integrate LID practices and standards for stormwater pollution mitigation through means of infiltration, evapotranspiration, biofiltration, and rainfall harvest and use. LID shall be inclusive of new development and/or redevelopment requirements.

B. Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the City of Vernon to further define and adopt stormwater pollution control measures, and to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, grant waivers from the LID requirements, and collect funds for projects that are granted waivers. Except as otherwise provided herein, the City shall administer, implement, develop guidelines and enforce the provisions of this Section.

C. Applicability. Development and Redevelopment projects, termed "Planning Priority Projects," subject to design and implementation of post-construction controls to mitigate potential stormwater pollution, prior to completion of the project(s), are:

(1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.
(2) Industrial parks 10,000 square feet or more of surface area.
(3) Commercial malls 10,000 square feet or more of surface area.
(4) Retail gasoline outlets with 5,000 square feet or more of surface area.
(5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.
(6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.
(7) Streets and roads construction of 10,000 square feet or more of impervious surface area. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects.
(8) Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) 5,000 square feet or more of surface area.
(9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:
    a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and
    b. Create 2,500 square feet or more of impervious surface area
(10) Single-family hillside homes.
(11) Redevelopment Projects
    a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.
    b. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire development site must be mitigated. If the development site was subject to post-construction stormwater quality control requirements, then only the area of alteration must be mitigated.
    c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.
    d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and

roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

D. Effective Date. The Planning and Land Development requirements contained in Section E shall become effective thirty (30) days from the adoption of the Ordinance. This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Ordinance. Projects that have been deemed complete within 90 days of adoption of the Ordinance are not subject to the requirements of this Chapter. Ministerial projects for which a grading plan was submitted prior to February 6, 2013 and approved by the City of Vernon Community Services & Water Department shall not be subject to the requirements contained in Section E.

E. Stormwater Pollution Control Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) A new single-family hillside home development shall include mitigation measures to:
   a. Conserve natural areas;
   b. Protect slopes and channels;
   c. Provide storm drain system stenciling and signage;
   d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and
   e. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

(2) Street and road construction of 10,000 square feet or more of impervious surface shall follow the City of Vernon's Green Streets Policy to the maximum extent practicable.

(3) The remainder of Planning Priority Projects shall prepare an LID Plan to comply with the following:
   a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:
      i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or
      ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.
   b. Minimize hydromodification impacts to natural drainage systems as defined in the MS4 Permit
   c. To demonstrate technical infeasibility, the project applicant must demonstrate that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:

i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.
ii. Locations where seasonal high groundwater is within five to ten feet of surface grade;
iii. Locations within 100 feet of a groundwater well used for drinking water;
iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;
v. Locations with potential geotechnical hazards;
vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

d. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in the MS4 Permit.
   i. Additional alternative compliance options such as offsite infiltration and groundwater replenishment projects may be available to the project Site. The project Site should contact the City of Vernon to determine eligibility.

e. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per the MS4 Permit. Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:
   i. 0.2 inches per hour, or
   ii. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

(4) Yearly monitoring sample results for Infiltration system projects shall be provided to the City to ensure infiltration system is not causing any type of contamination on the project site.
   a. Monitoring sample results will be required through the lifetime of the infiltration system; and
   b. Should contamination occur, the property owner will be required to remediate the site at its own expense; and
   c. Additional stormwater LID strategies will be implemented on the project site.

RESOLUTION NO. 13-17

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CUDAHY, CALIFORNIA, APPROVING A GREEN STREETS POLICY

The City Council of the City of CUDAHY, California, hereby resolves, determines and orders as follows:

SECTION 1. The Municipal Separate Storm Sewer System (MS4) Permit (Order No. R-2012-0175) was adopted by the California Regional Water Quality Control Board, Los Angeles Region on November 8, 2012. Municipalities electing to prepare a Watershed Management Program or an Enhanced Watershed Management Program under this Permit are required to demonstrate that Green Street policies are in place that specify the use of green street strategies for transportation corridors.

SECTION 2. Green Streets are enhancements to street and road projects to improve the quality of storm water and urban runoff through the implementation of infiltration, bio-treatment, xeriscaping parkways and tree lined streets.

SECTION 3. That on February 25, 2013, the City notified the Gateway Water Management Authority that development of a Green Street Policy has been initiated.

SECTION 4. That the City Council of the City of Cudahy, California, hereby directs the City Engineer to implement Green Streets for transportation corridors as described in the **City of Cudahy Green Street Manual**. The Green Street Manual is described on Exhibit "A" (Staff Report) and shown on Exhibit "B," attached hereto.

SECTION 5. Routine maintenance including but not limited to: slurry seals, grind and overlay and reconstruction to maintain original line are grade are excluded from the Green Street Policy.

PASSED, APPROVED AND ADOPTED this 4th day of June 2013.

Jack Guerrero, Mayor

ATTEST:

Angela Bustamante,
Deputy City Clerk

APPROVED AS TO FORM

Rick Olivarez,
City Attorney

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS:
CITY OF CUDAHY)

I, Angela Bustamante, Deputy City Clerk of the City of Cudahy, hereby certify that the foregoing Resolution No. 13-17 was passed and adopted by the City Council of the City of Cudahy at a regular meeting held on the 4th day of June, 2013 and that said Resolution was adopted by the following vote, to-wit:

AYES: Councilmember Gurule, Romo, Sanchez, Vice Mayor Garcia, Mayor Guerrero

NOES:

ABSENT:

ABSTAIN:

Angela Bustamante,
Deputy City Clerk

7D

AGENDA REPORT

MEETING DATE:	June 4, 2013
TO:	Honorable Vice Mayor and Members of the City Council
THROUGH:	Hector Rodriguez, City Manager
FROM:	Saul Bolivar, Community Development Director
TITLE:	**Introduction of DRAFT Ordinance pertaining to Low Impact Development Strategies on Projects that require Building, Grading and Encroachment Permits**

RECOMMENDATION: It is recommended that the City Council receive and file a DRAFT Ordinance of the City Council pertaining to Low Impact Development (LID) Strategies and LID Manual entitled: **CITY OF CUDAHY LOW IMPACT DEVELOPMENT (LID) GUIDELINES.**

SUMMARY:

The Municipal Separate Storm Sewer System (MS4) Permit (Order No. R-2012-0175) was adopted by the California Regional Water Quality Control Board, Los Angeles Region on November 8, 2012. Municipalities requires Permittees electing to prepare a Watershed Management Program or an Enhanced Watershed Management Program under this Permit to demonstrate that there are LID ordinances in place and/ or commence development of a Low Impact Development (LID) ordinance(s) meeting the requirements of the Order's Planning and Land Development Program within 60 days of the effective date and have a draft ordinance within 6 months of the effective date of the Order.

The purpose of this DRAFT Ordinance is to provide an outline of Low Impact Development (LID) policies for the City of Cudahy consistent with the requirements of the MS4 Permit.

BACKGROUND/ DISCUSSION:

LID stands for: Low Impact Development, it is a stormwater management strategy that emphasizes conservation and the use of existing natural site features integrated with distributed, small-scale stormwater control to more mimic natural hydrologic patterns in residential, commercial, and industrial settings.

The urbanization of Southern California has disrupted the natural flow of stormwater runoff. Rain falling on roof now flows into metal or plastic downspouts, then to concrete curbs and gutters along asphalt roads, then to concrete storm drains, then to concrete river-channels, and then finally into estuaries and the Pacific Ocean.

The problem is that rainwater no longer comes into contact with dirt and vegetation. Any pollutants (heavy metals, bacteria, nutrients, pesticides) that would have previously been naturally degraded, are now flowing straight out to environmentally sensitive areas.

LID is a green design strategy that corrects this problem. The purpose of this DRAFT Ordinance

is to provide an outline of Low Impact Development (LID) policies for the City of Cudahy consistent with the requirements of the MS4 Permit.

In contrast to conventional stormwater controls, low-impact development (LID) techniques emphasize on-site treatment and infiltration of stormwater. The term low-impact development encompasses a variety of stormwater-management techniques.

Typical LID systems include: Flow-through planter boxes, vegetative swales, rain gardens, and green streets. In addition to these LID systems, there are many other acceptable systems such as capture and re-use (cisterns/ rain barrels), green roofs, pervious pavement/ pavers, turf block, etc. However, the design, installation, and subsequent operation and maintenance of these systems can be complex and should be carefully evaluated prior to being proposed

ANALYSIS:

The Planning, Engineering and Public Works Departments shall require projects that require Building, Grading and Encroachment Permits to follow the **City of Cudahy Low Impact Development (LID) Guidelines.**

FISCAL IMPACT:

There is no direct fiscal impact to the City for receive and file this DRAFT Ordinance and Guidelines pertaining Low Impact Development (LID) strategies. However when this Ordinance is officially adopted it is expected LID controls can be more cost effective and have lower maintenance costs than conventional stormwater controls.

ATTACHMENTS:

1. DRAFT Ordinance No. Exhibit "A"
2. A copy of a DRAFT of the Low Impact Development (LID) Strategies entitled: CITY OF CUDAHY **LOW IMPACT DEVELOPMENT (LID) GUIDELINES** to be used by the property owner and/or developer is attached as seen in Exhibit "B."

ORDINANCE NO. (DRAFT)

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF CUDAHY, CALIFORNIA, ADDING CHAPTER 20.108 PERTAINING TO LOW IMPACT DEVELOPMENT (LID) STRATEGIES ON PROJECTS THAT REQUIRE BUILDING, GRADING AND ENCROACHMENT PERMITS, TO TITLE 20 (ZONING) OF THE CITY OF CUDAHY MUNICIPAL CODE

WHEREAS, the City of Cudahy (City) is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity; and

WHEREAS, the federal Clean Water Act establishes Regional Water Quality Control Boards in order to prohibit the discharge of pollutants in stormwater runoff to waters of the United States; and

WHEREAS, the City is a permittee under the California Regional Water Quality Control Board, Los Angeles Region Order No. R4-2012-0175, issued on November 08, 2012 which establishes Waste Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4; and

WHEREAS, Order No. R4-2012-0175 contains requirements for municipalities to establish an LID Ordinance in order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program; and

WHEREAS, the Regional Board has adopted Total Maximum Daily Loads (TMDLs) for pollutants which are numerical limits that must be achieved effectively through LID implementation; and

WHEREAS, the City has the authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity that might degrade waters of the State; and

WHEREAS, the City is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental and economic considerations; and

WHEREAS, urbanization has led to increased impervious surface areas resulting in increased water runoff and less percolation to groundwater aquifers causing the transport of pollutants to downstream receiving waters; and

WHEREAS, is it the intent of the City to expand the applicability of the existing LID requirements by providing stormwater and rainwater LID strategies for all projects for Development and Redevelopment projects as defined under "Applicability."

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF CUDAHY, CALIFORNIA, DOES HEREBY ORDAIN AS FOLLOWS:

Chapter 20.108 of Title 20 of the **City of Cudahy Municipal Code** (LOW IMPACT DEVELOPMENT MEASURES FOR NEW DEVELOPENT AND/OR REDEVELOPENT PLANNING AND CONSTRUCTION ACTIVITIES) is added to include the following definitions in alphabetical order. If the definition of any term contained in this chapter conflicts with the definition of the same term in Order No. R4-2012-0175, then the definition contained in Order No. R4-2012-0175 shall govern:

"Automotive Service Facility" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5511, 5541, 7532-7534, and 7536-7539 provided that these facilities have no outside activities or materials that may be exposed to stormwater (Order No. R4-2012-0175).

"Basin Plan" means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments (Order No. R4-2012-0175).

"Best Management Practice (BMP)" means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water (Order No. R4-2012-0175).

"Biofiltration" means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales (Order No. R4-2012-0175).

"Bioretention" means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in this Ordinance, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by Order No. R4-2012-0175 as biofiltration (Order No. R4-2012-0175).

"Bioswale" means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes (Order No. R4-2012-0175).

"City" means the City of Cudahy.

"Clean Water Act (CWA)" means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

"Commercial Development" means any development on private land that is not heavy industrial or residential. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities; mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes (Order No. R4-2012-0175).

"Commercial Malls" means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers (Order No. R4-2012-0175).

"Construction Activity" means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that result in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan (Order No. R4-2012-0175).

"Control" means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities (Order No. R4-2012-0175).

"Development" means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Order No. R4-2012-0175).

"Directly Adjacent" means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area (Order No. R4-2012-0175).

"Discharge" means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

"Disturbed Area" means an area that is altered as a result of clearing, grading, and/or excavation (Order No. R4-2012-0175).

"Flow-through treatment BMPs" means a modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain (Order No. R4-2012-0175).

"Full Capture System" means any single device or series of devices, certified by the Executive Officer, that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate Q resulting from a one-year, one-hour storm in the sub-drainage area (Order No. R4-2012-0175).

"General Construction Activities Storm Water Permit (GCASP)" means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions (Order No. R4-2012-0175).

"General Industrial Activities Storm Water Permit (GIASP)" means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions (Order No. R4-2012-0175).

"Green Roof" means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain (Order No. R4-2012-0175).

"Hillside" means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes (Order No. R4-2012-0175).

"Industrial/Commercial Facility" means any facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, and any facility involved and/or used in providing professional and non-professional services. This category of facilities includes, but is not limited to, any facility defined by either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS). Facility ownership (federal, state, municipal, private) and profit motive of the facility are not factors in this definition (Order No. R4-2012-0175).

"Industrial Park" means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry (Order No. R4-2012-0175).

"Infiltration BMP" means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement (Order No. R4-2012-0175).

"Low Impact Development (LID)" consists of building and landscape features designed to retain or filter stormwater runoff (Order No. R4-2012-0175).

"Municipal Separate Storm Sewer System (MS4)" means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) Designed or used for collecting or conveying stormwater;

(iii) Which is not a combined sewer; and

(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR Section 122.2.

(40 CFR Section 122.26(b)(8)) (Order No. R4-2012-0175)

"National Pollutant Discharge Elimination System (NPDES)" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA Section 307, 402, 318, and 405. The term includes an "approved program" (Order No. R4-2012-0175).

"Natural Drainage System" means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system (Order No. R4-2012-0175).

"New Development" means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision (Order No. R4-2012-0175).

"Non-Stormwater Discharge" means any discharge to a municipal storm drain system that is not composed entirely of stormwater (Order No. R4-2012-0175).

"Outfall" means a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances with connect segments of the same stream or other waters of the United Sates and are used to convey waters of the United States. (40 CFR Section 122.26(b)(9)) (Order No. R4-2012-0175).

"Parking Lot" means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces (Order No. R4-2012-0175).

"Pollutant" means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Section 13373 (Order No. R4-2012-0175).

"Project" means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code Section 21065) (Order No. R4-2012-0175).

"Rainfall Harvest and Use" means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department (Order No. R4-2012-0175).

"Receiving Water" means "water of the United States" into which waste and/or pollutants are or may be discharged (Order No. R4-2012-0175).

"Redevelopment" means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or

impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Order No. R4-2012-0175).

"Regional Board" means the California Regional Water Quality Control Board, Los Angeles Region.

"Restaurant" means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812) (Order No. R4-2012-0175).

"Retail Gasoline Outlet" means any facility engaged in selling gasoline and lubricating oils (Order No. R4-2012-0175).

"Routine Maintenance" includes, but is not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.
4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.

** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Order No. R4-2012-0175).

"Significant Ecological Areas (SEAs)" means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.

5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (Order No. R4-2012-0175).

"Site" means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity (Order No. R4-2012-0175).

"Storm Drain System" means any facility or any parts of the facility, including streets, gutters, conduits, natural or artificial drains, channels and watercourse that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the City.

"Storm Water or Stormwater" means runoff and drainage related to precipitation events (pursuant to 40 CFR Section 122.26(b)(13); 55 Fed. Reg. 47990, 47995 (Nov. 16, 1990)).

"Urban Runoff" means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial or industrial activities involving the use of potable and non-potable water.

CHAPTER 20.108 OF TITLE 20 (ZONING) LOW IMPACT DEVELOPMENT MEASURES FOR NEW DEVELOPENT AND/OR REDEVELOPENT PLANNING AND CONSTRUCTION ACTIVITIES.

A. i

A. Objective. The provisions of this Section establish requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Order No. R4-2012-0175," lessen the water quality impacts of development by using smart growth practices, and integrate LID practices and standards for stormwater pollution mitigation through means of infiltration, evapotranspiration, biofiltration, and ranfall harvest and use. LID shall be inclusive of new development and/or redevelopment requirements.

B. Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the City to further define and adopt stormwater pollution control measures, and to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, grant waivers from the LID requirements, and collect funds for projects that are granted waivers. Except as otherwise provided herein, the City shall administer, implement and enforce the provisions of this Section.

C. Applicability. Development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, prior to completion of the project(s), are:

(1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

(2) Industrial parks 10,000 square feet or more of surface area.

(3) Commercial malls 10,000 square feet or more of surface area.

(4) Retail gasoline outlets with 5,000 square feet or more of surface area.

(5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.

(6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(7) Streets and roads construction of 10,000 square feet or more of impervious surface area. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

(8) Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) 5,000 square feet or more of surface area.

(9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:

a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

b. Create 2,500 square feet or more of impervious surface area

(10) Single-family hillside homes.

(11) Redevelopment Projects

a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

b. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

D. **Effective Date.** The Planning and Land Development requirements contained in Section 7 of Order No. R4-2012-0175 shall become effective 90 days from the adoption of the Order (February 6, 2013). This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing,

or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Order. Projects that have been deemed complete within 90 days of adoption of the Order are not subject to the requirements Section 7.

E. Specific Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) A new single-family hillside home development shall include mitigation measures to:

a. Conserve natural areas;

b. Protect slopes and channels;

c. Provide storm drain system stenciling and signage;

d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and

e. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

(2) Street and road construction of 10,000 square feet or more of impervious surface shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

(3) The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:

a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:

i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or

ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.

b. Minimize hydromodification impacts to natural drainage systems as defined in Order No. R4-2012-0175.

c. To demonstrate technical infeasibility, the project applicant must demonstrate that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:

i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.

ii. Locations where seasonal high groundwater is within five to ten feet of surface grade;

iii. Locations within 100 feet of a groundwater well used for drinking water;

iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;

v. Locations with potential geotechnical hazards;

vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

d. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in Order No. R4-2012-0175.

i. Additional alternative compliance options such as offsite infiltration and groundwater replenishment projects may be available to the project Site. The project Site should contact the City of Cudahy to determine eligibility.

e. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per Order No. R4-2012-0175. Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

i. 0.2 inches per hour, or

ii. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

F. Additional Requirements. The site for projects not classified with general applicability listed in Section C of this Ordinance, but resulting in the creation or addition or replacement of 500 square feet or more of impervious surface area shall be designed to control pollutants, pollutant loads, and runoff volume per the **City of Cudahy Low Impact Development (LID) Technical Guidance Manual.**

G. Validity. If any provision of this Ordinance is found to be unconstitutional or otherwise invalid by any court of competent jurisdiction, such invalidity shall not affect remaining provisions of this Ordinance are declared to be severable.

Exhibit B

7/18/2013

DRAFT

MANAGING WET WEATHER AND URBAN RUNOFF

CITY OF CUDAHY LOW IMPACT DEVELOPMENT (LID) GUIDELINES

Table of Contents

What IS LID?

Low Impact Development (LID) consists of design strategies using softscape and hardscape surfaces to retain or filter stormwater and urban runoff. Key to the success of LID is to put in practice the use of small-scale, natural drainage features and to maximize infiltration and capture on site in lieu of conventional end-of-line treatment facilities. This approachalso improves a property's aesthetic appearance that achieve multiple goals and benefits.

Purpose & Intent
- Control stormwater and urban runoff to capture pollutants.
- Reuse water and prevent water waste through landscape design elements.

The intent of a LID is to curb the transport of pollutants to downstream receiving waters caused by impervious surfaces like roadways, parking lots and buildings. Urban areas have less green space that can capture water resulting in increased water runoff. The City needs to take an LID approach to managing runoff while mitigating the impacts of development and urbanization. LID is widely recognized as a sensible approach to managing the quantity and quality of rainwater and urban runoff by setting standards and practices to maintain or restore the natural hydrologic character of a development site, reduce off-site runoff, improve water quality, and provide groundwater recharge.

LID can incorporate a wide variety of design elements including landscaping, permeable pavements, bioretention, infiltration and swales. Although the design and appearance of LIDs will vary, the goals remain the same; provide source control of runoff, limit its transport and pollutant conveyance to the collection system, restore pre-development hydrology to the maximum extent practicable, and provide environmentally enhanced communities.

WHY IS LID REQUIRED?

Los Angeles River Control Channel

The City of Cudahy adopted an LID Ordinance to comply with requirements of Clean Water Act and the MS4 Stormwater and Urban Runoff Permit (Order Number R4-2012-0175) effective December 28, 2012.

Commercial and Residental land use represent a significant percentage of the impervious area within the City. Altered flow from development increasesrunoff from storm events, are damaging to the environment and increase the risk to property downstream.

Over time, water runoff has become more regulated to minimize negative impacts on the environment caused by transferring runoff to storm drains, channels, and water bodies. Stormwater runoff can contain pollutants such as trash, metals, nutrients, and bacteriaand are regulated bygovernmental agencies. LID will help to transform the design of properties to a method of storing and treating water on-site for a cleaner discharge into waters of the United States.

The MS4 Permit requires implementation of LID strategies in the following "Planning Priority Projects":

1. All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.
2. Industrial parks 10,000 square feet or more of surface area.
3. Commercial malls 10,000 square feet or more of surface area.
4. Retail gasoline outlets with 5,000 square feet or more of surface area.
5. Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.
6. Parking lots with 5,000 square feet or more of impervious surface area or with 25 or more parking spaces.
7. Streets and road construction of 10,000 square feet or more of impervious surface area.
8. Automotive service facilities (SIC of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) with 5,000 square feet or more of surface area.
9. Projects in, near or discharging to Environmentally Sensitive Areas.
10. Single-family hillside homes.
11. Redevelopment projects:

    - Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.
    - Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.
    - Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

- Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

- Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

12. Any other project as deemed appropriate by the Director.

For every Planning Priority Project the site shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, capture and use, and/or biotreatment. This LIDGuidelines is designed to provide guidance with Best Management Practices (BMP) selection based on site conditions. The initial step in selecting a stormwater tool is determining the available space and opportunities for LID.

Examples of Common LID Best Management Practices

			
Vegetated Swales/Bioswales	Rain Gardens	Rain Cisterns	Green Roofs
			
Permeable Pavers	Porous Pavement	Curb Bump-Outs	Curb Cuts

Site Considerations

Specific elements which should be given special consideration in the site assessment process for applicable LID include:

- Ownership of land.
- Location of existing utilities.
- Grade differential between road surface and storm drain system.
- Longitudinal slope.
- Soil suitability.
- Potential access for operations and maintenance.

Design Considerations

The drainage patterns of the project shall be developed to route drainage to areas with BMP opportunities before entering storm drains. For example, if a median strip is present, a reverse crown should be considered, where allowed, so that stormwater can drain to a median swale. Likewise, standard peak-flow curb inlets should be located downstream of areas with potential for stormwater planters so that water can first flow into the planter and then overflow to the downstream inlet if capacity of the planter is exceeded.

Infiltration planter

BMP Sizing for Applicable LID Projects

The Stormwater Quality Design Volume (SWQDv) standard should be used to determine the appropriate size, slope, and materials of each facility. The SWQDv is defined as:

1. The 85th percentile 24-hour runoff event as determined from the LA County 85th percentile precipitation isohyetal map; or
2. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.

After identifying the appropriate stormwater facilities for a site, an integrated approach using several BMPs is encouraged. To increase water quality and functional hydrologic benefits, several stormwater management BMPs can be used in succession, namely a treatment train approach. The control measures should be designed using available topography to take advantage of gravity for conveyance to and through each facility. All LID designs must be based off of a published design standard.

The following steps should be used to size BMPs for applicable LID projects:

1. Delineate drainage areas tributary to BMP locations and compute imperviousness.
2. Design BMPs per a published design standard.
3. Use the recommended sizing method for the BMP selected in each
4. Provide the calculated target sizing criteria for the selected BMPs.

Alternative Compliance Options for Applicable LID Projects

When, as determined by the Approving Agency, 100 percent onsite retention of the SWQDvis technically infeasible, partially or fully, the infeasibility shall be demonstrated in a submitted LID Plan. The technical infeasibility may result from conditions that include, but are not limited to:

1. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.

2. Locations where seasonal high groundwater is within five to ten feet of surface grade;

3. Locations within 100 feet of a groundwater well used for drinking water;

4. Brownfield development sites or other locations where pollutant mobilization is a documented concern;

5. Locations with potential geotechnical hazards;

6. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

If partial or complete onsite retention is technically infeasible, the project site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in the MS4 Permit.

Additional alternative compliance options such as offsite infiltration may be available to the project Site. The project site should contact the Approving Agency to determine eligibility. Alternative compliance options are further specified in CASQA's Post-Construction BMP Handbook.

The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per the MS4 Permit. Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

1. 0.2 inches per hour, or
2. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

A Multi-Phased Project may comply with the standards and requirements of this section for all of its phases by: (a) designing a system acceptable to the Approving Agency to satisfy these standards and requirements for the entire Site during the first phase, and (b) implementing these standards and requirements for each phase of Development or Redevelopment of the Site during the first phase or prior to commencement of construction of a later phase, to the extent necessary to treat the stormwater from such later phase. For purposes of this section, "Multi-Phased Project" shall mean any Planning Priority Project implemented over more than one phase and the Site of a Multi-Phased Project shall include any land and water area designed and used to store, treat or manage stormwater runoff in connection with the Development or Redevelopment, including any tracts, lots, or parcels of real property, whether Developed or not, associated with, functionally connected to, or under common ownership or control with such Development or Redevelopment.

Infiltration Considerations

Appropriate soils, infiltration media, and infiltration rates should be used for infiltration BMPs. If infiltration is proposed, a complete geotechnical or soils report should be undertaken to determine infiltration rates, groundwater depth, soil toxicity and stability, and other factors that will affect the ability and the desirability of infiltration. At a minimum, the infiltration capacity of the underlying soils shall be deemed suitable for infiltration (0.3 inches per hour or greater), appropriate media should be used in the BMP itself, the groundwater shall be located at a depth of ten feet or greater.

Operations and Maintenance

*Regular inspections of BMPs*installed must occur to ensure proper functioning of the BMP as designed and in accordance with manufacturer's specifications as applicable. Specifically, to ensure that surface ponding infiltrates into the subsurface completely within the design drawdown time following storms. This will minimize vector breeding and potential fines for violations from the Greater Los Angeles County Vector Control District.

Regular inspections of pretreatment sediment removal BMP/forebay must occur also to ensure sediment buildup does not exceed 50% of the forebay sediment storage capacity. Remove any excess sediment from the BMP.

Infiltration BMPs should be maintained to prevent blockage. Maintenance activities shall include checking for and removal of debris/sediment.

BMP soil applications must be maintained. Flow entrances, ponding areas, and surface overflow areas shall be inspected for erosion periodically and replaced as needed to maintain the long-term design infiltration rate.

Site vegetation shall be maintained for aesthetic appearance and filtration as designed and approved. This includes the removal of fallen, dead, and/or invasive plants, watering as necessary, and the replanting and/or reseeding of vegetation for reestablishment as necessary.

Maintenance of *permeable pavement systems* is essential to their continued functionality. Regular vacuuming and street sweeping should be performed to remove sediment from the pavement surface. The bedding and base material should be selected for long life and sufficient infiltration rates.

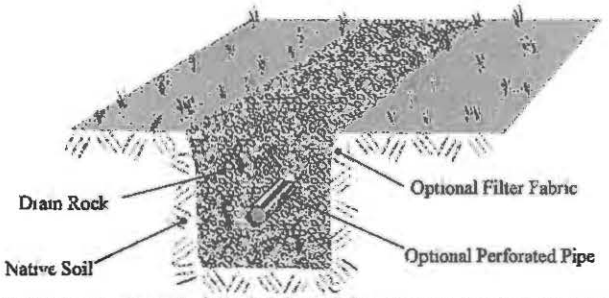
Permeable pavement, City of Los Angeles Airport parking lot

Infiltration systems utilize rock, gravel, and other highly permeable materials for on-site infiltration. Stormwater runoff is directed to these systems and allowed to infiltrate into the soils for on-site retention and groundwater recharge. During small storm events, infiltration systems can result in significant or even complete volume reduction of stormwater runoff. Infiltration should be used to the maximum extent practicable. Biotreatment BMPs should be considered if infiltration is found to be infeasible due to low infiltration rates, soil instability, high groundwater, or soil contamination.

Infiltration BMPs may become damaged by stormwater carrying high levels of sediment, therefore pre-treatment features should be designed to treat street runoff prior to discharging to infiltration features. Media filters, filter inserts, vortex-type units, bioretention devices, sumps, and sedimentation basins are several pre-treatment tools effective at removing sediment.

INFILTRATION TRENCHES AND DRY WELLS

Description



Infiltration trench (Model for Living Street Design Manual, 2011)

Infiltration trenches are linear, rock-filled features that promote infiltration by providing a high ratio of sub-surface void space in permeable soils. They provide on-site stormwater retention and may contribute to groundwater recharge. Infiltration trenches may accept stormwater from sheet flow, concentrated flow from a swale or other surface feature, or piped flow from a catch basin. Because they are not flow-through BMPs, infiltration trenches do not have outlets but may have overflow outlets for large storm events.Dry wells are typically distinguished from infiltration trenches by being deeper than they are wide. They are usually circular, resembling a well, and are backfilled with the same materials as infiltration trenches. Dry wells typically accept concentrated flow from surface features or from pipes and do not have outlets.

Infiltration trenches and dry wells are typically designed to infiltrate all flow they receive. In large storm events, partial infiltration of runoff can be achieved by providing an overflow outlet. In these systems, significant or even complete volume reduction is possible in smaller storm events. During large storm events, these systems may function as detention facilities and provide a limited amount of retention and infiltration.

Location and placement guidelines

Infiltration trenches and dry wells typically have small surface footprints so they are potentially some of the most flexible elements of landscape design. However, because they involve sub-surface excavation, these features may interfere with surrounding structures. Care needs to be taken to ensure that surrounding building foundations,

pavement bases, and utilities are not damaged by infiltration features. Once structural soundness is ensured, infiltration features may be located under sidewalks and in sidewalk planting strips, curb extensions, roundabouts, and medians. When located in medians, they are most effective when the street is graded to drain to the median. Dry wells require less surface area than trenches and may be more feasible in densely developed areas. Infiltration features should be sited on uncompacted soils with acceptable infiltration capacity. They are best used where soil and topography allow for moderate to good infiltration rates (0.3 inches per hour or better) and the depth to groundwater is at least 10 feet.

Prior to design of any retention or infiltration system, proper soil investigation and percolation testing shall be conducted to determine appropriate infiltration design rates, depth to groundwater, and if soil will exhibit instability as a result of infiltration. Any site with potential for previous underground contamination shall be investigated. Infiltration trenches and dry wells can be designed as stand-alone systems when water quality is not a concern or may be combined in series with other stormwater tools.

Perforated pipes and piped inlets and outlets may be included in the design of infiltration trenches. Cleanouts should be installed at both ends of any piping and at regular intervals in long sections of piping, to allow access to the system. Access ports are recommended for both trenches and wells and can be combined with clean-outs. If included, the overflow inlet from the infiltration trench should be properly designed for anticipated flows.

RAIN GARDENS

Description

Rain gardens are vegetated depressions in the landscape. They have flat bottoms and gently sloping sides. Rain gardens can be similar in appearance to swales, but their footprints may be any shape. Rain gardens hold water on the surface, like a pond, and have overflow outlets. The detained water is infiltrated through the topsoil and subsurface drain rock unless the volume of water is so large that some must overflow. Rain gardens can reduce or eliminate off-site stormwater discharge while increasing on-site recharge.

Rain garden (Model for Living Streets Design Manual, 2011)

Location and Placement Guidelines

Rain gardens may be placed where there is sufficient area in the landscape and where soils are suitable for infiltration. Rain gardens can be integrated with traffic calming measures installed along streets, such as medians, islands, circles, street ends, chicanes,

and curb extensions. Rain gardens are often used at the terminus of swales in the landscape.

PERMEABLE PAVEMENT

Description

Permeable pavement – parking stalls

Permeable pavement slows or eliminates direct runoff by absorbing rainfall and allowing it to infiltrate into the soil. Permeable pavement also filters and cleans pollutants such as petroleum deposits on streets and parking lots, reduces water volumes for existing overtaxed pipe systems, and decreases the cost of offsite or onsite downstream infrastructure. This BMP is impaired by sediment-laden run-on which diminishes its porosity. Care should be taken to avoid flows from landscaped areas reaching permeable pavement. Permeable pavement is, in certain situations, an alternative to standard pavement. Conventional pavement is designed to move stormwater off-site quickly. Permeable pavement, alternatively, accepts the water where it falls, minimizing the need for management facilities downstream.

Location and Placement Guidelines

Conditions where permeable pavement should be encouraged include:

- Sites where there is limited space in the right-of-way for other BMPs;
- Parking or emergency access lanes; and
- Furniture zones of sidewalks or walkways especially adjacent to tree wells

Conditions where permeable pavement should be avoided include:

- Large traffic volume or heavy load lanes;
- Where runoff is already being harvested from an impervious surface for direct use, such as irrigation of bioretention landscape areas;
- Steep sloped areas;
- Gas stations, car washes, auto repair, and other sites/sources of possible chemical contamination;
- Areas with shallow groundwater;
- Within 20 feet of sub-sidewalk basements; and
- Within 50 feet of domestic water wells.

Material and Design Guidelines

A soil or geotechnical report should be conducted to provide information about the permeability rate of the soil, load-bearing capacity of the soil, the depth to groundwater (10 feet or more required), and if soil will exhibit instability as a result of implementation. Infiltration rate and load capacity are key factors in the functionality of this BMP. Permeable pavement generally does not have the same load-bearing capacity as conventional pavement, so this BMP may have limited applications depending on the underlying soil strength and pavement use. Permeable pavement should not be used in general traffic lanes due to the possible variety of vehicles weights and heavy volumes of traffic.

Determining use of permeable pavement

- Conduct a soil or geotechnical study to determine infiltration rate and load capacity.

When used as a road paving, permeable pavement that carries light traffic loads typically has a thick drain rock base material. Pavers should be concrete as opposed to brick or other light-duty materials. Other possible permeable paving materials include porous concrete and porous asphalt. These surfaces also have specific base materials that detain infiltrated water and provide structure for the road surface. Base material depths should be specified based on design load and the soils report.

Plazas, emergency roads, and other areas of limited vehicular access can also be paved with permeable pavement. Paving materials for these areas may include open cell paver blocks filled with stones or grass and plastic cell systems. Base material specifications may vary depending on the product used, design load, and underlying soils.

When used for pedestrian paths, sidewalks, and shared-use paths, appropriate materials include those listed above as well as rubber pavers and decomposed granite or something similar (washed or pore-clogging fine material). Pedestrian paths may also use broken concrete pavers as long as ADA requirements are met. Paths should drain into adjoining landscapes and should be higher than adjoining landscapes to prevent run-on. Pavement used for sidewalks and pedestrian paths should be ADA compliant, especially smooth, and not exceed a 2 percent slope or have gaps wider than 0.25 inches. In general, tripping hazards should be avoided.

Design considerations for permeable pavement include:

- The location, slope and load-bearing capacity of the street, and the infiltration rate of the soil;
- The amount of storage capacity of the base course;
- The traffic volume and load from heavy vehicles;
- The design storm volume calculations and the quality of water; and
- Drain rock, filter fabrics, and other subsurface materials.

Biotreatment BMPs are landscaped, shallow depressions that capture and filter stormwater runoff. These types of BMPs are an increasingly common type of stormwater treatment device that are installed at curb level and filled with a bioretention type soil. They are designed as soil and plant-based filtration devices that remove pollutants through a variety of physical, biological, and chemical treatment processes. They typically consist of a ponding area, mulch layer, planting soils, and plants. Stormwater is directed to the system and pollutants are treated as the stormwater drains through the planting soil and either infiltrated or collected by an underdrain and directed to a collection system. Biotreatment should only be used in cases where infiltration has been proven infeasible due to low infiltration rates, soil instability, high groundwater, or soil contamination.

BIORETENTION

Description

Bioretention is a stormwater management process that cleans stormwater by mimicking natural soil filtration processes as water flows through a bioretention BMP. It incorporates mulch, soil pores, microbes, and vegetation to reduce and remove sediment and pollutants from stormwater. Bioretention is designed to slow, spread, and, to some extent, infiltrate water. Each component of the bioretention BMP is designed to assist in retaining water, evapotranspiration, and adsorption of pollutants into the soil matrix. As runoff passes through the vegetation and soil, the combined effects of filtration, absorption, adsorption, and biological uptake of plants remove pollutants.

Bioretention system (Planter Boxes, City of Los Angeles)

Biorentention in a parking lot (GeoSyntec)

For areas with low permeability or other soil constraints, bioretention can be designed as a flow-through system with a barrier protecting stormwater from native soils. Bioretention areas can be designed with an underdrain system that directs the treated runoff to infiltration areas, cisterns or the storm drain system, or may treat the water exclusively through surface flow. Examples of bioretention BMPs include swales, planters, and vegetated buffer strips.

Location and Placement Guidelines

Bioretention facilities can be included in the design of all street components, adjacent to the traveled way and in the frontage or furniture sidewalk zones. They can be designed into curb extensions, medians, traffic circles, roundabouts, and any other landscaped area. Depending on the feature, maintenance and access should always be considered in locating the device. Bioretention systems are also appropriate in constrained locations where other stormwater facilities requiring more extensive subsurface materials are not feasible.

If bioretention devices are designed to include infiltration, native soil should have a minimum permeability rate of 0.3 inches per hour and at least 10 feet to the groundwater table. Sites that have more than a 5 percent slope may require other stormwater management approaches or special engineering.

FLOW-THROUGH PLANTERS

Description

Flow-through planter (Model for Living Streets Design Manual, 2011)

Flow-through planters are typically above-grade or at-grade with solid walls and a flow-through bottom. They are contained within an impermeable liner and use an underdrain to direct treated runoff back to the collection system. Where space permits, buildings can direct roof drains first to building-adjacent planters. Both underdrains and surface overflow drains are typically installed with building-adjacent planters.
At-grade street-adjacent planter boxes are systems designed to take street runoff and/or sidewalk runoff and incorporate bioretention processes to treat stormwater. These systems may or may not include underdrains.

Location and Placement Guidelines

Above-grade planters should be structurally separate from adjacent sidewalks to allow for future maintenance and structural stability per local department of public works' standards. At-grade planter systems can be installed adjacent to curbs within the frontage and/or furniture zones.

All planters should be designed to pond water for less than 48 hours after each storm. Flow-through planters designed to detain roof runoff can be integrated into a building's foundation walls, and may be either raised or at grade.

For at-grade planters, small localized depressions may be included in the curb opening to encourage flow into the planter. Following the inlet, a sump (depression) to capture sediment and debris may be integrated into the design to reduce sediment loadings.

VEGETATED SWALES

Description

Swales are linear, vegetated depressions that capture rainfall and runoff from adjacent surfaces. The swale bottom should have a gradual slope to convey water along its length. Swales can reduce off-site stormwater discharge and remove pollutants along the way. In a swale, water is slowed by traveling through vegetation on a relatively flat grade. This gives particulates time to settle out of the water while contaminants are removed by the vegetation.

Vegetated infiltration swale for a supermarket parking lot (Downey, CA)

Location and Placement Guidelines

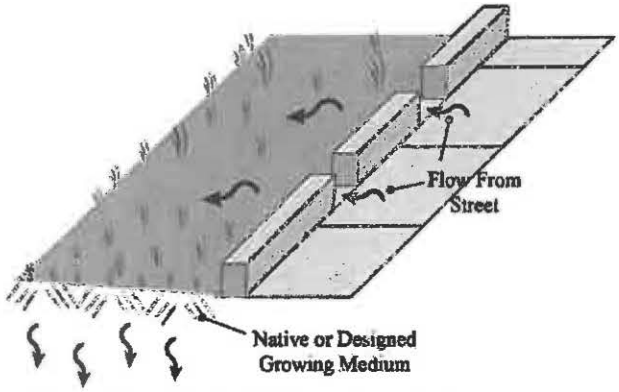
Swales can be located adjacent to roadways, sidewalks, or parking areas. Roadway runoff can be directed into swales via flush curbs or small evenly-spaced curb cuts into a raised curb. Swale systems can be integrated into traffic calming devices such as curb extensions.

Swales can be placed in medians where the street drains to the median. Placed alongside streets and pathways, vegetated swales can be landscaped with native plants which filter sediment and pollutants and provide habitat for wildlife. Swales should be designed to work in conjunction with the street slope to maximize filtration and slowing of stormwater. Swales are designed to allow water to slowly flow through the system. Depending on the landscape and design storm, an overflow or bypass for larger storm events may be needed. Curb openings should be designed to direct flow into the swale. Following the inlet, a sump may be built to capture sediment and debris.

VEGETATED BUFFER STRIPS

Description

Vegetated buffer strips are sloping planted areas designed to treat and absorb sheet flow from adjacent impervious surfaces. These strips are not intended to detain or retain water, only to treat it as a flow-



Vegetated buffer strip detail (Model for Living Streets Design Manual, 2011)

through feature. They should not receive concentrated flow from swales or other surface features, or concentrated flow from pipes.

Location and Placement Guidelines

Vegetated buffer strips are well-suited to treating runoff from roads and highways, small parking lots, and pervious surfaces. They may be commonly used on multi-way boulevards, park edge streets, or sidewalk furniture zones with sufficient space. When selecting potential placement the need for supplemental irrigation should be considered. Vegetated buffers can also be situated so they serve as pre-treatment for another stormwater management feature, such as an infiltration BMP.

SAND FILTERS & STORM DRAIN INLET PROTECTIONS

It may be infeasible for specific projects to apply infiltration or biotreatment BMPs. In these cases, sand filters or filter inserts as treatment BMPs can be considered as an alternative. Sand filters and filter inserts can be designed to prevent particulates, debris, metals, and petroleum-based materials conveyed by stormwater from entering the storm drain system. All treatment BMP units should have an overflow system that allows the storm drain to remain functional if the filtration system becomes blocked during rainstorms. All storm drain inlet protections must be of a style and configuration approved by the agency with ownership of the inlet.

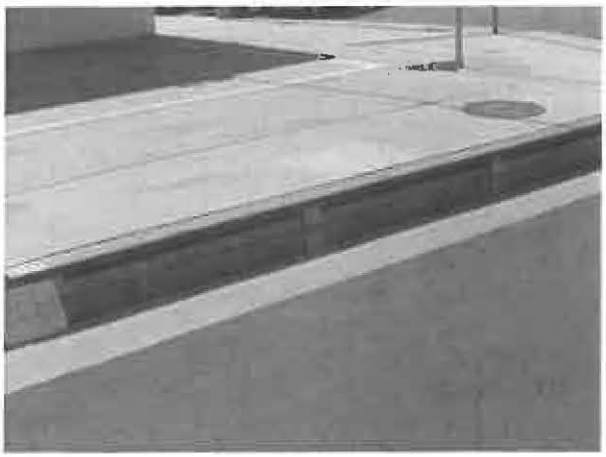
Typical maintenance of catch basins includes scheduled trash removal if a screen or other debris capturing device is used. Street sweeping should be performed by vacuum sweepers with occasional weed and large debris removal. Maintenance should include keeping a log of the amount of sediment collected and the data of removal.
The following are examples of possible treatment BMPs:

- **Sand Filters:** Sand filters are designed to filter stormwater through a constructed media bed and to an underdrain system. As stormwater flows through the media pollutants are filtered out of the water. The filtered water is conveyed through the underdrain to a collection system. Pretreatment is necessary to eliminate significant sediment load or other large particles which would clog the system. Minimum set-backs from foundations and slopes should be observed if the facility is not lined. Filters should be designed and maintained such that ponded water should not persist for longer than 48 hours following a storm event.

- **Cartridge Media Filters:** Cartridge media filters contain multiple modular filters which contain engineered media. The filters can be located in a catch basin, manhole, or vault. The manhole or vault may be divided into multiple chambers so that the first chamber may act as a pre-settling basin for removal of coarse sediment while the next chamber may act as the filter chamber. Cartridge media filters are recommended for drainage areas with limited available surface area or where surface BMPs would restrict uses. Depending on the number of cartridges, maintenance events can have long durations. Locations should be chosen so that maintenance events will not significantly disrupt businesses or traffic. Inlet inserts should be sized to capture all debris and should therefore be selected to match the specific size and shape of each catch basin and inlet. Filter media should be selected to target pollutants of concern. A combination of media may be used to remove a variety of pollutants. Systems with lower maintenance requirements are preferred.

- **Storm Drain Inlet Screens:** Inlet screens are designed to prevent large litter and trash from entering the storm drain system while allowing smaller particles to pass through. The screens function as the first preventive measure in removing pollutants from the storm water system. The city's street sweeping department should be consulted to ensure compliance with local specifications and to schedule regular maintenance. Annual inspection of the screen is recommended to ensure functionality. Note that most LA River drainage areas are already protected using connector pipe screens through collective systems.

Connector Pipe Screen (Commerce, CA)



Articulated Retractable Screen (Commerce, CA)

- **Storm Drain Pipe Filter Insert:** The storm drain outlet pipe filter is designed to be installed on an existing outlet pipe or at the bottom of an existing catch basin with an overflow. This filter removes debris, particulates, and other pollutants from stormwater as it leaves the storm drain system. This BMP is less desirable than a protection system that prevents debris from entering the storm drain system because the system may become clogged with debris. Outlet pipe filters can be placed on existing curbside catch basins and flush grate openings. Regular maintenance is required and inspection should be performed rigorously. Because this filter is located at the outlet of a storm drain system, clogging with debris is not as apparent as with filters at street level. This BMP may be used as a supplemental filter with an inlet screen or inlet insert unit.

Section 7 – Trees and Landscaping

Description

Healthy urban trees are powerful stormwater management tools. Leaves and branches catch and slow rain as it falls, helping it to soak into the ground. The use of California native trees and plants use less water and provide an infiltration opportunity. Part of this moisture is then returned to the air through evaporation to further cool the city.

The goal of adding trees is to increase the canopy cover of a street, parking lot or walkway, the percentage of its surface either covered by or shaded by vegetation. The selection, placement, and management of all landscape elements should enhance the longevity of trees and healthy, mature plantings should be retained and protected whenever possible.

Benefits to adding trees and other forms of California native landscaping include:

- Creation of shade to lower temperatures in a city, reduces energy use, and makes the area a more pleasant place in which to walk and spend time;
- Slowing and capturing of rainwater, helping it soak into the ground to restore local hydrologic functions and aquifers; and
- Improving air quality by cooling air, producing oxygen, and absorbing and storing carbon in woody plant tissues

Rio Hondo Golf Course parking lot (Downey, CA)

Section 8 – Definitions

Approving Agency	*The City of Cudahy City Administrator or designee.*
Automotive Service Facility	*A facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes.*
Basin Plan	*The Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Los Angeles Regional Water Quality Control Board on June 13, 1994 and subsequent amendments.*
Best Management Practice (BMP)	*Practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water.*
Biofiltration	*A LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales.*
Bioretention	*A LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in the Municipal NPDES permit, a bioretention BMP may be designed with an overflow drain, but may*

	not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by the Municipal NPDES permit as biofiltration.
Bioswale	*A LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes.*
Clean Water Act	*The Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.*
Commercial Malls	*Any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers.*
Construction Activity	*Any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that result in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges*

	Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan.
Control	*To minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities.*
Conveyance	The process of water moving from one place to another.
Design Storm	A storm whose magnitude, rate, and intensity do not exceed the design load for a storm drainage system or flood protection project.
Detention	Stormwater runoff that is collected at one rate and then released at a controlled rate. The volume difference is held in temporary storage.
Development	*Construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.*
Directly Adjacent	*Situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area.*
Discharge	*Any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.*
Disturbed Area	*An area that is altered as a result of clearing, grading, and/or excavation.*
Filtration	A treatment process that allows for removal of solid (particulate) matter from water by means of porous media such as sand, soil, vegetation, or a man-made filter. Filtration is used to remove

	contaminants.
Flow-through BMPs	*Modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain.*
General Construction Activities Storm Water Permit (GCASP)	*The general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions.*
General Industrial Activities Storm Water Permit (GIASP)	*The general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.*
Green Roof	*A LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain.*
Furniture Zone	The furniture zone is the area which lies between the curb and pedestrian zones and is intended to house utilities and pedestrian amenities.
Hardscape	Impermeable surfaces, such as concrete or stone, used in the landscape environment along sidewalks or in other areas used as public space.
Hazardous Materials	*Any material(s) defined as hazardous by Division 20, Chapter 6.95 of the California Health and Safety Code.*
Hydromodification	*The alteration of the hydrologic characteristics of coastal and non-coastal waters, which in turn could cause degradation of water resources. Hydromodification can cause excessive erosion and/or sedimentation rates, causing excessive*

	turbidity, channel aggradation and/or degradation.
Impervious Surface	*Any man-made or modified surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate, when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops. The imperviousness of these areas commonly results from paving, compacted gravel, compacted earth, and oiled earth.*
Industrial Park	*Land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry.*
Infiltration	The process by which water penetrates into soil from the ground surface.
Infiltration BMP	*A LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement.*
Low Impact Development (LID)	*Consists of building and landscape features designed to retain or filter stormwater runoff.*
MS4	*Municipal Separate Storm Sewer System. The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):* *a. Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other*

	wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; *b. Designed or used for collecting or conveying stormwater;* *c. Which is not a combined sewer; and* *d. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.*
National Pollutant Discharge Elimination System (NPDES)	*The national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA §307, 402, 318, and 405. The term includes an "approved program."*
Natural Drainage System	*A drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system.*
New Development	*Land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision.*
Non-Stormwater Discharge	*Any discharge to a municipal storm drain system that is not composed entirely of stormwater.*
Parking Lot	*Land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces.*

Permeability/Impermeability	The quality of a soil or material that enables water to move through it, determining its suitability for infiltration.
Person	*Any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, state, governmental entity or any other legal entity, or their legal representatives, agents or assigns. The masculine gender shall include the feminine and the singular shall include the plural where indicated by the context.*
Planning Priority Project	*Development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, prior to completion of the project(s).*
Pollutant	*Any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Sec. 13373. Pollutants may include, but are not limited to the following:* *a. Commercial and industrial waste (such as fuels, solvents, detergents, plastic pellets, hazardous substances, fertilizers, pesticides, slag, ash, and sludge).* *b. Metals (such as cadmium, lead, zinc, copper, silver, nickel, chromium, and non- metals such as phosphorus and arsenic).* *c. Petroleum hydrocarbons (such as fuels, lubricants, surfactants, waste oils, solvents, coolants, and grease).* *d. Excessive eroded soil, sediment, and particulate materials in amounts that may adversely affect the beneficial use of the receiving waters, flora, or fauna of the State.* *e. Animal wastes (such as discharge from confinement facilities, kennels, pens, recreational facilities, stables, and show*

	facilities). *f. Substances having characteristics such as pH less than 6 or greater than 9, or unusual coloration or turbidity, or excessive levels of fecal coliform, or fecal streptococcus, or enterococcus.*
Project	*All Development, Redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA.*
Rainfall Harvest and Use	*ALID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department.*
Receiving Water	*"Water of the United States" into which waste and/or pollutants are or may be discharged.*
Redevelopment	*Land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.*
Regional Board	*The California Regional Water Quality Control Board, Los Angeles Region.*
Restaurant	*A facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and*

	drinks for immediate consumption (SIC Code 5812).
Retail Gasoline Outlet	*Any facility engaged in selling gasoline and lubricating oils.*
Retention	The reduction in total runoff that results when stormwater is diverted and allowed to infiltrate into the ground through existing or engineered soil systems.
Routine Maintenance	*Include, but are not limited to projects conducted to:* *a. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.* *b. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.* *c. Includes road shoulder work, regarding dirt or gravel roadways and shoulders and performing ditch cleanouts.* *d. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.* *e. Repair leaks* *Routine maintenance does not include construction of new lines** or facilities resulting from compliance with applicable codes, standards and regulations.* ** Update existing lines includes replacing existing lines with new materials or pipes.* *** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines.*
Runoff	Water from rainfall that flows over the land surface that is not absorbed into the ground.

Sedimentation

The deposition and/or settling of particles suspended in water as a result of the slowing of the water.

Significant Ecologicai Areas (SEAs)

An area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

a. The habitat of rare, endangered, and threatened plant and animal species.

b. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.

c. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.

d. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.

e. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.

f. Areas important as game species habitat or as fisheries.

g. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.

	h. Special areas.
Site	*Land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity.*
Storm Drain System	*Any facilities or any part of those facilities, including streets, gutters, conduits, natural or artificial drains, channels, and watercourses that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the City of Cudahy.*
Stormwater	Water runoff from rain or snow resulting from a storm.
Stormwater Runoff	*Water that originates from atmospheric moisture (rain or snow) and that falls onto land, water, or other surfaces. Without any change in its meaning, this term may be spelled or written as one word or two separate words.*
SUSMP	*The Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP was required as part of the previous Municipal NPDES Permit (Order No. 01-182, NPDES No. CAS004001) and required plans that designate best management practices (BMPs) that must be used in specified categories of development projects.*
Transportation Corridor	A major arterial, state route, highway, or rail line used for the movement of people or goods by means of bus services, trucks, and vehicles.
Urban Runoff	*Surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial, or industrial activities involving the use of potable and non-potable water.*

RESOLUTION NO. 13-51

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF COMMERCE, CALIFORNIA, ADOPTING A RESOLUTION APPROVING A GREEN STREETS POLICY IN ACCORDANCE WITH ORDER NO. R4-2012-1075, NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT AND WASTE DISCHARGE REQUIREMENTS FOR STORM WATER AND NON-STORMWATER DISCHARGES

WHEREAS, every agency that discharges water from its jurisdiction into the stormwater system is regulated under a National Pollution Discharge Elimination System (NPDES) MS4 permit assigned and enforced by the State Water Quality Resources Control Board and the Los Angeles Regional Water Quality Control Board; and

WHEREAS, the Permit, effective December 28, 2012, enforces all TMDL pollutants affecting water quality including trash, metals, nutrients, and bacteria and requires additional compliance activities; and

WHEREAS, there are a number of permit compliance deadlines affecting the City and other permittees, the first being June 28, 2013 to submit a Notice of Intent (NOI) to the Water Board notifying them of the City's intent to comply with the MS4 Permit and the methods by which the City will comply including adopting a Green Streets Policy; and

WHEREAS, the proposed Green Streets Policy will serve as the City's Best Management Practice for transportation corridors associated with new and redeveloped street and roadway projects, including Capital Improvement Projects; and

WHEREAS, the Policy would apply to projects with construction costs greater than $500,000 and add at least 10,000 square feet of impervious surface. Routine maintenance or repair and linear utility projects are exempt including slurry seals, repaving, and reconstruction of the road and street where the original line and grade are maintained and no new impervious surface is added.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF COMMERCE DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. In accordance with Order No. R4-2012-1075, National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System (MS4) Permit and Waste Discharge Requirements for storm water and non-stormwater discharges, the City of Commerce's Green Streets Policy is hereby approved and adopted.

PASSED, APPROVED and ADOPTED this 4th day of June, 2013.

Joe Aguilar
Mayor

ATTEST:

Linda Kay Olivieri, MMC
City Clerk

THIS IS A CERTIFIED TRUE COPY OF Resolution No. 13-51, City of Commerce, California THE ORIGINAL OF WHICH IS ON FILE IN THE CITY CLERKS OFFICE.

Victoria M. Alexander
OFFICE OF THE CITY CLERK
Deputy City Clerk

ORDINANCE NO. 651

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF COMMERCE, CALIFORNIA, ADDING CHAPTER 19.33 PERTAINING TO LOW IMPACT DEVELOPMENT, TO TITLE 19 (ZONING) OF THE COMMERCE MUNICIPAL CODE

WHEREAS, the City of Commerce (City) is authorized by Article XI, §5 and §7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity; and

WHEREAS, the City has authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity which might degrade the quality of waters of the State; and

WHEREAS, the City is a permittee under the "Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4," issued by the California Regional Water Quality Control Board--Los Angeles Region," (Order No. R4-2012-0175) which also serves as an NPDES Permit under the Federal Clean Water Act (NPDES No. CAS004001), as well as Waste Discharge Requirements under California law (the "Municipal NPDES permit"). In order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program, the Municipal NPDES permit requires permittees to develop and implement a Low Impact Development (LID) Ordinance; and

WHEREAS, the City is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental, social, and economic considerations; and

WHEREAS, urbanization has led to increased impervious surface areas resulting in increased water runoff causing the transport of pollutants to downstream receiving waters; and

WHEREAS, the City needs to take a new approach to managing rainwater and urban runoff while mitigating the impacts of development and urbanization; and

WHEREAS, LID is widely recognized as a sensible approach to managing the quantity and quality of storm water and non-stormwater runoff by setting standards and practices to maintain or restore the natural hydrologic character of a development site, reduce off-site runoff, improve water quality, and provide groundwater recharge; and

WHEREAS, it is the intent of the City to replace the existing SUSMP requirements by providing stormwater and rainwater LID strategies for development and redevelopment projects as defined under "Applicability." Where there are conflicts between this Ordinance and previously adopted SUSMP and/or LID standards, the standards in this Ordinance shall prevail; and

WHEREAS, on February 15, 2011, the City of Commerce (the "City") City Council adopted Ordinance No. 633, which approved Section 15.04.010 (Adoption by Reference) of Chapter 15.04.010 (Building Laws) of the Commerce Municipal Code. Section 15.04.010 adopted by reference, as part of the City's own Building Code, various parts of the Los Angeles County Code, including New Title 31(Green Building Code). Section 5.106.2 of Title 31 of the Los Angeles County Code provides that "New development or alterations to existing developed sites shall comply with Chapter 12.84 of Title 12 of the Los Angeles County Code." Section 12.84 adopts "Low Impact Development Standards" ('LIDS") that are designed to encourage site sustainability and smart growth in a manner that respects and preserves the County's watersheds, drainage paths, water supplies, and natural resources; and

WHEREAS, Chapter 19.33 of the Commerce Municipal Code, which is adopted by this Ordinance, is intended to replace the requirements of Section 12.84 of the Los Angeles County Code that were adopted by reference as part of Section 15.04.010 of the Commerce Municipal Code.

WHEREAS, the proposed LID Ordinance qualifies for a Class 8 California Exemption under the provisions of the California Environmental Quality Act (CEQA) Section 15308. Class 8 exempts actions taken by regulatory agencies as authorized by State or local ordinance to assure the maintenance, restoration, enhancement or protection of the environment where the regulatory process involves procedures for protection of the environment.

THE CITY COUNCIL OF THE CITY OF COMMERCE DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1.

Section 15.04.010 (Adoption by Reference) of Chapter 15.04 (Building Laws) of the Commerce Municipal Code, which was enacted by Ordinance No. 633, is hereby amended in its entirety to read as follows:

15.04.010 – Adoption by reference.

There are adopted by reference, as the building, electrical, plumbing, mechanical laws, residential, and green building standards code, of the City of Commerce, the following:

Title 26, Los Angeles County Building Code (2010 Edition) adopted. Title 26 of the Los Angeles County Building Code (2010 Edition), as adopted by Los Angeles County Ordinance No. 2010-0053, becoming effective December 23, 2010, fully expresses the City Council's will and intention to enforce the provisions of Title 26 of the Los Angeles County Building Code (2010 Edition) within the City, except for Section 107 ("Fees"). The aforementioned is hereby adopted by reference as an amendment to Title 15 of the Buildings and Construction Code of the City.

Title 27, Los Angeles County Electrical Code (2010 Edition) adopted. Title 27 of the 2010 Los Angeles County Electrical Code, as adopted by Los Angeles County Ordinance No. 2010-0054, becoming effective December 23, 2010, fully expresses the City Council's will and intention to enforce the provisions of Title 27 of the Los Angeles County Electrical Code (2010 Edition) within the City, except for Section 82-8 ("Fees"). The aforementioned is hereby adopted by reference as an amendment to Title 15 of the Buildings and Construction Code of the City.

Title 28, Los Angeles County Plumbing Code (2010 Edition) adopted. Title 28 of the Los Angeles County Plumbing Code (2010 Edition), as adopted by Los Angeles County Ordinance No. 2010-0055, becoming effective December 23, 2010, fully expresses the City Council's will and intention to enforce the provisions of Title 28 of the Los Angeles County Plumbing Code (2010 Edition) within the City, except for Section 103.10 ("Cost of Permit"). The aforementioned is hereby adopted by reference as an amendment to Title 15 of the Buildings and Construction Code of the City.

Title 29, Los Angeles County Mechanical Code (2010 Edition) adopted. Title 29 of the Los Angeles County Mechanical Code (2010 Edition), as adopted by Los Angeles County Ordinance No. 2010-0056, becoming effective December 23, 2010, fully expresses the City Council's will and intention to enforce the provisions of Title 29 of the Los Angeles County

Mechanical Code (2010 Edition) within the City, except for Section 114 ("Permit Fees"). The aforementioned is hereby adopted by reference as an amendment to Title 15 of the Buildings and Construction Code of the City.

New Title 30, Los Angeles County Residential Code (2010 Edition) adopted. New Title 30 of the Los Angeles County Residential Code (2010 Edition), as adopted by Los Angeles County Ordinance No. 2010-0057, becoming effective December 23, 2010, fully expresses the City Council's will and intention to enforce the provisions of Title 30 of the Los Angeles County Residential Code (2010 Edition) within the City, except for Section 107 ("Fees"). The aforementioned is hereby adopted by reference as an amendment to Title 15 of the Buildings and Construction Code of the City.

SECTION 2.

That new Chapter 19.33 be, and the same is hereby, added to Title 19 of the Commerce Municipal Code, to read as follows:

CHAPTER 19.33

LOW IMPACT DEVELOPMENT ORDINANCE

Sections:

19.33.010. DEFINITIONS.

Except as specifically provided herein, any term used in Section 19.33.010 shall be defined as that term in the current Municipal NPDES permit, or if it is not specifically defined in either the Municipal NPDES permit, then as such term is defined in the Federal Clean Water Act, as amended, and/or the regulations promulgated thereunder. If the definition of any term contained in this chapter conflicts with the definition of the same term in the current Municipal NPDES permit, then the definition contained in the Municipal NPDES permit shall govern. The following words and phrases shall have the following meanings when used in this chapter:

(A) "Approving Agency" means the City of Commerce City Administrator or designee.

(B) "Automotive Service Facility" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5541, 5511, provided that these facilities have no outside activities or materials that may be exposed to stormwater (Source: Order No. R4-2012-0175).

(C) "Basin Plan" means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments (Source: Order No. R4-2012-0175).

(D) "Best Management Practice (BMP)" means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of

stormwater or non-stormwater discharged to the receiving water (Source: Order No. R4-2012-0175).

(E) "Biofiltration" means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales (Modified from: Order No. R4-2012-0175).

(F) "Bioretention" means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in the Municipal NPDES permit, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by the Municipal NPDES permit as biofiltration (Modified from: Order No. R4-2012-0175).

(G) "Bioswale" means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes (Source: Order No. R4-2012-0175).

(H) "City" means the City of Commerce.

(I) "Clean Water Act (CWA)" means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

(J) "Commercial Malls" means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers (Source: Order No. R4-2012-0175).

(K) "Construction Activity" means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that result in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan (Source: Order No. R4-2012-0175).

(L) "Control" means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities (Source: Order No. R4-2012-0175).

(M) "Development" means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Source: Order No. R4-2012-0175).

(N) "Directly Adjacent" means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area (Source: Order No. R4-2012-0175).

(O) "Discharge" means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

(P) "Disturbed Area" means an area that is altered as a result of clearing, grading, and/or excavation (Source: Order No. R4-2012-0175).

(Q) "Flow-through BMPs" means modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain (Modified from: Order No. R4-2012-0175).

(R) "General Construction Activities Storm Water Permit" (GCASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions.

(S) "General Industrial Activities Storm Water Permit" (GIASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

(T) "Green Roof" means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain (Source: Order No. R4-2012-0175).

(U) "Hazardous Material(s)" means any material(s) defined as hazardous by Division 20, Chapter 6.95 of the California Health and Safety Code.

(V) "Hillside" means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes (Source: Order No. R4-2012-0175).

(W) "Hydromodification" means the alteration of the hydrologic characteristics of coastal and non-coastal waters, which in turn could cause degradation of water resources. Hydromodification can cause excessive erosion and/or

sedimentation rates, causing excessive turbidity, channel aggradation and/or degradation. (Source: GCASP)

(X) "Impervious Surface" means any man-made or modified surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate, when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops. The imperviousness of these areas commonly results from paving, compacted gravel, compacted earth, and oiled earth.

(Y) "Industrial Park" means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry (Source: Order No. R4-2012-0175).

(Z) "Infiltration BMP" means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement (Source: Order No. R4-2012-0175).

(AA) "LID" means Low Impact Development. LID consists of building and landscape features designed to retain or filter stormwater runoff (Source: Order No. R4-2012-0175).

(BB) "MS4" means Municipal Separate Storm Sewer System. The MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

a. Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

b. Designed or used for collecting or conveying stormwater;

c. Which is not a combined sewer; and

d. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR §122.2.

(40 CFR § 122.26(b)(8)) (Source: Order No. R4-2012-0175)

(CC) "National Pollutant Discharge Elimination System (NPDES)" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA §307, 402, 318, and 405. The term includes an "approved program" (Source: Order No. R4-2012-0175).

(DD) "Natural Drainage System" means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system (Source: Order No. R4-2012-0175).

(EE) "New Development" means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision (Source: Order No. R4-2012-0175).

(FF) "Non-Stormwater Discharge" means any discharge to a municipal storm drain system that is not composed entirely of stormwater (Source: Order No. R4-2012-0175).

(GG) "Parking Lot" means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces (Source: Order No. R4-2012-0175).

(HH) "Person" means any individual, partnership, co-partnership, firm, company, corporation, association, joint stock company, trust, state, governmental entity or any other legal entity, or their legal representatives, agents or assigns. The masculine gender shall include the feminine and the singular shall include the plural where indicated by the context.

(II) "Planning Priority Projects" means development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, prior to completion of the project(s) (Modified from: Order No. R4-2012-0175).

(JJ) "Pollutant" means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Sec. 13373. Pollutants may include, but are not limited to the following:

a. Commercial and industrial waste (such as fuels, solvents, detergents, plastic pellets, hazardous substances, fertilizers, pesticides, slag, ash, and sludge).

b. Metals (such as cadmium, lead, zinc, copper, silver, nickel, chromium, and non- metals such as phosphorus and arsenic).

c. Petroleum hydrocarbons (such as fuels, lubricants, surfactants, waste oils, solvents, coolants, and grease).

d. Excessive eroded soil, sediment, and particulate materials in amounts that may adversely affect the beneficial use of the receiving waters, flora, or fauna of the State.

e. Animal wastes (such as discharge from confinement facilities, kennels, pens, recreational facilities, stables, and show facilities).

f. Substances having characteristics such as pH less than 6 or greater than 9, or unusual coloration or turbidity, or excessive levels of fecal coliform, or fecal streptococcus, or enterococcus.

(KK) "Project" means all Development, Redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code §21065) (Source: Order No. R4-2012-0175).

(LL) "Rainfall Harvest and Use" means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department (Source: Order No. R4-2012-0175).

(MM) "Receiving Water" means "water of the United States" into which waste and/or pollutants are or may be discharged (Source: Order No. R4-2012-0175).

(NN) "Redevelopment" means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Source: Order No. R4-2012-0175).

(OO) "Regional Board" means the California Regional Water Quality Control Board, Los Angeles Region.

(PP) "Restaurant" means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812) (Source: Order No. R4-2012-0175).

(QQ) "Retail Gasoline Outlet" means any facility engaged in selling gasoline and lubricating oils (Source: Order No. R4-2012-0175).

(RR) "Routine Maintenance" - Routine maintenance projects include, but are not limited to projects conducted to:

a. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

b. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.

c. Includes road shoulder work, regarding dirt or gravel roadways and shoulders and performing ditch cleanouts.

d. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.

e. Repair leaks

Routine maintenance does not include construction of new lines** or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.

** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Source: Order No. R4-2012-0175).

(SS) "Significant Ecological Areas (SEAs)" means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

a. The habitat of rare, endangered, and threatened plant and animal species.

b. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.

c. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.

d. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.

e. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.

f. Areas important as game species habitat or as fisheries.

g. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.

h. Special areas (Source: Order No. R4-2012-0175).

(TT) "Site" means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity (Source: Order No. R4-2012-0175).

(UU) "Storm Drain System" means any facilities or any part of those facilities, including streets, gutters, conduits, natural or artificial drains, channels, and watercourses that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the City of Commerce.

(VV) "Storm Water or Stormwater" means water that originates from atmospheric moisture (rain or snow) and that falls onto land, water, or other surfaces. Without any change in its meaning, this term may be spelled or written as one word or two separate words.

(WW) "Stormwater Runoff" means that part of precipitation (rainfall or snowmelt) which travels across a surface to the storm drain system or receiving waters.

(XX) "SUSMP" means the Los Angeles Countywide Standard Urban Stormwater Mitigation Plan. The SUSMP was required as part of the previous Municipal NPDES Permit (Order No. 01-182, NPDES No. CAS004001) and required plans that designate best management practices (BMPs) that must be used in specified categories of development projects.

(YY) "Urban Runoff" means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial, or industrial activities involving the use of potable and non-potable water.

19.33.020. STORMWATER POLLUTION CONTROL MEASURE FOR DEVELOPMENT PLANNING AND CONSTRUCTION ACTIVITIES.

(A) Objective. The provisions of this section contain requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Municipal NPDES permit," lessen the water quality impacts of development by using smart growth practices, and integrate LID design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use. LID shall be inclusive of previously adopted SUSMP requirements.

(B) Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the City to further define and adopt stormwater pollution control measures, to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, and to grant waivers or alternate compliance as allowed by the Municipal NPDES permit and collect fees from projects granted exceptions. Except as otherwise provided herein, the City shall administer, implement and enforce the provisions of this Section. Guidance documents supporting implementation of requirements in this Ordinance are hereby incorporated by reference, including SUSMP and LID Guidelines.

(C) Applicability. The following Development and Redevelopment projects, termed "Planning Priority Projects," shall comply with the requirements of Title 19, Chapter 19.33, Low Impact Development as follows:

a. All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

b. Industrial parks 10,000 square feet or more of surface area.

c. Commercial malls 10,000 square feet or more of surface area.

d. Retail gasoline outlets with 5,000 square feet or more of surface area.

e. Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.

f. Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

g. Streets and roads construction of 10,000 square feet or more of impervious surface area.

h. Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) 5,000 square feet or more of surface area.

i. Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:

   i. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

   ii. Create 2,500 square feet or more of impervious surface area

j. Single-family hillside homes.

k. Redevelopment Projects

   i. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

   ii. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

   iii. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

   iv. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

   v. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

l. Any other project as deemed appropriate by the Director.

(D) Effective Date. The Planning and Land Development requirements contained in this Ordinance shall become effective 30 days from the adoption of the Ordinance. This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Ordinance. Projects that have been deemed complete within 90 days of adoption of the Ordinance are not subject to the requirements of this Chapter.

(E) Stormwater Pollution Control Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

a. A new single-family hillside home development shall include mitigation measures to:
    i. Conserve natural areas;
    ii. Protect slopes and channels;
    iii. Provide storm drain system stenciling and signage;
    iv. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and
    v. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

b. Street and road construction projects with construction costs greater than $500,000 and add at least 10,000 square feet of impervious surface shall follow the City of Commerce's Green Streets Policy and Guidelines.

c. The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:
    i. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:
        1. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or
        2. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.
    ii. Minimize hydromodification impacts to natural drainage systems as defined in the Municipal NPDES Permit. Hydromodification requirements are further specified in post-construction BMP handbooks such as CASQA's.
    iii. When, as determined by the Approving Agency, 100 percent onsite retention of the SWQDv is technically infeasible, partially or fully, the infeasibility shall be demonstrated in the submitted LID Plan. The technical infeasibility may result from conditions that may include, but are not limited to:
        1. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.

2. Locations where seasonal high groundwater is within five to ten feet of surface grade;

3. Locations within 100 feet of a groundwater well used for drinking water;

4. Brownfield development sites or other locations where pollutant mobilization is a documented concern;

5. Locations with potential geotechnical hazards;

6. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

iv. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. If hazardous waste contamination results in technical infeasibility, the Project Site may biofiltrate the remaining SWQDv portion that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in the Municipal NPDES Permit.

1. Additional alternative compliance options such as offsite infiltration may be available to the project Site. The project site should contact the Approving Agency to determine eligibility. Alternative compliance options are further specified in CASQA's Post-Construction BMP Handbook.

v. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per the Municipal NPDES Permit. Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

1. 0.2 inches per hour, or

2. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

vi. A Multi-Phased Project may comply with the standards and requirements of this section for all of its phases by: (a) designing a system acceptable to the Approving Agency to satisfy these standards and requirements for the entire Site during the first phase, and (b) implementing these standards and requirements for each phase of Development or Redevelopment of the Site during the first phase or prior to commencement of construction of a later phase, to the extent necessary to treat the stormwater from such later phase. For purposes of this section, "Multi-Phased Project" shall mean any Planning Priority Project implemented over more than one phase and the Site of a Multi-Phased Project shall include

any land and water area designed and used to store, treat or manage stormwater runoff in connection with the Development or Redevelopment, including any tracts, lots, or parcels of real property, whether Developed or not, associated with, functionally connected to, or under common ownership or control with such Development or Redevelopment.

(F) Other Agencies of the City. All City departments, offices, entities and agencies, shall establish administrative procedures necessary to implement the provisions of this Article on their Development and Redevelopment projects and report their activities annually to the Community Development Department.

(G) Validity. If any provision of this Ordinance is found to be unconstitutional or otherwise invalid by any court of competent jurisdiction, such invalidity shall not affect remaining provisions of this Ordinance that are declared to be severable.

SECTION 3. Savings Clause. Neither the adoption of this ordinance nor the repeal of any other ordinance of this City shall in any manner affect the prosecution for violations of ordinances; which violations were committed prior to the effective date hereof, nor be construed as a waiver of any license or penalty or the penal provisions applicable to any violation thereof. The provision of this ordinance, insofar as they are substantially the same as ordinance provisions previously adopted by the City relating to the same subject matter, shall be construed as restatements and continuations, and not as new enactments.

SECTION 4. Effective Date. This Ordinance shall become effective thirty (30) calendar days from and after its adoption.

SECTION 5. The City Clerk shall attest to the adoption of this Ordinance and shall cause this Ordinance to be posted in the manner required by law.

PASSED, APPROVED AND ADOPTED this 18th day of June, 2013.

CITY OF COMMERCE

By: Joe Aguilar
Joe Aguilar, Mayor

ATTEST:

Linda Kay Olivieri
Linda Kay Olivieri, MMC
City Clerk

Ordinance No. 651

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF COMMERCE)

I, Victoria Maria Alexander, Deputy City Clerk of the City of Commerce, California, do hereby certify that the foregoing is a true and correct copy of Ordinance No. 651 of said City which was introduced at a concurrent regular meeting of said Council, held the 4th day of June, 2013, and, thereafter, said Ordinance was duly adopted and passed not less than five days thereafter at a regular meeting of said Council on the 18th day of June, 2013, by the following vote, to wit:

AYES:	Councilmembers:	Altamirano, Baca Del Rio, Robles, Mayor Pro Tempore Leon, Mayor Aguilar
NOES:	Councilmembers:	None
ABSENT:	Councilmembers:	None
ABSTAIN:	Councilmembers:	None

I, further certify that said Ordinance was thereupon signed by the Mayor of the City of Commerce.

Posted: 06/19/2013

Victoria Maria Alexander
Deputy City Clerk

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City of Commerce Green Streets Policy

Purpose

The City of Commerce shall implement Green Streets Best Management Practices (BMPs) for transportation corridors associated with new and redeveloped street and roadway projects, including Capital Improvement Projects (CIPs). This policy is enacted to demonstrate compliance with the NPDES MS4 Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that provides many benefits including water quality improvement, groundwater replenishment, attractive streetscapes, creation of parks and wildlife habitats, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain or detain stormwater runoff as well as a design element that creates attractive streetscapes.

Policy

A. Application. The Community Development Department shall require new development and/or redeveloped streets and roadway projects, including CIPs conducted within the right-of-way of transportation corridors as defined by the City's General Plan with construction costs greater than $500,000 and add at least 10,000 square feet of impervious surface to incorporate green streets BMPs. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are maintained and new impervious surface is not added.

B. Amenities. The Community Development Department shall consider where practical opportunities to replenish groundwater, create attractive streetscapes, create parks and wildlife habitats, and provide pedestrian and bicycle accessibility through new development and redevelopment of streets and roadway projects and CIPs.

C. Guidance. The Community Development Department shall use the City of Commerce Green Streets guidance, USEPA's *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets*[1] or equivalent guidance for use in public and private developments.

D. Retrofit Scope. The Community Development Department shall use the City's Watershed Management Program to identify opportunities for green streets BMP

retrofits where practical. Final decisions regarding implementation will be determined by the City based on the availability of adequate funding.

E. Training. The Community Development Department shall incorporate aspects of the Green Streets Policy into internal annual staff trainings.

ORDINANCE NO. 853

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF BELL GARDENS, CALIFORNIA, AMENDING THE CITY OF BELL GARDENS MUNICIPAL CODE, TITLE 11, "WATER, SEWERS, AND PUBLIC UTILITIES" CHAPTER 11.12, "URBAN STORMWATER," TO EXPAND THE APPLICABILITY OF THE EXISTING DEVELOPMENT REQUIREMENTS BY IMPOSING RAINWATER LOW IMPACT DEVELOPMENT (LID) STRATEGIES ON PROJECTS THAT REQUIRE BUILDING, GRADING AND ENCROACHMENT PERMITS

WHEREAS, the City of Bell Gardens ("City") is a general law city, incorporated under the laws of the state of California;

WHEREAS, pursuant to its police power, the City may enact and enforce laws within its boundaries which promote the general health, morals, safety, or general welfare of the community, and are not in conflict with general laws;

WHEREAS, the Federal Clean Water Act established Regional Water Quality Control Boards in order to prohibit the discharge of pollutants in stormwater runoff to waters of the United States;

WHEREAS, the City is a permittee under the California Regional Water Quality Control Board, Los Angeles Region Order No. R4-2012-0175, issued on November 08, 2012 which establishes waste discharge requirements for Municipal Separate Storm Sewer Systems (MS4) discharges within the coastal watersheds of Los Angeles County, Except those discharges originating from the City of Long Beach MS4;

WHEREAS, Order No. R4-2012-0175 contains requirements for municipalities to establish an LID Ordinance in order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program;

WHEREAS, the Regional Board has adopted Total Maximum Daily Loads (TMDLs) for pollutants which are numerical limits that must be achieved effectively through LID implementation;

WHEREAS, the City has the authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity that might degrade waters of the State;

WHEREAS, the City is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental and economic considerations;

WHEREAS, urbanization has led to increased impervious surface areas resulting in increased water runoff and less percolation to groundwater aquifers causing the transport of pollutants to downstream receiving waters; and

WHEREAS, is it the intent of the City to expand the applicability of the existing LID requirements by providing stormwater and rainwater LID strategies for all projects for Development and Redevelopment projects as defined under "Applicability."

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF BELL GARDENS DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Findings & Purpose. In adopting this Ordinance, the City Council finds and declares as follows:

A. The above recitals are true and correct and incorporate them herein by this reference.

B. Ordinance No. 853 serves the public health, safety, and welfare of the residents and businesses within the City.

C. Ordinance No. 853 is consistent with the City's General Plan.

D. Ordinance No. 853 amending the City of Bell Gardens Municipal Code, will not present any risk to the public health and safety.

SECTION 2. Chapter 11.12, "Urban Stormwater Management," Article I., "Definitions," is hereby replaced and amended in its entirety as follows:

11.12.010 Definitions applicable to this chapter.

The following words, phrases and terms as used in this chapter shall have the meanings ascribed to them in this article. (Ord. 709 § 1, 1998).

11.12.015 One hundred thousand square foot commercial or industrial development.

"One hundred thousand square foot commercial or industrial development" means any commercial or industrial development that creates at least 100,000 square feet of impervious area, including parking areas. (Ord. 732 § 1, 2001).

11.12.020 Act.

"Act" means the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq. (Ord. 709 § 1, 1998).

11.12.030 Adverse impact.

"Adverse impact" means a detrimental effect upon water quality or beneficial uses caused by a discharge or loading of a pollutant or pollutants. (Ord. 709 § 1, 1998).

11.12.035 Area susceptible to runoff.

"Area susceptible to runoff" means any surface exposed to precipitation or in the path of runoff caused by precipitation that leads directly to the street or storm drain. (Ord. 732 § 1, 2001).

11.12.037 Automotive ~~repair~~ service facility.

"Automotive ~~repair~~ service facility" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC)~~: Codes 5013, 5014, 5541, 7532 through 7534, or 7536 through 7539. (Ord. 732 § 1, 2001).~~ and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5511, 5541, 7532-7534, and 7536-7539 provided that these facilities have no outside activities or materials that may be exposed to stormwater.

11.12.040 Basin Plan.

"Basin plan" means ~~a water quality control plan for a specific watershed area or areas adopted by a regional board. (Ord. 709 § 1, 1998)~~ the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments.

11.12.050 Beneficial uses.

"Beneficial uses" means existing or potential uses of receiving waters as defined in a basin plan. (Ord. 709 § 1, 1998).

11.12.060 Best management practice (BMP).

"Best management practice (BMP)" means ~~stormwater and runoff pollution control practices designed to reduce the pollutants contained in discharges to the storm drain system and/or receiving waters. (Ord. 709 § 1, 1998).~~ practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water.

11.12.063 Biofiltration.

"Biofiltration" means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales.

11.12.065 Bioretention.

"Bioretention" means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in this Ordinance, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by Order No. R4-2012-0175 as biofiltration.

11.12.067 Bioswale.

"Bioswale" means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes.

11.12.070 Board.

"Board" means the city council of the city of Bell Gardens. (Ord. 709 § 1, 1998).

11.12.075 City.

"City" means the City of Bell Gardens.

11.12.077 Clean Water Act.

"Clean Water Act (CWA)" means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

11.12.080 Code of Federal Regulations (CFR).

"Code of Federal Regulations (CFR)" means the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government of the United States. (Ord. 709 § 1, 1998).

11.12.090 Commercial activity.

"Commercial activity" means any public or private activity not defined as an industrial activity in 40 CFR 122.26(b)(14), involved in the storage, transportation, distribution, exchange or sale of goods and/or commodities or providing professional and/or nonprofessional services. Commercial activity does not mean a dwelling as defined in BGMC Title 6 (Ord. 709 § 1, 1998).

11.12.095 Commercial development.

"Commercial development" means any development on private land that is not heavy industrial or residential. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities; mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes.

11.12.097 Commercial malls.

"Commercial malls" means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers.

11.12.100 Construction activity.

"Construction activity" means any construction or demolition activity, ~~any~~ clearing, grading, grubbing , or excavation or any other activity ~~of any real property~~ that results in ~~soil~~ land disturbance. Construction ~~activity~~ does not include ~~routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of a facility, nor does it include~~ emergency construction activities required to immediately protect public health and safety ~~(Ord. 709 § 1, 1998)~~ or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan.

11.12.105 Control.

"Control" means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities.

11.12.110 County.

"County" means the county of Los Angeles (Ord. 709 § 1, 1998).
Department – "Department" means the department of public works of the city of Bell Gardens. (Ord. 709 § 1, 1998).

11.12.120 Department.

"Department" means the department of public works of the city of Bell Gardens. (Ord. 709 § 1, 1998).

11.12.123 Development.

"Development" means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

11.12.124 Directly adjacent.

"Directly adjacent" means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area.

11.12.125 Directly connected impervious areas.

"Directly connected impervious areas" means the area covered by a structure, impervious pavement, and other impervious surfaces, which drains directly into the storm drain without first flowing across pervious land area (i.e., lawns). (Ord. 732 § 1, 2001).

11.12.130 Director.

"Director" means the director of public works of the city of Bell Gardens, or his/her authorized deputy, agent, representative or inspector. (Ord. 709 § 1, 1998).

11.12.140 Discharge.

"Discharge" means any release, spill, leak, pumping, flow, escape, dumping, or disposal of any ~~gas,~~ liquid, semi-solid, or solid substance.

11.12.145 Discretionary project.

"Discretionary project" means a project that requires the exercise of judgment or deliberation when the public agency or public body decides to approve or disapprove a particular activity, as distinguished from situations where the public agency or body has to determine whether there has been conformity with applicable statutes, ordinances, or regulations. (Ord. 732 § 1, 2001).

11.12.147 Disturbed area.

"Disturbed area" means an area that is altered as a result of clearing, grading, and/or excavation.

11.12.149 Flow-through treatment BMPs.

"Flow-through treatment BMPs" means a modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain.

11.12.150 Full capture system.

"Full capture system" means any single device or series of devices, certified by the Executive Officer, that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate Q resulting from a one-year, one-hour storm in the sub-drainage area.

11.12.152 General Construction Activities Storm Water Permit (GCASP).

"General Construction Activities Storm Water Permit (GCASP)" means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions.

11.12.153 General Industrial Activities Storm Water Permit (GIASP).

"General Industrial Activities Storm Water Permit (GIASP)" means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

11.12.155 Good housekeeping practice.

"Good housekeeping practice" means a best management practice related to the transfer, storage, use, or cleanup of materials performed in a regular manner that minimizes the discharge of pollutants to the storm drain system and/or receiving waters. (Ord. 709 § 1, 1998).

11.12.157 Green roof.

"Green roof" means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain.

11.12.160 Hazardous material.

"Hazardous material" means any material defined as hazardous by Chapter 6.95 of the California Health and Safety Code or any substance designated pursuant to 40 CFR 302. This also includes any unlisted hazardous substance which is a solid waste, as defined in 40 CFR 261.4(b), or is a hazardous substance under Section 101(14) of the Act, if it exhibits any of the characteristics identified in 40 CFR 261.20 through 261.24. (Ord. 709 § 1, 1998).

11.12.170 Hazardous waste.

"Hazardous waste" means a hazardous material, which is to be discharged, discarded, recycled, and/or reprocessed. (Ord. 709 § 1, 1998).

11.12.175 Hillside.

"Hillside" means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes.

11.12.180 Illicit connection.

"Illicit connection" means any human-made conveyance that is connected to the storm drain system without a permit, excluding roof drains, which convey only stormwater. (Ord. 709 § 1, 1998).

11.12.190 Illicit discharge.

"Illicit discharge" means any discharge to the storm drain system that is prohibited under local, state, federal statutes, ordinances, codes, or regulations. Illicit discharge includes all nonstormwater discharges except discharges pursuant to an NPDES permit or discharges that are exempted or conditionally exempted by such permit. (Ord. 709 § 1, 1998).

11.12.200 Industrial activity.

"Industrial activity" means any public or private activity which is in any of the 11 categories of activities defined in 40 CFR 122.26(b)(14) and which is required to obtain an NPDES. (Ord. 709 § 1, 1998).

11.12.210 Industrial/Commercial Facility.

"Industrial/commercial facility" means any ~~public or private~~ facility involved and/or used in ~~either~~ the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, and any facility involved and/or used in providing professional and nonprofessional services. This category of facilities includes, but is not limited to, any facility defined by ~~a~~ either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS). Facility ownership (federal, state, municipal, private) and profit motive of the facility are not factors in this definition.

11.12.213 Industrial park.

"Industrial park" means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry.

11.12.215 Infiltration.

"Infiltration" means the downward entry of water into the surface of the soil. (Ord. 732 § 1, 2001).

11.12.216 Infiltration BMP.

"Infiltration BMP" means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement.

11.12.217 Low Impact Development (LID).

"Low Impact Development (LID)" consists of building and landscape features designed to retain or filter stormwater runoff.

11.12.218 Municipal Separate Storm Sewer System (MS4).

"Municipal Separate Storm Sewer System (MS4)" means ~~municipal separate storm sewer system. (Ord. 732 § 1, 2001).~~ a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

A. Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

B. Designed or used for collecting or conveying stormwater;

C. Which is not a combined sewer; and

D. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR Section 122.2. (40 CFR Section 122.26(b)(8)).

11.12.219 National Pollution Discharge Elimination System (NPDES).

"National Pollutant Discharge Elimination System (NPDES)" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA Section 307, 402, 318, and 405. The term includes an "approved program."

11.12.220 National Pollutant Discharge Elimination System (NPDES) permit.

"National Pollutant Discharge Elimination System (NPDES) permit" means a permit issued by the United States Environmental Protection Agency, the State Water Resources Control Board or a California Regional Water Quality Control Board pursuant to the Act, that authorizes discharges to waters of the United States. (Ord. 709 § 1, 1998).

11.12.225 Natural Drainage System.

"Natural Drainage System" means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system.

11.12.227 New Development.

"New Development" means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision.

11.12.230 Non-stormwater discharge.

"Non-stormwater discharge" means ~~any discharge to the storm drain system and/or receiving waters~~ a municipal storm drain system that is not composed entirely of stormwater.

11.12.233 Outfall.

"Outfall" means a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances with connect segments of the same stream or other waters of the United Sates and are used to convey waters of the United States. (40 CFR Section 122.26(b)(9)).

11.12.235 Parking Lot.

"Parking lot" means land area or facility for ~~the temporary storage of motor vehicles used personally, for business, or for commerce~~ parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces.

11.12.240 Pollutant.

"Pollutant" ~~shall have the same meaning as set forth in Section 502(6) of the Act or as incorporated into the California Water Code Section 13373. Pollutants include, but are not limited to, the following:~~

~~A. Commercial and industrial waste (such as fuels, solvents, chemicals, detergents, plastic pellets, hazardous material or substances, hazardous wastes, fertilizers, pesticides, soot, slag, ash, and sludge);~~

~~B. Metals (such as cadmium, lead, zinc, copper, silver, nickel, chromium and arsenic) and nonmetals (such as carbon, chlorine, fluorine, phosphorous and sulfur);~~

~~C. Petroleum hydrocarbons (such as fuels, oils, lubricants, surfactant, waste oils, solvents, coolants, and grease);~~

~~D. Eroded soils, sediment, and particulate materials in amounts which may adversely affect the beneficial use of the receiving waters, flora, or fauna of the state;~~

~~E. Animal wastes (such as discharges from confinement facilities, kennels, pens, recreational facilities, stables, and show facilities);~~

~~F. Substances having acidic or corrosive characteristics such as a pH of less than six or greater than nine; and~~

~~G. Substances having unusual coloration or turbidity, levels of fecal coliform, fecal streptococcus, or enterococcus, which may adversely affect the beneficial use of the receiving waters, flora, or fauna of the state. (Ord. 709 § 1, 1998).~~

means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Section 13373.

11.12.245 Post construction BMP.

"Post construction BMP" means a structural or nonstructural BMP incorporated into the design of a project to control or reduce the discharge of pollutants from the site after construction is complete for the life of the project. (Ord. 732 § 1, 2001).

11.12.247 Project.

"Project" means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code Section 21065).

11.12.248 Rainfall Harvest and Use.

"Rainfall Harvest and Use" means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department.

11.12.250 Receiving Water.

"Receiving water" means ~~all surface water bodies within the country that are identified by a regional board in a basis plan~~ water of the United States into which waste and/or pollutants are or may be discharged.

11.12.255 Redevelopment.

"Redevelopment" means land-disturbing activity that results in the ~~creation,~~ ~~or~~ addition, or replacement of ~~at least~~ 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; ~~or~~ addition or replacement of a structure; ~~structural development, including an increase of gross floor area and/or exterior construction of remodeling;~~ replacement of impervious surfacing that is not part of a routine maintenance activity; and land disturbing activities related ~~with~~ to structural or impervious surfaces. ~~Where redevelopment results in an increase of less than 50 percent of the impervious surfaces of an existing development, and the existing development is not subject to these~~

~~USWMPs, the design standards apply only to the addition, and not to the entire development. (Ord. 732 § 1, 2001)~~ It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

11.12.260 Regional Board.

"Regional board" means ~~a~~ the California Regional Water Quality Control Board~~. (Ord. 709 § 1, 1998).~~ , Los Angeles Region.

11.12.265 Restaurant.

"Restaurant" means a stand-alone facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption. (Ord. 732 § 1, 2001).

11.12.267 Retail Gasoline Outlet.

"Retail gasoline outlet" means any facility engaged in selling gasoline and lubricating oils~~ to the general public (Ord. 732 § 1, 2001).~~

11.12.268 Routine Maintenance.

"Routine Maintenance" includes, but is not limited to projects conducted to:

A. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

B. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.

C. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.

D. Update existing lines (includes replacing existing lines with new pipes) and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.

E. Repair leaks

Routine maintenance does not include construction of new lines (those that are not associated with existing facilities and are not part of a project to update or replace existing lines) or facilities resulting from compliance with applicable codes, standards and regulations.

11.12.270 Runoff.

"Runoff" means any stormwater or nonstormwater discharge from any surface and/or drainage area that reaches the storm drain system and/or receiving waters. (Ord. 709 § 1, 1998).

11.12.275 Significant Ecological Areas (SEAs).

"Significant Ecological Areas (SEAs)" means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

A. The habitat of rare, endangered, and threatened plant and animal species.

B. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.

C. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.

D. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.

E. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.

F. Areas important as game species habitat or as fisheries.

G. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.

H. Special areas.

11.12.278 Site.

"Site" means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity.

11.12.280 Standard Industrial Classification (SIC).

"Standard Industrial Classification (SIC)" means a numbering system developed by the United States Government, Office of Budget, for the classification of businesses by the type of activity in which they are engaged. (Ord. 732 § 1, 2001; Ord. 709 § 1, 1998).

11.12.290 State Board.

"State board" means the State Water Resources Control Board (Ord. 709 § 1, 1998).

11.12.300 Storm Drain System.

"Storm drain system" means any facility or any parts of the facility, including streets, gutters, conduits, natural or artificial drains, channels and watercourses that are ~~, and/or other facility or any combination thereof, that is owned and/or operated by the city or the Los Angeles County Flood Control District and~~ used for the purpose of collecting, storing, transporting, ~~and/~~ or disposing of ~~runoff. (Ord. 709 § 1, 1998).~~ stormwater and are located within the City.

11.12.305 Storm event.

"Storm event" means a rainfall event that produces more than 0.10 inch of precipitation and that is separated from the previous rainfall event by at least 72 hours. (Ord. 732 § 1, 2001).

11.12.310 Storm Water or Stormwater.

"Storm water or Stormwater" means ~~any water, which originates from atmospheric moisture (rainfall or snowmelt) and falls onto land, water, and/or surfaces (Ord. 709 § 1, 1998).~~ runoff and drainage related to precipitation events (pursuant to 40 CFR Section 122.26(b)(13); 55 Fed. Reg. 47990, 47995 (Nov. 16, 1990)).

11.12.320 Stormwater pollution prevention plan (SWPPP).

"Stormwater pollution prevention plan (SWPPP)" means a plan required by and for which the contents are specified in an NPDES permit. (Ord. 709 § 1, 1998).

11.12.330 Stormwater runoff.

"Stormwater runoff" means stormwater which travels across any surface to the storm drain system and/or receiving waters. (Ord. 709 § 1, 1998).

11.12.340 Structureal BMP.

"Structural BMP" means any permanent facility constructed to control, treat, store, divert, neutralize, dispose of, and/or monitor runoff in order to reduce or measure pollutants. (Ord. 709 § 1, 1998).

11.12.345 Treatment.

"Treatment" means the application of engineering systems that use physical, chemical, or biological processes to remove pollutants. Such processes include, but are not limited to, filtration, gravity settling, medial absorption, biodegradation, biological uptake, chemical oxidation, and UV radiation. (Ord. 732 § 1, 2001).

11.12.347 Treatment control BMP.

"Treatment control BMP" means any engineered system designed to remove pollutants by simple gravity settling of particulate pollutants, filtration, biological uptake, media absorption, or any physical, biological, or chemical process. (Ord. 732 § 1, 2001).

11.12.350 Uncontrolled discharge.

"Uncontrolled discharge" means any discharge intentional or accidental, occurring in such a manner that the discharger is unable to determine or regulate the quantity, quality or effects of the discharge. (Ord. 709 § 1, 1998).

11.12.353 Urban Runoff.

"Urban Runoff" means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial or industrial activities involving the use of potable and non-potable water.

11.12.355 Urban stormwater mitigation plan.

"Urban stormwater mitigation plan" means a plan that evaluates the issue of site development including runoff, run-on, vehicle maintenance, land disturbances, erosion, sediment control, and revegetation and establishes BMPs to control or reduce the discharge of pollutants from the site, both during and after construction. (Ord. 732 § 1, 2001).

11.12.360 U.S. EPA.

"U.S. EPA" means the United States Environmental Protection Agency. (Ord. 709 § 1, 1998).

SECTION 3. Article V., entitled "Violations and Enforcement," of Chapter 11.12, "Urban Stormwater Management," is hereby amended and renumbered as follows:

Article VI. Violation and Enforcement

11.12.5550. Enforcement – Director's powers and duties

SECTION 4. Chapter 11.12, "Urban Stormwater Management," is hereby amended to add a new Article V. entitled "Low Impact Development Measures for New Development and/or Redevelopment Planning and Construction Activities," and the following Sections in the corresponding numerical sections are enacted as follows:

Article V. Low Impact Development Measures for New Development and/or Redevelopment Planning and Construction Activities.

11.12.547 Objective.

The provisions of this Section establish requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Order No. R4-2012-0175," lessen the water quality impacts of development by using smart growth practices, and integrate LID practices and standards for stormwater pollution mitigation through means of infiltration, evapotranspiration, biofiltration, and rainfall harvest and use. LID shall be inclusive of new development and/or redevelopment requirements.

11.12.548 Scope.

This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the City to further define and adopt stormwater pollution control measures, and to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, grant waivers from the LID requirements, and collect funds for projects that are granted waivers. Except as otherwise provided herein, the City shall administer, implement and enforce the provisions of this Section.

11.12.549 Applicability.

Development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, prior to completion of the project(s), are:

A. All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

B. Industrial parks 10,000 square feet or more of surface area.

C. Commercial malls 10,000 square feet or more of surface area.

D. Retail gasoline outlets with 5,000 square feet or more of surface area.

E. Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.

F. Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

G. Streets and roads construction of 10,000 square feet or more of impervious surface area. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

H. Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) 5,000 square feet or more of surface area.

I. Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:

1. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

2. Create 2,500 square feet or more of impervious surface area

J. Single-family hillside homes.

K. Redevelopment Projects

1. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

2. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

3. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

4. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

5. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

11.12.550 Effective Date.

The Planning and Land Development requirements contained in Section 7 of Order No. R4-2012-0175 shall become effective 90 days from the adoption of the Order (February 6, 2013). This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Order. Projects that have been deemed complete within 90 days of adoption of the Order are not subject to the requirements Section 7.

11.12.551 Specific Requirements.

The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

A. A new single-family hillside home development shall include mitigation measures to:
   1. Conserve natural areas;

   2. Protect slopes and channels;

   3. Provide storm drain system stenciling and signage;

   4. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and

   5. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

B. Street and road construction of 10,000 square feet or more of impervious surface shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

C. The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:

1. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:

   i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or

   ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.
2. Minimize hydromodification impacts to natural drainage systems as defined in Order No. R4-2012-0175.
3. To demonstrate technical infeasibility, the project applicant must demonstrate that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:

   i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.

   ii. Locations where seasonal high groundwater is within five to ten feet of surface grade;

   iii. Locations within 100 feet of a groundwater well used for drinking water;

   iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;

   v. Locations with potential geotechnical hazards;

vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

4. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in Order No. R4-2012-0175.

   i. Additional alternative compliance options such as offsite infiltration and groundwater replenishment projects may be available to the project Site. The project Site should contact the City to determine eligibility.

5. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per Order No. R4-2012-0175. Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

   i. 0.2 inches per hour, or

   ii. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

11.12.552 Additional Requirements.

The site for projects not classified with general applicability listed in Section C of this Ordinance, but resulting in the creation or addition or replacement of 500 square feet or more of impervious surface area shall be designed to control pollutants, pollutant loads, and runoff volume per the Bell Gardens Green Streets Manual.

SECTION 5. All affected sections and cross references in Chapter 11.12 of the Bell Gardens Municipal Code Section as amended herein shall be renumbered and listed accordingly in proper numerical and alphabetical order where appropriate.

SECTION 6. Compliance with California Environmental Quality Act. The adoption of this Ordinance is statutorily exempt from the California Environmental Quality Act pursuant to Section 10652, constituting the adoption of plans pursuant to the implementation of actions taken pursuant to Section 10652 and also constituting an activity that will not significantly affect water supplies for wish and wildlife.

SECTION 7. Severability. If any section, sentence, clause, phrase, or portion of this Ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have adopted this Ordinance, and each section, subsection, subdivision, sentence, clause, phrase, or portion thereof, irrespective of the fact that any one or more sections, subsections, subdivisions, sentences, clauses, phrases or portions might subsequently unconstitutional.

SECTION 8. The City Clerk shall certify to the passage and adoption of this Ordinance and shall cause this Ordinance to be published or posted as required by law, which shall take full force and effect thirty (30) days from its adoption.

PASSED AND ADOPTED this 24th day of June, 2013.

Pedro Aceituno, Mayor

APPROVED AS TO FORM:

Arnold Alvarez-Glasman
City Attorney

ATTEST:

Rosalia A. Conde, CMC
City Clerk

I, CLAUDIA Y. ISBELL, Secretary to the City Clerk of the City of Bell Gardens, hereby CERTIFY that **Ordinance No. 853** was introduced and placed upon its first reading at a regular meeting of the Bell Gardens City Council held June 10, 2013, and that thereafter said Ordinance was duly adopted at a regular meeting of the City Council held June 24, 2013, and was approved and passed by the following vote:

AYES: Council Members Crespo, Flores, Rodriguez, Mayor Pro-Tem Infanzon, Mayor Aceituno
NOES: None
ABSTAIN: None
ABSENT: None

Claudia Y. Isbell
Secretary to the City Clerk

City of Bell Gardens

Green Streets Manual

June 10, 2013

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SECTION 1 – INTRODUCTION

1.1 WHAT ARE GREEN STREETS?

Roads present many opportunities for green infrastructure application. One principle of green infrastructure involves reducing and treating stormwater close to its source. Urban transportation right-of-ways integrated with green techniques are often called "green streets." Green streets provide source controls for stormwater runoff and pollutant loads. In addition, green infrastructure approaches complement street facility upgrades, street aesthetic improvements, and urban tree canopy efforts that also make use of the right-of-way and allow it to achieve multiple goals and benefits. Using the right-of-way for treatment of stormwater runoff links green with grey infrastructure by making use of the engineered conveyance of roads and providing connections to conveyance systems when needed.

Green streets are beneficial for new road construction and retrofits. They can provide substantial economic benefits when used in transportation applications. Coordinating green infrastructure installation with broader transportation improvements can reduce the cost of stormwater management by including it within larger infrastructure improvements. A large municipal concern regarding green infrastructure use is maintenance access; using roads and right-of-ways as locations for green infrastructure not only addresses a significant pollutant source, but also alleviates access and maintenance concerns by using public space. Also, right-of-way installations allow for easy public maintenance.

Green streets can incorporate a wide variety of design elements including street trees, permeable pavements, bioretention, and swales. Although the design and appearance of green streets will vary, the functional goals are the same; provide source control of stormwater, limit its transport and pollutant conveyance to the collection system, restore pre-development hydrology to the maximum extent practicable, and provide environmentally enhanced roads. Successful application of green techniques will encourage soil and vegetation contact and infiltration and retention of stormwater.

1.2 WHY ARE GREEN STREETS BEING REQUIRED?

This Green Streets Manual provides guidance to help achieve the goals of the MS4 Permit (Order Number R4-2012-0175) which requires that jurisdictions in Los Angeles County reduce contaminants in runoff to improve water quality in waterways. These requirements stem from the National Pollutant Discharge Elimination System (NPDES) requirements of the Clean Water Act (CWA).

The MS4 Permit requires Green Streets strategies to be implemented for transportation corridors. Transportation corridors represent a significant percentage of the impervious area within Los Angeles and therefore generate a substantial amount of runoff from storm events. The altered flow regime from traditional roadways, increased runoff volume, and high runoff peak flows, are damaging to the environment and a risk to property downstream.

Traditionally, street design has focused on removing water from the street as quickly as possible and transferring it to storm drains, channels, and water bodies. Stormwater runoff can contain bacteria and other pollutants, and is thereby regulated at the state and local level (refer to *Table 1* for a list of pollutants typical of roads). Green Streets will help to transform the design of streets from the conventional method of moving water off-site as quickly as possible to a method of storing and treating water on-site for a cleaner discharge into the waters of the U.S.

Street and road construction applies to major arterials, state routes, highways, or rail lines used for the movement of people or goods by means of bus services, trucks, and vehicles, and transportation corridors within larger projects. Projects which are required under the MS4 permit (Order Number R4-2012-0175) to follow this Green Streets Guidance Manual include the following:

1. Public Street and road construction of 10,000 square feet or more of impervious surface area within a transportation corridor. (Private street and road construction activities are subject to separate development planning provisions of the MS4 permit).
2. Street and road redevelopment resulting in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.
3. For projects not listed above, as determined by the Director of Public Works.

Table 1: Examples of Stormwater Pollutants Typical of Roads (*Managing Wet Weather With Green Infrastructure Municipal Handbook: Green Streets, 2008*).

Pollutant	Source	Effects
Trash	Littering	Physical damage to aquatic animals and fish, release of poisonous substances
Sediment/solids	Construction, unpaved areas	Increased turbidity, increased transport of soil bound pollutants, negative effects on aquatic organisms reproduction and function
Metals (Copper, Zinc, Lead, Arsenic)	Vehicle brake pads, vehicle tires, motor oil, vehicle emissions and engines, vehicle emissions, brake linings, automotive fluids	Toxic to aquatic organisms and can accumulate in sediments and fish tissues
Organics associated with petroleum (e.g., PAHs)	Vehicle emissions, automotive fluids, gas stations	Toxic to aquatic organisms
Nutrients	Vehicle emissions, atmospheric deposition	Promotes eutrophication and depleted dissolved oxygen concentrations

1.3 PLANNING AND DEVELOPMENT

Ideally, a site would be designed to capture and use or infiltrate the entire runoff volume of a storm, however site and design constraints make it difficult to achieve that goal. This Green Streets Manual is designed to provide guidance with BMP selection based on site constraints typical to street design. Streetscape geometry, topography, and climate determine the types of controls that can be implemented. The initial step in selecting a stormwater tool is determining the available open space and constraints. Stormwater controls should be selected using the hierarchy represented in *Figure 1*, the site guidelines represented in *Table 2*, and the location opportunities listed in *Table 3*.

1.3.1 Site Considerations

Specific elements which should be given special consideration in the site assessment process for applicable Green Streets include:

- **Ownership of land adjacent to right of ways.** The opportunity to provide stormwater treatment may depend on the ownership of land adjacent to the right-of-way. Acquisition of additional right-of-way and/or access easements may be more feasible if land bordering the project is owned by relatively few land owners. If the adjacent land is not publicly owned, treatment implementation options may be significantly limited.
- **Location of existing utilities.** The location of existing storm drainage utilities can influence the opportunities for Green Streets infrastructure. For example, stormwater planters can be designed to overflow along the curb-line to an existing storm drain inlet, thereby avoiding the infrastructure costs associated with an additional inlet. The location of other utilities may limit the allowable placement of BMPs to only those areas where a clear pathway to the storm drain exists.
- **Grade differential between road surface and storm drain system.** Some BMPs require more head from inlet to outlet than others; therefore, allowable head drop may be an important consideration in BMP selection. Storm drain elevations may be constrained by a variety of factors in a roadway project (utility crossings, outfall elevations, etc.) that cannot be overcome and may override stormwater management considerations.
- **Longitudinal slope.** The suite of BMPs which may be installed on steeper road sections is more limited. Specifically, permeable pavement and swales are more suitable for gentle grades. Other BMPs may be more readily terraced to be used on steeper slopes.
- **Soil suitability.** Infiltration BMPs require specific types of soil. The site assessment should determine the type of soils on the site and the infiltration rate of the soils if infiltration BMPs are proposed.
- **Potential access opportunities.** A significant concern with installation of BMPs in major right of ways is the ability to safely access the BMPs for maintenance considering traffic hazards. Vehicle travel lanes and specific areas potentially hazardous for maintenance crews should be identified during the site assessment. The Green Streets WQMP should provide subsequent steps to avoid placing BMPs in the identified hazardous areas.

1.3.2 Design Considerations

The drainage patterns of the project should be developed so that drainage can be routed to areas with BMP opportunities before entering storm drains. For example, if a median strip is present, a reverse crown should be considered, where allowed, so that stormwater can drain to a median swale. Likewise, standard peak-flow curb inlets should be located downstream of areas with potential for stormwater planters so that water can first flow into the planter, and then overflow to the downstream inlet if capacity of the planter is exceeded. It is more difficult to apply green infrastructure after water has entered the storm drain.

Green Streets projects are not required to treat off-site runoff; however treatment of comingled off-site runoff may be used to off-set the inability to treat areas within the project for which significant constraints prevent the ability to provide treatment.

1.3.3 BMP Sizing for Applicable Green Streets Projects

An 85th percentile standard design storm should be used to determine the appropriate size, slope, and materials of each facility. After identifying the appropriate stormwater facilities for a site, an integrated approach using several BMPs is encouraged. To increase water quality and functional hydrologic benefits, several stormwater management BMPs can be used in succession. This is called a treatment

train approach. The control measures should be designed using available topography to take advantage of gravity for conveyance to and through each facility. All Green Streets designs must be based off of a published design standard.

The following steps should be used to size BMPs for applicable Green Streets projects:

1. Delineate drainage areas tributary to BMP locations and compute imperviousness.
2. Look up the recommended sizing method for the BMP selected in each drainage area and calculate target sizing criteria.
3. Design BMPs per a published design standard.
4. Attempt to provide the calculated sizing criteria for the selected BMPs.
5. If sizing criteria cannot be achieved, document the constraints that override the application of BMPs and provide the largest portion of the sizing criteria that can be reasonably provided given constraints. If BMPs cannot be sized to provide the calculated volume for the tributary area, it is still important to design the BMP inlet, energy dissipation, and overflow capacity for the full tributary area to ensure that flooding and scour is avoided. It is strongly recommended that BMPs which are designed to less than their target design volume be designed to bypass peak flows.

1.3.4 Alternative Compliance Options for Applicable Green Streets Projects

Alternative compliance programs should be considered for applicable Green Streets projects if on-site green infrastructure approaches cannot practicably treat the design volume. The primary alternative compliance option for applicable Green Streets projects is the completion of off-site mitigation projects. The proponent would implement a project to reduce stormwater pollution for other portions of roadway or similar land uses when being reconstructed to the project in the same hydrologic unit, ideally as close to the project as possible and discharging to the same outfall.

1.3.5 Infiltration Considerations

Appropriate soils, infiltration media, and infiltration rates should be used for infiltration BMPs. If infiltration is proposed, a complete geotechnical or soils report should be undertaken to determine infiltration rates, groundwater depth, soil toxicity and stability, and other factors that will affect the ability and the desirability of infiltration. At a minimum, the infiltration capacity of the underlying soils shall be deemed suitable for infiltration (0.3 inches per hour or greater), appropriate media should be used in the BMP itself, the groundwater shall be located at a depth of ten feet or greater.

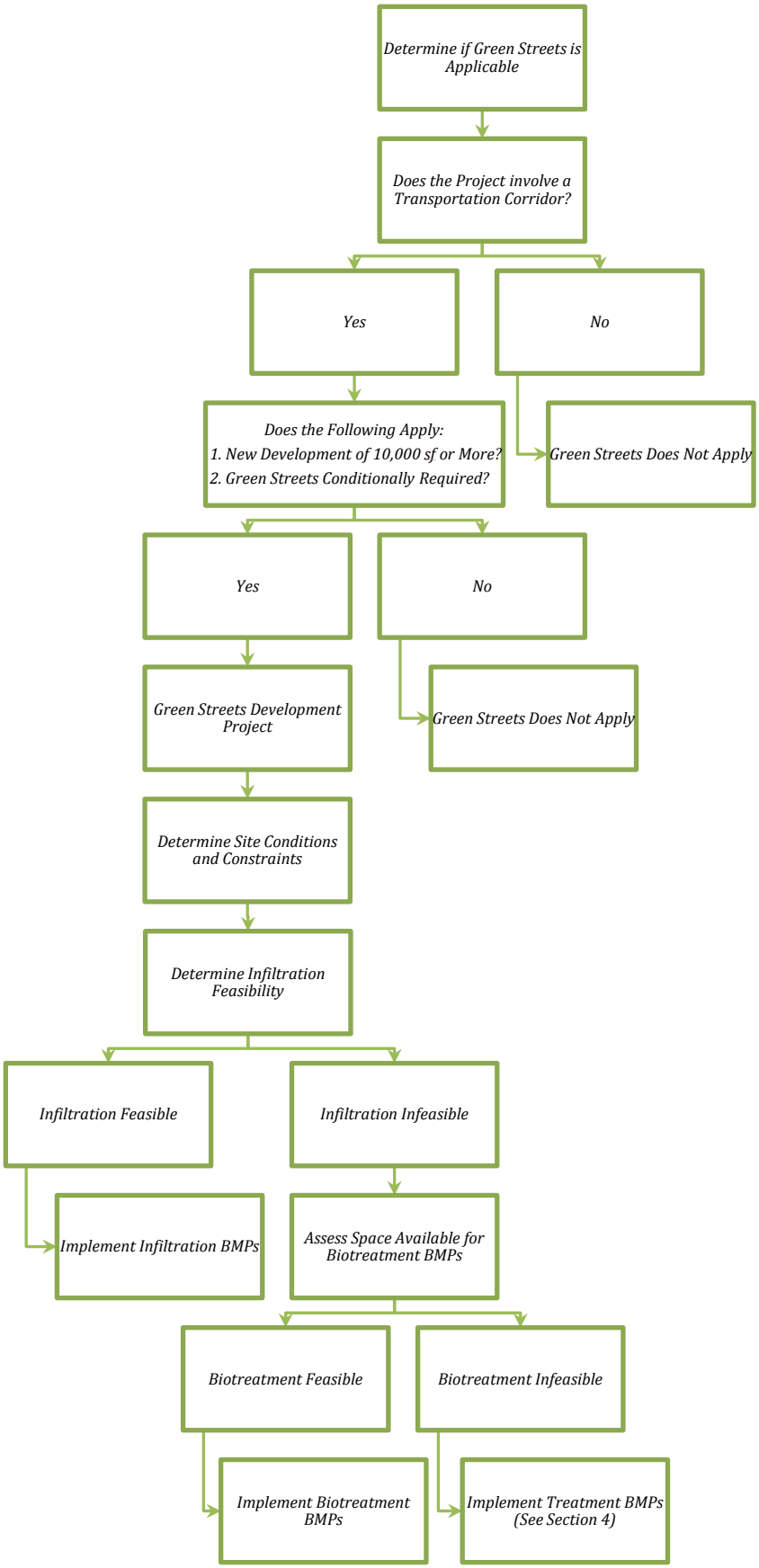

Figure 1: BMP Selection Flow Chart.

Table 2: BMP Selection by Street Context (*Model for Living Streets Design Manual, 2011*).

	STREET CONTEXT	BIORETENTION			DETENTION		PAVING	INLET PROTECTIONS		
		Swales	Planters	Vegetated Buffer Strips	Rain Gardens	Infiltration Trenches & Dry Wells	Permeable Pavement	Storm Drain Inlet Screens	Storm Drain Filter Inserts	Pipe Filter Inserts
Commercial	Downtown Commercial		✓			✓	✓	✓	✓	✓
	Commercial Throughway		✓	✓		✓	✓	✓	✓	✓
	Neighborhood Commercial		✓	✓	✓	✓	✓	✓	✓	✓
Residential	Downtown Residential	✓	✓		✓	✓	✓	✓	✓	✓
	Residential Throughway	✓	✓		✓	✓	✓	✓	✓	✓
	Neighborhood Residential	✓	✓		✓	✓	✓	✓	✓	✓
Industrial And Mixed-Use	Industrial	✓	✓		✓	✓	✓	✓	✓	✓
	Mixed-Use		✓	✓	✓	✓	✓	✓	✓	✓
Special	Sidewalk Furniture Zone	✓	✓		✓	✓	✓	✓	✓	✓
	Park Edge	✓	✓		✓	✓	✓	✓	✓	✓
	Boulevard	✓	✓		✓	✓	✓	✓	✓	✓
	Ceremonial (Civic)						✓	✓	✓	✓
Small	Alley		✓			✓	✓	✓	✓	✓
	Shared Public Way		✓			✓	✓	✓	✓	✓
	Walk Street		✓	✓		✓	✓	✓	✓	✓

Table 3: BMP Location Opportunity Summary.

BMP	Location Opportunity Summary

Bioretention	• Adjacent to traveled way and in frontage or furniture sidewalk zones • Can be located in curb extensions, medians, traffic circles, roundabouts, and any other landscaped area • Suitable for constrained locations
Infiltration Trench/Dry Well	• Can be located under sidewalks and in sidewalk planting strips, curb extensions, roundabouts, and medians
Rain Gardens	• Can be integrated medians, islands, circles, street ends, chicanes, and curb extensions • Can be located at the terminus of swales in the landscape
Permeable Pavement	• Suitable for parking or emergency access lanes • Can be located in furniture zones of sidewalks especially adjacent to tree wells • Cannot be placed in areas with large traffic volume or heavy load lanes • Avoid steep streets • Cannot be placed within 20 feet of sub-sidewalk basements • Cannot be within 50 feet of domestic water wells
Flow-Through Planters	• Above-grade planters should be structurally separate from adjacent sidewalks • At-grade planter systems can be installed adjacent to curbs within the frontage and/or furniture zones
Vegetated Swales	• Can be located adjacent to roadways, sidewalks, or parking areas • Can be integrated into traffic calming devices such as chicanes and curb extensions • Can be placed in medians where the street drains to the median • Can be placed alongside streets and pathways • Should be designed to work in conjunction with the street slope
Vegetated Buffer Strips	• Can be located in multi-way boulevards, park edge streets, or sidewalk furniture zones

	• Can serve as pre-treatment
Treatment BMPs	• Can be located in a catch basin, manhole, or vault • Can be installed on an existing outlet pipe or at the bottom of an existing catch basin with an overflow • Can be placed on existing curbside catch basins and flush grate openings • Can be installed on the existing wall of a catch basin and on the curb side wall of a catch basin • Minimum set-backs from foundations and slopes should be observed if the BMP is not lined
Street Trees	• Can be placed on sidewalks, in furniture zones, and on medians • Adequate spacing must be provided between trees and street lights, pedestrian lights, accessible parking spaces, bus shelters, awnings, canopies, balconies, and signs

SECTION 2 – INFILTRATION

Infiltration systems utilize rock, gravel, and other highly permeable materials for on-site infiltration. In these systems, stormwater runoff is directed to the system and allowed to infiltrate into the soils for on-site retention and groundwater recharge. During small storm events, infiltration systems can result in significant or even complete volume reduction of stormwater runoff.

Infiltration should be used to the maximum extent practicable. Biotreatment BMPs should be considered if infiltration is found to be infeasible due to low infiltration rates, soil instability, high groundwater, or soil contamination.

Infiltration BMPs may become damaged by stormwater carrying high levels of sediment, therefore pre-treatment features should be designed to treat street runoff prior to discharging to infiltration features. Media filters, filter inserts, vortex type units, bioretention devices, sumps, and sedimentation basins are several pre-treatment tools effective at removing sediment.

2.1 INFILTRATION TRENCHES AND DRY WELLS

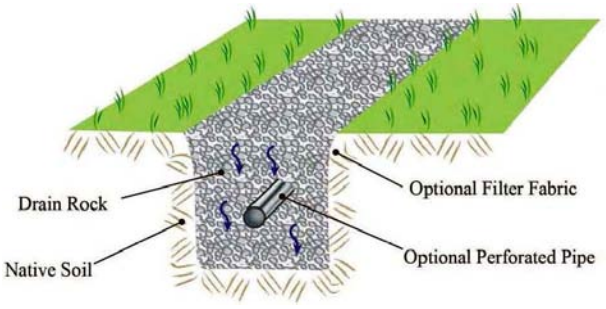

Figure 2: Infiltration Trench (*Model for Living Streets Design Manual, 2011*).

Description

Infiltration trenches are linear, rock-filled features that promote infiltration by providing a high ratio of sub-surface void space in permeable soils. They provide on-site stormwater retention and may contribute to groundwater recharge. Infiltration trenches may accept stormwater from sheet flow, concentrated flow from a swale or other surface feature, or piped flow from a catch basin. Because they are not flow-through BMPs, infiltration trenches do not have outlets but may have overflow outlets for large storm events.

Dry wells are typically distinguished from infiltration trenches by being deeper than they are wide. They are usually circular, resembling a well, and are backfilled with the same materials as infiltration trenches. Dry wells typically accept concentrated flow from surface features or from pipes and do not have outlets.

Infiltration trenches and dry wells are typically designed to infiltrate all flow they receive. In large storm events, partial infiltration of runoff can be achieved by providing an overflow outlet. In these systems, significant or even complete volume reduction is possible in smaller storm events. During large storm events, these systems may function as detention facilities and provide a limited amount of retention and infiltration.

Location and placement guidelines

Infiltration trenches and dry wells typically have small surface footprints so they are potentially some of the most flexible elements of landscape design. However, because they involve sub-surface excavation, these features may interfere with surrounding structures. Care needs to be taken to ensure that surrounding building foundations, pavement bases, and utilities are not damaged by infiltration features. Once structural soundness is ensured, infiltration features may be located under sidewalks and in sidewalk planting strips, curb extensions, roundabouts, and medians. When located in medians, they are most effective when the street is graded to drain to the median. Dry wells require less surface area than trenches and may be more feasible in densely developed areas.

Infiltration features should be sited on uncompacted soils with acceptable infiltration capacity. They are best used where soil and topography allow for moderate to good infiltration rates (0.3 inches per hour or better) and the depth to groundwater is at least 10 feet. Prior to design of any retention or infiltration system, proper soil investigation and percolation testing shall be conducted to determine appropriate infiltration design rates, depth to groundwater, and if soil will exhibit instability as a result of infiltration. Any site with potential for previous underground contamination shall be investigated. Infiltration trenches and dry wells can be designed as stand-alone systems when water quality is not a concern or may be combined in series with other stormwater tools.

Perforated pipes and piped inlets and outlets may be included in the design of infiltration trenches. Cleanouts should be installed at both ends of any piping and at regular intervals in long sections of piping, to allow access to the system. Access ports are recommended for both trenches and wells and can be combined with clean-outs. If included, the overflow inlet from the infiltration trench should be properly designed for anticipated flows.

2.2 RAIN GARDENS

Figure 3: Rain garden (*Model for Living Streets Design Manual, 2011)*.

Description

Rain gardens are vegetated depressions in the landscape. They have flat bottoms and gently sloping sides. Rain gardens can be similar in appearance to swales, but their footprints may be any shape. Rain gardens hold water on the surface, like a pond, and have overflow outlets. The detained water is infiltrated through the topsoil and subsurface drain rock unless the volume of water is so large that some must overflow. Rain gardens can reduce or eliminate off-site stormwater discharge while increasing on-site recharge.

Location and Placement Guidelines

Rain gardens may be placed where there is sufficient area in the landscape and where soils are suitable for infiltration. Rain gardens can be integrated with traffic calming measures installed along streets, such as medians, islands, circles, street ends, chicanes, and curb extensions. Rain gardens are often used at the terminus of swales in the landscape.

2.3 PERMEABLE PAVEMENT

Figure 4: Permeable pavement during a storm event (*Model for Living Streets Design Manual, 2011)*.

Description

Permeable pavement is a system with the primary purpose of slowing or eliminating direct runoff by absorbing rainfall and allowing it to infiltrate into the soil. Permeable pavement also filters and cleans pollutants such as petroleum deposits on streets, reduces water volumes for existing overtaxed pipe systems, and decreases the cost of offsite or onsite downstream infrastructure. This BMP is impaired by sediment-laden run-on which diminishes its porosity. Care should be taken to avoid flows from landscaped areas reaching permeable pavement. Permeable pavement is, in certain situations, an alternative to standard pavement. Conventional pavement is designed to move stormwater off-site quickly. Permeable pavement, alternatively, accepts the water where it falls, minimizing the need for management facilities downstream.

Location and Placement Guidelines

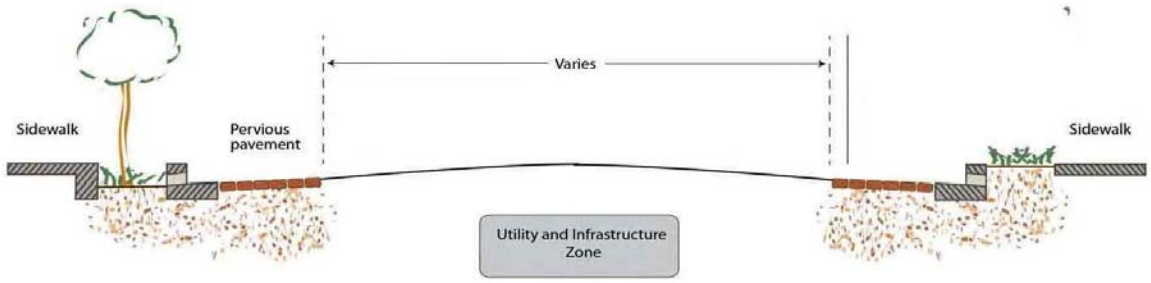

Figure 5: Possible pervious pavement design layout (*Model for Living Streets Design Manual, 2011*).

Conditions where permeable pavement should be encouraged include:

- Sites where there is limited space in the right-of-way for other BMPs;
- Parking or emergency access lanes; and
- Furniture zones of sidewalks especially adjacent to tree wells

Conditions where permeable pavement should be avoided include:

- Large traffic volume or heavy load lanes;
- Where runoff is already being harvested from an impervious surface for direct use, such as irrigation of bioretention landscape areas;
- Steep streets;
- Gas stations, car washes, auto repair, and other sites/sources of possible chemical contamination;
- Areas with shallow groundwater;
- Within 20 feet of sub-sidewalk basements; and
- Within 50 feet of domestic water wells.

Material and Design Guidelines

A soil or geotechnical report should be conducted to provide information about the permeability rate of the soil, load-bearing capacity of the soil, the depth to groundwater (10 feet or more required), and if soil will exhibit instability as a result of implementation. Infiltration rate and load capacity are key factors in the functionality of this BMP. Permeable pavement generally does not have the same load-

bearing capacity as conventional pavement, so this BMP may have limited applications depending on the underlying soil strength and pavement use. Permeable pavement should not be used in general traffic lanes due to the possible variety of vehicles weights and heavy volumes of traffic.

When used as a road paving, permeable pavement that carries light traffic loads typically has a thick drain rock base material. Pavers should be concrete as opposed to brick or other light-duty materials. Other possible permeable paving materials include porous concrete and porous asphalt. These surfaces also have specific base materials that detain infiltrated water and provide structure for the road surface. Base material depths should be specified based on design load and the soils report.

Plazas, emergency roads, and other areas of limited vehicular access can also be paved with permeable pavement. Paving materials for these areas may include open cell paver blocks filled with stones or grass and plastic cell systems. Base material specifications may vary depending on the product used, design load, and underlying soils.

When used for pedestrian paths, sidewalks, and shared-use paths, appropriate materials include those listed above as well as rubber pavers and decomposed granite or something similar (washed or pore-clogging fine material). Pedestrian paths may also use broken concrete pavers as long as ADA requirements are met. Paths should drain into adjoining landscapes and should be higher than adjoining landscapes to prevent run-on. Pavement used for sidewalks and pedestrian paths should be ADA compliant, especially smooth, and not exceed a 2 percent slope or have gaps wider than 0.25 inches. In general, tripping hazards should be avoided.

Design considerations for permeable pavement include:

- The location, slope and load-bearing capacity of the street, and the infiltration rate of the soil;
- The amount of storage capacity of the base course;
- The traffic volume and load from heavy vehicles;
- The design storm volume calculations and the quality of water; and
- Drain rock, filter fabrics, and other subsurface materials.

Maintenance Guidelines

Maintenance of permeable pavement systems is essential to their continued functionality. Regular vacuuming and street sweeping should be performed to remove sediment from the pavement surface. The bedding and base material should be selected for long life and sufficient infiltration rates.

SECTION 3 – BIOTREATMENT

Biotreatment BMPs are landscaped, shallow depressions that capture and filter stormwater runoff. These types of BMPs are an increasingly common type of stormwater treatment device that are installed at curb level and filled with a bioretention type soil. They are designed as soil and plant-based filtration devices that remove pollutants through a variety of physical, biological, and chemical treatment processes. They typically consist of a ponding area, mulch layer, planting soils, and plants. Stormwater is directed to the system and pollutants are treated as the stormwater drains through the planting soil and either infiltrated or collected by an underdrain and directed to a collection system.

Biotreatment should only be used in cases where infiltration has been proven infeasible due to low infiltration rates, soil instability, high groundwater, or soil contamination.

3.1 BIORETENTION

Figure 6: Bioretention system (*Model for Living Streets Design Manual, 2011*).

Description

Bioretention is a stormwater management process that cleans stormwater by mimicking natural soil filtration processes as water flows through a bioretention BMP. It incorporates mulch, soil pores, microbes, and vegetation to reduce and remove sediment and pollutants from stormwater. Bioretention is designed to slow, spread, and, to some extent, infiltrate water. Each component of the bioretention BMP is designed to assist in retaining water, evapotranspiration, and adsorption of pollutants into the soil matrix. As runoff passes through the vegetation and soil, the combined effects of filtration, absorption, adsorption, and biological uptake of plants remove pollutants.

For areas with low permeability or other soil constraints, bioretention can be designed as a flow-through system with a barrier protecting stormwater from native soils. Bioretention areas can be designed with an underdrain system that directs the treated runoff to infiltration areas, cisterns, or the storm drain system, or may treat the water exclusively through surface flow. Examples of bioretention BMPs include swales, planters, and vegetated buffer strips.

Location and Placement Guidelines

Bioretention facilities can be included in the design of all street components; adjacent to the traveled way and in the frontage or furniture sidewalk zones. They can be designed into curb extensions, medians, traffic circles, roundabouts, and any other landscaped area. Depending on the feature, maintenance and access should always be considered in locating the device. Bioretention systems are also appropriate in constrained locations where other stormwater facilities requiring more extensive subsurface materials are not feasible.

If bioretention devices are designed to include infiltration, native soil should have a minimum permeability rate of 0.3 inches per hour and at least 10 feet to the groundwater table. Sites that have more than a 5 percent slope may require other stormwater management approaches or special engineering.

3.2 FLOW-THROUGH PLANTERS

Figure 7: Flow-through planter (*Model for Living Streets Design Manual, 2011)*.

Description

Flow-through planters are typically above-grade or at-grade with solid walls and a flow-through bottom. They are contained within an impermeable liner and use an underdrain to direct treated runoff back to the collection system. Where space permits, buildings can direct roof drains first to building-adjacent planters. Both underdrains and surface overflow drains are typically installed with building-adjacent planters.

At-grade street-adjacent planter boxes are systems designed to take street runoff and/or sidewalk runoff and incorporate bioretention processes to treat stormwater. These systems may or may not include underdrains.

Location and Placement Guidelines

Above-grade planters should be structurally separate from adjacent sidewalks to allow for future maintenance and structural stability per local department of public works' standards. At-grade planter systems can be installed adjacent to curbs within the frontage and/or furniture zones.

All planters should be designed to pond water for less than 48 hours after each storm. Flow-through planters designed to detain roof runoff can be integrated into a building's foundation walls, and may be either raised or at grade.

For at-grade planters, small localized depressions may be included in the curb opening to encourage flow into the planter. Following the inlet, a sump (depression) to capture sediment and debris may be integrated into the design to reduce sediment loadings.

3.3 VEGETATED SWALES

Figure 8: Vegetated swale (*Signal hill, CA*).

Description

Swales are linear, vegetated depressions that capture rainfall and runoff from adjacent surfaces. The swale bottom should have a gradual slope to convey water along its length. Swales can reduce off-site stormwater discharge and remove pollutants along the way. In a swale, water is slowed by traveling through vegetation on a relatively flat grade. This gives particulates time to settle out of the water while contaminants are removed by the vegetation.

Location and Placement Guidelines

Swales can be located adjacent to roadways, sidewalks, or parking areas. Roadway runoff can be directed into swales via flush curbs or small evenly-spaced curb cuts into a raised curb. Swale systems can be integrated into traffic calming devices such as curb extensions.

Swales can be placed in medians where the street drains to the median. Placed alongside streets and pathways, vegetated swales can be landscaped with native plants which filter sediment and pollutants and provide habitat for wildlife. Swales should be designed to work in conjunction with the street slope to maximize filtration and slowing of stormwater.

Swales are designed to allow water to slowly flow through the system. Depending on the landscape and design storm, an overflow or bypass for larger storm events may be needed. Curb openings should be designed to direct flow into the swale. Following the inlet, a sump may be built to capture sediment and debris.

3.4 VEGETATED BUFFER STRIPS

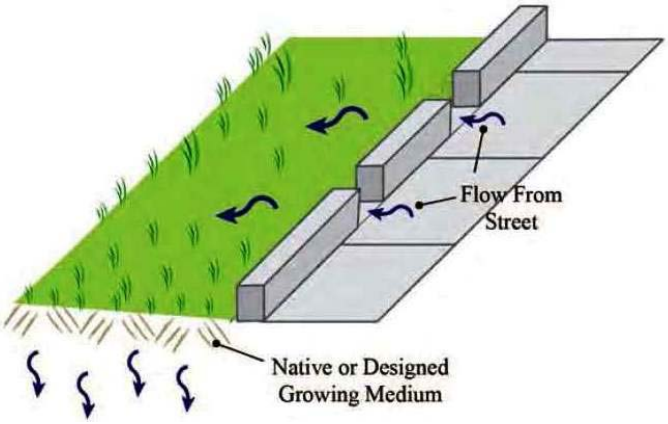

Figure 9: Vegetated buffer strip detail (*Model for Living Streets Design Manual, 2011)*.

Description

Vegetated buffer strips are sloping planted areas designed to treat and absorb sheet flow from adjacent impervious surfaces. These strips are not intended to detain or retain water, only to treat it as a flow-through feature. They should not receive concentrated flow from swales or other surface features, or concentrated flow from pipes.

Location and Placement Guidelines

Vegetated buffer strips are well-suited to treating runoff from roads and highways, small parking lots, and pervious surfaces. They may be commonly used on multi-way boulevards, park edge streets, or sidewalk furniture zones with sufficient space. When selecting potential placement the need for supplemental irrigation should be considered. Vegetated buffers can also be situated so they serve as pre-treatment for another stormwater management feature, such as an infiltration BMP.

SECTION 4 – TREATMENT BMPS

4.1 SAND FILTERS & STORM DRAIN INLET PROTECTIONS

As described in Section 1 of this Green Streets Manual, it may be infeasible for specific projects to apply infiltration or biotreatment BMPs. In these cases, sand filters or filter inserts as treatment BMPs can be considered as an alternative. Sand filters and filter inserts can be designed to prevent particulates, debris, metals, and petroleum-based materials conveyed by stormwater from entering the storm drain system. All treatment BMP units should have an overflow system that allows the storm drain to remain functional if the filtration system becomes clogged during rainstorms. All storm drain inlet protections must be of a style and configuration approved by the agency with ownership of the inlet.

Typical maintenance of catch basins includes scheduled trash removal if a screen or other debris capturing device is used. Street sweeping should be performed by vacuum sweepers with occasional weed and large debris removal. Maintenance should include keeping a log of the amount of sediment collected and the data of removal.

The following are examples of possible treatment BMPs:

- **Sand Filters:** Sand filters are designed to filter stormwater through a constructed media bed and to an underdrain system. As stormwater flows through the media pollutants are filtered out of the water. The filtered water is conveyed through the underdrain to a collection system. Pretreatment is necessary to eliminate significant sediment load or other large particles which would clog the system. Minimum set-backs from foundations and slopes should be observed if the facility is not lined. Filters should be designed and maintained such that ponded water should not persist for longer than 48 hours following a storm event.
- **Cartridge Media Filters:** Cartridge media filters contain multiple modular filters which contain engineered media. The filters can be located in a catch basin, manhole, or vault. The manhole or vault may be divided into multiple chambers so that the first chamber may act as a pre-settling basin for removal of coarse sediment while the next chamber may act as the filter chamber. Cartridge media filters are recommended for drainage areas with limited available surface area or where surface BMPs would restrict uses. Depending on the number of cartridges, maintenance events can have long durations. Locations should be chosen so that maintenance events will not significantly disrupt businesses or traffic. Inlet inserts should be sized to capture all debris and should therefore be selected to match the specific size and shape of each catch basin and inlet. Filter media should be selected to target pollutants of concern. A combination of media may be used to remove a variety of pollutants. Systems with lower maintenance requirements are preferred.
- **Storm Drain Inlet Screens:** Inlet screens are designed to prevent large litter and trash from entering the storm drain system while allowing smaller particles to pass through. The screens function as the first preventive measure in removing pollutants from the storm water system. The city's street sweeping department should be consulted to ensure compliance with local specifications and to schedule regular maintenance. Annual inspection of the screen is recommended to ensure functionality. Note that most LA River drainage areas are already protected using connector pipe screens through collective systems.
- **Storm Drain Pipe Filter Insert:** The storm drain outlet pipe filter is designed to be installed on an existing outlet pipe or at the bottom of an existing catch basin with an overflow. This filter removes debris, particulates, and other pollutants from stormwater as it leaves the storm drain system. This BMP is less desirable than a protection system that prevents debris from entering the storm drain system because the system may become clogged with debris. Outlet pipe filters can be placed on existing curbside catch basins and flush grate openings. Regular maintenance is required and inspection should be performed rigorously. Because this filter is located at the outlet of a storm drain system, clogging with debris is not as apparent as with filters at street level. This BMP may be used as a supplemental filter with an inlet screen or inlet insert unit.

SECTION 5 – STREET TREES

5.1 STREET TREES

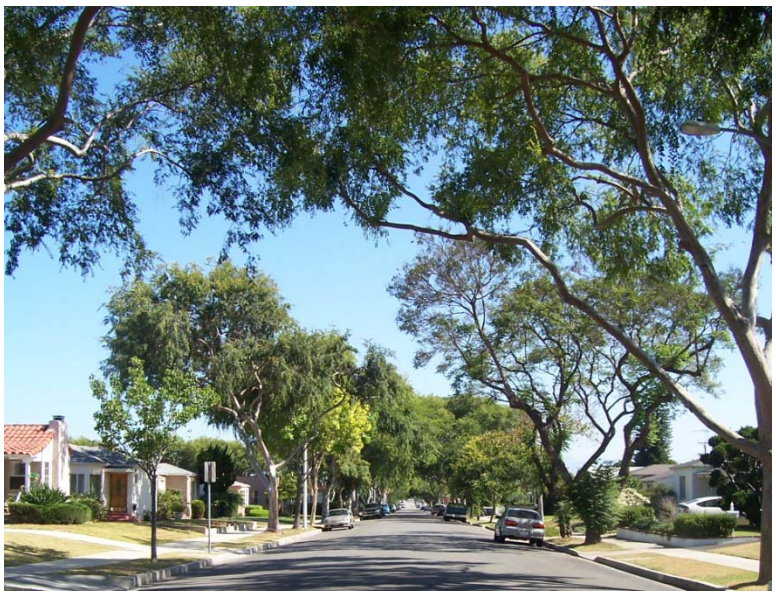

Figure 10: Street trees (*Signal Hill, CA*).

Description

Healthy urban trees are powerful stormwater management tools. Leaves and branches catch and slow rain as it falls, helping it to soak into the ground. The plants themselves take up and store large quantities of water that would otherwise contribute to surface runoff. Part of this moisture is then returned to the air through evaporation to further cool the city. As an important element along sidewalks, street trees must be provided with conditions that allow them to thrive, including adequate uncompacted soil, water, and air.

The goal of adding street trees is to increase the canopy cover of the street, the percentage of its surface either covered by or shaded by vegetation. The selection, placement, and management of all elements in the street should enhance the longevity of a city's street trees and healthy, mature plantings should be retained and protected whenever possible.

Benefits to adding street trees include:

- Creation of shade to lower temperatures in a city, reduces energy use, and makes the street a more pleasant place in which to walk and spend time
- Slowing and capture of rainwater, helping it soak into the ground to restore local hydrologic functions and aquifers
- Improving air quality by cooling air, producing oxygen, and absorbing and storing carbon in woody plant tissues

Guidelines

For guidelines on street tree design refer to the Signal Hill Street Tree Ordinance at http://www.cityofsignalhill.org/DocumentCenter/Home/View/774.

SECTION 6 – DEFINITIONS

Best Management Practice (BMP)
Operating methods and/or structural devices used to reduce stormwater volume, peak flows, and/or pollutant concentrations of stormwater runoff through evapotranspiration, infiltration, detention, filtration, and/or biological and chemical treatment.

Bioretention
Soil and plant-based retention practice that captures and biologically degrades pollutants as water infiltrates through sub-surface layers containing microbes that treat pollutants. Treated runoff is then slowly infiltrated and recharges the groundwater.

Conveyance
The process of water moving from one place to another.

Design Storm
A storm whose magnitude, rate, and intensity do not exceed the design load for a storm drainage system or flood protection project.

Detention
Stormwater runoff that is collected at one rate and then released at a controlled rate. The volume difference is held in temporary storage.

Filtration
A treatment process that allows for removal of solid (particulate) matter from water by means of porous media such as sand, soil, vegetation, or a man-made filter. Filtration is used to remove contaminants.

Furniture Zone
The furniture zone is the area which lies between the curb and pedestrian zones and is intended to house utilities and pedestrian amenities.

Hardscape
Impermeable surfaces, such as concrete or stone, used in the landscape environment along sidewalks or in other areas used as public space.

Infiltration
The process by which water penetrates into soil from the ground surface.

Permeability/Impermeability
The quality of a soil or material that enables water to move through it, determining its suitability for infiltration.

Retention
The reduction in total runoff that results when stormwater is diverted and allowed to infiltrate into the ground through existing or engineered soil systems.

Runoff
Water from rainfall that flows over the land surface that is not absorbed into the ground.

Sedimentation
The deposition and/or settling of particles suspended in water as a result of the slowing of the water.

Stormwater
Water runoff from rain or snow resulting from a storm.

Transportation Corridor
A major arterial, state route, highway, or rail line used for the movement of people or goods by means of bus services, trucks, and vehicles.

Optional:

Insert list of streets meeting the criteria of a Transportation Corridor or

Insert an equivalent phase such as: “The Director of Public Works will review projects on a case-by case basis to determine if the projects will be considered within a Transportation Corridor”.

SECTION 7 – REFERENCES

1. Los Angeles County. *Model for Living Streets Design Manual*. 2011.
2. U.S. Environmental Protection Agency (EPA). *Managing Wet Weather With Green Infrastructure Municipal Handbook: Green Streets*. December 2008.
3. Orange County. *Technical Guidance Document*. May 2011.

AGENDA REPORT
CITY OF MAYWOOD

DATE: JULY 8, 2013

TO: HONORABLE MAYOR AND MEMBERS OF THE CITY COUNCIL

FROM: LILIAN MYERS, CITY MANAGER

BY: ELROY L. KIEPKE, ASSISTANT CITY ENGINEER

SUBJECT: INTRODUCTION OF AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MAYWOOD TO AMEND CHAPTER 6-10 OF THE MAYWOOD MUNICIPAL CODE TO INCLUDE LOW IMPACT DEVELOPMENT (LID) STANDARDS AS REQUIRED BY THE NEW MS4 PERMIT FOR URBAN STORM WATER MITIGATION, MANAGEMENT AND DISCHARGE

RECOMMENDATION

That the City Council introduce for first reading an Ordinance of the City Council of the City of Maywood amending Chapter 6-10 of the Maywood Municipal Code to include Low Impact Development (LID) standards as required by the new MS4 permit for urban storm water mitigation, management and discharge.

FISCAL IMPACT

The adoption of the ordinance will have no fiscal impact on the City budget.

LEGAL REVIEW

This report and the draft ordinance have been reviewed by the City Attorney.

BACKGROUND

On November 8, 2012, the Regional Water Quality Control Board – Los Angeles Region – adopted the new Municipal Separate Storm Sewer System permit (MS4) which became effective December 28, 2012. This new MS4 permit made changes to the Planning and Land Development Program that must be included in the City Municipal Code to enable the City to enforce the new program. These changes are presented as an amendment to the City's current Municipal Code.

DISCUSSION

The City Municipal Code, Chapter 6-10, contains the current development and redevelopment provisions, specifically Section 6-10.01 definitions, Section 6-10.08 Urban Storm Water Mitigation Plans Required, Section 6-10.09 Content of the USWMP, Section 6-10.10 Project Specific Issues to be addressed by the USWMP, Section 6-10.11 Review of the USWMP and Section 6-10.12 Filing of the USWMP.

Ordinance Recommendation

The attached Ordinance adds definitions to Section 6-10.01 to make the Municipal Code consistent with the new MS4 permit. The major changes will occur in Section 6-10.08, with item B being removed completely to be replaced, Item C will be replaced, Items A, D, E, and F will remain but the definition will include an impervious area and one new item will be added to address street projects.

A new section will be added to the Municipal Code to address the requirements to retain on site the increased runoff caused by development and the various other standards imposed by the new MS4 permit.

Attachments: 1) Ordinance
2) Section VI.D.7 of the new MS4 permit

ATTACHMENT 1

Ordinance

ORDINANCE NO._____

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MAYWOOD, CALIFORNIA, AMENDING THE MAYWOOD MUNICIPAL CODE CHAPTER 6-10, TO EXPAND THE APPLICABILITY OF THE EXISTING URBAN STORM WATER MITIGATION PLANS BY IMPOSING RAINWATER LOW IMPACT DEVELOPMENT (LID) STRATEGIES ON PROJECTS THAT REQUIRE BUILDING, GRADING AND ENCROACHMENT PERMITS

WHEREAS, the City Council is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity; and

WHEREAS, the federal Clean Water Act establishes Regional Water Quality Control Boards in order to prohibit the discharge of pollutants in stormwater runoff to waters of the United States; and

WHEREAS, the City is a permittee under the California Regional Water Quality Control Board, Los Angeles Region Order No. R4-2012-0175, issued on November 08, 2012 which establishes Waste Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4; and

WHEREAS, Order No. R4-2012-0175 contains requirements for municipalities to establish an LID Ordinance in order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program; and

WHEREAS, the Regional Board has adopted Total Maximum Daily Loads (TMDLs) for pollutants which are numerical limits that must be achieved effectively through LID implementation; and

WHEREAS, the City Council has the authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity that might degrade waters of the State; and

WHEREAS, the City is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental and economic considerations; and

WHEREAS, urbanization has led to increased impervious surface areas resulting in increased water runoff and less percolation to groundwater aquifers causing the transport of pollutants to downstream receiving waters; and

WHEREAS, is it the intent of the City Council to expand the applicability of the existing LID requirements by providing stormwater and rainwater LID strategies for all projects for Development and Redevelopment projects as defined under "Applicability."

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MAYWOOD, CALIFORNIA, DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. The City Council finds and determines the foregoing recitals to be true and correct and hereby makes them a part of this ordinance.

SECTION 2. Section 6-10.01 (Definitions) of Chapter 10 (Urban Storm Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby amended with the replacement of the following terms and/or definitions:

Replace the term and definition of "Automotive repair shops" in its entirety with the following:

"Automotive service facility" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5511, 5541, 7532-7534, and 7536-7539 ~~provided that these facilities have no outside activities or materials that may be exposed~~ to stormwater (Order No. R4-2012-0175).

Replace the definition for the term "Basin plan" in its entirety with the following:

"Basin plan" means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments (Order No. R4-2012-0175).

Replace the definition for the term "Best Management Practice (BMP)" in its entirety with the following:

"Best management practice (BMP)" means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water (Order No. R4-2012-0175).

Replace the definition for the term "Commercial development" in its entirety with the following:

"Commercial development" means any development on private land that is not heavy industrial or residential. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities; mini-malls and other business complexes, shopping

malls, hotels, office buildings, public warehouses and other light industrial complexes (Order No. R4-2012-0175).

Replace the definition for the term "Discharge" in its entirety with the following:

"Discharge" means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

Replace the term and definition of "MS4" in its entirety with the following:

"Municipal separate storm sewer system (MS4)" means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) Designed or used for collecting or conveying stormwater;

(iii) Which is not a combined sewer; and

(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR Section 122.2.

(40 CFR Section 122.26(b)(8)) (Order No. R4-2012-0175)

Replace the definition for the term "NPDES" in its entirety with the following:

"National Pollutant Discharge Elimination System (NPDES)" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA Section 307, 402, 318, and 405. The term includes an "approved program" (Order No. R4-2012-0175).

Replace the definition for the term "New development" in its entirety with the following:

"New development" means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision (Order No. R4-2012-0175).

Replace the definition for the term "Pollutant" in its entirety with the following:

"Pollutant" means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Section 13373 (Order No. R4-2012-0175).

Replace the definition for the term "Redevelopment" in its entirety with the following:

"Redevelopment" means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Order No. R4-2012-0175).

Replace the definition for the term "Regional Board" in its entirety with the following:

"Regional Board" means the California Regional Water Quality Control Board, Los Angeles Region.

Replace the definition for the term "Restaurant" in its entirety with the following:

"Restaurant" means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812) (Order No. R4-2012-0175).

Replace the definition for the term "Storm drain system" in its entirety with the following:

"Storm Drain System" means any facility or any parts of the facility, including streets, gutters, conduits, natural or artificial drains, channels and watercourse that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the City.

SECTION 3. Section 6-10.01 (Definitions) of Chapter 10 (Urban Storm Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby amended with the addition of the following definitions, to be incorporated in the definition list of the Section in alphabetical order:

"Biofiltration" means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales (Order No. R4-2012-0175).

"Bioretention" means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in this Ordinance, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by Order No. R4-2012-0175 as biofiltration (Order No. R4-2012-0175).

"Bioswale" means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes (Order No. R4-2012-0175).

"City" means the City of Maywood.

"Clean Water Act (CWA)" means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

"Commercial malls" means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers (Order No. R4-2012-0175).

"Construction activity" means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that result in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan (Order No. R4-2012-0175).

"Control" means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities (Order No. R4-2012-0175).

"Development" means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Order No. R4-2012-0175).

"Directly adjacent" means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area (Order No. R4-2012-0175).

"Disturbed area" means an area that is altered as a result of clearing, grading, and/or excavation (Order No. R4-2012-0175).

"Flow-through treatment BMPs" means a modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain (Order No. R4-2012-0175).

"Full capture system" means any single device or series of devices, certified by the Executive Officer, that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate Q resulting from a one-year, one-hour storm in the sub-drainage area (Order No. R4-2012-0175).

"General Construction Activities Storm Water Permit (GCASP)" means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions (Order No. R4-2012-0175).

"General Industrial Activities Storm Water Permit (GIASP)" means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions (Order No. R4-2012-0175).

"Green Roof" means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain (Order No. R4-2012-0175).

"Hillside" means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes (Order No. R4-2012-0175).

"Industrial/Commercial Facility" means any facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods

and/or commodities, and any facility involved and/or used in providing professional and non-professional services. This category of facilities includes, but is not limited to, any facility defined by either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS). Facility ownership (federal, state, municipal, private) and profit motive of the facility are not factors in this definition (Order No. R4-2012-0175).

"Industrial park" means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry (Order No. R4-2012-0175).

"Infiltration BMP" means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement (Order No. R4-2012-0175).

"Low Impact Development (LID)" consists of building and landscape features designed to retain or filter stormwater runoff (Order No. R4-2012-0175).

"Natural drainage system" means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system (Order No. R4-2012-0175).

"Non-stormwater discharge" means any discharge to a municipal storm drain system that is not composed entirely of stormwater (Order No. R4-2012-0175).

"Outfall" means a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances with connect segments of the same stream or other waters of the United Sates and are used to convey waters of the United States. (40 CFR Section 122.26(b)(9)) (Order No. R4-2012-0175).

"Parking lot" means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces (Order No. R4-2012-0175).

"Project" means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code Section 21065) (Order No. R4-2012-0175).

"Rainfall Harvest and Use" means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department (Order No. R4-2012-0175).

"Receiving Water" means "water of the United States" into which waste and/or pollutants are or may be discharged (Order No. R4-2012-0175).

"Retail gasoline outlet" means any facility engaged in selling gasoline and lubricating oils (Order No. R4-2012-0175).

"Routine Maintenance" includes, but is not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.
4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.

** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Order No. R4-2012-0175).

"Significant Ecological Areas (SEAs)" means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.

5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (Order No. R4-2012-0175).

"Site" means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity (Order No. R4-2012-0175).

"Storm Water or Stormwater" means runoff and drainage related to precipitation events (pursuant to 40 CFR Section 122.26(b)(13); 55 Fed. Reg. 47990, 47995 (Nov. 16, 1990)).

"Urban Runoff" means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial or industrial activities involving the use of potable and non-potable water.

SECTION 4. Section 6-10.08 (Urban storm water mitigation plan required) of Chapter 10 (Urban Strom Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby repealed in its entirety and replaced with the following:

6-10.08 – Low impact development measures for new development and/or redevelopment planning and construction activities.

a) Objective. The provisions of this Section establish requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Order No. R4-2012-0175," lessen the water quality impacts of development by using smart growth practices, and integrate LID practices and standards for stormwater pollution mitigation through means of infiltration, evapotranspiration, biofiltration, and rainfall harvest and use. LID shall be inclusive of new development and/or redevelopment requirements.

b) Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the City to further define and adopt stormwater pollution control measures, and to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, grant waivers from the LID requirements, and collect funds for projects that are granted waivers. Except as otherwise provided herein, the City shall administer, implement and enforce the provisions of this Section.

c) Applicability. Development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, prior to completion of the project(s), are:

(1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

(2) Industrial parks 10,000 square feet or more of impervious surface area.

(3) Commercial malls 10,000 square feet or more of impervious surface area.

(4) Retail gasoline outlets with 5,000 square feet or more of impervious surface area.

(5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of impervious surface area.

(6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(7) Streets and roads construction of 10,000 square feet or more of impervious surface area. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

(8) Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) 5,000 square feet or more of impervious surface area.

(9) Redevelopment Projects

a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

b. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

d) Specific Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) Street and road construction of 10,000 square feet or more of impervious surface shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

(2) The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:

a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:

i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or

ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.

b. ~~Minimize hydromodification impacts to natural drainage systems as defined in~~ Order No. R4-2012-0175.

c. To demonstrate technical infeasibility, the project applicant must demonstrate that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:

i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.

ii. Locations where seasonal high groundwater is within five to ten feet of surface grade;

iii. Locations within 100 feet of a groundwater well used for drinking water;

iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;

v. Locations with potential geotechnical hazards;

vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

d. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in Order No. R4-2012-0175.

   i. Additional alternative compliance options such as offsite infiltration and groundwater replenishment projects may be available to the project Site. The project Site should contact the City of Maywood to determine eligibility.

e. The remaining SWQD that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per Order No. R4-2012-0175. Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

   i. 0.2 inches per hour, or

   ii. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

SECTION 5. Section 6-10.09 (Content of urban storm water mitigation plan) of Chapter 10 (Urban Strom Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby amended as follows: *(Revisions are highlighted with strikethrough for words to be deleted and underline for words to be added)*

6-10.09 - Content of ~~urban storm water mitigation~~ Low Impact Development (LID) plan.

The ~~USWMP~~ LID required by this section shall be prepared by a Registered Civil Engineer, Licensed Architect, Landscape Architect or any other professional knowledgeable about storm water management issues and shall evaluate and propose BMP's to address each source of pollutants identified by the project evaluation. As a minimum the designer shall address the BMP's listed in the Commercial Site Visit Program, for the proposed use of the site, as approved by the Regional Water Quality Control Board—Los Angeles by Resolution 98-08 on April 13, 1998. All ~~USWMP's~~ LID's shall contain the following elements: . . .

SECTION 6. Section 6-10.10 (Project specific issues to be addressed by the USWMP) of Chapter 10 (Urban Strom Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby amended as follows: *(Revisions are highlighted with strikethrough for words to be deleted and underline for words to be added)*

6-10.10 – Project specific issues to be addressed by the ~~USWMP~~ LID.

In addition to the ~~six (6) items~~ listed in Section 6-10.08 ~~11.12.542 BGMC~~ of MMC, the following projects must ~~also~~ consider issue unique to the occupancy: . . .

SECTION 7. Section 6-10.11 (Review of urban storm water mitigation plan by City) of Chapter 10 (Urban Strom Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby amended as follows: *(Revisions are highlighted with strikethrough for words to be deleted and underline for words to be added)*

6-10.11 - Review of the ~~urban storm water mitigation~~ Low Impact Development LID plan by City.

The City shall review the ~~USWMP~~ LID to assure that all elements of the plan have been addressed and that the applicant has identified the BMP's necessary to protect the MS4. The Director or his designee shall identify any deficiencies in the plan and return it to the applicant for modification. When the plan is found to comply with the provisions of this section the grading or building permits may be issued for the project. If, ~~during construction, the plan is found to be deficient by the City or any other interested~~ party the applicant shall amend the plan to address the deficiency.

SECTION 8. Section 6-10.12 (Filing of the urban storm water mitigation plan) of Chapter 10 (Urban Strom Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby amended as follows: *(Revisions are highlighted with strikethrough for words to be deleted and underline for words to be added)*

6-10.12 - Filing of the ~~urban storm water mitigation~~ Low Impact Development LID plan.

Upon acceptance of the ~~USWMP~~ LID by the City the applicant shall file a signed original of the plan with the County Recorder. The document shall contain sufficient legal description to identify the property covered and shall be binding on the applicant and all successors in interest to the property. The form shall be provided by the City and shall only be amended or removed from title with the consent of the City.

SECTION 9. The City Council finds that this Ordinance is not subject to the California Environmental Quality Act ("CEQA") pursuant to Sections 15060(c)(2) (the activity will not result in a direct or reasonably foreseeable indirectly physical change in the environment) and 15060(c)(3) (the activity is not a project as defined in Section 15378) of the CEQA Guidelines, California Code of Regulations, Title 14, Chapter 3, because it has no potential for resulting in physical change to the environment, directly or indirectly.

SECTION 10. If any section, subsection, subdivision, sentence, clause, phrase, or portion of the Ordinance for any reason is held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City council hereby declares that it would have adopted this Ordinance, and each section, subsection, subdivision, sentence, clause, phrase, or portion thereof, irrespective of the fact that any one or more sections, subsections, subdivisions, sentences, clauses, phrases, or portions thereof be declared invalid or unconstitutional.

SECTION 11. This ordinance shall take affect thirty (30) days after its final passage and within fifteen (15) days after its passage, the City Clerk of the City of Maywood shall certify to the passage and adoption of this ordinance and to its approval by the Mayor and City Council and shall cause the same to be published in a newspaper in the manner required by law.

PASSED, APPROVED AND ADOPTED ON this _____ day of _____ 2013.

_____
Oscar Magana, Mayor

ATTEST:

_____
Sergio Calderon, City Clerk

APPROVED AS TO FORM:

_____
Richard L. Adams II, City Attorney

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES)
CITY OF MAYWOOD)

I, Sergio Calderon, Secretary of the City Council of the City of Maywood, do hereby certify the foregoing Ordinance, being Ordinance No. _____ as passed by the City Council of the City of Maywood, signed by the Mayor of said Council, and attested by the City Clerk, at a regular meeting of the City Council held on the __ of _____ 2013, and that the same was passed by the following vote, to wit:

AYES:

NAYS:

ABSENT:

ABSTAINED:

ATTACHMENT 2

Section VI.D.7 of the New MS4 Permit

Pollutant-Generating Activity	BMP Narrative Description
Parking/ Storage Area Maintenance	Implementation of effective parking/ storage area designs and housekeeping/ maintenance practices
Storm water Conveyance System Maintenance Practices	Implementation of proper conveyance system operation and maintenance protocols
Pollutant-Generating Activity	**BMP Narrative Description from Regional Water Board Resolution No. 98-08**
Sidewalk Washing	**1.** Remove trash, debris, and free standing oil/grease spills/leaks (use absorbent material, if necessary) from the area before washing; and **2.** Use high pressure, low volume spray washing using only potable water with no cleaning agents at an average usage of 0.006 gallons per square feet of sidewalk area.
Street Washing	Collect and divert wash water to the sanitary sewer – publically owned treatment works (POTW). Note: POTW approval may be needed.

g. Significant Ecological Areas (SEAs)

See VI.D.6.e.ii.3.

h. Progressive Enforcement

Each Permittee shall implement its Progressive Enforcement Policy to ensure that Industrial / Commercial facilities are brought into compliance with all storm water requirements within a reasonable time period. See Part VI.D.2 for requirements for the development and implementation of a Progressive Enforcement Policy.

7. Planning and Land Development Program

a. Purpose

i. Each Permittee shall implement a Planning and Land Development Program pursuant to Part VI.D.7.b for all New Development and Redevelopment projects subject to this Order to:

(1) Lessen the water quality impacts of development by using smart growth practices such as compact development, directing development towards existing communities via infill or redevelopment, and safeguarding of environmentally sensitive areas.

(2) Minimize the adverse impacts from storm water runoff on the biological integrity of Natural Drainage Systems and the beneficial uses of water

bodies in accordance with requirements under CEQA (Cal. Pub. Resources Code § 21000 et seq.).

(3) Minimize the percentage of impervious surfaces on land developments by minimizing soil compaction during construction, designing projects to minimize the impervious area footprint, and employing Low Impact Development (LID) design principles to mimic predevelopment hydrology through infiltration, evapotranspiration and rainfall harvest and use.

(4) Maintain existing riparian buffers and enhance riparian buffers when possible.

(5) Minimize pollutant loadings from impervious surfaces such as roof tops, parking lots, and roadways through the use of properly designed, technically appropriate BMPs (including Source Control BMPs such as good housekeeping practices), LID Strategies, and Treatment Control BMPs.

(6) Properly select, design and maintain LID and Hydromodification Control BMPs to address pollutants that are likely to be generated, reduce changes to pre-development hydrology, assure long-term function, and avoid the breeding of vectors[25].

(7) Prioritize the selection of BMPs to remove storm water pollutants, reduce storm water runoff volume, and beneficially use storm water to support an integrated approach to protecting water quality and managing water resources in the following order of preference:

(a) On-site infiltration, bioretention and/or rainfall harvest and use.

(b) On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit.

b. Applicability

i. New Development Projects

(1) Development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, prior to completion of the project(s), are:

(a) All development projects equal to 1 acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area

(b) Industrial parks 10,000 square feet or more of surface area

(c) Commercial malls 10,000 square feet or more surface area

(d) Retail gasoline outlets 5,000 square feet or more of surface area

(e) Restaurants (SIC 5812) 5,000 square feet or more of surface area

[25] Treatment BMPs when designed to drain within 96 hours of the end of rainfall minimize the potential for the breeding of vectors. See California Department of Public Health *Best Management Practices for Mosquito Control in California* (2012) at http://www.westnile.ca.gov/resources.php

V1.0.7

(f) Parking lots 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces

(g) Street and road construction of 10,000 square feet or more of impervious surface area shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets[26] (December 2008 EPA-833-F-08-009) to the maximum extent practicable. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

(h) Automotive service facilities (SIC 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) 5,000 square feet or more of surface area

(i) Redevelopment projects in subject categories that meet Redevelopment thresholds identified in Part VI.D.6.b.ii (Redevelopment Projects) below

(j) Projects located in or directly adjacent to, or discharging directly to a Significant Ecological Area (SEA), where the development will:

(i) Discharge storm water runoff that is likely to impact a sensitive biological species or habitat; and

(ii) Create 2,500 square feet or more of impervious surface area

(k) Single-family hillside homes. To the extent that a Permittee may lawfully impose conditions, mitigation measures or other requirements on the development or construction of a single-family home in a hillside area as defined in the applicable Permittee's Code and Ordinances, each Permittee shall require that during the construction of a single-family hillside home, the following measures are implemented:

(i) Conserve natural areas

(ii) Protect slopes and channels

(iii) Provide storm drain system stenciling and signage

(iv) Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability

(v) Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

ii. Redevelopment Projects

(1) Redevelopment projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, prior to completion of the project(s), are:

(a) Land-disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area

[26] http://water.epa.gov/infrastructure/greeninfrastructure/index.cfm

on an already developed site on development categories identified in Part VI.D.6.c. (New Development/Redevelopment Performance Criteria).

(b) Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction storm water quality control requirements, the entire project must be mitigated.

(c) Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction storm water quality control requirements, only the alteration must be mitigated, and not the entire development.

(i) Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

(ii) Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

(d) In this section, Existing Development or Redevelopment projects shall mean all discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Order. Projects that have been deemed complete within 90 days of adoption of the Order are not subject to the requirements Section 7.c. For Permittee's projects the effective date shall be the date the governing body or their designee approves initiation of the project design.

Feb. 8, 2013

(e) Specifically, the Newhall Ranch Project Phases I and II (a.k.a. the Landmark and Mission Village projects) are deemed to be an existing development that will at a minimum, be designed to comply with the Specific LID Performance Standards attached to the Waste Discharge Requirements (Order No. R4-2012-0139). All subsequent phases of the Newhall Ranch Project constructed during the term of this Order shall be subject to the requirements of this Order.

c. New Development/ Redevelopment Project Performance Criteria

I. Integrated Water Quality/Flow Reduction/Resources Management Criteria

(1) Each Permittee shall require all New Development and Redevelopment projects (referred to hereinafter as "new projects") identified in Part VI.D.7.b to control pollutants, pollutant loads, and runoff volume emanating from the project site by: (1) minimizing the impervious surface area and (2) controlling runoff from impervious surfaces through infiltration, bioretention and/or rainfall harvest and use.

(2) Except as provided in Part VI.D.7.c.ii. (Technical Infeasibility or Opportunity for Regional Ground Water Replenishment), Part VI.D.7.d.i (Local Ordinance Equivalence), or Part VI.D.7.c.v (Hydromodification), below, each Permittee shall require the project to retain on-site the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:

(a) The 0.75-inch, 24-hour rain event or

(b) The 85th percentile, 24-hour rain event, as determined from the Los Angeles County 85th percentile precipitation isohyetal map, *whichever is greater.*

(3) Bioretention and biofiltration systems shall meet the design specifications provided in Attachment H to this Order unless otherwise approved by the Regional Water Board Executive Officer.

(4) When evaluating the potential for on-site retention, each Permittee shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use.

II. Alternative Compliance for Technical Infeasibility or Opportunity for Regional Ground Water Replenishment

(1) In instances of technical infeasibility or where a project has been determined to provide an opportunity to replenish regional ground water supplies at an offsite location, each Permittee may allow projects to comply with this Order through the alternative compliance measures as described in Part VI.D.7.c.iii.

(2) To demonstrate technical infeasibility, the project applicant must demonstrate that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:

(a) The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv on-site.

(b) Locations where seasonal high ground water is within 5 to 10 feet of the surface,

(c) Locations within 100 feet of a ground water well used for drinking water,

(d) Brownfield development sites where infiltration poses a risk of causing pollutant mobilization,

(e) Other locations where pollutant mobilization is a documented concern[27],

(f) Locations with potential geotechnical hazards, or

(g) Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the on-site volume retention requirement.

(3) To utilize alternative compliance measures to replenish ground water at an offsite location, the project applicant shall demonstrate *(i)* why it is not advantageous to replenish ground water at the project site, *(ii)* that ground water can be used for beneficial purposes at the offsite location, and *(iii)* that the alternative measures shall also provide equal or greater water quality benefits to the receiving surface water than the Water Quality/Flow Reduction/Resource Management Criteria in Part VI.D.c.i.

III. Alternative Compliance Measures

When a Permittee determines a project applicant has demonstrated that it is technically infeasible to retain 100 percent of the SWQDv on-site, or is proposing an alternative offsite project to replenish regional ground water supplies, the Permittee shall require one of the following mitigation options:

(1) On-site Biofiltration

(a) If using biofiltration due to demonstrated technical infeasibility, then the new project must biofiltrate 1.5 times the portion of the SWQDv that is not reliably retained on-site, as calculated by Equation 1 below.

Equation 1:

$$Bv = 1.5 * [SWQDv - Rv]$$

Where:

Bv = biofiltration volume

[27] Pollutant mobilization is considered a documented concern at or near properties that are contaminated or store hazardous substances underground.

SWQDv = the storm water runoff from a 0.75 inch, 24-hour storm or the 85th percentile storm, *whichever is greater.*

Rv = volume reliably retained on-site

(b) Conditions for On-site Biofiltration

(i) Biofiltration systems shall meet the design specifications provided in Attachment H to this Order unless otherwise approved by the Regional Water Board Executive Officer.

(ii) Biofiltration systems discharging to a receiving water that is included on the Clean Water Act section 303(d) list of impaired water quality-limited water bodies due to nitrogen compounds or related effects shall be designed and maintained to achieve enhanced nitrogen removal capability. See Attachment H for design criteria for underdrain placement to achieve enhanced nitrogen removal.

(2) Offsite Infiltration

(a) Use infiltration or bioretention BMPs to intercept a volume of storm water runoff equal to the SWQDv, less the volume of storm water runoff reliably retained on-site, at an approved offsite project, and

(b) Provide pollutant reduction (treatment) of the storm water runoff discharged from the project site in accordance with the Water Quality Mitigation Criteria provided in Part VI.D.7.c.iv.

(c) The required offsite mitigation volume shall be calculated by Equation 2 below and equal to:

Equation 2:

$$Mv = 1.0 * [SWQDv - Rv]$$

Where:

Mv = mitigation volume

SWQDv = runoff from the 0.75 inch, 24-hour storm event or the 85th percentile storm, *whichever is greater*

Rv = the volume of storm water runoff reliably retained on-site.

(3) Ground Water Replenishment Projects

Permittees may propose, in their Watershed Management Program or EWMP, regional projects to replenish regional ground water supplies at offsite locations, provided the groundwater supply has a designated beneficial use in the Basin Plan.

(a) Regional groundwater replenishment projects must use infiltration, ground water replenishment, or bioretention BMPs to intercept a volume of storm water runoff equal to the SWQDv for new development and redevelopment projects, subject to Permittee conditioning and approval for the design and implementation of post-construction controls, within the approved project area, and

(b) Provide pollutant reduction (treatment) of the storm water runoff discharged from development projects, within the project area, subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution in accordance with the Water Quality Mitigation Criteria provided in Part VI.D.7.c.iv.

(c) Permittees implementing a regional ground water replenishment project in lieu of onsite controls shall ensure the volume of runoff captured by the project shall be equal to:

Equation 2:

$$Mv = 1.0 \cdot [SWQDv - Rv]$$

Where:

Mv = mitigation volume

SWQDv = runoff from the 0.75 inch, 24-hour storm event or the 85th percentile storm, whichever is greater

Rv = the volume of storm water runoff reliably retained on-site.

(d) Regional groundwater replenishment projects shall be located in the same sub-watershed (defined as draining to the same HUC-12 hydrologic area in the Basin Plan) as the new development or redevelopment projects which did not implement on site retention BMPs . Each Permittee may consider locations outside of the HUC-12 but within the HUC-10 subwatershed area if there are no opportunities within the HUC-12 subwatershed or if greater pollutant reductions and/or ground water replenishment can be achieved at a location within the expanded HUC-10 subwatershed. The use of a mitigation, ground water replenishment, or retrofit project outside of the HUC-12 subwatershed is subject to the approval of the Executive Officer of the Regional Water Board.

(4) Offsite Project - Retrofit Existing Development

Use infiltration, bioretention, rainfall harvest and use and/or biofiltration BMPs to retrofit an existing development, with similar land uses as the new development or land uses associated with comparable or higher storm water runoff event mean concentrations (EMCs) than the new development.

Comparison of EMCs for different land uses shall be based on published data from studies performed in southern California. The retrofit plan shall be designed and constructed to:

(a) Intercept a volume of storm water runoff equal to the mitigation volume (Mv) as described above in Equation 2, except biofiltration BMPs shall be designed to meet the biofiltration volume as described in Equation 1 and

(b) Provide pollutant reduction (treatment) of the storm water runoff from the project site as described in the Water Quality Mitigation Criteria provided in Part VI.D.7.c.iv.

(5) Conditions for Offsite Projects

(a) Project applicants seeking to utilize these alternative compliance provisions may propose other offsite projects, which the Permittees may approve if they meet the requirements of this subpart.

(b) Location of offsite projects. Offsite projects shall be located in the same sub-watershed (defined as draining to the same HUC-12 hydrologic area in the Basin Plan) as the new development or redevelopment project. Each Permittee may consider locations outside of the HUC-12 but within the HUC-10 subwatershed area if there are no opportunities within the HUC-12 subwatershed or if greater pollutant reductions and/or ground water replenishment can be achieved at a location within the expanded HUC-10 subwatershed. The use of a mitigation, ground water replenishment, or retrofit project outside of the HUC-12 subwatershed is subject to the approval of the Executive Officer of the Regional Water Board.

(c) Project applicant must demonstrate that equal benefits to ground water recharge cannot be met on the project site.

(d) Each Permittee shall develop a prioritized list of offsite mitigation, ground water replenishment and/or retrofit projects, and when feasible, the mitigation must be directed to the highest priority project within the same HUC-12 or if approved by the Regional Water Board Executive Officer, the HUC-10 drainage area, as the new development project.

(e) Infiltration/bioretention shall be the preferred LID BMP for offsite mitigation or ground water replenishment projects. Offsite retrofit projects may include green streets, parking lot retrofits, green roofs, and rainfall harvest and use. Biofiltration BMPs may be considered for retrofit projects when infiltration, bioretention or rainfall harvest and use is technically infeasible.

(f) Each Permittee shall develop a schedule for the completion of offsite projects, including milestone dates to identify, fund, design, and construct the projects. Offsite projects shall be completed as soon as possible, and at the latest, within 4 years of the certificate of occupancy for the first project that contributed funds toward the

construction of the offsite project, unless a longer period is otherwise authorized by the Executive Officer of the Regional Water Board. For public offsite projects, each Permittee must provide in their annual reports a summary of total offsite project funds raised to date and a description (including location, general design concept, volume of water expected to be retained, and total estimated budget) of all pending public offsite projects. Funding sufficient to address the offsite volume must be transferred to the Permittee (for public offsite mitigation projects) or to an escrow account (for private offsite mitigation projects) within one year of the initiation of construction.

(g) Offsite projects must be approved by the Permittee and may be subject to approval by the Regional Water Board Executive Officer, if a third-party petitions the Executive Officer to review the project. Offsite projects will be publicly noticed on the Regional Water Board's website for 30 days prior to approval.

(h) The project applicant must perform the offsite projects as approved by either the Permittee or the Regional Water Board Executive Officer or provide sufficient funding for public or private offsite projects to achieve the equivalent mitigation storm water volume.

(6) Regional Storm Water Mitigation Program

A Permittee or Permittee group may apply to the Regional Water Board for approval of a regional or sub-regional storm water mitigation program to substitute in part or wholly for New and Redevelopment requirements for the area covered by the regional or sub-regional storm water mitigation program. Upon review and a determination by the Regional Water Board Executive Officer that the proposal is technically valid and appropriate, the Regional Water Board may consider for approval such a program if its implementation meets all of the following requirements:

(a) Retains the runoff from the 85th percentile, 24-hour rain event or the 0.75 inch, 24-hour rain event, whichever is greater;
(b) Results in improved storm water quality;
(c) Protects stream habitat;
(d) Promotes cooperative problem solving by diverse interests;
(e) Is fiscally sustainable and has secure funding; and
(f) Is completed in five years including the construction and start-up of treatment facilities.
(g) Nothing in this provision shall be construed as to delay the implementation of requirements for new and redevelopment, as approved in this Order.

(7) Water Quality Mitigation Criteria

(a) Each Permittee shall require all New Development and Redevelopment projects that have been approved for offsite mitigation or ground water replenishment projects as defined in Part VI.D.7.c.ii-iii to also provide treatment of storm water runoff from the project site. Each Permittee shall require these projects to design and implement post-construction storm water BMPs and control measures to reduce pollutant loading as necessary to:

(i) Meet the pollutant specific benchmarks listed in Table 11 at the treatment systems outlet or prior to the discharge to the MS4, and

(ii) Ensure that the discharge does not cause or contribute to an exceedance of water quality standards at the Permittee's downstream MS4 outfall.

(b) Each Permittee may allow the project proponent to install flow-through modular treatment systems including sand filters, or other proprietary BMP treatment systems with a demonstrated efficiency at least equivalent to a sand filter. The sizing of the flow through treatment device shall be based on a rainfall intensity of:

(i) 0.2 inches per hour, or

(ii) The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, *whichever is greater.*

Table 11. Benchmarks Applicable to New Development Treatment BMPs[28]

Conventional Pollutants

Pollutant	Suspended Solids mg/L	Total P mg/L	Total N mg/L		TKN mg/L	
Effluent Concentration	14	0.13	1.28		1.09	

Metals

Pollutant	Total Cd µg/L	Total Cu µg/L	Total Cr µg/L	Total Pb µg/L	Total Zn µg/L
Effluent Concentration	0.3	6	2.8	2.5	23

[28] The treatment control BMP performance benchmarks were developed from the median effluent water quality values of the six highest performing BMPs, per pollutant, in the storm water BMP database (http://www.bmpdatabase.org/, last visited September 25, 2012).

(c) In addition to the requirements for controlling pollutant discharges as described in Part VI.D.7.c.iii. and the treatment benchmarks described above, each Permittee shall ensure that the new development or redevelopment will not cause or contribute to an exceedance of applicable water quality-based effluent limitations established in Part VI.E pursuant to Total Maximum Daily Loads (TMDLs).

iv. Hydromodification (Flow/ Volume/ Duration) Control Criteria

Each Permittee shall require all New Development and Redevelopment projects located within natural drainage systems as described in Part VI.D.7.c.iv.(1)(a)(iii) to implement hydrologic control measures, to prevent accelerated downstream erosion and to protect stream habitat in natural drainage systems. The purpose of the hydrologic controls is to minimize changes in post-development hydrologic storm water runoff discharge rates, velocities, and duration. This shall be achieved by maintaining the project's pre-project storm water runoff flow rates and durations.

(1) Description

(a) Hydromodification control in natural drainage systems shall be achieved by maintaining the Erosion Potential (Ep) in streams at a value of 1, unless an alternative value can be shown to be protective of the natural drainage systems from erosion, incision, and sedimentation that can occur as a result of flow increases from impervious surfaces and prevent damage to stream habitat in natural drainage system tributaries (see Attachment J - Determination of Erosion Potential).

(ii) Hydromodification control may include one, or a combination of on-site, regional or sub-regional hydromodification control BMPs, LID strategies, or stream and riparian buffer restoration measures. Any in-stream restoration measure shall not adversely affect the beneficial uses of the natural drainage systems.

(iii) Natural drainage systems that are subject to the hydromodification assessments and controls as described in this Part of the Order, include all drainages that have not been improved (e.g., channelized or armored with concrete, shotcrete, or rip-rap) or drainage systems that are tributary to a natural drainage system, except as provided in Part VI.D.7c.iv.(1)(b)--Exemptions to Hydromodification Controls [see below]. The clearing or dredging of a natural drainage system does not constitute an "improvement."

(iv) Until the State Water Board or the Regional Water Board adopts a final Hydromodification Policy or criteria, Permittees shall implement the Hydromodification Control Criteria described in Part VI.D.7.c.iv.(1)(c) to control the potential adverse impacts of changes in hydrology that may result from new development and

GREEN STREETS POLICY DOCS

AGENDA REPORT
CITY OF MAYWOOD

DATE: JUNE 10, 2013

TO: HONORABLE MAYOR AND MEMBERS OF THE CITY COUNCIL

FROM: LILIAN MYERS, CITY MANAGER

BY: ELROY L. KIEPKE, ASSISTANT CITY ENGINEER

SUBJECT: ADOPTION OF GREEN STREETS POLICY FOR TRANSPORTATION CORRIDORS

RECOMMENDATION

That the City Council review the proposed Green Streets Policy (the "Policy") as presented by staff and either adopt the Policy or provide staff direction to amend the Policy and return it to the City Council for approval to implement the policy as identified in the new MS4 permit.

FISCAL IMPACT

The adoption of this proposed Policy will have no immediate fiscal impact on the City Budget. The proposed Policy would establish a practice to consider the feasibility of implementing Green Streets Best Management Practices ("BMPs") for City and private projects that result in the improvement of transportation corridors that pass through the City of Maywood.

LEGAL REVIEW

This report and the draft Policy have been reviewed by the City Attorney.

BACKGROUND

On November 8, 2012, the Regional Water Quality Control Board – Los Angeles Region, adopted the new Municipal Separate Storm Sewer System permit (MS4) which became effective December 28, 2012. This new MS4 permit made changes to the Planning and Land Development Program that seeks to have Cities evaluate the feasibility of Green Streets BMPs during the design phase of transportation corridors through the City. These changes are presented to you as a proposed policy for implementation by City staff during

the design of City Capital Projects and for private developments that make improvements to the transportation corridors that run through the City.

DISCUSSION

Cities adopt and implement policies in a number of situations, primarily in the implementation of the General Plan, but also in areas related to Engineering and Public Works. This proposed Policy is requested by the Regional Water Quality Control Board when improvements are made to the City's transportation corridors. For Maywood, this will probably be limited to the Slauson Avenue corridor and the Atlantic Boulevard corridor.

Green Streets

Beginning with a basic understanding of what Green Streets policies are, roads present many opportunities for green infrastructure application. One principle of green infrastructure involves reducing and treating stormwater close to its source. Urban transportation right-of-ways integrated with green techniques are often called "Green Streets".

Green Streets provide a source control for a main contributor of stormwater runoff and pollutant load. In addition, green infrastructure complements street facility upgrades, street aesthetic improvements, and urban tree canopy efforts that also make use of the right-of-way and allow it to achieve multiple goals and benefits. Using the right-of-way for treatment also links green with gray infrastructure by making use of the engineered conveyance of roads and providing connections to conveyance systems when needed.

With this basic understanding of what Green Streets accomplishes, it is staff's goal to present a Policy for consideration that will allow the City to consider the feasibility of implementing Green Streets where neighborhood conditions will support it and where the facility will enhance the Urban environment while also functionally treating storm water pollutants.

Attachments: 1) Proposed Green Streets Policy
2) Managing Wet Weather with Green Infrastructure Municipal Handbook Green Streets-33-F-08-009

ATTACHMENT 1
Proposed Green Streets Policy

Green Street Policy

Purpose

The City of Maywood, has established a policy on the implement green street Best Management Practices (BMPs) for transportation corridors associated with new and redevelopment street and roadway projects, including Capital Improvement Projects (CIPs). This policy is implemented to demonstrate compliance with the NPDES MS4 Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that provides many benefits including water quality improvement, groundwater replenishment, creation of attractive streetscapes, creation of greenbelts, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain, or detain stormwater runoff as well as a design element that creates attractive streetscapes.

Policy

A. Application. The City of Maywood shall require new private development and/or redevelopment streets and roadway projects and CIP projects conducted within the right-of-way of transportation corridors to incorporate green street BMPs where the BMPs will not lead to excessive maintenance or deterioration of the street improvements. Transportation corridors projects are major arterials as defined in the City of Maywood General Plan which add at least 10,000 square feet of impervious surface. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are maintained.

B. Amenities. The City of Maywood shall consider opportunities to replenish groundwater, create attractive streetscapes, and provide pedestrian and bicycle accessibility through new private development and redevelopment of streets and roadway projects and CIPs.

C. Guidance. The Department of Public Works shall use the City of Los Angeles Green Streets guidance, USEPA's *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets*[1], or equivalent guidance developed by the Department of Public Works for use in public and private developments.

D. Retrofit Scope. The City of Maywood shall use the City's Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the City Engineer based on the availability of adequate funding and the soils condition at the site that may lead to excessive maintenance or deterioration of the proposed improvements.

E. Training. The City of Maywood shall incorporate aspects of green streets into internal annual staff trainings.

[1] EPA-833-F-08-009, December 2008.

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF HUNTINGTON PARK)

I, ROCIO MARTINEZ, Acting City Clerk of the City of Huntington Park, California, do hereby certify that the following Resolution is a full, true, and correct copy of Resolution No. 2013-30 which was duly passed and adopted by the City Council of said City at a regular meeting of said City Council thereof, held on the 17th day of June, 2013 and which the original Resolution is on file in the Office of the City Clerk.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal this 31st day of July, 2013.

Rocio Martinez
Acting City Clerk

Resolution No. 2013-30

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF HUNTINGTON PARK APPROVING A GREEN STREETS POLICY

WHEREAS, the Municipal Separate Storm Sewer System (MS4) Permit (Order No. R-2012-0175) adopted by the California Regional Water Quality Control Board, Los Angeles Region on November 8, 2013 allows municipalities to comply with the requirements of Order No. R-2012-0175 through the preparation of a Watershed Management Program or an Enhanced Watershed Management Program.

WHEREAS, municipalities choosing to comply with the requirements of Order No. R-2012-0175 through the preparation of a Watershed Management Program are required to demonstrate that Green Street Policies are in place to specify the use of green street strategies for transportation corridors.

WHEREAS, the City of Huntington Park has elected to comply with the requirements of Order No. R-2012-0175 by preparing a Watershed Management Program in collaboration with the Cities of Bell, Bell Gardens, Commerce, Cudahy, Maywood, and Vernon.

WHEREAS, green Streets strategies are enhancements to street and road projects to improve the quality of storm water and urban runoff through the implementation of infiltration, bio-treatment, xeriscaping parkways and tree lined streets.

WHEREAS, on February 19, 2013, the City Council authorized the development of a Green Streets Policy for the City of Huntington Park.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF HUNTINGTON PARK, CALIFORNIA, HEREBY RESOLVES, DETERMINES AND ORDERS AS FOLLOWS:

Section 1. That the Public Works Department implement a Green Streets Policy for transportation corridors for publicly owned street and road projects that involve the reconstruction or addition of 10,000 square feet or more of impervious area. The USEPA's Managing Wet Weather with Green Infrastructure Municipal Handbook (December 2008 EPA-833-F-08-009) shall be followed to the maximum extent practicable.

Section 2. That the City Council of the City of Huntington Park does hereby direct the Public Works Department to plan for the use of Green Streets strategies as a means to better connect neighborhoods, better use the City's Rights of Ways, and enhance neighborhood livability.

Section 3. That routine maintenance including but not limited to: slurry seals, grind and overlay and reconstruction to maintain original line and grade are excluded from the Green Streets Policy.

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Section 4. That the Public Works Department shall incorporate aspects of green streets in the development of all capital improvement programs and to annually train staff in implementing the Green Streets Policy.

PASSED, APPROVED, AND ADOPTED this 17th day of June, 2013, by the following vote:

Mario Gomez, Mayor

ATTEST:

Rocio Martinez, Acting City Clerk

ATTEST:

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF HUNTINGTON PARK)

I, Rocio Martinez, Acting City Clerk of the City of Huntington Park, California, do hereby certify that the whole number of members of the City Council of said City is five; that the foregoing Resolution, being Resolution No. 2013-30, was duly passed and adopted by the City Council of the City of Huntington Park, approved and signed by the Mayor of said City, and attested to by the Acting City Clerk of said City, all at a regular meeting of the City Council held on the 17th day of June, 2013, and that the same was so passed and adopted by the following vote, to wit:

AYES: Council Members – Amezquita, Perez, Hernandez, Macias, Gomez

NOES: Council Members – None

ABSENT: Council Members – None

ABSTAIN: Council Members – None

Rocio Martinez
Acting City Clerk

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF HUNTINGTON PARK)

I, ROCIO MARTINEZ, Acting City Clerk of the City of Huntington Park, California, do hereby certify that the following Ordinance is a full, true, and correct copy of Ordinance No. 912-NS which was duly passed and adopted by the City Council of said City at a regular meeting of said City Council thereof, held on the 1st day of July, 2013 and which the original Ordinance is on file in the Office of the City Clerk.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal this 31st day of July, 2013.

Rocio Martinez
Acting City Clerk

ORDINANCE NO. 912-NS

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF HUNTINGTON PARK, CALIFORNIA, AMENDING THE CITY OF HUNTINGTON PARK'S MUNICIPAL CODE TITLE 7, PUBLIC WORKS, CHAPTER 9, STORM WATER MANAGEMENT AND DISCHARGE, TO INCLUDE LOW IMPACT DEVELOPMENT (LID) STRATEGIES ON PROJECTS THAT REQUIRE BUILDING, GRADING AND ENCROACHMENT PERMITS

WHEREAS, the City is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity; and

WHEREAS, the federal Clean Water Act establishes Regional Water Quality Control Boards in order to prohibit the discharge of pollutants in stormwater runoff to waters of the United States; and

WHEREAS, the City is a permittee under the California Regional Water Quality Control Board, Los Angeles Region Order No R4-2012-0175, effective as of December 28, 2012 which establishes Waste Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4; and

WHEREAS, Order No. R4-2012-0175 contains requirements for municipalities to establish an Low Impact Development (LID) Ordinance in order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program; and

WHEREAS, the Regional Board has adopted Total Maximum Daily Loads (TMDLs) for pollutants which are numerical limits that must be achieved effectively through LID implementation; and

WHEREAS, the City has the authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity that might degrade waters of the State; and

WHEREAS, the City is committed to comply with Order No. R4-2012-0175 through the implementation of a Watershed Management Program that protects water quality and water supply by employing watershed-based approaches that balance environmental and economic considerations; and

WHEREAS, urbanization has led to increased impervious surface areas resulting in increased water runoff and less percolation to groundwater aquifers causing the transport of pollutants to downstream receiving waters; and

WHEREAS, the City needs to take a new approach to managing stormwater and urban runoff while mitigating the impacts of development and urbanization; and

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WHEREAS, LID is widely recognized as a sensible approach to managing the quantity and quality of stormwater runoff by setting standards and practices to maintain or restore the natural hydrologic characteristics of a development site, reduce off-site runoff, improve water quality, and provide groundwater recharge; and

WHEREAS, it is the intent of the City to require stormwater and rainwater LID strategies for all Development and Redevelopment projects as defined under "Applicability."

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF HUNTINGTON PARK, CALIFORNIA, DOES ORDAIN AS FOLLOWS:

Section 1: The above recitals are true and correct and incorporated herein.

Section 2: Section 7.9.01 of the Huntington Park Municipal Code entitled "Definitions" is hereby amended to read in its entirety as follows:

Section 7.9.01 Definitions.

When used in this Chapter the following words and phrases shall have the following meaning. If the definition of any term contained in this chapter conflicts with the definition of the same term in Order No. R4-2012-0175, then the definition contained in Order No. R4-2012-0175 shall govern:

"Act" means the Federal Water Pollution Control Act, also known as, The Clean Water Act, as amended, 33 U.S.C. 1251.

"Automotive Service Facility" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5511, 5541, 7532-7534, and 7536-7539 provided that these facilities have no outside activities or materials that may be exposed to stormwater (Order No. R4-2012-0175).

"Basin Plan" means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments (Order No. R4-2012-0175).

"Best Management Practice (BMP)" means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water (Order No. R4-2012-0175).

"Biofiltration" means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the

equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bios Wales (Order No. R4-2012-0175).

"Bios wale" means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes (Order No. R4-2012-0175).

"City" means the City of Huntington Park.

"Clean Water Act (CWA)" means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

"Code of Federal Regulations (CFR)" means the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Government of the United States.

"Commercial Development" means any development on private land that is not heavy industrial or residential. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities; mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes (Order No. R4-2012-0175).

"Commercial Malls" means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers (Order No. R4-2012-0175).

"Construction Activity" means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that result in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan (Order No. R4-2012-0175).

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"Control" means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity of activities (Order No. R4-2012-0175).

"County" means the Los Angeles County Department of Public Works.

"Development" means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Order No. R4-2012-0175).

"Directly Adjacent" means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area (Order No. R4-2012-0175).

"Discharge" means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

"Disturbed Area" means an area that is altered as a result of clearing, grading, and/or excavation (Order No. R4-2012-0175).

"Flow-through treatment BMPs" means a modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain (Order No. R4-2012-0175).

"Full Capture System" means any single device or series of devise, certified by the Executive Officer, that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate Q resulting from a one-year, one-hour storm in the sub-drainage area (Order No. R4-2012-0175).

"General Construction Activities Storm Water Permit (GCASP)" means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions (Order No. R4-20120-0175).

"Green Roof" means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain (Order No. R4-2012-0175).

"Hazardous material" means any material defined as hazardous by Chapter 6.95 of the California Health and Safety Code or any substantial designated pursuant to 40 CFR 302. This also includes any unlisted hazardous substance that is a solid waste, as defined in

40 CFR 261.4(b), or is a hazardous substance under Section 101(14) of the Act, it exhibits any of the characteristics identified in 40 CFR 261.20 through 261.24.

"Hazardous waste" means a hazardous material that is to be discharged, discarded, recycled and/or processed.

"Hillside" means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes (Order No. R4-2012-0175).

"Illicit connection" means any device through or by which illicit discharges are made into the City's storm drain system, including, but not limited to, floor drains, pipes or any fabricated or natural conduits.

"Illicit discharge" means any discharge of any substance or material to the City's storm drain system that is not composed entirely of storm water runoff, except for the following:

(1) Any discharge regulated under a NPDES permit issued to the discharger and administered by the State of California under the authority of the United States Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit and other applicable laws or requirements;

(2) Discharges from the following activities, when properly managed: water line flushing and other discharges from potable water sources, landscape irrigation and lawn watering, irrigation waters, diverted stream flows, rising ground water, uncontaminated pumped ground water, foundation and footing drains, water from crawl space pumps, residential air conditioning condensation, springs, dechlorinated swimming pool discharges, flows from riparian habitats and wetlands, and fire fighting activities;

(3) Other discharges specifically permitted by law.

"Industrial/Commercial Facility" means any facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, and any facility involved and/or used in providing professional and non-professional services. This category of facilities includes, but is not limited to, any facility defined by either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS). Facility ownership (federal, state, municipal, private) and profit motive of the facility are not factors in this definition (Order No. R4-2012-0175).

"Industrial Park" means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have officers and light industry (Order No. R4-2012-0175).

"Infiltration BMP" means a LIP BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement (Order No. R4-2012-0175).

"Low Impact Development (LID)" consists of building and landscape features designed to retain or filter stormwater runoff (Order No. R4-2012-0175).

"Municipal Separate Storm Sewer System (MS4)" means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) Designed or used for collecting or conveying stormwater;

(iii) Which is not a combined sewer; and

(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR Section 122.2. (40 CFR Section 122.26(b)(8) (Order No. R4-201200175).

"National Pollutant Discharge Elimination System (NPDES)" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA Section 307, 403, 318, and 405. The term includes an "approved program" (Order No. R4-2012-0175).

"Natural Drainage System" means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system (Order No. R4-2012-0175).

"New development" means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision (Order No. R4-2012-0175).

"Non-Stormwater Discharge" means any discharge to a municipal storm drain system that is not composed entirely of stormwater (Order No. R4-2012-0175).

"Outfall" means a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances with connect segments of the same stream or other waters of the United States and are used to convey waters of the United States. (40 CFR Section 122.26(b)(9)) (Order No. R4-2012-0175).

"Parking Lot" means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces (Order No. R4-2012-0175).

"Pollutant" means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Section 13373 (Order No. R4-2012-0175).

"Project" means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code Section 21065) (Order No. R4-2012-0175).

"Rainfall Harvest and Use" means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department (Order No.R4-2012-0175).

"Receiving Water" means "water of the United States" into which waste and/or pollutants are or may be discharged (Order No. R4-2012-0175).

"Redevelopment" means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Order No. R4-2012-0175).

"Regional Board" means the California Regional Water Quality Control Board Los Angeles Basin.

"Restaurant" means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812) (Order No. R4-2012-0175).

"Retail Gasoline Outlet" means any facility engaged in selling gasoline and lubricating oils (Order No. R4-2012-0175).

"Routine Maintenance" includes, but is not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regarding dirt or gravel roadways and shoulders and performing ditch cleanouts.
4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.

5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.
** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Order No. R4-2012-0175).

"Runoff" shall mean the same as "Urban Runoff".

"Significant Ecological Areas (SEAs)" means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.
5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (Order No. R4-2012-0175).

"Site" means land or water where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity (Order No. R4-2012-0175).

"Standard Industrial Code (SIC)" means a numbering system developed by the United States Government, Office of Management and Budget, for the classification of establishments by the type of activity in which they are engaged.

"Storm Drain System" means any facility or any parts of the facility, including streets, gutters, conduits, natural or artificial rains, channels and watercourse that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the City.

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"Storm Water or Stormwater" means runoff and drainage related to precipitation events (pursuant to 40 CFR Section 122.26(b)(13); 55 Fed. Reg. 47990, 47995 (Nov. 16, 1990)).

"Urban Runoff" means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial or industrial activities involving the use of potable and non-potable water.

"U.S. EPA" means United States Environmental Protection Agency.

Section 3: Section 7.9.04 of the Huntington Park Municipal Code is hereby entitled "Low Impact Development Measures for New Development and/or Redevelopment Planning and Construction Activities" and is hereby amended to read in its entirety as follows:

Section 7.9.04 Low Impact Development Measures for New Development and/or Redevelopment Planning and Construction Activities.

A. **Objective.** The provisions of this Section establish requirements for construction activities and facility operations of Development and Redevelopment projects to comply with Order No. R4-2012-0175, lessen the water quality impacts of development by using smart growth practices, and integrate Low Impact Development (LID) practices and standards for stormwater pollution mitigation through means of infiltration, evapotranspiration, biofiltration, and rainfall harvest and use. LID practices shall be inclusive of all new development and/or redevelopment requirements as further defined in Section7-9.04.C.

B. **Scope.** This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the City to further define and adopt stormwater pollution control measures, and to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, grant waivers from the LID requirements, and collect funds for projects that are granted waivers. Except as otherwise provided herein, the City shall administer, implement and enforce the provisions of this Section.

C. **Applicability.** Development projects subject to City conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, prior to completion of the project(s) are:

1. All development projects equal to one acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.
2. Industrial parks 10,000 square feet or more of surface area.
3. Commercial malls 10,000 square feet or more of surface area.
4. Retail gasoline outlets with 5,000 square feet or more of surface area.
5. Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.
6. Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

7. Streets and roads construction of 10,000 square feet or more of impervious surface area. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects.
8. Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511 5541, 7532-7534, and 7536-7539) 5,000 square feet or more of surface area.
9. Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:
    a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and
    b. Create 2,500 square feet or more of impervious surface area
10. Single-family homes.
11. Redevelopment Projects:
    a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.
    b. Where Redevelopment results in an alteration to more than fifty percent (50%) of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.
    c. Where Redevelopment results in an alteration of less than fifty percent (50%) of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.
    d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.
    e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

D. **Specific Requirements:** The Site for every project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest.
    1. A new single-family home development shall include mitigation measures to:
        a. Conserve natural areas;

b. Protect slopes and channels;
c. Provide storm drain system stenciling and signage,
d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and
e. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

2. Street and road construction of 10,000 square feet or more of impervious surface shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

3. The reminder of projects not covered above shall prepare a LID Implementation Plan to comply with the following:
   a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:
      i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or
      ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.
   b. Minimize hydromodification impacts to natural drainage systems as defined in Order No. R4-2012-0175.
   c. To demonstrate technical infeasibility, the project applicant must demonstrate that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:
      i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or biorention BMPs in retaining the SWQDv onsite.
      ii. Locations where seasonal high groundwater is within five to ten feet of surface grade;
      iii. Locations within 100 feet of a groundwater well used for drinking water;
      iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;
      v. Locations with potential geotechnical hazards;
      vi. Smart growth and infill or redevelopment locations where the density and/or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

d. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in Order No. R4-2012-0175.

e. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading BMPs must be selected and designed to meet pollutant-specific benchmarks as required per Order No. R4-2012-0175. Flow-through BMPs may be used to treat the remaining SWQDvs and must be sized based on a rainfall intensity of:

   i. 0.2 inches per hour, or
   ii. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

Section 4: Section 7.9.08 of the Huntington Park Municipal Code is hereby entitled "Low Impact Development Plan" and amended to read in its entirety as follows:

7-9.08 Low Impact Development Plan.

(a) Prior to the submittal of an application for approval of new construction or redevelopment by the Planning Department and/or the Building and Safety Department the applicant shall submit an LID Plan to the City Engineer and/or Building Official.

(b) The City Engineer and/or Building Official shall approve or disapprove the plan within fourteen (14) business days of submittal, or within fourteen (14) business days of approval of the development project by the Planning Commission, where such approval is required. If the plan is disapproved, the reasons for disapproval shall be given in writing to the developer. Any plan disapproved by the City Engineer and/or Building Official or his or her designee may be revised by the developer and resubmitted for approval. A resubmitted plan will be approved or disapproved within fourteen (14) business days of submission. No building permit shall be issued until an LID Implementation plan has been approved by the City Engineer and/or Building Official.

Section 5: Section 7.9.08.01 of the Huntington Park Municipal Code is hereby deleted in its entirety.

Section 6: Section 7.9.08.02 of the Huntington Park Municipal Code is hereby entitled "Low Impact Development Implementation Plan Requirements" and is hereby amended to read in its entirety as follows:

7-9.08.02 Low Impact Development Implementation Plan Requirements.

The Low Impact Development Implementation Plan shall be prepared by a California registered Civil Engineer, Architect, Landscape Architect knowledgeable about storm water management issues and shall evaluate and propose the proper BMPs to address each

source of pollutants identified by the project evaluation. As a minimum the designer shall provide BMPs meeting the requirements of Section 7-9.04.

Section 7: Section 7.9.03 of the Huntington Park Municipal Code is hereby entitled "Project specific issues to be addressed by the LID Implementation Plan" and is hereby amended to read in its entirety as follows:

7-9.08.03 Project specific issues to be addressed by the LID Implementation Plan.

The LID Implementation Plan shall address issues unique to the following occupancies:

(a) Automotive Repair Shops.

a. Properly Designed Fueling Areas. Fueling facilities for a new automotive repair project shall be constructed in compliance with the Service Station Managers Association guidelines.

b. Property Design of Outside Material Storage Areas. Areas used for storage of vehicles under repair or for storage of spare parts shall be designed to minimize, to the greatest extent practicable, the exposure of stored parts or vehicles to rainfall.

c. Property Design of Repair/Maintenance Bays. Repair/maintenance bays shall be designed to allow for the collection of all fluid spills and floor washdown runoff and provide for the proper discharge of these fluids to the sanitary sewer system. Automotive fluids and greases shall not be discharged to areas exposed to rainfall.

d. Properly Designed Loading and Unloading Areas. Loading and unloading of materials and vehicles shall be handled to limit the discharge of pollutants to the public streets or storm drain system. Spill prevention and cleanup materials shall be maintained on the site at all times and the staff at the site shall be trained in the proper use of such materials and their use.

(b) Commercial Developments.

a. Proper Design for Outside Material Storage Areas. Areas used for storage of raw materials or for storage of finished products or merchandise shall be designed to minimize, to the greatest extent practicable, the exposure of stored materials to rainfall.

b. Proper Design for Repair/Maintenance Bays. Repair/maintenance bays shall be designed for the proper discharge of fluids to the sanitary sewer system. Automotive fluids and greases shall not be discharged to areas exposed to rainfall.

c. Proper Design for Loading and Unloading Areas. Loading and unloading of materials and equipment shall be handled to lit the discharge of pollutants to the storm drain system. Spill prevention and cleanup materials shall be maintained on site and at all times and staff shall be trained in its proper use of such materials.

(c) Restaurants (SIC 5812).

a. Properly Designed Equipment/Accessory Wash Areas. Projects in this SIC shall be designed with an area for the washing of floor mats and other large equipment that is connected to the sanitary sewer system. The area shall be roofed to prevent the entrance of rainwater or shall be designed to activate a valve to transfer the discharge from the storm drain to the

sanitary sewer when mats or equipment are being washed. The operator may, upon submission of substantial proof, eliminate the wash area if no floor mats or equipment will be washed outside.

b. Proper Design for Outside Storage Areas. Projects shall be designed to limit, to the greatest extent practicable, the exposure to rainfall or rainwater runoff for materials stored outside of the building. This provision shall apply to, but is not limited to the storage of fryer fat stored for recycling, cardboard or paper storage intended for recycling, and waste food products stored for recycling.

(d) Retail Gasoline Outlets.

a. Proper Design for Fueling Areas. Fueling facilities for a new retail gasoline outlet project shall be constructed in compliance with the Service Station Managers Association Guidelines.

b. Proper Design for Outside Materials Storage Areas. Areas used for storage of products or merchandise shall be designed to minimize, to the greatest extent practicable, the exposure of stored materials to rainfall.

c. Proper Design for Repair/Maintenance Bays. Repair/maintenance bays shall be designed to allow for the collection of all fluid spills and floor washdown runoff and provide for the proper discharge of these fluids to the sanitary sewer system. Automotive fluids and greases shall not be discharged to areas exposed to rainfall.

Section 8: Section 7.9.08. 04 of the Huntington Park Municipal Code is hereby entitled "Review of the Low Impact Development Implementation Plan by the City" and is hereby amended to read in its entirety as follows:

7-9.08.04 Review of the Low Impact Development Implementation Plan by the City.

The City shall review the LID Implementation Plan to assure that is complies with all elements of Order No. R4-2012-0175 and that the applicant has identified the BMPs necessary to protect the City's MS4 System. The City Engineer or his designee shall identify any deficiencies in the plan and return it to the applicant for modification. When the plan is found to comply with the provisions of this section, the grading and/or building permits may be issued for the project. If, during construction, the plan is found to be deficient by the City, the applicant shall amend the plan to address the deficiency.

Section 9: Section 7.9.08.05 of the Huntington Park Municipal Code is hereby entitled "Filing of the Low Impact Development Implementation Plan" and is hereby amended to read in its entirety as follows:

7-9.08.05 Filing of the Low Impact Development Implementation Plan.

Upon approval and acceptance of the LID Implementation Plan by the City, the applicant shall file a signed original of the plan with the County Recorder. The document shall contain sufficient legal description to identify the property covered and shall be binding upon the applicant and all successors in interest to the property. The format shall be provided by the County and shall only be amended or removed from title with the consent of the City.

Section 10: Section 7.9.08.06 of the Huntington Park Municipal Code is hereby entitled "Waiver" and is hereby amended to read in its entirety as follows:

7-9.08.06 Waiver.

If after evaluating the issues related to a project, the applicant determines that an LID Implementation Plan is infeasible for their project, a waiver may be applied for. The waiver for infeasibility shall only be granted when all structural or treatment BMPs have been considered and rejected as infeasible. All of the following situations shall apply to justify an impracticability waiver:

(a) Extreme limitations of space for treatment on a redevelopment project;
(b) Unfavorable or unstable soils conditions at a site to attempt infiltration;
(c) Risk of groundwater contamination because a known unconfined aquifer lies beneath the site or an existing or potential underground source of drinking water is less than ten (10) feet from the soil surface.

The Regional Water Quality Control Board-Los Angeles, must approve the Waiver. Any waivers granted for impracticality shall be filed as required by Section 7-9.08.05.

Section 11: Section 7.9.11 of the Huntington Park Municipal Code is hereby entitled "Public Education" and is hereby amended to read in its entirety as follows:

7-9.11 Public Education.

The Public Works Department shall conduct an informational program to educate the public about the dangers of stormwater and urban runoff pollution and the means of controlling such pollution. The program shall educate residents and business persons who operate within the City about the contents of this chapter.

Section 12: This Ordinance shall take effect and be in force thirty one (31) days after its passage.

PASSED, APPROVED, AND ADOPTED at a regular meeting of the City Council of the City of Huntington Park, on this 1st day of July, 2013.

Mario Gomez, Mayor

ATTEST:

Rocio Martinez, Acting City Clerk

ATTEST:

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF HUNTINGTON PARK)

I, Rocio Martinez, Acting City Clerk of the City of Huntington Park, California, do hereby certify that the whole number of members of the City Council of said City is five; that the foregoing Ordinance, being Ordinance No. 912–NS, was duly passed and adopted by the City Council of the City of Huntington Park, approved and signed by the Mayor of said City, and attested to by the Acting City Clerk of said City, all at a regular meeting of the City Council held on the 1st day of July, 2013, and that the same was so passed and adopted by the following vote, to wit:

AYES: Council Members – Amezquita, Perez, Hernandez Macias, Gomez

NOES: Council Members – None

ABSENT: Council Members – None

ABSTAIN: Council Members – None

Rocio Martinez
Acting City Clerk

September 25, 2013

Los Angeles River Upper Reach 2 Sub-watershed Management Group
(See Distribution List)

APPROVAL OF NOTIFICATION OF INTENT (NOI) TO DEVELOP A WATERSHED MANAGEMENT PROGRAM (WMP), PURSUANT TO THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear Los Angeles River Upper Reach 2 Sub-watershed Management Group Participants:

Regional Board staff received and reviewed the NOI to prepare a WMP that the Los Angeles River Upper Reach 2 Sub-watershed Management Group submitted to the Regional Board on June 27, 2013. According to the NOI, the participants in the Los Angeles River Upper Reach 2 Sub-watershed Management Group are the Los Angeles County Flood Control District, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. Upon review, Regional Board staff determined the NOI meets the notification requirements of Part VI.C of Order No. R4-2012-0175, *Waste Discharge Requirements for MS4 Discharges within the Coastal Watersheds of Los Angeles County, except those Discharges Originating from the City of Long Beach* (hereafter, Order).

As you are aware, the Order allows permittees the option to submit to the Regional Board for approval an NOI to prepare a WMP. Preparing a WMP allows permittees to implement the requirements of the Order on a watershed scale through customized strategies, control measures, and best management practices (BMPs). Implementing a WMP allows permittees to address the highest watershed priorities, including complying with the requirements of Part V.A (Receiving Water Limitations), Part VI.E (Total Maximum Daily Load Provisions) and Attachments L through R, by customizing the control measures in Parts III.A (Prohibitions – Non-Storm Water Discharges) and VI.D (Minimum Control Measures) of the Order.

The Los Angeles River Upper Reach 2 Sub-watershed Management Group must submit to the Regional Board for review and approval a draft WMP for the Los Angeles River Upper Reach 2 Sub-watershed no later than June 28, 2014. Until Regional Board staff approves the Los Angeles River Upper Reach 2 Sub-watershed Management Group

WMP, each Los Angeles River Upper Reach 2 Sub-watershed Management Group participant must do the following:

1. Continue to implement all the watershed control measures in their corresponding storm water management programs, including actions within each of the six categories of minimum control measures consistent with Title 40 Code of Federal Regulations Section 122.26(d)(2)(iv) and Part VI.C.4.d.i of the Order.
2. Continue to implement watershed control measures to eliminate non-storm water discharges through the MS4 that are a source of pollutants to receiving waters consistent with Clean Water Act Section 402(p)(3)(B)(ii) and Part VI.C.4.d.ii of the Order.
3. Implement watershed control measures, including those identified in existing TMDL implementation plans, to ensure MS4 discharges achieve compliance with interim and final trash WQBELs and all other final WQBELs and receiving water limitations pursuant to Part VI.E and set forth in Attachments L through Q by the applicable compliance deadlines occurring prior to approval of the WMP per Part VI.C.4.d.iii of the Order.
4. Target implementation of watershed control measures listed above to address known contributions of pollutants from MS4 discharges to receiving waters.
5. Meet all interim and final deadlines for development of a WMP.

If you have any questions, please contact Ms. Pavlova Vitale of the Storm Water Permitting Unit by electronic mail at Pavlova.Vitale@waterboards.ca.gov or by phone at (213) 576-6761. Alternatively, you may also contact Mr. Ivar Ridgeway, Chief of the Storm Water Permitting Unit, by electronic mail at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

cc: Young Park, City of Bell
Chau Vu, City of Bell Gardens
Gina Nila, City of Commerce
Aaron Herandez-Torres, City of Cudahy
James Enriquez, City of Huntington Park
Andre Dupret, City of Maywood
Samuel Kevin Wilson, City of Vernon
Gary Hildebrand, Los Angeles County Flood Control District
Dave Smith, US EPA
Walt Shannon, State Water Resources Control Board – Storm Water Section
Jennifer Fordyce, State Water Resources Control Board – Office of Chief Counsel

ECM#

Distribution List for the Los Angeles River Upper Reach 2 Sub-watershed Management Group

1. Doug Wilmore, City Manager
   City of Bell
   6330 Pine Avenue
   Bell, CA 90201

2. Philip Wagner, City Manager
   City of Bell Gardens
   7100 Garfield Avenue
   Bell Gardens, CA 90201

3. Jorge Rifa, City Administrator
   City of Commerce
   2535 Commerce Way
   Commerce, CA 90040

4. Hector Rodriguez, City Manager
   City of Cudahy
   5220 Santa Ana Street
   Cudahy, CA 90201

5. Renee Bobadilla, City Manager
   City of Huntington Park
   6550 Miles Avenue
   Huntington Park, CA 90255

6. Lilian Myers, City Manager
   City of Maywood
   4319 East Slauson Avenue
   Maywood, CA 90270

7. Kevin Wilson, Director of Community Services and Water
   City of Vernon
   4305 Santa Fe Avenue
   Vernon, CA 90058

8. Gail Farber, Chief Engineer
   Los Angeles County Flood Control District
   900 South Freemont Avenue
   Alhambra, CA 91803

City of Commerce

Office of the
City Administrator

June 28, 2014

Mr. Sam Unger
Executive Officer
California Regional Water Quality Control Board
Los Angeles Region, Suite 200
320 W. Fourth St., Suite 200
Los Angeles, CA 90013

RE: Submittal of the Watershed Management Program and Coordinated Integrated Monitoring Program for the Los Angeles River Upper Reach 2 Gateway Sub Watershed.

Dear Mr. Unger:

As you are aware, the following permittees listed in **Table 1** formed the Los Angeles River Upper Reach 2 Gateway Sub Watershed (LAR UR2 Sub Watershed) to jointly develop a Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) under a Memorandum of Understanding (MOU) with the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority for administration and cost sharing.

Table 1. Watershed Management Program Permittees

City of Bell
City of Bell Gardens
City of Commerce
City of Cudahy
City of Huntington Park
City of Maywood
City of Vernon
Los Angeles County Flood Control District (LACFCD)

The permittees hereby submit a joint draft WMP and draft CIMP for the LAR UR2 Sub Watershed. These programs are submitted in accordance with the Sub Watershed's Notice of Intent (NOI) dated June 27, 2013 and approved by the Los Angeles Regional

Water Quality Control Board (Regional Water Board) as notified in a letter dated September 25, 2013 and with Part VI.C and IV.B of Order R4-2012-0175. As indicated in the NOI, the Permittees intend to follow a CIMP approach for each of the required monitoring plan elements including Receiving Water Monitoring, Storm Water Outfall Based Monitoring, Non-Storm Water Outfall Based Monitoring, New Development/Re-Development Effectiveness Tracking, and Regional Studies.

The listed permittees have cooperatively worked together in a good faith effort towards compliance with Order R4-2012-0175. Please contact the individual permittees should you have questions pertaining to their jurisdiction's compliance measures. A list of contact information is enclosed. Please direct all inquiries regarding the LAR UR2 Sub Watershed's draft WMP/CIMP development to Dr. Gerald Greene with CWE at ggreene@cwecorp.com or (714) 526-7500 x 207. Thank you.

Sincerely,

The LAR UR2 Sub Watershed Permittees
(Individual signatures enclosed)

cc: Ms. Renee Purdy, California Regional Water Quality Control Board
Mr. Ivar Ridgeway, California Regional Water Quality Control Board

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP). The following signator is authorized to submit on behalf of their agency the joint draft WMP and draft CIMP for the LAR UR2 Sub Watershed due June 28, 2014.

DATE: 6/25/14

CITY OF BELL
Mr. Doug Willmore
City Manager
6330 Pine Avenue
Bell, CA 90201

Doug Willmore, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP). The following signator is authorized to submit on behalf of their agency the joint draft WMP and draft CIMP for the LAR UR2 Sub Watershed due June 28, 2014.

DATE: 6/24/14

CITY OF BELL GARDENS
Mr. Philip Wagner
City Manager
7100 Garfield Avenue
Bell Gardens, CA 90201

Phillip Wagner, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP). The following signator is authorized to submit on behalf of their agency the joint draft WMP and draft CIMP for the LAR UR2 Sub Watershed due June 28, 2014.

DATE: 06/18/2014

CITY OF COMMERCE
Mr. Jorge Rifa
City Administrator
2535 Commerce Way
Commerce, CA 90040

Jorge Rifa, City Administrator

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP). The following signator is authorized to submit on behalf of their agency the joint draft WMP and draft CIMP for the LAR UR2 Sub Watershed due June 28, 2014.

DATE: 6/20/14

CITY OF CUDAHY
Mr. Michael Allen
Acting City Manager
5220 Santa Ana Street
Cudahy, CA 90201

Michael Allen, Acting City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP). The following signator is authorized to submit on behalf of their agency the joint draft WMP and CIMP for the LAR UR2 Sub Watershed due June 28, 2014.

DATE: 6/16/14

CITY OF HUNTINGTON PARK
Mr. Rene Bobadilla, P.E.
City Manager
6550 Miles Avenue
Huntington Park, CA 90255

Rene Bobadilla, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP). The following signator is authorized to submit on behalf of their agency the joint draft WMP and CIMP for the LAR UR2 Sub Watershed due June 30, 2014.

DATE: 6-11-14

CITY OF MAYWOOD
Ms. Lilian Myers
City Manager
4319 East Slauson Avenue
Maywood, CA 90270

Lilian Myers, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP). The following signator is authorized to submit on behalf of their agency the joint draft WMP and draft CIMP for the LAR UR2 Sub Watershed due June 28, 2014.

DATE: 6-17-14

CITY OF VERNON
Mr. Samuel Kevin Wilson, P.E.
Director of Public Works, Water & Development Services
4305 Santa Fe Avenue
Vernon, CA 90058

Samuel Kevin Wilson, P.E., Director of Public Works, Water & Development Services

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

GAIL FARBER, Director

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE
REFER TO FILE: WM-11

June 25, 2014

Ms. Gina Nila
Environmental Services Manager
City of Commerce
2535 Commerce Way
Commerce, CA 90040

Dear Ms. Nila:

AUTHORIZATION TO SUBMIT
LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
LOS ANGELES RIVER UPPER REACH 2 SUB WATERSHED GROUP
COORDINATED INTEGRATED MONITORING PROGRAM PLAN AND
WATERSHED MANAGEMENT PROGRAM PLAN

In compliance with Order No. R4-2012-0175 (Municipal Separate Storm Sewer System Permit), the Los Angeles County Flood Control District (LACFCD) has been participating in the Los Angeles River Upper Reach 2 Sub Watershed Group to develop a Coordinated Integrated Monitoring Program (CIMP) Plan and a Watershed Management Program (WMP) Plan. These Plans have been developed in partnership with the following agencies: the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon.

This letter serves to authorize the City of Commerce to submit the CIMP Plan and the WMP Plan to the California Regional Water Quality Control Board – Los Angeles Region on behalf of the LACFCD.

If you have any questions, please contact me at (626) 458-4300 or ghildeb@dpw.lacounty.gov or your staff may contact Ms. Terri Grant at (626) 458-4309 or tgrant@dpw.lacounty.gov.

Very truly yours,

GAIL FARBER
Chief Engineer
Los Angeles County Flood Control District

GARY HILDEBRAND
Assistant Deputy Director
Watershed Management Division

TA:ba
P:\wmpub\Secretarial\2014 Documents\Letter\Letter of Commitment LAR UR2_LACFCD.doc\C14141

cc: City of Bell
City of Bell Gardens
City of Commerce
City of Cudahy
City of Huntington Park
City of Maywood
City of Vernon

Watershed Permittee Contact List

Permittee	*Contact*	*Contact Mailing Address*	*Contact Telephone and Email Address*
City of Bell	Chris Vogt Terry Rodrigue	6330 Pine Ave. Bell, CA 90201	(714) 899-9039 cvogt@cityofbell.org trodrigue@cityofbell.org
City of Bell Gardens	Chau Vu	7100 Garfield Ave. Bell Gardens, CA 90201	(562) 334-1790 cvu@bellgardens.org
City of Commerce	Gina Nila Environmental Services Manager	2535 Commerce Way Commerce, CA 90040	(323) 722-4805, ext. 2839 ginan@ci.commerce.ca.us
City of Cudahy	Aaron Hernandez-Torres Assistant City Engineer	5220 Santa Ana St. Cudahy, CA 90201	(323) 773-5143 ahernandez@cityofcudayca.gov
City of Huntington Park	James A. Enriquez Director of Public Works/City Engineer	6550 Miles Ave. Huntington Park, CA 90255	(323) 584-6253 jenriquez@huntingtonpark.org
City of Maywood	Andre Dupret	4319 E. Slauson Ave. Maywood, CA 90270	(323) 562-5700 andre.dupret@cityofmaywood.org
City of Vernon	Samuel Kevin Wilson, P.E. Director of Public Works, Water & Development Services Claudia Arellano Stormwater & Special Projects Analyst	4305 Santa Fe Ave. Vernon, CA 90058	(323) 583-8811, ext. 245 kwilson@ci.vernon.ca.us (323) 583-8811, ext. 258 carellano@ci.vernon.ca.us
LACFCD	Gary Hildebrand	900 S. Freemont Ave. Alhambra, CA 91803	(626) 458-4300 ghildeb@dpw.lacounty.gov

Los Angeles River Upper Reach 2 Watershed Management Area

Watershed Management Program (WMP) Plan DRAFT

Submittal Date: June 26, 2014

1561 E. Orangethorpe Avenue, Suite 240
Fullerton, California 92831
TEL (714) 526-7500 | FAX (714) 526-7004
www.cwecorp.com

RB-AR5456

Los Angeles River Upper Reach 2 Watershed Management Area

Watershed Management Program (WMP) Plan

Prepared for the:

Los Angeles Gateway Region
Integrated Regional Water Management Authority
16401 Paramount Boulevard
Paramount, California 90723
TEL (626) 485-0338

On Behalf of the Cities of Bell (WDID 4B190153001), Bell Gardens (WDID 4B190139002), Commerce (WDID 4B190161001), Cudahy (WDID 4B190164001), Huntington Park (WDID 4B190177001), Maywood (WDID 4B190192001), Vernon (WDID 4B190216001), and the Los Angeles County Flood Control District (WDID4B190107101)

Prepared by:

1561 E. Orangethorpe Avenue, Suite 240
Fullerton, California 92831

TEL (714) 526-7500 | FAX (714) 526-7004 | www.cwecorp.com

June 26, 2014

RB-AR5457

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Appendices

Acronyms

AIN	Assessor Identification Number
AMP	Adaptive Management Process
ARS	Automatic Retracting Screen
BMP	Best Management Practice
BSI	Bacteria Source Identification
CARE	Community Action for a Renewed Environment
CBE	Communities for a Better Environment
CDS	Continuous Deflective Separation
CEEIN	California Environmental Education Interagency Network
CIMP	Coordinated Integrated Monitoring Program
CMP	Coordinated Monitoring Plan
COG	Council of Governments
CPI	Catchment Priority Index
CPS	Connector Pipe Screen
CREST	Cleaner Rivers through Effective Stakeholder-led TMDLs
CTR	California Toxics Rule
CWA	Clean Water Act
CWH	Council for Watershed Health
CWSRF	Clean Water State Revolving Fund
DTSC	Department of Toxic Substances Control
EWMP	Enhanced Watershed Management Program
GIS	Geographic Information System
GWMA	Gateway Water Management Authority
HCF	Habitat Conservation Fund
HFS	High Flow Suspension
HHWC	Household Hazardous Waste Collection
HSPF	Hydrologic Simulation Program - FORTRAN
IC/ID	Illicit Connection and Illicit Discharges
IDDE	Illicit Discharge Detection Elimination
IRWM	Integrated Regional Water Management
ISRF	Infrastructure State Revolving Fund
LACFCD	Los Angeles County Flood Control District
LAR	Los Angeles River
LAR UR2 WMA	Los Angeles River Upper Reach 2 Watershed Management Area
LARWMP	Los Angeles River Watershed Monitoring Program
LARWQCB	Los Angeles Regional Water Quality Control Board
LID	Low Impact Development
LRS	Load Reduction Strategy
LSPC	Loading Simulation Program in C++
LWCF	Land and Water Conservation Fund
MAL	Municipal Action Limit

MCM	Minimum Control Measure
MEP	Maximum Extent Practicable
MOU	Memorandum of Understanding
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm and Sewer System
NCPI	Nodal Catchment Priority Index
NGO	Non Governmental Organization
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OAL	Office of Administrative Law
P2	Pollution Prevention
PIPP	Public Information and Participation Program
POTW	Publically Owned Treatment Works
QA/QC	Quality Assurance/Quality Control
RAA	Reasonable Assurance Analysis
RTP	Recreational Trails Program
RWL	Receiving Water Limitation
SB	Senate Bill
SBPAT	Structural BMP Prioritization and Analysis Tool
SRP	Spill Response Plan
SSO	Site Specific Objective
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
TLR	Target Load Reduction
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
WBPC	Water Body-Pollutant Combination
WCB	Wildlife Conservation Board
WCM	Watershed Control Measure
WDR	Waste Discharge Requirement
WLA	Waste Load Allocation
WMA	Watershed Management Area
WMP	Watershed Management Program
WRP	Water Recovery Plant
WQBEL	Water Quality-Based Effluent Limitation
WQO	Water Quality Objective

Executive Summary

The California Regional Water Quality Control Board, Los Angeles Region (LARWQCB), adopted the fourth term Coastal Los Angeles County Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit as Order No. R4-2012-0175, on November 8, 2012, which then became effective on December 28, 2012. This Permit encourages Permittees to join together into Watershed Management Groups and develop Watershed Management Program (WMP), or Enhanced WMP (EWMP), Plans. These plans are intended to guide the iterative Adaptive Management Process (AMP) for the individual groups as they prioritize the implementation of Watershed Control Measures (WCMs) to reduce the discharge of runoff, and the pollutants it may convey, to local receiving waters, thereby contributing to the attainment and protection of water body beneficial uses.

In a June 27, 2013, Notice of Intent (NOI) letter, which was acknowledged in a September 25, 2013, NOI Approval letter from the Regional Board Executive Officer, the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon, along with the Los Angeles County Flood Control District (LACFCD), announced the formation of the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA). Furthermore these Permittees agreed to prepare a Reasonable Assurance Analysis (RAA), to guide development of the WMP Plan, and a Coordinated Integrated Monitoring Program (CIMP) Plan to track progress in attaining the Permit goals and objectives, through the iterative AMP identified within MS4 Permit Part VI.C.8.a.

The LAR UR2 WMA Cities lie exclusively within the Los Angeles River Watershed and each Permittee discharges to Reach 2 of the Los Angeles River, a concrete-lined river channel with year-round flows comprised primarily of treated wastewater. The Cities of Bell Gardens and Commerce also drain southeast to the normally dry concrete-lined Rio Hondo tributary channel. To the north and west, the LAR UR2 WMA is bordered by, and receives discharges from, the Upper Los Angeles River EWMP Group, while the Lower Los Angeles River WMP Group aligns with the east and south LAR UR2 WMA borders.

Many of the watershed water quality impairments were previously identified as Total Maximum Daily Loads (TMDLs) and are being successfully addressed by the LAR UR2 WMA Permittees. The Trash TMDL was primarily implemented through a grant to the Gateway Water Management Authority (GWMA) and remaining capital projects should be completed within two years. The nutrient TMDL was primarily directed at wastewater recovery plants and has been implemented. The Metals TMDL listings for copper and lead were addressed through a $2,100,000 Site Specific Objective (SSO) Study that should be adopted as a Regional Board Basin Plan Amendment. Permittees also instigated legislation to reformulate automotive friction (brake) pads as a copper source control and phase out lead wheel weights.

The RAA identified zinc and *E. coli* as the pollutants driving implementation of costly new pollutant source and watershed control measures, including Minimum Control Measures (MCMs), Low Impact Development (LID), LID and Green Street projects, Low Flow Diversions (LFDs), scientific studies, increased inspections and enforcement, and structural Best Management Practices (BMPs).

The LAR UR2 RAA and WMP identified six regional BMP projects, estimated to cost a total of $210 million, and an additional $90 million in residential and commercial LID street renovations that may need to be implemented, over the next two decades, to achieve Permit numeric limits. The six conceptual regional projects were located under public lands, such as parks and easements, to avoid land acquisition costs; however the WMP costs are beyond City budgets and will require outside funding support to implement. While the LAR UR2 WMA will begin applying for support to construct these facilities, City and regional management should also consider undertaking studies or efforts to more accurately characterize jurisdictional Event Mean Concentration (EMC) pollutant loads, a zinc water effects ratio (WER) SSO study, and identify land acquisition opportunities near subwatershed outfalls, where the effectiveness of regional structural BMPs to control the discharge of bacterial laden runoff is maximized.

1. Introduction

This Watershed Management Program (WMP) Plan introduces the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA), characterizes water quality challenges faced by its Permittees, and describes implementation actions and activities to demonstrate that Municipal Separate Storm Sewer System (MS4) discharges achieve applicable Water Quality-Based Effluent Limitations (WQBELs) and do not cause or contribute to exceedances of Receiving Water Limitations (RWLs) as required by the fourth term 2012 Los Angeles County MS4 National Pollutant Discharge Elimination System (NPDES) Permit (Order No. R4-2012-0175). This WMP plan is critical component of the iterative Adaptive Management Process (AMP) strategy and will be updated every two years as described in the MS4 Permit, or amended with minor corrections as warranted by changing regional precedents and the development of new scientific and technical data. The WMP is a comprehensive stormwater management plan intended to allow optimization of the extremely limited stormwater and financial resources of the participating Permittees. The development of this program required the determination of current water quality priorities in the LAR UR2 WMA and the identification of structural and non-structural Watershed Control Measures (WCMs) that would address those priorities. In addition, the LAR UR2 WMA Reasonable Assurance Analysis (RAA) demonstrates, through a calibrated model, that Water Quality Objectives (WQOs) will be met through implementation of the actions in this Plan.

1.1 Applicability for WMP Development

Permittees participating in the LAR UR2 WMA WMP include the Los Angeles County Flood Control District (LACFCD) and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. The LAR UR2 WMA is within the Los Angeles River (LAR) Watershed and based on Geographical Information System (GIS) subwatershed data available from Los Angeles County[1], directly drains to LAR Reach 2, Rio Hondo Reach 1, and potentially to Compton Creek, as illustrated in **Figure 1-1**. The reported tributary area to each of these receiving waters, on a jurisdictional basis, is summarized in **Table 1-1**. The LAR UR2 WMA Permittees prepared and submitted a Notice of Intent (NOI) on June 27, 2013, as found in **Appendix A,** which was acknowledged in a September 25, 2013, NOI Approval letter from the Regional Board Executive Officer, as found in **Appendix B**.

Table 1-1 Jurisdictions within LAR UR2 WMA

LAR UR2 WMA Member	Alhambra Wash Rio Hondo		Chavez Ravine Los Angeles River		Compton Creek Los Angeles River	
	Area (acres)	% LAR UR2 WMA	Area (acres)	% LAR UR2 WMA	Area (acres)	% LAR UR2 WMA
Bell	0	0%	1,676	14%	0	0%
Bell Gardens	797	35%	780	6%	0	0%
Commerce	1,478	65%	2,717	22%	0	0%
Cudahy	0	0%	786	6%	0	0%
Huntington Park	0	0%	1,885	15%	45	100%
Maywood	0	0%	754	6%	0	0%
Vernon	0	0%	3,298	31%	0	0%
LACFCD	N/A		N/A		N/A	
Total	**2,275**	**100%**	**11,896**	**100%**	**45**	**100%**

[1] http://dpw.lacounty.gov/general/spatiallibrary/

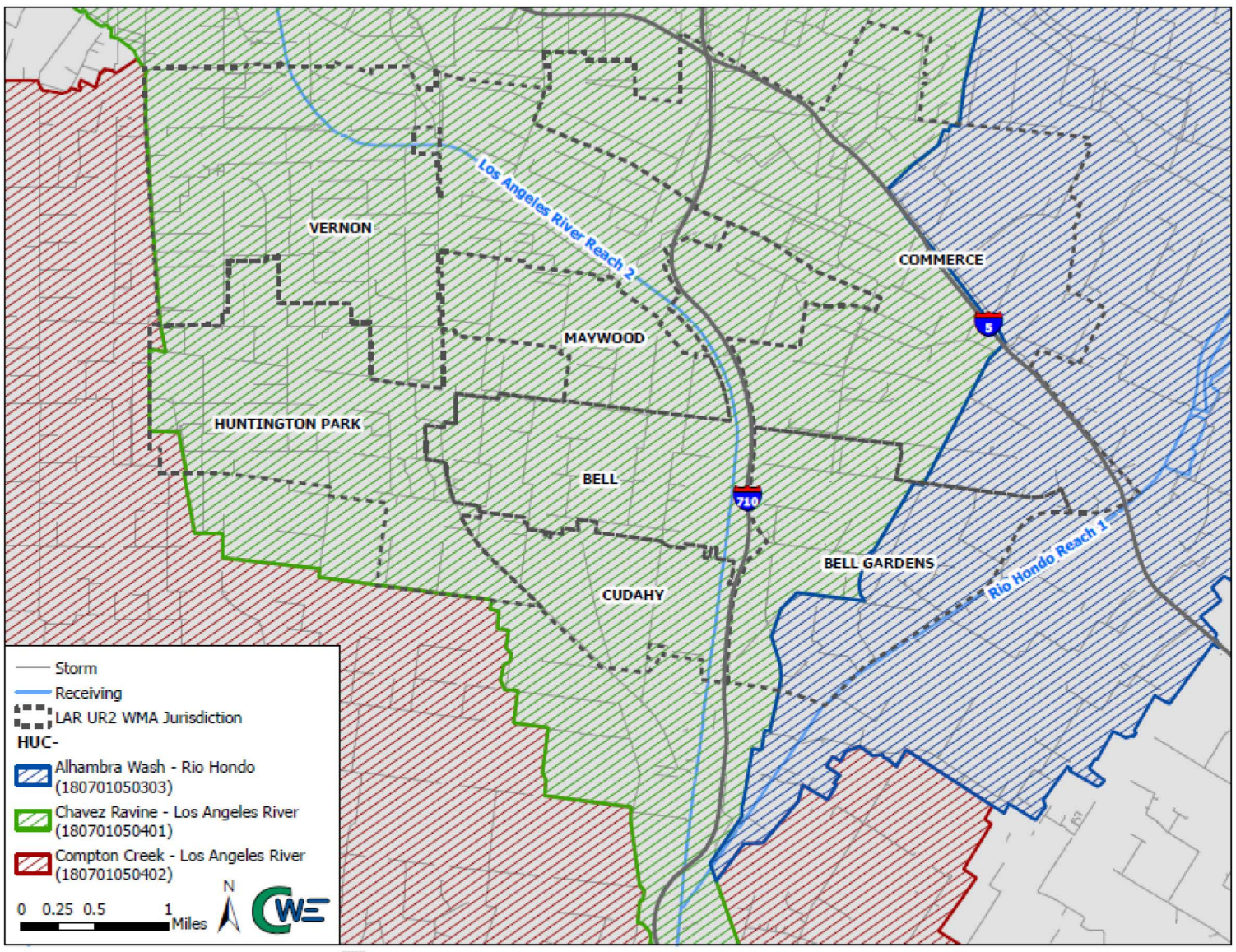


Figure 1-1 LAR UR2 WMA HUC-12s and Jurisdictions

1.2 Geographic Scope and Characteristics

The LAR UR2 WMA encompasses approximately 14,215 acres, or 22.21 square miles, and is located in the south central portion of the LAR Watershed as illustrated in **Figure 1-2**. Pertinent characteristics of the LAR UR2 WMA, including land use, soil type, hydrologic parameters, receiving waters, and their LARWQCB Basin Plan identified beneficial uses, are briefly summarized in the following subsections. Both the Cities of Bell and Vernon cross the LAR, while the City of Huntington Park is located a significant distance from it.

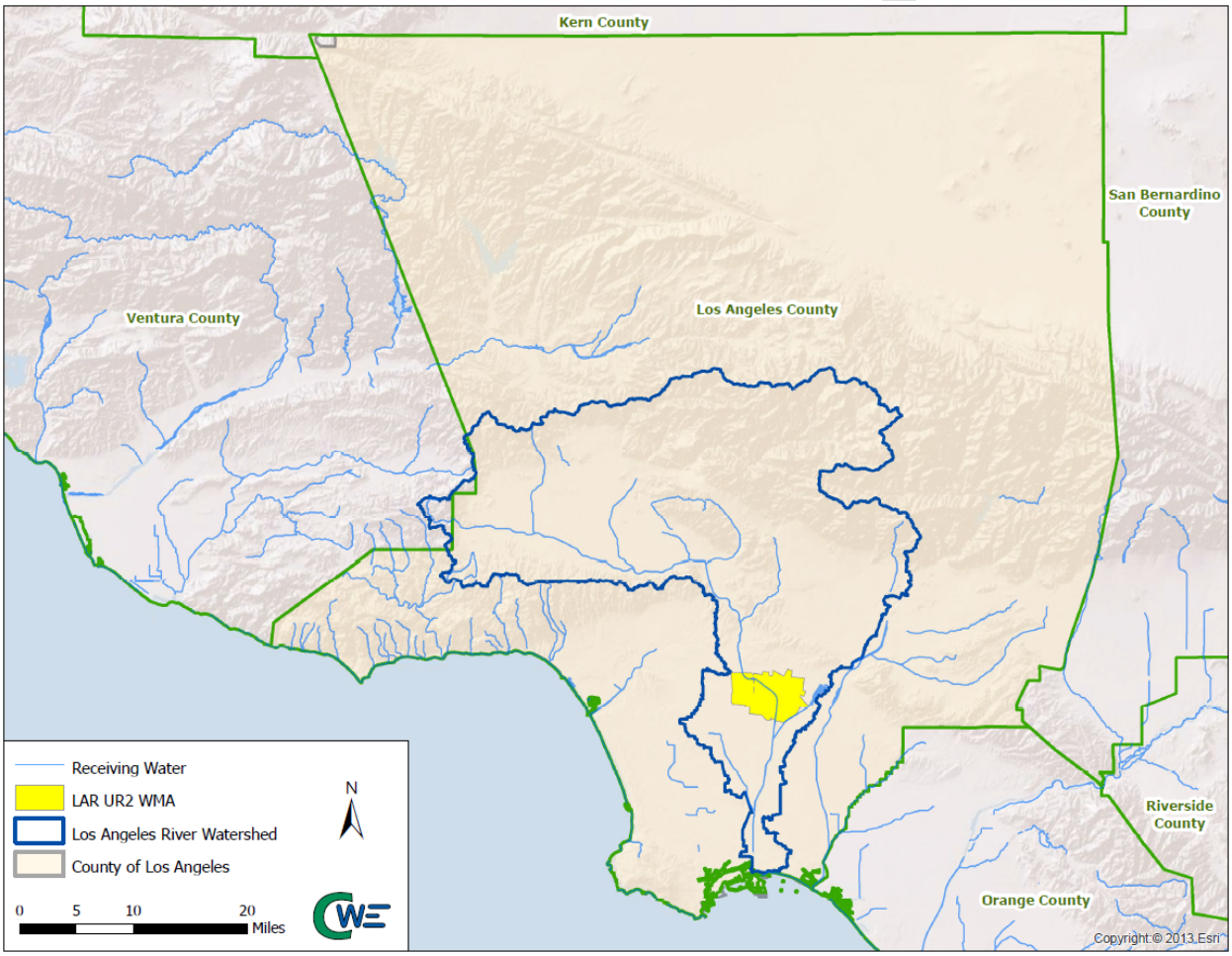


Figure 1-2 LAR UR2 WMA within the Los Angeles River Watershed

1.2.1 Watershed Management Area Hydrologic Characteristics

While each City has unique land use and zoning characteristics that may differentially impact pollutant generation, for the initial WMP and RAA development purposes, land use characteristics were initially identified based on the Los Angeles County Department of Public Works (LACDPW) GIS data as summarized in **Table 1-2** for the WMA and illustrated in **Figure 1-3**. The most prevalent land use in the Cities of Commerce, Vernon and the northern portions of Bell and Huntington Park is industrial, while the remaining areas are dominated by residential and commercial land use categories. **Table 1-3** provides a detailed description of WMA land use characteristics on a jurisdictional level.

Table 1-2 Land Use Designation within LAR UR2 WMA

Land Use Category	Area (acres)	Percent of LAR UR2 WMA
Agriculture	46	0%
Commercial	1,419	10%
Education	311	2%
Industrial	6,029	42%
Multi-Family Residential	2,413	17%
Single Family Residential	1,784	13%
Transportation	1,370	10%
Vacant	843	6%
Total	14,215	100%

Table 1-3 Land Use Designation within LAR UR2 WMA by Jurisdiction

LAR UR2 WMA Member	Bell		Bell Gardens		Commerce		Cudahy		Huntington Park		Maywood		Vernon	
	Area (acre)	%	Area (acre)	%	Area (acre)	%	Area (acre)	%	Area (acre)	%	Area (acre)	%	Area (acre)	%
Agriculture	0	0	27	2	19	0	0	0	0	0	0	0	0	0
Commercial	271	16	230	15	383	9	58	7	352	18	109	14	16	0
Education	39	2	97	6	24	1	38	5	90	5	20	3	3	0
Industrial	296	18	164	10	2,523	60	104	13	333	17	52	7	2,556	78
MF Residential	513	31	736	47	129	3	434	55	480	25	121	16	0	0
SF Residential	272	16	175	11	292	7	51	6	562	29	430	57	1	0
Transportation	131	8	8	1	651	16	24	3	53	3	9	1	494	15
Vacant	154	9	141	9	173	4	76	10	59	3	13	2	227	7
Total:	**1,676**	**100**	**1,578**	**100**	**4,194**	**100**	**786**	**100**	**1,930**	**100**	**754**	**100**	**3,298**	**100**

MF = Multi-Family; SF = Single Family

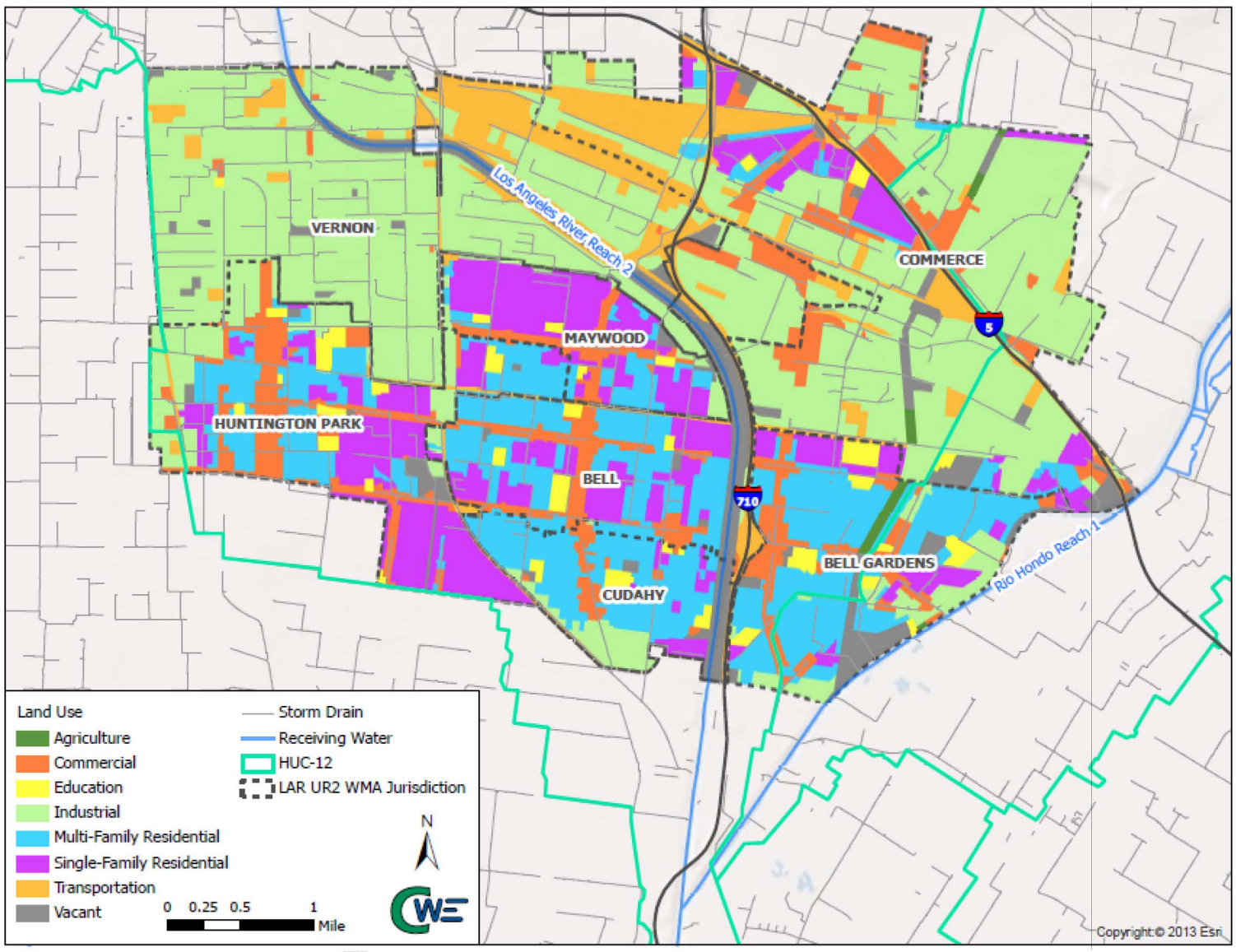


Figure 1-3 LAR UR2 WMA Land Use

The 2006 Los Angeles County Hydrology Manual[2] Appendices B and C, identifies soil types in the LAR UR2 WMA as being dominated by Hanford Fine Sandy Loam and other loam mixes as shown in **Figure 1-4**. Infiltration rates through these soils are generally unremarkable, but allowing percolation over extended periods, when vector access and egress can be prevented or controlled. While clay lenses are present, they are generally discontinuous and may sometimes be breached by utilizing moderate increase or variances in excavation depth, or through wick drains that maintain a wider than deep facility design configuration.

The 2004 LACFCD Analysis of 85th Percentile, 24-hour Rainfall Depth Analysis within the County of Los Angeles[3] reports that the lowest rainfall depth isohyetal of 0.88 inches is found in the northeastern corner of the WMA and that depths rise as you move to either the west or south of that location. The largest rainfall depth isohyetal of 0.98 is located in the northwest WMA, while the mean value is approximately 0.92 inches as shown by the isohyetal distribution map in **Figure 1-5**.

The 2006 Los Angeles County Hydrology Manual[2] Appendix B identifies the twenty four-hour, fifty-year design storm isohyetals within the LAR UR2 WMA as varying from 5.6 inches on the western side to 5.9 inches in the eastern portion of the WMA, as shown in **Figure 1-6**.

[2] http://ladpw.org/wrd/Publication/engineering/2006_Hydrology_Manual/2006%20Hydrology%20Manual-Divided.pdf

[3] http://ladpw.org/wrd/Publication/engineering/Final_Report-Probability_Analysis_of_85th_Percentile_24-hr_Rainfall1.pdf

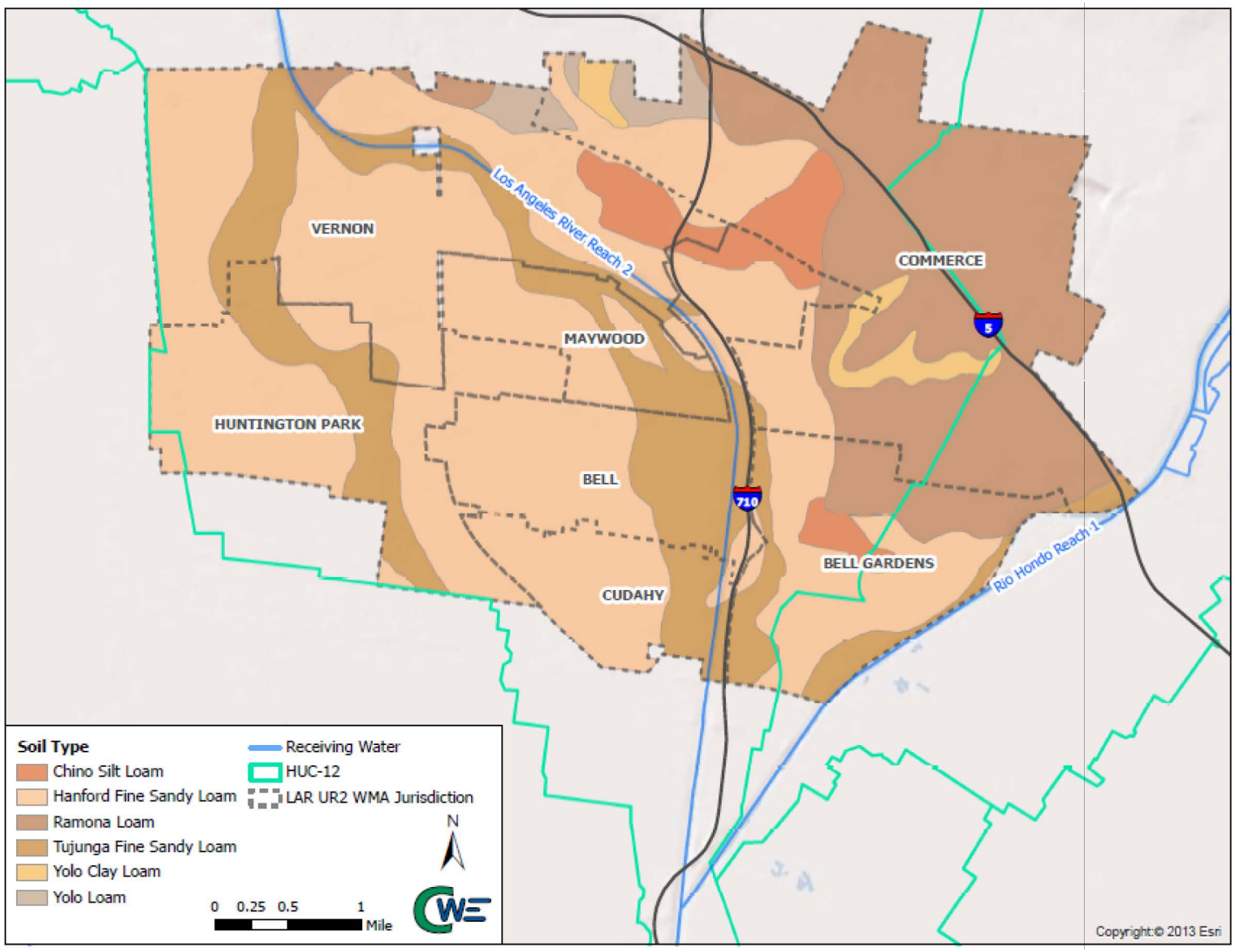


Figure 1-4 LAR UR2 WMA Soil Types

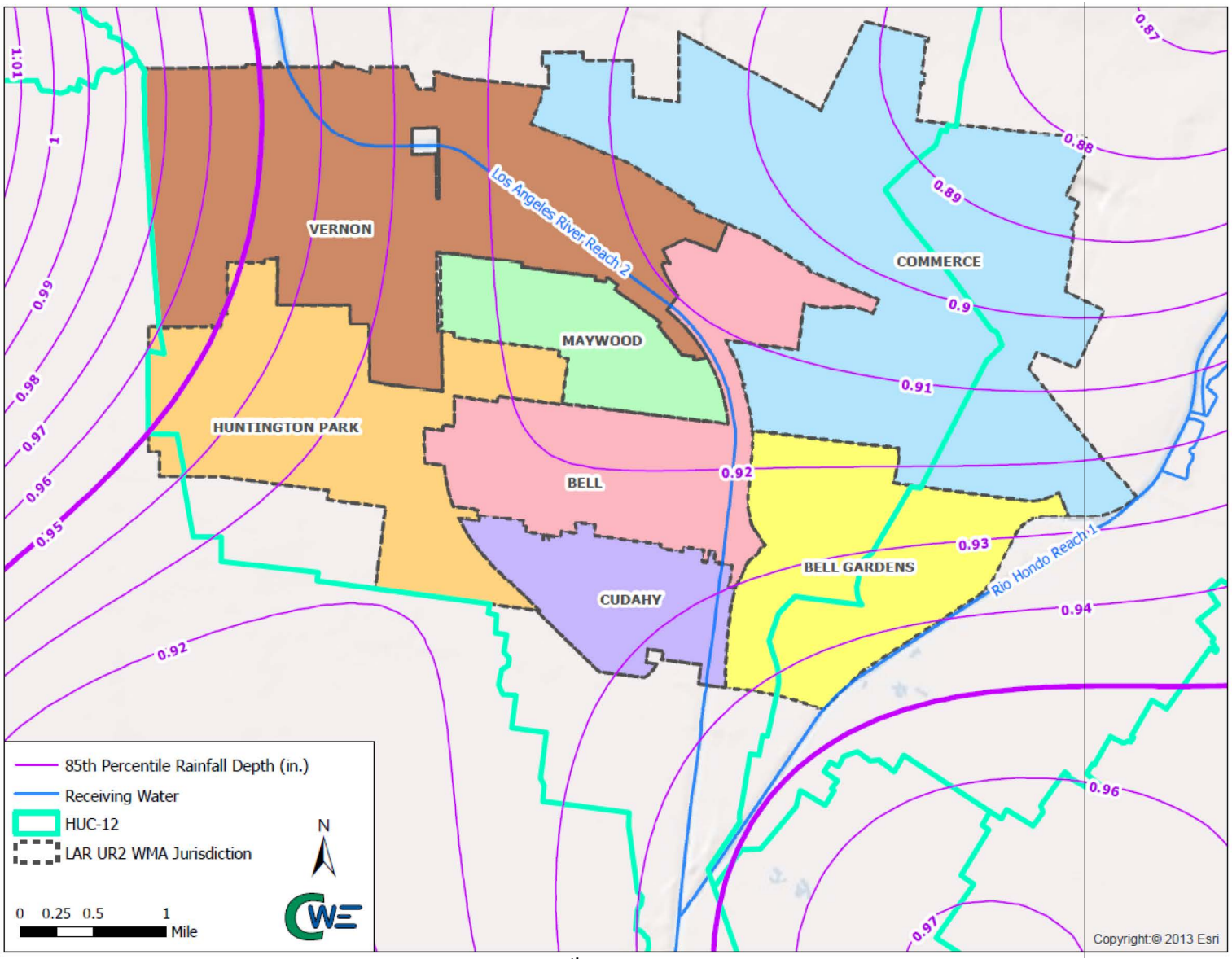


Figure 1-5 LAR UR2 WMA 85th Percentile, 24-Hour Rainfall Depths

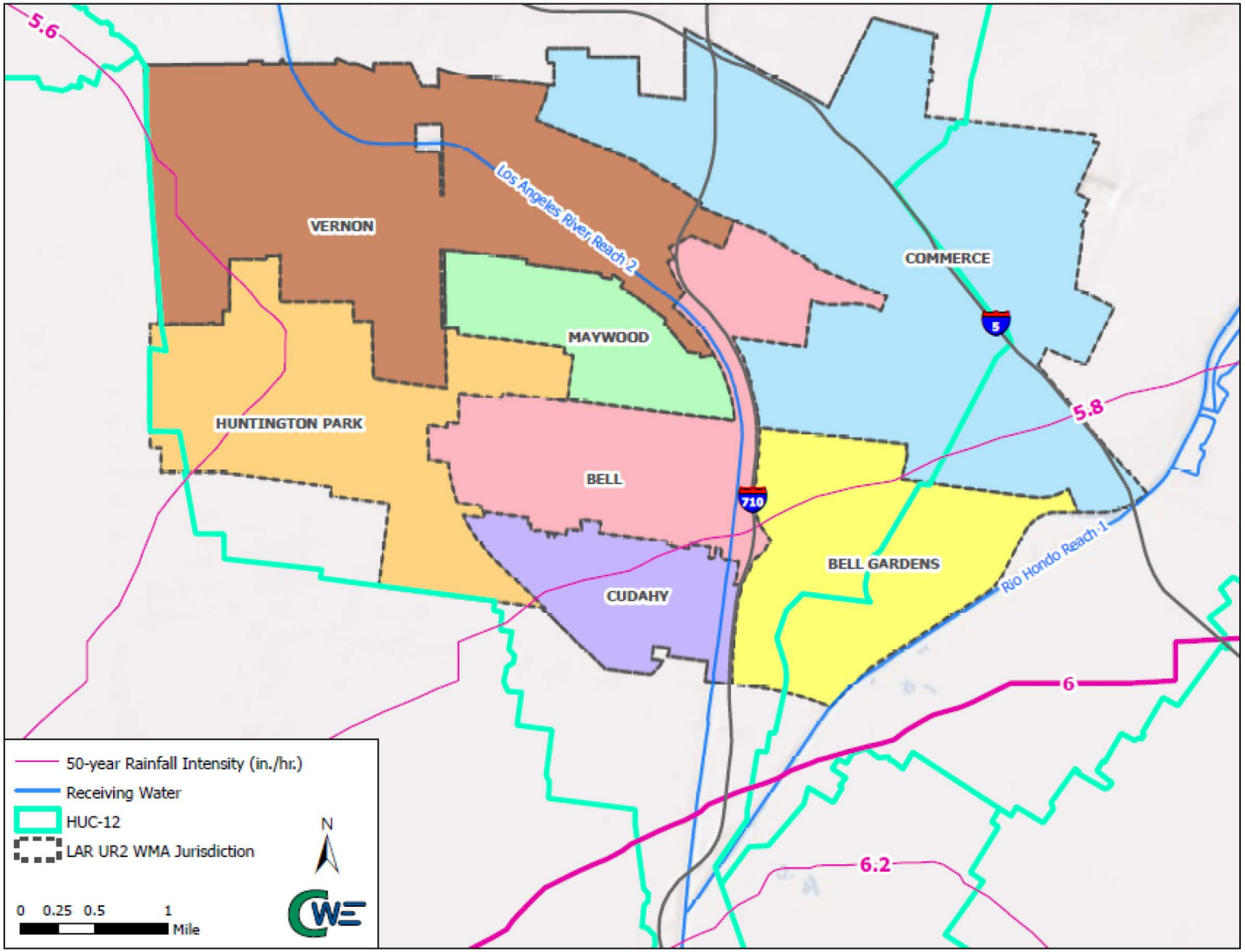


Figure 1-6 LAR UR2 WMA 50-Year, 24-Hour Rainfall Intensity

1.2.2 Water Body Characteristics

The LAR flows 51 miles from the Santa Monica Mountains, at the western end of the San Fernando Valley, to the Long Beach Harbor, San Pedro Bay, and Pacific Ocean. Including tributaries, such as the Rio Hondo and Compton Creek, the 824 square mile LAR watershed includes a total stream length of about 837 miles and about 4.6 square miles of lake area. No lakes are located within the LAR UR2 WMA. The watershed includes steep, easily eroded, undeveloped mountainous areas in the Angeles National Forest in the north and extensive urban areas in the midsection and south. Los Angeles River Reach 2 stretches from the Arroyo Seco confluence to the Compton Creek confluence. During dry-weather the LAR conveys mostly treated wastewater effluent from upstream Public Owned Treatment Works (POTWs) and Water Recovery Plants (WRPs). Following exceptionally productive storm seasons, rising groundwater in Glendale Narrows may supplement these LAR flows, along with other Board permitted industrial and individual dischargers, and dry-weather urban runoff discharges. The volume of these dry-weather discharges are expected to decline over time as more water is recycled.

The largest tributary to Reach 2 of the LAR is the Rio Hondo. The Rio Hondo drains approximately 120 square miles of the eastern LAR watershed. Below the Whittier Narrows, flows in Reach 2 of the Rio Hondo may be diverted to the adjacent Rio Hondo Spreading Grounds and used to recharge the Central Basin groundwater aquifer. These spreading grounds extend to the northeast corner of the WMA adjacent to the City of Commerce. Highly turbid "first flush" storm flows are not diverted into the spreading grounds, but drain into Rio Hondo Reach 1 which runs along the eastern boundary of the LAR UR2 WMA before flowing into the LAR below the LAR UR2 WMA. In conclusion, during dry-weather, flows in Reach 1 of the Rio Hondo are essentially absent, while during wet-weather, runoff volume and water quality my change abruptly due to upstream conditions that are beyond the control of the LAR UR2 WMA Permittees.

The LAR UR2 WMA is located within Reach 2 of the Los Angeles River, in the lower half of LAR Watershed, starting at East 26th Street in the City of Vernon and ending at Patata Street in City of Cudahy. The LAR UR2 WMA Cities of Bell Gardens and Commerce line the western bank of Rio Hondo Reach 1, while all WMA Permittees except the City of Huntington Park, line the LAR, as illustrated in **Figure 1-7**. Throughout these reaches, both the LAR and Rio Hondo are conveyed within concrete-lined trapezoidal channels, that have successfully contained regional flooding risks for decades. Dry-weather flows in some channel sections are further confined to narrow low-flow channels and the varying channel configurations in this area may impede water contact recreational beneficial uses. Given the large number and tributary area occupied by dischargers not regulated under the MS4 Permit, it may be challenging to separate their impact on dry-weather outfall and receiving water quality characteristics in the WMA. During dry- and wet-weather, it is likely that the LAR UR2 WMA's impact on receiving water conditions may be difficult to assess, given analytical limitations and the modest approximately 4% runoff contribution to the total flow in those receiving waters.

Waterfowl and other avian wildlife are commonly observed in the LAR within, and adjacent to, the MWA. Large congregations of gulls, are often observed near the proposed receiving water site at the extension of Tweedy Avenue in City of South Gate. However this location is immediately downstream of the largest outfalls from the WMA and shifting the monitoring location northward would further obfuscate the already modest contribution of the WMA on receiving water quality. Pending several years of water quality data collection, this predicament may necessitate the need for a special study to quantify the potential impact of this condition, further characterize the source of apparent Permit non-compliance, or guide the relocation of the monitoring site under some conditions of weather, flow, and wildlife use. Any study or monitoring changes would be proposed and coordinated in writing with Board staff.

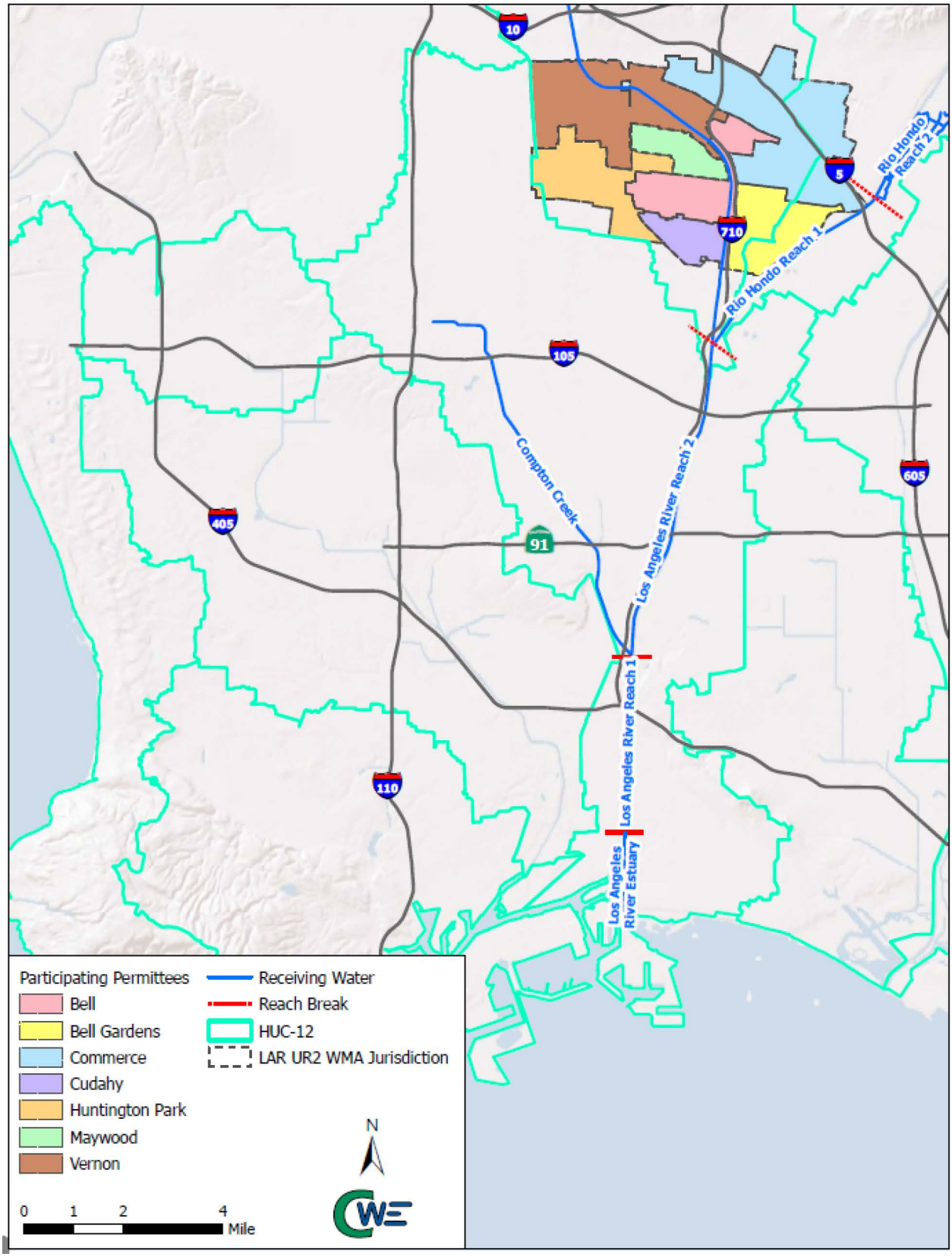


Figure 1-7 LAR UR2 WMA Water Bodies

1.3 Regulatory Framework

In 1972, provisions of the Federal Water Pollution Control Act, also known as the Clean Water Act (CWA), were amended so that the discharge of pollutants to waters of the United States from any point source is effectively prohibited, unless the discharge is in compliance with an NPDES permit. The CWA was amended, as the Water Quality Act of 1987, to require the United States Environmental Protection Agency (USEPA) to establish a program to address stormwater discharges. In response, USEPA promulgated NPDES stormwater permit application regulations. These regulations required that facilities with stormwater discharges "...from a large or medium municipal storm sewer system; or (3) a discharge which USEPA or the state/tribe determines to contribute to a violation of a water quality standard..." apply for an NPDES permit. On November 16, 1990, the USEPA published final regulations that established application requirements for stormwater permits for MS4s serving a population of over 100,000 (Phase I communities) and certain industrial facilities, including construction sites greater than five acres. On December 8, 1999, the USEPA published the final regulations for communities under 100,000 (Phase II MS4s) and construction sites between one and five acres.

The Porter-Cologne Act (Water Code 13000, et seq.) is the principal water quality management legislation for California, requiring that the State Water Resources Control Board (SWRCB) and Regional Boards develop plans to serve as guides for protecting water quality within the state.

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board or LARWQCB), Water Quality Control Plan (Basin Plan), identifies receiving waters, their beneficial uses, water quality objectives, and more specific discharge controls that may be applied to categories of discharges. The beneficial use designations for the LAR and the Rio Hondo include:

- **Municipal and Domestic Supply (MUN)** – Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
- **Industrial Service Supply (IND)** – Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
- **Ground Water Recharge (GWR)** – Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
- **Water Contact Recreation (REC-1)** – Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.
- **Non-contact Water Recreation (REC-2)** – Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
- **Warm Freshwater Habitat (WARM) –** Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
- **Wildlife Habitat (WILD) –** Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Table 1-4 summarizes the beneficial uses for the receiving water bodies located within the LAR UR2 WMA, as designated in the Basin Plan.

Table 1-4 Basin Plan Beneficial Use Designations Within the LAR UR2 WMA							
Receiving Water Bodies	**MUN**	**IND**	**GWR**	**REC-1**	**REC-2**	**WARM**	**WILD**
Los Angeles River	P*	P	E	Es	E	E	P
Rio Hondo below Spreading Grounds	P*		I	Pm	E	P	I

E: Existing beneficial Use
P: Potential beneficial Use
I: Intermittent beneficial Use
E, P, and I shall be protected as required.
Es: Access prohibited by Los Angeles County DPW
Pm: Access prohibited by Los Angeles County Department in the concrete-channelized areas.
* Asterisked MUN designations addressed by Senate Bill (SB) 88-63 and Regional Board (RB) Order 89-03.

Under Porter-Cologne, specific Waste Discharge Requirements (WDRs) are issued by the nine Regional Water Quality Control Boards and may serve as NPDES permits for discharges to surface waters.

1.3.1 MS4 Permit Requirements

The Regional Board adopted Order No. R4-2012-0175, WDRs for MS4 discharges within the Coastal Watersheds of Los Angeles County, except those discharges originating from the City of Long Beach MS4 (NPDES Permit No. CAS004001) on November 8, 2012, and it became effective on December 28, 2012. The MS4 Permit identifies Minimum Control Measures (MCMs), Total Maximum Daily Load (TMDL) provisions, the WMP Plan development process, and TMDL Waste Load Allocations (WLAs) as dry- and wet-weather numeric limits. Pursuant to Permit Part VI.C.1.d, WMPs must ensure that MS4 discharges:

(i) Achieve applicable WQBELs in Part VI.E and Attachment O based on the corresponding compliance schedules;
(ii) Do not cause or contribute to exceedances of the RWLs in Parts V.A and VI.E, and Attachment O of the MS4 Permit; and
(iii) Do not include non-stormwater discharges that are effectively prohibited based on Part III.A.

The WMP must also ensure that the controls are implemented to reduce the discharge of pollutants to the Maximum Extent Practicable (MEP), pursuant to Part IV.A.1, and as proposed in the LAR UR2 WMP Plan. Part VI.C.1.f of the Permit states that the WMP must be consistent with Parts VI.C.5-C.8 and shall:

i. Prioritize water quality issues resulting from stormwater and non-stormwater discharges from the MS4 to receiving waters within their WMA.
ii. Identify and implement strategies, control measures, and Best Management Practices (BMPs) to achieve the outcomes specified in Part VI.C.1.d and discussed above.
iii. Execute an integrated monitoring program and assessment program pursuant to Attachment E - Monitoring and Reporting Program (MRP), Part VI to determine progress towards achieving applicable limitation and/or action levels in Attachment G.
iv. Modify strategies, control measures, and BMPs as necessary based on analysis of monitoring data collected pursuant to the MRP to ensure that applicable numeric limits and other milestones set forth in the WMP are achieved in the required timeframes.
v. Provide appropriate opportunity for meaningful stakeholder input, including but not limited to, a permit-wide WMP Technical Advisory Committee (TAC) that will advise and participate in the development of the WMP from month six through the date of the program approval. The TAC may include at least one Permittee representative from each WMA for which a WMP will be developed, and must include a minimum of one public representative from a non-governmental organization (NGO) with public membership, staff from the Regional Board and USEPA Region IX.

Part VI.C.4.c.i of the MS4 Permit states that Permittees may elect to collaborate on the development and submission of a draft WMP by June 28, 2014, if the following conditions are met in greater than fifty percent of the land area covered by the WMP.

(1) Demonstrate that there are Low Impact Development (LID) ordinances in place and/or commence development of a LID ordinance(s) meeting the requirements of the MS4 Permit's Planning and Land Development Program by February 26, 2013, 60 days after the effective date of the MS4 Permit.
(2) Demonstrate that there are green streets policies in place and/or commence development of a policy(ies) that specifies the use of green street strategies for transportation corridors by February 26, 2013, 60 day after the effective date of the MS4 Permit.
(3) Demonstrate in the Notice of Intent (NOI) to develop a WMP that Parts VI.C.4.c.i. (1) and (2) have been met in greater than fifty percent of the watershed area.

Since these conditions have been met, the LAR UR2 WMA anticipates that the Regional Board will provide comments within four months after submittal of the WMP draft, and the final WMP must be submitted within the following three months. Three months after the submittal of the final WMP, and no later than April 28, 2015, the LAR UR2 WMA will be provided a final approval or denial by the Regional Board or by the Executive Officer on behalf of the Regional Board. Implementation of the WMP will begin upon approval, and the existing stormwater management programs and associated control measures must be implemented until then.

The requirements associated with the WMP are identified in Part VI.C.5 of the MS4 Permit, Program Development, and focuses on the:

a. Identification of water quality priorities;
b. Selection of watershed control measures; and
c. Compliance schedules.

The 2012 Los Angeles County MS4 Permit and LAR UR2 WMP Plan do not require implementation to the exclusion of other municipal priorities and the prioritization of its recommendations, or planning elements, may be iteratively modified based on the permit identified AMP, changing technical consideration, fiscal limitations, and societal priorities of the individual Permittees, as they may change from time to time. Furthermore, the proposals within the WMP Plan, are subject to revision or reversal, following consideration of the Own-Motion order, regarding the Permit Appeal and contents, before the SWRCB.

1.3.1.1 2012 MS4 Permit Review Process and WMP Implementation

On December 10, 2012 the cities of Commerce, Huntington Park and Vernon (hereinafter “the Cities”) submitted Administrative Petitions (Petitions) to the California State Water Resources Control Board (SWRCB) pursuant to section 13320(a) of the California Water Code requesting that the SWRCB review various terms and requirements set forth in the 2012 MS4 Permit, Order No. R4-2012-0175 (Permit) adopted by the California Regional Water Quality Control Board, Los Angeles Region (Regional Board). The Petitions were subsequently referred to as SWRCB/OCC File Nos. A-2236(a) through (kk). In particular, and among other terms/requirements contained in the Permit, the Cities have sought review of all numeric limits, both interim and final, and whether derived from a TMDL or provided from the application of an adopted water quality standard, or through a discharge prohibition set forth in the Permit. The challenges to the various numeric limits set forth in the Permit include a challenge to all such numeric limits that may be complied with through the implementation of an approved Watershed Management Plan (WMP) and/or an Enhanced Watershed Management Plan (EWMP). In essence, the Petitions are challenging the fundamental premise for the various WMPs and the EWMPs requirements in the Permit, on various grounds, including, but not limited to, on the grounds that such Permit terms

exceed the maximum extent practicable (MEP) standard, and were not adopted in accordance with the requirements of California Water Code (CWC) sections 13000, 13263 and 13241 The Cities are reserving all of their rights to subsequently assert that the identified BMPs need not be implemented, on the grounds that they are not technically or economically feasible. In other words, that the BMPs are impracticable and contrary to the MEP standard, and that it is not possible to provide the reasonable assurances required under the Permit in a manner that is consistent with the MEP standard, if at all. The Cities agree that it is not possible to provide the reasonable assurances required under the Permit in a manner that is consistent with the MEP standard. On July 8, 2013 the SWRCB advised the Cities that the respective Petitions were complete and all such Petitions remain pending at this time.

In spite of the pending Petitions, the Cities are acting in good faith and moving forward to attempt to comply with all of the applicable terms of the Permit, and look forward to working with the Regional Board to assess and implement the strategies and requirements necessary for compliance, including the development of an acceptable WMP. Nevertheless, because, through their Petitions, the Cities believe that many of the terms of the Permit are invalid, including the terms involving compliance with numeric limits which the Cities are seeking to comply with through the development and implementation of this WMP. the Cities hereby expressly reserve and are not waiving, with this submission or otherwise, any of their rights to challenge the need for any WMP, including their rights to seek to void or otherwise compel modifications to the Permit terms involving the WMP, or to void or compel revisions to any other part or portion of the Permit. In addition, the Cities are not waving, and hereby expressly reserve, any and all rights they have or may have to seek to recover the costs from the State to develop and implement this WMP, on the grounds that the WMP is being developed and will be implemented in order to comply with various mandates involving TMDLs, water quality standards and other similar Permit requirements, which requirements in the Permit are not mandated by the Clean Water Act, and with the Cities being unable to impose fees in order to recover their costs for developing and implementing this WMP.

1.3.2 Relevant TMDLs

TMDLs applicable to the LAR UR2 WMA are listed in **Table 1-5** and are further characterized in Section 2 regarding the WMP Plan water quality priorities. The resolutions numbers and effective dates reflect the most recent amendments to the Los Angeles River nitrogen and metals TMDLs. TMDL impacted reaches are highlighted in **Figure 1-8** and a detailed summary of the numeric WLAs specified in the MS4 Permit can be found in **Appendix C**.

Table 1-5 TMDLs Applicable to the LAR UR2 WMA

TMDL	LARWQCB Resolution Number	Effective Date
Los Angeles River Nitrogen Compounds and Related Effects TMDL	2003-009	March 23, 2004
	2012-010[1]	Not Yet Effective
Los Angeles River Trash	2007-012	September 23, 2008
Los Angeles River Metals TMDL	2007-014	October 29, 2008
	2010-003	November 3, 2011
Los Angeles River Bacteria TMDL	2010-007	March 23, 2012

[1] Site Specific Objectives (SSOs) for Ammonia were approved on June 4, 2013.

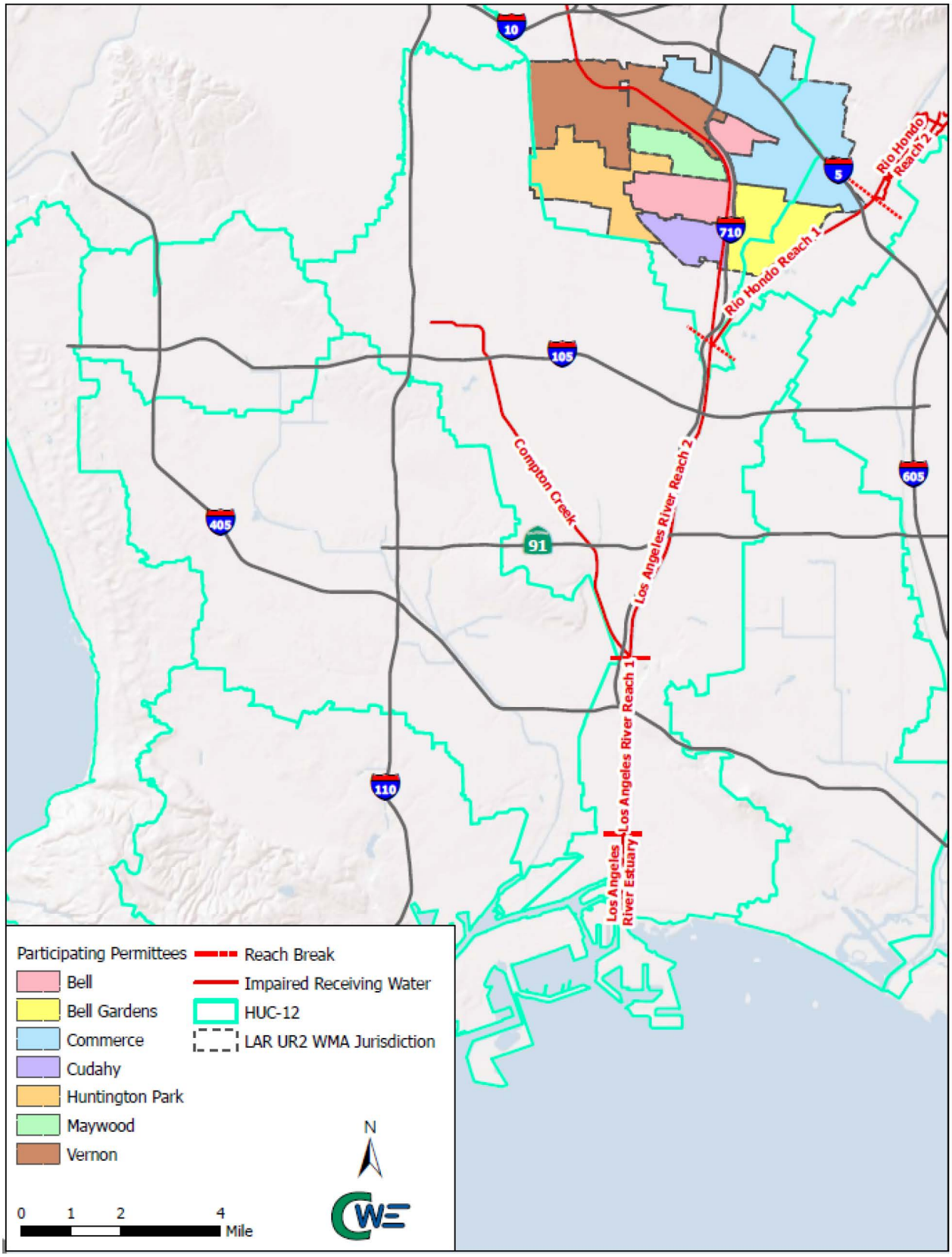


Figure 1-8 LAR UR2 WMA and Downstream Impaired Water Bodies

Regional Board adopted TMDLs include requirements to develop implementation plans, providing interim and final compliance dates. **Table 1-6** lists LAR UR2 WMA relevant interim and final compliance dates.

Two dry-weather compliance paths are applicable to the LAR bacteria TMDL, based on whether or not jurisdictions develop and implement a Load Reduction Strategy (LRS), which must quantitatively demonstrate that outfall specific actions result in attainment of the final WLAs. There are also required dry-weather "snapshot" monitoring events where every flowing outfall is sampled for bacterial indicators. Six snapshot monitoring events are required prior to LRS implementation, and three after, to assess effectiveness. Completing the LRS process provides regulatory relief by providing seven additional years before final effluent limitations become effective. The WMA proposes to combine and undertake the LAR and Rio Hondo LRS studies at the same time and submit the results by March 23, 2016, so that results are comparable and fair among the WMA Permittees. This is not expected to adversely impact water quality, as the City of Los Angeles Segment B LRS, undertaken prior to Permit adoption, identified three Low Flow Diversion (LFD) projects, that would be necessary to achieve interim objectives, and none were within the LAR UR2 WMA. The proposed LRS due date and corresponding interim and final compliance milestones for the dry-weather bacteria TMDL for the Los Angeles River are included in **Table 1-6**.

Revised numeric limits were incorporated into the MS4 Permit by the Regional Board after adoption and Office of Administrative Law (OAL) approval of the TMDL amendment. Site Specific Objectives for Copper and Lead were developed (LWA 2013), at considerable Permittee expense, and have been presented to the LARWQCB for future consideration as a Basin Plan Amendment of the LAR Metals TMDL.

1.3.3 Relevant 303(d) Listings

Receiving water impairments on the CWA 303(d) List, otherwise known as the State Integrated Report, but not currently addressed by a TMDL, include the following for the LAR UR2 WMA:

- **Los Angeles River Reach 2**
  - **Oil** – This constituent has an estimated TMDL completion date of 2019. Impairments for oil are based on a qualitative assessment of sheen and may result from natural constituents associated with algal growth. It is anticipated that remaining anthropogenic oil and grease will continue to be controlled through the enhanced weekly street vacuuming/sweeping program utilized by each of the LAR UR2 WMA Permittees and the installation of the Full Capture Certified (FCC) trash control devices which should be completed before the TMDL completion date. Furthermore, this condition may have originated in upstream areas where the interval between sweeping events is months, rather than a single week. Finally, the LAR UR2 WMA CIMP includes analytical monitoring during the first year to numerically assess the presence of this contaminant.
- **Rio Hondo Reach 1**
  - **Coliform Bacteria** – This constituent has an estimated completion date of 2019; however with the adoption of the Los Angeles River Bacteria TMDL this impairment is actually currently being addressed.
  - **Toxicity** – This impairment condition has an estimated TMDL completion date of 2021; however other toxicity listings have been addressed as a specific toxicant, such as a metal, for which a TMDL has already been developed. It is unclear that a source assessment can be developed, or a pollutant reduction strategy implemented for a condition or unknown constituent. The impairment listing is based on a single line of evidence consisting of only two positive toxicity tests using Fathead Minnows and *Ceriodaphnia dubia*. The LAR UR2 WMA CIMP proposes required annual toxicity tests, to assess whether this impairment remains or was a result of TMDL addressed metals concentrations or other conditions associated with the extremely low dry weather flows that were previously present in the Rio Hondo.

Table 1-6 Schedule of TMDL Compliance Milestones Applicable to the LAR UR2 WMA

TMDL	Water Bodies	Constituents	Compliance Goal	Weather Condition	Compliance Dates and Milestones (Bolded **numbers** indicate milestone deadlines within the current MS4 Permit term)[1]													
					2012	2013	2014	2015	2016	2017	2020	2022	2023	2024	2026	2028	2030	2032	2037
LAR Nitrogen	All	Ammonia, Nitrate, Nitrite, Nitrate+Nitrite	Meet WQBELs	All	**Pre 2012**														
					Final														
LAR Trash	All	Trash	% Reduction	All	**9/30**	**9/30**	**9/30**	**9/30**	**9/30**										
					70%	**80%**	**90%**	**96.7%**	**100%**										
LAR Metals	All	Copper, Lead, Zinc	% of MS4 area Meets WQBELs	Dry	**1/11**						1/11			1/11					
					50%						75%			100%					
	All	Copper, Lead, Zinc, Cadmium		Wet	**1/11**									1/11		1/11			
					25%									50%		100 %			
LAR Bacteria	All	*E. Coli*	Meet WQBELs	Dry w/o LRS									Final						
				Rio Hondo Segment B Dry w/ LRS					**LAR UR2 LRS Due[2]**				Interim				Final		
				LAR Segment B Dry w/ LRS			**LAR UR2 LRS Due[2]**		[2]			Interim				Final			
				Wet															Final

Notes: LAR = Los Angeles River

[1] The MS4 Permit term is five years from the MS4 Permit effective date or December 27, 2017.

[2] The LRS requires coordinated effort by all MS4 Permittees within a segment or tributary. An LRS must quantitatively demonstrate that the actions for specific outfalls are sufficient to result in attainment of the *final* WLAs. Requires six snapshot sampling events prior to LRS and three post-LRS snapshot sampling events. The LAR UR2 WMA proposes to shift the LAR LRS to coincide with the Rio Hondo LRS schedule, so that data and methods are comparable between Permittees. This is not anticipated to shift compliance as the prior City of Los Angeles LRS for segment B indicated that only three Low Flow Diversions upstream of the LAR UR2 WMA would be required for the first interim compliance step. Shifting the schedule will also allow LAR UR2 to complete its Non-Stormwater Discharge survey and initiate the source assessment in areas where there are large number of non-MS4 NPDES Permittees and facilities that have asserted a federal preemption from state water quality regulation, such as rail roads.

1.4 WMP Stakeholder Process

Permit Part VI.C.1.f.v, states that each WMP must provide appropriate opportunity for meaningful stakeholder input, including, but not limited to, a permit-wide watershed management program TAC that will advise and participate in the development of the WMP from month six through the date of approval. The MS4 Permit requires that the TAC include at least one Permittee representative from each WMA for which a WMP is being developed and one public representative from an NGO with public membership, staff from the Regional Board and USEPA Region IX. The City of Huntington Park regularly participated on the TAC, with the assistance of the City of Commerce as an alternate.

Rather than reaching out to distant NGO stakeholders with priorities beyond the central LAR watershed, the LAR UR2 WMA reached out to a local advocacy group Communities for A Better Environment[4] (CBE) in the City of Huntington Park. On February 26, 2014, representatives for the Permittees and CBE met and discussed the MS4 Permit and development of the WMP, RAA, and CIMP Plans. After discussing WCM and BMP alternatives, CBE asserted a preference for a distributed rain barrel retrofit program to support residential agricultural projects. Since this recommendation would need to be compatible with the RAA, additional discussions were deferred until after the Regional Board RAA Guidelines were released on March 25, 2014, and modeling scenarios could be analyzed. With bacteria as a dominant or driving pollutant, the SB-PAT model favored infiltration BMPs near subwatershed outfalls, which accept runoff from smaller events and allow larger events to be addressed as allowable exceedance days, over large numbers of distributed BMPs sized to rare larger events. Furthermore, since agricultural areas are generally modeled as a greater sources of nearly all pollutants than residential areas (Table 3.3 of the Regional Board RAA Guidelines), it is unlikely that any benefit would accrue. Further Permittee and CBE meetings will be planned during the Summer 2014 WMP review period; however, it is unclear that Regional Board MS4 Permit objectives align with those of local NGO stakeholders and in a worst case scenario, both the Regional Board and Permittees could be confronted with extensive new enforcement demands.

1.5 WMP Overview

The WMP documents the programs development process by detailing the water quality priorities within the LAR UR2 WMA, identifying existing, potential, and proposed control measures, and demonstrating through a model that WQOs will be satisfied in order to ensure compliance with the MS4 Permit. The WMP includes the following sections:

- **Section 2 - Water Quality Priorities**
  Receiving water bodies are identified and characterized based on available water quality data records. Water Body-Pollutant Classifications are developed so that categories can be assigned to each water body-pollutant combination. A source assessment was used to establish water quality priorities. The water quality priorities are the primary "driver" of the WMP.

- **Section 3 - Watershed Control Measures**
  This section outlines the existing, potential, and proposed control measures in LAR UR2 WMA. The current MCMs are described and an approach to modifying the programs, as well as potential modifications, is presented. Existing structural BMPs are identified an approach to identifying and selecting additional regional BMPs is included. The proposed watershed control measures will be implemented to address the water quality priorities.

[4] http://www.cbecal.org/

- **Section 4 - Reasonable Assurance Analysis**
  The modeling system being used by the LAR UR2 WMA is described. The modeling approach and process are discussed which involve Target Load Reductions and reductions associated with both structural and non-structural BMPs. The BMP assumptions and proposed BMPs are detailed along with the model output. The RAA modeled combinations of watershed control measures and BMPs to demonstrate their effectiveness in addressing the water quality priorities. The RAA demonstrates Target Load Reductions will be met, using the Site Specific Objectives for metals as presented in the Draft Los Angeles River Copper and Lead Special Study Implementation Report (Larry Walker and Associates, 2013).

- **Section 5 - Compliance Schedules and Costs**
  The LAR UR2 WMA identified interim milestones and dates to compliment TMDL final Waste Load Allocation (WLA) and compliance dates. These milestone dates were chosen at intervals to reflect key Permit and TMDL dates, while allowing sufficient time for monitoring data permit and implementation to progress in a meaningful fashion that might guide the iterative adaptive management process.

- **Section 6 - Legal Authority**
  As summarized in their 2012-13 Annual Reports, the LAR UR2 WMA Permittees have established the Legal Authorities required in Permit Part VI.A.2.

2. Water Quality Priorities

Identification of the water quality priorities in the LAR UR2 WMA is a key component of the WMP process. Part VI.C.5.a of the MS4 Permit outlines the pertinent elements of the prioritization process as follows:

1. Water quality characterization (VI.C.5.a.i) based on available monitoring data, TMDLs, 303(d) lists, storm water annual reports, etc.;
2. Water body-pollutant classification (VI.C.5.a.ii) to identify water body-pollutant combinations that fall into three MS4 Permit-defined categories;
3. Source assessment (VI.C.5.a.iii) for the water body-pollutant combinations in the three categories; and
4. Prioritization of the water body-pollutant combinations (VI.C.5.a.iv).

The three MS4 Permit defined categories are:

- Category 1 (Highest Priority): Water body-pollutant combinations for which numeric limits are established in Part VI.E and Attachments L through R of the MS4 Permit. Attachment O is the most applicable attachment for LAR UR2 WMA.

- Category 2 (High Priority): Pollutants for which data indicate water quality impairment in the receiving water according to the State's Water Quality Control Policy for Developing California's CWA Section 303(d) List (State Listing Policy) and for which MS4 discharges may be causing or contributing to the impairment.

- Category 3 (Medium Priority): Pollutants for which there are insufficient data to indicate water quality impairment in the receiving water according to the State's Listing Policy, but which exceed applicable receiving water limitations contained in the MS4 Permit and for which MS4 discharges may be causing or contributing to the exceedance.

The following sections presented below describe the characterization and prioritization of those water body-pollutant combinations (WBPCs) found to be issues in the LAR UR2 WMA.

2.1 Water Quality Characterization

Water quality monitoring data for the Los Angeles River Upper Reach 2 water body segments were gathered, assessed for quality and compiled into a database by wet-weather and dry-weather conditions and locations. Permittee specific discharge sampling has not been required under past permits; therefore, no information was identified. Water quality monitoring data was solicited from numerous sources, but the most useful and highest quality data relevant to the LAR UR2 WMA were obtained from the following sources:

- Los Angeles County Annual Mass Emission and Tributary Station Monitoring Data (2002 – 2012);
- Los Angeles River Metals TMDL Coordinated Monitoring Plan (CMP) Ambient Monitoring Program (2008 – 2013);
- Council for Watershed Health (CWH) Los Angeles River Watershed Monitoring Program (LARWMP) data (2009 – 2012); and
- Cleaner Rivers through Effective Stakeholder-led TMDLs (CREST) Los Angeles River Bacteria Source Identification (BSI) Study.

A review of these sources found that no monitoring locations were located within the LAR UR2 WMA. In order to conduct the MS4 Permit required data analysis, monitoring locations upstream or downstream of

the LAR UR2 WMA was assessed. Details of each data source are summarized below and a more detailed summary can be found in **Appendix D**.

All data were screened to identify potential water quality objective exceedances. The monitoring sites with relevant available data are illustrated in **Figure 2-1**. Monitoring data that met Quality Assurance and Quality Control (QA/QC) criteria were analyzed to determine constituents exceeding water quality objectives. The number of available analytical data values, detected data values, and total number of constituents analyzed in the primary LAR UR2 WMA receiving water bodies are summarized in **Table 2-1**.

Table 2-1 Summary of Water Quality Data Reviewed for LAR UR2 WMA

Receiving Water Body	10 Year (2002 – 2012)			5 Year (2007 – 2012)		
	Total Sample	Number Detect	Number of Constituents	Total Sample	Number Detect	Number of Constituents
Los Angeles River	10,524	3,529	169	6,700	2,425	165
Rio Hondo	2,006	715	157	70	70	7
Wet-Weather	7,761	2,413	169	3,891	1,226	165
Dry-Weather	4,769	1,831	170	2,879	1,269	167
Totals	**12,530**	**4,244**	**171**	**6,770**	**2,495**	**167**

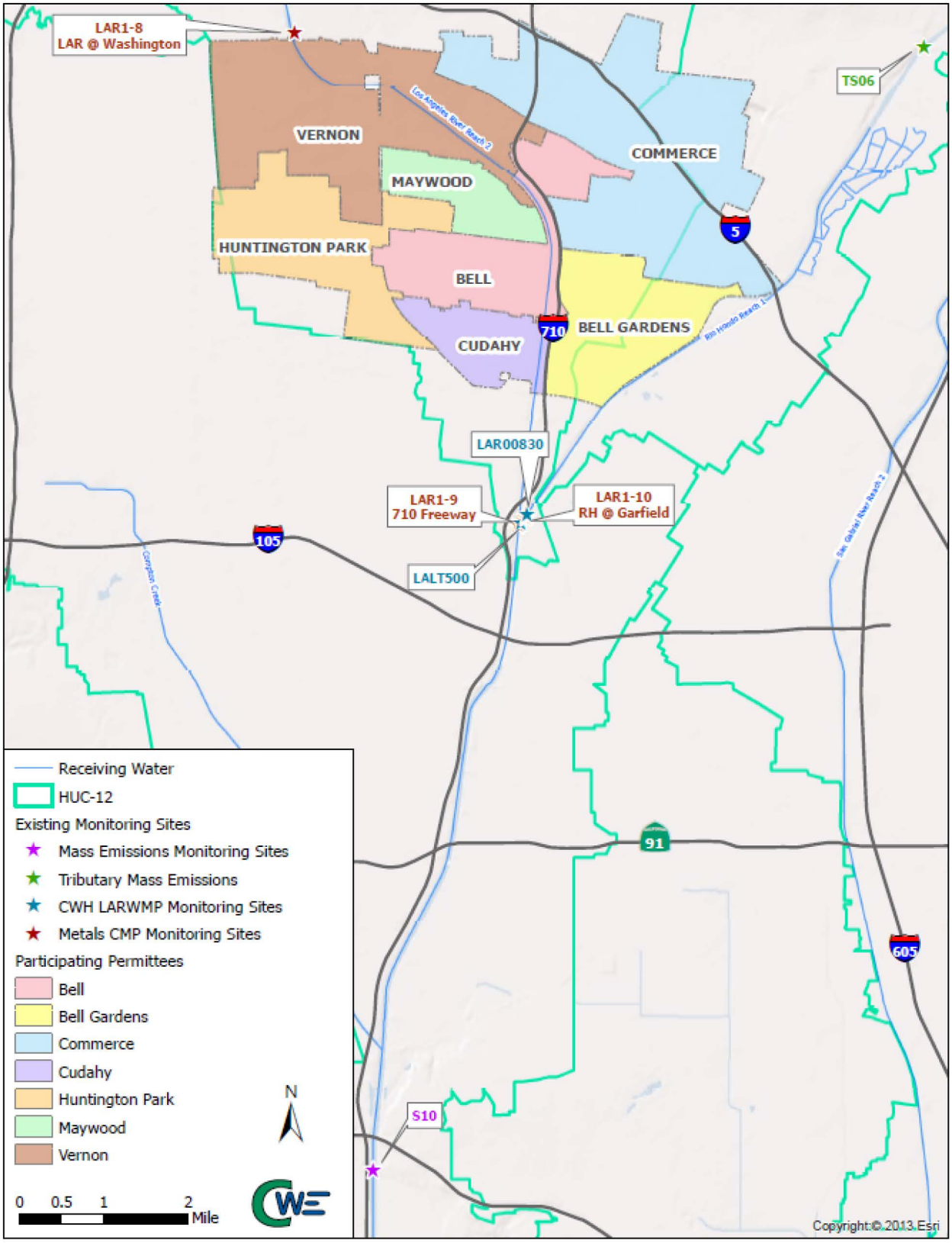


Figure 2-1 Existing Monitoring Sites Relevant to LAR UR2 WMA

Los Angeles County Annual Mass Emission and Tributary Station Monitoring Data

The Los Angeles County Department of Public Works Annual Stormwater Monitoring Report presents stormwater quality findings for each July to June storm season. The 2002–2003, 2003–2004, 2005–2006, 2006–2007, 2007–2008, 2008–2009, 2009–2010, 2010-2011 and 2011-2012 monitoring reports addressed the following programs and associated elements:

- Core Monitoring Program – mass emission, tributary, water column toxicity, shoreline, and trash monitoring.
- Regional Monitoring Program – estuary sampling and bioassessment.
- Special studies – New Development Impacts Study in the Santa Clara Watershed, Peak Discharge Impact Study and BMP Effectiveness Study.

Monitoring data from the Los Angeles County Annual Mass Emission and Tributary Station Monitoring were analyzed for mass emission station S10 (Los Angeles River at Wardlow) and TS06 (Rio Hondo at Whittier Narrows).

Los Angeles River Metals TMDL CMP Ambient Monitoring Program

The CMP includes Tier I ambient monitoring program which collects monthly samples at thirteen locations. Tier I monitoring sites LAR1-8, LAR1-9, and LAR1-10 are located adjacent to the LAR UR2 WMA and the data from these sites help LAR UR2 WMA have a better understanding of the distribution of metals concentrations in the adjacent WMAs. Data for monitoring location LAR1-8, LAR1-9, and LAR1-10 were analyzed from the Los Angeles River Metals TMDL CMP. LAR1-8 is located upstream of the LAR UR2 WMA at Arroyo Seco, LAR1-9 is located downstream of the LAR UR2 WMA just above the Rio Hondo confluence, and LAR1-10 is located on the Rio Hondo just above the Los Angeles River confluence.

CWH LARWMP

CWH coordinates the LARWMP to assess watershed health based on five broad objectives: are stream conditions improving; are specific critical site conditions improving; do discharges meet WQOs; is it safe to swim; and are locally caught fish safe to eat. CWH water quality monitoring data was collected under a stratified randomized strategy so that most sites were not revisited, and only a limited number of constituents were tested at each site. CWH monitoring data for locations LALT500 and LAR00830 were included in the analysis.

CREST Los Angeles River BSI Study

The CREST Los Angeles River BSI Study was designed to characterize the bacteria inputs to the LA River, support the development of the Bacteria TMDL source assessment, and assist with prioritization of the types and locations of TMDL implementation actions. Since bacteria are already categorized as a Category 1 pollutant, findings of the study were not included in the monitoring data analysis, as the study focuses solely on bacteria, which is a Category 1 pollutant because of existing Los Angeles River Bacteria TMDL. Additional details regarding this study and its findings can be found in **Appendix D**.

2.1.1 Characterization of Receiving Water Quality

Receiving water bodies and constituents, or WBPCs, identified during the data review were individually evaluated based on number of analyses reported, number of detects, and number of exceedances. Constituents subject to a TMDL underwent a data review to determine the status of compliance, as

opposed to determining the appropriate Category of pollutant. Constituents on the CWA 303(d) list were analyzed based on the listing and current exceedance status. Constituents not TMDL or CWA 303(d) listed, but subject to basin plan, California Toxics Rule (CTR) or MS4 Permit water quality objectives were identified.

Analytes with exceedances in the past 10 years are presented in **Table 2-2** and subcategorized into TMDL, 303(d), and other source derivations. A comparison of the five and ten year data in **Table 2-2**, suggests a subtle decrease in the frequency with which exceedances are observed for most constituents. Cyanide, dissolved oxygen, chemical oxygen demand, chloride, and nitrite-N appeared to no longer demonstrate exceedances during the most recent 5 year period.

To further evaluate the data, comparisons of the Los Angeles River Reach 2 to Rio Hondo and wet- to dry-weather were also conducted. The comparison will help evaluate the constituents for each receiving water body during wet- and dry-weather conditions for five and ten year data sets. These comparisons are presented in **Table 2-3** to **Table 2-5**.

Table 2-3 demonstrates that, for the 10 year data set, wet-weather exceedances were more prevalent than dry-weather, for most constituents with the exception of cyanide, pH, nitrite-N, and mercury. The five year data set, presented in **Table 2-4**, shows an even greater percentage of exceedances in wet-weather. **Table 2-5** suggest that there were a higher percentage of exceedances in the Rio Hondo as compared to the Los Angeles River, with the exception of dissolved oxygen, pH, chemical oxygen demand, nitrite-N, total phosphorus, cadmium, chromium, mercury, nickel, and zinc. The higher percentages of exceedances may attribute to the limited number of samples collected for the Rio Hondo, as well as to the low or limited flow of the river.

This data has been presented to show a general characterization of the receiving water quality. However, as this data was obtained from sites outside of the LAR UR2 WMA, it does not reflect the water quality conditions caused by the LAR UR2 WMA.

Table 2-2 Summary of Exceedances for All Five Year and Ten Year Data Set

Constituent	10 Year (2002-2012)					5 Year (2007 - 2012)				
	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed
TMDL										
E. coli	0	0	0	0%	0%	0	0	0	0%	0%
Copper	149	146	51	98%	34%	112	109	33	97%	29%
Lead	149	148	16	99%	11%	112	111	12	99%	11%
Zinc	149	149	25	100%	17%	112	112	19	100%	17%
Ammonia	50	42	0	84%	0%	42	35	0	83%	0%
CWA 303(d) List										
Total Coliform	75	75	56	100%	75%	38	38	26	100%	68%
Fecal Coliform	75	74	59	99%	79%	38	37	27	97%	71%
Oil and Grease	75	39	39	52%	52%	38	22	22	58%	58%
Basin Plan, CTR, MS4 Permit Water Quality Objective Exceedance										
Fecal Enterococcus	75	73	65	97%	87%	38	36	31	95%	82%
Cyanide	75	57	4	76%	5%	38	29	0	76%	0%
Dissolved Oxygen	74	74	1	100%	1%	38	38	0	100%	0%
pH	75	75	14	100%	19%	38	38	9	100%	24%
Chemical Oxygen Demand	75	74	1	99%	1%	38	37	0	97%	0%
Chloride	79	79	1	100%	1%	42	42	0	100%	0%
Kjeldahl-N	79	79	18	100%	23%	42	42	9	100%	21%
Nitrite-N	79	50	6	63%	8%	42	25	0	60%	0%
Nitrogen - Total	4	4	3	100%	75%	4	4	3	100%	75%
Phosphorus - Total (as P)	78	77	10	99%	13%	42	41	4	98%	10%
Total Suspended Solids	82	82	30	100%	37%	45	45	16	100%	36%
Cadmium	79	45	5	57%	6%	42	34	3	81%	7%
Chromium	79	77	9	97%	11%	42	40	6	95%	14%
Mercury	79	6	2	8%	3%	42	5	1	12%	2%
Nickel	79	77	6	97%	8%	42	40	3	95%	7%

Table 2-3 Ten Year (2002 – 2012) Comparison of Exceedances during Wet- and Dry-Weather

Constituent	10-Year Wet-Weather					10-Year Dry-Weather				
	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed
TMDL										
E. coli	0	0	0	0%	0%	0	0	0	0%	0%
Copper	49	47	37	96%	76%	100	99	14	99%	14%
Lead	49	49	11	100%	22%	100	99	5	99%	5%
Zinc	49	49	25	100%	51%	100	100	0	100%	0%
Ammonia	29	25	0	86%	0%	21	17	0	81%	0%
CWA 303(d) List										
Total Coliform	49	49	49	100%	100%	26	26	7	100%	27%
Fecal Coliform	49	49	48	100%	98%	26	25	11	96%	42%
Oil and Grease	49	37	37	76%	76%	26	2	2	8%	8%
Other										
Fecal Enterococcus	49	49	49	100%	100%	26	24	16	92%	62%
Cyanide	49	34	2	69%	4%	26	23	2	88%	8%
Dissolved Oxygen	48	48	1	100%	2%	26	26	0	100%	0%
pH	49	49	2	100%	4%	26	26	12	100%	46%
Chemical Oxygen Demand	49	48	1	98%	2%	26	26	0	100%	0%
Chloride	49	49	1	100%	2%	30	30	0	100%	0%
Kjeldahl-N	49	49	15	100%	31%	30	30	3	100%	10%
Nitrite-N	49	26	0	53%	0%	30	24	6	80%	20%
Nitrogen - Total	0	0	0	0%	0%	4	4	3	100%	75%
Phosphorus - Total (as P)	48	48	8	100%	17%	30	29	2	97%	7%
Total Suspended Solids	56	56	29	100%	52%	26	26	1	100%	4%
Cadmium	49	31	5	63%	10%	30	14	0	47%	0%
Chromium	49	48	8	98%	16%	30	29	1	97%	3%
Mercury	49	1	1	2%	2%	30	5	1	17%	3%
Nickel	49	48	5	98%	10%	30	29	1	97%	3%

Table 2-4 Five Year (2007 – 2012) Comparison of Exceedances during Wet- and Dry-Weather

Constituent	5 year Wet-Weather					5 year Dry-Weather				
	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed
TMDL										
E. coli	0	0	0	0%	0%	0	0	0	0%	0%
Copper	24	22	22	92%	92%	88	87	11	99%	13%
Lead	24	24	7	100%	29%	88	87	5	99%	6%
Zinc	24	24	19	100%	79%	88	88	0	100%	0%
Ammonia	24	21	0	88%	0%	18	14	0	78%	0%
CWA 303(d) List										
Total Coliform	24	24	24	100%	100%	14	14	2	100%	14%
Fecal Coliform	24	24	23	100%	96%	14	13	4	93%	29%
Oil and Grease	24	20	20	83%	83%	14	2	2	14%	14%
Other										
Fecal Enterococcus	24	24	24	100%	100%	14	12	7	86%	50%
Cyanide	24	17	0	71%	0%	14	12	0	86%	0%
Dissolved Oxygen	24	24	0	100%	0%	14	14	0	100%	0%
pH	24	24	0	100%	0%	14	14	9	100%	64%
Chemical Oxygen Demand	24	23	0	96%	0%	14	14	0	100%	0%
Chloride	24	24	0	100%	0%	18	18	0	100%	0%
Kjeldahl-N	24	24	7	100%	29%	18	18	2	100%	11%
Nitrite-N	24	13	0	54%	0%	18	12	0	67%	0%
Nitrogen - Total	0	0	0	0%	0%	4	4	3	100%	75%
Phosphorus - Total (as P)	24	24	4	100%	17%	18	17	0	94%	0%
Total Suspended Solids	31	31	16	100%	52%	14	14	0	100%	0%
Cadmium	24	20	3	83%	13%	18	14	0	78%	0%
Chromium	24	23	6	96%	25%	18	17	0	94%	0%
Mercury	24	0	0	0%	0%	18	5	1	28%	6%
Nickel	24	23	3	96%	13%	18	17	0	94%	0%

Table 2-5 Summary of Exceedances for Los Angeles River and Rio Hondo (2002 – 2012)

Constituent	Los Angeles River					Rio Hondo				
	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed
TMDL										
E. coli	0	0	0	0%	0%	0	0	0	0%	0%
Copper	123	120	35	98%	28%	26	26	16	100%	62%
Lead	123	122	10	99%	8%	26	26	6	100%	23%
Zinc	123	123	24	100%	20%	26	26	1	100%	4%
CWA 303(d) List										
Total Coliform	63	63	46	100%	73%	12	12	10	100%	83%
Fecal Coliform	63	62	48	98%	76%	12	12	11	100%	92%
Oil and Grease	63	34	34	54%	54%	12	5	5	42%	42%
Other										
Fecal Enterococcus	63	61	54	97%	86%	12	12	11	100%	92%
Cyanide	63	50	1	79%	2%	12	7	3	58%	25%
Dissolved Oxygen	62	62	1	100%	2%	12	12	0	100%	0%
pH	63	63	12	100%	19%	12	12	2	100%	17%
Chemical Oxygen Demand	63	62	1	98%	2%	12	12	0	100%	0%
Chloride	63	63	0	100%	0%	16	16	1	100%	6%
Kjeldahl-N	63	63	13	100%	21%	16	16	5	100%	31%
Nitrite-N	63	43	6	68%	10%	16	7	0	44%	0%
Nitrogen - Total	0	0	0	0%	0%	4	4	3	100%	75%
Phosphorus - Total (as P)	63	62	9	98%	14%	15	15	1	100%	7%
Total Suspended Solids	70	70	24	100%	34%	12	12	6	100%	50%
Cadmium	63	39	5	62%	8%	16	6	0	38%	0%
Chromium	63	61	9	97%	14%	16	16	0	100%	0%
Mercury	63	3	2	5%	3%	16	3	0	19%	0%
Nickel	63	61	6	97%	10%	16	16	0	100%	0%

2.1.2 Characterization of Discharge Quality

Stormwater and non-stormwater discharges would be characterized if sufficient existing data were available. The necessary data is limited due to the typical lack of data for MS4 discharges within the LAR UR2 WMA and other Los Angeles County WMAs. Regional studies, modeling data, and/or land use data will be further evaluated in the future in order to characterize discharge quality. In addition, data will become available through the future Coordinate Integrated Monitoring Program (CIMP) Outfall Monitoring which will be utilized to characterize discharges from the LAR UR2 WMA.

2.2 Water Body Pollutant Classification

Based on the findings from the water quality characterization, the WBPCs can be classified into one of three categories, in accordance with the MS4 Permit Part VI.5.a.ii. Those WBPCs with a TMDL were classified as Category 1, those WBPCs listed on the State's 303(d) list as impairing a particular waterbody segment were classified as Category 2, and those remaining WBPCs without an associated TMDL or on the State's 303(d) list, but showing exceedances of water quality criteria were classified as Category 3. This categorization is intended to prioritize WBPCs in order to guide the implementation of structural and non-structural control measures in this WMP as well as the CIMP development. A classification of the constituents into each category was prepared and is summarized in **Table 2-6**. Category 3 pollutants were not identified for LAR UR2 WMA because all available water quality data was obtained downstream of LAR UR2 WMA, therefore its applicability is unknown. Through CIMP monitoring efforts, applicable data will be obtained and WBPCs will be revised through the adaptive management process.

Table 2-6 Categorized Water Body-Pollutant Combinations

Category 1 (TMDL)	Category 2 (303(d) List)
Ammonia-Nitrogen Nitrate-Nitrogen Nitrite-Nitrogen Nitrate-Nitrogen Plus Nitrite-Nitrogen *E. coli* Bacteria Cadmium Copper Lead Zinc Trash	Oil Coliform Bacteria Toxicity

2.3 Source Assessment

After the WBPC classification analysis, a source assessment, as outlined in MS4 Permit Part VI.C.5.a.iii, for LAR UR2 WMA Category 1 through 3 pollutants is warranted to identify whether MS4 discharges are likely to be causing or contributing to the impairments or exceedances. The assessment criteria may be based on the following facts or findings:

- Findings from LAR UR2 WMA Illicit Connections and Illicit Discharge Elimination Programs;
- Findings from LAR UR2 WMA Industrial/Commercial Facilities Programs;
- Findings from LAR UR2 WMA Development Construction Programs;
- Findings from LAR UR2 WMA Public Agency Activities Programs;
- TMDL source investigations;
- Watershed model results;

- Findings from LAR UR2 WMA monitoring programs, including but not limited to TMDL compliance monitoring and receiving water monitoring; and
- Any other pertinent data, information, or studies related to pollutant sources and conditions that contribute to the highest water quality priorities.

Monitoring data from non-MS4 Permittees in the LAR UR2 WMA was also reviewed. The result of this analysis is summarized in the following sections.

Bacteria

The Los Angeles River Watershed Bacteria TMDL asserted the following regarding the identification of indicator bacteria sources to the Los Angeles River:

> *Dry-weather urban runoff and stormwater conveyed by storm drains are the primary sources of elevated bacterial indicator densities to the Los Angeles River Watershed during dry- and wet-weather. The linkage between the numeric targets and the allocations is supported by the following scientific findings:*
>
> 1. *In Southern California, in dry-weather, local sources of bacteria principally drive exceedances (LARWQCB, 2002b; 2003b; 2004a).*
> 2. *Tiefenthaler et al. found that in natural streams bacteria levels were generally higher during lower flow condition (Tiefenthaler et al., 2008).*
> 3. *Ackerman et al. found that storm drains contribute roughly 13 percent of the flow in the Los Angeles River in dry-weather, while Water Reclamation Plants (WRPs) account for roughly 72 percent of the flow in the river during dry-weather. With this flow, storm drains were contributing almost 90 percent of the E. coli loading (Ackerman et al., 2003). E. coli concentrations were found to be as much as four orders of magnitude higher from storm drains than from the WRP discharges.*
> 4. *In the BSI study, the CREST team found that approximately 85 percent of the storm drain samples collected exceeded the E. coli objective. In the reaches investigated, E. coli loading from storm drains and tributaries greatly exceeded the allowable instream loading. The study also found that some of the loading in Reach 2 could not be attributed to the measured storm drain inputs.*
> 5. *In Southern California, in wet-weather, upstream or watershed sources principally cause the bacteria exceedances (LARWQCB, 2002b; 2003c; 2004a).*
> 6. *During wet-weather, WRP discharges may account for as little as 1 percent of the total flow in the river (CREST, 2009a).*
> 7. *Based on three experiments conducted by Noble et al. (1999) to mimic natural conditions in or near Santa Monica Bay (SMB), two in marine water and one in fresh water, bacteria degradation was shown to range from hours to days (Noble et al., 1999). Based on the results of the marine water experiments, the model assumes a first-order decay rate for bacteria of 0.8 d-1 (or 0.45 per day). Degradation rates were shown to be as high as 1.0 d-1 (Noble et al., 1999). These studies show that bacterial degradation and dilution during transport through the watershed do not significantly affect bacterial indicator densities in receiving waters.*

Based on this finding, further source assessment of the MS4 discharges will need to be conducted to determine the primary source of bacteria within MS4 of the LAR UR2 WMA.

Metals

The Los Angeles River Metals TMDL CMP stated the following regarding sources of metals to MS4 discharges:

> *There are significant differences in the sources of metals loadings during dry-weather and wet-weather. During dry-weather, most of the metals loadings are in the dissolved form. The three major publicly owned treatment works (POTWs) that discharge to the river (Tillman WRP, LA-Glendale WRP, and Burbank WRP) constitute the majority of the flow and metals loadings during dry-weather. The storm drains also contribute a large percentage of the loadings during dry-weather because although their flows are typically low, concentrations of metals in urban runoff may be quite high. The remaining portion of the dry-weather flow and metals loadings represents a combination of tributary flows, groundwater discharge, and flows from other permitted NPDES discharges within the watershed.*
>
> *During wet-weather, most of the metals loadings are in the particulate form and are associated with wet-weather stormwater flow. On an annual basis, stormwater contributes about 40 percent of the cadmium loading, 80 percent of the copper loading, 95 percent of the lead loading and 90 percent of the zinc loading. This stormwater flow is permitted through two MS4 permits, a separate Caltrans MS4 permit, a general construction stormwater permit and a general industrial stormwater permit.*
>
> *Nonpoint sources of metals may include tributaries that drain the open space areas of the watershed. Direct atmospheric deposition of metals on the river is also a small source. Indirect atmospheric deposition on the land surface that is washed off during storms is a larger source, which is accounted for in the estimates of stormwater loadings.*

Nitrogen Compounds, pH, and Phosphorous

The Los Angeles River Nitrogen Compounds and Related Effects TMDL asserted that the principal sources of nitrogen compounds to the Los Angeles River were:

> *The principal source of nitrogen compounds to the Los Angeles River is discharges from the Donald C. Tillman WRP, the Los Angeles-Glendale WRP, and the Burbank WRP. During dry-weather period, the major POTWs contribute 84.1 percent of the total dry-weather nitrogen load. Urban runoff, stormwater, and groundwater discharge may also contribute nitrate loads. Further evaluation of these sources is set forth in the Implementation Plan.*

Trash, Oil, Grease, and Sediments

The Trash TMDL for the Los Angeles River Watershed asserted the following in the source analysis section of the technical TMDL:

> *The major source of trash in the river results from litter, which is intentionally or accidentally discarded in watershed drainage areas. Transport mechanisms include the following:*
>
> 1. *Storm drains: trash is deposited throughout the watershed and is carried to the various reaches of the river and its tributaries during and after significant rainstorms through storm drains.*
> 2. *Wind action: trash can also blow into the waterways directly.*
> 3. *Direct disposal: direct dumping also occurs.*

Extensive research has not been done on trash generation or the precise relationship between rainfall and its deposition in waterways. However, it has been found that the amount of gross pollutants entering the stormwater system is rainfall dependent but does not necessarily depend on the source (Walker and Wong, December 1999). The amount of trash which enters the stormwater system depends on the energy available to re-mobilize and transport deposited gross pollutants on street surfaces rather than on the amount of available gross pollutants deposited on street surfaces. The exception to this finding of course would be in the event that there is zero gross pollutants deposited on the street surfaces or other drainages tributary to the storm drain.

Where gross pollutants exist, a clear relationship between the gross pollutant load in the stormwater system and the magnitude of the storm event has been established. The limiting mechanism affecting the transport of gross pollutants, in the majority of cases, appears to be remobilization and transport processes (i.e., stormwater rates and velocities).

Several studies conclude that urban runoff is the dominant source of trash. The large amount of trash conveyed by urban stormwater to the Los Angeles River is evidenced by the amount of as trash that accumulates at the base of storm drains. The amount and type of trash that is washed into the storm drain system appears to be a function of the surrounding land use.

While this assessment may have been correct several years ago, the LAR UR2 WMA were recipients of a grant that resulted in full capture certified devices being placed where ever possible within the jurisdictions. Most of the cities are 90 percent or more compliant with the trash TMDL and are investigating opportunities to complete this implementation effort.

2.4 Prioritization

MS4 Permit Part VI.C.5.a.iv, directs Permittees to identify the water quality priorities within each WMA. At a minimum, these priorities shall include: 1) Achieving applicable WQBELs and/or RWLs established pursuant to TMDLs, as set for in the MS4 Permit Part VI.E and Attachment O for the LAR UR2 WMA. The MS4 Permit listed water quality priorities are as follows:

- **Priority 1(a)** – TMDLs controlling pollutants for which there are WQBELs and/or RWL with interim or final compliance deadlines within the permit term or TMDL compliance deadlines that have already passed and limitations have not been achieved.
- **Priority 1(b)** – TMDLs controlling pollutants for which the WQBELs and/or RWL with interim or final compliance deadlines between September 6, 2012 and October 25, 2017.
- **Priority 2** – All other controlling pollutants for which data indicate impairment or exceedances of RWL in the receiving water and the findings from the source assessment implicates discharges from the MS4 shall be considered the second highest priority.

Table 2-7 lists the identified water quality priorities and the WBPCs categories based on compliance deadlines.

Table 2-7 LAR UR2 WMA Water Quality Priorities

Priority	Pollutant	Category	Water Body		Compliance Deadline
			Los Angeles River Reach 2	Rio Hondo Reach 1	
1a	Ammonia (NH_3-N)	1	x	x	March 23, 2004
	Nitrate (NO_3-N)	1	x	x	March 23, 2004
	Nitrite (NO_2-N)	1	x	x	March 23, 2004
	NO_3-N+NO_2-N	1	x	x	March 23, 2004
1b	Trash	1	x	x	September 30, 2016 (effectively 10/1/15)
2	*E.coli* Dry-Weather	1	x	x	March 23, 2022 (Group Interim Single sample Final WQBEL)
	Copper Dry-Weather	1	x	x	January 11, 2024
	Lead Dry-Weather	1	x	x	January 11, 2024
	Zinc Dry-Weather	1		x	January 11, 2024
	Copper Wet-Weather	1	X	x	January 11, 2028
	Lead Wet-Weather	1	X	x	January 11, 2028
	Zinc Wet-Weather	1	X	x	January 11, 2028
	Cadmium Wet-Weather	1	X	x	January 11, 2028
	E.coli Wet-Weather	1	X	x	March 23, 2037
	Oil	2	X		N/A
	Coliform Bacteria	2		x	N/A
	Toxicity	2		x	N/A
	Fecal Enterococcus	3	x	x	N/A
	pH	3	x	x	N/A
	Kjeldahl-N	3	x	x	N/A
	Total Nitrogen	3		x	N/A
	Total Phosphorus - P	3	x		N/A
	Total Suspended Solids	3	x		N/A
	Cadmium	3	x		N/A
	Chromium	3	x		N/A
	Nickel	3	x		N/A

3. Watershed Control Measures

Permit Part VI.C.5.b is titled *Selection of Watershed Control Measures* and directs Permittees to *identify strategies, control measures and BMPs ... with the goal of creating an efficient program to focus individual and collective resources on watershed priorities*. This section further identifies retrofitting of existing development and modification of Permit identified MCMs. The permit apparently introduces this verbiage as catch all for the many ways in which runoff and pollutants from a watershed can be reduced.

3.1 MCMs and Institutional BMPs

MS4 Permit Part VI.C.5.b.iv.(1) directs that the MCMs identified in Parts VI.D.4 to VI.D.10 be incorporated as part of the WMP Plan. The placement of this reference section within the WMP portion of the permit (Part VI.C) allows the MCMs in the subsequent section (IV.D) to be assessed for potential effectiveness and even modified to emphasize the pollution control priorities identified within the WMP Plan. Part VI.C.5.b.iv.(1).(c) explicitly allows some MCM sections to be deleted, and wholly replaced, when accompanied by appropriate justification. The general MCMs categories identified in Part VI.C of the MS4 Permit include the following:

i. Development Construction Program
ii. Industrial/Commercial Facilities Program
iii. Illicit Connection and Illicit Discharges (IC/ID) Detection and Elimination Program
iv. Public Agency Activities Program
v. Public Information and Participation Program (PIPP)

3.1.1 MCM Programs and Potential Modifications

The following subsections provide an overview of the MS4 Permit requirements associated with each of the MCMs, including the Planning and Land Development Program which cannot be modified. The MCM programs and corresponding MS4 Permit Parts are outlined as follows:

- Public Information and Participation Program (Part VI.D.5)
- Industrial/Commercial Facilities Program (Part VI.D.6)
- Planning and Land Development Program (Part VI.D.7)
- Development and Construction Program (Part VI.D.8)
- Public Agency Activities Program (Part VI.D.9)
- Illicit Connections and Illicit Discharges Detection and Elimination Program (Part VI.D.10)

Additional details regarding the enhancements that will be implemented by the LAR UR2 WMA are presented in **3.3.1**.

3.1.1.1 Public Information and Participation Program

Since adoption of the first Los Angeles County MS4 Permit in 1990, PIPPs have been the most visible and important component of the stormwater quality protection program for the average Los Angeles County resident. The PIPP is introduced in Part VI.D.5 of the MS4 Permit with the following objectives:

1) Measurably increase target audience knowledge about the MS4, stormwater pollution, the impact of stormwater pollution on receiving waters, and solutions to mitigate the impact of stormwater;
2) Measurably change the waste disposal and pollution generating behavior of target audiences by encouraging implementation of alternatives by distributing educational material; and

3) Involve and engage socio-economic groups and ethnic communities in mitigating stormwater impacts.

The PIPP MCM objectives must be achieved by participating in a County, WMP, or Permittee led program. Permittees may maintain the existing 888-CLEANLA hotline for reporting spills, clogged catch basins, faded PIPP markers, and identify staff/department responsible for receiving such reports, or establish similar new Watershed Management Area or Permittee specific hotlines and reporting websites. Permittees must also individually or collectively participate in public outreach events to raise community awareness regarding stormwater and urban runoff. Example events include Beach and River Clean-Up Days coordinated with Heal the Bay and the Los Angeles County Waterkeeper, the Los Angeles County Fairs, Electronic Recycling and community Household Hazardous Waste Collection (HHWC) events.

There must also be a residential outreach program to develop public service announcements and advise the public about appropriate handling and disposal of hazardous materials and animal wastes. During prior permit cycles, Permittees contributed to developing and purchasing print advertisements, movie trailers, mobile billboards, and advertisement spots during Dodger Baseball games. A "Point of Purchase" education or brochure distribution program must also be developed for display at automotive part, home improvement and gardening, pet, and feed stores. Permittees are also directed to have, or share; websites with educational materials along with educational programs based on the State's Erase the Waste and California Environmental Education Interagency Network (CEEIN) program.

Together these ongoing PIPP MCM efforts can be expected to continue to contribute to reducing the discharge of pollutants, educating the public about how to better implement LID opportunities during their home improvement projects, and generally improving the local and regional environment. For the LAR UR2 WMA, this is especially true as it relates to pet wastes which are likely to remain a predominant watershed source of indicator bacteria such as *E. coli*, which are likely to remain the most significant long term watershed pollutant priority. As in past permit cycles, a well supported and thoughtfully directed PIPP program, focused on bacteria and fecal wastes as a priority within the LAR UR2 WMA, should reach over 50% of the community with multiple impact opportunities per year, which can then be easily and substantially quantified as part of the annual report process. This program could focus on the proper disposal of dog and cat excrement, with linkages back to human and wildlife (e.g., Sea Otter) diseases such as toxoplasmosis with reputable supporting information provide by aquariums (Science Daily, 2002) and Health Departments (Los Angeles County, 2012). The potential modifications to this MCM are presented so that they may be referenced in the future during the adaptive management process. The program modifications incorporated through the WMP are documented in **Section 3.3.1**.

3.1.1.2 Industrial/Commercial Facilities Program

As required by Part VI.D.6 of the MS4 Permit, each Permittee must implement an industrial and commercial facilities program designed to prevent illicit discharges into the MS4, reduce runoff from these facilities to the MEP standard, and prevent their discharges from contributing to violations of receiving water limitations. At a minimum this program must:

1) Track critical industrial and commercial sources using a GIS based inventory and database;
2) Implement a Business Assistance Program to educate them about reducing pollutants in runoff;
3) Conduct inspections of Critical Commercial Sources to ensure effective BMP implementation;
4) Inspect and progressively enforce Critical Source and General Industrial Permit compliance; and
5) Verify the implementation of the Commercial and Industrial Source Control BMPs identified on Table 10 (page 93 and 94) of the MS4 Permit.

This MCM program has the potential to significantly reduce stormwater conveyed pollutant loadings, especially within the more industrialized areas of the LAR UR2 WMA. The potential modifications to this

MCM are presented so that they may be referenced in the future during the adaptive management process. The program modifications incorporated through the WMP are documented in **3.3.1**. This program may provide the clearest example of a cost effective MCM modification. One example would be a State led effort to educate General Industrial Permittees about their anticipated responsibilities to comply with TMDL WLAs under the proposed draft General Industrial Permit. As detailed in **Section 4.3.2.1**, as industrial land use loadings are reduced to comply with general permit requirements, the LAR UR2 WMA RAA demonstrates significant reductions in key land use based pollutant loadings, such as trash, metals and bacteria (*E. coli*). Furthermore, as these facilities expand their monitoring effort to address these problematic pollutants, it should become easier to share the information with the MS4 Permittees and focus the education and Business Assistance Program on the more problematic facilities that have a true contribution to observed receiving water and (public or private) outfall exceedances. While enforcement should not be an immediate priority, more recalcitrant or negligent facilities could also be targeted for limited cost-effective (e.g. bacteria and metal) monitoring that can contribute to permit required coordination with State enforcement efforts. The impact of this program could be uneven across the LAR UR2 WMA, as most of the industrial sites are in the Cities of Vernon and Commerce, but each Permittee has significant areas of critical commercial source facilities such as retail gasoline outlets, restaurants, nurseries, and automotive repair shops.

3.1.1.3 Planning and Land Development Program

The Planning and Land Development Program in MS4 Permit Part VI.D.7 is probably the most complicated section of the current Permit. In the 2012 MS4 Permit this part continues to implement, expand, and quantify the SUSMP program. It also defines hydromodification controls that are expected to have little impact on the LAR UR2 WMA Permittees, as it is only applicable to projects located within natural drainage systems. The section contains specific BMP design criteria, as well as implementation priorities that may be subject to interpretation at the planning level and annually documented. The stated purposes or objectives of this permit section include:

1) Encouraging Smart Growth and urban redevelopment to protect environmentally sensitive areas;
2) Protecting natural drainage systems (limited applicability to the LAR UR2 WMA);
3) Minimize imperviousness through LID and runoff retention or use;
4) Maintain and enhance riparian buffer areas (limited applicability to the LAR UR2 WMA);
5) Minimize pollutant loads, from impervious surfaces, through appropriate BMP/LID technologies;
6) Properly design and maintain LID and BMP control pollutants and reduce changes in hydrology;
7) Prioritize BMP selection to remove pollutants, reduce runoff, and support integrated water management by first using on-site infiltration, bioretention, and rainfall harvesting, then secondarily utilizing on-site biofiltration, off-site replenishment and retrofit opportunities.

Typical redevelopment rates released by the City of Los Angeles (City of Los Angeles Bureau of Sanitation, 2009) assume complete or substantial building replacement at an annual rate of between two and five percent, meaning that a particular parcel is likely to be redeveloped every twenty to fifty years on average. Assuming typical interpretations of permit requirements, which would exclude residential redevelopments of less than an acre in area from the significant program requirements, this program is most likely to produce water quality improvements in industrial or commercial land use areas, rather than cities with more residential characteristics. Extrapolating current redevelopment rates will help quantify the impact of this program over time.

3.1.1.4 Development and Construction Program

Implementation of a Development Construction Program is required under the MCM identified in MS4 Permit Part VI.D.8, with subparts directed at projects both less than, and greater than, one acre in extent. Permittees are required to implement a construction program with the following objectives:

1) Prevent the discharge of illicit construction-related pollutants into the MS4 and receiving waters;
2) Implement and maintain structural and non-structural BMPs to reduce pollutants in site runoff;
3) Prevent construction site discharges from causing or contributing to receiving water limitations;
4) Reduce construction site discharges of pollutants to the MS4 to the MEP standard; and
5) Establish an enforceable erosion/sediment control ordinance for soil disturbing construction sites.

MS4 Permit Part VI.D.8.d and Table 12 from the MS4 Permit apply exclusively to construction projects of less than one acre in extent and generally require the use of tracking and good housekeeping practices that are suitably implemented through typical municipal building and safety inspection programs. With the exception of concluding MS4 Permit Parts regarding enforcement and staff training, the remainder of this Part applies to construction sites of greater than, or equal to, one acre. Therefore, it significantly complements and documents implementation and competent tracking of the State General Construction Permit requirements, with Tables 13 through 17 of the MS4 Permit identifying specific BMP implementation and inspection requirements. Since this MS4 Permit Part addresses the construction phase of development/redevelopment, estimates of pollution reduction can be expected to vary annually and are only applicable in the year of occurrence. However the reduction in pollution generation, especially for suspended solids and trash, can be significant and far greater than generation rates found on adjacent similarly sized occupied parcels. Potential modifications to this program are not identified, as they are unpredictable and vary over time.

3.1.1.5 Public Agency Activities Program

MS4 Permit Part VI.D.9 identifies the Public Agency Activities Program MCM, which is directed at Permittees, their facilities, and maintenance operations. In previous MS4 Permits, the objectives of this program element were sometimes referred to as municipal "good housekeeping" practices, but they continue to evolve and have become significant municipal implementation efforts on their own. They include:

1) Public Construction Activities Management;
2) Public Facility Inventory;
3) Inventory of Existing Development for Retrofitting Opportunities;
4) Public Facility and Activity Management;
5) Vehicle and Equipment Wash Areas;
6) Landscape, Park, and Recreational Facilities Management;
7) Storm Drain Operation and Maintenance;
8) Streets, Roads and Parking Facilities Maintenance;
9) Emergency Procedures; and
10) Municipal Employee and Contractor Training.

The potential modifications to this MCM are presented so that they may be referenced in the future during the adaptive management process. The program modifications incorporated through the WMP are documented in **Section 3.3.1**. More frequent street cleaning, will enhance compliance with the Los Angeles River Trash TMDL, while street vacuuming in land use areas that generate high metals loads can also have significant positive results. Enhanced maintenance of catch basins, especially those containing connector pipe screens, may result in reduced bacteria loadings that are likely to be significant priority in this region. The cost and pollution reduction effectiveness of this MCM program would likely be linked to the measures necessary to achieve RAA water quality objectives in the most cost effective and implementable WMP plan manner.

3.1.1.6 Illicit Connections and Illicit Discharges Elimination Program

Permit Part VI.D.10 expands the IC/ID program by substantially formalizing elements of the extant Permittee effort. Program formalization steps include the following:

1) Develop written procedures for conducting source investigations;
2) Develop written procedures for eliminating the source of illicit connections and illicit discharges;
3) Develop written procedures for public reporting of illicit discharges;
4) Develop written Spill Response Plans (SRPs); and
5) Educate employees, businesses, and the public about the hazards of illegal discharges and improper waste disposal.

The potential modifications to this MCM are presented so that they may be referenced in the future during the adaptive management process. The program modifications incorporated through the WMP are documented in **Section 3.3.1**. Ordinances with consistent enforcement actions, which include accelerated follow up times may be beneficial. Reducing the amount of days for the follow up inspection will ensure prompt clean up.

3.1.2 Summary of Existing MCMs/Institutional BMPs

The existing MCMs/institutional BMPs within the LAR UR2 WMA were evaluated and summarized based on the Los Angeles County Unified Annual Stormwater Reports for the Fiscal Years 2010-2011 and 2011-2012. Tables summarizing the existing MCMs/institutional BMPs by LAR UR2 WMA are presented in **Appendix E**.

3.1.3 Non-Stormwater Discharge Control Measures

Part VI.C.5.b.iv.(2) of the MS4 Permit states that where Permittees identify non-stormwater discharges from the MS4 as a source of pollutants that cause or contribute to exceedance of RWLs, the proposed watershed control measures must include strategies, control measures, and/or BMPs that must be implemented to effectively eliminate the source of pollutants consistent with Parts III.A and VI.D.10 of the MS4 Permit. These may include measures to prohibit the non-stormwater discharge to the MS4, additional BMPs to reduce pollutants in the non-stormwater discharge or conveyed by the non-stormwater discharge, diversion to a sanitary sewer for treatment, or strategies to require the non-stormwater discharge to be separately regulated under a general NPDES Permit.

Among others, the Rio Hondo has been successful in controlling non-stormwater discharges and the channel is often either dry or lacks runoff flows. It is likely that efforts to control irrigation overspray and reduce outdoor water use will continue to benefit the LAR UR2 WMA Permittees. This combined with the non-stormwater outfall based inventory; screening and source assessment will be the group's initial focus for the next round of source control measures.

3.1.4 TMDL Control Measures

Part VI.C.5.b.iv.(3) of the MS4 Permit states that Permittees must compile control measures that have been identified in TMDLs and corresponding implementation plans. In addition, Permittees must identify those control measures to be modified, if any, to most effectively address TMDL requirements within the watershed. If TMDL implementation plans have not been developed, Permittees must include control measures (baseline or modified) that will address both stormwater and non-stormwater discharges from the MS4s to ensure compliance with applicable TMDLs. This section identifies and summarizes TMDL

implementation plans that have been developed by the LAR UR2 WMA members in response to applicable TMDLs. Proposed modifications to these control measures are presented in **Section 3.3.3**

3.1.5 TMDL Implementation Plans

TMDL implementation plans have not been developed for any of the applicable TMDLs except for the Los Angeles River Metals TMDL. Implementation plans were not required, and moving forward, this WMP will serve as the implementation plan for all applicable TMDLs. The implementation plan corresponding to the Los Angeles River Metals TMDL is reviewed and summarized below in order to identify the TMDL control measures previously identified.

3.1.5.1 Los Angeles River Metals TMDL Implementation Plans

In compliance with the implementation schedule set forth in the Los Angeles River Metals TMDL, Permittees and groups of Permittees completed an implementation plan. The Final Implementation Plan for Reach 2 Participating Jurisdictions was approved on October 11, 2010 and among the submitting jurisdictions were the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. This plan identifies a phased implementation for non-structural BMPs that starts in 2010 and ends in 2028. The schedule is provided in **Table 3-1**.

Table 3-1 LAR Metals TMDL Jurisdictional Group 2 Non-Structural BMPs Phased Implementation Plan

BMP	Phase 1 (2010-2011)	Phase 2 (2012-2019)	Phase 3 (2020-2023)	Phase 4 (2024-2028)
Vehicle Brake Pad Replacement	Senate Bill 346 into law September 27, 2010	Support Implementation activities		
Tire Wheel Weight Replacement	Support legislative efforts for passage of Senate Bill 757	No new activity (assumes legislative success by 2012)		
Pesticide Use	No activity	Evaluate potential for action and implement as needed by end of Phase 3		No new activity
Vehicle Tire Wear Reduction	No activity	Evaluate potential for action and implement as needed by end of Phase 3		No new activity
Roof Materials Control	Implement building and planning agency coordination activities; evaluate need for ordinance/revised specifications	Establish and implement as needed ordinance and/or revised specifications; implement downspout disconnect program	No new activity	
Street Sweeping	No new activity - continue to implement at current level	Evaluate existing program to identify opportunities to increase efficiency		No new activity
Catch Basin Cleaning	No new activity - continue to implement at current level	Evaluate existing program to identify opportunities to increase efficiency		No new activity
Public Education and Outreach	Evaluate and revise public education and outreach materials/programs as needed to focus on metals	Continue to review and revise as needed		
Water Conservation	Develop water conservation model ordinance	Establish ordinance by end of Phase 3		No new activity
Development Practices	Establish model requirements that reduce offsite runoff consistent with future MS4 Permit expectations	Revise MS4 program as needed and implement new practices; update as needed over long term to incorporate new concepts or methods		
Downspout Disconnect Program[1]	Establish program for implementation	Implement downspout disconnects at rate determined by Phase 1 structural BMP selection	Implement downspout disconnects at rate determined by Phase 1 structural BMP selection	Implement downspout disconnects at rate determined by Phase 1 structural BMP selection
General Plan Update	Identify areas for revision and establish schedule for implementation	Revise General Plan by end of Phase 3		No new activity
Watershed Coordination	Review existing coordination; identify improved mechanisms and implement	Continue high level of coordination		

[1] The number of downspout disconnections implemented in Reach 2 watershed is dependent on the number of structural BMPs implemented. The rate of implementation needed will be determined during Phase 1.

Note: Each jurisdiction will select from the phased non-structural BMP programs as outlined in Table ES-4 of the Final Implementation Plan for Reach 2 Participating Jurisdictions.

3.2 Structural BMPs

As part of the WMP development process, BMPs that will be considered sufficient in addressing water quality priorities and achieving compliance with MS4 Permit requirements were identified. Structural BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. The overarching goal of BMP implementation as part of the WMP is to reduce the impact of stormwater and non-stormwater flows on receiving water quality. This section identifies structural BMPs that are currently implemented, as well as potential BMPs that may be used in the future. The structural BMPs proposed in accordance to this WMP are identified in **Section 3.3.3**.

3.2.1 Categories of Structural BMPs

Structural BMPs include both regional and distributed BMPs categorized as illustrated in **Table 3-2**. This section provides detailed descriptions of various regional and distributed BMPs that were considered for use by the LAR UR2 WMA and may be considered in the future through the adaptive management process. The structural BMPs proposed through this WMP are identified in **Section 3.3.3**. Additionally, **Appendix F** provides a comparison matrix which ranks different BMP types for different ranking factors that include cost, effectiveness, implementation, and environmental/other factors.

Table 3-2 Summary of Structural BMP Categories and Major Functions

Category	Subcategory	Example BMP Types
Regional	Infiltration	Surface infiltration basin, subsurface infiltration gallery
	Detention	Surface detention basin, subsurface detention gallery
	Constructed Wetland	Constructed wetland, flow-through/linear wetland
	Treatment Facility	Facilities designed to treat runoff from and return it to the receiving water
	Low Flow Diversion	Facilities designed to divert dry-weather flows to the sanitary sewer
Distributed	Site-Scale Detention	Dry detention basin, wet detention pond, detention chambers, etc.
	Green Infrastructure	**Bioretention** and **biofiltration** (vegetated practices with a soil filter media, and the latter with an underdrain)
		Permeable pavement
		Green streets (often an aggregate of bioretention/biofiltration and/or permeable pavement)
		Infiltration BMPs (non-vegetated infiltration trenches, dry wells, rock wells, etc.)
		Bioswales (vegetative filter strips or vegetated swales)
		Rainfall harvest (green roofs, cisterns, rain barrels)
	Flow-Through Treatment BMP	Media/cartridge filters, high-flow biotreatment filters, etc.
	Source Control Treatment BMPs	Catch basin inserts, screens, hydrodynamic separators, trash enclosures, etc.

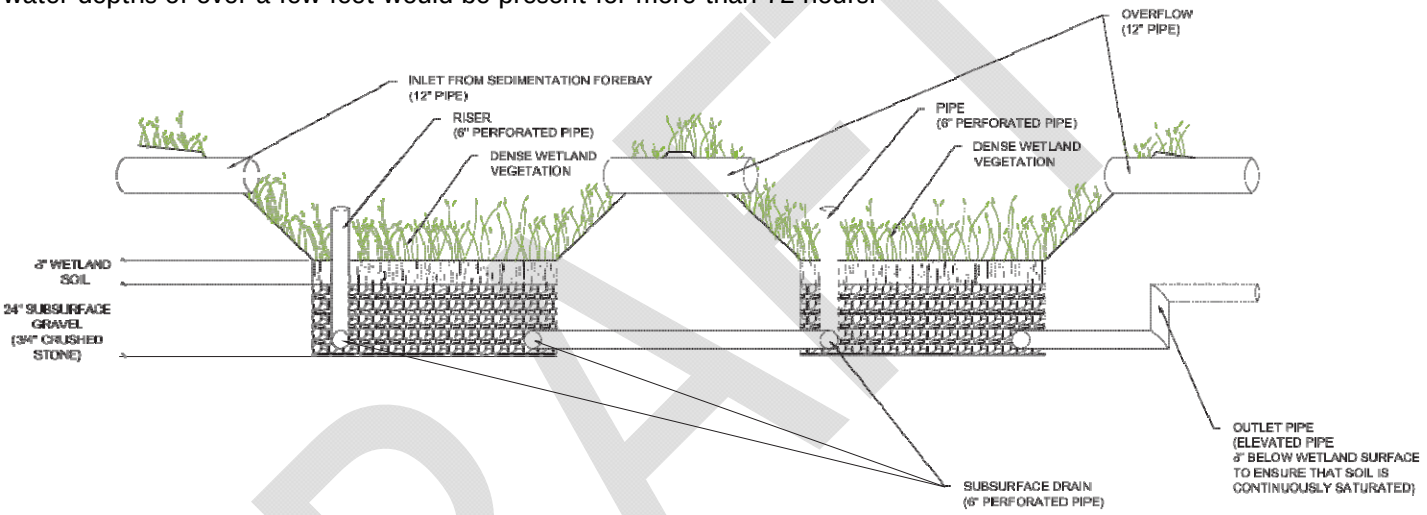
Regional BMPs

Regional BMPs are large scale runoff treatment and retention systems that accept runoff from tens to hundreds of acres of development. They generally support multiple beneficial uses such as groundwater recharge and recreation to achieve Integrated Regional Water Management Program objectives.

Typically the first flush of runoff, which carries the pollutants of concern and debris at high concentrations, receives solids removal pretreatment. In most areas, after the runoff is captured and stored it can be treated and discharged, used for non-potable purposes, infiltrated into the soil, or a combination of the three.

Subsurface Flow (SF) Wetlands

Unless extensive land area and substrate is available, subsurface flow wetlands are generally reserved as a tertiary treatment or polish for the effluent from wastewater treatment facilities, but can be utilized in relatively small catchments where nutrients are a significant issue. The design is generally based on either a relatively dependable and consistent inflow or the ability to primarily function in detention rather than extended retention. They may also be practical for remediation of dry-weather and very low first flush runoff drainage systems, so long as higher flows may be diverted away. They are impractical where water depths of over a few feet would be present for more than 72 hours.



Adapted from:
Subsurface Gravel Wetland
University of New Hampshire Stormwater Center. 2007 Annual Report.

Extended Retention Wetlands

Extended retention wetlands are favored where rainfall or runoff is present year round so that replenishment water is available to maintain the wetland and aquatic life. They must also discharge when large storm events or storm event series are encountered. While water depths are greater for subsurface flow wetland, and therefore the area requirements are lessened, there is a significant risk of the water becoming stagnant and overgrown with algae mats. In this case, where the wetland is expected to function for retention, the seasonal volume of water that must be accommodated, and the wetland, becomes excessively large, since the rainfall depth would grow from 0.75 inch to perhaps 2 feet. This BMP would be modeled as a constructed surface flow wetlands in the RAA.

Seasonal Dry Detention Pond

Seasonal detention ponds are an effective method for detaining runoff so that it can be metered out through a secondary treatment, such as a bioswale, sand filter, or media filter. They are also effective in avoiding damage associated with hydromodification or flooding due to limited downstream conveyance capacity. However, as with the prior wetland examples, they must either drain completely within a few days or be excessively large to accommodate the seasonal runoff from a large catchment.

Surface Infiltration Basins

Surface infiltration basins and spreading grounds can be found locally in the San Fernando Valley, below Whittier Narrows and in the Chino Basin, where they make an important contribution towards regional groundwater management. A key characteristic of these basins is placement over alluvial soils that allow rapid drawdown following the storm event. The area between the lower Rio Hondo and Los Angeles River has limited areas suitable for very rapid infiltration, but there may be opportunities on the east side of the Cities of Bell Gardens and Commerce or there are horizontal basins that parallel the rivers and can allow both settling and infiltration or horizontal wells. Spreading grounds owned by LACFCD may require storage and pre-treatment before being allowed for infiltration through the spreading grounds.

Underground Cisterns

For those WMP areas where infiltration is deemed infeasible, the MS4 Permit directs the implementation of water use projects, which can be supported using underground cisterns that temporarily store the runoff until needed for reuse such as for irrigation. These systems can take many forms such as below grade water tanks, mediums sized modular precast concrete units, or very large precast bridge or arch structures. Modular units are installed over a water proof geotextile to retain the water within the cistern. A recently constructed example of this technology is Garvanza Park in the City of Los Angeles. Here modular units were installed under an existing park to accept storm or urban runoff. Flows beyond the cistern capacity are bypassed down the pre-existing storm drain. The stored water is used for park irrigation, during the early morning hours when the park is closed and there is the least risk of bodily contact.

Subsurface Infiltration Basins

In areas where infiltration is favorable, a similar cistern design can be used, except the geotextile is omitted so that the runoff may infiltrate into the ground below the cistern and be naturally filtered before recharging the regional groundwater table. In the case of the City of Downey Discovery Park, the cistern provides 3.3 acre feet of infiltration storage and an additional 4.8 acre feet of peak flow detention to avoid regional flooding. Systems for this size warrant multiple entry points and a vent system to allow air to escape during periods of peak runoff inflow, which has been estimated at 100 cubic feet per second.

Low Flow Diversion Pump Station

Low flow diversion pump stations are operationally straight forward, but connection to the sanitary sewer system can be problematic due to capacity issues, connection limitations, treatment costs and unexpected prohibitions due to changes in the water quality. The Permittees within the LAR UR2 WMA are situated in an upper watershed that generates little or no summer flows, suggesting that seasonally, the only flows currently present may be urban runoff. This might provide a rationale for allowing a few diversion stations to be constructed to eliminate the flows and any contribution to downstream

impairments. Typically, they are constructed as a manhole adjacent to, and slightly deeper than, adjacent drainage channels so that flows can be easily diverted and then pumped to the sanitary sewer. This BMP would be modeled as a treatment facility in the RAA.

Sand and Media Filter

Surface, or Austin sand filters, are at ground-level and typically earthen. They are usually easier to maintain, but have a large footprint. Perimeter, or Delaware, sand filters consist of two parallel trench chambers located in concrete vaults below an impervious surface, such as a parking lot. Sand filters are estimated to remove 80 percent of total suspended solids, 50 percent of total phosphorus, 25 percent of total nitrogen, 40 percent of fecal coliform, and 50 percent of heavy metals from typical stormwater runoff. Media filters detain and treat stormwater via filtration and adsorption of pollutants to the filter media (San Francisco, 2010). Media filters containing both organic and mineral filtration materials generally have greater ion exchange capacity than sand filters, and therefore can more effectively remove soluble metals and other dissolved pollutants. This renders media filters particularly effective for roadways and highly industrial sites that contribute higher concentrations of metals to stormwater runoff, particularly zinc and copper. These filters have been shown to consistently remove over 85 percent of oil and grease, 82 percent of heavy metals, and around 40 percent of total phosphorus. While media filters are generally better at removing metals and organics, new media types may have the capabilities to reduce nutrients and sulfate in the future (Water Remediation Media, SWS).

Membrane Filtration

Membrane Filtration water treatment systems use semi-permeable membranes under high pressure to exude a clean water product, leaving behind a brine with the pollutants. The higher pressure membrane types such as reverse osmosis or ultra filtration are highly effective at removing dissolved contaminants, while lower pressure systems filter bacteria and viruses. These systems usually require pre-treatment as particulate matter can foul the ion selective membrane and reduce performance.

Ion Exchange

Ion exchange is a polishing step that specifically targets polar dissolved constituents, such as sulfate. Pretreatment is required prior to ion exchange as suspended solids will clog the exchange columns. Ion exchange systems can be used to treat stormwater from pollution generating impervious surfaces at end-of-pipe using a pump system; they are also commonly used to treat contaminated groundwater.

Distributed BMPs

The MS4 Permit encourages the use of LID BMPs, during planning, development and redevelopment, to manage runoff, and the pollutants it contains, at the source by encouraging infiltration. LID employs landscape and structural features to minimize imperviousness and manage stormwater as a resource. Broadly applied, LID can contribute to restoring a watershed's hydrologic functions by promoting infiltration and the natural movement of water (LID, USEPA). Since LID based BMPs encourage infiltration of runoff, and the pollutants it conveys, it has the potential to address most anthropogenic impairments and achieve WQOs for bacteria. The following paragraphs characterize several broad categories of applicable LID BMPs.

Bioretention Planters and Rain Gardens

With bacteria and nutrients being concerns for the LAR UR2 WMA, bioretention is a promising solution that relies on inundation tolerant vegetation and native or engineered soils with high organic content, to capture, infiltrate, and transpire runoff, while retaining pollutants. If designed properly, especially where native soils are sufficiently permeable and without other constraints to infiltration, rain gardens and larger bioretention facilities can be aesthetic amenities in addition to being cost effective and scalable stormwater retention sites that are easily integrated into highly urbanized retrofit projects. The planters should be flat and require maintenance such as weeding, trimming, and the replacement of dead plants (San Francisco, 2010).

Rain Barrels

Rain barrels hold roof runoff, usually delivered by rain gutters and downspouts, and store the water for later use. Screen installations at the downspout inlets prevent sediment, leaves, debris and mosquitoes from entering the rain barrel. Rain barrels are easily constructed for aesthetic purposes to compliment adjacent structures. Overall, maintenance requirements are minimal and include frequent visual inspections during the storm season and removal of accumulated sediment or debris. When effectively designed to capture and contain the runoff from a rooftop structure, a rain barrel can prevent runoff from small frequency storm events from ever leaving the property. This will reduce onsite water usage and the amount of pollutants that may potentially be carried offsite. This LID BMP can be implemented throughout residential areas.

Cisterns

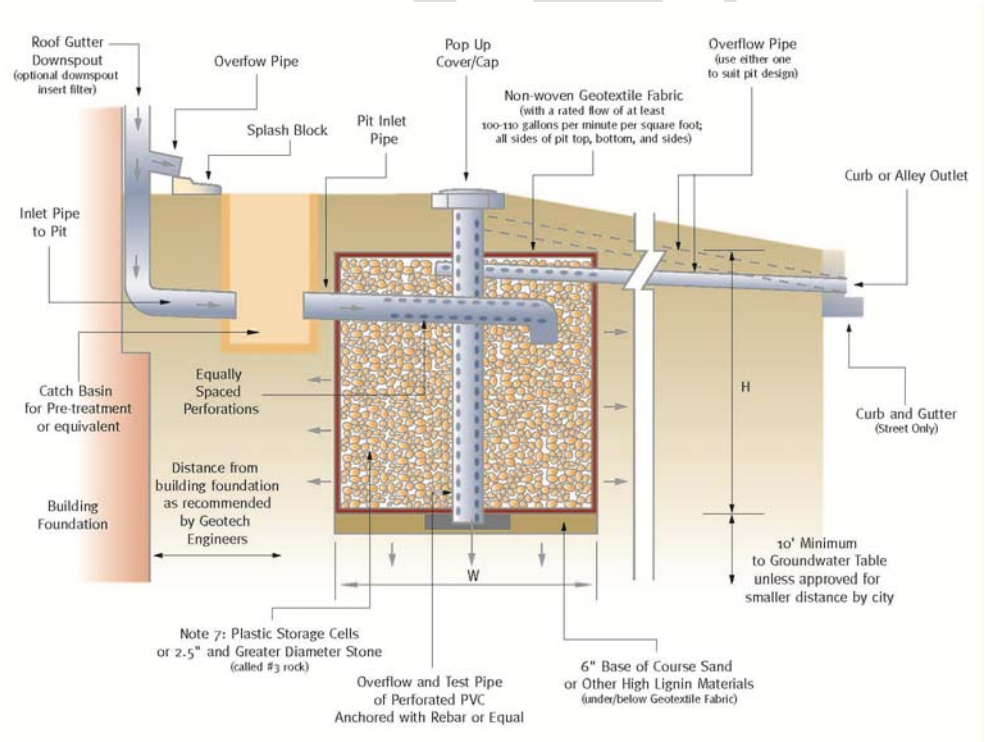
Cisterns provide retention storage in above or below ground storage tanks that accept divert roof runoff and distribute it for later use, usually by pump to adjacent landscaped areas. Runoff collected in the cistern tank is often used for onsite landscape irrigation since outdoor irrigation can account for 40 percent of water consumption during spring and summer. Cisterns can be constructed of nearly any impervious, water retaining material and are distinguishable from rain barrels only by their larger sizes and different shapes. Cisterns are an effective onsite retrofit option for treating rooftop runoff from selected residential, commercial, industrial, institutional, and municipal sites. By using cisterns, a quantifiable amount of stormwater runoff from impervious surfaces such as rooftops, parking structures, and elevated walkways can be captured and stored onsite to reduce the runoff volume and peak runoff flow rates. For smaller storm events, this captured runoff will reduce pollutant loads to the MS4 by preventing the first flush of contaminants from leaving the source site. Stored rainwater may also be used to conserve potable water supplies and reduce water utility bills.

Infiltration Pits and Drywells

Infiltration pits are among the first BMPs used in the Los Angeles region and are typically constructed by digging pits sized to accommodate the runoff source and design storm, lined with geotextile filter fabric, and filled with gravel or aggregate. The retention volume can be increased using various open retention systems or large diameter plastic half pipes in addition to the aggregate. The surface can be either open to accept incoming runoff or receive the downspout from a rain gutter and then covered with vegetation.

A dry well is operationally similar to an infiltration pit, but larger and more formally constructed. Pretreatment techniques, such as grass filter strips, a sand layer, clean aggregates, or a small settling chamber, are recommended to prevent clogging and maintain infiltration. It is recommended that dry wells maintain a minimum clearance of 10 feet from the surface of the seasonal high water table and any foundations. Dry wells are lined with geotextile filter fabric to prevent soil intrusion and filled with clean graded aggregate or volume enhancing structures, such as open plastic half pipes (San Francisco, 2010).

When designed properly, a dry well can serve small impervious areas such as residential rooftops, however if they are bored, drilled, or driven shaft, or a dug hole that is deeper than its widest surface dimension, it may be classified as a Class V injection well and requires permitting through the USEPA. This LID BMP has high pollutant removal efficiencies for sediments, nutrients, trash, metals, bacteria, oil, grease, and organics.

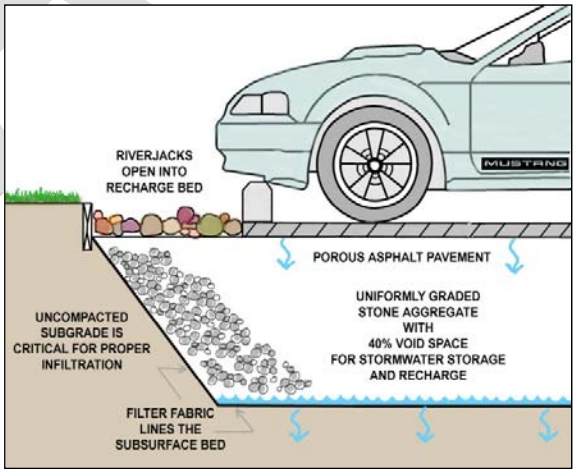


Infiltration Basins, Swales, and Trenches

An infiltration basin or trench is a shallow impoundment over permeable soil that holds and stores runoff until infiltration can occur, using the natural filtering ability of the soil to filter out pollutants. This LID BMP is effective at retaining sediments associated with pollutants, but can become clogged requiring removal of the upper soil. Use of a vegetated swale, or settling forebay, will extend the basin's longevity and reduce maintenance costs. Infiltration basins are best constructed over soils with infiltration rates of 0.5 inches/hour or greater and they should have at least a four foot separation from basin bottom to groundwater (San Francisco, 2010).

If adequate space is available, infiltration basins are cost-effective measures even for regional scale projects, because little infrastructure is needed for their construction. However, site-specific conditions can cause significant variations in cost. CASQA (2003) cites costs ranging from approximately $3 to $18 per cubic foot of storage. Annual maintenance costs are estimated to be approximately five to ten percent of the construction costs (Class V Wells, USEPA).

Porous/Pervious Pavements



Pervious pavement allows rainfall to drain into an aggregate bed or structural retention unit where it is stored until infiltration can occur. There are many pervious pavements including porous concrete, plastic grid system, interlocking paving stones, brick, grass pavers, gravel pavers, and crushed stones. These materials allow for onsite infiltration that efficiently filters out pollutants such as bacteria, nutrients, and metals. Infiltration rates of the native soil are a key element to the overall design. Pervious pavements can be designed with a perforated underdrain system to redirect stormwater to a storm drain in areas where infiltration is infeasible. Using an underdrain system still results in improved water quality since stormwater will have passed through the BMP and undergone natural filtration and treatment processes. This type of BMP can also be used to disconnect directly connected impervious areas such as rooftops and parking lots. Vegetated runoff should not drain onto the pervious pavement as it may clog the system and require more frequent maintenance. Permeable pavements may be used in many locations where conventional pavements are used, such as parking lots, driveways, and walkways. Areas with the potential for spills, such as gas stations, should be avoided. Using proper maintenance techniques, pervious pavement can remove a significant portion of pollutants in stormwater runoff and reduce pavement ponding.

Green Roofs

Green Roofs are commonly recommended LIDs that are appropriate in some climates, but may be challenging to maintain or support in areas with a risk of brush fires and little annual rainfall. Intensive systems have large depths and cover much of the roof while extensive systems features minimal plantings that require little maintenance. Green roofs enhance water quality, reduce runoff and are visually appealing as a rest area above office buildings. The amount of stormwater that a green roof can contain is proportional to the area of coverage, types of plants, slope, and many other factors. Green roofs can be constructed during the building's construction phase or included as a retrofit. When retrofitting, it must be noted that the building needs to support the weight of the green roof under fully saturated conditions. A waterproof membrane should be laid over the building to protect it from structural damage and overflow should be addressed through a drainage layer. Green roofs also provide insulation, help reduce building temperatures during summer months, and counter the heat island effect.

Green Streets

Like LID, Green Street design is strongly encouraged by the MS4 Permit and all of the Permittees within the LAR UR2 WMA have developed or adopted green streets policies. They can take many forms such as an inverted street cross section with a vegetated low center median, vegetated curb extensions, parkways that trap and hold gutter flows, planter boxes connected to the gutter and filled with highly porous soil and appropriate vegetation. In areas where sediment generation is limited or can be accommodated by pretreatment through a bioswale, porous concrete may be used to construct gutters so that flows may infiltrate. The City of Santa Monica is currently investigating the construction of large infiltration systems within the parkway that may be designed to accept dry weather or design storm flows for small residential catchments. When properly designed, these structural BMPs can alleviate many of the types of pollutant that are of particular concern to the City.

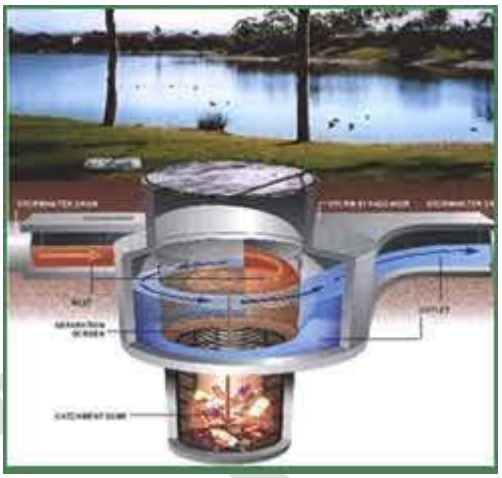
Connector Pipe Screens

While several devices have been certified as meeting the LARWQCB definition of full capture (Full Capture, LARWQCB) the most commonly installed device in Los Angeles County is a Connector Pipe Screen (CPS). Generically, CPS are made from stainless steel mesh, with 5 mm openings, that stretch in front of the lateral or outlet from a catch basin and are secured to the walls and floor of the catch basin, with an opening above the screen that is greater in area than the outlet. During most events runoff will flow through the screen leaving the trash upstream of, or on, the screen. However, during high intensity storms or if the mesh becomes occluded, runoff can still flow over the screen and out of the catch basin to prevent flooding. Based on experience in other jurisdictions, 75-90 percent or more of the catch basins can be retrofitted with this device. While regular maintenance, to remove debris trapped on and on the upstream side of the screen, is required, the intensity of maintenance is correlated with the amount of trash and debris collected. The Regional Board is familiar with the device and assessing compliance through their use, so it is expected that implementation should be relatively straight forward. In locations were the trash load results in excessive maintenance costs, many communities also install Automatic Retracting Screens (ARSs).

Automatic Retracting Screens

An ARS extends across the opening or "mouth" of the catch basin and traps trash and debris at street level where street sweepers or hand crews may remove the trash before it can enter into the catch basin or drain. However, in order to avoid flooding, they will open or retract and allow the trash to enter the catch basin and be trapped on the CPS, where maintenance costs are higher. Areas that generate sufficient trash and debris to warrant the use of ARS in combination with a CPS are usually also subject to enhanced street sweeping, on a weekly or even more frequently, basis.

Hydrodynamic Separation Devices (CDS systems)



Hydrodynamic Separation Devices such as continuous deflective separation (CDS) systems are often used to ensure compliance with trash TMDLs. A CDS system effectively screens, separates and traps debris, sediment, and oil and grease from stormwater and urban runoff. The indirect screening capability of the system allows for 100 percent removal of floatables and neutrally buoyant materials, without binding. The system utilizes the natural motion of water to separate and trap sediments by indirect filtration. As the storm water flows through the system, a very fine screen deflects the pollutants, which are captured in a litter sump in the center of the system. CDS system screens are self-cleaning. The water velocities within the swirl chamber continually shear debris off the screen to keep it clean. CDS systems are ineffective in removing soluble pollutants and smaller, less-settleable solids. They can provide effective pretreatment when paired with filtration devices, such as media filters or bioretention area, covered in sections below, to achieve higher removals of nutrient, metals, and organics. Between storms, the CDS system can have standing water that could raise mosquito breeding concerns, which increase the concerns of vector control (San Francisco, 2010).

The processing capacities of a CDS unit vary from 3 to 300 cubic feet per second, depending on the application. Precast modules are available for flows up to 62 cubic feet per second, while higher flow processing requires cast-in-place construction. Every unit requires a detailed hydraulic analysis before it is installed to ensure that it achieves optimum solids separation. The cost per unit (including installation) ranges from $2,300 to $7,200 per cubic feet per second capacity, depending on site specific conditions and does not include any required maintenance (Hydrodynamic Separators, USEPA).

Maintenance of the CDS system is site-specific but manufacturer recommends that the unit be checked after every runoff event for the first 30 days after installation. During this initial installation period the unit should be visually inspected and the amount of deposition should be measured, to give the operator an idea of the expected rate of sediment deposition. After initial operational period, it is recommended that the CDS system be inspected at least once every thirty days after the wet season. During these inspections, the floatables should be removed and the sump cleaned out. It is also recommended that the CDS systems be pumped out and the screen inspected for damage at least once per year.

3.2.2 Summary of Existing Structural BMPs

The Los Angeles County Unified Annual Stormwater Reports identify the numbers and types of BMPs installed and maintained by jurisdiction. LAR UR2 WMA members identified the following stormwater pollutant watershed control measures as particularly effective:

- Street Sweeping
- Catch Basin Cleaning
- Catch Basin Inserts
- Trash Bins
- End-of-Pipe Controls such as Low-flow Sanitary Sewer Diversions
- Infiltration Controls
- Erosion Controls
- Public Education and Outreach

Based on Appendices B and C of the Los Angeles County MS4 Permittees 2010-2011 annual reports, the most frequently cumulatively installed and prevalent BMPs are summarized within **Table 3-3** and **Table 3-4**, respectively. Three of the four most frequently installed BMPs, were primarily implemented through a grant received by the Gateway Council of Governments (COG), suggesting that the most efficient means of achieving water quality objectives and implementing the BMPs desired by the Regional Board, would be by providing grants for them to be installed, so that local design engineers, developers, government, and contractors could become familiar with use of the devices.

Table 3-3 Cumulatively Most Frequently Installed BMPs Countywide

BMP Type	Total Number Installed
Catch Basin CPS	6,377
Fossil Filter Catch Basin Insert	5,968
ARS	3,870
Clean Screen Catch Basin Insert	3,767
Extra Trash Can	3,681
Covered Trash Bin	3,119
Signage and Stenciling	1,884
Drain Pac Catch Basin Insert	1,625
Cultec Infiltration Systems	1,296
Infiltration Trenches	963
Infiltration Pit	958
Abtech Ultra Urban Catch Basin Insert	748
CDS Gross Pollutant Separator	438
United Stormwater Catch Basin Screen Inserts	403
Restaurants Vent Traps	258
Stormceptor Gross Pollutant Separators	211

Table 3-4 Most Prevalent BMPs Installed During 2010-11

Types of Non-Proprietary BMPs Used By Most Permittees		Types of Proprietary BMPs Used By Most Permittees	
BMP Type	**Number of Cities**	**BMP Type**	**Number of Cities**
Infiltration Trenches	40	Fossil Filter Catch Basin Insert	46
Covered Trash Bins	32	CDS Gross Pollutant Separator	36
Extra Trash Bins	31	Drain Pac Catch Basin Insert	21
Enhanced Street Sweeping	26	Clean Screen Catch Basin Insert	21
Dog Parks	23	Stormceptor Gross Pollutant Separator	19

Los Angeles County Unified Annual Stormwater Reports, Appendices B and C submitted from 2004 through 2012, were used to develop a BMP installation summary table, provided in **Appendix G**.

3.2.3 Approach to Screening for Potential Regional BMP Sites

In order to ensure compliance with the MS4 Permit specified numeric limits, regional projects can be used to enhance water quality. This approach was developed and used to identify a broader list of regional

projects to include in this WMP, which could be initially short-listed through the RAA, but remain potentially viable if RAA projects became untenable. The approach may also be used in the future during the adaptive management process, therefore potential projects identified and not incorporated into the WMP are still identified. In order to identify and prioritize potential regional project sites, Structural BMP Prioritization and Analysis Tool (SBPAT) was used. SBPAT was also used to conduct the LAR UR2 WMA RAA, therefore additional details regarding this program can be found in **Section** 4. In addition to this approach, existing planning documents were referenced in order to determine if any regional BMPs are planned. Accessible planning documents show no indications that regional BMPs have already been planned in this area.

3.2.3.1 SBPAT Process for Identifying Potential Regional BMP Sites

SBPAT is able to prioritize among catchments and subcatchments based on water quality needs (i.e., pollutant load) and identify parcels that provide opportunities for implementation of structural BMPs. In order to reflect the anticipated relative challenge of achieving compliance with TMDL-based effluent limits, bacteria were assigned a relative weight of 20, while metals (copper, lead, and zinc) were collectively assigned a weight of 15 and all other pollutants set to zero.

After first evaluating and prioritizing watershed subcatchments, based on water quality needs, SBPAT identifies potential BMP opportunities by calculating regional BMP scores for each subcatchment within a watershed. Parcel scores are determined for each subcatchment based on parcel size, ownership, land use, and distance from major storm drains, then the parcel scores are integrated to determine a BMP score. BMP scores are compared with regional BMP scoring, resulting in a list of potential structural BMP opportunities based on parcel characteristics and water quality considerations. A comprehensive overview of the modeling framework can be found in the SBPAT User's Guide (Geosyntec, 2008). This SBPAT process will generally follow the steps established in the Los Angeles County-wide Structural BMP Prioritization Methodology (Geosyntec, 2006), as implemented within SBPAT.

Figure 3-1 ranks Catchment Prioritization Index (CPI) scores from 2 to 5, with the highest rankings (4 or 5) attributable to large subcatchments with primarily industrial, manufacturing, and commercial land use parcels, whose model attributes would be generally expected to generate data with high runoff rates and pollutant loads. The only low (2) priority subcatchments were in southeastern portion of Bell Gardens and are dominated by land use features that include a large park, electric transmission lines, and single family residential homes, which together would be expected to model as having low pollution loading and runoff volume potentials.

Figure 3-2 ranks Nodal Catchment Prioritization Index (NCPI) scores, from 2 to 4. This analysis cumulatively considers the discharge from tributary catchment so that one of the previously low ranking catchments in southeastern Bell Gardens, which receives flows from a more typical and large catchment to the north, no longer has a low ranking. Likewise, several previously high ranking headwater catchments now have reduced scores and rankings in comparison to catchments that received cumulative discharges from other tributary catchments, located outside of the LAR UR2 WMA, elsewhere in the Los Angeles River watershed. For the immediate purpose of locating potential regional BMP facilities for consideration during the RAA effort, NCPI scores, rather CPI scores were used in subsequent analyses; however there is potential for distant tributary areas with high CPI scores to the primary source of runoff and contaminants, rather than downstream areas that receive the discharge and may have attributes that meet the preferred regional BMP location selection criteria. Subwatersheds with high CPI scores may represent good sites, as they would capture the primary source of contaminants, but were not the focus of this analysis.

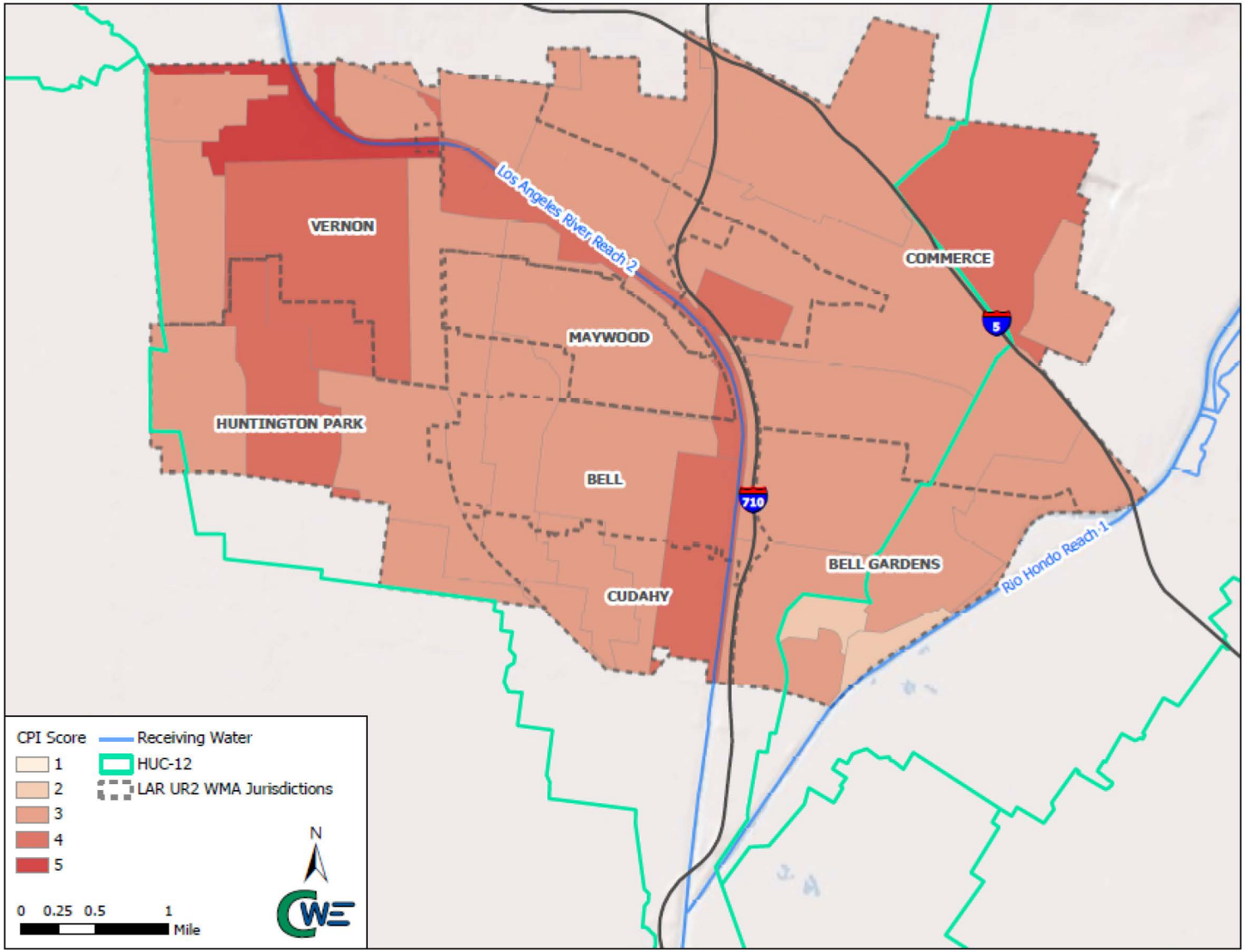


Figure 3-1 SBPAT CPI Scores

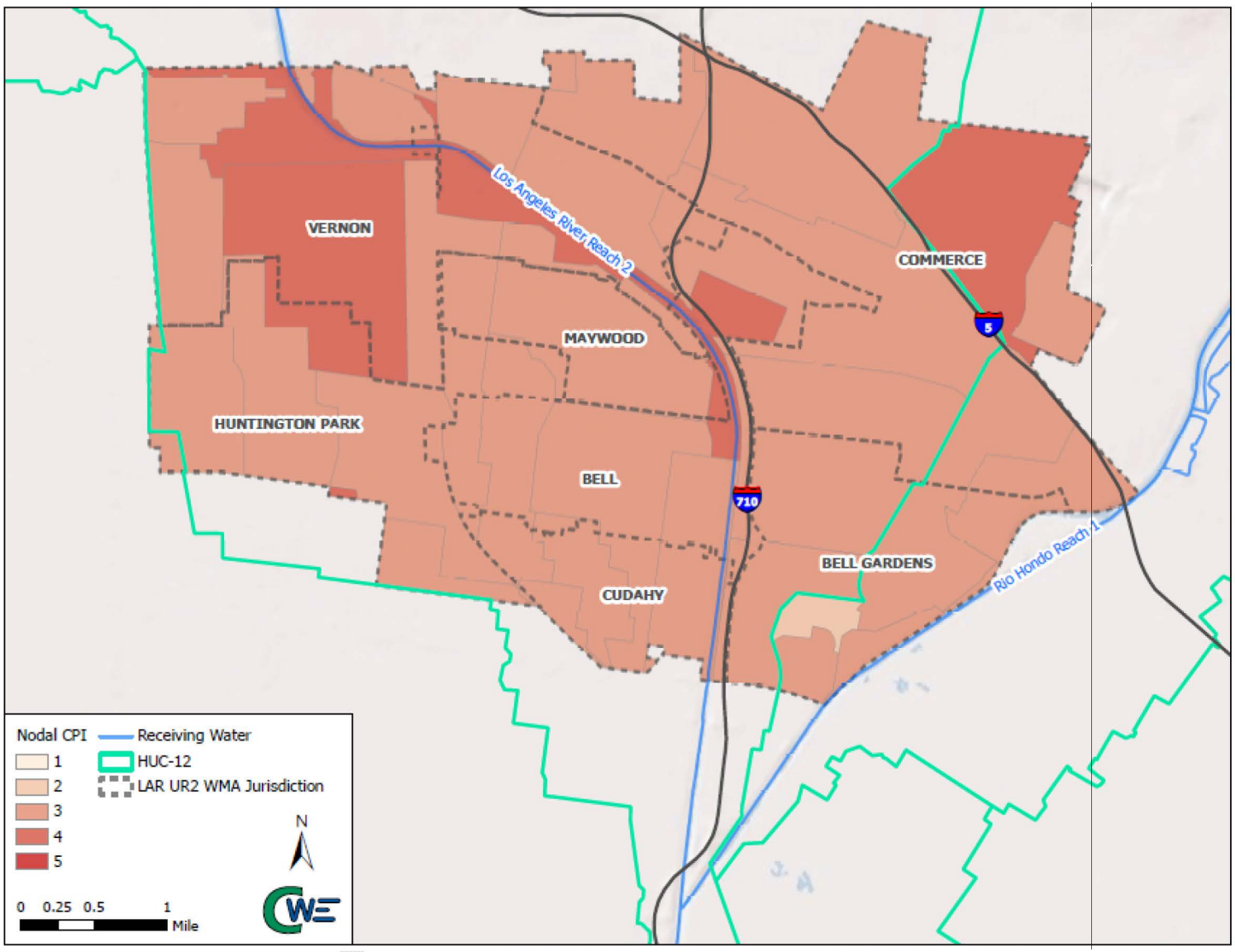


Figure 3-2 SBPAT NCPI Scores

Figure 3-3 illustrates the results of the GIS based SBPAT automated Potential Regional BMP Opportunity screening analysis. Although the selection criteria are flexible and subject to modification, for this analysis the criteria included a minimum acceptable parcel size of 0.5 acres and maximum parcel to storm drain distance of 100 feet. City or County-owned undeveloped parcels were assigned a score of five while other publicly-owned parcels were assigned a score of four, which drives the resultant analysis scoring. Parcels not meeting these criteria were not considered viable regional BMP locations and assigned a zero score. Fourteen subcatchments, or less than half of the LAR UR2 WMA subcatchments, were found to have one or more potential regional BMP opportunity sites that were identified as tributary to areas of high water quality improvement need.

Normally, after potential regional BMP sites are identified, recommended BMP types are matched based on the water quality targets, runoff volumes, and site attributes. The pairing of a BMP type with a BMP site represents a potential regional BMP project. With bacteria being a main driver for the LAR UR2 WMP RAA, the initial selection of suitable regional BMP types was constrained to those capable of achieving recreational beneficial use objectives, which include infiltration basins and subsurface flow wetlands.

Figure 3-4 identifies the surficial soil types, which are primarily slowly infiltrating loams, the important regional groundwater basin, and SBPAT analysis identified potential regional BMP opportunities, illustrated in red as Potential Regional BMP Sites. The areas of Tujunga Fine Sandy Loam, located immediately adjacent to the lower Rio Hondo, Los Angeles River, and further west as a strip leading south through the middle of the Cities of Vernon and Huntington Park, may signify the presence of old deep river channels with relatively sandy soils that could potentially accommodate high infiltration rates. If present and protected from sediment induced blockage, these could horizontally distribute infiltrated runoff to other intermingled sandy layers that might otherwise seem inaccessible due to scattered clay lens of low permeability soils.

Figure 3-5 illustrates the RAA Guideline standard model land use classifications within the LAR UR2 WMA, particularly around the SBPAT identified potential regional BMP sites. As might be expected the Cities of Vernon, Commerce and northeastern Bell contain a relatively high proportion of industrial or manufacturing and commercial land use areas and few vacant or agricultural areas. Most of the parcels in these categories, which might be more potentially accessible for the construction of infiltration basins are actually electrical transmission line easements or associated with the Long Beach (I-710) freeway.

Since the number of subcatchments with potential regional BMP opportunities was limited, and the identified parcels relatively small for these facilities, a coarse assessment of total catchment BMP sizing needs, regardless of site constraints, was prepared for comparison with future unanticipated private parcel acquisition opportunities. The major catchments in LAR UR2 WMA used for this analysis are consistent with monitoring sites in the CIMP and are illustrated in **Figure 3-6**. This analysis was prepared as the product of the sum of areas, for each of the major LAR UR2 WMA Cities, area weighted land use based imperviousness, and the weighted 85th percentile 24-hour rainfall depth. The results expressed as runoff volume in acre-feet are in the second column from the right in **Table 3-5**. The area needed for a regional BMP holding an average water depth of 1 foot, would be approximately the same as this volume, while the area of a basin, or cistern, holding a depth of 10 feet of water would be approximately an order of magnitude less (i.e. one tenth the surface area size). Assuming an infiltration rate of 0.3 inches per hour (very low type B soil) and desired draw down time of 72 hours, results in a water depth of 1.8 feet and basin area as summarized in the rightmost columns of the two tables.

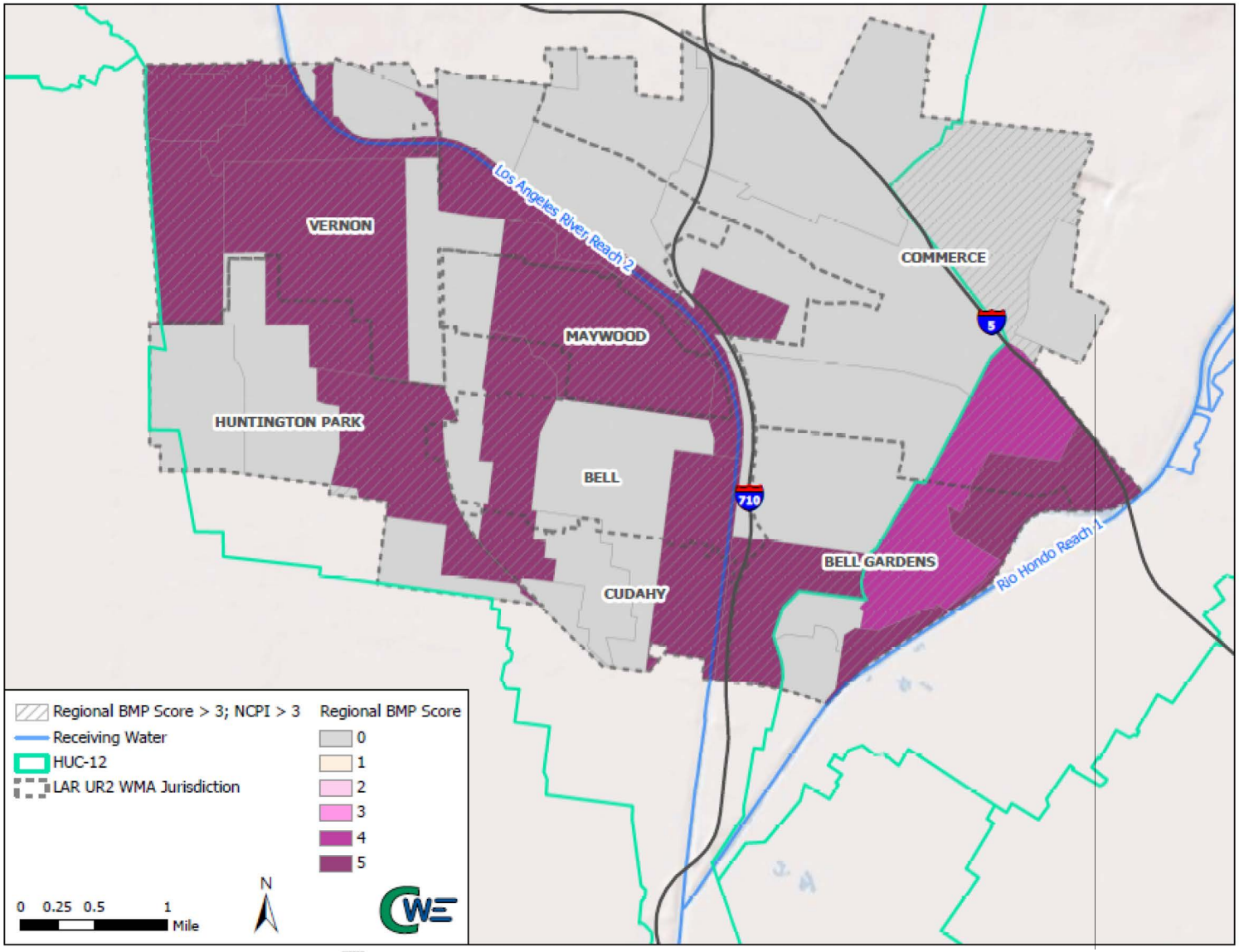


Figure 3-3 SBPAT Regional BMP Opportunity Scores (normalized to values of 0 to 5)

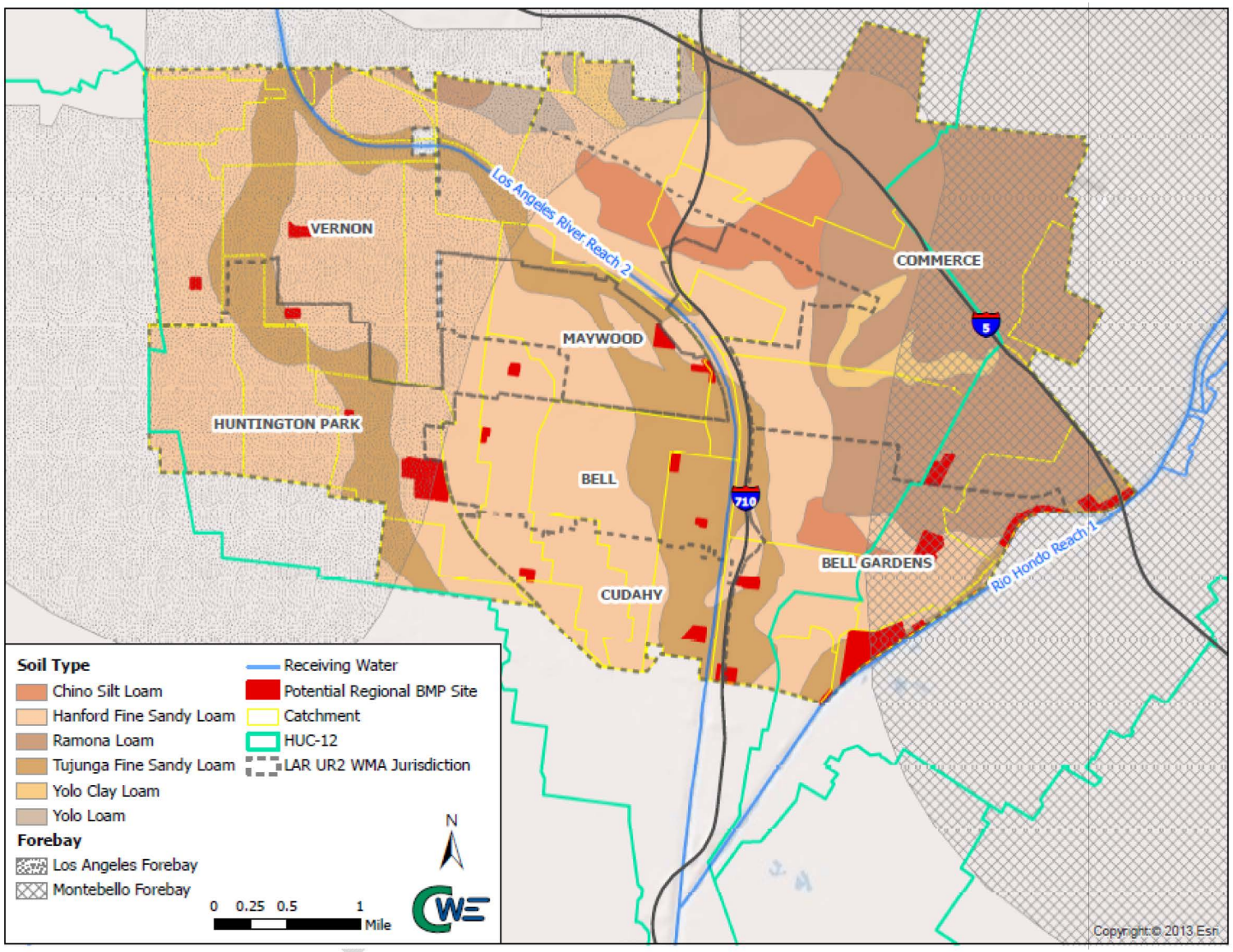


Figure 3-4 Surficial Soil Types, Groundwater Basins, and Potential Regional BMP Sites

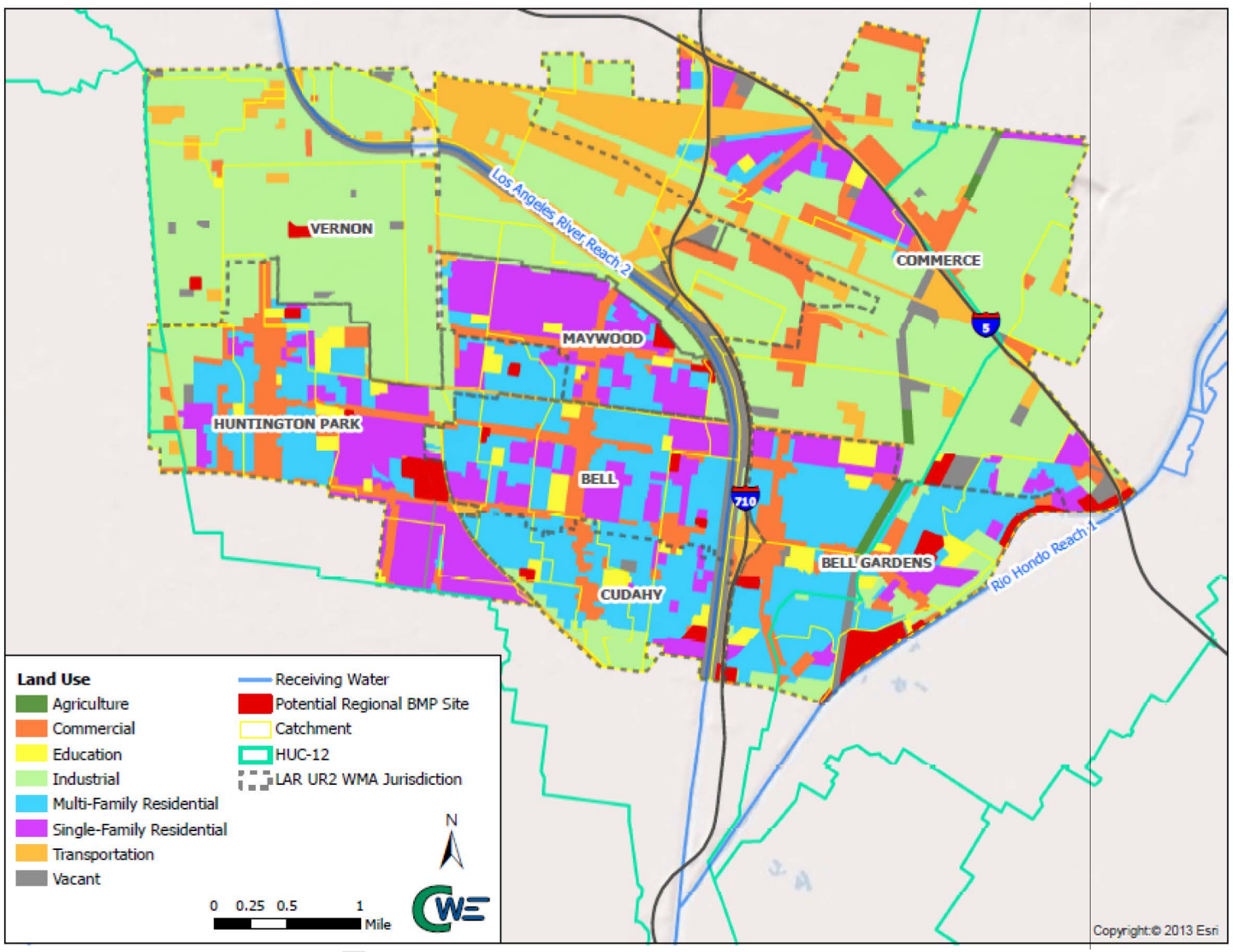


Figure 3-5 Land Use Classes Near Potential Regional BMP Locations

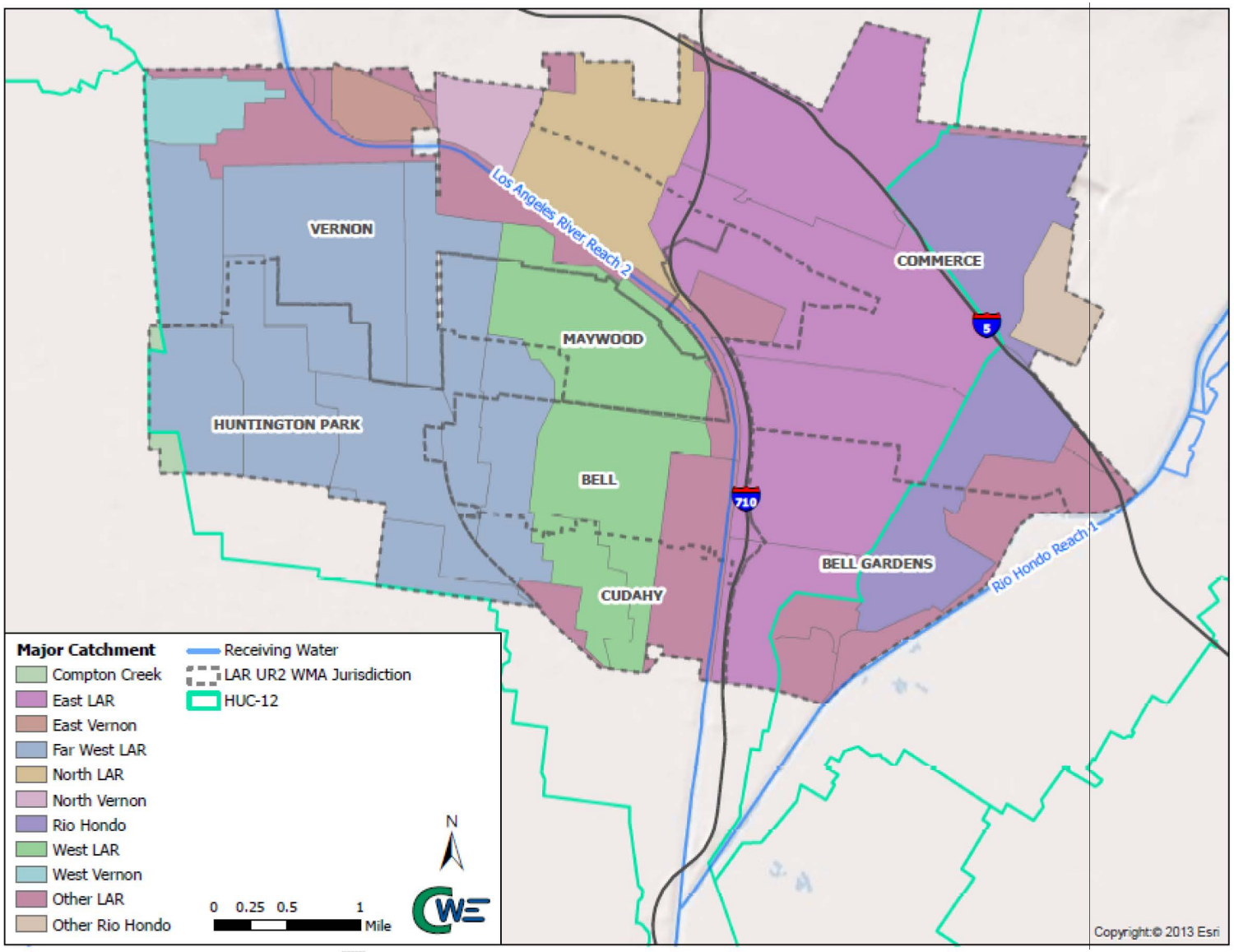


Figure 3-6 LAR UR2 WMA Major Catchments

Table 3-5 Estimate Runoff Volume and Regional BMP Area by City and Catchment

City	Major Catchment	Area (Acres)	Weighted		Runoff Volume (Acre Feet)	Basin Area 1.8' Deep
			Imperviousness	Rain (inch)		
Bell	East LAR	388	0.832	0.91	24	14
	Far West LAR	329	0.609	0.92	15	9
	North LAR	10	0.741	0.91	1	0
	West LAR	539	0.666	0.92	28	15
	Other LAR	410	0.787	0.92	25	14
	Total	**1676**	**0.723**	**0.918**	**93**	**51**
Bell Gardens	East LAR	780	0.637	0.93	39	21
	Rio Hondo	354	0.677	0.94	19	10
	Other LAR	443	0.600	0.94	21	12
	Total	**1578**	**0.636**	**0.935**	**78**	**43**
Commerce	East LAR	2279	0.791	0.91	137	76
	North LAR	377	0.886	0.9	25	14
	North Vernon	1	0.910	0.91	0	0
	Rio Hondo	1025	0.857	0.9	66	37
	Other LAR	310	0.679	0.92	16	9
	Other Rio Hondo	203	0.899	0.91	14	8
	Total	**4194**	**0.813**	**0.907**	**258**	**143**
Cudahy	East LAR	38	0.639	0.94	2	1
	Far West LAR	113	0.621	0.93	5	3
	West LAR	339	0.792	0.93	21	12
	Other LAR	297	0.716	0.94	17	9
	Total	**786**	**0.731**	**0.934**	**45**	**25**
Huntington Park	Compton Creek	42	0.864	0.95	3	2
	Far West LAR	1853	0.667	0.93	96	53
	West LAR	31	0.565	0.93	1	1
	Other LAR	4	0.239	0.93	0	0
	Total	**1930**	**0.670**	**0.930**	**100**	**56**
Maywood	Far West LAR	131	0.620	0.92	6	3
	West LAR	601	0.551	0.92	25	14
	Other LAR	22	0.792	0.92	1	1
	Total	**754**	**0.570**	**0.920**	**33**	**18**

Table 3-5 Estimate Runoff Volume and Regional BMP Area by City and Catchment						
City	**Major Catchment**	**Area (Acres)**	**Weighted**		**Runoff Volume (Acre Feet)**	**Basin Area 1.8' Deep**
			Imperviousness	**Rain (inch)**		
Vernon	East LAR	85	0.758	0.91	5	3
	East Vernon	157	0.911	0.92	11	6
	Far West LAR	1448	0.885	0.96	103	57
	North LAR	367	0.840	0.93	24	13
	North Vernon	211	0.880	0.93	14	8
	West LAR	130	0.908	0.94	9	5
	West Vernon	202	0.903	0.95	14	8
	Other	697	0.889	0.93	47	26
	Total	**3298**	**0.880**	**0.944**	**228**	**126**
LAR UR2 WMA	**Total**	**14215**	**0.761**	**0.925**	**834**	**463**

3.2.3.2 Other Potential Regional BMP Project Sites

Based on the results of monitoring, water quality, technical studies, and source control studies it is questionable as to whether bacteria can be consistently controlled to meet the dry- and wet-weather numeric limits identified in Attachment O of the MS4 Permit, which are based on recreational beneficial use objectives within the Basin Plan, unless MS4 discharges can be eliminated.

Therefore LAR UR2 WMA identified a variety of exemplar projects which were further investigated during the initial phase of the WMP development process to identity new inter-agency opportunities for LID that reduces runoff and controls the discharge from within the LAR UR2 WMA. The potential projects are summarized in **Table 3-6.**

Table 3-6 Preliminary Assessment of Potential Regional BMP Sites

Potential Project Name	Catchment	Cross Streets	Area (ac)	Green Area (ac)	Attributes	Challenges
Bell						
Bell High School	WLAR	Pine Avenue and Florence Avenue	18.1	4.9		Small Trib
Park Avenue School	WLAR	Florence Avenue and Wilcox Avenue	5.7	1.7	Large Trib	
Veterans Memorial Park	WLAR	Gage Avenue and Wilcox Avenue	3.3	2.4	Med Trib	
United States Army Reserve	Other LAR		UNK	N/A	Current Const	Federal Govt
I-710/Transmission Line	Other LAR	West of I-710	UNK	N/A	LFDs?	Small Trib
Abandoned RR Spurs	Other LAR	Various Locations	UNK	N/A		Pvt Property
Bell Gardens						
Bell Gardens Elementary School	ELAR	Quinn Street and Jaboneria Road	10.4	2.2	Large Trib	
Bell Gardens Intermediate School	ELAR	Florence Avenue and Jaboneria Road	14.6	4.5	Large Trib	
Bell Gardens Park	RH	Florence Avenue and Loveland Street	13.7	10.3		No Drain
Ford Park Golf Course	RH	Garfield Avenue and Park Lane	25.3	18.9	Large Trib	Golf Course
John Anson Ford Park	RH	Garfield Avenue and Park Lane	9.6	7.2	Large Trib	
I-710/Transmission Line	Various	West of I-710/Garfield Avenue	45.8	34.3	LFDs?	Small Trib
Commerce						
Bandini Park	NLAR	Astor Avenue and Hepworth Avenue	2.4	1.8		MS4 Unclear
Bristow Park	NLAR	Triggs Street and McDonnell Avenue	7.0	5.3		No MS4
Park Lawn Memorial Park	RH	Gage Avenue and Garfield Avenue	18.3	13.7		No MS4
Power Facilities Total	ELAR	West of Garfield Avenue	21.6	16.2	Nr Telegraph	
Rosewood Park	ELAR	Commerce Way and Harbor Street	11.3	8.5	Med Trib	
Veterans Park Total	Other RH	Gage Avenue and Zindell Avenue	9.7	7.3	Small Trib	
Abandoned RR Spurs	Various	Various Locations	UNK	N/A		Pvt Property

Table 3-6 Preliminary Assessment of Potential Regional BMP Sites

Potential Project Name	Catchment	Cross Streets	Area (ac)	Green Area (ac)	Attributes	Challenges
Cudahy						
Clara Street Park	ELAR	Clara Street b/w Wilcox and Atlantic Ave	4.1	3.1		No MS4
Cudahy Park	Other LAR	River Drive and Santa Ana Street	7.0	5.2		Unk MS4
Lugo Park	FWLAR	Elizabeth Street and Otis Avenue	1.5	1.1	Med Trib	
Park Avenue Elementary School	Other LAR	River Drive and Elizabeth Street	1.5	1.1		Unk MS4
I-710/Transmission Line	Other LAR	West of I-710/Garfield Avenue	UNK	N/A	LFDs	Small Trib
Huntington Park						
Freedom Park Total	FWLAR	E. 61st Street and Carmelita Avenue	0.8	0.6		No MS4
Nimitz Middle School	FWLAR	E. 60th Street and Carmelita Avenue	8.5	2.3	Small Trib	
Salt Lake Park Total	FWLAR	E. Florence Avenue and Salt Lake Ave	33.4	25.1	Lrg Trib/Prcl	
Maywood						
Maywood Academy High School	WLAR	E. 61st Street and Pine Avenue	1.8	1.4		No MS4
Maywood Elementary School	WLAR	E. 52nd Place and Cudahy Avenue	0.5	0.4		Small Trib
Maywood Park	WLAR	E. 52nd Place and E. 58th Street	6.0	2.6		No MS4
Maywood Riverfront Park Total	Other LAR	E. 59th Place and Alamo Avenue	4.6	3.5		Unk MS4
Vernon						
Abandoned RR Spurs	Various	Various Locations	UNK	N/A		Pvt Property
Vacant Parcel	FWLAR	2221 E 55th Street	7.6	0.0		No Drains
Vernon Power Plant	FWLAR	2701 50th Street	5.510	0.00	South Parcel	Power Plant

3.2.3.3 Evaluating and Prioritizing Potential Regional BMP Project Sites

A planning-level, desktop based feasibility screening assessment was performed to identify potential regional BMP projects for inclusion in the WMP Plan. The County Assessors website was queried for current parcel ownership information and the County Department of Public Works searched for information pertinent to drainage conveyance characteristics for existing facilities. Aerial imagery were reviewed to verify actual and adjacent land use characteristics, assess potential engineering design alternatives, facility footprint, possible sizing and other criteria generally pertinent to an initial assessment of feasibility. Based on this information the subsequent RAA model evaluation step was undertaken to assess the potential beneficial impact of these parcels on LAR UR2 WMA MS4 discharges. The potential regional BMP projects were also evaluated using the cost and water quality analysis module in SBPAT.

The potential regional BMP project configurations and planning-level capital and operation and maintenance costs were evaluated (i.e., quantification of costs and water quality benefits) using SBPAT. SBPAT evaluates BMP performance by linking a long-term hydrologic output from USEPA's Stormwater Management Model (SWMM) to a stochastic Monte Carlo water quality model to develop statistical descriptions of stormwater quantity and quality. The statistics generated in this process are then used to characterize the low (25^{th} percentile), average (mean), and high (75^{th} percentile) values for the annual volume, pollutant loads, and pollutant concentrations in stormwater runoff from the modeled area, with and without BMPs implemented. Water quality benefits are reported as the difference between Monte Carlo-derived statistics of the modeled area without BMPs and the same area with a specific suite of BMPs. Additional details regarding the modeling system are provided in **Section 4**.

The prioritization of regional BMPs considers the relative costs, benefits, and ease of implementation associated with each potential project. Potential projects yielding higher water quality benefits at lower costs will receive higher prioritization rank in instances where ease of implementation is considered to be comparable. Regional BMP projects that are constrained by engineering or site considerations and projects that are seen to be more challenging to implement may receive a lower priority rank than projects with similar costs and benefits with less significant constraints.

3.2.3.4 Process for Selecting Regional BMP Projects

The process of selecting the final list of regional BMPs was based on the prioritization results, RAA results, and agency input. The RAA quantifies the water quality benefits from quantifiable non-structural BMPs and distributed structural BMPs that are included in this WMP. The sum of load reductions from non-structural, distributed, and regional BMPs will then be compared with the target load reductions necessary for compliance with final TMDL limits for the purpose of reasonable assurance demonstration. BMP phasing (i.e., the planned implementation of some BMPs before others) will then be developed to meet the schedule of interim compliance milestones. The selection process and results are detailed in **Section 4.3.3**.

3.2.4 Summary of BMP Performance Data

The CASQA Development and Municipal BMP Handbook provides a general summary of BMP performance data within Southern California, which is summarized in **Table 3-7**.

Table 3-7 Treatment Control BMP Removal Efficiency

Pollutant of Concern	Treatment Control BMPs					
	Vegetated Swale/Strip	Catch Basin Screen/Insert	Hydrodynamic Separator	Infiltration Basin/Trench	Bioswale	Grease Trap
Sediment/ Turbidity/ Suspended Solids/ pH	High/Medium	High/Medium	High/Medium Low for Turbidity	High/Medium	High/Medium	Low
Nutrients	Low	Low	Low	High/Medium	Low	Low
Organic Compounds	Medium/Low	Low	Low	High/Medium	Medium	Low
Trash & Debris	Low	High/Medium	High/Medium	High/Medium	Low	Medium
Oxygen Demanding Substances	Low	Low	Low	High/Medium	Low	Low
Pathogens (Bacteria/ Viruses)	Low	Low	Low	High/Medium	low	Low
Oil & Grease	High/Medium	Medium	Medium/Low	High/Medium	High/Medium	Medium
Pesticides/PCBs	Medium	Low	Low	High/Medium	Medium	Low
Metals	High/Medium	Medium	Low	High	High/Medium	Low

3.3 Proposed Control Measures

Through the RAA iterative modeling process, detailed in **Section 4**, control measures were identified which will ensure compliance with applicable numeric limits in the time frame required by existing TMDLs. The types of control measures are outlined in this section, while the quantities are discussed in **Section 4**. Through the adaptive management process, the proposed control measures may change.

3.3.1 Proposed MCM/Institutional BMP Modifications

Based on input from the Regional Board, load reductions derived from non-modeled non-structural BMPs can be assumed to be five percent of baseline loads. Enhanced programs will be implemented in order to ensure they result in at least a five percent load reduction. These non-structural BMPs will include the following program enhancements (i.e., beyond the MS4 Permit minimum):

- Enhanced street sweeping
- Enhanced catch basin and storm drain cleaning
- Enhanced commercial and food outlet inspection
- Enhanced pet waste controls
- Enhanced education and outreach
- Enhanced homeless waste control efforts
- Enhanced Illicit Discharge Detection Elimination (IDDE) efforts

Potential non-structural BMP enhancements were identified in the Los Angeles River Reach 2 Metals TMDL Implementation Plan. **Table 3-8** provides potential enhancements associated with each of the programs listed above. Each LAR UR2 WMA City will have the flexibility to implement some or all of the enhancements, which do not have to be the same throughout the group.

3.3.2 Proposed Non-Stormwater Discharge Control Measures

Permit Attachment E Part IX introduces an aggressive non-stormwater outfall based screening and monitoring program. The LAR UR2 WMA CIMP describes how the non-stormwater screening program will be implemented. Given that the Rio Hondo is normally dry, or at least does not have flowing runoff, the LAR UR2 WMA anticipates that non-storm water discharge source assessment will result in the development of new control measures specific to the unique characteristics of the LAR UR2 WMA.

3.3.3 Proposed Structural Control Measures

The proposed structural control measures are discussed in greater detail in **Section 4.3.3**, including sizing and other design parameters. The proposed structural control measures include both distributed and regional BMPS. Distributed BMPs will be implemented throughout the watershed in accordance with the Planning and Land Development Program specified by the MS4 Permit. The types and sizes of these BMPs are not identified, but assumptions are provided to support the quantities incorporated into the RAA. LID Streets or Green Streets generally consist of bioretention system. These distributed BMPs will be implemented in LAR UR2 WMA as described in **Section 4.3.3**.

Six regional projects have been identified through the development, as listed below. The design details associated with the projects will be determined in the future, but as currently conceptualized include infiltration trenches, infiltration basins, and subsurface infiltration systems.

- Randolph Street Green Rail Trail;
- LADWP Transmission Easement;
- John Anson Ford Park;
- Rosewood Park;
- Lugo Park; and
- Salt Lake Park.

Table 3-8 Potential Non-Structural BMP Enhanced Implementation Efforts

Non-Structural BMP Program	Proposed Implementation Approach
Street Sweeping	Consider more frequent street sweeping
	Consider modified enforcement strategies
	Consider requiring sweepers to travel at slower speeds
	Consider sweeping medians of larger streets
	Consider contractually mandating the use of regenerative vacuum equipment
Catch Basin and Storm Drain Cleaning	Consider enhanced catch basin cleaning for catch basins with CPS
	Consider modifying the extent, timing, and frequency of cleaning
	Consider conducting study to evaluate opportunities to enhance/modify program and consider implementing based on the findings
Commercial and Food Outlet Inspection	Consider targeted outreach effort related to bacterial discharges
	Consider developing and enforcing ordinances
	Consider focusing education and Business Assistance Program
	Consider increasing inspection and enforcement of grease removal equipment
Pet Waste Controls	Consider developing and enforcing ordinances
	Consider targeted outreach effort
	Consider using various media outlets
Education and Outreach	Consider targeted outreach efforts
	Consider alternative media outlets
	Consider conducting study to evaluate opportunities to enhance/modify program and consider implementing based on the findings
Homeless Waste Control	Consider developing and implementing program to reduce homelessness
	Consider ordinances that reduce encampments
	Consider targeted enforcement during evening hours
IDDE	Consider developing and implementing ordinances that include enforcement actions and accelerated follow up inspections
	Consider conducting study to evaluate opportunities to enhance/modify program and consider implementing based on the findings

4. Reasonable Assurance Analysis

The purpose of the RAA is to demonstrate that the implementation scenarios proposed in the WMP will meet the MS4 Permit effluent and receiving water limits for the priority pollutants of concern identified in **Section 2**. The WQOs are specified in the TMDLs and included in **Appendix C**, along with other MS4 Permit limitations for each WBPC addressed in the WMP. The limiting pollutant used to control the implementation efforts of the LAR UR2 WMA is bacteria for the area draining to the Los Angeles River and metals for the area draining to the Rio Hondo. Bacteria and metals were determined to be the limiting pollutants because they meet the following criteria:

- Relatively high priority with respect to meeting TMDL WLAs and/or other WQOs;
- Conservative with respect to attenuation during fate and transport modeling; and
- Require the greatest amount of volumetric control to achieve TMDL WLAs and other objectives.

This section summarizes the modeling approach that was carried out as part of the greater RAA development effort, specifically the process of:

- Setting target load reductions based on MS4 Permit limitations;
- Modeling identified structural BMPs and quantifying their associated load reductions;
- Demonstrating, with reasonable assurance, that target load reductions (and therefore MS4 Permit limitations) can be met by the final compliance dates; and
- Phasing of structural and non-structural BMPs to achieve interim milestones.

The RAA modeling approach presented herein conforms to Part VI.C.5.b.iv(5) of the MS4 Permit, which states:

> *"Permittees shall conduct a Reasonable Assurance Analysis for each water body-pollutant combination addressed by the [WMP]. [The] RAA shall be quantitative and performed using a peer-reviewed model in the public domain. Models to be considered for the RAA, without exclusion, are the Watershed Management Modeling System (WMMS), Hydrologic Simulation Program-FORTRAN (HSPF), and the Structural BMP Prioritization and Analysis Tool (SBPAT. The objective of the RAA shall be to demonstrate the ability of [the WMP] to ensure that Permittees' MS4 discharges achieve applicable water quality based effluent limitations and do not cause or contribute to exceedances of receiving water limitations."*

The Regional Board has developed a guidance document titled, "Guidelines for Conducting Reasonable Assurance Analysis in a Watershed Management Program, Including an Enhanced Watershed Management Program (March 25, 2014)." Although the guidance document presents guidelines and not necessarily requirements, the results of the RAA presented in this WMP have been developed to conform to the Regional Board guidance document. The approach described was presented to the Regional Board by Geosyntec on April 9, 2014 (Geosyntec, 2014) and was found to be consistent with their guidelines.

4.1 Modeling System

The RAA approach leverages the strengths of publicly available, MS4 Permit-approved GIS-based models that are widely utilized including within this region. The decision to use these models in the manner described below was based on the unique characteristics of the LAR UR2 WMA in regards to water quality priorities, hydrologic processes, and BMP opportunities, as well as to the capabilities of the models approved by the MS4 Permit.

Loading Simulation Program in C++ (LSPC), a publically available watershed model that uses Hydrologic Simulation Program - FORTRAN (HSPF) algorithms to simulate hydrology, sediment transport, water quality, and the fate and transport of pollutants within receiving waters and through a watershed. GIS was also used for the spatial component of the analysis as well as general visualization.

SBPAT is a public-domain GIS-based water quality analysis tool used to evaluate structural BMP performance for the purposes of this RAA. SBPAT links a modified USEPA SWMM hydrologic engine to a Monte Carlo analysis capable of repeated random sampling of pollutant EMCs and BMP effectiveness distributions to obtain numerical results regarding the expected performance of a specific BMP configuration. Each Monte Carlo analysis typically involves 10,000 iterations of EMC distributions and BMP effluent concentrations from the International BMP Database. SBPAT's land use EMCs are presented in Table 5. SBPAT is capable of quantifying model output variability, which is a component of the Regional Board's recent RAA guidance. The model:

- Calculates and tracks inflows to BMPs, treated discharge, bypassed flows, evaporation, and infiltration at a user-defined time step (e.g., 15 minutes);
- Distinguishes between individual runoff events by defining six-hour minimum inter-event times in the rainfall record, yet tracks inter-event antecedent conditions;
- Tracks volume treated by BMPs and summarizes and records these metrics by storm event; and
- Produces a table of each BMP's hydrologic performance, including concentration and load metrics by storm event, and consolidates these outputs on an annual basis.

SBPAT is specifically referenced in the MS4 Permit Part VI.C.5.b.iv and was presented at the first two MS4 Permit Group TAC RAA Subcommittee meetings. Additional information regarding SBPAT can be found in the SBPAT portal (SBPAT, 2013a).

Table 4-1 SBPAT RAA EMCs - Arithmetic Estimates of the Lognormal Summary Statistics

Land Use	TSS (mg/L)	TP (mg/L)	DP (mg/L)	NH3 (mg/L)	NO3 (mg/L)	TKN (mg/L)	DCu (µg/L)	TCu (µg/L)	TPb (µg/L)	DZn (µg/L)	TZn (µg/L)	FC (#/100mL)
Agriculture (row crop)	999.2 (648.2)	3.34 (1.53)	1.41 (1.04)	1.65 (1.67)	34.40 (116.30)	7.32 (3.44)	22.50 (17.50)	100.1 (74.8)	30.2 (34.3)	40.1 (49.1)	274.8 (147.3)	60,300 (153,000)
Commercial	67.0 (47.1)	0.40 (0.33)	0.29 (0.25)	1.21 (4.18)	0.55 (0.55)	3.44 (4.78)	12.3 (10.2)	31.4 (25.7)	12.4 (34.2)	153.4 (96.1)	237.1 (150.3)	51,600 (173,400)[a]
Education (Municipal)	99.6 (122.7)	0.30 (0.17)	0.26 (0.2)	0.4 (0.99)	0.61 (0.67)	1.71 (1.13)	12.2 (11.0)	19.9 (13.6)	3.6 (4.9)	75.4 (52.3)	117.6 (83.1)	11,800[b] (23,700)
Industrial	219.2 (206.9)	0.39 (0.41)	0.26 (0.25)	0.6 (0.95)	0.87 (0.96)	2.87 (2.33)	15.2 (14.8)	34.5 (36.7)	16.4 (47.1)	422.1 (534.0)	537.4 (487.8)	3,760 (4,860)
Multi-Family Residential	39.9 (51.3)	0.23 (0.21)	0.20 (0.19)	0.50 (0.74)	1.51 (3.06)	1.80 (1.24)	7.40 (5.70)	12.1 (5.60)	4.5 (7.80)	77.5 (84.1)	125.1 (101.1)	11,800[c] (23,700)
Single Family Residential	124.2 (184.9)	0.40 (0.30)	0.32 (0.21)	0.49 (0.64)	0.78 (1.77)	2.96 (2.74)	9.4 (9.0)	18.7 (13.4)	11.3 (16.6)	27.5 (56.2)	71.9 (62.4)	31,100[d] (94,200)
Transportation	77.8 (83.8)	0.68 (0.94)	0.56 (0.82)	0.37 (0.68)	0.74 (1.05)	1.84 (1.44)	32.40 (25.5)	52.2 (37.5)	9.2 (14.5)	222.0 (201.7)	292.9 (215.8)	1,680 (456)
Vacant/Open Space	216.6 (1482.8)	0.12 (0.31)	0.09 (0.27)	0.11 (0.25)	1.17 (0.79)	0.96 (0.9)	0.60 (1.90)	10.6 (24.4)	3.0 (13.1)	28.1 (12.9)	26.3 (69.5)	484 (806)

Note: EMC statistics are calculated based on 1996-2000 data for Los Angeles County land use sites (Los Angeles County, 2000), except for agriculture which are based on Ventura County MS4 EMCs (Ventura County, 2003) and fecal coliform which are based on 2000-2005 SCCWRP Los Angeles region land use data (SCCWRP, 2007b). These EMC datasets are summarized in the SBPAT User's Guide (Geosyntec, 2012).

[a] The default log distribution best fit summary statistics for this land use-pollutant combination produced an unreasonably high deviation, therefore the arithmetic estimate of the log mean was held constant while the log summary statistics were recomputed based on the log CoV for SFR (SCCWRP's low-density residential EMC).

[b] Multi-family residential EMC used here since educational land use site not available in the SCCWRP fecal coliform dataset.

[c] The fecal coliform EMC for the multi-family residential land use is based on SCCWRP dataset for "high-density residential"

[d] The fecal coliform EMC for the single-family residential land use is based on SCCWRP's dataset for "low-density residential".

4.2 Modeling Approach

This section gives an overview of the modeling approach, while the findings and results identified using this approach are described in **Section 4.3**. The modeling approach involves the establishment of target load reductions and the evaluation of non-structural and structural BMP pollutant load reductions. In addition, load reductions associated with non-MS4 parcels must also be established.

4.2.1 Establish Target Load Reductions

This initial step established target pollutant load reductions for the water quality priorities identified in **Section 2**, which includes applicable TMDL and 303(d)-listed pollutants (excluding trash) for the LAR UR2 WMA compliance modeling locations. It is possible that for some pollutants, such as nutrients, no MS4 load reduction relative to existing conditions would be necessary to meet the TMDL-based compliance requirements. The compliance modeling locations will consist of a location in Los Angeles River Reach 2 (or Segment B in the bacteria TMDL) and another in the lower Rio Hondo tributary.

The target load reductions represent a model-able expression of the MS4 Permit compliance metrics (e.g., bacteria allowed exceedance days for dry- and wet-weather), and serve as a basis for confirming that the WMP reasonably assures compliance with the MS4 Permit through quantitative analyses. Target load reductions were established using the calibrated LSPC watershed model for the TMDL pollutants total nitrogen, total copper, total lead, total zinc, and fecal coliform. LSPC does not model TMDL pollutants nitrate, nitrate plus nitrite, ammonia (total nitrogen will be used as a surrogate for all regulated nitrogen species), total cadmium (copper, lead, and zinc will be used as surrogates), or E. coli (fecal coliform will be used as a surrogate).

Land use loadings were reduced in LSPC until daily average pollutant concentrations at the compliance modeling locations met concentration or (single sample) exceedance day-based limits. Alternatively, daily maximum values may be used, however such an approach is considered overly conservative. The resulting load reductions that were found necessary to meet the MS4 Permit limits became the target load reductions that BMP benefits were modeled against. For bacteria, the wet-weather allowable exceedance days include High Flow Suspension (HFS) days.

4.2.2 Evaluate Non-Structural BMP Pollutant Load Reductions

Existing recently-initiated non-structural BMPs (i.e., those that have been initiated post-TMDL effective date) and planned non-structural BMPs were evaluated in terms of ability to reduce loads at the two compliance modeling locations. Both wet- and dry-weather water quality benefits of these BMPs were evaluated for all TMDL and 303(d) pollutants (excluding trash) where data was available to support such estimates.

Non-structural BMP load reductions include redevelopment (i.e., implementation of the MS4 Permit's post-construction retention and treatment requirements), Industrial General Permit compliance (i.e., stormwater discharge permittees meeting TMDL limits), and other non-structural BMPs, such as MCMs/institutional BMPs. Load reductions were quantifiable based on available BMP performance data and literature. These assumptions are documented in **Section**
4.3.2. For example, the load reductions resulting from phase-out of copper in brake pads and of zinc in rubber tires (assuming implementation of Department of Toxic Substances Control's (DTSC's) Safer Consumer Product Regulations, and inclusion of zinc in tires in the Priority Products list) was determined based on recent quantitative mass balance estimates developed by Kelly Moran for CASQA's True Source Control subcommittee. As another example, bacteria and dry-weather runoff reduction BMPs were quantified consistent with methodologies employed in recent San Diego Combined Load Reduction Plans

(examples available online (SBPAT, 2013b)). **Figure 4-1** shows a general schematic of non-structural BMP load reduction quantification through an example using pet waste programs.

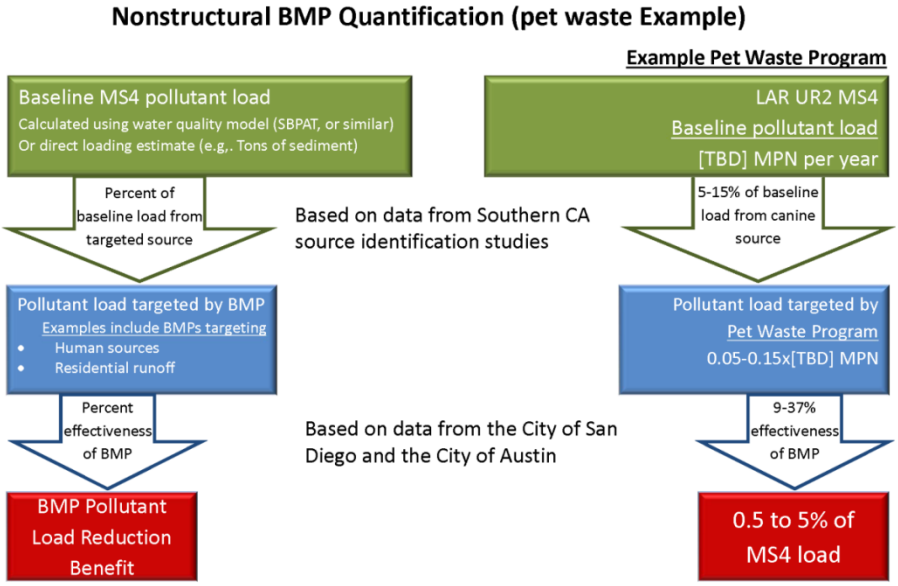


Figure 4-1 Non-Structural BMP Quantification (San Diego Pet Waste Example)

To avoid double-counting of load reductions where non-structural and structural BMPs overlap, the greater load reduction was applied.

4.2.3 Evaluate Structural BMP Pollutant Load Reductions

The goal of this step is to achieve the remaining target load reductions needed after accounting for the benefits of non-structural BMPs. Existing jurisdictional boundaries, as well as subwatershed and conveyance facility characteristics, were considered to delineate pollutant source, runoff control, and outfall monitoring strategies. This involved a detailed review of existing conditions and datasets.

Existing (i.e., implemented post-TMDL) and planned structural BMPs were provided by the agencies with sufficient conceptual design detail to support quantitative analysis. The additional "proposed" structural BMPs opportunities were identified and prioritized using SBPAT's structural retrofit planning methodology. Structural BMPs were modeled iteratively for the final TMDL compliance scenario (interim compliance milestone scenarios, were quantified by summing load reductions of phased BMP subsets as required). The final TMDL compliance scenario reflects the dates in which the final TMDL limits become effective. Milestones and final scenario dates for pacing water quality control measure implementation and iterative adaptive management reanalysis are (assuming the responsible parties implement the LRS approach for the bacteria TMDL):

- October 1, 2015 (final WQBEL - trash TMDL)
- January 11, 2020 (75% dry-weather WQBEL - metals TMDL)
- January 11, 2024 (final dry-weather, 50% wet-weather WQBEL - metals TMDL)
- January 11, 2028 (final wet-weather WQBEL metals TMDL)
- September 23, 2028 (Los Angeles River Segment B dry-weather second phase WQBEL - bacteria TMDL)
- March 23, 2030 (Rio Hondo dry-weather second phase WQBEL - bacteria TMDL)
- March 23, 2037 (final wet-weather WQBEL and RWL - bacteria TMDL)

The water quality benefits (in terms of expected pollutant load reductions) associated with existing, planned, and proposed structural BMPs were evaluated for wet-weather using SBPAT, consistent with methods used in previous TMDL Implementation Plans and Combined Load Reduction Plans. SBPAT uses recent effluent quality data from the WERF/EPA/ASCE International Stormwater BMP Database (www.bmpdatbase.org) to characterize structural BMP performance for all TMDL and 303(d)-listed pollutants of concern, based on available data. SBPAT estimates pollutant load reductions by comparing "existing" loads (corresponding to the effective date of the TMDL) with "post-BMP implementation" loads. Load estimates for the existing condition rely primarily on hydrology (which is modeled in SBPAT using UESPA's SWMM and Los Angeles region land use EMCs).

Following evaluation of the water quality benefits associated with these BMPs, the remaining need in terms of additional pollutant load reductions required to achieve the target load reductions was calculated to determine whether additional BMPs are needed to demonstrate Reasonable Assurance.

Estimated load reductions were compared with the target pollutant load reductions and were used to assess compliance with both load-based and exceedance day-based TMDL compliance metrics. Expected pollutant reduction ranges were provided, thereby capturing the variability of BMP performance, and reflecting the specific compliance risk tolerance of the LAR UR2 WMA.

For dry-weather (which includes days with <0.1-inch rainfall as defined by the Los Angeles River Bacteria TMDL), structural BMP quantification is based on static volume and load reduction calculations. An example of a static mass or volume balance calculation would be for characterizing the effects of overspray irrigation control programs (e.g., water conservation outreach and incentives) in combination with a number of low flow diversion (to sewer) projects, which together may be estimated to reduce 100 percent of dry-weather discharge volumes for the entire drainage area tributary to the implementation sites. This was done consistent with methods employed for recent TMDL Implementation Plans and Combined Load Reduction Plans, and took into account local knowledge and data provided for dry-weather runoff sources and discharge locations within LAR UR2 WMA. For pollutants that are covered within the RAA, but lack data to support a quantitative modeling analysis, surrogate pollutants were used to estimate load reductions (e.g., TSS for particulate-associated toxicants). Non-stormwater pollutants (e.g., pH, cyanide, ammonia), as determined by the water quality prioritization and source assessment presented in **Section 2**, as well as trash were not addressed by the RAA.

4.3 Modeling Process

This section goes into greater detail regarding the RAA completed using the approach described in **Section 4.2**, while the final RAA output is provided in **Section 4.4**.

4.3.1 Target Load Reductions

The Determination of Target Load Reductions began with a January 30, 2014 meeting with Board staff to clarify our assumptions and approach to conducting the RAA. Based on staff comments, we began by identifying the 90th percentile rain event years, then determined baseline pollutant loads based on those years, and made a determination of allowable loads for both the LAR and Rio Hondo based on TMDL and MS4 Permit requirements. The difference between the baseline and allowable loads then became the Target Load Reduction which must be reduced through the imposition of watershed control measures. The final step is an iterative adaptive management process, which will be subject to changing information and experience with the modeling methods and RAA assumptions. As an example, the current land use EMCs are primarily derived from data developed around the time that the 2001 MS4 Permit was just being implemented. Although models have been used to determine watershed pollutant loads,

approximately 40% of the Los Angeles River watershed, as a whole, follows a reduced street sweeping schedule, as compared to the enhanced weekly schedule, followed by the LAR UR2 WMA Permittees.

4.3.1.1 90th Percentile Years for Bacteria and Metals

The Regional Board's RAA Guidance document requires that RAAs consider critical conditions when evaluating structural and non-structural BMPs. Additional communication with the Regional Board indicated that two separate methods could be used to establish critical or 90th percentile years for different pollutant classes. Based on Regional Board guidance, the 90th percentile year was established for bacteria by applying the regulatory definition of a wet day, a calendar day with precipitation greater than 0.1-inch and the three days that follow, to the period of record for a representative rain gage, ranking years by the number of wet days, and identifying the 90th percentile TMDL year based on the number of wet days. The year representing the critical condition for all other pollutants under consideration, specifically metals and nutrients, was established by summing rainfall totals by TMDL year and identifying the corresponding 90th percentile year based on annual rainfall depths.

Subwatersheds within LSPC are assigned a rain gage reflecting thiessen polygons or areas of influence for each precipitation gage within the model. LACFCD's South Gate Transfer Station (D1256) is associated with the largest unit area within the WMA, as demonstrated in **Figure 4-2** and was therefore assumed to be representative of atmospheric conditions for the sub-region. The period of record for the gage is 1986-2011. The 90th percentile year for bacteria and metals are outlined in **Table 4-2**.

Table 4-2 90th Percentile Years for Limiting Pollutants

Pollutant	TMDL Year	Year Definition
Bacteria[1]	2011	November 1, 2010 - October 31, 2011
Metals and Nutrients[2]	1995	November 1, 1994 - October 31, 1995

[1] Applicable to area directly draining to Los Angeles River
[2] Applicable to area directly draining to Rio Hondo

4.3.1.2 Baseline Loads

In order to determine the baseline loads, the default Los Angeles County scale LSPC model was revised to reflect the subwatershed portions that fall within the LAR UR2 WMA as defined by the Regional Board. **Figure 4-3** presents LSPC model catchments, storm drains, and receiving waters for the WMA.

In order to establish baseline pollutant loads, a single model run without any BMPs or treatment control measures was carried out for both the Los Angeles River and Rio Hondo sides of the LAR UR2 WMA. Bacteria loads were extracted for the 2011 TMDL year while metals and nutrient loads were isolated for the 1995 TMDL year. Baseline loads for copper, lead, zinc, total nitrogen, and fecal coliform (used as the representative fecal indicator bacteria parameter) are reported in **Table 4-3**.

Table 4-3 Baseline Loads Derived from LSPC for 90th Percentile Model Years

Receiving Water Segment	Total Copper (lbs)	Total Lead (lbs)	Total Zinc (lbs)	Fecal Coliform (MPN*10^12)	Total Nitrogen (lbs)
Los Angeles River	672	536	6,784	997	99,952
Rio Hondo	147	105	1,594	181	23,183

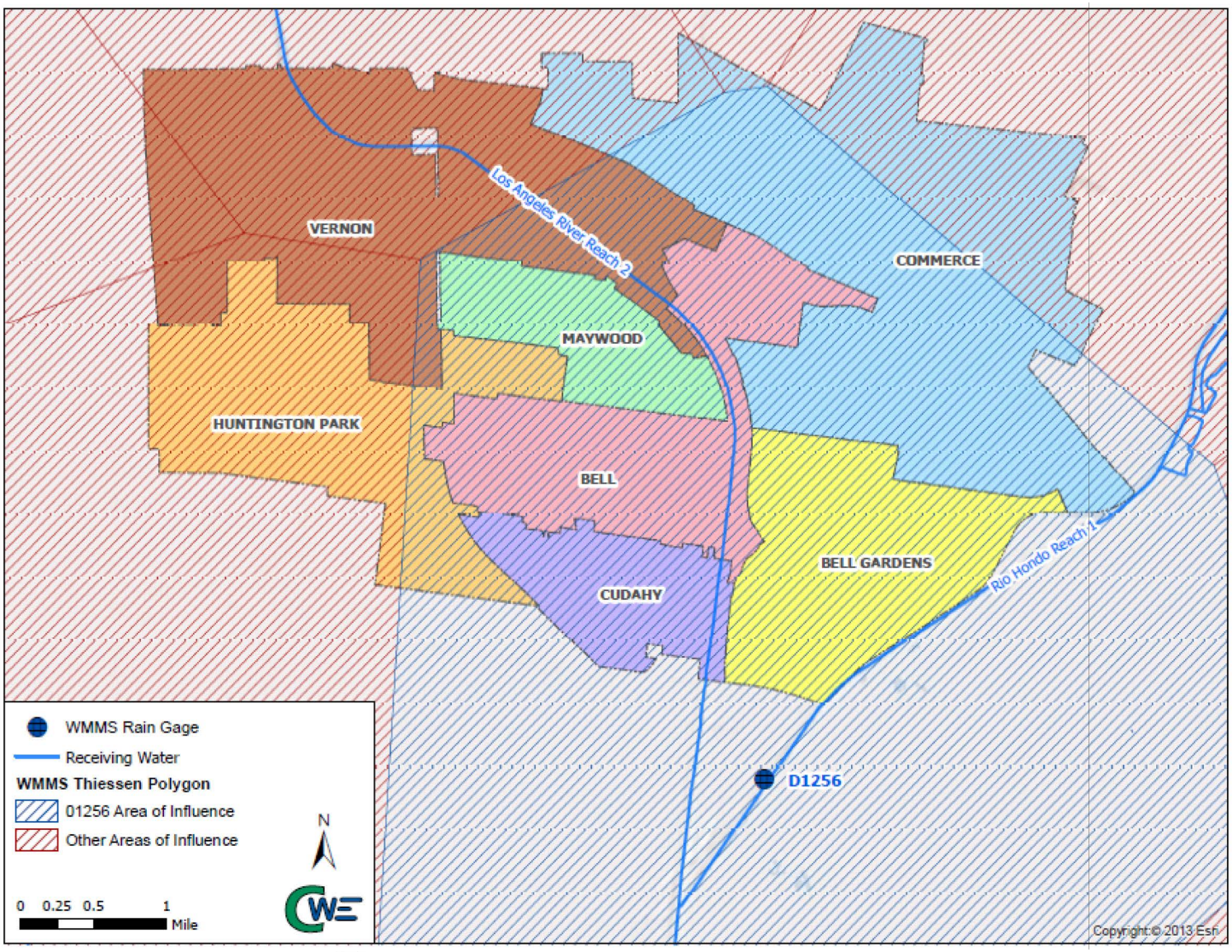


Figure 4-2 LAR UR2 WMA LSPC/HSPF Thiessen Polygons

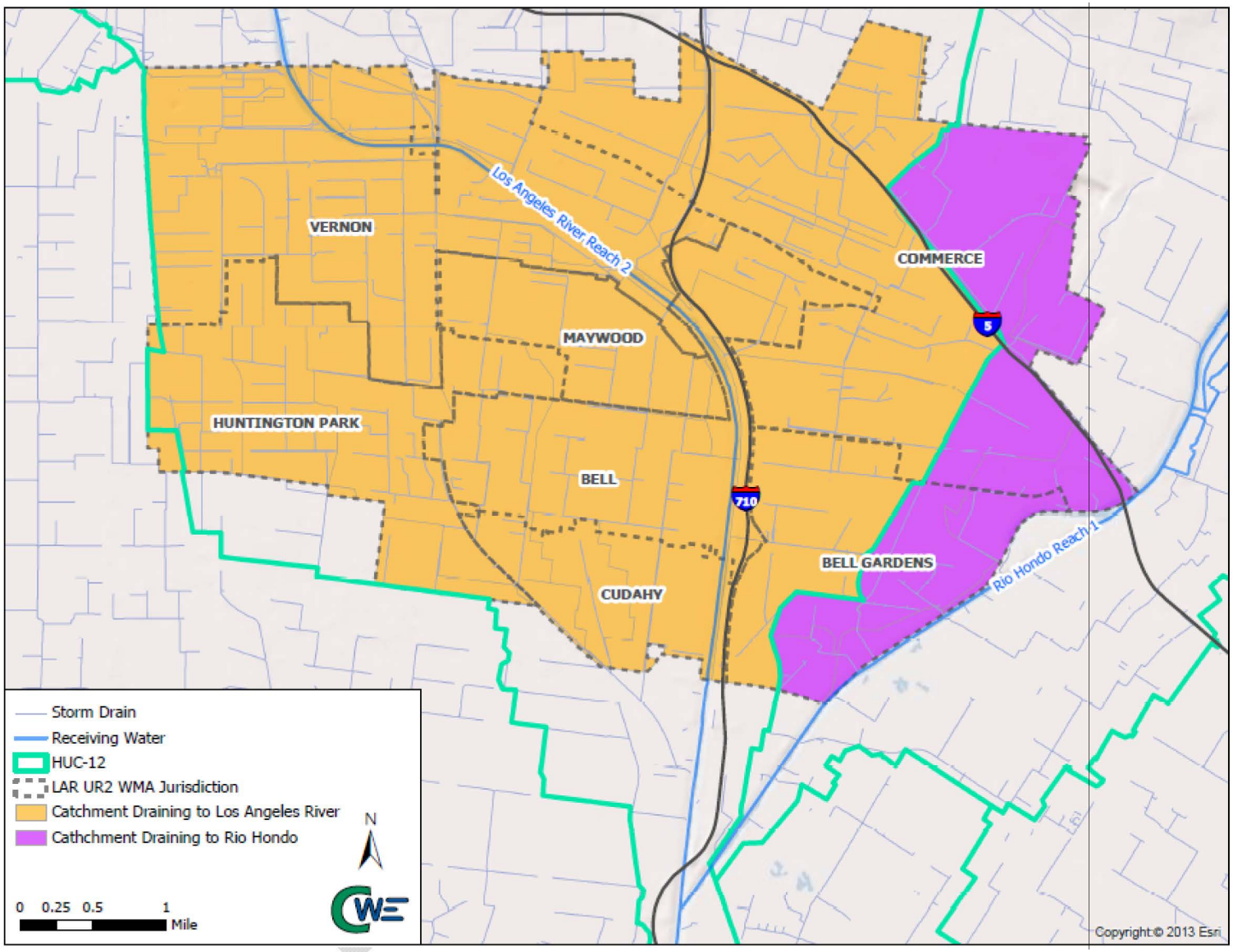


Figure 4-3 LSPC Model Catchments, Storm Drains, and Receiving Waters

4.3.1.3 Allowable Loads for Metals and Nutrients

Allowable loads for metals and nutrients were computed by multiplying relevant concentration-based WQBELs or SSOs by LSPC-derived runoff volumes for the periods modeled. Copper, lead, zinc, and nitrogen WQBELs are identified in Attachment O of the MS4 Permit, and provided in **Appendix C**. Copper and lead SSOs presented in the Draft Los Angeles River Copper and Lead Special Study Implementation Report (Larry Walker and Associates, 2013) were used in place of the WQBELs presented in the MS4 Permit for a parallel allowable load scenario. The concentration-based WQBELs that were used to set allowable loads are as follows:

- Total Copper: 15 µg/L;
- Total Lead: 56 µg/L;
- Total Zinc: 140 µg/L; and
- Total Nitrogen: 10.4 mg/L (based on sum of nitrate and ammonia WQBELs [8 mg/L + 2.4 mg/L], and assuming zero organic nitrogen).

SSOs used for the alternative allowable loads for copper and lead are as follows:

- Total Copper: 60 µg/L (3.971 Water Effects Ratio), and
- Total Lead: 85 µg/L

Table 4-4 shows the allowable loads for metals and nitrogen which may not exceed the baseline loads, shown in parenthesis, derived from the Los Angeles County scale LSPC model. Where allowable loads exceed baseline loads (e.g. values subject to SSOs), allowable loads are set equal to baseline loads.

Table 4-4 Allowable Loads Derived for 90th Percentile Model Years (SSO-Derived Allowable Loads in Parenthesis)

Receiving Water Segment	Total Copper (lbs)	Total Lead (lbs)	Total Zinc (lbs)	Total Nitrogen (lbs)
Los Angeles River	464 (672)	536 (536)	4,342 (NA)	99,952 (NA)
Rio Hondo	88 (147)	105 (105)	813 (NA)	23,183 (NA)

NA = Not applicable (no SSO available)

4.3.1.4 Allowable Loads for Bacteria

Permit limitations for bacteria are expressed in terms of allowable exceedance days (i.e., number of wet days with instream fecal coliform concentrations above 400 MPN/100 mL, minus ten reference stream-based allowed exceedance days and 15 days during which the high flow recreational use is suspended for 2011 [i.e., days with rainfall greater than or equal to 0.5 inches]). The allowable exceedance days were used to directly calculate target load reductions (described in the next section). Allowable loads (**Table 4-5**) for bacteria for the 90th percentile year were calculated by subtracting target load reductions from baseline loads.

Table 4-5 Allowable Loads for 90th Percentile Model Years for Bacteria

Receiving Water Segment	Fecal Coliform (MPN*10^12)
Los Angeles River	708
Rio Hondo	125

4.3.1.5 Target Load Reductions

Target Load Reductions (TLRs) are the reduction of baseline loads needed to achieve MS4 Permit WQOs. TLRs (**Table 4-6**) were calculated as the difference between baseline loads and allowable loads, for all pollutants except bacteria.

TLRs for bacteria were established as the load reduction from baseline conditions that are required to decrease the number of wet-weather exceedance days (i.e., days with receiving water concentrations above 400 MPN/100mL) in the 90th percentile bacteria year (2011) to the MS4 Permit's allowable exceedance days, or ten allowed days (excluding high flow recreational use suspension days, or days with rainfall greater than or equal to 0.5 inches and the following 24 hours). In order to calculate the required load reductions, SBPAT was used to model hypothetical infiltration basins located at the outlets of the Los Angeles River and Rio Hondo drainage areas. The two basins were iteratively sized until modeled receiving water exceedance days meet the allowed number. This is achieved through elimination of discharge on non-allowed exceedance days. The fecal coliform target load reductions (**Table 4-6**) were then set to the load reductions that were achieved by these hypothetical infiltration basins.

For lead and total nitrogen, no load reductions were needed for baseline loads to meet allowable loads, therefore TLRs were zero. The same is true for copper with SSOs considered.

For copper (without SSOs) and zinc, TLRs as a percentage of baseline loads vary from 31-49 percent. For bacteria, TLRs as a percentage of baseline loads vary from 29-31 percent.

Table 4-6 TLRs for 90th Percentile Model Years, with SSO-based LTRs in Parenthesis

Receiving Water Segment	Total Copper (lbs)	Total Lead (lbs)	Total Zinc (lbs)	Fecal Coliform (MPN*10^12)	Total Nitrogen (lbs)
Los Angeles River	209 (0)	0	2,442	289	0
Rio Hondo	59 (0)	0	781	56	0

4.3.2 Non-Structural BMP Modeling Assumptions

In order to take credit in the load reductions that will result from non-structural BMP implementation, the load reductions had to be quantified and justified. Load reductions were incorporated into the model for various types of non-structural BMPs, including the following:

- Non-MS4 NPDES Permittee Parcels
- Senate Bill (SB) 346 Copper Load Reductions
- Non-Modeled Non-Structural BMPs

4.3.2.1 Non-MS4 NPDES Facility Parcels

In addition to MS4 Permittees, such as those agencies that make up the LAR UR2 WMA, there are several other groups of NPDES Permittees that are responsible for ensuring that their own discharges are in compliance with the various TMDL WLAs including WQBELs. These include Individual NPDES, General NPDES, General Industrial NPDES and General Construction NPDES facilities or sites. With the exception of the General Construction Permittees, which constantly change, the remaining NPDES Permittees are long lasting and are generally attributable to the industrial, commercial and manufacturing land uses categories and are therefore attributed with high pollutant loadings that may adversely skew the results of a RAA.

For each of the LAR UR2 WMA General Industrial Permittees identified in SMARTS, public stormwater information including Enforcement Actions, NOI, Annual Reports, and Monitoring Reports, were reviewed. **Appendix H** provides tables summarizing key characteristics of these facilities include area and SIC codes. Each facility was then mapped, as illustrated in **Figure 4-4**, by translating from street address to Los Angeles County Assessor Identification Number (AIN) using ArcGIS. These mapped parcels represent "Non-MS4 NPDES Facilities" within each City and were modeled as non-structural BMPs through applicable load reductions.

By modeling these parcels as non-structural BMPs, the analysis took into account the compliance of independently permitted facilities, which would normally have high pollutant loadings. These pollutant concentrations, or land use based loadings, were set equivalent to the WQBELs (arithmetic summary statistics shown in **Table 4-7**), to reflect the assumption that stormwater runoff from these sites will generally comply with the water quality standards. For characterization of variability, the coefficients of variation for the industrial EMCs were preserved.

Two SBPAT model runs were carried out to quantify load reductions derived from this BMP. The first model run reflected the baseline scenario with land use specific EMCs presented in **Table 4-7** applied uniformly across LAR UR2 WMA. The second model run represented the land use dataset with non-MS4 parcels included (i.e., their EMCs set to WQBELs).

Table 4-7 Non-MS4 NPDES Facility Parcel's Land Use EMCs (arithmetic estimates of log means)

Land Use	TCu (µg/L)	TZn (µg/L)	FC (# /100 mL)
Non-MS4 NPDES Facility Parcels	21.9 (23.3)	189 (172)	653 (843)

Note: SBPAT assumes lognormal distributions for its water quality input datasets. SBPAT's log mean values for the new non-MS4 NPDES Facility parcel land use were set to the log of the WQBEL concentrations (i.e., 15 µg/L for total copper, 140 µg/L for total zinc, and 400 MPN/100mL for fecal coliform); log standard deviations (in parentheses) were scaled based on the industrial EMC COVs. This table reports arithmetic estimates of the log summary statistics; i.e., the log mean and log standard deviations were converted into arithmetic space using statistical conversion equations.

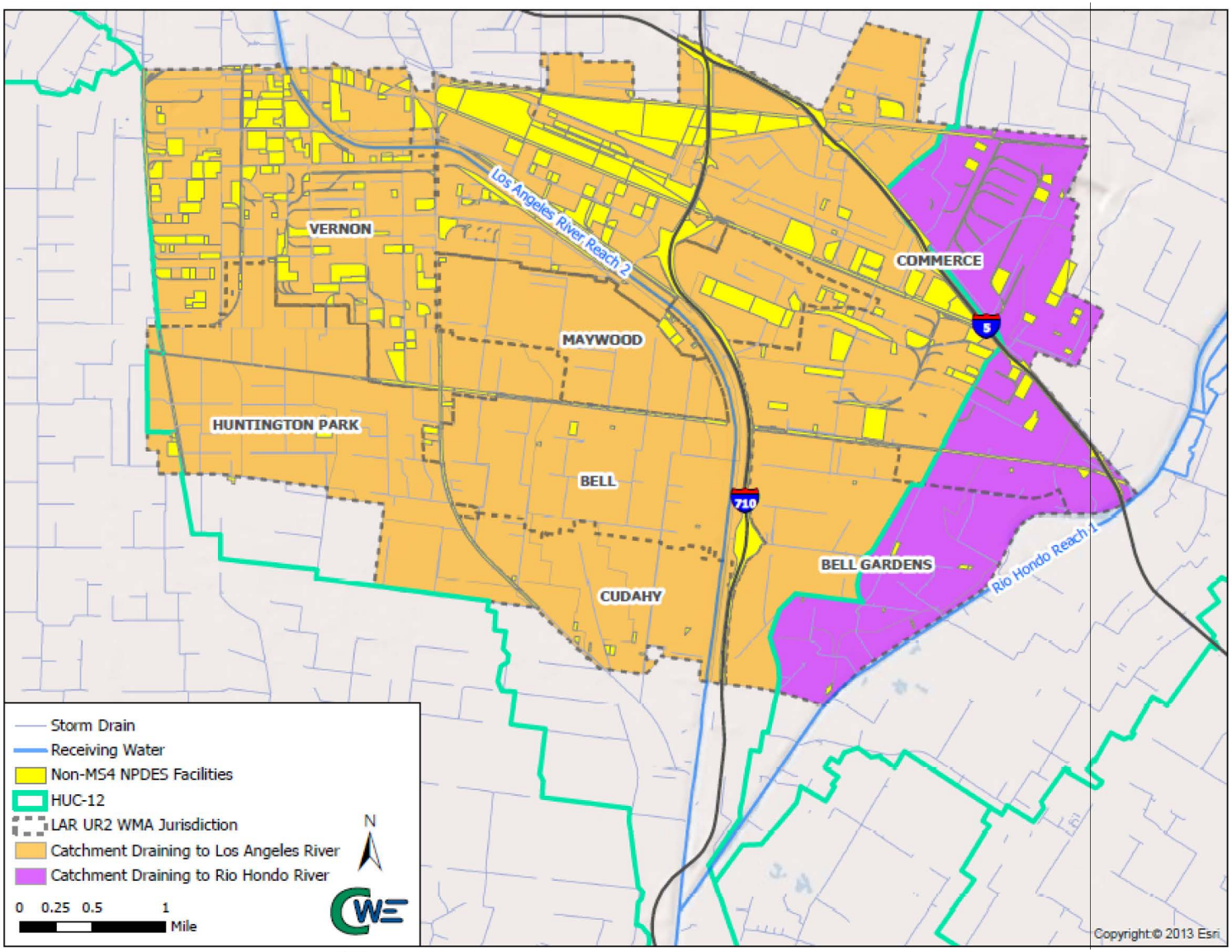


Figure 4-4 Non-MS4 NPDES Permittees in LAR UR2 WMA

4.3.2.2 SB 346 Copper Load Reductions

Car brake pad debris has been shown to be the source of approximately 60 percent of total copper loads into highly urbanized watersheds throughout California (Donigian, 2009 as cited by Moran, 2013). A study conducted by AquaTerra in 2007 attributed 15 to 50 percent of total copper loads to the San Francisco Bay to brake pad wear debris from a range of land uses. A similar study carried out by the Santa Clara Valley Urban Runoff Program attributed 42 percent of copper loading to the same water body to brake pad wear (SCVURP, 1997).

California SB 346 mandates reduction in copper composition of brake pads sold in California such that each pad must be comprised of less than 5 percent of copper by weight in 2021 and 0.5 percent of copper by weight in 2025. A CASQA funded study developed by TDC Environmental (Moran, 2013) carried out a series of mass balance assessments to estimate the percentage of copper loading that would occur as a result of SB 346 driven changes. The study assessed three scenarios accounting for uncertainty in manufacturer response and projected load reductions from baseline for years of interest for the MS4 Permit compliance in Los Angeles County. These scenarios and years of interest are presented in **Table 4-8**.

Table 4-8 Estimated Runoff Copper Reduction from Friction Pad Reformulation (Adapted from Moran, 2013)

Year	Scenario 1 - One Step Reduction	Scenario 2 - Step Reduction	Scenario 3 - Aftermarket Exemption from 0.5% Copper
2020	29%	17%	17%
2024	60%	45%	39%
2028	61%	60%	49%
2032	61%	61%	55%

For the LAR UR2 WMA RAA, a 50 percent reduction in copper loading was conservatively assumed to occur by the 2028 final metals milestone. To avoid double counting, this reduction was applied to the remaining copper load after all structural BMP load reductions were accounted for.

4.3.2.3 Non-Modeled Non-Structural BMPs

Load reductions derived from non-modeled, non-structural BMPs were assumed to be 5 percent of baseline loads for all pollutants following discussions with the Regional Board. These non-structural BMPs will include the following program enhancements (i.e., beyond the Permit minimum), with an emphasis on those BMPs that most effectively target urban stormwater bacteria sources: enhanced street sweeping, enhanced catch basin and stormdrain cleaning, enhanced commercial and food outlet inspection, enhanced pet waste controls, enhanced education and outreach, enhanced homeless waste control efforts, and enhanced IDDE efforts (including microbial source tracking to identify inputs of human fecal contamination into the MS4). Additional details regarding the enhancements are presented in **Section 3.3.1**.

4.3.3 Structural BMP Modeling Assumptions

In order to take credit in the load reductions that will result from structural BMP implementation, the load reductions had to be determined. Load reductions were quantified by the model for the proposed structural BMPs, based on specified design criteria. Assumptions for the following structural BMP implementation are discussed in greater detail below:

- LID Ordinances
- LID Streets or Green Streets (Distributed BMPs)
- Regional BMPs

4.3.3.1 Low Impact Development Ordinances

Implementation of LID as a result of redevelopment was modeled uniformly throughout the LAR UR2 WMA. MS4 Permit Part VI.C.4.c.i.(1) requires Permittees to develop and implement a LID ordinance applicable to redevelopment meeting minimum criteria thresholds of disturbance. Average annual redevelopment rates released by the City of Los Angeles (City of Los Angeles Bureau of Sanitation, 2009) were used to establish what area within each land use is expected to be retrofitted consistent with the Permit's post-construction onsite retention requirements. Average annual redevelopment rates were extrapolated to final compliance dates, or 2028 for metals and 2037 for bacteria. In an April 16, 2014, memorandum to the MS4 Permittees, the LARWQCB Executive Officer asserted that the Permit required final LID ordinances to be in place by the time of WMP submittal. The area redeveloped each year was sampled without replacement; i.e., areas that had undergone redevelopment in previous years were not available to undergo redevelopment again in subsequent years. Average annual redevelopment rates for relevant land uses and cumulative redevelopment for pollutant-specific TMDL compliance dates are presented in **Table 4-9**.

Table 4-9 Redevelopment Rates by Land Use

Land Use	Average Annual Percent Area that is Redeveloped	Percent of Total Area that is Redeveloped by Milestone Year	
		Metals Compliance Date (2028)	Bacteria Compliance Date (2037)
Commercial	0.15	2.1	3.4
Education	0.16	2.2	3.6
Industrial	0.34	4.7	7.5
Residential	0.18	2.5	4.1
Transportation	2.7	31.8	46.7

Areas treated by LID as a result of the ordinances were modeled using bioretention systems sized for the 85th percentile storm depth for the region of 0.97-inch (LACDPW, 2004) with a saturated hydraulic conductivity (K_{sat}) of 0.15 inch per hour.

4.3.3.2 LID Streets

LID Streets were applied to treat 25 percent of commercial and residential land uses in areas that were not tributary to proposed regional BMPs on the Los Angeles River side of LAR UR2 WMA. LID Streets are different from the arterial Green Streets indentified in the Permit and Green Streets Policy in that LID Streets are more comparable to distributed parcel level BMPs within the public Right of Way (ROW). LID Streets will be implemented on smaller street projects which do not trigger the requirements of the Green Streets Policy. LID Streets were not necessary to meet TLRs on the Rio Hondo side of LAR UR2 WMA and they are only proposed for implementation in LAR UR2 WMA areas that drains directly to the Los Angeles River. **Table 4-10** identifies the cumulative area within each LAR UR2 WMA City that will be tributary to a LID Street based on the afore mentioned assumptions. LID Street treatment was modeled using bioretention systems sized for the 0.4-inch storm (sizing was identified through iterative analysis) with a saturated hydraulic conductivity (K_{sat}) of 0.15 inch per hour.

Table 4-10 LID Street Required Tributary Area by LAR UR2 WMA City

LAR UR2 WMA City	SF Residential (acres)	MF Residential (acres)	Commercial (acres)	Total Area[1] (acres)	Regional Project Area Reduction[2] (acres)	Required Area Tributary to LID Streets (acres)
Bell	272	513	271	1,056	181	219
Bell Gardens	91	402	146	639	0	160
Commerce	212	83	288	583	191	98
Cudahy	51	434	59	544	85	115
Huntington Park	562	481	352	1,394	557	209
Maywood	430	121	109	660	209	113
Vernon	1	0	16	17	1	4
Totals:	**1,619**	**2,033**	**1,241**	**4,893**	**1,224**	**918**

SF = Single Family, MF = Mixed Family, LAR = Los Angeles River, LID = Low Impact Development
[1] Total area includes SF Residential, MF Residential, and Commercial areas.
[2] Area reductions are determined based on the total SF Residential, MF Residential, and Commercial land uses in proposed regional BMP tributary area.

4.3.3.3 Regional BMPs

Regional BMP opportunities were identified using the approach discussed in **Section 3.2.3**. Six regional infiltration BMPs (two infiltration trenches and four subsurface infiltration systems) were carried forward to the final RAA modeling iteration. The locations of these regional BMPs and their drainage areas are shown in **Figure 4-5**. The six regional projects include:

- Randolph Street Green Rail Trail;
- LADWP Transmission Easement;
- John Anson Ford Park;
- Rosewood Park;
- Lugo Park; and
- Salt Lake Park.

The Randolph Street Green Rail and LADWP Transmission Easement regional BMPs were sized using the maximum dimensions presently considered feasible due to size and design constraints. All other regional BMPs were iteratively sized to meet the TLRs. Regional BMP conceptual design attributes that were used for RAA modeling using SBPAT are summarized below.

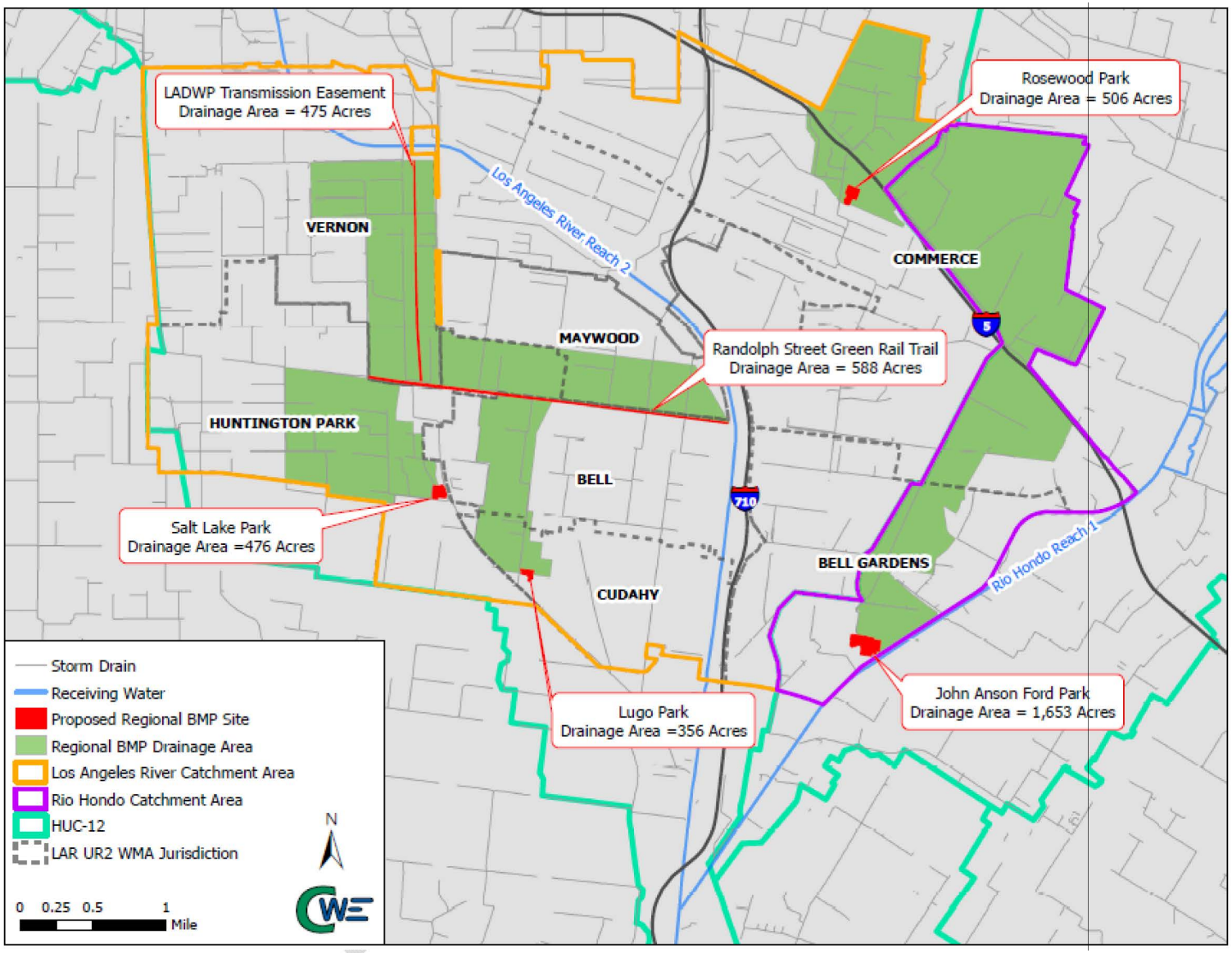


Figure 4-5 Proposed Regional Project Sites and Tributaries

Randolph Street Green Rail Trail

An infiltration trench project opportunity was identified adjacent to the Randolph Street Green Rail Trail. **Figure 4-6** illustrates the proposed project site and corresponding tributary drainage area. This BMP was modeled as an infiltration basin using the following design parameters and assumptions:

Table 4-11 John Anson Ford Park Design Parameters

Design Parameter	Value
Water Quality Design Volume	8.2 acre feet/354,000 cubic feet
Infiltration Rate	0.17 inches/hour
Design Storm Treated	0.19 inches
Regional BMP Length	10,400 feet
Regional BMP Width	10 feet
Regional BMP Depth	10 feet
Area Assumed for Pretreatment and Side Slopes	15%
Assumed Void Ratio	0.4

LADWP Transmission Easement

An infiltration trench project opportunity was identified along a Los Angeles City DWP transmission line. **Figure 4-7** illustrates the proposed project site and corresponding tributary drainage area. The water quality design volume of the planned infiltration trench was modeled as an infiltration basin in SBPAT using the following design parameters and assumptions:

Table 4-12 LADWP Transmission Easement Design Parameters

Design Parameter	Value
Water Quality Design Volume	15 acre feet/656,000 cubic feet
Infiltration Rate	0.17 inches/hour
Design Storm Treated	0.43 inches
Regional BMP Length	4,760 feet
Regional BMP Width	20 feet
Regional BMP Depth	10 feet
Area Assumed for Pretreatment and Side Slopes	15%
Assumed Void Ratio	0.9

Figure 4-6 Randolph Street Green Rail Trail

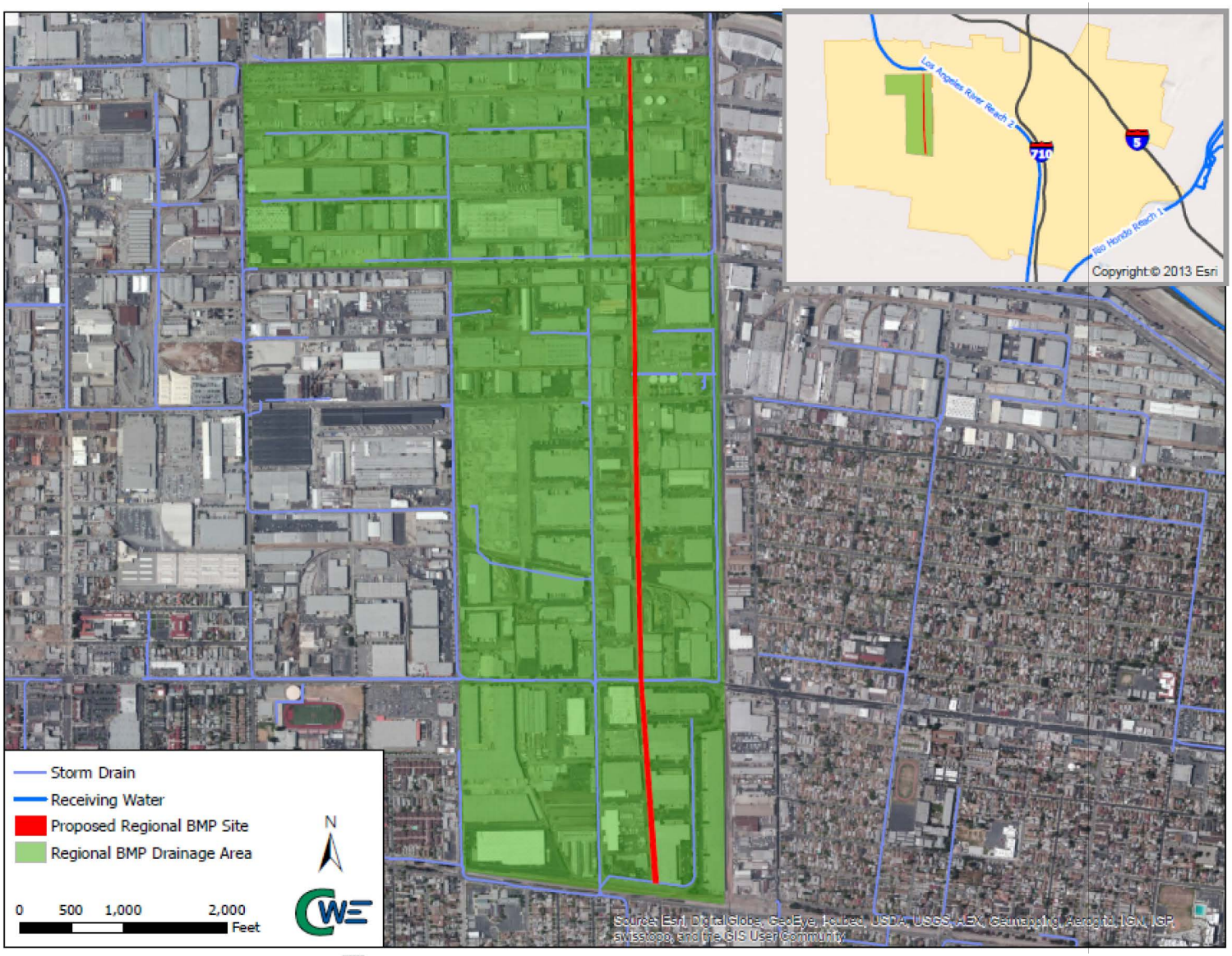


Figure 4-7 LADWP Transmission Easement

John Anson Ford Park

A subsurface infiltration project opportunity was identified at the ball fields of John Anson Ford Park. An illustration of the proposed regional BMP footprint is presented in **Figure 4-8**. The water quality design volume of this subsurface infiltration facility was modeled as an infiltration basin in SBPAT using the following design parameters and assumptions:

Table 4-13 John Anson Ford Park Design Parameters

Design Parameter	Value
Water Quality Design Volume	72 acre feet/3,124,000 cubic feet
Infiltration Rate	0.36 inches/hour
Design Strom Treated	0.6 inches
Footprint Area	544,500 square feet
Assumed Void Ratio	0.9

Rosewood Park

A subsurface infiltration project opportunity was identified at the baseball field in Rosewood Park. An illustration of the proposed regional BMP footprint is presented in **Figure 4-9**. The water quality design volume of this subsurface infiltration facility was modeled as an infiltration basin in SBPAT using the following design parameters and assumptions:

Table 4-14 Rosewood Park Design Parameters

Design Parameter	Value
Water Quality Design Volume	29 acre feet/1,250,000 cubic feet
Infiltration Rate	0.23 inches/hour
Design Storm Treated	0.77 inches
Footprint Area	217,800 square feet
Assumed Void Ratio	0.9

Lugo Park

A subsurface infiltration project opportunity was identified at the softball field and open space of Lugo Park. An illustration of the proposed regional BMP footprint is presented in **Figure 4-10**. The water quality design volume of this subsurface infiltration facility was modeled as an infiltration basin in SBPAT using the following design parameters and assumptions:

Table 4-15 Lugo Park Design Parameters

Design Parameter	Value
Water Quality Design Volume	13.2 acre feet/575,000 cubic feet
Infiltration Rate	0.17 inches/hour
Design Storm Treated	0.71 inches
Footprint Area	100,000 square feet
Assumed Void Ratio	0.9

Figure 4-8 John Anson Ford Park

Figure 4-9 Rosewood Park

Figure 4-10 Lugo Park

Salt Lake Park

A subsurface infiltration facility project opportunity was identified at the ball fields of Salt Lake Park. An illustration of the regional BMP footprint is presented in **Figure 4-11**. The water quality design volume of this subsurface infiltration facility was modeled as an infiltration basin in SBPAT using the following design parameters and assumptions:

Table 4-16 Salt Lake Park Design Parameters

Design Parameter	Value
Water Quality Design Volume	26 acre feet/1,125,000 cubic feet
Infiltration Rate	0.17 inches/hour
Design Storm Treated	0.75 inches
Footprint Area	196,000 square feet
Assumed Void Ratio	0.9

Figure 4-11 Salt Lake Park

4.4 Modeling Output

An iterative process was employed to identify suites of structural and non-structural BMPs capable of achieving the TLRs. Bacteria was found to be the driving (or limiting) pollutant for the Los Angeles River drainage area, and zinc was the driving pollutant for the Rio Hondo drainage area. The following tables present individual and summed BMP load reductions for fecal coliform, copper, and zinc for the Los Angeles River and Rio Hondo drainage areas. Bacteria load reduction results (**Table 4-17** and **Table 4-18**) are shown for the final wet-weather bacteria TMDL compliance date of 2037, modeled using rainfall data from the 90th percentile year based on wet days (2011). Metals load reduction results (**Table 4-19** and **Table 4-20**) are shown for the final wet-weather metals TMDL compliance date of 2028, modeled using rainfall data from the 90th percentile year based on rainfall (1995). Average (mean) load reduction results are shown, as well as the interquartile ranges (25th to 75th percentiles), to reflect model output variability, which is primarily driven by land use EMC variability. Total BMP load reductions that exceed the TLRs indicate that reasonable assurance (of meeting the MS4 Permit limits) has been demonstrated for that pollutant for that drainage area.

Table 4-17 Fecal Coliform Load Reductions for Los Angeles River Drainage Area

Control Measure	Average	Low (25th Percentile)	High (75th Percentile)
Non-Structural BMPs			
Non-MS4 NPDES Parcels	77	77	77
LID Ordinance	31	23	35
Other Non-Modeled	50	50	50
Regional BMPs			
Randolph Green Rail Trail	6	4	7
LADWP Transmission Easement	3	2	4
Rosewood Park	31	18	35
Lugo Park	13	8	15
Salt Lake Park	24	16	27
Distributed BMPs			
LID Streets	72	45	82
Target Load Reduction	**289**	**289**	**289**
Total BMP Load Reduction	**307**	**243**	**332**

Table 4-18 Fecal Coliform Load Reductions for Rio Hondo Drainage Area			
Control Measure	**Average**	**Low (25th %ile)**	**High (75th %ile)**
Non-Structural BMPs			
Non-MS4 NPDES Parcels	10	10	10
LID Ordinance	6	4	6
Other Non-Modeled	9	9	9
Regional BMPs			
John Anson Ford Park	47	31	53
Distributed BMPs			
LID Streets	NA	NA	NA
Target Load Reduction	**56**	**56**	**56**
Total BMP Load Reduction	**71**	**55**	**78**

Table 4-19 Copper and Zinc Load Reductions for Los Angeles River Drainage Area						
Control Measure	**Total Copper**			**Total Zinc**		
	Average	**Low 25th %ile**	**High 75th %ile**	**Average**	**Low 25th %ile**	**High 75th %ile**
Non-Structural BMPs						
Non-MS4 NPDES Parcels	274	274	274	2,580	2,580	2,580
LID Ordinance	29	26	32	320	277	343
Other Non-Modeled	34	34	34	339	339	339
Brake Pad (SB 346)	143	146	139	-	-	-
Regional BMPs						
Randolph Green Rail Trail	3	3	3	36	31	40
LADWP Transmission Easement	5	5	6	51	52	66
Rosewood Park	14	12	15	172	151	189
Lugo Park	3	3	3	27	24	29
Salt Lake Park	7	6	7	47	43	50
Distributed BMPs						
LID Streets	18	16	19	140	124	143
Target Load Reduction (with SSO considered)	**208 (0)**	**208 (0)**	**208 (0)**	**2,442**	**2,442**	**2,442**
Total BMP Load Reduction	**529**	**526**	**533**	**3,712**	**3,622**	**3,778**

Table 4-20 Copper and Zinc Load Reductions for Rio Hondo Drainage Area

Control Measure	Total Copper			Total Zinc		
	Average	Low 25th %ile	High 75th %ile	Average	Low 25th %ile	High 75th %ile
Non-Structural BMPs						
Non-MS4 NPDES Parcels	0.2	0.2	0.2	4	4	4
LID Ordinance	5	4	6	70	60	77
Other Non-Modeled	7	7	7	80	80	80
Brake Pad (SB 346)[1]	44	48	41	-	-	-
Regional BMPs						
John Anson Ford Park	46	39	52	659	566	731
Distributed BMPs						
LID Streets	NA	NA	NA	NA	NA	NA
Target Load Reduction (with SSO considered)	**59 (0)**	**59 (0)**	**59 (0)**	**781**	**781**	**781**
Total BMP Load Reduction	**103**	**99**	**106**	**813**	**709**	**893**

[1] For SB346, low load reductions are higher than average, and high load reductions are lower than average, because of the calculation methodology that is used. This methodology is described in Section 3.5, which states that the copper load reduction "was applied to the remaining copper load after all structural BMP load reductions were removed," and the remaining copper load is high for the low load reduction scenario (and low for the high load reduction scenario).

5. Compliance Schedule and Cost

Interim and final compliance dates in the LAR Metals and Bacteria TMDLs are the primary drivers for the LAR UR2 WMA RAA and WMP Plan implementation schedule. The dates identified in this WMP Plan are subject to the procurement of grants or other financing support commensurate with the existing and future fiduciary responsibilities of the Permittees. They may furthermore be adjusted based on evolving information developed through the iterative adaptive management process identified in the 2012 MS4 Permit or similar Parts within future MS4 Permits. As discussed in the CIMP, the LAR Bacteria TMDL LRS would be shifted two years back to match Rio Hondo schedule and allow a single WMA study.

5.1 WMP Implementation Schedule

Part VI.C.5.c of the MS4 Permit discusses the compliance schedule requirements associated with the WMP. The WMP Implementation schedule was developed based on TMDL milestones (i.e., interim and final numeric limits) identified in **Table 1-6**. The Los Angeles River Metals TMDL requires 50 percent of the final load reductions to be achieved by 2024, while the Los Angeles River Bacteria TMDL allows agencies to set a percent of final load reductions to be achieved by the 2030 interim milestone.

To allow comparison with the metals interim compliance target, and to allow the development of a bacteria interim compliance target, average load reductions were estimated to reflect the structural and non-structural BMP implementation schedule. **Table 5-1** identifies the proposed control measure implementation schedule based on what LAR UR2 WMA deems feasible and the phasing needed to achieve compliance with interim and final compliance targets for both bacteria and metals. The resulting average load reductions, phased by milestone date, are presented in the following figures. **Figure 5-1** through **Figure 5-3** address fecal coliform, copper, and zinc, respectively, for the Los Angeles River drainage area. **Figure 5-4** through **Figure 5-6** address fecal coliform, copper, and zinc, respectively, for the Rio Hondo drainage area. The WMP, including the schedule aspect, will be updated through the adaptive management process, therefore the schedule identified is always tentative.

Table 5-1 Tentative Control Measure Implementation Schedule

Control Measure	Tentative Date to be Implemented
Non-Structural BMPs	
Non-MS4 NPDES Parcels	December 2017
LID Ordinance	March 2037[1]
Other Non-Modeled	January 2028
Brake Pad (SB 346)	January 2028
Regional BMPs	
John Anson Ford Park	January 2024
Randolph Green Rail Trail	January 2028
LADWP Transmission Easement	January 2028
Rosewood Park	January 2030
Lugo Park	March 2037
Salt Lake Park	March 2037
Distributed BMPs	
LID Streets (Los Angeles River side only)	March 2037[2]

[1] Interim milestone dates assume a percentage of final load reduction
[2] Assume 50 percent implementation by March 2030

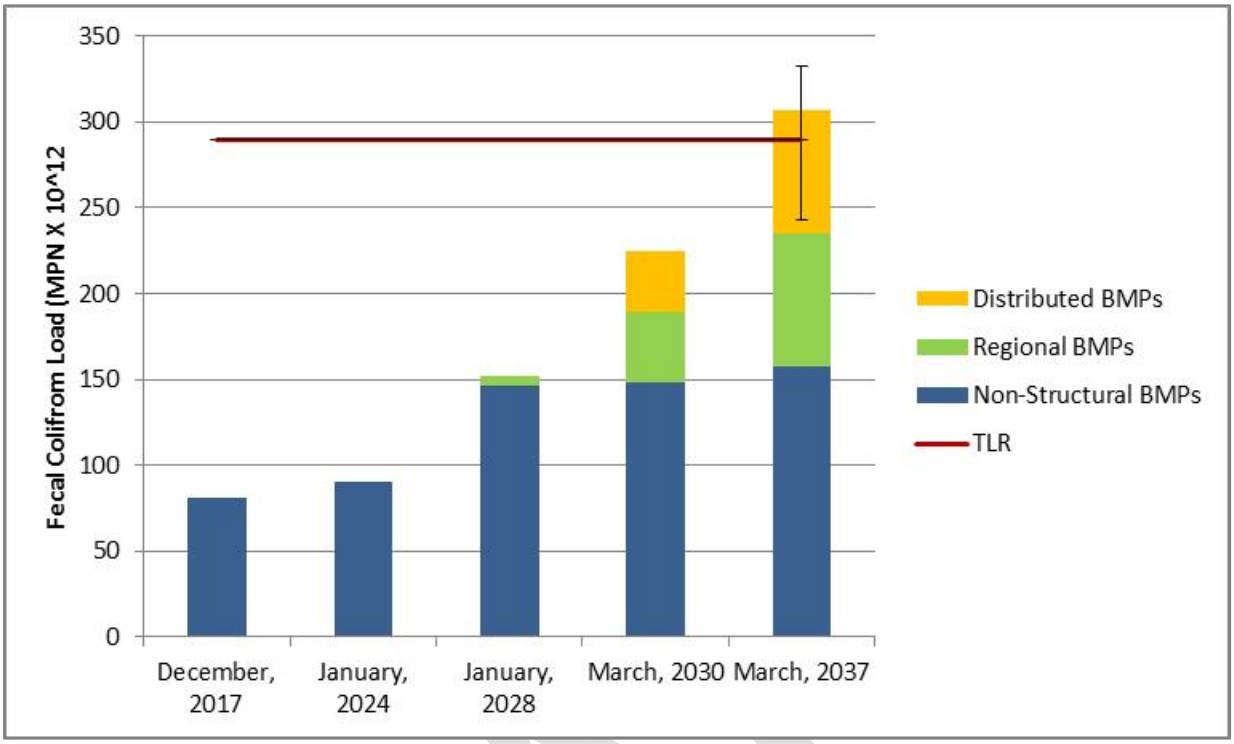


Figure 5-1 Fecal Coliform Load Reduction Milestones for the LAR UR2 WMA by BMP Category

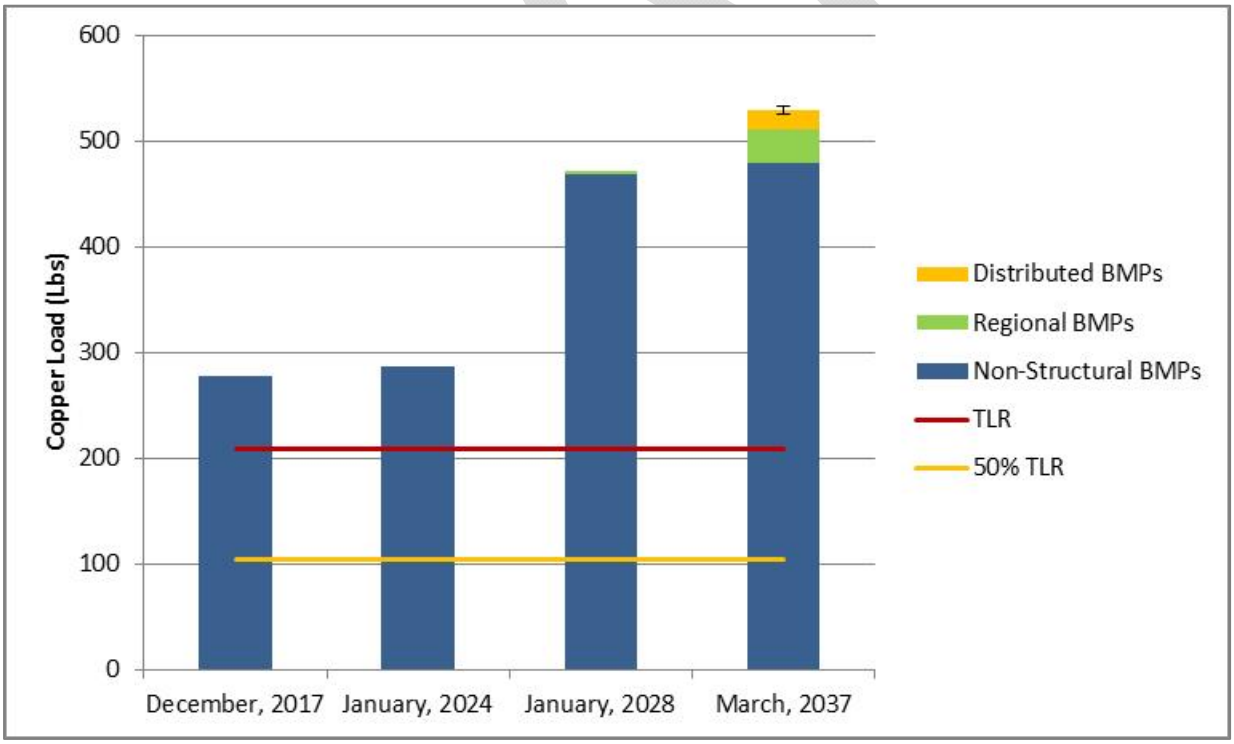


Figure 5-2 Copper Load Reduction Milestones for the LAR UR2 WMA by BMP Category

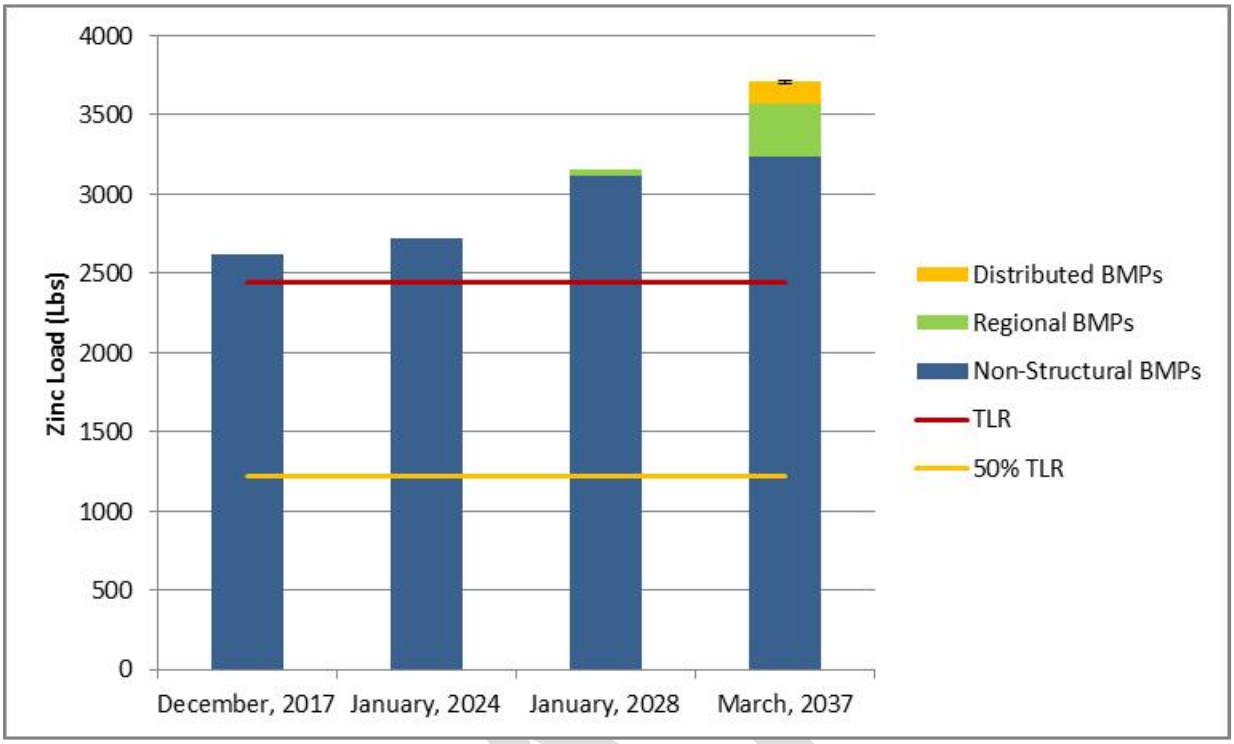


Figure 5-3 Zinc Load Reduction Milestones for the LAR UR2 WMA by BMP Category

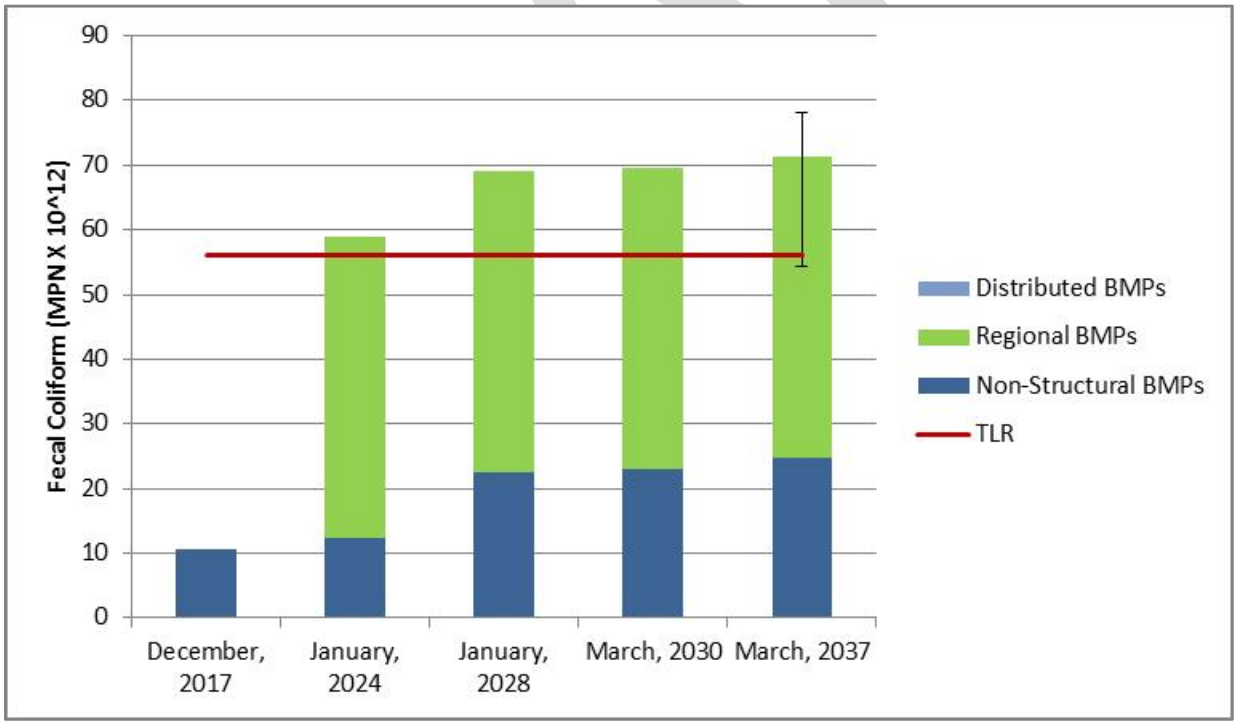


Figure 5-4 Fecal Coliform Load Reduction Milestones for the LAR UR2 Rio Hondo WMA by BMP Type

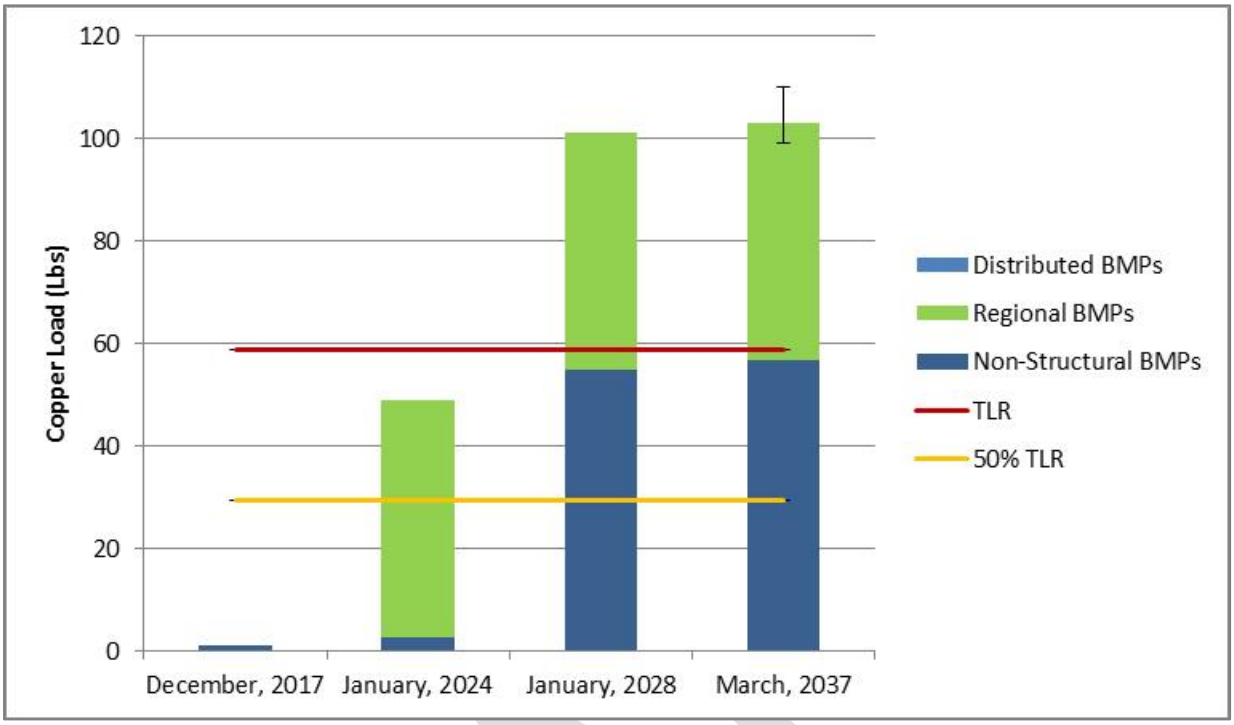


Figure 5-5 Copper Load Reduction Milestones for the LAR UR2 Rio Hondo WMA by BMP Category

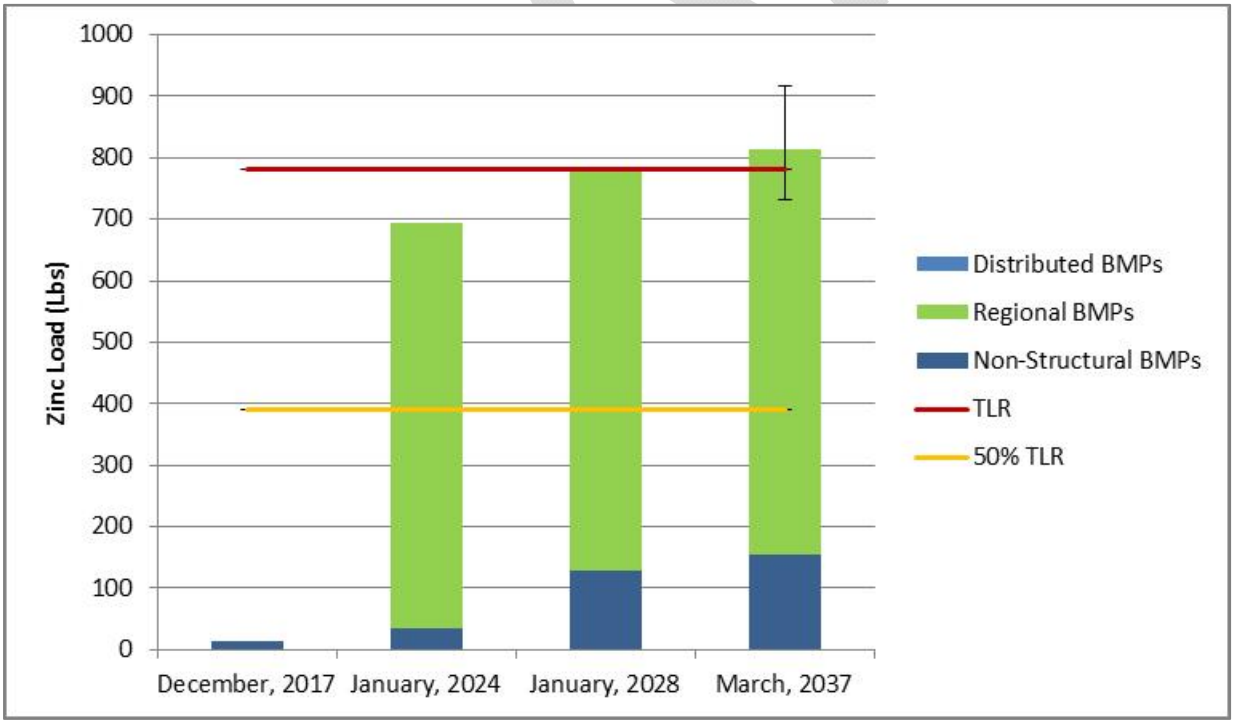


Figure 5-6 Zinc Load Reduction Milestones for the LAR UR2 Rio Hondo WMA by BMP Category

5.2 WMP Implementation Cost

In order to determine potential funding strategies, costs associated with the implementation of the control measures identified in this WMP must be considered. This section identifies the cost associated with the structural BMPs (regional and distributed) and non-structural BMPs. A Memorandum of Understanding (MOU) between LAR UR2 WMA jurisdictions determined that LACFCD would pay ten percent of the WMP development costs and each City would pay an equal one seventh share of forty-five percent of the WMP development costs. In addition, each City paid its pro-rata share of forty-five percent of the WMP developments cost at the cost sharing allocation percentage provided in **Table 5-2**.

Table 5-2 Cost Sharing Allocation of Forty-Five Percent of WMP Cost

LAR UR2 WMA Jurisdiction	Land Area (mi^2)	Cost Allocation Percentage
Bell	2.64	11.90
Bell Gardens	2.49	11.22
Commerce	6.57	29.61
Cudahy	1.12	5.05
Huntington Park	3.03	13.65
Maywood	1.18	5.32
Vernon	5.16	23.25

The cost of the regional BMPs will be shared based on future MOU(s), while the distributed BMPs (LID Streets or Green Streets) will be paid for by the jurisdiction for which they are implemented.

Planning-level cost estimates are presented for each of the six preliminary regional BMP projects and the distributed BMPs (LID Streets) for LAR UR2 WMA. During the preliminary concept phase it may be difficult to produce a precise cost estimate because the specific details pertaining to the projects have not been determined therefore the costs are presented as a range. The cost estimate employs best engineering judgment and was determined based on a per acre-feet unit rate, or for the LID Streets, a cost per acre of tributary area. The cost estimates consider the costs associated with planning, design, permits, an environmental assessment, construction, operation and maintenance, construction administration and inspections, post-construction effectiveness monitoring, contingency, and mobilization. Land acquisition costs may be of importance depending on the site, and are not considered in the cost estimates presented, as none of the preliminary project concepts require land acquisition. The following generally accepted costs were used for cost estimates presented:

- Planning - minimum between 5 percent of construction cost or $100,000
- Engineering design - 10 percent of construction cost
- Permits and specifications - 25 percent of engineering design cost
- Construction administration and inspections - 10 percent of construction (including mobilization)
- Contingency - 10 percent of construction (including mobilization)
- Mobilization - 10 percent of construction

The costs estimates associated with the six regional BMP projects will be adjusted as more information becomes available and as additional project concept details are developed. Based on the current estimates, the cost of implementing all six projects is approximately $209 million. Applying the cost allocations contained in the WMP development MOU, **Table 5-3** summarizes the cost each LAR UR2 WMA jurisdiction will contribute under current assumptions and **Table 5-4** summarizes the cost and major characteristics of each of the proposed regional BMPs.

Table 5-3 Cost Allocation for Proposed Regional BMP Projects	
LAR UR2 WMA Jurisdiction	**Cost**
Bell	$24,600,000
Bell Gardens	$24,000,000
Commerce	$41,200,000
Cudahy	$18,200,000
Huntington Park	$26,300,000
Maywood	$18,500,000
Vernon	$35,300,000
Other Agencies	$20,900,000
Total:	**$209,000,000**

Table 5-4 LAR UR2 WMA Regional BMP Cost Estimate	
Name	**Cost**
Randolph Street Green Rail Trail	$10,800,000
LADWP Transmission Easement	$19,600,000
John Anson Ford Park	$91,300,000
Rosewood Park	$36,800,000
Lugo Park	$17,200,000
Salt Lake Park	$33,200,000
Total:	**$209,000,000**

Note: Estimates are based on 2014 dollars.

Based on the LID Street assumptions outlined in **Section 4.3.3.2**, the area of commercial and residential land uses that must be tributary to a LID Street were determined for each LAR UR2 WMA jurisdiction draining to the Los Angeles River. A cost was determined for each jurisdiction, taking into account the area tributary to a proposed regional BMP. **Table 5-5** summarizes the costs anticipated due to LID Streets.

Table 5-5 LID Streets Cost Estimate

LAR UR2 WMA Jurisdiction	SF Residential (acres)	MF Residential (acres)	Commercial (acres)	Total Area[1] (acres)	Area Reduction[2] (acres)	25% of Remaining Area (acres)	Total Cost
Bell	272	513	271	1,056	181	219	$21,900,000
Bell Gardens (LAR Side)	91	402	146	639	0	160	$16,000,000
Commerce (LAR Side)	212	83	288	583	191	98	$9,800,000
Cudahy	51	434	59	544	85	115	$11,500,000
Huntington Park	562	481	352	1,394	557	209	$20,900,000
Maywood	430	121	109	660	209	113	$11,300,000
Vernon	1	0	16	17	1	4	$400,000
Totals:	**1,619**	**2,033**	**1,241**	**4,893**	**1,224**	**918**	**$91,800,000**

SF = Single Family, MF = Mixed Family, LAR = Los Angeles River, LID = Low Impact Development

[1] Total area includes SF Residential, MF Residential, and Commercial areas.

[2] Area reductions based on the total of SF Residential, MF Residential, and Commercial land uses areas within proposed regional BMP tributary areas.

5.3 WMP Funding

In order to implement the control measures identified within the LAR UR2 WMA WMP, or future WMP iterations developed through the iterative AMP, funding from a variety of sources, including the possibility of partnering with other agencies, will need to be developed and managed in such a way as so ensure that the programs and projects are implemented on schedule. According to an article titled "Financial Strategies for Stormwater Management" (Treadway, 2000), stormwater programs are generally funded with both primary and secondary funding methods.

Primary methods generally have adequate capacity and flexibility to fund the bulk of the stormwater program and can be lumped into two categories:

- General fund revenues - property tax, franchise fees, local income tax, and/or general sales tax
- Stormwater user fees - also known as stormwater utility fees

Secondary funding methods are used to enhance equity or simplicity. These funds are generally generated by various fees (e.g. impact fees or plan review fees), debt financing, grants or government cost share programs, special assessments, improvement districts, connection charges, in liu of fees, etc. Each of these secondary methods has conditions and limitations that restrict their use to specially targeted parts of the stormwater program (Treadway, 2000).

Table 5-6 outlines the current stormwater program funding for LAR UR2 WMA. LAR UR2 WMA will evaluate the various funding options in order to determine what works best. The funding mechanisms may vary by jurisdiction and by project. **Table 5-7** identifies potential funding strategies based on implementation actions which will be further evaluated. In addition, a summary of the identified grant and loan opportunities that will be further evaluated can be found in **Appendix I**.

The Gateway Cities Transportation Water Quality Strategic Plan, released in March 25, 2014 identifies over one hundred local and Transportation Corridor related BMP projects that could be constructed within the Gateway Cities region. Many of these projects are along the I-5 and I-710 Freeway corridors and would primarily benefit Caltrans by reducing the discharges of pollutants from that Permittee. A few are located within the LAR UR2 WMA. John Anson Ford Park and Salt Lake Park are also identified in this LAR UR2 WMA WMP. Others, such as Veterans and Little Bear Park in Bell, Bell Gardens Park in Bell Gardens, and Veteran's Memorial Park in Commerce, were considered during preparation of this study, but appeared to provide little benefit, often because of the lack of a nearby drainage system, legacy contamination issues, permitting difficulties or small tributary catchment. The report referenced the Federal USEPA and State Department of Water Resources as potential funding sources for its projects.

In a study entitled ***Stormwater Funding Options*** prepared for The League of California Cities, Los Angeles County Division and California Contract Cities Association, and dated May 29, 2014, the proponents acknowledge the enormity of the tasks that lie ahead for the LAR UR2 WMA and all Los Angeles County MS4 Permittees. They propose a multi pronged range of existing and proposed funding mechanisms and encourage each agency to develop an appropriate mix to support its needs and expectations. Without substantial additional and adequate financial support to the LAR UR2 WMA, it will not be possible to implement the WMP or MS4 Permit to the extent intended by the Permittees.

Table 5-6 Recent Stormwater Program Costs and Budgets

Stormwater Program	Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon	Total
2011-2012 Program Costs[1]								
Public Information and Participation Program	$1,836	$0	$20,000	$2,500	$7,950	$2,950	$9,376	**$44,612**
Industrial/Commercial Facilities Program	$2,204	$53,300	$205,000	$3,000	$75,000	$3,600	$13,520	**$355,624**
Planning and Land Development Program	$2,160	$5,250	$50,000	$4,000	N/A	$0	$4,925	**$66,335**
Development and Construction Program	$692	$7,875	$12,000	$5,000	N/A	$0	$8,259	**$33,826**
Public Agency Activities Program	$453,576	$1,911,906	$1,495,500	$6,300	$725,000	$49,506	$615,417	**$5,257,205**
IC/ID Elimination Program	$1,620	$10,500	$5,100	$4,000	N/A	$0	$7,745	**$28,965**
Total	**$462,088**	**$1,988,831**	**$1,787,600**	**$24,800**	**$807,950**	**$56,056**	**$659,242**	**$5,786,567**
2012-2013 Program Budget[1]								
Public Information and Participation Program	$1,700	$2,250	$100,000	$3,000	$7,950	$15,500	$30,000	**$160,400**
Industrial/Commercial Facilities Program	$3,500	$50,000	$205,000	$5,000	$75,000	$10,000	$40,000	**$388,500**
Planning and Land Development Program	$3,000	$5,250	$75,000	$4,000	N/A	$2,000	$23,000	**$112,250**
Development and Construction Program	$1,500	$7,875	$25,000	$5,000	N/A	$3,000	$16,000	**$58,375**
Public Agency Activities Program	$452,000	$2,196,000	$1,935,000	$40,000	$700,000	$67,550	$1,077,000	**$6,467,550**
IC/ID Elimination Program	$1,800	$10,500	$5,100	$4,000	N/A	$0	$70,000	**$91,400**
Total	**$463,500**	**$2,271,875**	**$2,345,100**	**$61,000**	**$782,950**	**$98,050**	**$1,256,000**	**$7,278,475**

[1] Based on 2012 Annual Reports, except the 2011 Annual Reports were used for the Cities of Cudahy and Huntington Park.

Table 5-7 Funding Opportunities by WMP Implementation Effort

Funding Opportunity	Stormwater Program						Regional BMP Projects						Distributed BMP Projects
	Public Information and Participation Program	Industrial/Commercial Facilities Program	Planning and Land Development Program	Development Construction Program	Public Agency Activities Program	IC/ID Elimination Program	Randolph Street Green Rail Trail	LADPW Easement	John Anson Ford Park/Golf Course	Rosewood Park	Lugo Park	Salt Lake Park	LID or Green Streets
General Funds	X	X	X	X	X	X							
Additional taxes	X	X	X	X	X	X	X	X	X	X	X	X	X
Stormwater Utility Fee	X	X	X	X	X	X	X	X	X	X	X	X	X
General Fees	X	X	X	X	X	X							X
Grant Opportunities													
Proposition 84 Stormwater Program							X	X	X	X	X	X	X
Community Action for a Renewed Environment (CARE)	X	X	X	X	X	X	P		P	P	P	P	
Pollution Prevention (P2)	X	X	X	X	X	X	P		P	P	P	P	
Urban Waters Small Grant	X	X	X	X	X	X	P		P	P	P	P	
Environmental Education Grant and SubGrant	X	X	X	X	X	X	P		P	P	P	P	
Cooperative Watershed Management Plan	X	X	X	X	X	X	X	X	X	X	X	X	X
State of California Coastal Conservancy Program	P						X	X	X	X	X	X	
Wildlife Conservation Board (WCB)													

Table 5-7 Funding Opportunities by WMP Implementation Effort

Funding Opportunity	Stormwater Program						Regional BMP Projects						Distributed BMP Projects
	Public Information and Participation Program	Industrial/Commercial Facilities Program	Planning and Land Development Program	Development Construction Program	Public Agency Activities Program	IC/ID Elimination Program	Randolph Street Green Rail Trail	LADPW Easement	John Anson Ford Park/Golf Course	Rosewood Park	Lugo Park	Salt Lake Park	LID or Green Streets
Habitat Conservation Fund (HCF)													
Land and Water Conservation Fund (LWCF)													
Recreational Trails Program (RTP)							X						
TIGER Discretionary Grant							X						
Environmental Solutions for Communities	P						X	X	X	X	X	X	
Clean Water Act (CWA) §319(h) Non-Point Source													P
Potential 2014 Water Bond	P	P	P	P	P	P	P	P	P	P	P	P	
Loan Opportunities													
Clean Water State Revolving Fund (CWSRF)							X	X	X	X	X	X	
Financial Incentives for Recycled Water Projects to Provide Drought Relief							X	X	X	X	X	X	
Infrastructure State Revolving Fund (ISRF)							X	X	X	X	X	X	X

X = Eligible for opportunity (with conditions); P = Potentially eligible for opportunity

6. Legal Authority

Permit Part VI.C.5.b.iv.(6) directs that the *Permittee shall provide documentation that they have the necessary legal authority to implement the Watershed Control Measures identified in the plan, or that other legal authority exists to compel implementation of the Watershed Control Measures.* This authority appears to be more narrow than the broad legal authority addressed within Permit Part VI.A.2, which has been an annual report requirement since early in the implementation of the 2001 MS4 Permit. The majority of the Watershed Control Measures identified in the LAR UR2 WMA WMP Plan are associated with regional structural BMPs and LID streets that have been preliminarily sited on municipal public lands including parks, street right of ways. The primary exception to this practice of using municipal public lands is the Los Angeles Department of Water and Power (LADWP) Transmission Line Easement through the City of Vernon. However, as visible in aerial photographs, this easement has allowed many encroachments compatible with its primary purpose and the concept proposal includes alternatives to maintain the primary purpose of the easement. With a project implementation date over a decade in the future, we believe the design and permitting hurdle can be surpassed or the RAA and WMP modified through the adaptive management process. Permittees, or other entities, regulated under state or federal law (e.g. Railroads and other NPDES Permittees) and found to have problematic discharges, may be identified through the adaptive management process or during implementation of the CIMP and WMP plans. If these entities are found to require authorities beyond those of the Permittees, or are otherwise recalcitrant to instituting comparable Watershed Control Measures, they may be referred to other legal authorities enabled to compel implementation.

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Appendix A

June 27, 2013, Los Angeles River Upper Reach 2 WMA Notice of Intent (NOI) Letter

City of Commerce

Office of the
City Administrator

June 27, 2013

Mr. Sam Unger
Executive Officer
California Regional Water Quality Control Board
Los Angeles Region, Suite 200
320 W. Fourth St., Suite 200
Los Angeles, CA 90013

RE: Notice of Intent for a Watershed Management Program and Coordinated Integrated Monitoring Program for the Los Angeles River Upper Reach 2 Gateway Sub Watershed.

Dear Mr. Unger:

The Permittees listed in Table 1 below that are party to this Notice of Intent (NOI) hereby notify the Los Angeles Regional Water Quality Control Board (Regional Water Board) of their intent to develop a Watershed Management Program (WMP) for the Los Angeles River Upper Reach 2 Sub Watershed (LAR UR2 Sub Watershed) which includes the Cities of Bell, Bell Gardens, Cudahy, Commerce, Huntington Park, Maywood, Vernon, and the Los Angeles County Flood Control District. This NOI is hereby submitted in accordance with Part VI.C.4.b.i of Order R4-2012-0175. Permittees meet the LID and Green Streets conditions and will submit the Draft WMP within 18 months of the effective date of Order R4-2012-0175 (June 28, 2014).

In addition, the same permittees listed in Table 1 hereby notify the Regional Water Board of their intent to develop a Coordinated Integrated Monitoring Program (CIMP) as part of their WMP. The Permittees intend to follow a CIMP approach for each of the required monitoring plan elements including Receiving Water Monitoring, Storm Water Outfall Based Monitoring, Non-Storm Water Outfall Based Monitoring, New Development/Re-Development Effectiveness Tracking, and Regional Studies and will submit the CIMP within 18 months of the effective date of Order R4-2012-0175 (June 28, 2014) with the WMP.

SECTION 1. PROGRAM TYPE AND PERMITTEES

Table 1 lists the permittees who have agreed to work cooperatively and to jointly develop a WMP and CIMP under a Memorandum of Understanding (MOU) with the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority for administration and cost sharing.

Table 1. Watershed Management Program Permittees

City of Bell
City of Bell Gardens
City of Commerce
City of Cudahy
City of Huntington Park
City of Maywood
City of Vernon
Los Angeles County Flood Control District (LACFCD)

SECTION 2. TOTAL MAXIMUM DAILY LOADS ESTABLISHED WATER QUALITY BASED EFFLUENT LIMITATIONS:

Table 2 lists applicable interim and final Water Quality Based Effluent Limitations (WQBELs) and receiving water limitations established by Total Maximum Daily Loads (TMDLs) and identified by Section VI.C.4.B.ii of the Order that occur prior to the anticipated approval of the WMP.

Table 2. Applicable Interim and Final Trash WQBELs and all other Final WQBELs and Receiving Water Limitations Occurring Before Watershed Management Program Approval

TMDL Order	WQBEL	Interim or Final	Compliance Date
Los Angeles River Trash	80% reduction of baseline	Interim	09/30/2013
	90% reduction of baseline	Interim	09/30/2014
	96.7% reduction of baseline	Interim	09/30/2015
	100% reduction of baseline	Final	09/30/2016

Los Angeles River Nitrogen Compounds and Related Effects TMDL	100% of MS4 drainage area complies with waste load allocations	Final	03/23/2004
Los Angeles River Bacteria Implementation Schedule for Dry Weather – upper and middle reach 2 (Figueroa St. to Rosecrans Ave.) R4-2012-0175	Submit a Load Reduction Strategy (LRS) for Segment B (or submit an alternative compliance plan)	Interim	09/23/2014

SECTION 3. IDENTIFY TMDL CONTROL MEASURES:

Table 3 identifies the control measures being implemented by each Permittee for each TMDL that have interim and final WQBELs that occur prior to the anticipated approval of the WMP. The Permittees will continue to implement these measures during the development of the WMP.

Table 3. Control Measures that will be Implemented Concurrently with WMP Development for TMDLs

TMDL	Permittees	Implementation Plan and Control Measures	Status of Implementation
Los Angeles River Trash R4-2012-0175	Cities of: Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon	Install Full Capture Systems or other BMPs to reduce baseline by 80%	Completed
		Install Full Capture Systems or other BMPs to reduce baseline by 90%	Completed
		Install Full Capture Systems or other BMPs to reduce baseline by 96.7%	Completed
Los Angeles River Bacteria Implementation Schedule for Dry Weather – upper and middle reach 2 (Figueroa St. to Rosecrans Ave.) R4-2012-0175	Cities of: Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon	Developed a Coordinated Monitoring Plan (CMP) for the Los Angeles River Watershed.	Submitted the CMP to the LA Regional Water Quality Control Board on March 23, 2013 with the expressed intention of integrating the CMP with a future CIMP.

SECTION 4. DEMONSTRATION OF MEETING LID ORDINANCE AND GREEN STREETS POLICY REQUIREMENTS:

The Permittees that are party to this NOI developed LID Ordinances and Green Streets Policies that are in the process of being adopted by their governing board.**Table 4** summarizes the status of the Permittees' LID ordinances and Green Streets policies. More than 50% of the MS4 watershed area that will be addressed by the WMP is covered by LID Ordinances and Green Streets Policies.

Table 4. Status of LID Ordinance and Green Streets Policy Coverage of the MS4 Watershed Area Addressed by the WMP

Permittee	Land Area (mi^2)	LID Ordinance Status	Green Streets Policy Status
City of Bell	2.64	Developed	Developed
City of Bell Gardens	2.49	Adopted	Adopted
City of Commerce	6.57	Adopted	Adopted
City of Cudahy	1.12	Developed	Adopted
City of Huntington Park	3.03	Developed	Adopted
City of Maywood	1.18	Developed	Adopted
City of Vernon	5.16	Developed	Developed
LACFCD	0	N/A	N/A
Total MS4 Watershed Area	22.19		

The listed permittees are diligently working together and making progress towards compliance with Order R4-2012-0175. Please contact the individual permittees should you have questions pertaining to their jurisdiction's compliance measures. A list of contact information is enclosed. Please direct all inquiries regarding the LAR UR2 Sub Watershed's WMP/CIMP development to Ms. Claudia Arellano at carellano@ci.vernon.ca.us or (323) 583-8811, ext. 258. Thank you.

Sincerely,

The LAR UR2 Sub Watershed Permittees
(Individual signatures enclosed)

cc: Ms. Renee Purdy, California Regional Water Quality Control Board
Mr. Ivar Ridgeway, California Regional Water Quality Control Board

6330 Pine Avenue
Bell, California 90201
(323) 588-6211
(323) 771-9473 fax

CITY OF BELL

June 12, 2013

Mr. Samuel Unger, P.E., Executive Officer
California Regional Water Quality
Control Board – Los Angeles Region
320 West Fourth Street, Suite 200
Los Angeles, CA 90013

Attention: Ms. Renee Purdy

Dear Mr. Unger:

LETTER OF INTENT – LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
LOS ANGELES RIVER UPPER REACH 2 SUB WATERSHED
WATERSHED MANAGEMENT PROGRAM
AND COORDINATED INTEGRATED MONITORING PROGRAM

The City of Bell submits this Letter of Intent to participate in and share the cost of the development of a Watershed Management Program (WMP) and a Coordinated Integrated Monitoring Program (CIMP) with the Los Angeles River Upper Reach 2 Sub Watershed Group. This Letter of Intent serves to satisfy the WMP notification requirements of Section VI.C.4.b. of Order No. R4-2012-0175 (Municipal Separate Storm Sewer System Permit) and the CIMP requirements of Section IV.C.1 of Attachment E of the Municipal Separate Storm Sewer System Permit.

The Los Angeles River Upper Reach 2 Sub Watershed Group consists of the following agencies: the cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the LACFCD. The City of Bell intends to submit a final Memorandum of Understanding to the City Council for approval on July 17th, 2013.

If you have any questions, please contact Mr. Terry Rodrigue at (323)588-6211 or trodrigue@cityofbell.org.

Sincerely,

Doug Wilmore
City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6/19/13

CITY OF BELL GARDENS
Mr. Philip Wagner
City Manager
7100 Garfield Avenue
Bell Gardens, CA 90201

Philip Wagner, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 06/13/2013

CITY OF COMMERCE
Mr. Jorge Rifa
City Administrator
2535 Commerce Way
Commerce, CA 90040

Jorge Rifa, City Administrator

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6/19/13

CITY OF CUDAHY
Mr. Hector Rodriguez
City Manager
5220 Santa Ana Street
Cudahy, CA 90201

Hector Rodriguez, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6/24/13

CITY OF HUNTINGTON PARK
Mr. Rene Bobadilla, P.E.
City Manager
6550 Miles Avenue
Huntington Park, CA 90255

Rene Bobadilla, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6-25-13

CITY OF MAYWOOD
Ms. Lilian Myers
City Manager
4319 East Slauson Avenue
Maywood, CA 90270

Lilian Myers, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6-20-13

CITY OF VERNON
Mr. Samuel Kevin Wilson, P.E.
Director of Community Services & Water
4305 Santa Fe Avenue
Vernon, CA 90058

Samuel Kevin Wilson, Director of
Community Services & Water

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

GAIL FARBER, Director

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE
REFER TO FILE: WM-7

June 24, 2013

Mr. Samuel Unger, P.E.
Executive Officer
California Regional Water Quality
Control Board – Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Attention Ms. Renee Purdy

Dear Mr. Unger:

LETTER OF INTENT – LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
LOS ANGELES RIVER UPPER REACH 2 SUB WATERSHED
WATERSHED MANAGEMENT PROGRAM
AND COORDINATED INTEGRATED MONITORING PROGRAM

The Los Angeles County Flood Control District (LACFCD) submits this Letter of Intent to participate in and share the cost of the development of a Watershed Management Program (WMP) and a Coordinated Integrated Monitoring Program (CIMP) with the Los Angeles River Upper Reach 2 Sub Watershed Group. This Letter of Intent serves to satisfy the WMP notification requirements of Section VI.C.4.b. of Order No. R4-2012-0175 (Municipal Separate Storm Sewer System Permit) and the CIMP requirements of Section IV.C.1 of Attachment E of the Municipal Separate Storm Sewer System Permit.

The Los Angeles River Upper Reach 2 Sub Watershed Group consists of the following agencies: LACFCD and cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. The LACFCD intends to submit a final Memorandum of Understanding to the County of Los Angeles Board of Supervisors (which is the LACFCD's governing body) for approval prior to December 28, 2013.

If you have any questions, please contact Ms. Terri Grant at (626) 458-4309 or tgrant@dpw.lacounty.gov.

Very truly yours,

for GAIL FARBER
Chief Engineer of the Los Angeles County Flood Control District

TA:jht
P:\wmpub\Secretarial\2013 Documents\Letter\LOI LAR UR2 LACFCD.doc\C13230

cc: City of Bell
City of Bell Gardens
City of Commerce
City of Cudahy
City of Huntington Park
City of Maywood
City of Vernon

Watershed Permittee Contact List

Permittee	*Contact*	*Contact Mailing Address*	*Contact Telephone and Email Address*
City of Bell	Young Park Terry Rodrigue	6330 Pine Ave. Bell, CA 90201	(323) 588-6211 Ext 228 ypark@cityofbell.org trodrigue@cityofbell.org
City of Bell Gardens	Chau Vu	7100 Garfield Ave. Bell Gardens, CA 90201	(562) 334-1790 cvu@bellgardens.org
City of Commerce	Gina Nila Environmental Services Manager	2535 Commerce Way Commerce, CA 90040	(323) 722-4805, ext. 2839 ginan@ci.commerce.ca.us
City of Cudahy	Aaron Hernandez-Torres Assistant City Engineer	5220 Santa Ana St. Cudahy, CA 90201	(323) 773-5143 ahernandez@cityofcudayca.gov
City of Huntington Park	James A. Enriquez Director of Public Works/City Engineer	6550 Miles Ave. Huntington Park, CA 90255	(323) 584-6253 jenriquez@huntingtonpark.org
City of Maywood	Andre Dupret	4319 E. Slauson Ave. Maywood, CA 90270	(323) 562-5700 andre.dupret@cityofmaywood.org
City of Vernon	Samuel Kevin Wilson, P.E. Director of Community Services & Water Claudia Arellano Project Engineer	4305 Santa Fe Ave. Vernon, CA 90058	(323) 583-8811, ext. 245 kwilson@ci.vernon.ca.us (323) 583-8811, ext. 258 carellano@ci.vernon.ca.us
LACFCD	Gary Hildebrand	900 S. Freemont Ave. Alhambra, CA 91803	(626) 458-4300 ghildeb@dpw.lacounty.gov

Appendix B

September 25, 2013, Approval of NOIU to Develop WMP Letter

September 25, 2013

Los Angeles River Upper Reach 2 Sub-watershed Management Group
(See Distribution List)

APPROVAL OF NOTIFICATION OF INTENT (NOI) TO DEVELOP A WATERSHED MANAGEMENT PROGRAM (WMP), PURSUANT TO THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear Los Angeles River Upper Reach 2 Sub-watershed Management Group Participants:

Regional Board staff received and reviewed the NOI to prepare a WMP that the Los Angeles River Upper Reach 2 Sub-watershed Management Group submitted to the Regional Board on June 27, 2013. According to the NOI, the participants in the Los Angeles River Upper Reach 2 Sub-watershed Management Group are the Los Angeles County Flood Control District, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. Upon review, Regional Board staff determined the NOI meets the notification requirements of Part VI.C of Order No. R4-2012-0175, *Waste Discharge Requirements for MS4 Discharges within the Coastal Watersheds of Los Angeles County, except those Discharges Originating from the City of Long Beach* (hereafter, Order).

As you are aware, the Order allows permittees the option to submit to the Regional Board for approval an NOI to prepare a WMP. Preparing a WMP allows permittees to implement the requirements of the Order on a watershed scale through customized strategies, control measures, and best management practices (BMPs). Implementing a WMP allows permittees to address the highest watershed priorities, including complying with the requirements of Part V.A (Receiving Water Limitations), Part VI.E (Total Maximum Daily Load Provisions) and Attachments L through R, by customizing the control measures in Parts III.A (Prohibitions – Non-Storm Water Discharges) and VI.D (Minimum Control Measures) of the Order.

The Los Angeles River Upper Reach 2 Sub-watershed Management Group must submit to the Regional Board for review and approval a draft WMP for the Los Angeles River Upper Reach 2 Sub-watershed no later than June 28, 2014. Until Regional Board staff approves the Los Angeles River Upper Reach 2 Sub-watershed Management Group

WMP, each Los Angeles River Upper Reach 2 Sub-watershed Management Group participant must do the following:

1. Continue to implement all the watershed control measures in their corresponding storm water management programs, including actions within each of the six categories of minimum control measures consistent with Title 40 Code of Federal Regulations Section 122.26(d)(2)(iv) and Part VI.C.4.d.i of the Order.
2. Continue to implement watershed control measures to eliminate non-storm water discharges through the MS4 that are a source of pollutants to receiving waters consistent with Clean Water Act Section 402(p)(3)(B)(ii) and Part VI.C.4.d.ii of the Order.
3. Implement watershed control measures, including those identified in existing TMDL implementation plans, to ensure MS4 discharges achieve compliance with interim and final trash WQBELs and all other final WQBELs and receiving water limitations pursuant to Part VI.E and set forth in Attachments L through Q by the applicable compliance deadlines occurring prior to approval of the WMP per Part VI.C.4.d.iii of the Order.
4. Target implementation of watershed control measures listed above to address known contributions of pollutants from MS4 discharges to receiving waters.
5. Meet all interim and final deadlines for development of a WMP.

If you have any questions, please contact Ms. Pavlova Vitale of the Storm Water Permitting Unit by electronic mail at Pavlova.Vitale@waterboards.ca.gov or by phone at (213) 576-6761. Alternatively, you may also contact Mr. Ivar Ridgeway, Chief of the Storm Water Permitting Unit, by electronic mail at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

cc: Young Park, City of Bell
Chau Vu, City of Bell Gardens
Gina Nila, City of Commerce
Aaron Herandez-Torres, City of Cudahy
James Enriquez, City of Huntington Park
Andre Dupret, City of Maywood
Samuel Kevin Wilson, City of Vernon
Gary Hildebrand, Los Angeles County Flood Control District
Dave Smith, US EPA
Walt Shannon, State Water Resources Control Board – Storm Water Section
Jennifer Fordyce, State Water Resources Control Board – Office of Chief Counsel

ECM#

Distribution List for the Los Angeles River Upper Reach 2 Sub-watershed Management Group

1. Doug Wilmore, City Manager
   City of Bell
   6330 Pine Avenue
   Bell, CA 90201

2. Philip Wagner, City Manager
   City of Bell Gardens
   7100 Garfield Avenue
   Bell Gardens, CA 90201

3. Jorge Rifa, City Administrator
   City of Commerce
   2535 Commerce Way
   Commerce, CA 90040

4. Hector Rodriguez, City Manager
   City of Cudahy
   5220 Santa Ana Street
   Cudahy, CA 90201

5. Renee Bobadilla, City Manager
   City of Huntington Park
   6550 Miles Avenue
   Huntington Park, CA 90255

6. Lilian Myers, City Manager
   City of Maywood
   4319 East Slauson Avenue
   Maywood, CA 90270

7. Kevin Wilson, Director of Community Services and Water
   City of Vernon
   4305 Santa Fe Avenue
   Vernon, CA 90058

8. Gail Farber, Chief Engineer
   Los Angeles County Flood Control District
   900 South Freemont Avenue
   Alhambra, CA 91803

Appendix C

MS4 Permit LAR Watershed TMDL Water Quality Objectives

This Appendix outlines the Water Quality-Based Effluent Limitations (WQBELs) and Receiving Water Limitations (RWLs) identified in Attachment O of the MS4 Permit. The following Total Maximum Daily Loads (TMDLs) are applicable to the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA):

- Los Angeles River Trash TMDL
- Los Angeles River Nitrogen Compounds and Related Effects TMDL
- Los Angeles River and Tributaries Metals TMDL
- Los Angeles River Watershed Bacteria TMDL

LAR Watershed Trash TMDL

The litigation and implementation history of the Los Angeles River Watershed Trash TMDL is complex, however the current TMDL was adopted by the Los Angeles Regional Water Quality Control Board (LARWQCB) as Resolution 2007-012, which became effective on September 23, 2008. Simplistically, TMDL compliance is assessed based on Daily Generation Rate (DGR) studies, the remainder of the catchment not protected by Full Capture Certified Devices (FCCDs), or a combination of both metrics. **Table C-1** and **Table C-2** list (in gallons and pounds) interim and final DGR estimated residual WQBELs from Attachment O Part A.3 of the MS4 Permit, while the allowable remainder of the catchment unprotected by FCCDs is identified in parentheses within the table header rows.

Table C-1 LAR Watershed Trash TMDL Effluent Limitations per Storm Year (gal of uncompressed trash)

Permittees	Baseline	2012 (30%)	2013 (20%)	2014 (10%)	2015 (3.3%)	2016 (0%)
Bell	16026	4808	3205	1603	529	0
Bell Gardens	13500	4050	2700	1350	446	0
Commerce	58733	17620	11747	5873	1938	0
Cudahy	5935	1781	1187	594	196	0
Huntington Park	19159	5748	3832	1916	632	0
Maywood	6129	1839	1226	613	202	0
Vernon	47203	14161	9441	4720	1558	0

Table C-2 LAR Watershed Trash TMDL Effluent Limitations per Storm Year (lbs of drip dry trash)

Permittees	Baseline	2012 (30%)	2013 (20%)	2014 (10%)	2015 (3.3%)	2016 (0%)
Bell	25337	7601	5067	2534	836	0
Bell Gardens	23371	7011	4674	2337	771	0
Commerce	85481	25644	17096	8548	2821	0
Cudahy	10061	3018	2012	1006	332	0
Huntington Park	30929	9279	6186	3093	1021	0
Maywood	10549	3165	2110	1055	348	0
Vernon	66814	20044	13363	6681	2205	0

The final WQBEL of zero trash discharged, or catchment area unprotected, is to be achieved for the 2016 storm year that begins on October 1, 2015 and ends on September 30, 2016. During the current period from October 1, 2013 to September 30, 2014, 90% of the baseline study trash volume or weight must be

captured based on DGR study analysis and only 10% estimated to have been discharged. Alternatively, 90% of a Permittee catchment may be protected by FCCDs, leaving 10% unprotected.

LAR Nitrogen Compounds and Related Effects TMDL

The LAR Nitrogen TMDL was adopted by the LARWQCB as Resolution 2003-009 and became effective on March 23, 2004. Site Specific Objectives (SSOs) for ammonia were approved by the State Water Resources Control (SWRCB) Board on June 4, 2013. This TMDL has been primarily addressed by Publically Owned Treatment Works (POTWs), or Water Recovery Plants (WRPs), and MS4 Permittee discharges do not appear to cause or contribute to the exceedance of the applicable RWLs. **Table C-3** lists the currently effective TMDL WQBELs, as identified in Attachment O, Part B.2 of the MS4 Permit, which the LAR UR2 WMA Permittee discharges would be expected to comply with as assessed through the Coordinated Integrated Monitoring Program (CIMP).

Table C-3 LAR Nitrogen Compounds and Related Effects TMDL Final WQBELs

Water Body	NH_3-N (mg/L)		NO_3-N (mg/L)	NO_2-N (mg/L)	NO_3-N+NO_2-N (mg/L)
	One-hour Average	Thirty-day Average	Thirty-day Average	Thirty-day Average	Thirty-day Average
LAR below LAG	8.7	2.4	8.0	1.0	8.0
Rio Hondo Reach 1 and 2	10.1	2.3	8.0	1.0	8.0

LAG = Los Angeles-Glendale WRP

LAR and Tributaries Metals TMDL

The litigation and implementation history of the LAR and Tributaries Metals TMDL is complex, however the current TMDL was adopted by the LARWQCB as Resolution 2007-014 and became effective on October 29, 2008. The TMDL assesses compliance based on the load or concentration of several metals in comparison to the California Toxic Rule (CTR) values, during dry- and wet-weather conditions. Dry-weather is defined as days when the maximum daily flow in the Los Angeles River is less than 500 cubic feet per second (cfs) as measured at the Wardlow Street gauge station in Long Beach. Since metal toxicity is correlated to bioavailability, which is higher for dissolved metals, and decreases in the presence of competing cations, as assessed by water hardness, the permit and TMDL WQBEL values were determined using total to dissolved “translator” values, prepared by the USEPA, weather, and water body specific hardness data, which results in relatively significant variability in WQBELs among the various water body and weather combinations. Furthermore, local water characteristics, such as organic content, may result in Water Effect Ratios (WERs) and SSOs that alter the preliminary toxicity assessment used in developing a TMDL and may change the final numeric WQBELs.

Table C-4 through **Table C-7** list the "final" WQBELs that may be of importance to the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA), subject to any future basin plan amendments, established by the LAR and Tributaries Metals TMDL and identified in Attachment O Parts C.2 and C.3 of the MS4 Permit. **Table C-4** lists the grouped (shared) dry-weather final WQBELs, expressed as total recoverable metals daily loads. Dry-weather flows in Rio Hondo Reach 1, have normally been much lower than the TMDL estimate of 0.5 cfs, however TMDL watershed compliance has generally been first assessed based on concentration, rather than load.

Table C-4 LAR Metals TMDL Dry-Weather Final WQBELs Expressed as Total Recoverable Metals			
Water Body	**Effluent Limitations Daily Maximum (kg/day)**		
	Copper	**Lead**	**Zinc**
LAR Reach 2	WER[1] x 0.13	WER[1] x 0.07	--
LAR Reach 1	WER[1] x 0.14	WER[1] x 0.07	--
Rio Hondo Reach 1	WER[1] x 0.01	WER[1] x 0.006	WER[1] x 0.16

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved via the Basin Plan Amendment process

Concentration based dry-weather WQBEL that may be of importance to the RH/SGRWQG are summarized in **Table C-5**.

Table C-5 LAR Metals TMDL Concentration Based Dry-Weather Final WQBELs Expressed as Total Recoverable Metals			
Water Body	**Effluent Limitations Daily Maximum (µg)**		
	Copper	**Lead**	**Zinc**
LAR Reach 2	WER[1] x 22	WER[1] x 11	--
LAR Reach 1	WER[1] x 23	WER[1] x 12	--
Rio Hondo Reach 1	WER[1] x 13	WER[1] x 5.0	WER[1] x 131

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved via the Basin Plan Amendment process

Load and approximate concentration based wet-weather WQBELs that are applicable to the LAR UR2 WMA are summarized in **Table C-6**. Since the TMDL includes both Waste Loads (WLs) and WLAs, and multiple discharge groups, the WQBEL concentration for MS4 Permittees varies with the volume of runoff measured at Wardlow Street, but the rightmost column is a serviceable first order estimate.

Table C-6 LAR Metals TMDL Wet-Weather Final WQBEL Expressed as Total Recoverable Metals		
Constituent	**Effluent Limitations Daily Maximum (kg/day)**	**Approximate Effluent Limitation (µg/L)**
Cadmium	WER[1] x 2.8 x 10^{-9} x daily volume (L) - 1.8	WER[1] x 2.8
Copper	WER[1] x 1.5 x 10^{-8} x daily volume (L) - 9.5	WER[1] x 15
Lead	WER[1] x 5.6 x 10^{-8} x daily volume (L) - 3.85	WER[1] x 56
Zinc	WER[1] x 1.4 x 10^{-7} x daily volume (L) - 83	WER[1] x 140

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved via the Basin Plan Amendment process

Table C-7 outlines the interim and final Metals TMDL WQBELs schedule which Permittees are expected to comply with through the EWMP and RAA development process. The LAR UR2 WMA affected by this TMDL is located within Jurisdictional Group 2, thus it should be noted that the June 29, 2012 Implementation Study, funded by the Permittees, identified Watershed Control Measures to achieve the interim and final WQBELs. Among the more important measures was State Senate Bill 346, chaptered in September 2010, which called for phased elimination of copper from automotive friction (brake) pads. A

similar effort to reduce the zinc content in automotive tires has also been initiated, but is many years from being chaptered.

Table C-7 LAR Metals TMDL Schedule of Interim and Final WQBELs

Deadline	Total Drainage Area Served by the MS4 required to meet the water quality-based effluent limitations (%)	
	Dry-Weather	Wet-Weather
January 11, 2012	50	25
January 11, 2020	75	-
January 11, 2024	100	50
January 11, 2028	100	100

Along with most other LAR Watershed municipalities, the LAR UR2 WMA Permittees supported a study to develop Copper WER and Lead Recalculation SSOs that will become effective after it has been approved by the LARWQCB as Basin Plan Amendments. The draft study reports suggest that for copper, in both dry- and wet-weather, a final WER of 3.971 for LAR Reaches 1 and 2 and 9.691 for the Rio Hondo should be adopted. The lead recalculation study suggest that during dry-weather the WQBELs for LAR Reach 1 should increase from 12 to 102 µg/L for LAR Reach 1, increase from 11 to 94 µg/L for LAR Reach 2, and rise from 5 to 37 µg/L for the Rio Hondo. In wet-weather, the lead WQBEL should increase from 62 to 94 µg/L in all of these water bodies. Favorable translators between total and dissolved metal concentrations were also determined by these studies, but are not explicitly referenced in the MS4 Permit so their eventual impact is unclear at this time. As a result of these studies and legislative efforts, the LAR Metals TMDL has probably moved from a regional to specific outfall priority.

LAR Watershed Bacteria TMDL

The LAR Watershed Bacteria TMDL was adopted by the LARWQCB as Resolution 2010-007 and became effective on March 23, 2012. As expressed in Attachment O Part D4 of the MS4 Permit, this TMDL is very complex with multiple implementation phases, river segments that do not coincide with reaches, wet and dry compliance schedules, WLAs expressed as both WQBELs and RWLs, complex analytical methods, and requires the development with submission of Segment Specific Load Reduction Strategies (LRS). In addition, studies indicate that there are significant natural sources including endogenous replication of the "pollutant." **Table C-8** through **Table C-11** summarize the final WQBELs and RWLs that may be of importance to the LAR UR2 WMA.

Table C-8 LAR Bacteria TMDL WQBEL

Constituent	Effluent Limitation (MPN or cfu)	
	Daily Maximum	Geometric Mean
E. coli	235/100 mL	126/100 mL

Table C-9 summaries the "grouped interim dry-weather single sample bacteria WQBEL for the specific river segment and tributaries," that may be of importance to the LAR UR2 WMA. While the Rio Hondo watershed area is approximately half of the total Segment B catchment area and would be expected to generate comparable discharge volumes during dry- and wet-weather, the WQBEL differs by over 250 fold. This is a result of the latter being based on the flow of water, mostly discharged from wastewater treatment plants, into the reach, while the Rio Hondo is primarily a headwater catchment. The interim dry-weather WQBELs are group-based and shared among the Permittees within a drainage area; however, alternatively they may be distributed based on proportion of drainage area, upon approval of the Regional Board Executive Officer. It is currently unclear how compliance with the LAR Bacteria TMDL will be assessed.

Table C-9 LAR Bacteria TMDL Grouped Interim Dry-Weather Single Sample Bacteria WQBEL			
River Segment of Tributary	**Daily Maximum *E. coli* Load (10^9 MPN/day)**	**First Phase Compliance Date**	**Second Phase Compliance Date**
LAR Segment A (Willow to Rosecrans)	301	March 23, 2024	September 23, 2031
LAR Segment B (Rosecrans to Figueroa)	518	March 23, 2022	September 23 2028
Rio Hondo	2	September 23, 2023	March 23, 2030

In addition to WQBELs for MS4 discharges, the LAR Bacteria TMDL includes a RWL that is attributable to all MS4 Permittees, including the City of Long Beach and Caltrans. This RWL is assessed as a limit on the number of days, or weeks, per year, where the RWLs are not achieved. The final compliance dates, for the annually assessed grouped single sample bacteria RWLs, are March 23, 2022 for dry-weather and March 23, 2037 for wet-weather. These requirements can be found in **Table C-10**, while the numeric water quality objective is shown on **Table C-11**.

Table C-10 LAR Bacteria TMDL Grouped Final Single Sample Bacteria RWLs		
Time Period	**Annual Allowable Exceedance Days of the Single Sample Objective (days)**	
	Daily Sampling	**Weekly Sampling**
Dry-Weather	5	1
Non-HFS[1] Waterbodies Wet-Weather	15	2
HFS[1] Waterbodies Wet-Weather	10 (not including HFS days)	2 (not including HFS days)

[1] HFS stands for high flow suspension as defined in Chapter 2 of the Basin Plan

Table C-11 LAR Bacteria TMDL Geometric Mean RWL	
Constituent	**Geometric Mean (MPN or cfu)**
E. coli	126/100 mL

The distinction that these water quality objectives are expressed annually may be important, as MS4 Permit Part VI.A.13.g states that for some WQBELs that are expressed as annual effluent limitations, such as those for trash, violations may only be assessed annually; however Part VI.C.1.d.(i) states that EWMPs must "achieve applicable WQBELs in Part VI.E and Attachments L through R pursuant to the corresponding compliance schedules." It is unclear why an annually assessed WQBEL is substantially and inherently different than an annually assessed RWL, although this question is likely to be resolved long before the dry-weather final compliance schedule is reached.

Appendix D

Summary of Existing Water Quality Studies Relevant to LAR UR2 WMA

This Appendix summarizes the existing water quality studies relevant to the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA), including:

- Los Angeles County Annual Mass Emission and Tributary Station Monitoring Data (2002 – 2012);
- Los Angeles River Metals TMDL Coordinated Monitoring Plan (CMP) Ambient Monitoring Program (2008 – 2013);
- Council for Watershed Health (CWH) Los Angeles River Watershed Monitoring Program (LARWMP) data (2009 – 2012); and
- Cleaner Rivers through Effective Stakeholder-led TMDLs (CREST) Los Angeles River Bacteria Source Identification (BSI) Study.

Los Angeles County Annual Stormwater Monitoring Reports (2002-2012)

The Los Angeles County Department of Public Work Annual Stormwater Monitoring Report (LACDPW SMR) presents stormwater quality findings for each July to June storm season. The 2002–2003, 2003–2004, 2005–2006, 2006–2007, 2007–2008, 2008–2009, 2009–2010, 2010-2011, and 2011-2012 monitoring reports addressed the following programs and associated elements:

- Core Monitoring Program – mass emission, tributary, water column toxicity, shoreline, and trash monitoring.
- Regional Monitoring Program – estuary sampling and bioassessment.
- Special studies – New Development Impacts Study in the Santa Clara Watershed, Peak Discharge Impact Study and BMP Effectiveness Study.

Attachment 1, Figure 1 shows the LA River (S10) Core Monitoring program, mass emission station nearest the LAR UR2 WMA, while **Figure 2** shows the Rio Hondo Channel tributary monitoring station studied during the 2002-2003 and 2003-2004 storm seasons. The S10 station is located at the existing stream gauge station (i.e., Stream Gauge F319-R) between Willow Street and Wardlow Road in the City of Long Beach and was chosen to avoid tidal influences. The Rio Hondo Channel monitoring station is located on Beverly Boulevard, downstream of Whittier Narrows dam, at the USGS – U.S. Army Corps of Engineers (ACOE) Stream gage No. 1102300 or E327-R and upstream of the LAR UR2 WMA.

A minimum of three wet-weather and two dry-weather events were monitored for all sites during each annual storm season. Grab samples were collected and analyzed for conventional pollutants and bacteria during both dry- and wet-weather events. Additionally, composite samples were collected for both dry- and wet-weather events and were analyzed for general minerals, metals, semi-volatiles, chlorinated pesticides, organophosphate pesticides, herbicides, PCBs and TSS. A summary of constituents that did not meet applicable WQOs from 2002 – 2012 is as follows:

LAR (S10):

Dry-Weather – a total of 18 samples.
Cyanide – 13 exceedances with a range of values from 0.022 to 0.109 mg/L,
pH –11 exceedances, all greater than 9.0,
TKN – 3 exceedances ranging from 5.82 to 6.18 mg/L,
Nitrite-N – 6 exceedances with a range of values from 1.093 to 1.6039 mg/L, and
Total Phosphorus as P – a total of 2 exceedances.

Wet-Weather –a total of 40 samples.
Cyanide – 9 exceedances with a range of values from 0.024 to 1.2 mg/L,
Dissolved Oxygen (DO) – 1 exceedance with a value of 2.5 mg/L,
pH – 2 exceedances with measurements below 6.5,
Chemical Oxygen Demand (COD) – 1 exceedance, a values of 578 mg/L,
TKN – 13 exceedances with a range of values from 4.9 to 30.68 mg/L,
Total Phosphorus as P – 7 exceedances, and
Total Suspended Solids (TSS) – 24 exceedances ranging from 276 to 2,280 mg/L.

Rio Hondo Channel (TS06):

Dry-Weather, n = 3
Cyanide –1 exceedance with a value of 0.025 mg/L,
pH - 2 exceedances with one under 6.5 and one over 8.5, and
TKN – 1 exceedance with a value of 7 mg/L.

Wet-Weather, n = 9
Cyanide – 1 exceedance with a 0.043 mg/L,
pH – 1 exceedance under 6.5,
Chloride – 1 exceedance with a value of 759 mg/L,
TKN – 2 exceedances with a value of 7 and 12.8 mg/L, and
TSS – 5 exceedances with a range of values from 266 to 1186 mg/L.

Metals

Figure D-1 through **Figure D-5** show measured metal concentrations, and selected standards, for the 2002 to 2012 storm seasons at the Los Angeles River S10 site. **Figure D-6** through **Figure D-11** show measured metal concentrations, and selected standards for the 2002 to 2012 storm seasons at the Rio Hondo TS06 tributary monitoring site. As expected, exceedances were generally higher in wet-weather and assumption of amended WER and Lead Recalculation SSOs, reduced the prevalence of exceedances.

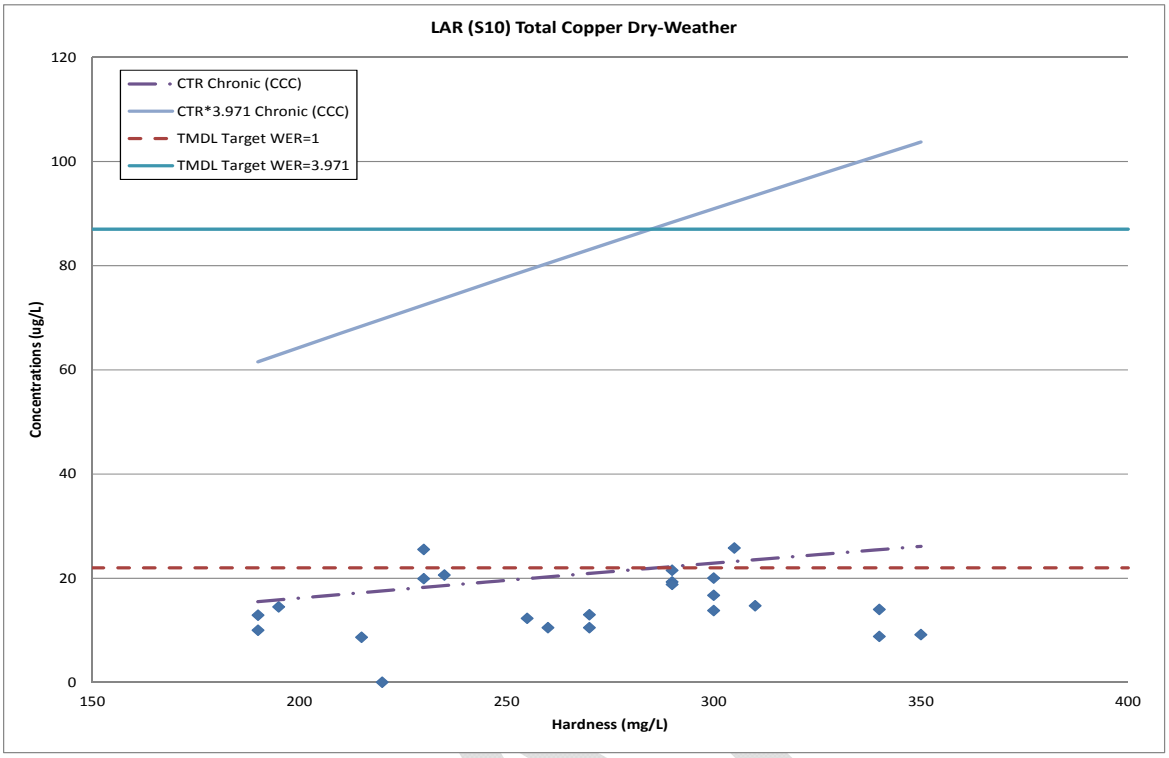

Figure D-1 LAR S10 Total Copper Concentrations Compared to Hardness Monitoring Plot from 2002-2012 storm seasons Dry-Weather

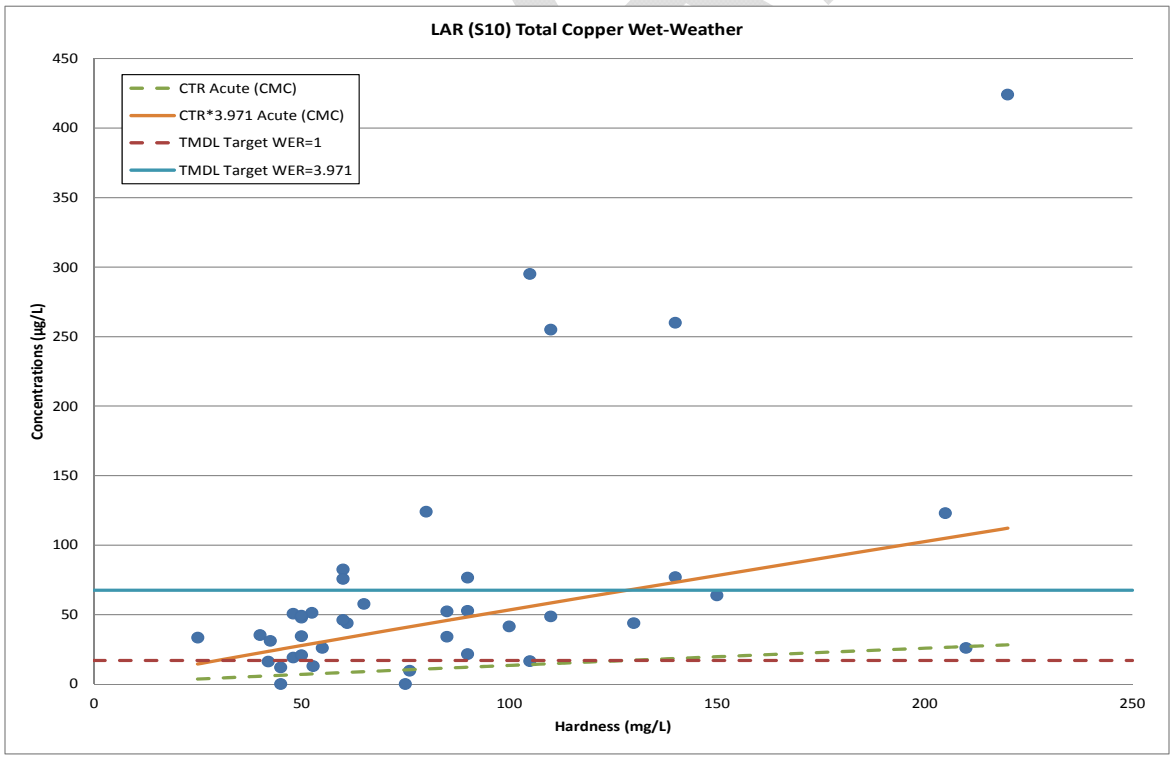

Figure D-2 LAR S10 Total Copper Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

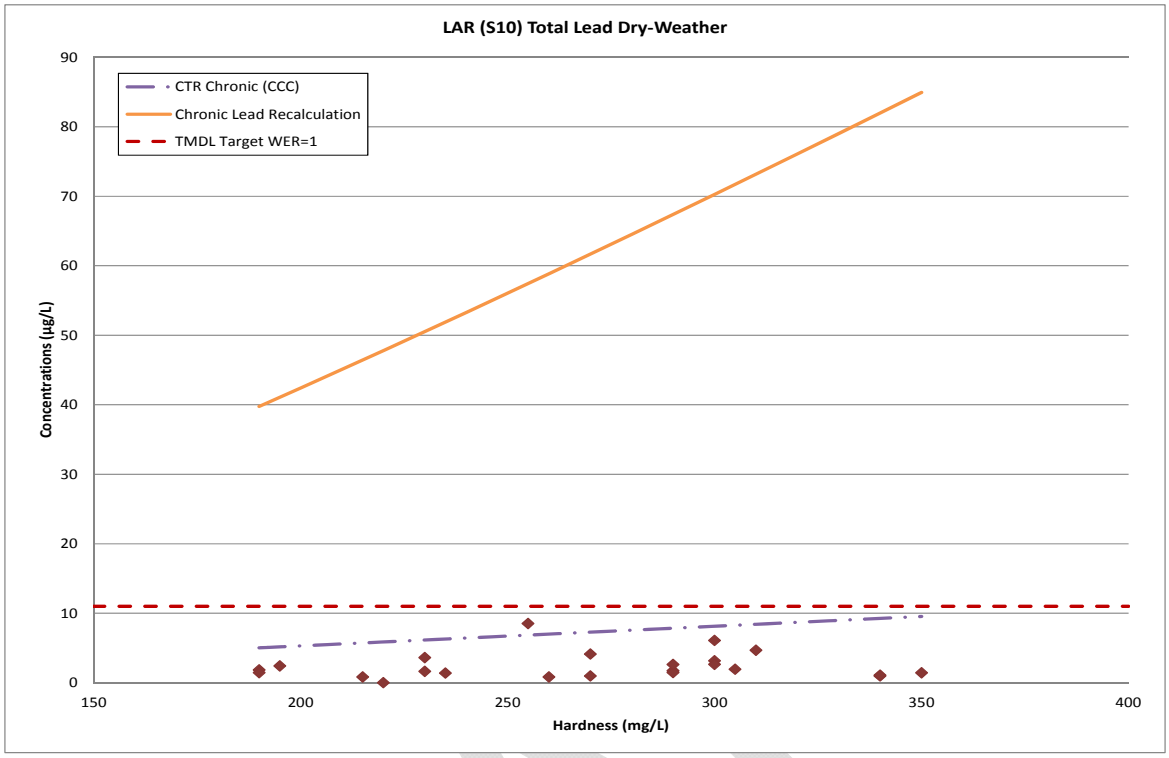

Figure D-3 LAR S10 Total Lead Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Dry-Weather

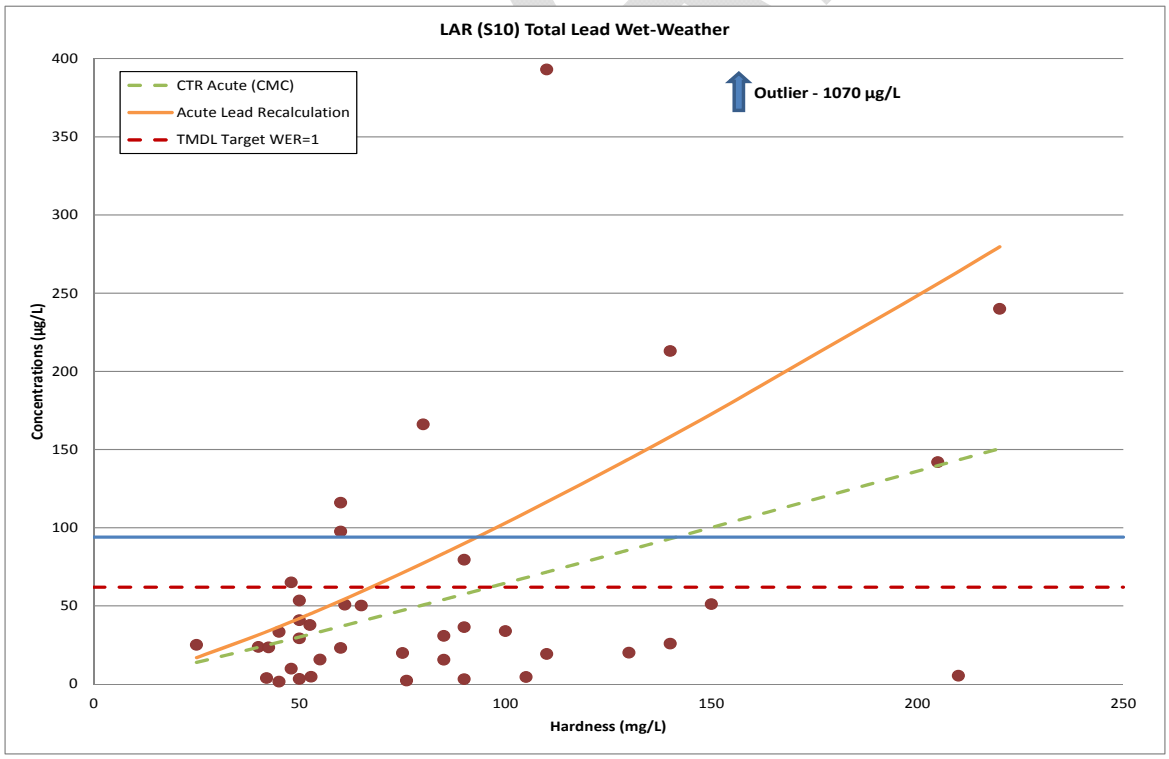

Figure D-4 LAR S10 Total Lead Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

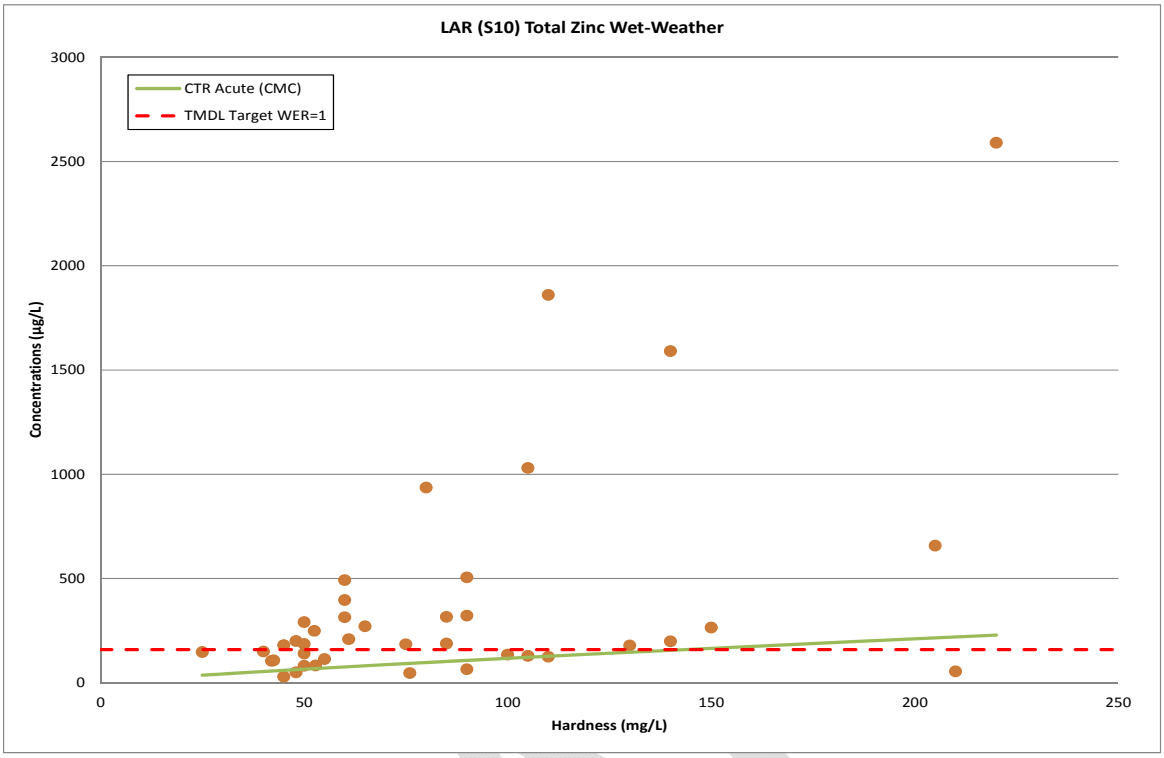

Figure D-5 LAR S10 Total Zinc Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

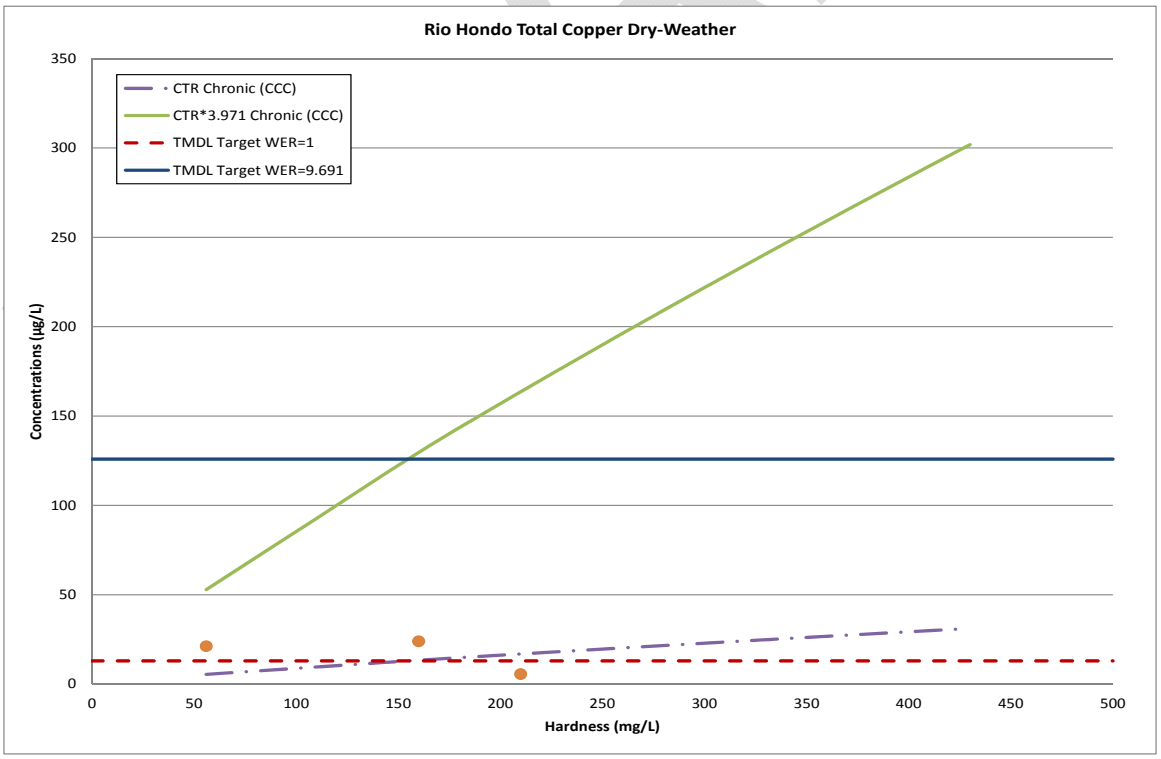

Figure D-6 Rio Hondo Total Copper Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Dry-Weather

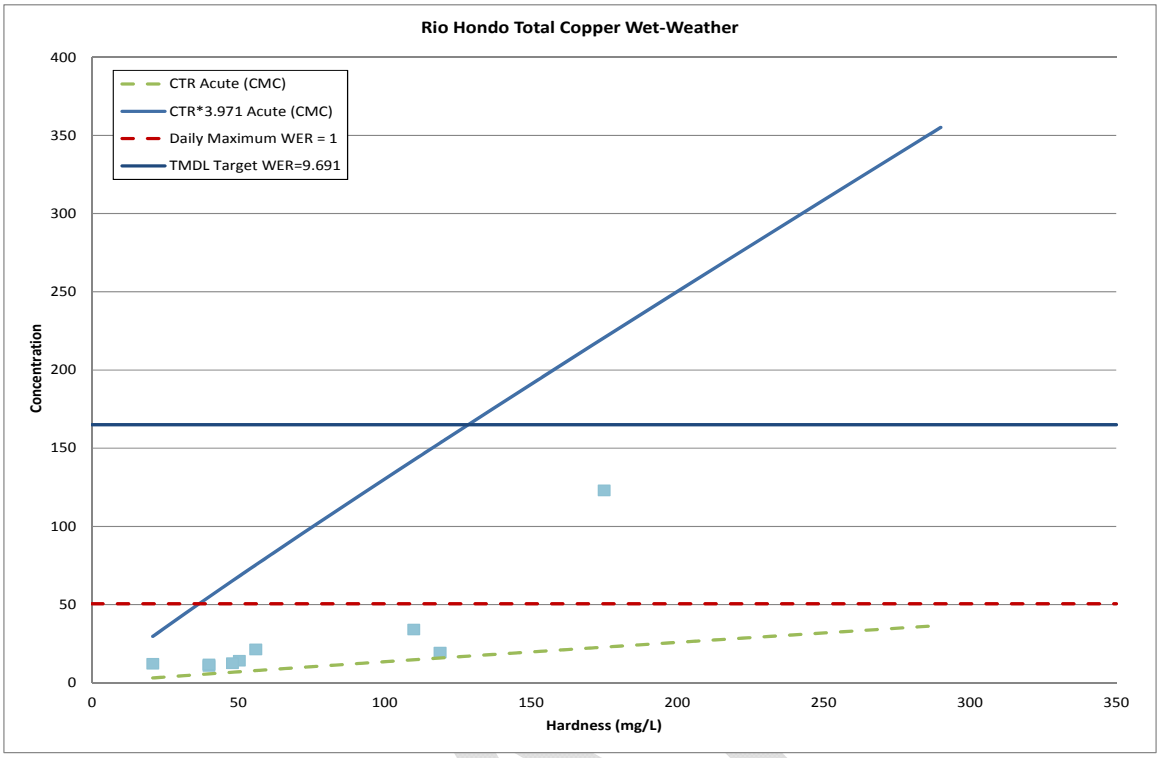

Figure D-7 Rio Hondo Total Copper Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

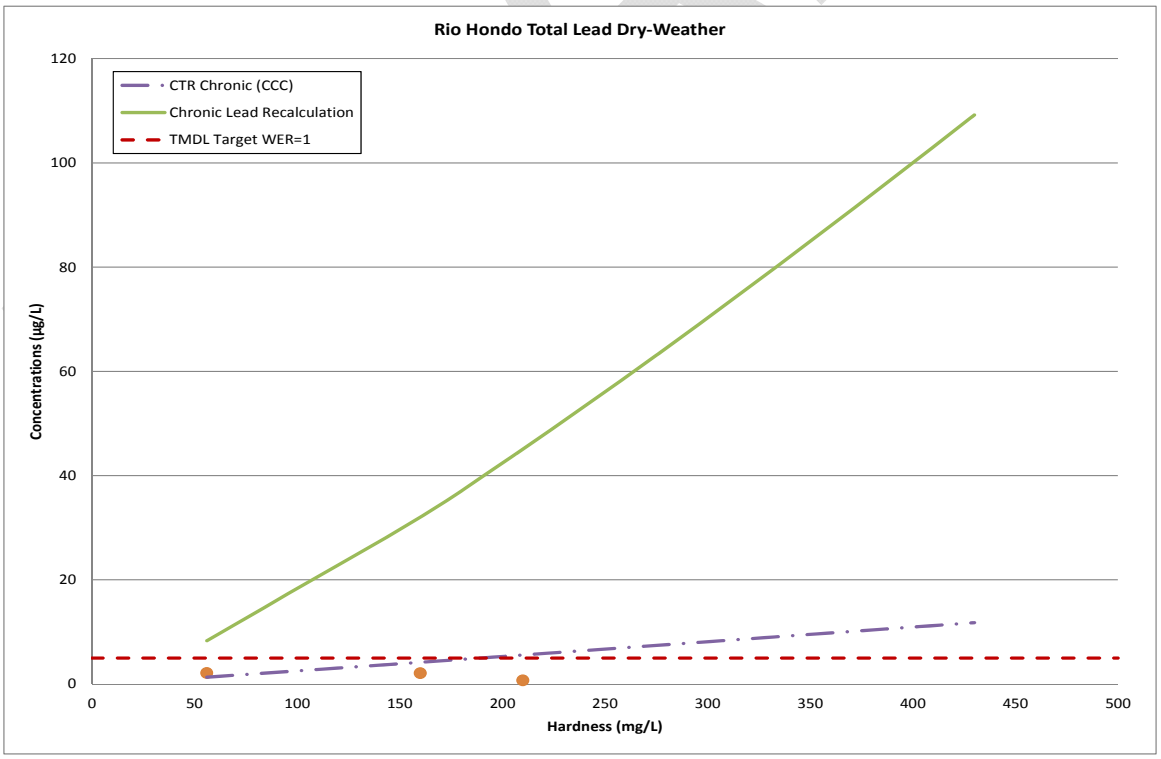

Figure D-8 Rio Hondo Total Lead Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Dry-Weather

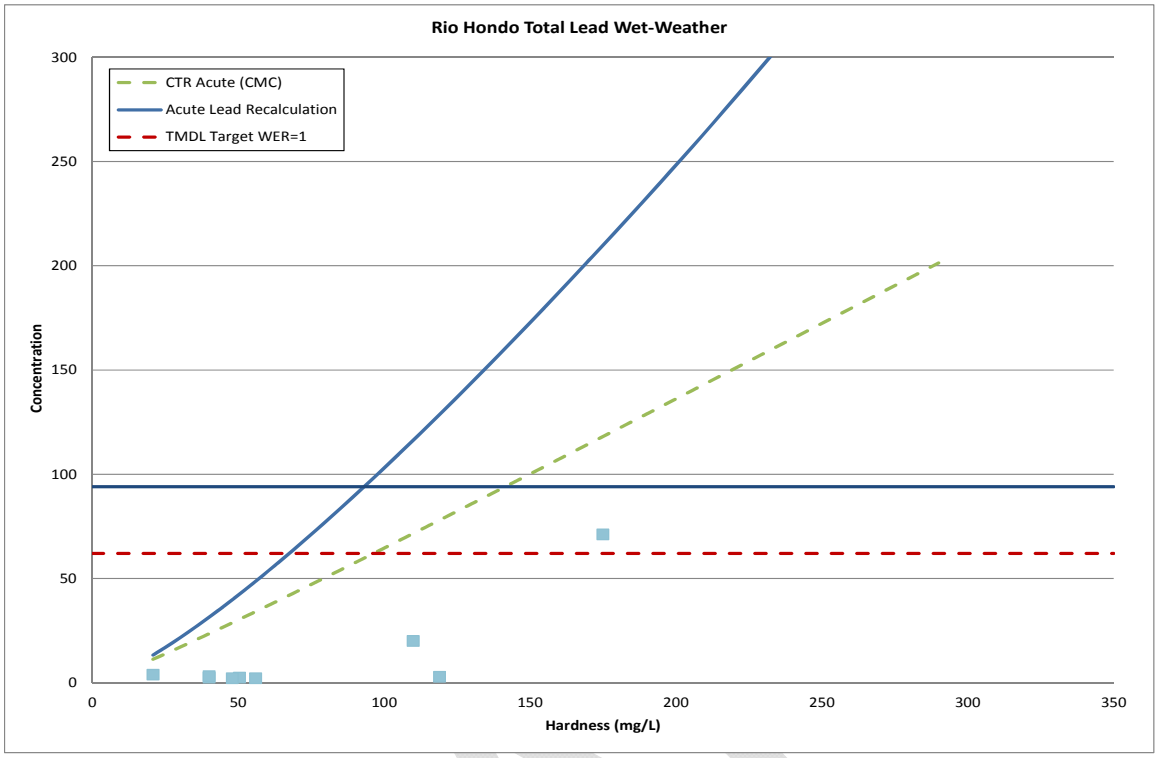

Figure D-9 Rio Hondo Total Lead Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

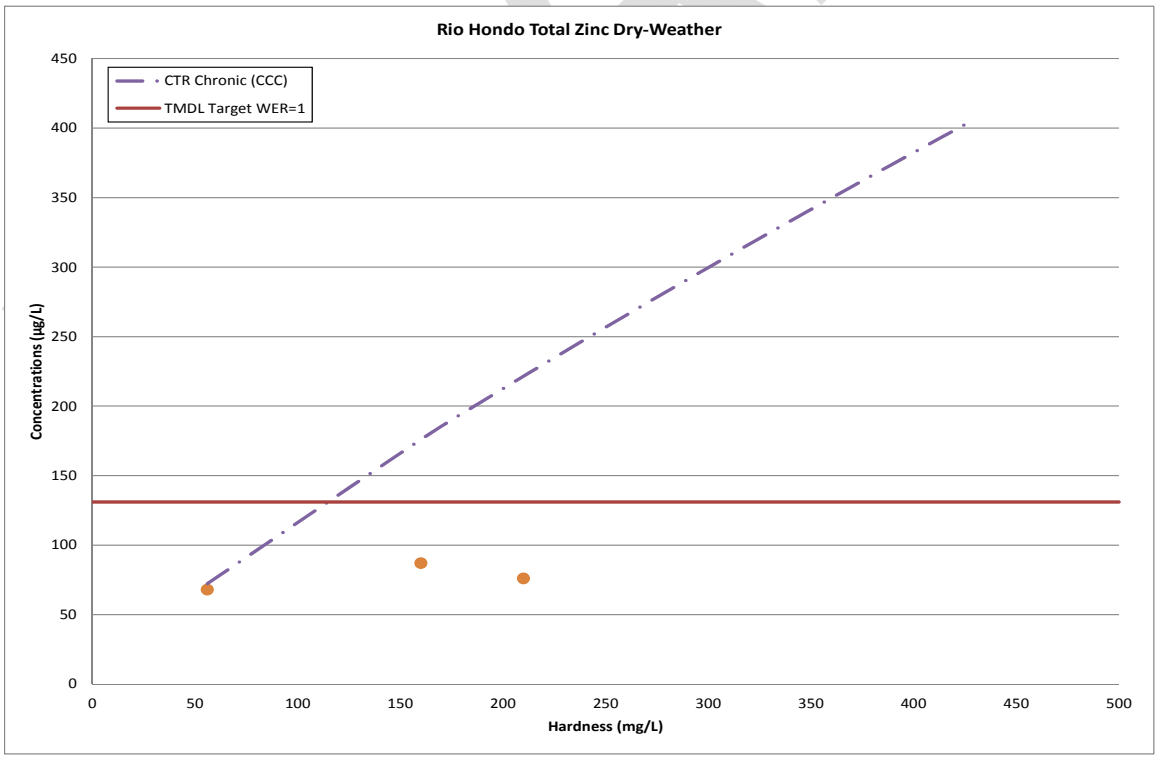

Figure D-10 Rio Hondo Total Zinc Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Dry-Weather

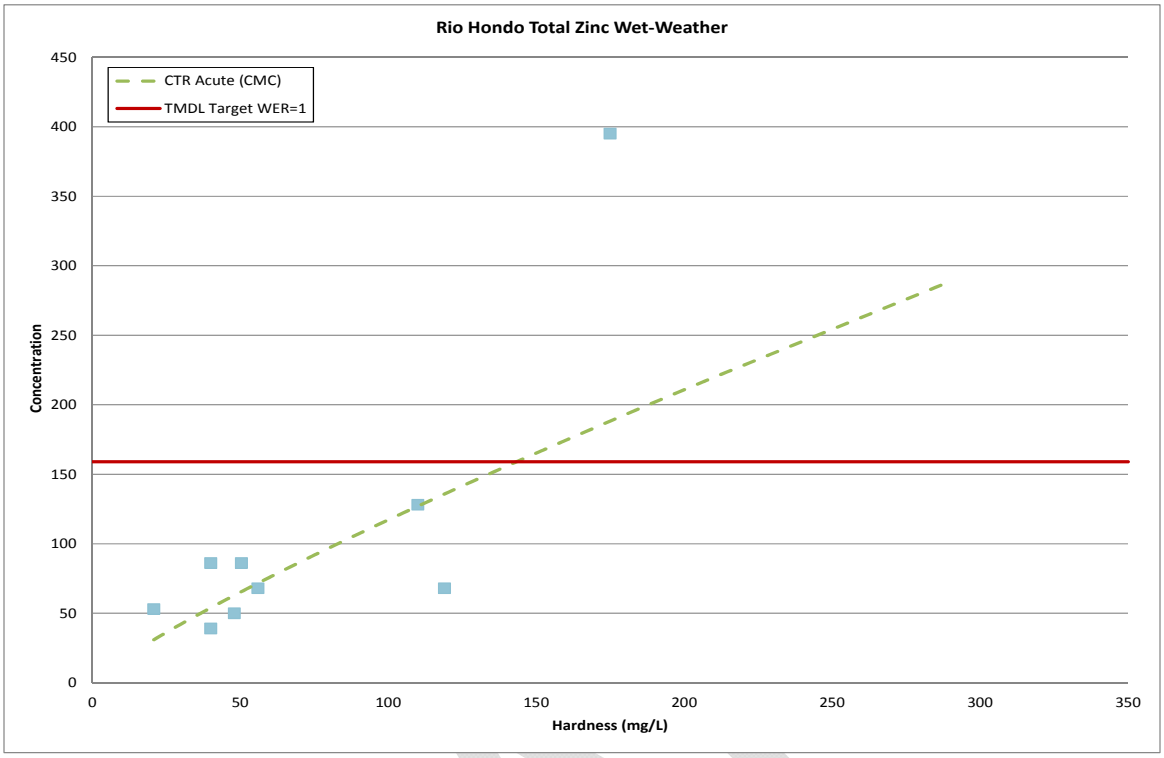

Figure D-11 Rio Hondo Total Zinc Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

Bacteria

Fecal and total coliforms concentrations, for sampling site LAR S10 and the Rio Hondo TS06, have been plotted against time in **Figure D-12** through **Figure D-15**. The Los Angeles River bacteria TMDL *E. coli* wet- and dry-weather effluent limitation daily maximum of 126 MPN/100 mL is shown on each figure. Although not directly comparable, during both dry- and wet-weather events, and for both the LAR S10 and Rio Hondo TS06, fecal and total coliform concentrations consistently did not meet the *E. coli* daily maximum.

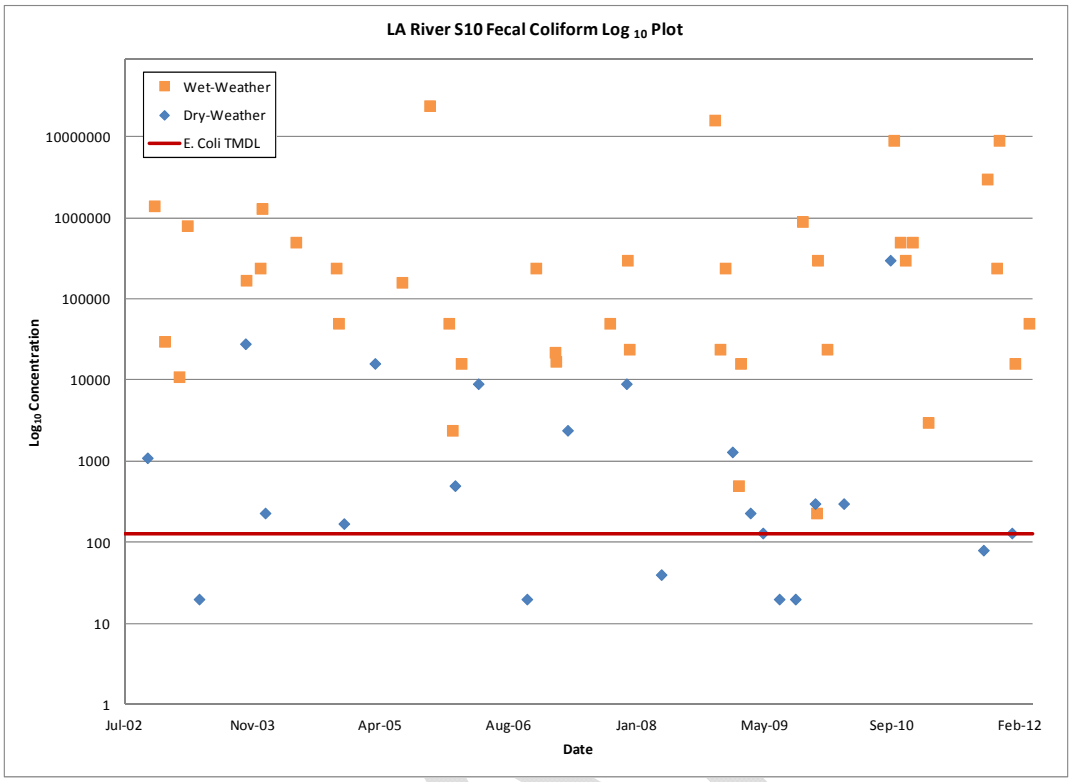

Figure D-12 LAR S10 Fecal Coliform Concentration Plot from 2002-2012 Storm Seasons

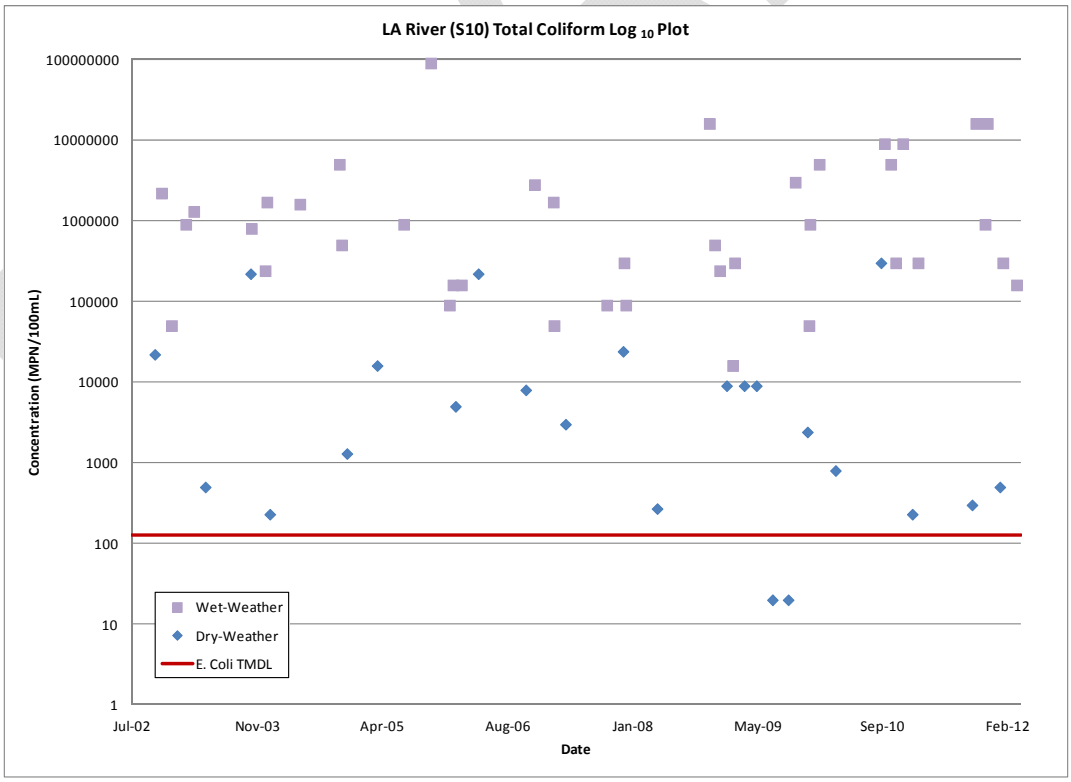

Figure D-13 Total Coliform Concentration Plot from 2002-2012 Storm Seasons

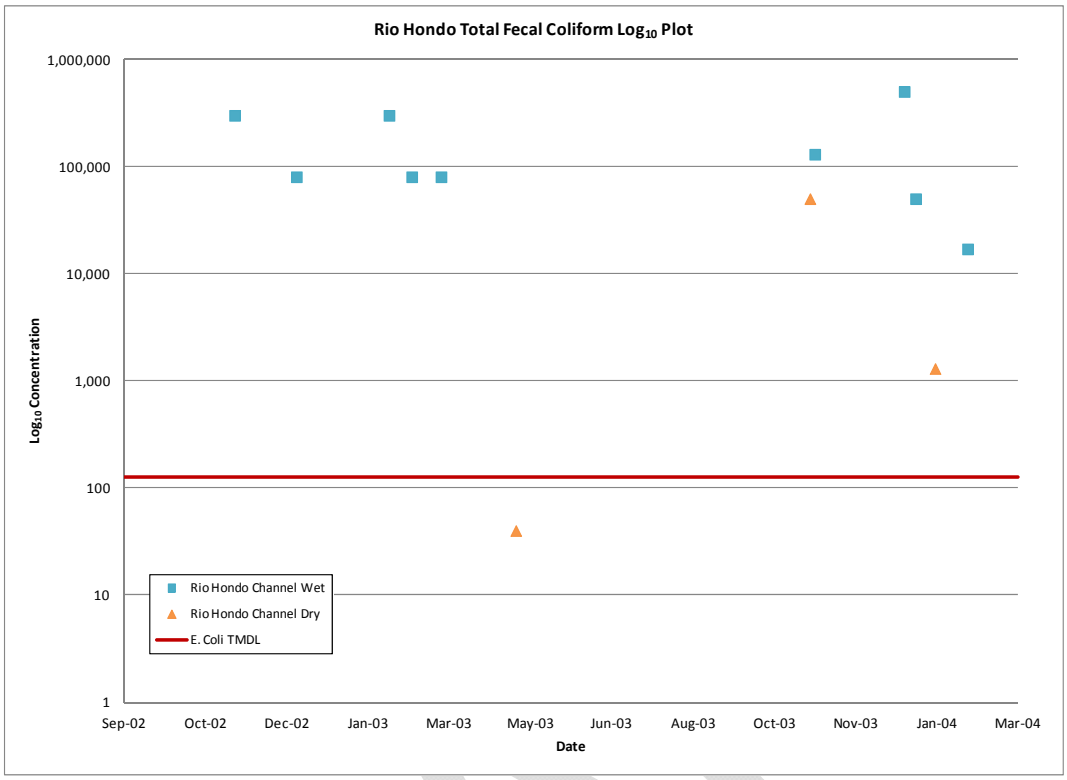

Figure D-14 Rio Hondo Fecal Coliform Concentration Plot form 2002-2012 Storm Seasons

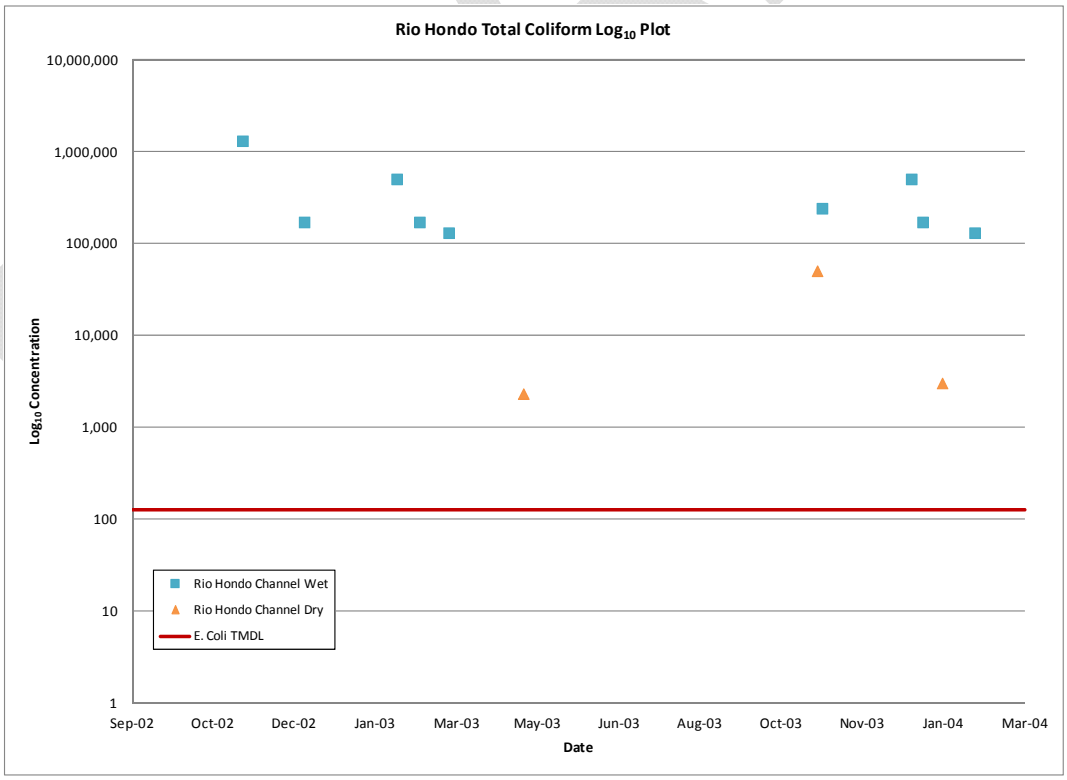

Figure D-15 Rio Hondo Total Coliform Concentration Plot from 2002-2012 Storm Seasons

Los Angeles River Metals TMDL CMP and Ambient Monitoring Submittal (2010-2011, 2011-2012)

At its July 17, 2006 meeting, the Los Angeles River Watershed Management Committee recommended formation of a Los Angeles River Metals TMDL Technical Committee (TC) and tasked the group with preparation of a Coordinated Monitoring Plan (CMP). The CMP includes both ambient (Tier I) and effectiveness monitoring (Tier II). The Tier I ambient monitoring program collects monthly samples at thirteen (13) locations shown in **Attachment 1, Figure 3**. Tier I monitoring site LAR1-8, LAR1-9, and LAR1-10 are located adjacent to the LAR UR2 WMA and the data from these sites would give the LAR UR2 WMA a better understanding of the distribution of metals concentrations in the adjacent WMAs.

Sampling results for CMP ambient monitoring for July 1, 2010 to June 30, 2011 (2010-2011) and July 1, 2011 through June 30, 2012 (2011-2012) was acquired. The 2011-2012 CMP results include submittal for both Ambient (Tier I) and Effectiveness (Tier II) Monitoring. Sampling sites LAR1-8, LAR1-9, and LAR1-10 were not sampled during wet-weather events. **Figure D-16** through **Figure D-19**, show that sampling sites LAR1-8 and LAR1-9 are in compliance of the LA Rivers metals TMDL daily maximums for Reach 2. However, sampling site LAR1-10, with a total of 10 sampling events, had a total of seven exceedances for total copper and three exceedances for total lead. LAR1-10 was compared to the metals TMDL daily maximum for the Rio Hondo.

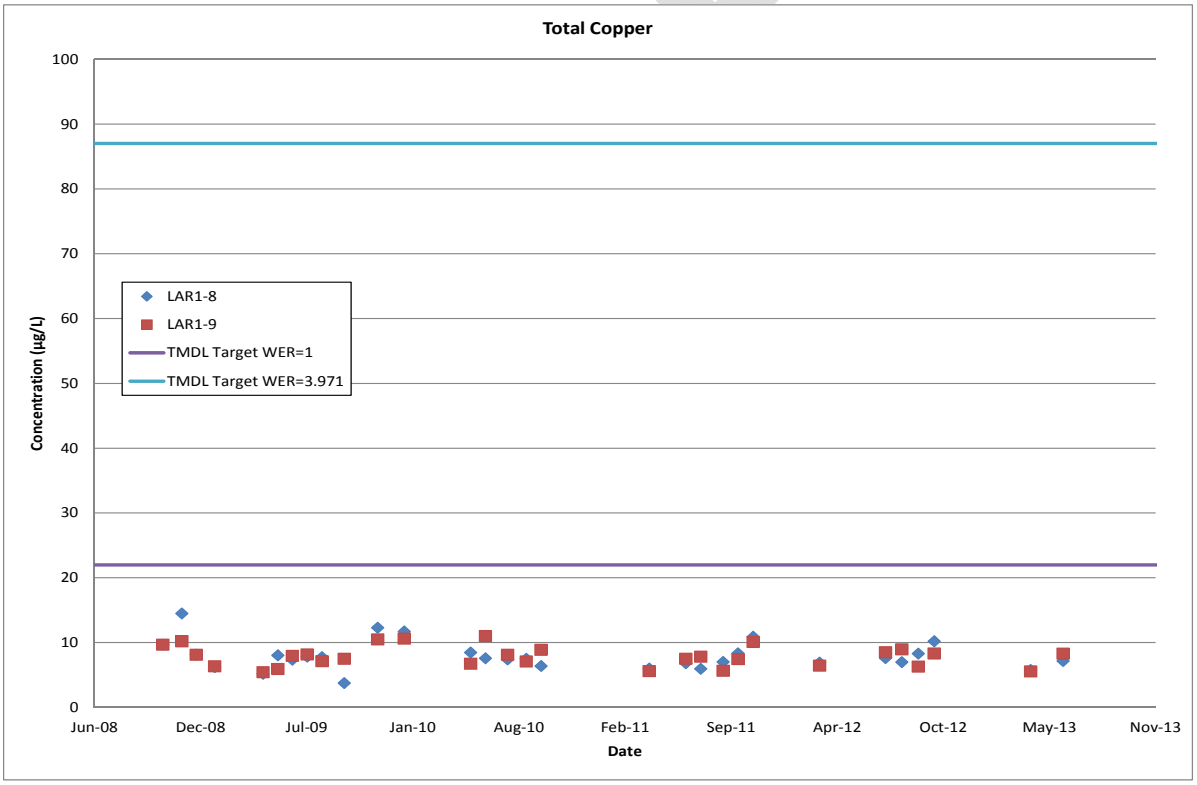

Figure D-16 Total Copper Concentration Comparison for LAR1-8 LAR1-9

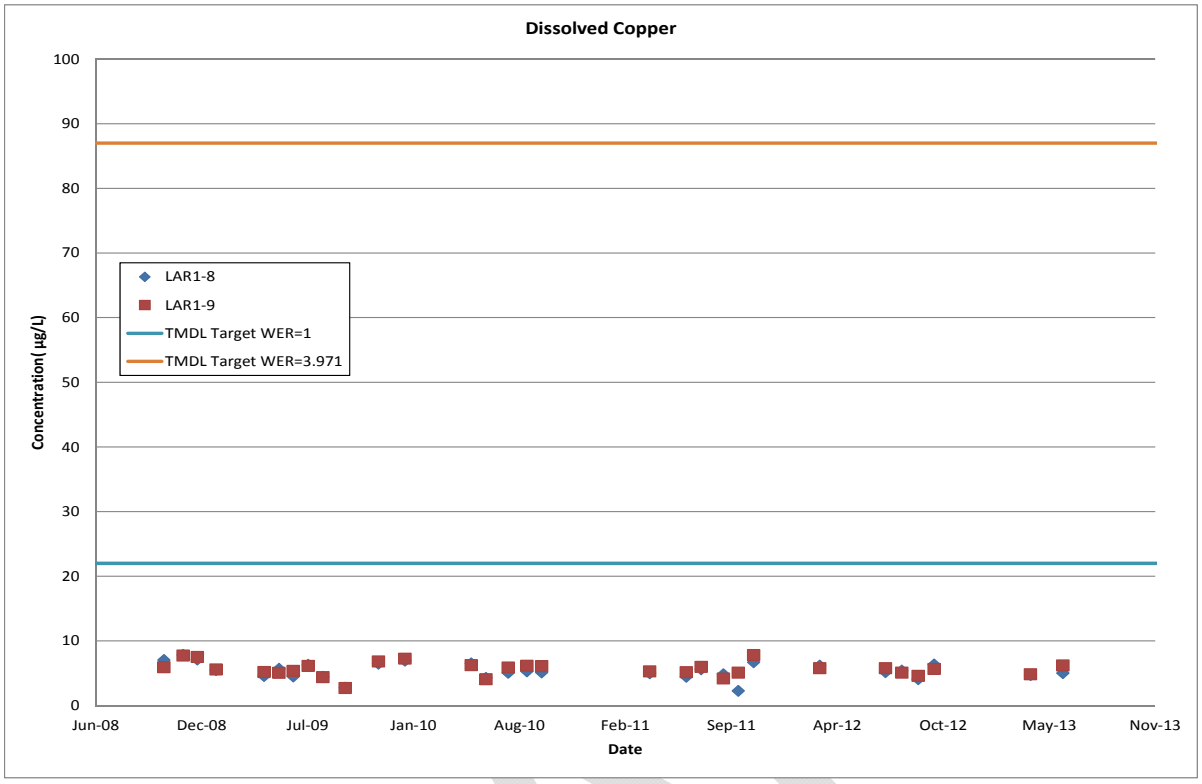

Figure D-17 Dissolved Copper Concentration Comparison for LAR1-8 LAR1-9

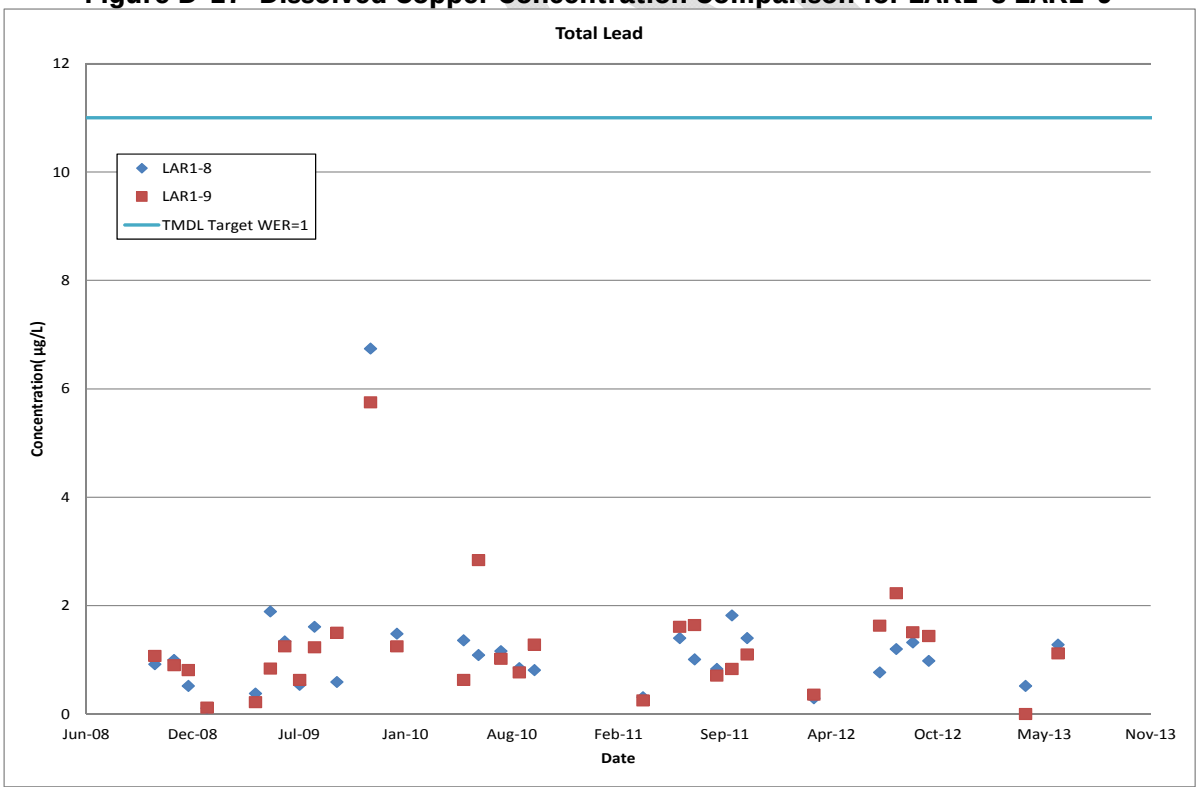

Figure D-18 Total Lead Concentration Comparison Plots for LAR1-8 and LAR1-9

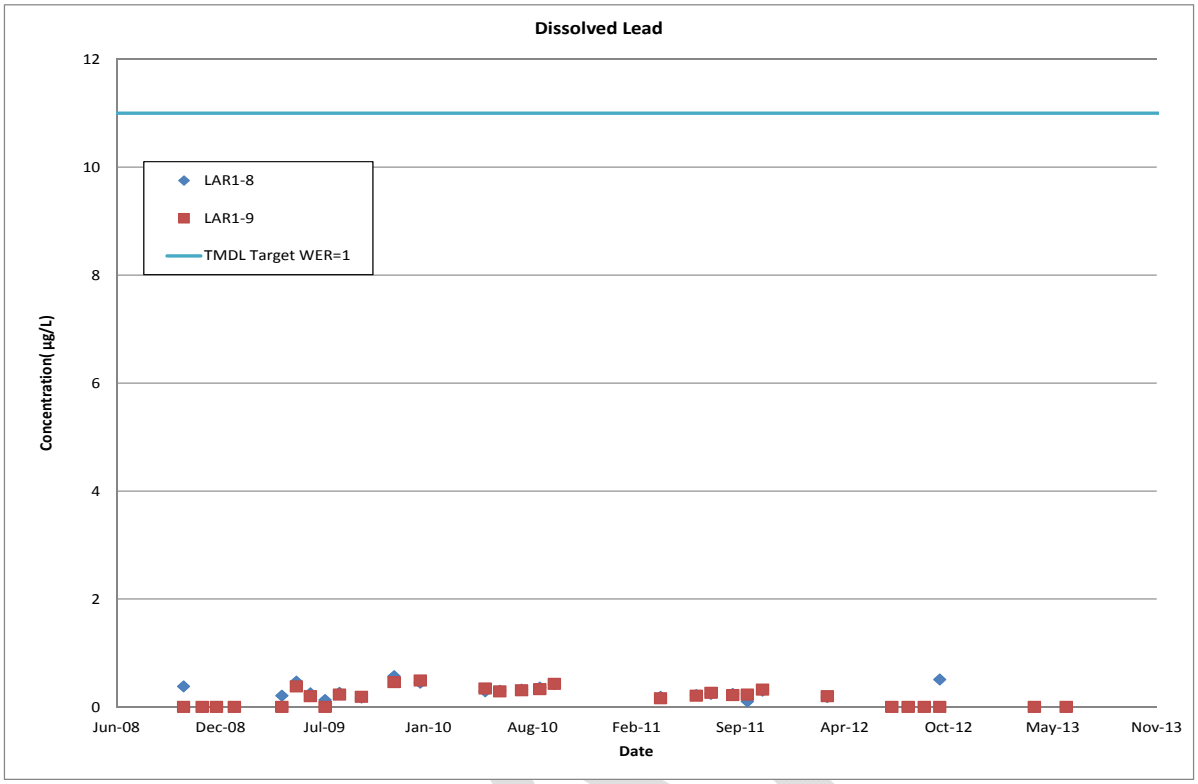

Figure D-19 Dissolved Lead Concentration Comparison Plots for LAR1-8 and LAR1-9

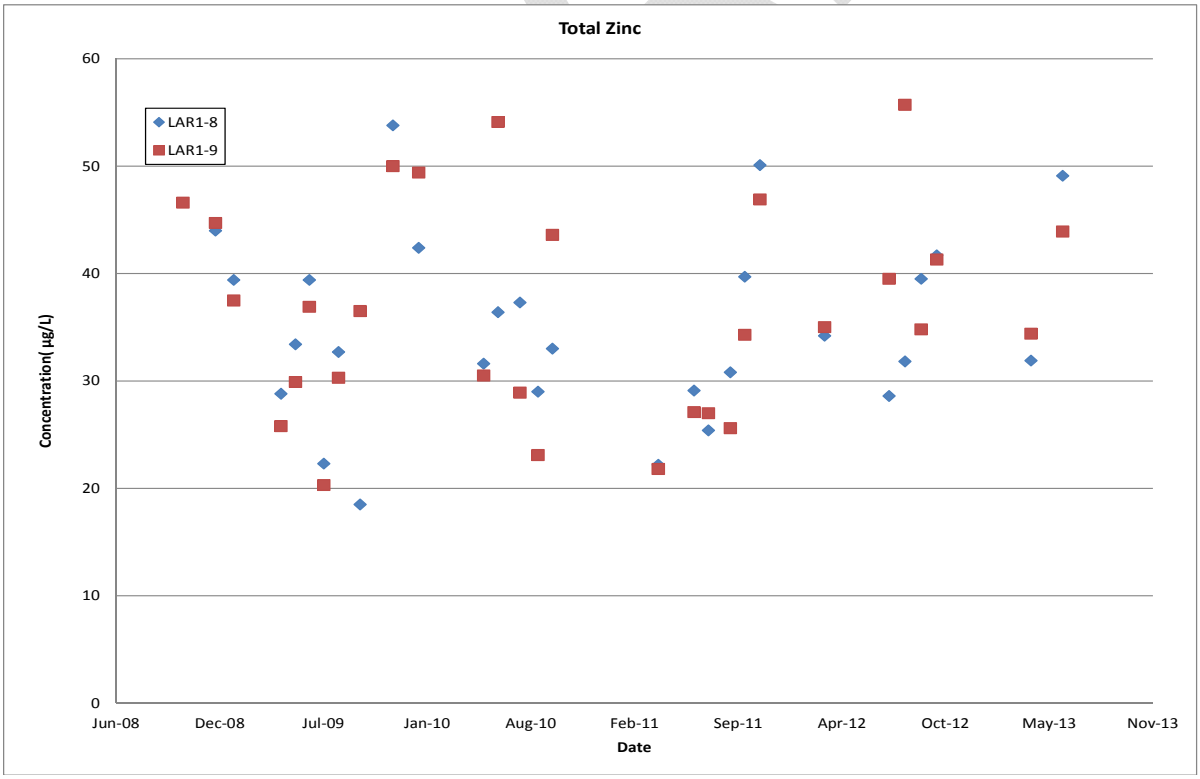

Figure D-20 Total Zinc Concentration Comparison Plots for LAR1-8 and LAR1-9

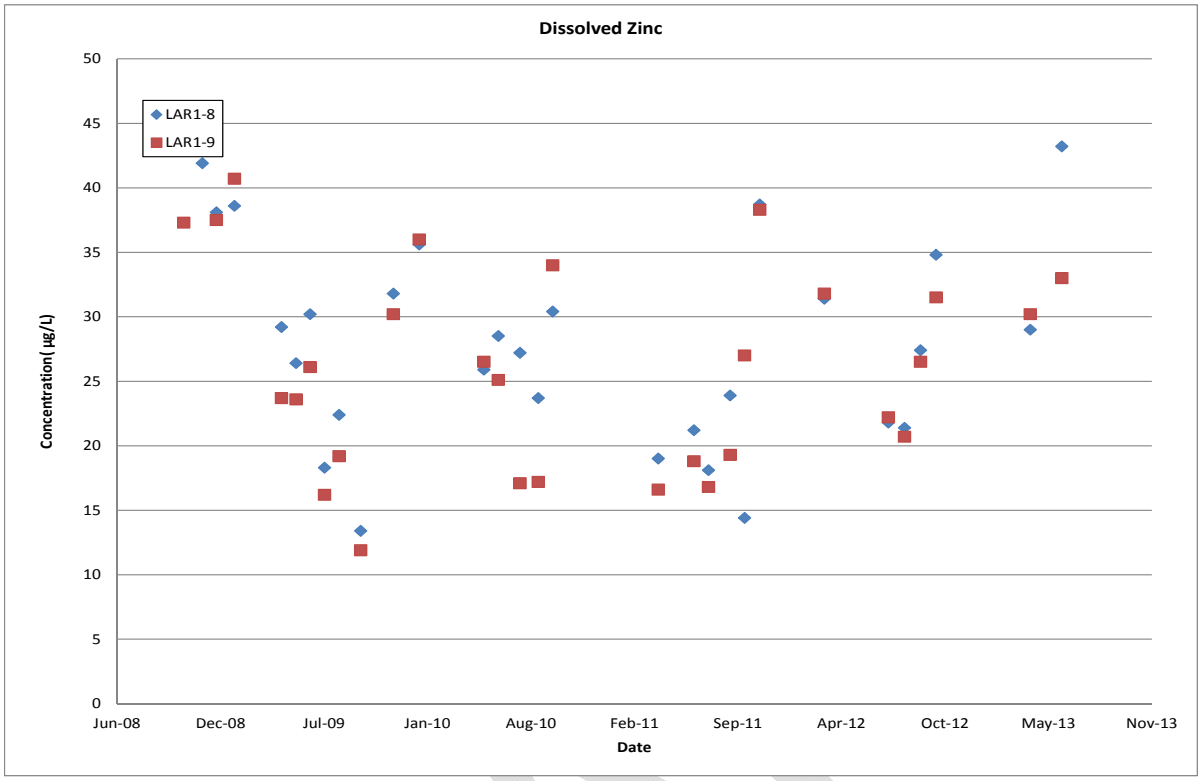

Figure D-21 Dissolved Zinc Concentration Comparison Plots for LAR1-8 and LAR1-9

Council for Watershed Health: Los Angeles River Watershed Monitoring

The Council for Watershed Health (CWH) coordinates the Los Angeles River Watershed Monitoring Program (LARWMP) to assess Watershed health based on five broad objectives: are stream conditions improving; are specific critical site conditions improving; do discharges meet WQOs; is it safe to swim; and are locally caught fish safe to eat. The CWH LARWMP collects water samples and performs bioassessments throughout the watershed using a stratified randomized sampling scheme that separates the watershed into natural, urban and mainstem portions from which random samples may be taken to facilitate comparisons. Sampling occurs annually, during the late spring or early summer, and the water is analyzed for general chemistry (nutrients), metals (total and dissolved), organophosphorus, and pyrethroid pesticides. The CWH provided for monitoring data from 2009 – 2012, which was reviewed for relevance. The most recent monitoring sites near the LAR UR2 WMA are LALT500, located at the LAR and Rio Hondo confluence, and LAR00830, which is located within Rio Hondo. As shown in **Attachment 1, Figure 4** both sites are located directly downstream of the LAR UR2 WMA. Although these sampling locations are not within the LAR UR2 WMA, the data provides perspective regarding water quality passing through the LAR UR2 WMA.

The CWH LARWMP found that one of four samples exceeded the MS4 Permit Total Kjeldahl Nitrogen (TKN) MAL of 4.59 mg/L. Based on the MS4 Permit MAL for Total Nitrate three exceedances, out of four samples, with a range of values from 2.02 to 5 mg/L were observed.

Site LALT500 observed one exceedance for total copper and two exceedances for total lead, among three samples. Sampling site LAR00830 had one exceedance for total copper from only one sample.

CREST Los Angeles River BSI Study Final Report

Consistent decreases in *E. coli* concentrations are observed where discharges of tertiary-treated, water reclamation plant (WRP) effluent overwhelm and dilute in stream flows. Generally single sample *E. coli* numbers at the base of reaches 2 and 4 are up to two orders of magnitude (100x) higher than water quality objectives (WQO). Identification of the sources responsible for these increases was a high priority of the BSI study, which was designed to characterize the bacteria inputs to the LA River, support the development of the Bacteria TMDL source assessment, and assist with prioritization of the types and locations of TMDL implementation actions. Bacteria concentrations in the LA River are typically at a minimum in reaches that are supplied with recycled water from municipal WRPs (Reach 4 - LAR @ Sepulveda Boulevard and Reach 2 - LAR @ Figueroa Street).

Monitoring for the BSI Study was conducted within LA River Reaches 2, 4, and 6, during a two-month period, when six "Snapshot" and six "WRP" events, consisting of more than 600 water samples, were collected for the BSI Study. Monitoring locations for Snapshot Events included 10 LA River sites, three tributary sites, and over 110 storm drain sites. **Attachment 1, Figure 5** shows the BSI Study WRP sampling locations while **Figure 6** and Figure 7 illustrate the storm drain sampling locations. The sampling logistics associated with the Snapshot Events were immense; each event was conducted over two days using four teams of field personnel. During WRP Events, untreated influent and tertiary-treated, disinfected effluent were collected from two WRPs: D.C. Tillman and City of LA-Glendale. All ~600 samples were analyzed for *E. coli*, *Enterococcus*, universal *Bacteroidales*, human-specific *Bacteroidales*, human adenovirus, flow rate, and seven other constituents. Along LAR R2 four receiving water sites were sampled and approximately 47 storm drain discharge sites were sampled, regularly or irregularly.

Therefore it appears that significant loads of bacteria are entering the water column in Reach 2, leading to concentration increases and WQO exceedances.

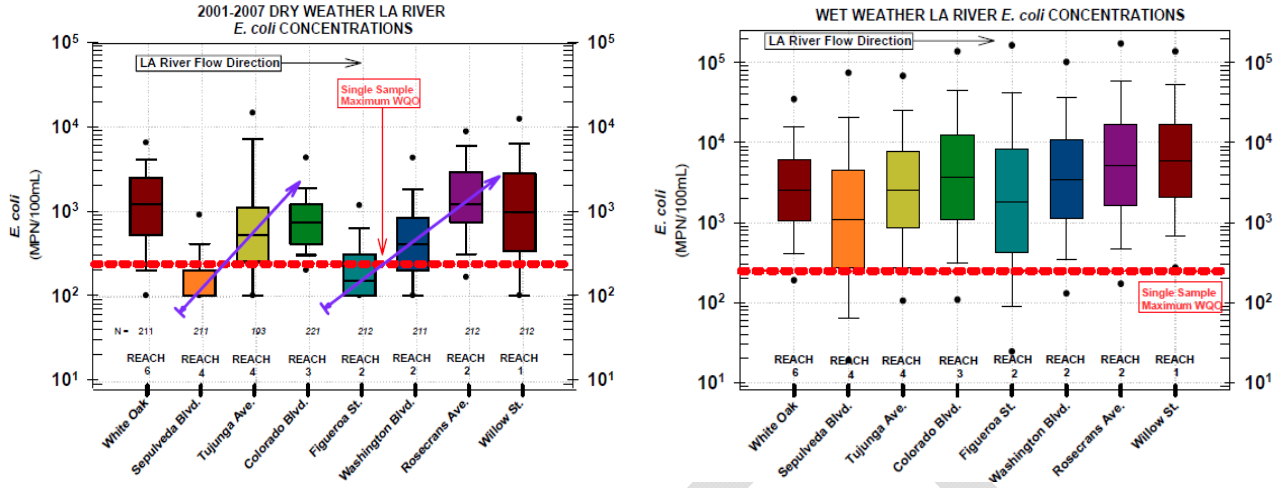

Figure D-22 Mainstem LA River E. coli Concentrations as Measured during Dry and Wet Weather by Status and Trends from 2001-2007

Status and Trends monitoring dataset collected from wet-weather shows that bacteria concentrations are about one order of magnitude higher during dry-weather, and there is less apparent spatial variation, as shown in **Figure D-23**. Median bacteria concentrations are well above the single sample maximum WQOs at all sites during wet-weather. Although the trend is not as strong as with dry-weather sampling, there is still a slight upward trend in the median concentrations in the downstream direction in both Reaches 2 and 4 during wet-weather. This may be an indication that the same source(s) may be influencing bacteria levels during both dry- and wet-weather. Overall, the relatively uniform spatial patterns suggest that strong, ubiquitous inputs of bacteria affect the LA River during wet-weather. Studies in other southern California watersheds have observed similarly strong and ubiquitous wet-weather bacteria sources, with > 99% of the annual bacteria loading from watersheds occurring during storm events.

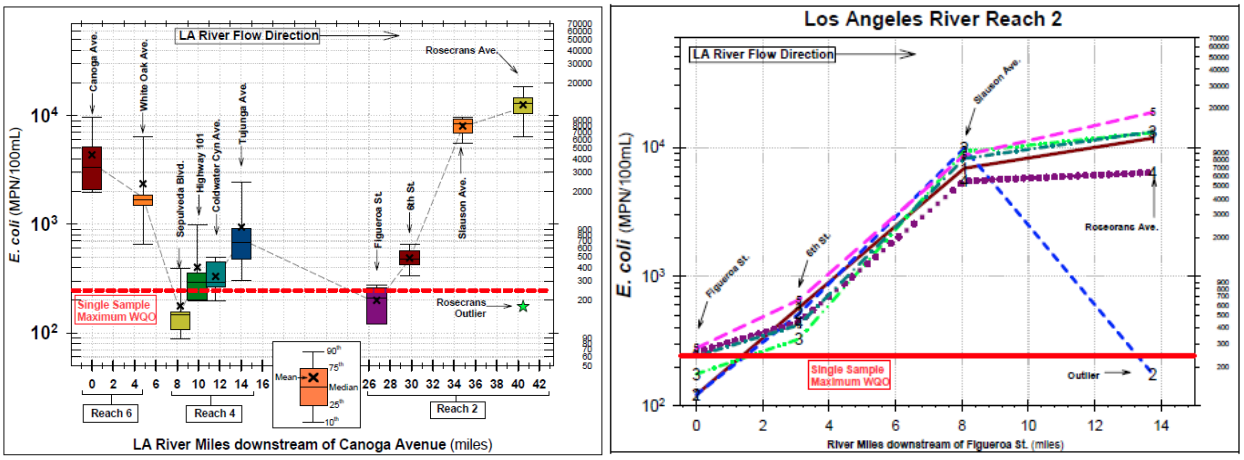

Figure D-23 Measured *E. coli* Concentration along the LA River - BSI Monitoring Study

E. coli

Along Reach 2, both *E. coli* concentrations and loading rates increased from upstream to downstream on each sampling date. The measured concentration and loading rate always increased from Figueroa Street to 6th Street to Slauson Avenue to Rosecrans Avenue. Respectively, the average concentrations

along Reach 2, from upstream to downstream, were 199, 488, 8030, and 10,522 MPN/100mL, and average loading rates were 415, 1,030, 18,642, and 27,174 x109 MPN/day. Overall, *E. coli* concentrations increased by approximately two orders of magnitude (100x) between the upstream and downstream ends of Reach 2. As such, apparently strong sources of *E. coli* are significantly affecting Reach 2, primarily along the lower section between 6th Street and Rosecrans Avenue. This large upstream-downstream increase, which was one of the motivations behind the BSI Study, was also apparent during other studies of Reach 2, including the Status and Trends monitoring.

Enterococcus

Along Reach 2, *Enterococcus* concentrations generally increased from upstream to downstream with average concentrations of 59, 299, 399, and 556 MPN/100mL at Figueroa Street, 6th Street, Slauson Avenue, and Rosecrans Avenue, respectively. However, the concentration differences among lower and upper Reach 2 sites for *Enterococcus* were not nearly as dramatic as for *E. coli*, with an approximately order of magnitude (10x) increase in *Enterococcus* concentration from Figueroa Street to Rosecrans Avenue, compared to two orders of magnitude increases (100x) for *E. coli*. Concentrations of *Enterococcus* were generally more variable when compared to *E. coli*, particularly at 6th Street (coefficient of variation [CV] of 0.24 for *E. coli* compared to 1.61 for *Enterococcus*) and Slauson Avenue (CV of 0.20 for *E. coli* compared to 0.95 for *Enterococcus*). The only statistically significant difference among Reach 2 sites was for Rosecrans Avenue versus Figueroa Street; the mean log *Enterococcus* concentrations and loading rates were significantly higher at Rosecrans Avenue (HSD test, α=0.05).

Bacteroidales

Along Reach 2, universal and human *Bacteroidales* concentrations apparently increased between Figueroa Street and 6th Street and then remained relatively constant between 6th Street and Rosecrans Avenue. All-event average concentrations slightly increased from 28 gc/mL to 32 gc/mL and the rate of detection indicate a source of human fecal inputs affecting LA River concentrations along this segment; human *Bacteroidales* was detected on 3 of 6 dates at Figueroa Street and 6 of 6 events at 6th Street. Average concentrations of universal *Bacteroidales* also increased from 2,282 to 3,973 gc/mL between Figueroa Street and 6th Street. *E. coli* concentrations increased along this segment, from generally in-compliance with WQOs at Figueroa Street to out-of-compliance at 6th Street. It is interesting to note that a majority of the homeless person activity observed along Reach 2 during the BSI Study was near the 6th Street bridge, where there were numerous encampments near storm drain outfalls. One of the most significant storm drain inputs of human *Bacteroidales* (storm drain site R2-A) was between these sites as well.

Further downstream, universal and human *Bacteroidales* concentrations remained relatively constant or decreased. Average human *Bacteroidales* concentrations at Slauson Avenue and Rosecrans Avenue were 75 gc/mL and 47 gc/mL, respectively. Average universal *Bacteroidales* concentrations at Slauson Avenue and Rosecrans Avenue were 4,668 gc/mL and 4,650 gc/mL, respectively. During 5 of 6 events and 3 of 6 events, respectively, universal and human *Bacteroidales* concentrations decreased between Slauson Avenue and Rosecrans Avenue. There were no significant differences among Reach 2 sites for universal or human *Bacteroidales*. *E. coli* concentrations increased dramatically along this segment. Thus, it appears that the apparent bacteria source(s) affecting lower Reach 2 are predominantly non-human, highly abundant in *E. coli*, and low in *Bacteroidales*.

Tributary Measurements

Three tributaries were monitored during this study; Arroyo Seco and Rio Hondo along Reach 2 and Tujunga Wash along Reach 4. Concentrations of *E. coli* in tributaries were generally above the WQO of 235 MPN/100mL. Rio Hondo was the only tributary that exhibited concentrations below the WQO 2 of 6 samples were <235 MPN/100mL, one of these was non-detect. However, the maximum tributary

E. coli (48,840 MPN/100mL) concentration was also measured at Rio Hondo, making it the tributary with the most variable *E. coli* concentrations and loading rates.

Concentrations of *Enterococcus* in tributaries ranged from 74 to 10,462 MPN/100mL and loading rates ranged from 0.09 to 584 x109 MPN/day. Compared to *E. coli*, the variability of *Enterococcus* in Arroyo Seco was greater, but lower for Rio Hondo. Median concentrations, from high to low, were Tujunga Wash > Arroyo Seco > Rio Hondo.

Concentrations of universal *Bacteroidales* ranged from 244 to 16,800 gc/mL while human *Bacteroidales* ranged from non-detect to 6150 gc/mL. The variability of universal *Bacteroidales* in tributaries was generally lower than *E. coli or Enterococcus*, and human *Bacteroidales* were detected in 10 of 18 samples. The Rio Hondo exhibited the highest median universal *Bacteroidales* and lowest median human *Bacteroidales* concentration, indicating non-human sources. Loading of human *Bacteroidales* in the Rio Hondo was two orders of magnitude lower than the Tujunga Wash and Arroyo Seco. For both 200-mL and 4-liter methodologies, human viruses were detected in 0 of 18 tributary samples.

Attachment 1

Additional Figures

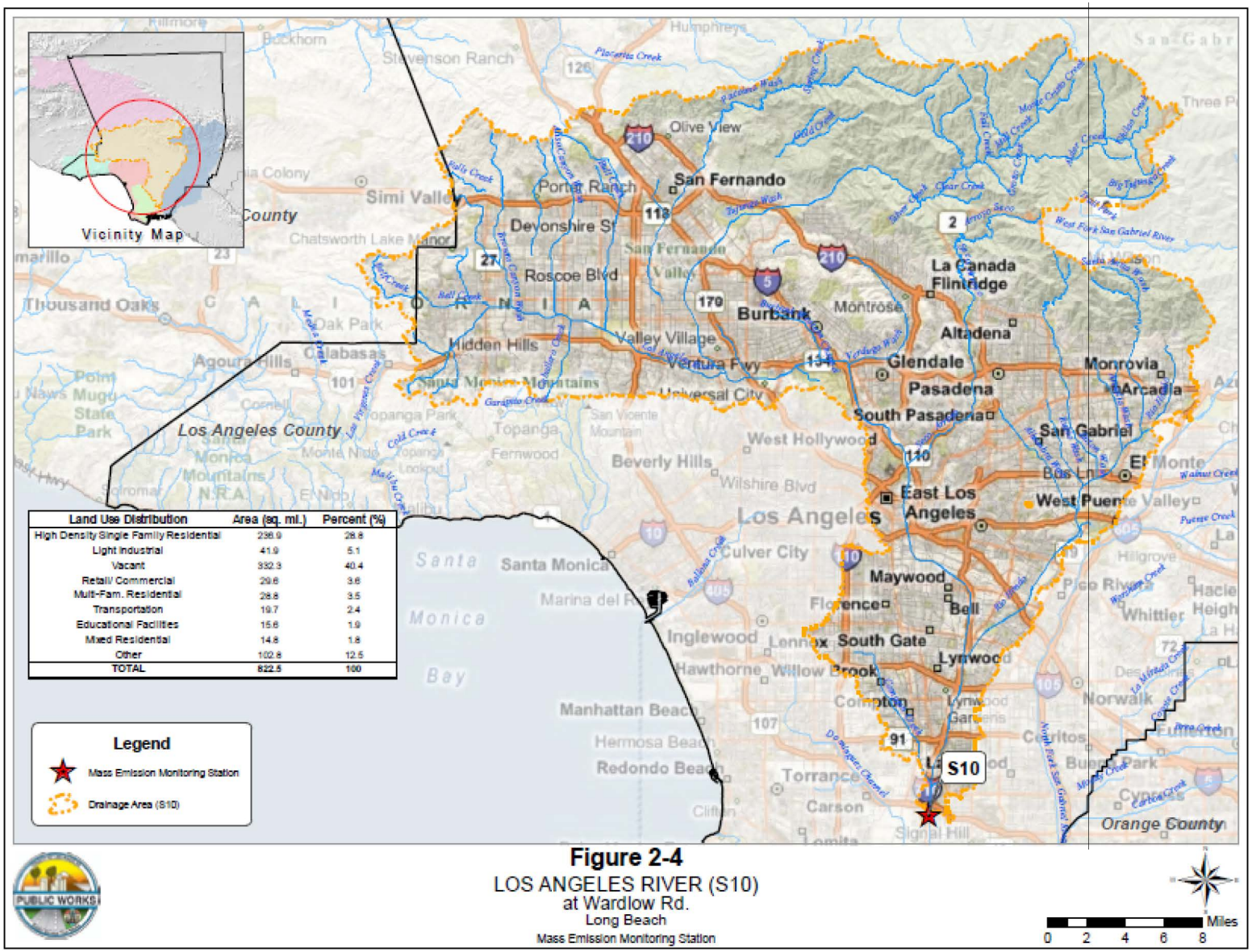

Figure 1 LA County Annual Stormwater Monitoring Reports (2002-2012) - LA River S10 Locations

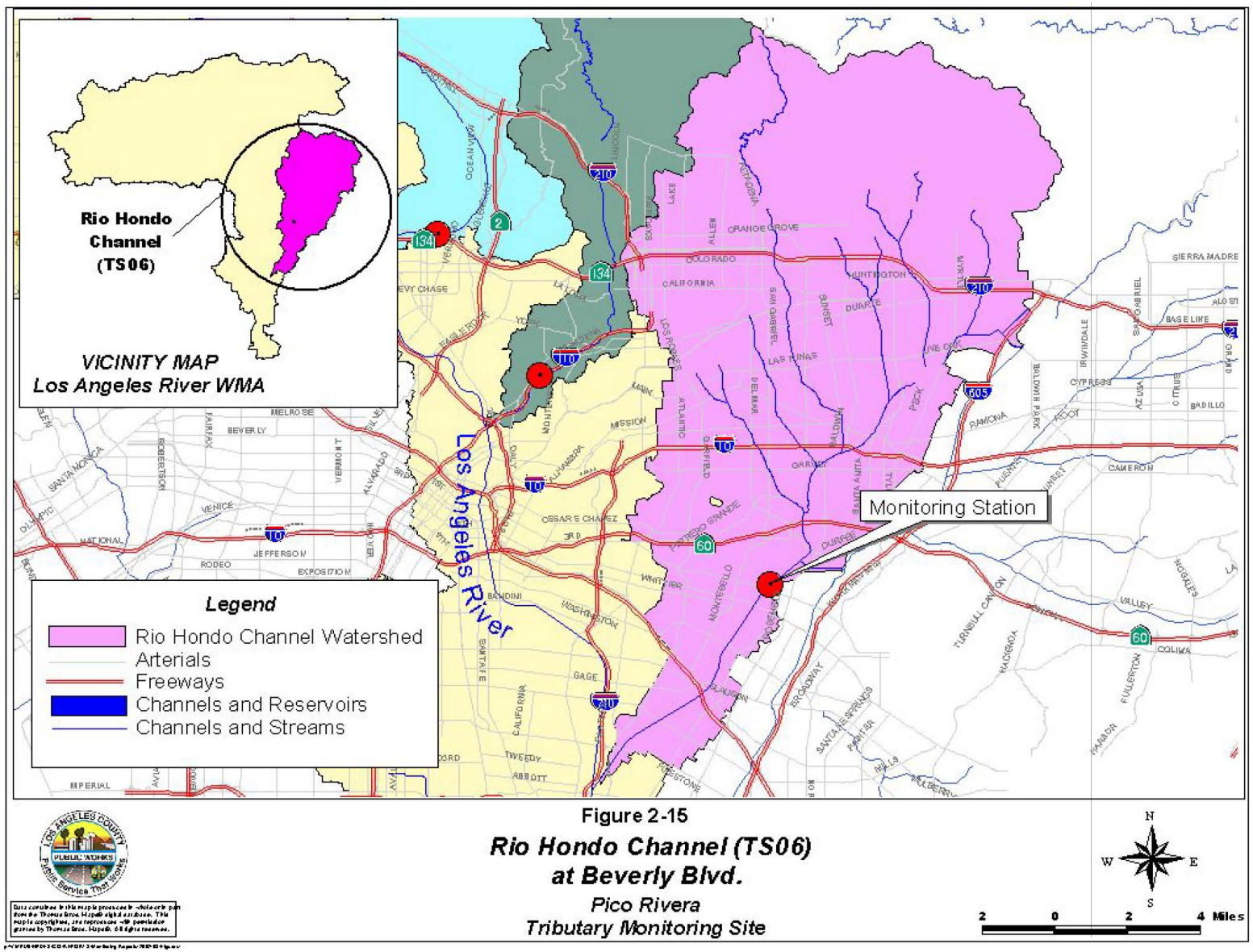

Figure 2 LA County Annual Stormwater Monitoring Reports (2002-2012) - Rio Hondo TS06 Location

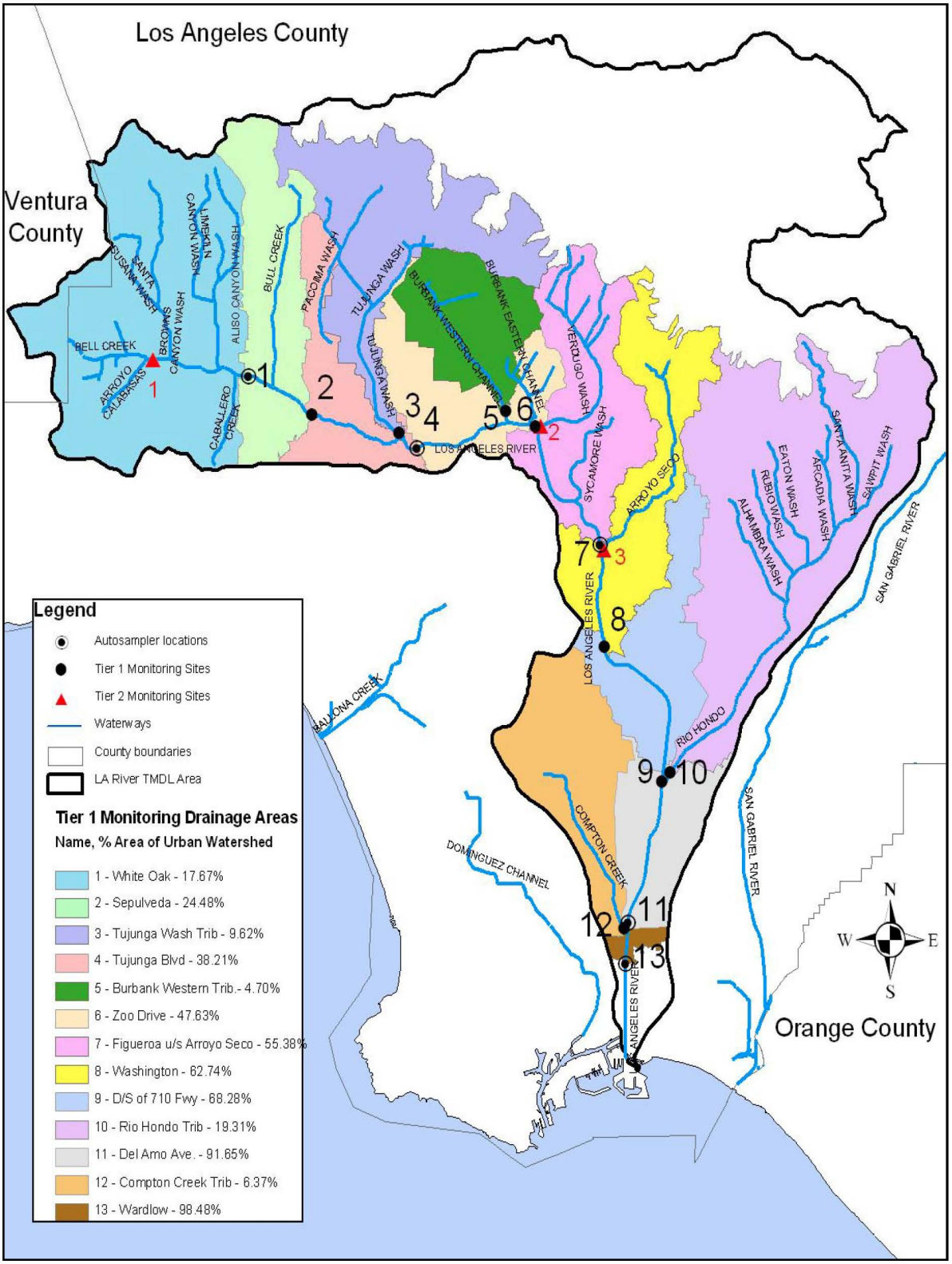

Figure 3 LA River Metals TMDL Coordinated Monitoring Plan Tier I and II Monitoring Locations

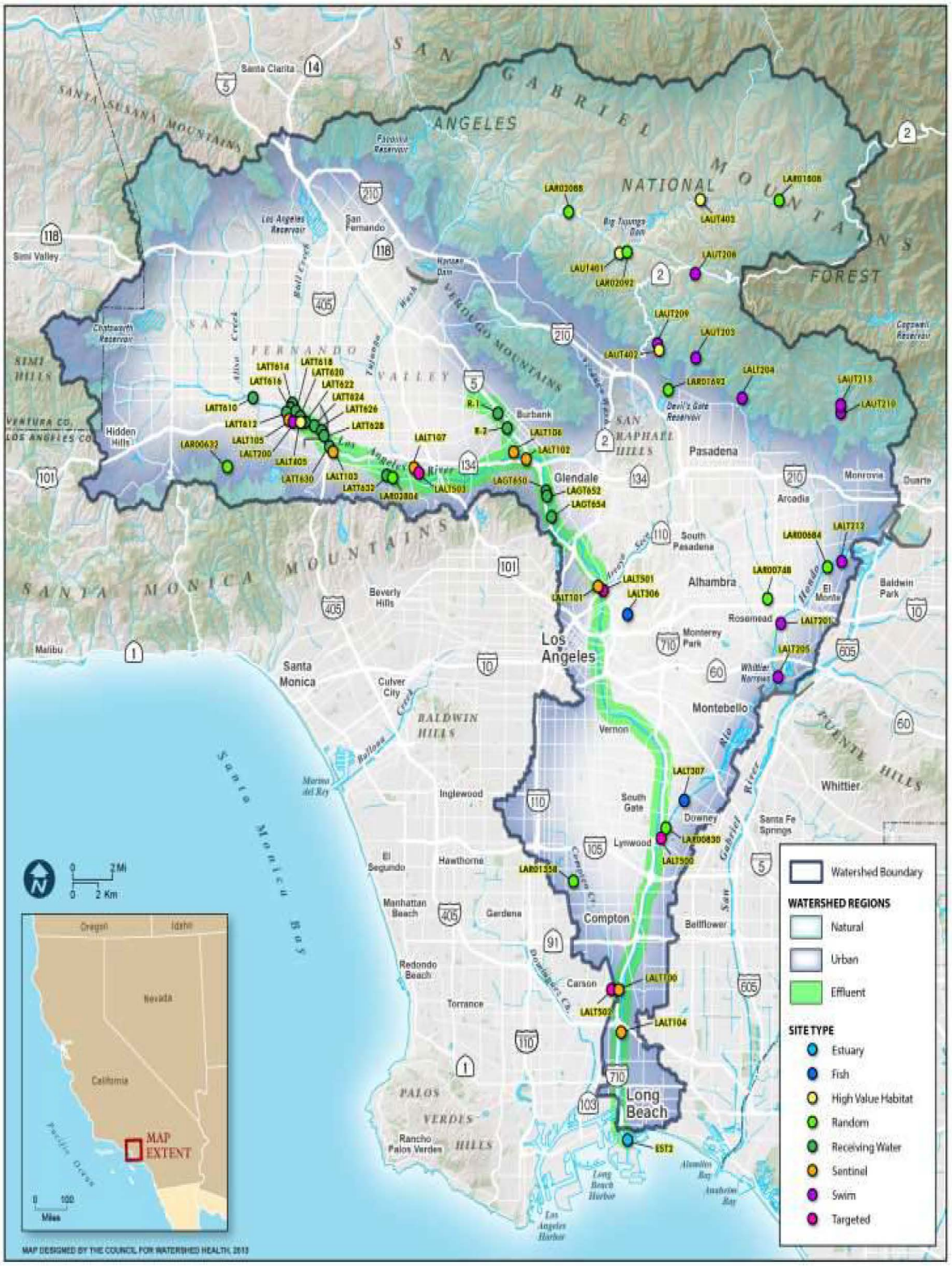

Figure 4 CWH Los Angeles River Watershed Monitoring Program (2011 Draft Report) LARWMP Sampling Locations 2011

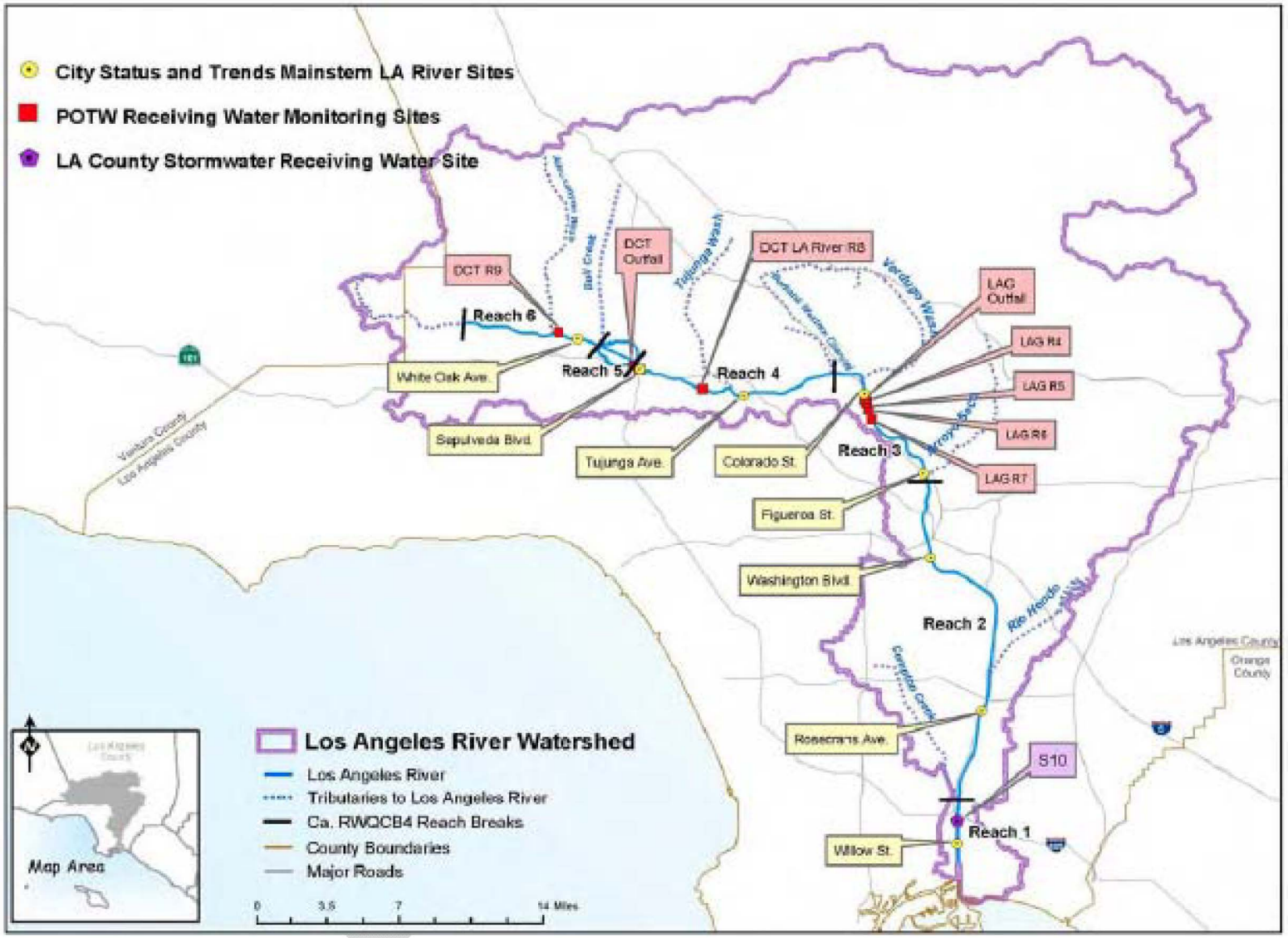

Figure 5 Crest LA River Bacteria Source Identification (BSI) Study Final Report - LA River Reaches and Long-Term Bacteria Monitoring Locations along the Mainstream LA River

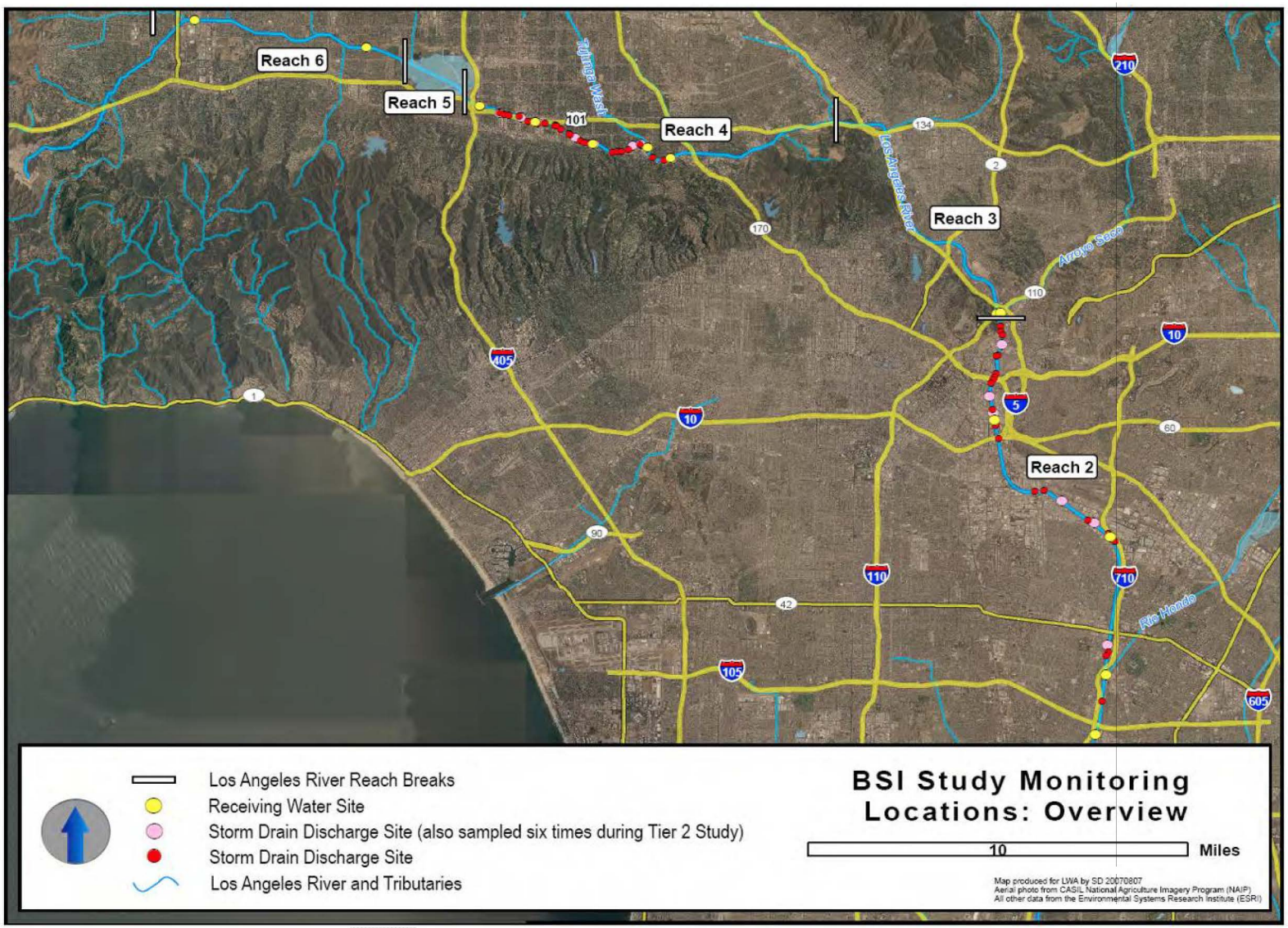

Figure 6 Crest LA River Bacteria Source Identification (BSI) Study Final Report - BSI Study Monitoring Locations

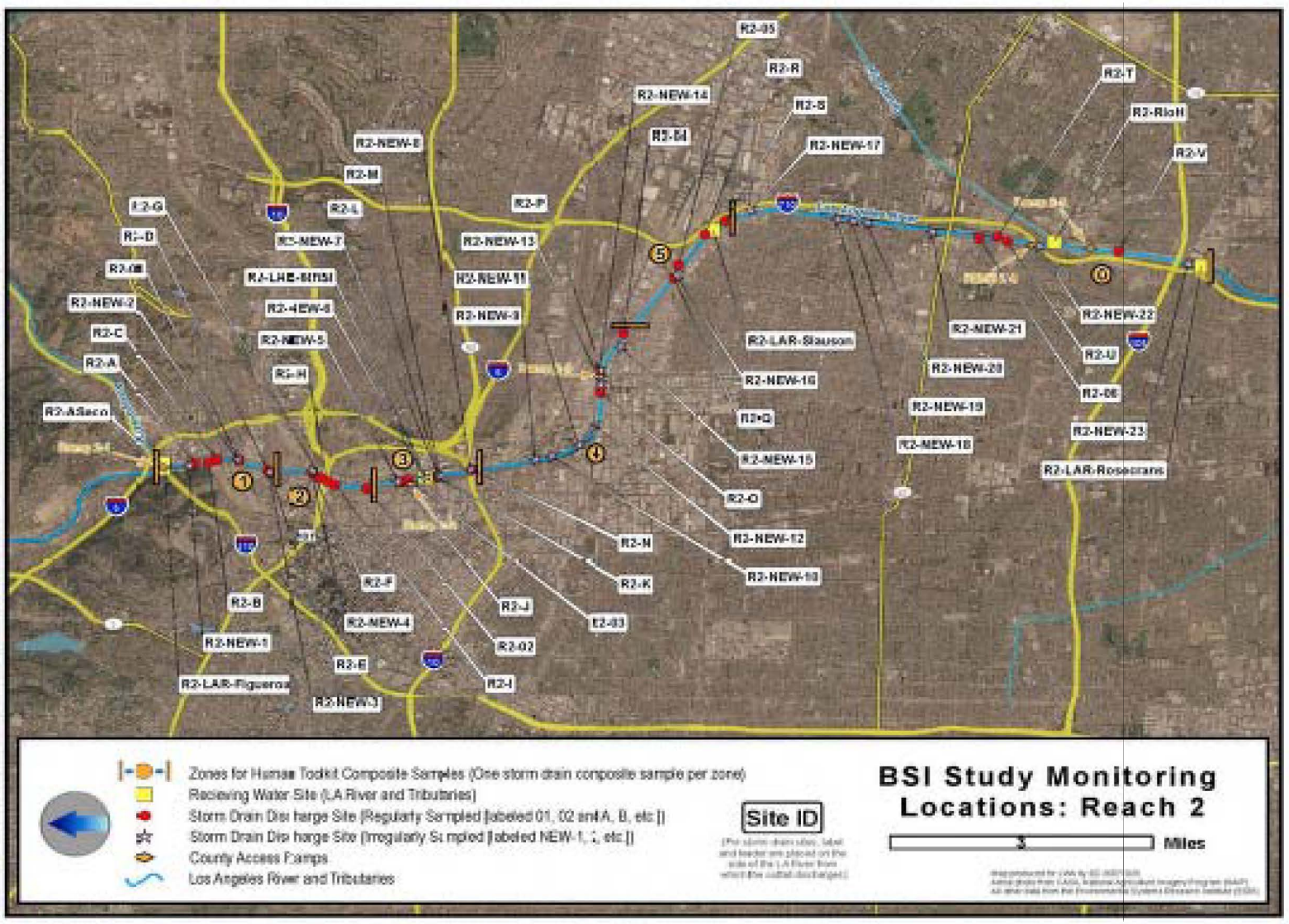

Figure 7 Crest LA River Bacteria Source Identification (BSI) Study Final Report - BSI Study Monitoring Locations: Reach 2

Appendix E

Summary of Existing MCMs/Institutional BMPs Implemented by LAR UR2 WMA

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
General Permit Requirements									
Prohibit non-stormwater discharges into the MS4 and watercourses	1	Feb-02	I	I	I		I	D	I
Comply with Receiving Water Limitations (RWL) requirements	2	Feb-02	I	I	I		I	I	I
Implement the Stormwater Quality Management Plan (SQMP)	3.A.1	Feb-02	I	I	I		I	I	I
Revise the SQMP	3.A.4	Aug-02	I	I	I		I	NA	I
Implement the most effective combination of BMPs for storm water/ urban runoff pollution	3.B	Feb-02	I	I	I		I	I	I
Prepare and submit Annual Budget Summary as part of the annual report to the RWQCB	3.E.5	Oct-02	I	I	I		I	I	I
Conduct quarterly watershed management committee meetings	3.F.3.g	Mar-02	I	NA	I		I	I	NA
Amend and adopt county ordinance to enforce all requirements of the permit, if needed	3.G.3	Nov-02	I	I	I		I	I	I
Submit to RWQCB a legal statement demonstrating the necessary legal authority	3.G.4	Dec-02	I	I	I		I	I	I
Prepare and submit to the RQWCB individual annual reports	1.B	Aug-02	I	I	I		NA	I	I
Special Provisions									
Public Information and Participation - Permit Requirements									
Implement public information and participation program	4.B	Feb-02	I	NA	I		I	I	I
Convene an Advisory Committee	4.B	ASAP	NA	NA	I		NA	NA	NA
Mark all storm drain inlets with a "no dumping" message	4.B.1.a	Feb-04	I	I	I		I	I	I
Maintain the (888) CLEAN-LA hotline	4.B.1.b	Feb-02	I	NA	I		I	NA	NA
Provide a list of reporting contacts to public through www.888CleanLA.com	4.B.1.b	Mar-02	I	NA	I		I	I	I
Media campaign for Storm Water Pollution Prevention (SPP)	4.B.1.c.1	Feb-02	I	I	I		I	I	I
Strategy to educate ethnic communities about SPP	4.B.1.c.2	Feb-03	NA	I	I		I	I	NA
Enhance outreach for proper disposal of cigarette butts	4.B.1.c.3	Feb-02	I	I	I		NA	I	NA
Conduct educational activities within jurisdiction and participate in county-wide events	4.B.1.c.4	Feb-02	I	I	I		I	I	I

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Organize Public Outreach Strategy meetings quarterly	4.B.1.c.5	May-02	I	NA	I		I	I	NA
Conduct Media Outreach to 35 million impressions per year	4.B.1.c.6	Annually	NA	NA	I		I	D	NA
Distribute SPP information to K-12 schools	4.B.1.c.7	-	I	I	I		I	I	I
Coordinate and provide contact information for public education activities	4.B.1.c.8	Apr-02	I	I	I		I	I	I
Strategy to measure effectiveness of in-school programs	4.B.c.9	May-02	NA	I	I		NA	NA	NA
Behavioral change assessment strategy towards SPP	4.B.c.10	May-02	NA	I	I		NA	NA	NA
Coordinate watershed-specific pollution prevention outreach programs	4.B.1.d	Feb-03	I	NA	I		I	I	I
Corporate Outreach Program to target retail gas outlets and restaurant chains	4.B.2.a	Feb-03	I	NA	I		I	I	NA
Coordinate an SPP program for a Business Assistance Program	4.B.2.b	Optional	NA	I	I		NA	NA	I
Industrial/Commercial Facilities Control - Permit Requirements									
Maintain a list of industrial/commercial facilities to be inspected	4.C.1	Aug-02	I	I	I		I	D	I
Inspect/visit industrial/commercial facilities appropriately	4.C.2	Aug-04	I	I	I		I	NA	I
Initiate progressive enforcement for facilities failing to implement BMP's	4.C.3	-	I	I	I		I	NA	I
Inspect restaurants twice during Permit cycle	4.C.2	Aug-04	I	I	I		I	I	I
Development Planning - Permit Requirements									
Implement development planning program that requires SUSMP	4.D	Feb-02	I	I	I		I	I	I
Develop peak flow control criteria	4.D.1	Feb-05	I	D	D		I	NA	I
Amend codes and ordinances to give legal effect to SUSMP changes in permit	4.D.2.a	Aug-02	I	I	I		I	I	I
Implement revised SUSMP	4.D.2.b	Sep-02	I	I	I		I	I	I
Submit an Environmentally Sensitive Areas (ESAs) Delineation map to RWQCB	4.D.2.d	Jun-02	NA	NA	NA		NA	NA	I
Implement SUSMP requirements for industrial/commercial projects >1 acre	4.D.5	Mar-03	I	I	I		I	I	I
Update CEQA guidelines to include specific storm water related issues	4.D.11	Feb-02	NA	I	I		NA	I	I

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Update General Plan to include specific storm water related issues	4.D.12	-	I	I	I		NA	**	I
Train targeted employees in permit requirements for Development Planning	4.D.13	Varies	I	I	I		I	NA	I
Develop and make SUSMP guidelines available to the developer	4.D.14.a	Feb-02	I	D	D		I	D	I
Develop a technical manual for the siting and design of BMPs	4.D.14.b	Feb-04	I	D	D		I	NA	I
Development Construction - Permit Requirements									
Implement a development construction program	4.E.1 &2	Feb-02	I	I	I		I	I	I
Require proof of a Waste Discharger ID (WDID) number prior to filing Notice of Intent (NOI)	4.E.2.c	Mar-03	I	I	I		I	I	I
Require proof of an NOI and a copy of SWPPP for a transfer of ownership	4.E.3	Feb-02	I	I	I		NA	D	I
Track the number of issued building and grading permits	4.E.3.c	Feb-02	I	I	I		I	I	I
Refer General Construction Activities Stormwater Permit (GCASP) violations to RWQCB	4.E.4	Feb-02	I	I	I		I	I	I
Train targeted employees in permit requirements for Development Construction	4.E.5	Varies	I	I	I		I	NA	I
Public Agency Activities - Permit Requirements									
Implement a sewer overflow prevention and response program	4.F.1	Aug-02	NA	I	I		I	I	I
Implement Development Planning Program at Permittee-owned construction projects	4.F.2.a	Aug-02	I	I	I		I	I	I
Implement Development Construction Program at Permittee-owned construction projects	4.F.2.b	Feb-02	I	I	I		I	I	I
Develop, if needed, and implement SWPPPs for field facilities	4.F.3	Feb-02	NA	I	D		NA	NA	I
Equip wash areas with a clarifier, pre-treatment device, or be connected to sewer	4.F.3.c	Feb-02	NA	I	I		NA	NA	I
Store pesticides/herbicides/fertilizers indoors and apply only in accordance	4.F.4.c&g	Feb-02	NA	I	I		NA	NA	I
Designate Catch Basins as priority A, B, or C	4.F.5.a	Feb-02	I	I	I		I	I	I
Ensure that Catch Basins (CBs) are cleaned appropriately	4.F.5.c.1	Feb-02	I	I	I		I	NA	I
Place temporary screens on CBs prior to special events or cleanout immediately afterwards	4.F.5.c.2	Feb-02	I	I	I		I	NA	I
Place and maintain trash receptacles at all transit stops with shelters	4.F.5.c.3	Feb-02	I	I	I		I	I	I

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Inspect the legibility of CB stencils and re-label within 180 days if necessary	4.F.5.d	-	I	I	I		I	I	I
Visually monitor and clean all open channels annually for debris	4.F.5.e.1	Feb-02	NA	I	I		NA	NA	NA
Designate curbed streets as priority A, B, or C based on liter accumulation	4.F.6.a.b	Feb-02	I	I	I		I	I	I
Recover saw cutting waste and dispose it offsite	4.F.6.c	Feb-02	I	I	I		I	I	I
Train targeted employees in permit requirements for Public Agency Activities	4.F.6.d	Varies	I	I	I		I	NA	I
Inspect and, if needed, clean Permittee owned parking lots twice per month, but at least once	4.F.7	Feb-02	I	I	I		I	NA	I
Conduct a dry weather diversion study and create a priority list of drains for diversion	4.F.10	Jul-03	NA	I	D		**	I	I
Illicit Connections / Illicit Discharges - Permit Requirements									
Develop an Implementation Program which specifies how revisions of the IC/ID SQMP are implemented	4.G.1.a	-	I	D	D		I	I	I
Create a database for permitted storm drain connections and map IC/ID	4.G.1.b	Feb-03	I	I	I		NA	NA	I
Perform IC/ID Trend Analysis	4.G.1.b	Feb-03	NA	I	I		**	NA	I
Train targeted employees in the permit requirements for IC/ID	4.G.1.c	Varies	I	I	I		I	NA	I
Field screen the storm drain system for illicit connections in open channels	4.G.2.a	Feb-03	NA	I	D		NA	NA	NA
Field screen the storm drain system for illicit connections in underground storm drains in priority areas	4.G.2.a	Feb-05	I	I	D		I	NA	I
Field screen the storm drain system for illicit connections in underground s/d larger than 36 inch diameter	4.G.2.a	Dec-06	I	I	D		I	NA	I
Review all permitted connections to the storm drain system for compliance	4.G.2.a	Dec-06	NA	NA	I		NA	NA	I
Investigate illicit connections 21 days after discovery	4.G.2.b	-	I	I	I		I	I	I
Terminate illicit connections 180 days after confirmation	4.G.2.b	-	I	I	I		I	I	I
Respond to illicit discharges within one business day of discovery	4.G.3.a	-	I	I	I		I	I	I
Investigate illicit discharges as soon as practicable	4.G.3.a	-	I	I	I		I	I	I

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**

NA - Not Applicable or Not Completed
D - Developed
I - Program Implemented/Completed
** - Not Scheduled

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
General Permit Requirements									
Prohibit non-stormwater discharges into the MS4 and watercourses	1	Feb-02		I	I			I	I
Comply with Receiving Water Limitations (RWL) requirements	2	Feb-02		I	I			I	I
Implement the Stormwater Quality Management Plan (SQMP)	3.A.1	Feb-02		I	I			I	I
Revise the SQMP	3.A.4	Aug-02		I	I			**	I
Implement the most effective combination of BMPs for storm water/ urban runoff pollution	3.B	Feb-02		I	I			I	I
Prepare and submit Annual Budget Summary as part of the annual report to the RWQCB	3.E.5	Oct-02		I	I			I	I
Conduct quarterly watershed management committee meetings	3.F.3.g	Mar-02		I	I			NA	I
Amend and adopt county ordinance to enforce all requirements of the permit, if needed	3.G.3	Nov-02		I	I			NA	I
Submit to RWQCB a legal statement demonstrating the necessary legal authority	3.G.4	Dec-02		I	I			I	I
Prepare and submit to the RQWCB individual annual reports	1.B	Aug-02		I	I			I	I
Special Provisions									
Public Information and Participation - Permit Requirements									
Implement public information and participation program	4.B	Feb-02		I	I			I	I
Convene an Advisory Committee	4.B	ASAP		I	I			NA	I
Mark all storm drain inlets with a "no dumping" message	4.B.1.a	Feb-04		I	I			I	I
Maintain the (888) CLEAN-LA hotline	4.B.1.b	Feb-02		I	I			NA	NA
Provide a list of reporting contacts to public through www.888CleanLA.com	4.B.1.b	Mar-02		I	I			I	I
Media campaign for Storm Water Pollution Prevention (SPP)	4.B.1.c.1	Feb-02		I	I			I	I
Strategy to educate ethnic communities about SPP	4.B.1.c.2	Feb-03		I	I			I	NA
Enhance outreach for proper disposal of cigarette butts	4.B.1.c.3	Feb-02		I	I			I	NA
Conduct educational activities within jurisdiction and participate in county-wide events	4.B.1.c.4	Feb-02		I	I			I	NA

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Organize Public Outreach Strategy meetings quarterly	4.B.1.c.5	May-02		I	I			NA	NA
Conduct Media Outreach to 35 million impressions per year	4.B.1.c.6	Annually		D	I			NA	NA
Distribute SPP information to K-12 schools	4.B.1.c.7	-		NA	I			I	I
Coordinate and provide contact information for public education activities	4.B.1.c.8	Apr-02		I	I			I	NA
Strategy to measure effectiveness of in-school programs	4.B.c.9	May-02		NA	I			NA	NA
Behavioral change assessment strategy towards SPP	4.B.c.10	May-02		NA	I			NA	NA
Coordinate watershed-specific pollution prevention outreach programs	4.B.1.d	Feb-03		I	I			I	NA
Corporate Outreach Program to target retail gas outlets and restaurant chains	4.B.2.a	Feb-03		NA	I			NA	NA
Coordinate an SPP program for a Business Assistance Program	4.B.2.b	Optional		**	I			NA	I
Industrial/Commercial Facilities Control - Permit Requirements									
Maintain a list of industrial/commercial facilities to be inspected	4.C.1	Aug-02		I	I			I	I
Inspect/visit industrial/commercial facilities appropriately	4.C.2	Aug-04		I	I			I	I
Initiate progressive enforcement for facilities failing to implement BMP's	4.C.3	-		I	I			I	I
Inspect restaurants twice during Permit cycle	4.C.2	Aug-04		D	I			I	I
Development Planning - Permit Requirements									
Implement development planning program that requires SUSMP	4.D	Feb-02		I	I			I	I
Develop peak flow control criteria	4.D.1	Feb-05		I	D			NA	NA
Amend codes and ordinances to give legal effect to SUSMP changes in permit	4.D.2.a	Aug-02		I	I			I	I
Implement revised SUSMP	4.D.2.b	Sep-02		I	I			I	I
Submit an Environmentally Sensitive Areas (ESAs) Delineation map to RWQCB	4.D.2.d	Jun-02		NA	NA			I	NA
Implement SUSMP requirements for industrial/commercial projects >1 acre	4.D.5	Mar-03		I	I			I	I
Update CEQA guidelines to include specific storm water related issues	4.D.11	Feb-02		I	I			I	I

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Update General Plan to include specific storm water related issues	4.D.12	-		I	I			**	I
Train targeted employees in permit requirements for Development Planning	4.D.13	Varies		I	I			NA	I
Develop and make SUSMP guidelines available to the developer	4.D.14.a	Feb-02		I	D			I	I
Develop a technical manual for the siting and design of BMPs	4.D.14.b	Feb-04		I	D			NA	NA
Development Construction - Permit Requirements									
Implement a development construction program	4.E.1 &2	Feb-02		I	I			I	I
Require proof of a Waste Discharger ID (WDID) number prior to filing Notice of Intent (NOI)	4.E.2.c	Mar-03		I	I			I	I
Require proof of an NOI and a copy of SWPPP for a transfer of ownership	4.E.3	Feb-02		I	I			I	I
Track the number of issued building and grading permits	4.E.3.c	Feb-02		I	I			I	D
Refer General Construction Activities Stormwater Permit (GCASP) violations to RWQCB	4.E.4	Feb-02		I	I			I	I
Train targeted employees in permit requirements for Development Construction	4.E.5	Varies		I	I			NA	I
Public Agency Activities - Permit Requirements									
Implement a sewer overflow prevention and response program	4.F.1	Aug-02		I	I			I	I
Implement Development Planning Program at Permittee-owned construction projects	4.F.2.a	Aug-02		I	I			I	I
Implement Development Construction Program at Permittee-owned construction projects	4.F.2.b	Feb-02		I	I			I	I
Develop, if needed, and implement SWPPPs for field facilities	4.F.3	Feb-02		I	D			NA	I
Equip wash areas with a clarifier, pre-treatment device, or be connected to sewer	4.F.3.c	Feb-02		I	I			NA	I
Store pesticides/herbicides/fertilizers indoors and apply only in accordance	4.F.4.c&g	Feb-02		I	I			NA	I
Designate Catch Basins as priority A, B, or C	4.F.5.a	Feb-02		I	I			I	I
Ensure that Catch Basins (CBs) are cleaned appropriately	4.F.5.c.1	Feb-02		I	I			I	I
Place temporary screens on CBs prior to special events or cleanout immediately afterwards	4.F.5.c.2	Feb-02		I	I			I	I
Place and maintain trash receptacles at all transit stops with shelters	4.F.5.c.3	Feb-02		I	I			I	I

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Inspect the legibility of CB stencils and re-label within 180 days if necessary	4.F.5.d	-		I	I			I	I
Visually monitor and clean all open channels annually for debris	4.F.5.e.1	Feb-02		I	I			NA	I
Designate curbed streets as priority A, B, or C based on liter accumulation	4.F.6.a.b	Feb-02		I	I			I	I
Recover saw cutting waste and dispose it offsite	4.F.6.c	Feb-02		I	I			I	I
Train targeted employees in permit requirements for Public Agency Activities	4.F.6.d	Varies		I	I			NA	I
Inspect and, if needed, clean Permittee owned parking lots twice per month, but at least once	4.F.7	Feb-02		I	I			I	I
Conduct a dry weather diversion study and create a priority list of drains for diversion	4.F.10	Jul-03		I	D			I	NA
Illicit Connections / Illicit Discharges - Permit Requirements									
Develop an Implementation Program which specifies how revisions of the IC/ID SQMP are implemented	4.G.1.a	-		I	D			I	I
Create a database for permitted storm drain connections and map IC/ID	4.G.1.b	Feb-03		I	I			NA	I
Perform IC/ID Trend Analysis	4.G.1.b	Feb-03		I	I			NA	I
Train targeted employees in the permit requirements for IC/ID	4.G.1.c	Varies		I	I			NA	I
Field screen the storm drain system for illicit connections in open channels	4.G.2.a	Feb-03		NA	I			NA	I
Field screen the storm drain system for illicit connections in underground storm drains in priority areas	4.G.2.a	Feb-05		I	D			I	I
Field screen the storm drain system for illicit connections in underground s/d larger than 36 inch diameter	4.G.2.a	Dec-06		I	D			I	I
Review all permitted connections to the storm drain system for compliance	4.G.2.a	Dec-06		I	I			I	I
Investigate illicit connections 21 days after discovery	4.G.2.b	-		D	I			I	I
Terminate illicit connections 180 days after confirmation	4.G.2.b	-		I	I			I	I
Respond to illicit discharges within one business day of discovery	4.G.3.a	-		D	I			I	I
Investigate illicit discharges as soon as practicable	4.G.3.a	-		I	I			I	I

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**

NA - Not Applicable or Completed
D - Developed
I - Program Implemented/Completed
** - Not Scheduled

Appendix F

Regional and Distributed BMP Comparison Matrix

Table F-1 Regional BMP Comparison Matrix

Ranking Factor	Score (1=worst, 5=best)						
	Infiltration Basins	**Detention Basins**	**Detention with SSF Wetlands**	**Constructed SF Wetlands**	**Treatment Facility**	**Hydrodynamic Devices**	**Channel Naturalization**
Cost							
Capital	4	4	2	4	1	3	4
Operations and Maintenance	1	3	2	2	2	4	3
Effectiveness							
Effluent Concentration							
Trash	5	4	5	5	5	4	2
Nutrients	5	2	5	5	5	2	5
Bacteria	5	2	4	3	5	2	1
Metals	5	3	5	5	5	3	4
Sediment	5	3	5	5	5	4	4
"Other" Pollutant	5	3	4	4	4	3	3
Volume Mitigation	5	3	3	3	2	1	2
Reliability	2	3	3	3	5	3	3
Implementation							
Implementation Issues							
Engineering Feasibility	Based on Site-Specific Evaluation						
Ownership/ROW							
Environmental Clearance	4	4	4	4	2	4	2
Permitting Water Rights	5	5	5	2	2	2	2
Public Safety	3	3	3	3	4	4	3
Environment/Other Factors							
Other Potential Benefits	5	4	4	4	1	1	5
Other Potential Impacts	3	2	3	2	3	3	3

SSF = Subsurface Flow
SF = Surface Flow

Table F-2 Distributed BMP Comparison Matrix

Ranking Factors	Score (1=worst, 5=best)							
	Cisterns	Bioretention	Vegetated Swales	Green Roofs	Porous/ Permeable Pavements	GSRDs	Media Filters	Catch Basin Inserts
Cost								
Capital	3	2	4	1	2	2	3	5
Operations and Maintenance	5	3	4	4	5	3	4	4
Effectiveness								
Effluent Concentration								
Trash	5	5	4	4	5	4	5	4
Nutrients	5	5	4	4	5	1	3	1
Bacteria	5	5	1	4	5	1	3	1
Metals	5	5	4	4	5	2	4	1
Sediment	5	5	3	4	5	3	5	2
"Other" Pollutant	4	4	4	4	4	1	4	1
Volume Mitigation	3	4	4	4	4	1	1	1
Reliability	3	4	4	3	2	3	3	3
Implementation								
Implementation Issues								
Engineering Feasibility	Based on Site-Specific Evaluation							
Ownership/ROW								
Environmental Clearance	5	5	5	5	5	5	5	5
Permitting Water Rights	5	5	5	5	5	5	5	5
Public Safety	4	3	3	4	3	4	4	4
Environment/Other Factors								
Other Potential Benefits	5	4	4	4	3	1	1	1
Other Potential Impacts	2	3	3	3	3	3	3	3

GSRDs = Gross Solid Removal Devices

Appendix G

BMP Installation Summary

Table G-1 LAR UR2 WMA BMPs Installed by Year

BMP Type	Year Installed	Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon	Total
Catch Basin Screens									
Automatic Retracting Screens(ARS)	2011-2012	137	154	321	105	136	116	3	972
	2010-2011							10	10
	2009-2010					148			148
United Storm Water Clean Screens III	2010-2011			403			152		555
	Subtotal	137	154	724	105	284	268	13	1,685
BioClean Flume Filter	2011-2012							3	3
	2010-2011							7	7
	2006-2007							2	2
	Subtotal							12	12
BioClean Grate Inlet Skimmer Box	2011-2012							8	8
	2005-2006							1	1
	Subtotal							9	9
Clean Screen Catch Basin Inserts	2010-2011	163	101	288		450			1,002
	2005-2006			29					29
	2004-2005		5						5
	2003-2004		50						50
Full Capture Catch Basin Inserts	2010-2011		146						146
Connector Pipe Screens (CPS)	2011-2012	238	243	545	130	442	151		1,749
	2010-2011							631	631
	Subtotal	401	545	862	130	892		631	3,461

Table G-1 LAR UR2 WMA BMPs Installed by Year

BMP Type	Year Installed	Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon	Total
Catch Basin Inserts/Filters									
Fossil Filter Catch Basin Inserts	2011-2012						4		4
	2010-2011					2			2
	2009-2010	2				2			4
	2008-2009			1					1
	2007-2008	2							2
	2006-2007	2		3					5
	2005-2006			4	4			22	30
	2004-2005			1					1
	Subtotal	6		9	4	4	4	22	49
Kristar Flo Guard Inserts	2008-2009							3	3
	2007-2008							11	11
	2006-2007							11	11
	Subtotal							25	25
Bioclean Catch Basin Inserts	2010-2011							16	16
	2007-2008							7	7
	Subtotal							23	23
Suntree Technologies	2008-2009							2	2
	2007-2008							2	2
	Subtotal							4	4
Catch Basin Insert - Watershed Only	2004-2005							7	7
Catch Basin Inserts	2010-2011			1					1
Kristar Panel	2007-2008							6	6
Filter Insert	2011-2012			1					1
SuntrekTech Catch Basin Insert	2006-2007							2	2

Table G-1 LAR UR2 WMA BMPs Installed by Year

BMP Type	Year Installed	Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon	Total
Sediment/Oil Trap									
CDS Gross Pollutant Separators	2010-2011					1			1
	2005-2006							3	3
	Subtotal					1		3	4
Stormceptor Gross Pollutant Separators	2008-2009							1	1
	2007-2008							1	1
	2006-2007							1	1
	2005-2006							1	1
	2003-2004								2
	Subtotal					1	1	4	6
Vegetated Swale/Strip	2008-2009			3					3
Grease Interceptors	2004-2005							1	1
Grease Trap	2006-2007			1					1
Infiltration BMPs									
Flow-thru Planter	2011-2012			1					1
	2010-2011			1					1
	Subtotal			2					2
Infiltration System	2006-2007			4					4
Infiltration Trenches	2008-2009			1					1
	2006-2007							2	2
	2003-2004					1			1
	Subtotal			1		1		2	4
Landscape/infiltration	2004-2005			2					2

Table G-1 LAR UR2 WMA BMPs Installed by Year

BMP Type	Year Installed	Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon	Total
Trash Bins									
Covered Trash Bins	2010-2011					2			2
	2009-2010					3			3
	2008-2009			3					3
	2005-2006			6	5			9	20
	2004-2005			4					4
	2003-2004		30			2	2		34
	Subtotal		30	13	5	7	2	9	66
Extra Trash Cans	2010-2011					2			2
	2009-2010			10		9			19
	2003-2004	10	30			50	10		100
	Subtotal	10	30	10		61	10		121
Trash Can Lid	2010-2011		50						50
Parks									
Dog Parks	2003-2004					1			1
Other									
Enhanced Street Sweeping	2009-2010	6	46			1			53
	2008-2009	6							6
	2007-2008	6							6
	2006-2007	6							6
	2005-2006	6			1				7
	2003-2004	6			2	1	1		10
	Subtotal	36	46		3	2	1		88
Trash Enclosures	2004-2005							8	8
Catch Basin Signage	2004-2005							8	8
Diversion System with rain switch	2005-2006							1	1

Table G-1 LAR UR2 WMA BMPs Installed by Year									
BMP Type	**Year Installed**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**	**Total**
Kristar Roof Downspout	2006-2007							6	6
Restaurant Vent Traps	2006-2007			1					1
	2003-2004					2	1		3
	Subtotal			1		2	1		4
Catch Basin Clean-outs cycles	2006-2007	6							6
Safedrain (Spill Prevention Valve)	2007-2008							1	1
	City Total:	**596**	**855**	**1,634**	**247**	**1,256**	**438**	**797**	**5,823**

Appendix H

Non-MS4 NPDES Permittees

Table H-1 Active Permitted Industrial Facilities in Los Angeles County within Bell, Bell Gardens, Cudahy, Huntington Park, and Maywood

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I000777	3/20/1992	Custom Bldg Prods	6511 Salt Lake Ave	Bell	90201	7.0	2899	3272	-
4 19I002530	6/25/2013	US Army Patton Reserve	5340 Bandini Blvd Bldg 334	Bell	90201	21.0	4231	-	-
4 19I022905	6/26/2013	Bell US Army Reserve Center	5631 Rickenbacker Rd	Bell	90201	43.0	4231	9711	-
4 19I023321	9/8/2011	FedEx Home Delivery	4801 S Eastern Ave	Bell	90201	1.0	4215	-	-
4 19I009019	11/3/1992	Temple Inland Inc dba International Paper	5991 Bandini Blvd	Bell[1]	90040	15.0	2653	-	-
4 19I014288	7/1/1998	YRC Inc Los Angeles Bell	4700 S Eastern Ave	Bell[1]	90040	15.0	4231	-	-
4 19I012040	12/14/1995	David H Fell & Co	6009 Bandini Blvd	Bell[1]	90040	0.4	3341	-	-
4 19I001684	3/30/1992	Metal Surfaces	6060 Shull St	Bell Gardens	90201	1.0	3471	-	-
4 19I004413	4/6/1992	J P Turgeon & Sons	7758 Scout Ave	Bell Gardens	90201	0.5	3471	-	-
4 19I003408	4/3/1992	Day Glo Color Corp	4615 Ardine St	Cudahy	90201	1.3	2851	-	-
4 19I010996	5/18/1994	Artson Manufacturing Co	4915 Cecilia St # 4907	Cudahy	90201	3.2	3315	3496	-
4 19I012606	10/15/1996	Consolidated Foundries Inc	8333 Wilcox Ave	Cudahy	90201	3.1	3369	-	-
4 19I013803	3/13/1998	David Downs Co	4539 Cecilia St	Cudahy	90201	75.0	2992	-	-
4 19I016698	8/7/2001	Consolidated Foundaries GE Core Co	8346 Salt Lake Ave	Cudahy	90201	1.0	3369	-	-
4 19I024275	5/28/2013	HF Cox Inc	8330 S Atlantic Avenue	Cudahy	90201	3.2	7538	-	-
4 19I000122	2/21/1992	LA Brass Prod	2529 55th	Huntington Park	90255	1.0	3364	3366	-
4 19I000835	7/18/2012	Henry Co	5731 Bickett St	Huntington Park	90255	5.0	2952	-	-
4 19I001609	3/27/1992	Aircraft Foundry	5316 Pacific Blvd	Huntington Park	90255	0.5	3365	-	-
4 19I001831	3/30/1992	Acme Castings	2319 Randolph St	Huntington Park	90255	1.3	3321	3325	3369
4 19I004458	4/6/1992	LA Galvanizing	2518 E 53rd St	Huntington Park	90255	0.6	3471	-	-
4 19I010372	8/2/1993	Covert Iron Works	7821 Otis Ave	Huntington Park	90255	3.0	3321	-	-
4 19I013694	1/12/1998	Calpac Chemical Co Inc	6231 Maywood Ave	Huntington Park	90255	2.0	2842	-	-
4 19I016489	4/25/2001	Aircraft X-ray Laboratories Inc	5216 Pacific	Huntington Park	90255	1.5	3471	3479	-
4 19I018443	10/29/2003	Bodycote Thermal Processing	3370 Benedict Way	Huntington Park	90255	1.6	3398	-	-
4 19I019552	5/31/2005	H P Used Auto Parts	2461 E Slauson Ave	Huntington Park	90255	0.4	5015	-	-
4 19I020668	2/9/2007	West Coast Foundry	2450 E 53rd St	Huntington Park	90255	Unknown	Unknown	-	-
4 19I021216	10/17/2007	Crown Poly Inc	5700 Bickett St	Huntington Park	90255	5.3	3081	3089	-
4 19I022418	11/24/2009	Joseph Levin & Sons Inc	2863 E Slauson Ave	Huntington Park	90255	2.0	5093	-	-
4 19I023686	6/21/2012	I A Machinery Co	2301 Belgrave Ave	Huntington Park	90255	1.1	3545	3549	3547
4 19I023952	11/30/2012	Ace Recycling LLC	6069 Maywood Ave	Huntington Park	90255	2.9	5093	-	-
4 19I004074	4/6/1992	Alloys Cleaning Inc	1960 Gage	Huntington Park[1]	90001	0.8	3471	-	-
4 19I014184	6/18/1998	Madison Industries	1900 64th	Huntington Park[1]	90001	5.4	3441	-	-
4 19I011248	11/1/1994	LA Unified Sch Dist Alameda Ga	6901 S Alameda St	Huntington Park[1]	90001	4.4	4151	-	-
4 19I021660	7/9/2008	Windsor Foods	6711 through 6717 Alameda St	Huntington Park[1]	90001	1.1	2038	-	-
4 19I000680	3/18/1992	W S Dodge Oil Co Inc	3710 Fruitland Ave	Maywood	90270	1.0	2992	-	-
4 19I010960	3/14/1994	Cook Induction Heating	4925 Slauson Ave	Maywood	90270	0.6	3398	3679	3399
4 19I013344	8/18/1997	Keeney Truck Lines Inc	3500 Fruitland Ave	Maywood	90270	3.0	4212	-	-
4 19I013345	8/18/1997	Food Express Inc	5127 Maywood Ave	Maywood	90270	3.0	4231	-	-
4 19I014688	10/21/1998	Evans Dedicated Systems	5711 Maywood Ave	Maywood	90270	1.4	3081	-	-

Table H-1 Active Permitted Industrial Facilities in Los Angeles County within Bell, Bell Gardens, Cudahy, Huntington Park, and Maywood

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I021671	7/14/2008	Gemini Plastic Ent Inc	3574 Fruitland	Maywood	90270	0.4	5093	-	-
4 19I024365	7/22/2013	Panda International Trading Co	570 Fruitland Ave	Maywood	90270	0.8	3471	-	-

[1] Permittee listed as City of Los Angeles in Permit Documents

Table H-2 Active Permitted Industrial Facilities in Los Angeles County within Commerce

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I000163	2/26/1992	Amvac Chemical Corp	4100 E Washington Blvd	Commerce[1]	90023	3.0	2879	2869	-
4 19I000205	3/2/1992	Ashland Chemical Co	6608 26th	Commerce	90040	5.6	2821	-	-
4 19I000411	3/11/1992	Engineered Polymer Solutions	5501 E Slauson Ave	Commerce[1]	90040	4.0	2821	-	-
4 19I001142	3/25/1992	Calstrip Industries Inc	7140 Bandini Blvd	Commerce[1]	90040	7.0	3316	-	-
4 19I001502	3/27/1992	Hickory Springs	4542 East Dunham St	Commerce	90023	5.9	3086	-	-
4 19I001761	3/30/1992	Monogram Aerospace Fasteners	3423 Garfield Ave	Commerce[1]	90040	3.0	3452	-	-
4 19I002134	3/30/1992	Gallo Wine	2650 Commerce Way	Commerce[1]	90040	7.0	2084	-	-
4 19I002702	4/1/1992	Huhtamaki Inc	4209 Noakes St	Commerce[1]	90023	8.9	2656	3089	2671
4 19I002878	4/2/1992	Newark Pac Paperboard	6001 S Eastern Ave	Commerce	90040	Unknown	Unknown	-	-
4 19I003336	4/3/1992	Oldcastle BuildingEnvelope	5631 Ferguson Dr	Commerce[1]	90022	10.5	3231	-	-
4 19I003406	4/3/1992	Globe Iron Foundry	5649 Randolph St	Commerce	90040	1.6	3321	-	-
4 19I003509	4/3/1992	Vons Grocery Co Safeway	3361 Boxford Ave	Commerce[1]	90040	17.0	2024	2051	2026
4 19I004620	4/8/1992	UPS Ground Freight	2747 Vail Ave	Commerce	90040	Unknown	Unknown	-	-
4 19I004896	4/7/1992	ATK Space Systems Inc	6033 Bandini	Commerce	90040	4.0	3795	3449	-
4 19I005001	4/8/1992	Commerce East LA	4341 Washington	Commerce[1]	90023	218.0	4011	-	-
4 19I005064	4/7/1992	Mission Foods Corp Olympic	5505 E Olympic Blvd	Commerce[1]	90022	4.0	2099	-	-
4 19I006760	5/6/1992	Unified Grocers Inc	5200 Sheila St	Commerce	90040	66.0	4225	-	-
4 19I006988	5/19/1992	Interstate Consolidation	5800 Sheila St	Commerce[1]	90040	7.0	4212	-	-
4 19I007019	5/27/1992	Adelwiggins Grp	5000 Triggs St	Commerce[1]	90022	8.0	3499	-	-
4 19I009384	11/15/1992	LA Paper Box & Board	6027 S Eastern Ave	Commerce[1]	90040	5.0	2631	-	-
4 19I009618	12/22/1992	W R Grace Construction Co	7237 Gage	Commerce[1]	90040	2.0	2899	-	-
4 19I010842	1/4/1994	Ei Du Pont Sardo & Sons Whse	5468 Union Pacific Ave	Commerce	90022	3.5	4225	-	-
4 19I012397	6/24/1996	Tzeng Long Usa Inc	2801 Vail Ave	Commerce	90040	5.0	5093	4225	-
4 19I012612	10/25/1996	Strategic Materials Inc	7000 Bandini Blvd	Commerce	90040	3.0	5093	-	-
4 19I012671	11/22/1996	Fleming Metal Fabricators	2810 Tanager	Commerce	90040	2.0	3499	-	-
4 19I013540	11/20/1997	Precision Wire Products Inc	6150 Sheila	Commerce[1]	90040	10.6	3496	-	-
4 19I013577	12/23/1997	Colonial Dames	6820 Watcher St	Commerce[1]	90040	0.4	2844	-	-
4 19I014215	6/18/1998	Pac Die Casting Corp	6155 S Eastern Ave	Commerce[1]	90040	1.5	3363	-	-
4 19I015449	10/21/1999	Parsec Inc Bnsf Railroad	4000 E Sheila St	Commerce[1]	90023	2.0	4011	-	-
4 19I015576	1/12/2000	US Lubricants	4000 E Washington Blvd	Commerce	90023	2.0	2992	-	-
4 19I015663	3/10/2000	Valley Plating Works Inc	5900 Sheila St	Commerce[1]	90040	4.9	3471	-	-
4 19I016019	8/14/2000	Exide Corp	5909 Randolph	Commerce	90040	1.7	3399	-	-
4 19I016034	8/21/2000	American RENOLIT Corp	6900 Elm St	Commerce[1]	90040	2.0	3081	2821	-
4 19I016230	11/20/2000	API Kirk Containers	2131 Garfield	Commerce[1]	90040	0.2	3089	-	-
4 19I017590	11/3/2002	General Mills	5469 Ferguson	Commerce[1]	90022	3.0	2045	-	-
4 19I018180	6/13/2003	Parsec Operations at BNSF Railway	2818 Eastern Ave	Commerce[1]	90040	36.0	4011	-	-
4 19I018741	4/19/2004	American Graphic Board Inc	5880 East Slauson Ave	Commerce	90040	2.4	2655	-	-
4 19I018851	6/23/2004	Commerce Refuse to Energy Facility	5926 Sheila St	Commerce[1]	90040	6.0	4911	4953	-
4 19I018989	9/2/2004	Wiretech Inc	6440 E Canning St	Commerce	90040	1.6	3315	-	-

Table H-2 Active Permitted Industrial Facilities in Los Angeles County within Commerce

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I020422	8/22/2006	Horizon Milling LLC	5471 Ferguson Dr	Commerce	90022	5.8	2041	-	-
4 19I020783	4/10/2007	Liberty Packing & Estruding Inc	3015 Supply Ave	Commerce	90040	1.1	2673	2671	-
4 19I020805	4/12/2007	OXY USA East LA Facility	5901 Triumph	Commerce	93340	2.4	1311	-	-
4 19I020806	4/12/2007	OXY USA Bandini Facility	5141 Astor	Commerce	93340	1.0	1311	-	-
4 19I020821	4/12/2007	Signature Flexible Packaging	5519 Jillson St	Commerce	90040	0.6	2673	-	-
4 19I020881	5/14/2007	US Polymers Inc	5910 Bandini	Commerce	90040	1.5	3084	3082	3087
4 19I020887	5/16/2007	E Z Plastic Packaging Corp	2051 S Garfield Ave	Commerce	90040	1.7	3081	-	-
4 19I021220	10/19/2007	FP International	6195 E Randolph St	Commerce	90040	1.7	3086	-	-
4 19I021380	8/15/2012	Superior Printing Ink Co Inc	2121 Yates Ave	Commerce	90040	0.4	2893	-	-
4 19I021525	4/14/2008	Southern Fiber Los Angeles LLC	2748 Tanager Ave	Commerce	90040	2.0	2297	-	-
4 19I021540	4/29/2008	Kaiser Aluminum	6250 E Bandini Blvd	Commerce[1]	90040	4.5	3354	3341	-
4 19I022102	4/10/2009	Kerry Ingredients & Flavours	1916 Tubeway Ave	Commerce	90040	2.5	2087	-	-
4 19I022351	10/7/2009	SI Tourcoach	1230 S Tubeway Ave	Commerce	90040	2.0	4173	-	-
4 19I023412	11/28/2011	Smart and Final Distribution	5500 Sheila St	Commerce	90040	23.0	4225	-	-
4 19I023650	5/31/2012	Replanet LLC	5603 Randolph St	Commerce	90040	2.7	5093	-	-
4 19I023653	6/4/2012	Green Land Metals Inc	6400 Bandini Blvd	Commerce	90040	0.6	5093	-	-
4 19I023769	8/7/2012	99 Cent Only Stores	4000 Union Pacific Ave	Commerce	90023	20.7	5149	5099	-
4 19I023992	12/27/2012	Western State Industrial	5635 Sheila St	Commerce	90040	0.7	5051	-	-
4 19I024214	4/22/2013	Sun Plastics Inc	7140 East Slauson Ave	Commerce	90040	2.5	3089	-	-
4 19I024241	5/6/2013	Spirit Foodservice Inc	5951 Rickenbacker Road	Commerce	90040	0.8	3089	-	-
4 19I024336	7/2/2013	Arion Global Inc	2919 Tanager Ave	Commerce	90040	0.7	5093	-	-
4 19I000163	2/26/1992	Amvac Chemical Corp	4100 E Washington Blvd	Commerce[1]	90023	3.0	2879	2869	-

[1] Permittee listed as City of Los Angeles in Permit Documents

Table H-3 Active Permitted Industrial Facilities in Los Angeles County within Vernon

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I000107	2/20/1992	Ajax Forge Co	1956 E 48th St	Vernon[1]	90058	0.9	3462	-	-
4 19I000335	3/11/1992	Punch Press Products Inc	2035 51st	Vernon	90058	2.5	3469	-	-
4 19I000341	3/11/1992	King Meat Inc	4215 Exchange	Vernon	90058	4.3	2013	-	-
4 19I000505	3/13/1992	Metro Division 34	4462 Pacific Blvd	Vernon	90058	Unknown	Unknown	-	-
4 19I000688	3/18/1992	Gasser Olds Co	2618 Fruitland Ave	Vernon	90058	0.9	3369	3499	3365
4 19I000797	3/20/1992	West Coast Rendering	4105 Bandini Blvd	Vernon[1]	90023	2.4	2077	-	-
4 19I001136	3/25/1992	Lubricating Specialties	3365 E Slauson Ave	Vernon	90058	0.3	5171	2992	-
4 19I001435	3/27/1992	Coast Packing Company	3275 Vernon	Vernon	90058	3.0	2079	-	-
4 19I001661	3/27/1992	Bodycote Thermal Proc	2900 S Sunol Dr	Vernon	90023	2.0	3398	-	-
4 19I001697	10/10/2011	Norton Packaging Inc	5800 S Boyle Ave	Vernon	90058	5.0	3089	-	-
4 19I002066	3/30/1992	L A Junction R&R	4433 Exchange Ave	Vernon[1]	90058	2.0	4011	-	-
4 19I002078	3/30/1992	United Parcel Service	4925 Boyle	Vernon	90058	2.0	4215	-	-
4 19I002083	3/30/1992	United Parcel Ser Cagvs	3333 S Downey Rd	Vernon[1]	90023	15.0	4215	-	-
4 19I002142	3/30/1992	Tremco Manufacturing	3060 E 44th St	Vernon	90058	2.1	2952	-	-
4 19I002179	3/30/1992	FedEx Freight Inc SLG	4500 Bandini Blvd	Vernon	90058	16.0	4213	-	-
4 19I002639	4/1/1992	Exxon Mobil Oil Corp Vernon Cu	2619 37th	Vernon	90058	18.0	5171	-	-
4 19I002920	4/2/1992	Dunn Edwards Corp	4885 E 52nd Pl	Vernon[1]	90040	6.4	2851	-	-
4 19I002950	4/2/1992	Air Prod & Chemicals	3305 E 26th St	Vernon[1]	90023	5.0	2899	-	-
4 19I002998	4/2/1992	City Fibers Inc	2500 S Santa Fe Ave	Vernon[1]	90058	4.0	5093	-	-
4 19I003535	4/3/1992	Alpert & Alpert Iron & Metal	1820 S Soto St	Vernon[1]	90023	7.0	5093	-	-
4 19I003834	4/3/1992	F & S Distributing Co Inc	4444 E 26th St	Vernon[1]	90023	3.4	4225	-	-
4 19I004283	4/6/1992	Neptune Foods	4510 Alameda	Vernon	90058	2.0	2092	-	-
4 19I004285	4/6/1992	Clougherty Packing Co	3049 E Vernon Ave	Vernon	90058	19.0	2013	-	-
4 19I004956	4/7/1992	Norman Fox and Co	5611 S Boyle Ave	Vernon	90058	4.9	2841	2843	-
4 19I005336	4/10/1992	Rehrig Pacific Co	4010 26th	Vernon[1]	90023	4.7	3089	2821	-
4 19I005454	4/7/1992	Sandberg Furniture	3251 E Slauson Ave	Vernon[1]	90058	11.0	2511	-	-
4 19I005929	4/17/1992	Darling Delaware Co	2626 E 25th St	Vernon[1]	90058	5.0	2077	-	-
4 19I006257	4/22/1992	Catalina Pacific Concrete Co	1862 E 27th St	Vernon[1]	90058	1.0	3273	-	-
4 19I006948	5/11/1992	Barksdale Inc	3211 Fruitland Ave	Vernon[1]	90058	5.0	3499	-	-
4 19I007214	6/18/1992	Engineered Coating Tech Inc	2838 E 54th St	Vernon	90058	0.2	2851	-	-
4 19I009526	12/2/1992	Vernon Warehouse Liquid Division	2322 37th	Vernon	90058	1.9	2099	2869	-
4 19I009847	3/18/1993	General Mills	4309 Fruitland	Vernon	90058	7.0	2041	-	-
4 19I009855	6/8/2011	FLOWSERVE	2300 VERNON	Vernon[1]	90058	13.0	3561	-	-
4 19I009927	4/22/1993	Arcadia Inc	3225 E Washington Blvd	Vernon	90023	Unknown	Unknown	-	-
4 19I009970	5/27/1993	D K Enviromental	3650 E 26th St	Vernon	90058	2.0	4953	-	-
4 19I010454	8/17/1993	Quickway Trucking Co	2929 E 50th St	Vernon[1]	90058	3.0	4214	-	-
4 19I010612	9/20/1993	Core Mark Int	2311 E 48th St	Vernon[1]	90058	6.4	4213	-	-
4 19I010685	10/20/1993	Modern Pattern & Foundry Co	5610 Alcoa Ave	Vernon	90058	1.0	3325	3365	-
4 19I011162	9/16/1994	Robertsons Ready Mix Los Angeles	3365 26th	Vernon[1]	90023	3.0	3273	-	-

Table H-3 Active Permitted Industrial Facilities in Los Angeles County within Vernon

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I011194	9/30/1994	Cargill Inc	2750 Jewel Ave	Vernon	90058	3.3	2079	-	-
4 19I011284	11/22/1994	Four Star Chemical	3137 E 26th St	Vernon[1]	90023	3.0	2869	-	-
4 19I011463	3/8/1995	P Kay Metal Supply	2448 E 25th St	Vernon[1]	90058	0.7	3369	-	-
4 19I011862	9/14/1995	Packaging Advantage Corp	4633 S Downey Rd	Vernon[1]	90058	12.0	2841	2844	2842
4 19I012393	6/24/1996	Clorox Products Manufacturing Co	4333 Bandini	Vernon	90023	7.0	2819	-	-
4 19I012450	7/31/1996	LA Fiber Co	920 S Boyle Ave	Vernon	90058	2.8	2299	-	-
4 19I012994	3/19/1997	BNSF Railway Hobart	3770 E Washington Blvd	Vernon[1]	90023	2.0	4212	-	-
4 19I013129	6/25/1997	Vest Inc	6023 Alcoa Ave	Vernon	90058	10.0	3317	-	-
4 19I013230	7/1/1997	Innovative Waste Control Inc T	4133 Bandini Blvd	Vernon	90023	2.0	4953	-	-
4 19I013457	10/8/1997	Fed Ex Ground	2600 28th	Vernon	90058	13.0	4215	-	-
4 19I014854	12/22/1998	Sweetener Products Co Trucking Division	4181 Ross St	Vernon	90058	2.8	4231	-	-
4 19I015027	3/23/1999	Heitz Trucking Inc	3575 Ross St	Vernon	90058	2.0	4212	4213	-
4 19I015100	5/7/1999	Packaging Co CA	4240 Bandini Blvd	Vernon[1]	90023	12.0	2653	-	-
4 19I015868	11/20/2012	ExxonMobil Oil Corp Vernon Terminal	2709 37th	Vernon	90058	3.0	5171	-	-
4 19I016288	12/21/2000	Cherokee Chemical Co Inc	3540 E 26th St	Vernon[1]	90023	2.0	2899	-	-
4 19I016397	3/14/2001	US Radiator Corp	4423 District Blvd	Vernon	90058	2.0	3714	-	-
4 19I016811	9/25/2001	Dependable Highway Express Inc	2626 E 26th St	Vernon	90058	4.0	4212	4213	-
4 19I017351	7/3/2002	Earthgrains Baking Company Inc	5200 S Alameda St	Vernon	90058	7.9	2051	-	-
4 19I017499	9/25/2002	J&J Snack Food	5353 Downey	Vernon	90058	8.0	2052	-	-
4 19I017741	1/8/2003	Seven Up Rc Botting Co	3220 E 26th St	Vernon	90058	22.0	2086	-	-
4 19I018427	10/24/2003	Southwest Processors Inc	4120 Bandini Blvd	Vernon[1]	90023	4.0	4952	4953	2077
4 19I018451	10/29/2003	Aerojet Rocketdyne Inc	2929 E 54th St	Vernon[1]	90058	3.0	3483	-	-
4 19I018475	11/24/2003	Aul Pipe Tube & Steel Inc	701 S Bonnie Beach Pl	Vernon[1]	90023	0.6	3317	-	-
4 19I018486	12/5/2003	Allied Feather & Down Corp	2661 E 46th St	Vernon	90058	0.9	3999	-	-
4 19I018493	12/5/2003	Hollander Home Fashion Corp	553 Seville Ave	Vernon	90058	2.8	2392	-	-
4 19I018501	12/8/2003	C S America Inc	4309 Exchange Ave	Vernon[1]	90058	1.8	2281	-	-
4 19I018503	12/8/2003	Randall Foods Inc	2905 E 50th St	Vernon	90058	2.0	2015	-	-
4 19I018508	12/10/2003	Overhill Farms	2727 E Vernon Ave	Vernon[1]	90058	3.9	2038	-	-
4 19I018509	12/10/2003	Overhill Farms No 2	3055 E 44th St	Vernon[1]	90058	1.0	2038	-	-
4 19I018514	12/15/2003	Huxtables Kitchen	2100 E 49th St	Vernon[1]	90058	1.2	2038	2099	-
4 19I018516	12/15/2003	Camino Real Foods Inc	2638 E Vernon Ave	Vernon[1]	90058	3.0	2011	2099	-
4 19I018518	12/15/2003	Fruitland Assoc	3336 Fruitland Ave	Vernon	90058	5.0	5147	4222	2038
4 19I018579	1/14/2004	Clougherty Packing Co	2750 E 37th St 2730 And2740	Vernon	90058	4.0	2013	-	-
4 19I018594	1/22/2004	F J Food Service Inc	3855 S Soto St	Vernon[1]	90058	2.0	2013	-	-
4 19I018597	1/23/2004	Dot Line Transp	4366 E 26th St	Vernon[1]	90023	4.6	4213	-	-
4 19I018625	2/6/2004	Square H Brands Inc	2731 S Soto St	Vernon[1]	90023	3.8	2013	-	-
4 19I018628	10/3/2012	Orient Fisheries Intl	5970 Alcoa Ave	Vernon[1]	90058	1.3	919	-	-
4 19I018647	2/18/2004	As Match Dyeing	522 E 37th St	Vernon[1]	90058	4.6	2261	-	-
4 19I018715	3/26/2004	A 1 Express Delivery Services	4520 S Maywood Ave	Vernon	90058	1.8	4213	-	-

Table H-3 Active Permitted Industrial Facilities in Los Angeles County within Vernon

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I018753	4/22/2004	Screamline Inv Tourcoach	2715 Bonnie Beach	Vernon	90023	Unknown	4173	-	-
4 19I018836	6/14/2004	Consolidated Fabricators Corp	4600 S Santa Fe Ave	Vernon[1]	90058	3.5	3469	-	-
4 19I018866	6/23/2004	Kal Plastics	2050 48th	Vernon[1]	90058	1.3	3089	-	-
4 19I018894	7/12/2004	Caltex Plastics Inc	2380 E 51st St	Vernon	90058	1.8	3081	-	-
4 19I018907	7/21/2004	Lifoam Industries LLC	2340 E 52nd St	Vernon[1]	90058	1.5	3086	-	-
4 19I018922	7/27/2004	Metal Improvement Co LLC	3239 E 46th St	Vernon[1]	90058	1.1	3398	-	-
4 19I018952	8/6/2004	Atlas Galvanizing LLC	2639 Leonis Blvd	Vernon[1]	90058	0.1	3479	-	-
4 19I018954	8/6/2004	Engine Trend Co	4515 S Soto St	Vernon[1]	90058	0.5	5015	-	-
4 19I018965	8/17/2004	Evergreen Scientific	2254 to 2300 E 49th St	Vernon[1]	90058	6.0	3089	-	-
4 19I018970	8/19/2004	Vernon Pallets Inc	875 E 27th St	Vernon[1]	90058	2.0	2448	-	-
4 19I018987	9/2/2004	Baker Coupling Co Inc	2929 S Santa Fe Ave	Vernon[1]	90058	2.0	3494	-	-
4 19I019033	9/8/2004	Edris Plastic Mfg Inc	4560 Pacific Blvd	Vernon	90058	1.5	3089	-	-
4 19I019039	9/14/2004	Stericycle Inc	2775 E 26th St	Vernon	90023	1.9	4953	-	-
4 19I019096	10/14/2004	Flores Design Fine Furniture Inc	4618 Pacific Blvd	Vernon	90058	2.4	2512	-	-
4 19I019122	11/5/2004	Stone Blue Inc	2501 28th	Vernon	90058	2.0	7211	-	-
4 19I019267	9/27/2011	RCH Supply Co Inc	4511 Everett	Vernon	90058	0.3	5085	2842	-
4 19I019373	3/22/2005	Commercial Sandblast Company	2678 East 26th St	Vernon	90058	3.0	3471	-	-
4 19I019379	3/23/2005	Joes Plastics Inc	5725 District Blvd	Vernon[1]	90040	2.0	3089	-	-
4 19I019422	4/15/2005	Oseguera Trucking Co Inc	2634 E 26th St	Vernon[1]	90058	2.0	4214	-	-
4 19I019433	4/20/2005	Dollar Empire LLC	4423 Bandini Blvd	Vernon	90023	3.7	4225	-	-
4 19I019450	5/4/2005	Saia Motor Freight Line Inc	2550 28th	Vernon	90058	7.8	4213	-	-
4 19I019453	5/4/2005	Simply Fresh Fruit	4383 Exchange Ave	Vernon[1]	90058	2.6	2024	-	-
4 19I020300	6/21/2006	F Gavina & Sons Inc	2700 Fruitland Ave	Vernon	90058	8.7	2095	-	-
4 19I020418	8/21/2006	Superior Electric Motor Service	4623 Hampton St	Vernon	90058	Unknown	Unknown	-	-
4 19I020625	1/4/2007	Vernon Air Separation Plant 870	5555 District Blvd	Vernon	90058	7.0	2813	-	-
4 19I020647	1/24/2007	Ameripride Uniform Services	5950 Alcoa Ave	Vernon	90058	Unknown	Unknown	-	-
4 19I020880	5/11/2007	Pacific Coast Trans Vernon	1925 E Vernon Ave	Vernon	90058	0.5	4213	-	-
4 19I021228	10/19/2007	Arcadia Inc	2301 E Vernon Ave	Vernon	90058	5.9	3499	-	-
4 19I021527	4/14/2008	Vernon City Light & Power Dept	4990 Seville Ave	Vernon	90058	0.4	4911	-	-
4 19I021537	4/23/2008	Malburg Generating Station	4963 Soto St	Vernon	90058	3.4	4911	-	-
4 19I021543	4/30/2008	Hannibal Industries INC	3851 Santa Fe Ave	Vernon[1]	90058	Unknown	Unknown	-	-
4 19I021637	7/1/2008	AFC Hydraulic Seals	4926 S Boyle Ave	Vernon	90058	0.2	3053	-	-
4 19I021752	8/21/2008	Rancho Foods Inc	2528 E 37th St	Vernon	90058	1.6	2011	-	-
4 19I022040	2/17/2009	Strategic Materials Inc	3211 E 26th St	Vernon	90058	3.7	5093	-	-
4 19I022161	5/28/2009	Progressive Fram & Fabrication	5050 Euerett Ct	Vernon	90058	0.5	3441	3452	-
4 19I022239	7/27/2009	Premier Meat Co	5030 Gifford Ave	Vernon	90058	0.5	5147	-	-
4 19I022277	8/13/2009	Sewing Collection Inc	3113 E 26th St	Vernon	90058	Unknown	3089	-	-
4 19I022281	8/18/2009	PABCO Paper	4460 Pacific Blvd	Vernon	90058	Unknown	Unknown	-	-
4 19I022592	4/13/2010	Waste Management Healthcare Solutions Inc	4280 Bandini Blvd	Vernon	90058	2.3	4953	-	-

Table H-3 Active Permitted Industrial Facilities in Los Angeles County within Vernon

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I022644	5/19/2010	Command Packaging	3840 E 26th St	Vernon	90058	4.6	3081	-	-
4 19I022704	7/7/2010	Pacific Precision Formulators	5511 District Blvd	Vernon	90058	1.0	2992	-	-
4 19I022726	7/19/2010	Geo Plastics	2200 E 52nd St	Vernon	90058	2.3	3089	-	-
4 19I022781	8/10/2010	Great American Packaging	4361 S Soto St	Vernon	90058	1.3	2673	-	-
4 19I022931	12/6/2010	V & L Prodce Inc	2550 E 25th St	Vernon	90058	0.1	4225	-	-
4 19I023091	4/5/2011	Valley Fruit and Produce Co	2043 Ross St	Vernon	90058	1.4	5148	-	-
4 19I023121	4/25/2011	Vans Natural Foods	3285 Vernon Ave	Vernon	90058	1.8	2099	-	-
4 19I023354	9/30/2011	Forever 21 Distribution Center	2800 2860 Sierra Pine Ave	Vernon	90058	4.1	4225	-	-
4 19I023474	1/20/2012	Service Oil Co Transportation Inc	5122 S Atlantic Blvd	Vernon	90058	0.3	4213	-	-
4 19I023485	1/26/2012	Yi Bao Produce Group Inc	3105 Leonis Blvd	Vernon	90040	2.5	4222	-	-
4 19I023644	5/24/2012	Pencco Inc	4921 Gifford Ave	Vernon	90058	1.5	2819	-	-
4 19I023654	6/4/2012	D and W Fine Pack	4380 Ayers Ave	Vernon	90058	2.6	2671	-	-
4 19I023667	6/19/2012	Axex Inc	4641 Hampton St	Vernon	90058	0.2	4226	-	-
4 19I023683	6/20/2012	PPP LLC	5991 Alcoa Ave	Vernon	90058	2.1	3089	5093	-
4 19I023721	7/16/2012	Ryerson	4310 E Bandini Blvd	Vernon	90058	9.2	5051	-	-
4 19I023765	8/3/2012	Primo Corporation	3301 Fruitland Ave	Vernon	90058	2.3	3089	-	-
4 19I023878	10/19/2012	Exide Technologies	2700 S Indiana Ave	Vernon	90058	15.0	3341	-	-
4 19I023880	10/19/2012	Holliday Rock Vernon 24	2822 South Soto Street	Vernon	90058	2.6	3273	-	-
4 19I023907	11/2/2012	Pactiv Packaging Inc	3751 Seville Ave	Vernon	90058	7.0	3089	-	-
4 19I023939	11/30/2012	Proportion Foods LLC	3501 E Vernon Ave	Vernon	90058	3.5	2011	-	-
4 19I023940	11/30/2012	CLW Foods LLC	3425 E Vernon Ave	Vernon	90058	4.6	2011	-	-
4 19I023950	11/30/2012	CR Laurence Co Inc	2200 E 55th Street	Vernon[1]	90058	10.8	3442	-	-
4 19I023967	12/17/2012	CR Laurence Co Inc	2100 E 38th St	Vernon[1]	90058	6.2	3442	-	-
4 19I024017	1/23/2013	Americold Vernon 3	4224 District Blvd	Vernon	90058	8.7	2092	-	-
4 19I024176	3/28/2013	Pacific Blue Wash House Inc	2713 South Bonnie Beach Place	Vernon	90058	0.3	7211	-	-
4 19I024273	5/28/2013	Siemens Water Technologies LLC	5375 S Boyle Avenue	Vernon	90058	4.5	4953	-	-

[1] Permittee listed as City of Los Angeles in Permit Documents

Table H-4 General Individual Permitted Facilities in Los Angeles County within Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon

Order No.	CI No.	Discharger	Facility Address	Facility City, State, and Zip Code	Program Type	General or Individual	Active Historical	Effective Date	Facility Area (acres)
2006-0003-DWQ	None	Bell City	6330 Pine Avenue	Bell, CA	NON15	G	Active	--	
R4-2003-0108	8385	Southern California Water Co.	6424 S. Otis Ave	Bell, CA	NPDES	G	Active	1/14/2004	
R4-2003-0108	8729	Southern California Water Co.	7026 Walker Ave	Bell, CA	NPDES	G	Active	4/23/2004	
R4-2003-0108	8666	Southern California Water	6612 Bissell St	Bell, CA 90210	NPDES	G	Active	10/4/2003	
2006-0003-DWQ	None	Bell Gardens City	7100 Garfield Avenue South	Bell Gardens, CA	NON15	G	Active	--	
R4-2003-0108	8762	Southern California Water Co.	6440 Clara St	Bell Gardens, CA 90201	NPDES	G	Active	6/24/2004	
R4-2003-0108	8184	Southern California Water Co.	6112 E. Gage Ave	Bell Gardens, CA 90201	NPDES	G	Active	12/23/2003	
R4-2003-0108	7708	Bell Gardens DPW	6607 Florence Place	Bell Gardens, CA 90201	NPDES	G	Active	10/23/2003	
R4-2007-0019	9613	6863 East Florence Place, LLC	6863/45 East Florence Place	Bell Gardens, CA 90201	NON15	G	Active	6/21/2010	
P 8163	6389C	Maravilla Transport	5936 E. Clara St	Bell Gardens, CA 90201	NON15	I	C	1/23/1978	
2006-0003-DWQ	None	Commerce City	2535 Commerce Way	Commerce, CA	NON15	G	Active	--	
P 8416	6623C	Apex Drum Co.	6226 Ferguson Dr	Commerce, CA 90022	NON15	I	C	3/22/1982	
R4-2007-0019	9875	Univar USA Inc.	4256 Noakes St	Commerce, CA 90023	NON15	G	Active	3/25/2013	
R4-2003-0108	9802	California Water Service Company	2000 S. Tubeway Ave	Commerce, CA 90040	NPDES	G	Active	3/28/2012	
P 8462	6655C	Benjamin Moore & Co.	3325 S. Garfield Ave	Commerce, CA 90040	NON15	I	C	2/28/1983	
2006-0003-DWQ	None	Cudahy City	5220 Santa Ana St	Cudahy, CA 90201	NON15	G	Active	--	
R4-2003-0108	9229	Tract 180 Water Company	4566 Florence Ave	Cudahy, CA 90201	NPDES	G	Active	2/20/2007	
2006-0003-DWQ	None	Huntington Park City	6550 Miles Avenue	Huntington Park, CA	NON15	G	Active	--	
R4-2003-0108	7942	Walnut Park Mutual Water Co.	2460 E. Florence Ave	Huntington Park, CA 90255	NPDES	G	Active	11/26/2003	
2006-0003-DWQ	None	Maywood City	4319 Slauson Avenue East	Maywood, CA	NON15	G	Active	--	
R4-2008-0032	9917	Maywood Mutual Water Company No. 3	6253 Prospecet Ave	Maywood, CA 90270	NPDES	G	Active	2/19/2013	
R4-2009-0047	9172	Maywood Mututal Water Company	4421 E. 52nd Street	Maywood, CA 90270	NPDES	G	Active	1/14/2011	
2006-0003-DWQ	None	Vernon City	4305 Santa Fe Avenue	Vernon, CA	NON15	G	Active	--	
R4-2007-0019	8676	Soco West, Inc.	3270 E. Washington Blvd	Vernon, CA 90023	NON15	G	Active	8/27/2012	
R4-2009-0047	7652	Coast Packing Co.	3275 E. Vernon Ave	Vernon, CA 90058	NPDES	G	Active	6/10/2010	
R4-2009-0068	8160	ExxonMobil Oil Corporation	2709 E. 37th St	Vernon, CA 90058	NPDES	G	Active	8/6/2009	
R4-2010-0087	6079	Owens-Illinois, Incorporated	2901 Fruitland Ave	Vernon, CA 90058	NPDES	I	Active	7/3/2010	
R4-2010-0087-R01	6079	Owens-Illinois, Incorporated	2901 Fruitland Ave	Vernon, CA 90058	NPDES	I	Active	3/2/2012	
P 8255	6505C	Millennium Tech	2438 E. 55th St	Vernon, CA 90058	NON15	I	C	3/24/1980	
R4-2003-0108	8717	California Water Service Co.			NPDES	G	Active	2/25/2004	

NON15 = New, General, Nonsubchapter 15 Program
NPDES = NPDES Permit

Appendix I

Secondary Funding Opportunities

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**Proposition 84 Stormwater Program**	**Proposition 84 (Chapter 2, §75026) Integrated Regional Water Management (IRWM)**	**Proposition 84 Urban Stream Restoration**
Department	State Water Resources Control Board (SWRCB)	SWRCB	SWRCB
Purpose	Provides funding for projects that reduce and prevent stormwater contamination of rivers, lakes, and streams.	Projects to assist local public agencies to meet long-term water management needs of the State, including the delivery of safe drinking water, flood risk reduction, and protection of water quality and the environment.	Projects that reduce urban flooding and erosion, restore environmental values, and promote stewardship of urban streams.
Eligibility Requirements	Local public agencies	Local public agencies or nonprofit representing an accepted IRWM Region	Local government agencies and citizens groups/nonprofits (together)
Eligible Uses	➢ Implement Low Impact Development (LID) and other onsite and regional practices that seek to maintain predevelopment hydrology. ➢ Comply with stormwater related TMDL requirements	Projects that implement IRWM Plans	Creek cleanups; eradication of exotic or invasive plants; revegetation efforts; bioengineering bank stabilization projects; channel reconfiguration to improve stream geomorphology and aquatic habitat functions; acquisition of parcels critical for flood management; and coordination of community involvement in projects.
Ineligible Uses	Operation and maintenance activities	Operation and maintenance activities	Exclusively educational or fish and wildlife enhancement projects; lake or reservoir enhancements; planning only projects; and mitigation for development or other projects
Funding Limits	$250,000 to $3,000,000 per project Requires 20% match (less for Disadvantaged Communities (DACs))	➢ Bond funding allocation for entire program is $1,000,000,000. ➢ Prop 84 allots grant funding to 11 funding areas. ➢ Each proposal solicitation package will have predetermined amount of funds available.	$1,000,000 per eligible project
Terms/Dates	Round 2 proposals were due February 27, 2014 with grants being awarded by June 2014, ending Round 2. Future opportunities will be presented at a future time.	➢ 25% minimum cost share with waivers for DACs ➢ Round 3 expected in Fall 2014 (approximately $130,000,000 available for Los Angeles Funding Areas)	Next grant application solicitation anticipated in Spring 2014 ($9,000,000 available)
Website	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/prop84/index.shtml	http://www.water.ca.gov/irwm/grants/	http://www.water.ca.gov/urbanstreams
Examples	➢ City of Los Angeles Broadway Neighborhood Stormwater Greenway Project ➢ City of Encinitas Cottonwood Creek Watershed LID Retrofit Project	➢ City of Carson's Trash Reduction Automatic Retracting Screen Project ➢ Dominguez Gap Spreading Grounds West Basin Percolation Improvements ➢ Oxford Retention Basin Multi-Use Enhancement Project ➢ Vermont Avenue Stormwater Capture and Green Street Project.	➢ Restoration of Berkshire Creek sponsored by Pasadena and Arroyo Seco ➢ Dry Canyon Creek Historic Meander Restoration sponsored by the City of Calabasas ➢ Upper Otay Watershed Restoration Project sponsored by the City of San Diego Water Department
Comments	All projects awarded funds through this grant program have planning and monitoring requirements or an implementation requirement. The projects funded through this program also involve LID or green streets in order to reduce and prevent stormwater contamination of rivers, lakes, and streams. This program gives agencies the opportunity to enhance water quality while also assisting in compliance.	IRWM is a collaborative effort to manage all aspects of water resources in a region. IRWM crosses jurisdictional, watershed, and political boundaries; involves multiple agencies, stakeholders, individuals, and groups; and attempts to address the issues and differing perspectives of all the entities involved through mutually beneficial solutions. Some eligible project types include: ➢ Stormwater capture, storage, clean-up, treatment, and management; ➢ Non-point source pollution reduction, management, and monitoring; ➢ Groundwater recharge and management projects; ➢ Planning and implementation of multipurpose flood management programs; and ➢ Watershed protection and management.	LAR UR2 WMA may be able to take advantage of this funding opportunity if the proposed projects are related to stream restoration. If project concepts change in the future, this opportunity may be more applicable..
LAR UR2 WMA Potential Uses	➢ Regional BMP Projects ➢ Distributed BMP Projects	➢ Regional BMP Projects ➢ Distributed BMP Projects	No projects apply at this time
Contact Information	Erik Ekdahl Division of Financial Assistance Project Development (916) 341-5877 Erik.Ekdahl@waterboards.ca.gov	(916) 651-9613 or email DWR_IRWM@water.ca.gov	Program Manager Amy Young Staff Environmental Scientist (916) 651-9626 Amy.Young@water.ca.gov

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation

Grant Program	Community Action for a Renewed Environment (CARE)	Pollution Prevention (P2)	Clean Beaches Initiative (CBI)
Department	United States Environmental Protection Agency (USEPA)	USEPA	SWRCB
Purpose	Provide support to help communities form collaborative partnerships, develop a comprehensive understanding of many sources of risk from toxics and environmental pollutants, set priorities and identify and carry out projects to reduce risks through collaborative action at the local level.	Fund projects that help reduce hazardous substances, pollutants, or contaminants entering waste streams or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, disposal or energy recovery activities.	Projects that restore and protect water quality of coastal waters, estuaries, bays, and near shore waters, with an emphasis on projects that reduce bacterial contamination on public beaches.
Eligibility Requirements	Local non-profit organizations, Native American Organizations, quasi-public non-profit organizations, inter and intrastate, local government, colleges, and universities.	State governments, colleges, and universities, federally-recognized tribes and intertribal consortia.	Local agencies, public agencies, non-profits, and Indian tribes
Eligible Uses	Community projects involving education of environmental pollutants	Projects that implement pollution prevention technical assistance services and/or training for businesses and support projects that utilize pollution prevention techniques to reduce and/or eliminate pollution from air, water, and/or land.	Planning and implementation projects meeting CBI priorities
Ineligible Uses	Not identified	Not identified	Operation and maintenance activities
Funding Limits	➢ Two funding levels: $75,000-$100,000 and $150,000-$300,000 ➢ No matching required	➢ Approximately forty grants awarded annually for $20,000-$180,000 ➢ 50 percent match required	$150,000 to $5,000,000 Requires match (variable based on project or if benefits a DAC)
Terms/Dates	Applications dates are to be determined.	Grants are usually awarded between May and August and application deadlines are currently unavailable, but will be posted online.	➢ Continuous funding cycle, with intermittent closures to review proposals, until funds are exhausted ($49,500,000 available). ➢ Applications through Financial Assistance Application Submittal Tool (FAAST)
Website	www.epa.gov/care	http://www.epa.gov/p2/pubs/grants/index.htm	http://www.waterboards.ca.gov/water_issues/programs/beaches/cbi_projects/index.shtml
Examples	➢ Environmental Justice Action Collaborative for Maywood in 2010 ➢ Environmental Health Coalition - Clean Ports in 2009 ➢ Pacoima Beautiful in 2007 and 2005	➢ Funded the Santa Ynez Band of Chumash Indians and trained over 1,700 business employees regarding pollution prevention techniques (2013) ➢ Funded the University of California San Francisco so that a database could be developed that identifies environmentally friendlier product alternatives (2012)	➢ Los Angeles Sanitation District and City of Los Angeles Ballona Creek Water Quality Improvement and Beneficial Use Project ➢ City of Santa Cruz Reduce Sources of Bacteria at Cowell Beach and Main Beach Project ➢ Low flow diversions and sewer improvements
Comments	CARE projects have been implemented and funded within the United States since 2005. LAR UR2 WMA may be able to take advantage of the CARE grant opportunity to fund community programs associated with MCM program elements involving community outreach.	P2 has funded various training and educational programs across the United States. LAR UR2 WMA may be able to benefit from this grant program in order to implement requirements associated with the M4 Permit required MCMs and other pollution prevention training programs.	The projects awarded this grant promote LID and projects designed to implement a stormwater resource plan. As mentioned above, priority is given to project that reduce bacterial contamination on public beaches. An even higher priority is given to projects addressing bacteria on beaches that have a low grade on the Heal the Bay Report Card (http://brc.healthebay.org).
LAR UR2 WMA Potential Uses	➢ Stormwater Program	➢ Stormwater Program	➢ Regional BMP Projects ➢ Distributed BMP Projects (If a link between clean beaches can be made)
Contact Information	CARE Program USEPA (8001A) 1200 Pennsylvania Avenue, NW Washington, DC 20460 (877) CARE-909	Jessica Counts-Arnold USEPA Region 9 75 Hawthorne Street (WST-7) San Francisco, CA 94105 (415) 972-3288 Counts-arnold.jessica@epa.gov	Patricia Leary Senior Water Resources Control Engineer Division of Financial Assistance (916) 341-5167 pleary@waterboards.ca.gov

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**Urban Waters Small Grant**	**Environmental Education Grant and SubGrant**	**Cooperative Watershed Management Plan**
Department	USEPA	USEPA	United States Department of the Interior Bureau of Reclamation
Purpose	Fund projects that will foster a comprehensive understanding of local urban water issues, identify and address these issues at the local level, and educate and empower the community.	Provide financial support for projects which design, demonstrate or disseminate environmental education practices, methods, or techniques.	Enhance water conservation including alternative uses, improve water quality, improve ecological resiliency of a river or stream, and reduce conflicts over water at the watershed level by supporting the formation of watershed groups.
Eligibility Requirements	Educational institutions, Indian tribes, local governments, non-profit groups, schools, governments, state/territorial agency, and Tribal agencies.	Local, Tribal, or state education agencies, colleges and universities, state environmental agencies, and non-commercial educational broadcasting agencies.	Existing or proposed watershed groups, states, and local districts.
Eligible Uses	Fund research, investigations, experiments, training, surveys, studies, and demonstrations that will advance the restoration of urban waters by improving water quality through activities that also support community revitalization and other local priorities.	Project must address one of the following educational and environmental priority issue. Educational issues: community projects; human health and environment; or career development. Environmental issues: protecting air quality; safety of chemicals; cleaning up our communities; or protecting America's waters.	Activities falling under categories Task Area A and Task Area B described below. Task Area A: establishment of a new watershed group. Task Area B: expansion of an existing watershed group.
Ineligible Uses	Not identified	Not identified	Not identified
Funding Limits	Approximately $1.6 million annually, $40,000-$60,000 each	➢ Approximately $2,778,940 available annually ➢ Each grant between $75,000-$200,000 ➢ 2-3 grants awarded to each region for an expected 22-32 grants total	Typically $22,000-$100,000 each and an annual total of about $200,000
Terms/Dates	The 2013/14 application period is closed and the 2014/15 not announced.	Applications accepted annually. Expect solicitation for 2015 funding near the end of 2014 and applications due January 2015.	Schedule for 2014 and future funding is currently under development.
Website	http://www2.epa.gov/urbanwaters/urban-waters-small-grants	http://www2.epa.gov/education/environmental-education-ee-grants	http://www.usbr.gov/WaterSMART/cwmp/index.html
Examples	➢ California Coastal Commission in Santa Cruz County (see below) ➢ Council for Watershed Health (see below)	➢ Bay institute of San Francisco for a watershed restoration educational program ➢ San Joaquin for an Adopt-a-Watershed training for teachers ➢ Santa Monica Baykeeper for a variety of stormwater pollution prevention education	➢ Western Slope Conservation Center in Colorado (see below) ➢ Friends of Teton River, Inc. in Idaho (see below)
Comments	During the 2011/12 funding cycle, the California Coastal Commission in Santa Cruz County received funding for a project that will reduce specific urban sources of water quality impacts in two target watershed areas by implementing structural and non-structural control measures. The Council for Watershed Health also received funding to develop a Los Angeles River Watershed assessment framework and then disseminate the results to the community via multi-media outlets. LAR UR2 WMA may be able to take advantage of funding through this grant depending on the requirements set forth during the application year. These funds could be used to fund various MCM programs, other institutional BMP control measures, and distributed structural BMPs.	Various environmental educational programs within California have received funding through this grant program dating back as far as 1992. LAR UR2 WMA may be able to utilize this grant opportunity for funding any stormwater pollution prevention educational programs, including various MCM program elements.	Five entities received funding in 2013 to establish or expand watershed groups in Colorado, Idaho, and Oregon. The Western Slope Conservation Center in Colorado was an established watershed group that will use the funding to address exceedances in E. coli and selenium. The Friends of Teton River, Inc. in Idaho used the grant money to expand their current watershed group to form an advisory council to prioritize and endorse various projects. The Cooperative Watershed Management Program grant is applicable to LAR UR2 WMA and could be used to expand or implement projects or programs associated with the group.
LAR UR2 WMA Potential Uses	➢ Stormwater Program	➢ Stormwater Program	➢ Stormwater Program ➢ Regional BMP Projects ➢ Distributed BMP Projects (as long as the group applies for the grant opposed to individual agencies)
Contact Information	Jared Vollmer USEPA Region 9 (WTR-3) 75 Hawthorne Street San Francisco, CA 94105 (415) 972-3447 Vollmer.jared@epa.gov	Adrienne Priselac USEPA Region 9 Environmental Education (CED-4) 75 Hawthorne Street San Francisco, CA 94105 Priselac.adrienne@epa.gov	Dean Marrone (303) 445-3577 www.usbr.gov/WaterSMART

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**State of California Coastal Conservancy Program**	**Wildlife Conservation Board (WCB)**	**Habitat Conservation Fund (HCF)**
Department	State of California Coastal Conservancy	State of California Wildlife Conservation Board	State of California Department of Parks and Recreation
Purpose	Projects that protect and improve coastal wetlands, streams, and watersheds; work with local communities to revitalize urban waterfronts; and helps to solve complex land use problems.	Projects that are applicable to the following WCB program, riparian habitat conservation, inland wetlands conservation, ecosystem restoration or agricultural lands, and habitat enhancement and restoration.	Projects that protect threatened species, address wildlife corridors, create trails, and provide nature interpretation programs.
Eligibility Requirements	Government agencies and non-profit organizations	Government agencies, state departments, federal agencies, and non-profit organizations	Cities, counties, and districts
Eligible Uses	Goals and projects that meet the objectives in the Conservancy's Strategic Plan and consistent with the purposes of the funding source (typically Proposition 84)	Projects that restore and enhance wildlife habitats	Nature interpretation programs to bring urban residents into park and wildlife areas, protection of various plant and animal species, and acquisition and development of wildlife corridors and trails.
Ineligible Uses	Not identified	Not identified	Not identified
Funding Limits	No established minimum or maximum grant amount	No established minimum or maximum grant amount	➢ $2,000,000 funded annually through 2019-2020 Fiscal Year ➢ 50 percent match required from grantees
Terms/Dates	Proposals are accepted on a continuous basis. Periodically grant rounds will be advertised and applications will be accepted for projects of a particular type or a particular location.	Proposals are accepted on a continuous basis. WCB meets four times per year, typically in February, May, August, and November.	Applications are due the first workday in October each year.
Website	http://scc.ca.gov/applying-for-grants-and-assistance/forms/	www.wcb.ca.gov/Programs.aspx	http://www.parks.ca.gov/?Page_id=21361
Examples	➢ Los Cerritos Wetlands Authority (see below) ➢ Mountains Recreation and Conservation Authority (see below) ➢ Ballona Creek Wetlands Ecological Reserve (see below)	➢ Malibu Lagoon State Park Coastal Restoration Project ➢ Moss Landing Wildlife Area Wetland Restoration Project	Projects identified on the 2013-14 HCF recommended projects list: ➢ City of Pasadena's Arroyo Seco Adventure Camp ➢ County of Los Angeles Golden Braille Trail Project ➢ County of Los Angeles Placerita Canyon Riparian Habitat Preserve/Restoration Project
Comments	Various projects within southern California have received funding through the Coastal Conservancy Grant Program. In 2011, $225,000 was provided to the Los Cerritos Wetlands Authority to prepare a comprehensive conceptual restoration plan for the Los Cerritos wetlands complex in the Cities of Long Beach and Seal Beach near the mouth of the San Gabriel River. $500,000 was awarded to the Mountains Recreation and Conservation Authority for the design and construction of the Compton Creek Nature Park and $280,000 was provided for site improvements and planning to provide for public access, community stewardship, and educational programs at the Ballona Wetlands Ecological Reserve. This grant program may be applicable to LAR UR2 WMA for different types of control measures.	Various projects within California have received funding through this grant program. Projects that may be authorized as inland wetland conservation projects incorporate elements such as the construction of swales, installation of water control structures, and the establishment of upland grasslands. LAR UR2 WMA may be able to benefit from the WCB Grant Program if the projects identified through the WMP development pertain to wetlands or habitat enhancements. It may be easy `to add elements to potential projects so that the project qualifies for funding while also incorporating water quality improvement elements.	The HCF has opportunities annually that the LAR UR2 WMA may be able to benefit from if selected projects concern a wildlife aspect. In some cases, projects can be modified to incorporate additional elements to address water quality. Multi-use projects may qualify for funding through this grant.
LAR UR2 WMA Potential Uses	No projects apply at this time	No projects apply at this time	No projects apply at this time
Contact Information	South Coast: Ventura County to San Diego County Joan Cardellino (510) 286-4093 jcard@scc.ca.gov	Dave Means Assistant Executive Director Dave.means@wildlife.ca.gov www.wcb.ca.gov/Programs.aspx	California State Parks Office of Grants & Local Services P.O. Box 942896 Sacramento, CA 94296 (916) 653-7423 localservices@parks.ca.gov

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**Land and Water Conservation Fund (LWCF)**	**Recreational Trails Program (RTP)**	**TIGER Discretionary Grant**
Department	State of California Department of Parks and Recreation	State of California Department of Parks and Recreation	Department of Transportation (DOT)
Purpose	Projects that protect threatened species, address wildlife corridors, create trails, and provide nature interpretation programs.	Provides funding for recreational trails and trails-related projects.	Provides funding for road, rail, transit, and port projects that will deliver long-term outcomes of safety, economic competitiveness, state of good repair, livability, and environmental sustainability.
Eligibility Requirements	Cities, counties, Native American tribes, joint power authorities, and non-state agency recreation and park districts	Cities, counties, districts, state agencies, federal agencies, and non-profit organizations	State, local, and tribal governments, including United States territories, transit agencies, port authorities, metropolitan planning organizations, other political subdivisions of state or local governments, and multi-state or multi-jurisdictional groups applying through a single lead applicant.
Eligible Uses	Projects that are associated with parks which promote children play, exercise, family bonding, senior socializing, connections with nature, and cultural differences.	Non-motorized and motorized projects that involve acquisitions for trails, trail rehabilitation, and construction of new trails.	Based on the Consolidated Appropriations Act, 2014 (Public Law No. 113-76)
Ineligible Uses	Not identified	See application guidelines	Not identified
Funding Limits	➢ $2,000,000 is the maximum grant request which cannot exceed 50 percent of total project cost ➢ This is a reimbursement-only program	➢ No minimum or maximum amount specified ➢ The maximum amount of funds allowed for each project is 88 percent, requiring a minimum of 12 percent match	$600 million to be awarded for National Infrastructure Investments
Terms/Dates	Applications are due February 3rd of every year	Current funding source expires September 30, 2014 and additional dates cannot be identified until new authorizations are finalized.	Grant applications must be submitted by April 28, 2014. Future opportunities are unknown at this time.
Website	http://www.parks.ca.gov/?Page_id=21360	http://www.parks.ca.gov/?Page_id=24324	http://www.dot.gov/tiger
Examples	➢ City of Covina's City Center Park ➢ Los Angeles County Cold Creek High Trail ➢ City of El Monte's Rio Hondo River Park	➢ City of Los Angeles' Peck Bandini ➢ City of Diamond Bar's Sycamore Canyon Park ➢ City of Gendale's San Rafael Hills "Mountain Do" Trail	➢ Crenshaw/Los Angeles Airport Light Rail Connection ➢ Port of Long Beach Rail Realignment ➢ Port of Los Angeles West Basin Rail Yard
Comments	Types of projects eligible: ➢ Athletic fields and courts ➢ Community gardens ➢ Non-motorized neighborhood and regional recreational trails ➢ Open space and natural areas ➢ Picnic areas ➢ Play grounds LAR UR2 WMA may be able to take advantage of this funding opportunity if the proposed projects are related to parks. It may be easy to add elements to potential projects so that the project qualifies for funding while also incorporating water quality improvement elements.	LAR UR2 WMA may be able to take advantage of this funding opportunity if the proposed projects are related to trails. It may be easy to add elements to potential projects so that the project qualifies for funding while also incorporating water quality improvement elements.	According to the March 24, 2014 CASQA bi-weekly newsletter, the notice for available funding provides guidance on selection criteria and application requirements for the National Infrastructure Investments. The legislation includes substantial language including funding for "addressing stormwater through natural means", "groundwater recharge in areas of water scarcity", and "stormwater mitigation", therefore stormwater projects may be eligible for funding. LAR UR2 WMA may be able to receive funding from this program now or in the future in order to assist in projects that incorporate both a transportation and water quality aspect.
LAR UR2 WMA Potential Uses	➢ Regional BMP Projects (with park elements)	➢ Regional BMP Projects (with trail elements)	➢ Regional BMP Projects ➢ Distributed BMP Projects (related to transportation)
Contact Information	California State Parks Office of Grants & Local Services P.O. Box 942896 Sacramento, CA 94296 (916) 653-7423 localservices@parks.ca.gov	California State Parks Office of Grants & Local Services P.O. Box 942896 Sacramento, CA 94296 (916) 653-7423 localservices@parks.ca.gov	Office of Infrastructure Finance and Innovation -Office of the Secretary of Transportation 1200 New Jersey Avenue, SE Washington, DC 20590 (202) 366-0301 TIGERgrants@dot.gov

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**Environmental Solutions for Communities**	**Clean Water Act (CWA) §319(h) Non-Point Source (NPS)**	**Potential 2014 Water Bond**
Department	Wells Fargo and the National Fish and Wildlife Foundation	CWA	State of California
Purpose	Support projects that link economic development and community well-being to the stewardship and health of the environment.	Support implementation and planning projects that address water quality problems in surface and ground water resulting from NPS. The goal of these projects is to eventually restore the impacted beneficial uses in receiving waters.	Provide funding for projects that ensure reliable water supply for future generations.
Eligibility Requirements	Community/watershed groups, cooperative associations or districts, local governments, state/territorial agencies, and non-profit groups.	The projects must be located within watersheds that has a TMDL with constituents identified in the NPS Program Preferences. The project must also be located in a watershed that has a plan or suite of plans that meet the Nine Key Elements found in Appendix A of the grant guidelines. Lastly the project cannot be located in an area subject to an NPDES Permit.	Unclear at this time.
Eligible Uses	Funding priorities include: supporting sustainable agricultural practices and private lands stewardship; conserving critical land and water resources and improving local water quality; restoring and managing natural habitat, species, and ecosystems that are important to community livelihood; facilitating investments in green infrastructure, renewable energy and energy efficiency; and encouraging broad-based citizen participation in project implementation.	Projects that address TMDLs associated with NPS.	Provide funding for projects must address water storage capacity, recycling facilities, levee improvements, flood control facilities, water treatment plants, ecosystem restoration, and habitat improvements.
Ineligible Uses	Not identified	Projects in areas that are under or affiliated with a NPDES Permit or address an issue in a land use included in a MS4 Permit	Unclear at this time.
Funding Limits	➢ Approximately $3,000,000 annually, between $25,000-$100,000 each ➢ 1:1 match required	➢ Funding allocation for entire program is $4,000,000 ➢ Provide the minimum match funding of 25 percent of the total project cost	Unclear at this time, but budget may include $4 billion for local resources development, $4 billion for ecosystem restoration, and $3 billion for public benefits associated with groundwater storage.
Terms/Dates	Applications accepted in December annually until 2016.	Annual solicitations (2014 solicitations were required by January 2014)	On the 2014 California ballot.
Website	http://www.nfwf.org/environmentalsolutions/Pages/home.aspx	http://www.waterboards.ca.gov/water_issues/programs/nps/grant_program.shtml#eligible	http://www.acwa.com/spotlight/2014-water-bond
Examples	➢ Newark Urban Tree and Urban Farm Project ➢ Removing Blight to Restore the Bay and Create Jobs Project ➢ Greening Art Alley: Pedestrian Corridor/Urban Renewal Project	➢ San Diego County Nutrient Source Reduction Program in Rainbow Creek Watershed ➢ Desert Wildlife Unlimited Alamo River Treatment Wetlands at Shank Road	Not Applicable
Comments	The Urban Tree and Urban Farm Project established tree and urban farms in Newark to reduce the carbon footprint, improve stormwater management, and provide job training opportunities for the youth. Removing Blight to Restore the Bay and Create Jobs Project that deconstructed 56 vacant homes in Baltimore Harbor Watershed and replaced them with permanent green space to treat stormwater and create jobs in the local community. The Greening Art Alley: Pedestrian Corridor/Urban Renewal Project installed rain gardens and other green infrastructure techniques in a local pedestrian facility to improve stormwater management and increase community engagement with natural habitats.	LAR UR2 WMA will not be able to benefit from this grant program because the receiving waterbodies associated with the group are not identified on the NPS Program Preferences. In addition, the projects the LAR UR2 WMA would be interested in implementing would be in areas covered by an NPDES Permit and therefore would not quality.	The 2014 Water Bond is the product of a comprehensive legislative package developed in 2009 by Governor Schwarzenegger and state lawmakers to meet California's growing water challenges. This package represented a major step toward ensuring reliable water supply for future generations as well as restoring the Sacramento-San Joaquin Delta and other ecologically sensitive areas. The progression of this bond will be tracked in the future in order to determine if funding opportunities exist for LAR UR2 WMA.
LAR UR2 WMA Potential Uses	➢ Regional BMP Projects ➢ Distributed BMP Projects	➢ XXX	Unclear at this time.
Contact Information	National Fish and Wildlife Foundation Carrie Clingan (202) 595-2471 Carrie.Clingan@nfwf.org	For CWA §319(h) Grant Program: Division of Water Quality Matthew Freese (916) 341-5485 Matthew.Freese@waterboards.ca.gov For FAAST: Patricia Leary (916) 341-5167 Patricia.Leary@waterboards.ca.gov	Timothy Quinn Association of California Water Agencies (CWA) Executive Director (916)441-4545 Timq@acwa.com

Table I-2 Potential Loan Programs to Fund LAR UR2 WMA WMP Implementation

Loan Program	Clean Water State Revolving Fund (CWSRF)	Financial Incentives for Recycled Water Projects to Provide Drought Relief	Infrastructure State Revolving Fund (ISRF)
Department	SWRCB	SWRCB	California Infrastructure and Economic Development Bank
Purpose	Provide funding for publically-owned facilities	Provide funding for recycled water projects that would be completed within three years of the Governor's January 17, 2014 drought declaration.	Provide financing for public infrastructure projects.
Eligibility Requirements	Public agencies and nonprofit organizations	See CWSRF. This program is has new low interest financing terms, funded through CWSRF.	Applicant must be a local municipal entity Project must promote economic development and attract, create, and sustain long-term employment opportunities
Eligible Uses	Stormwater treatment and diversions, sediment and erosion control, stream restoration, and land acquisitions.	Construct or modify public infrastructure, purchase and install pollution control or noise abatement equipment, or acquire land. Project must meet tax-exempt financing criteria.	Construct or modify public infrastructure, purchase and install pollution control or noise abatement equipment, or acquire land. Project must meet tax-exempt financing criteria.
Ineligible Uses	Operation and maintenance activities, legal fees	Privately owned facilities or debt refinancing	Privately owned facilities or debt refinancing
Funding Limits	$50,000,000 per agency per year	$800 million total in one percent loans	➢ $2,000,000 maximum per environmental mitigation project per fiscal year ➢ $10,000,000 maximum per project for all other purposes per fiscal year ➢ $20,000,000 per jurisdiction per fiscal year
Terms/Dates	➢ Interest rate is one-half general obligation bond rate. ➢ Repayment term of twenty years ➢ Applications accepted continuously	Open application process until December 2, 2015	➢ Maximum 30 year term and open application process ➢ Preliminary application available at www.ibank.ca.gov
Website	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/index.shtml	http://www.waterboards.ca.gov/press_room/press_releases/2014/pr031914.pdf	http://ibank.ca.gov/infrastructure_loans.htm
Examples	➢ City of Anaheim Sewer Reconstruction Project ➢ Eastern Municipal Water District Recycled Water Pond Expansion and Optimization Project	Program just began therefore no example projects at this time.	➢ City of Paramount Water Well #15 Construction Project ➢ City of Monterey Park Water Main Replacement Project ➢ Lawndale Redevelopment Agency Hawthorne Boulevard Revitalization Project ➢ City of Lawndale Charles B. Hopper Park Project
Comments	Other project types that are considered under this financing program include: ➢ Construction of publicly-owned facilities: ▪ Wastewater treatment ▪ Local sewers ▪ Sewer interceptors ▪ Water reclamation facilities ▪ Stormwater treatment ➢ Expanded Use projects include, but are not limited to: ▪ Implementation of nonpoint source projects or programs ▪ Development and implementation of estuary comprehensive conservation and management plan Expanded Use project include, but are not limited to NPS projects/programs and estuary comprehensive conservation and management plan.	This program provides low-cost, long-term financing to local governments for water recycling projects. Water recycling is the use of treated municipal wastewater for beneficial purposes such as agricultural and landscape irrigation, industrial processes, and replenishment of groundwater basins. Amount the projects that will be eligible for funding are recycled water treatment, distribution, and storage facilities.	This program provides low-cost, long-term financing to local governments for a variety of public infrastructure projects. A lot of the eligible project categories are not applicable to the LAR UR2 WMA in terms of using this funding to implement stormwater compliance measures, but the following project categories would be applicable to LAR UR2 WMA: ➢ Drainage, water supply, and flood control ➢ Environmental mitigation measures ➢ Parks and recreation facilities. It may be easy to add water quality elements to potential infrastructure projects so that the project qualifies for funding while also incorporating water quality improvement elements.
LAR UR2 WMA Potential Uses	➢ Regional BMP Projects ➢ Distributed BMP Projects	➢ Regional BMP Projects ➢ Distributed BMP Projects	➢ Regional BMP Projects ➢ Distributed BMP Projects
Contact Information	(916) 327-9978 CleanWaterSRF@waterboards.ca.gov	Kathie Smith (916) 341-5263	Ruben Rojas, Deputy Executive Director 980 9th Street, 9th floor Sacramento, CA 95814 (916) 539-4408 Ruben.Rojas@ibank.ca.gov (OR) Marilyn Muñoz, General Counsel Same address (916) 324-1299 Marilyn.Munoz@ibank.ca.gov

Los Angeles River Upper Reach 2 Watershed Management Area

Coordinated Integrated Monitoring Program (CIMP) Plan DRAFT

Submittal Date: June 26, 2014

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RB-AR5670

Los Angeles River Upper Reach 2 Watershed Management Area

Coordinated Integrated Monitoring Program (CIMP)

Prepared for:

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Integrated Regional Water Management Authority
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Paramount, California 90641
TEL (626) 485-0338

On Behalf of the Cities of Bell (WDID 4B190153001), Bell Gardens (WDID 4B190139002), Commerce (WDID 4B190161001), Cudahy (WDID 4B190164001), Huntington Park (WDID 4B190177001), Maywood (WDID 4B190192001), Vernon (WDID 4B190216001), and the Los Angeles County Flood Control District (WDID4B190107101)

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June 26, 2014

RB-AR5671

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Appendices

Acronyms

AL	Action Limit
AMP	Adaptive Management Process
BMP	Best Management Practice
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFU	Colony Forming (Microbial) Unit
CIMP	Coordinated Integrated Monitoring Program
CTR	California Toxics Rule
CWA	Clean Water Act
DO	Dissolved Oxygen
EO	Executive Officer
GIS	Geographic Information System
HUC	Hydrologic Unit Code
IC/ID	Illicit Connection/Illicit Discharge
LACFCD	Los Angeles County Flood Control District
LACSD	Los Angeles County Sanitation Districts
LAR	Los Angeles River
LARWQCB	Los Angeles Regional Water Quality Control Board
MAL	Municipal Action Limit
MES	Mass Emission Station
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
NSW	Non-Stormwater
NSWD	Non-Stormwater Discharge
QAPP	Quality Assurance Project Program
RAA	Reasonable Assurance Analysis
RWL	Receiving Water Limitation
SCCWRP	Southern California Coastal Water Research Project
SMC	Stormwater Monitoring Coalition
SSC	Suspended Sediment Concentration
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
UR2	Upper Reach 2
USEPA	United States Environmental Protection Agency
WBPC	Water Body- Pollutant Combination
WDR	Waste Discharge Requirements
WLA	Waste Load Allocation
WMA	Watershed Management Area
WMP	Watershed Management Program
WQO	Water Quality Objectives
WQBEL	Water Quality-Based Effluent Limitation

Executive Summary

The California Regional Water Quality Control Board, Los Angeles Region, adopted the fourth term Coastal Los Angeles County Municipal Separate Storm Sewer System (MS4) NPDES Permit as Order No. R4-2012-0175, on November 8, 2012, which then became effective on December 28, 2012. This Permit encourages Permittees to join together into Watershed Management Groups and develop Watershed Management Program (WMP) or Enhanced WMP (EWMP) Plan. This plan is intended to guide the iterative adaptive management process for the individual group as they prioritize the implementation of watershed control measures to reduce the discharge of runoff, and the pollutants it may convey, to local receiving waters, thereby contributing to the attainment and protection of water body beneficial uses.

In a June 27, 2013, Notice of Intent (NOI) letter, which was acknowledged in a September 25, 2013, NOI Approval letter from the Regional Board Executive Officer, the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon, along with the Los Angeles County Flood Control District (LACFCD), announced the formation of the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA). Furthermore these Permittees agreed to prepare a Reasonable Assurance Analysis (RAA), to guide development of the WMP Plan, and a Coordinated Integrated Monitoring Program (CIMP) Plan to track progress in attaining the Permit goals and objectives, through the iterative adaptive management process identified within MS4 Permit Part VI.C.8.a.

The LAR UR2 WMA Cities lie exclusively within the Los Angeles River Watershed and each Permittee discharges to Reach 2 of the Los Angeles River, which flows during dry-weather primarily with treated wastewater. The Cities of Bell Garden and Commerce also drain southeast to the normally dry concrete-lined Rio Hondo tributary channel. To the north and west, the LAR UR2 WMA is bordered by, and receives discharges from, the Upper Los Angeles River EWMP Group, while the Lower Los Angeles River WMP Group aligns with the east and south LAR UR2 WMA borders.

Based on discussions with Board staff and meetings with other watershed management groups, this document constitutes a Coordinated Integrated Monitoring Program (CIMP) Plan that will allow implementation of integrated approach to support the Adaptive Management Process (AMP) as intended in 2012 MS4 Permit Attachment E (MRP), Part II.C. The LAR UR2 WMA proposes to implement a dry and wet-weather receiving water monitoring location, along the Los Angeles River at Tweedy Avenue in the City of South Gate, just downstream of the largest storm drains from the area.

Seven stormwater outfall based monitoring sites are proposed, that would allow water quality to be collected annually, from over 70% of the LAR UR2 WMA, based on Los Angeles County subwatershed delineations. Since the Rio Hondo is normally dry, the Ford Park outfall site would be sampled during three storm events per year to develop WMA trend data and compliment data that might be needed to support regional wet-weather receiving water assessments. The remaining six outfall sites would be split into two groups, with similar land use characteristics, of three each and monitored annually. This strategy is proposed to facilitate annual characterization of most discharges from the LAR UR2 WMA.

The LAR UR2 WMA CIMP also proposes a non-stormwater outfall based monitoring approach that will complement the Illegal Discharge Illicit Connection (IC/ID) Elimination Minimum Control Measure (MCM) watershed control measure component of the WMP and Permit. Similarly, the New and Redevelopment Effectiveness Tracking MCM, should support the anticipated demonstration of steady progress in reducing pollutant loads and concentrations observed at the group outfalls and in adjacent receiving waters. Regional studies, through the (Southern California) Stormwater Monitoring Coalition (SMC), or more locally focused special studies, such as contemplated zinc Water Effects Ratio (WER) Site Specific Objective (SSO) study could also be coordinated through the AMP and implemented through modifications of the CIMP, to prioritize evolving water quality challenges and priorities that develop. Effective CIMP implementation will present difficult hurdles for all of the involved stakeholder groups.

1. Introduction

On November 8, 2012, the Regional Water Quality Control Board, Los Angeles Region (Regional Board or LARWQCB) adopted Order No. R4-2012-0175, *Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4*, herein the MS4 Permit or Permit which became effective on December 28, 2012. The Permit encourages Permittees to join together as Watershed Management Areas (WMAs) and propose individualized stormwater programs through the development and implementation of Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) Plans to demonstrate attainment of certain numeric limits expressed as Receiving Water Limitations (RWLs) and Water Quality-Based Effluent Limits (WQBELs). This document is the proposed CIMP for the Los Angeles River Upper Reach 2 (LAR UR2) WMA.

Permit Attachment E sets forth the requirements for the Monitoring and Reporting Program (MRP). The primary objectives for the MRP are listed in Part II.A of the MRP and are summarized as follows:

- Assess the chemical, physical, and biological impacts of MS4 discharges on receiving waters;
- Assess compliance with Total Maximum Daily Load (TMDL) wet-weather and dry-weather numeric limit waste load allocations (WLAs);
- Characterize pollutant loads in MS4 discharges;
- Identify sources of pollutants in MS4 discharges; and
- Measure and improve the effectiveness of pollutant controls implemented under the Permit.

Extensive default monitoring requirements are specified in the MRP, however the MRP allows Permittees, such as the LAR UR2 WMA, the option of proposing a CIMP that utilizes alternative approaches to meet the primary objectives of the MS4 Permit MRP. The CIMP should also identify TMDL monitoring requirements which are designed to unify the Permittees' efforts and provide consistent and comparable assessments of watershed water quality conditions and source control priorities.

1.1 Los Angeles River Upper Reach 2 Watershed Management Area Overview

Located in the south central Los Angeles River watershed, as shown in **Figure 1-1**, the LAR UR2 WMA includes the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD), as shown in **Figure 1-2**. The most prevalent land uses are industrial, residential, commercial, and transportation as shown in **Table 1-1** and **Figure 1-3**.

Table 1-1 Land Use Summaries by UR2 City

City	Agr	Com	Edu	Ind	MF Res	SF Res	Trans	Vac	Total
Bell	0%	16.15%	2.34%	17.67%	30.60%	16.24%	7.80%	9.20%	100%
Bell Gardens	1.68%	14.55%	6.17%	10.40%	46.65%	11.10%	0.52%	8.93%	100%
Commerce	0.46%	9.13%	0.58%	60.15%	3.09%	6.97%	15.51%	4.11%	100%
Cudahy	0%	7.44%	4.82%	13.28%	55.18%	6.47%	3.10%	9.71%	100%
Huntington Park	0%	18.24%	4.64%	17.27%	24.89%	29.14%	2.76%	3.06%	100%
Maywood	0%	14.45%	2.69%	6.85%	16.01%	57.05%	1.16%	1.79%	100%
Vernon	0%	0.50%	0.08%	77.52%	0.01%	0.03%	14.98%	6.88%	100%
LACFCD	NA	NA	NA	NA	NA	NA	NA	NA	NA
LAR UR2 Total	0.32%	9.98%	2.19%	42.41%	16.98%	12.55%	9.64%	5.93%	100%

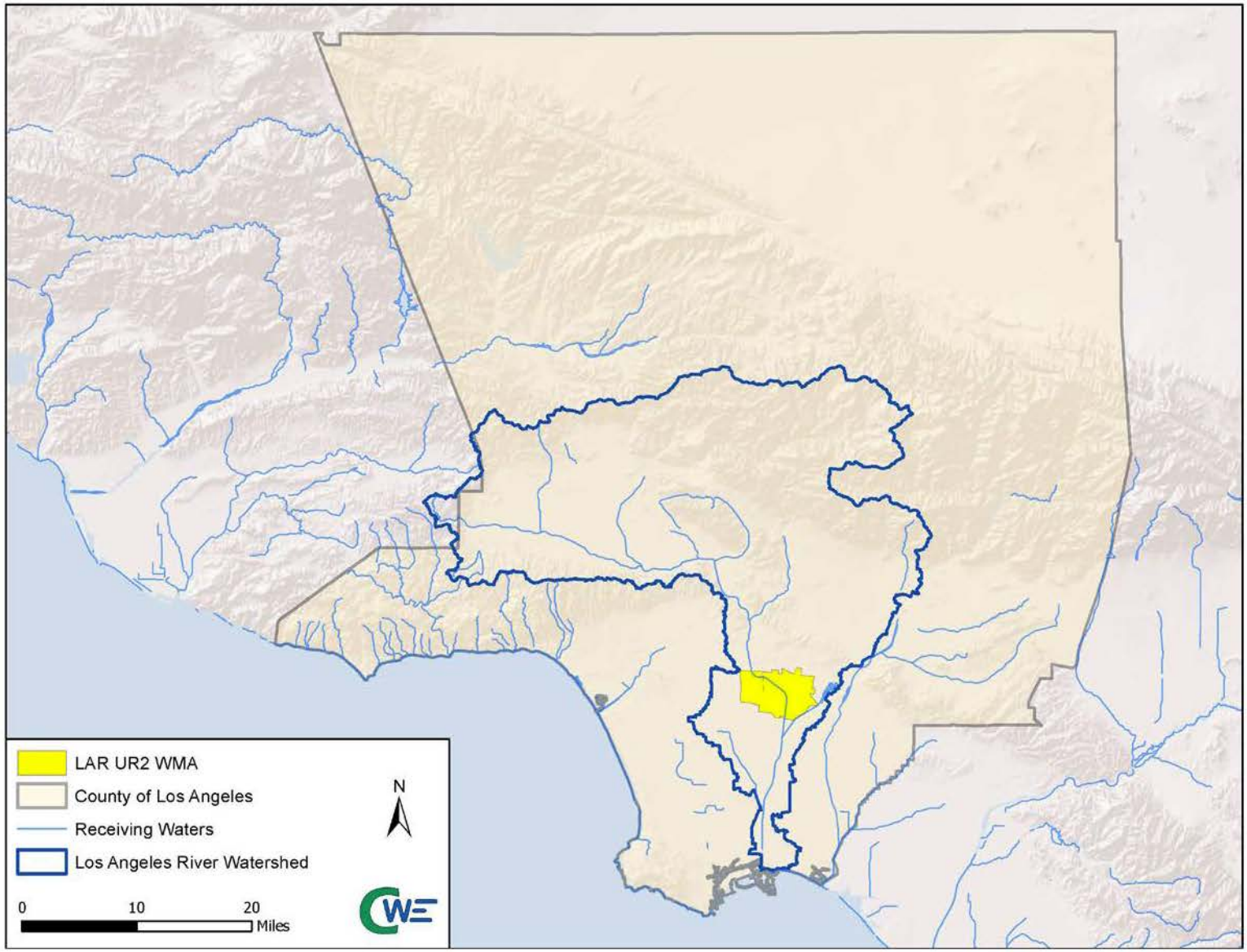

Figure 1-1 Los Angeles River Upper Reach 2 Watershed Management Area within Los Angeles Basin

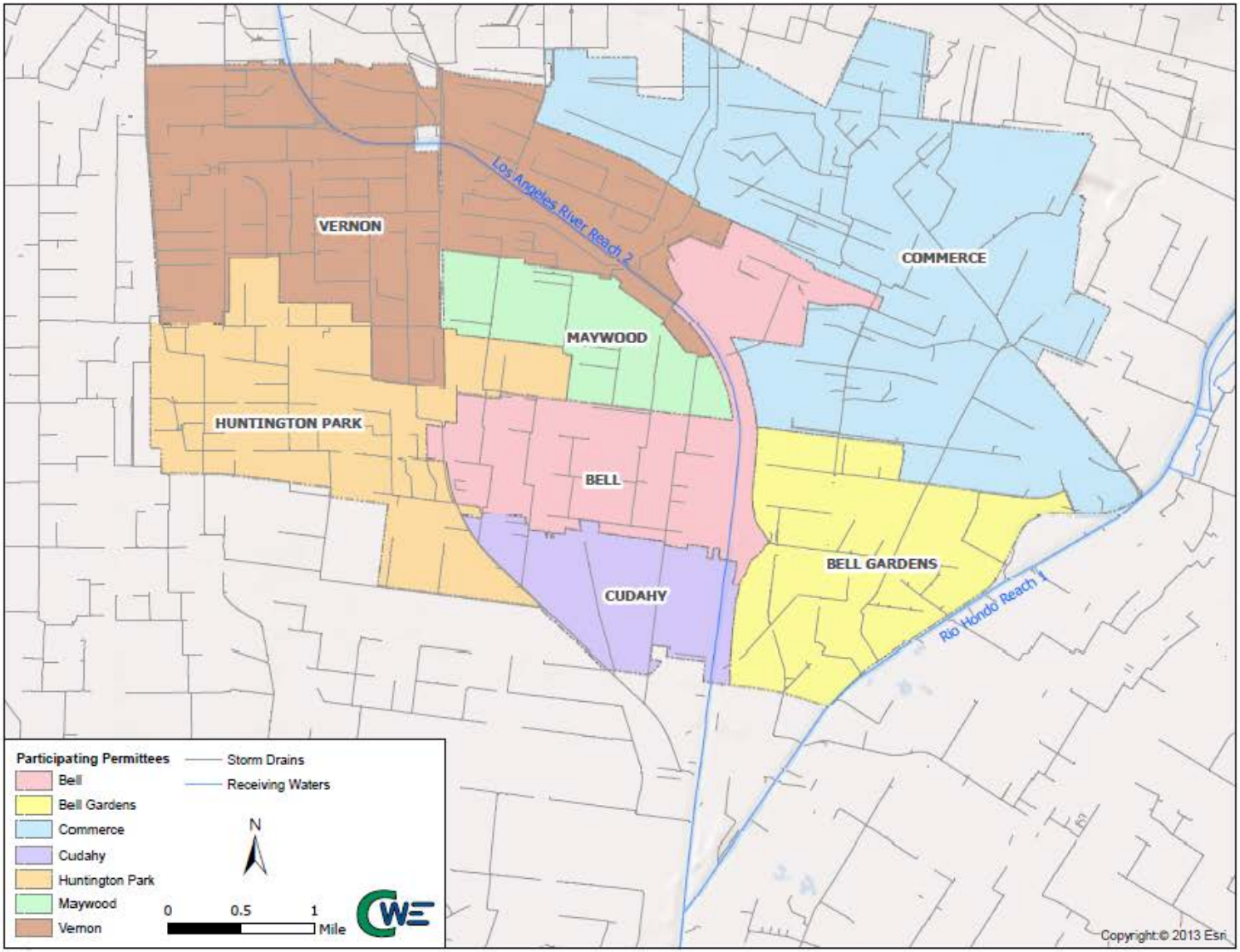

Figure 1-2 Participating Permittees

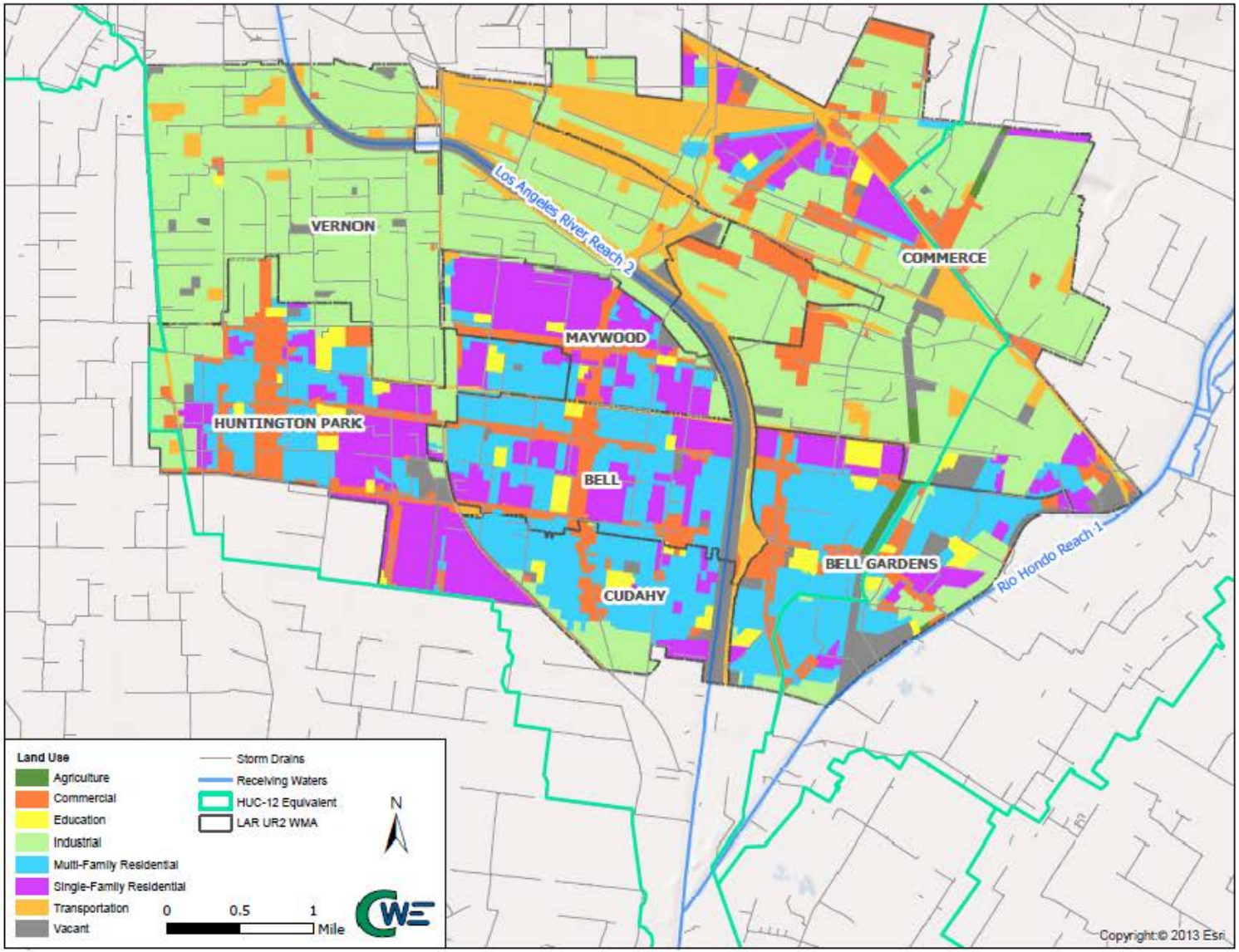

Figure 1-3 Land Use

The Los Angeles River flows 51 miles from the Santa Monica Mountains, in the west San Fernando Valley, to Long Beach Harbor, San Pedro Bay, and the Pacific Ocean. Including tributaries, the 824 square mile watershed has a total stream length of about 837 miles with about 4.6 square miles of lake area. The watershed includes steep, easily eroded, undeveloped mountainous areas in the Angeles National Forest and large urban areas in the midsection and south. Los Angeles River Reach 2 begins at the Arroyo Seco confluence and ends at the Compton Creek confluence. The primary Reach 2 tributary is the Rio Hondo.

The 120 square mile Rio Hondo subwatershed drains a large portion of the eastern Los Angeles River Watershed. Reach 2 of the Rio Hondo is located north of the Santa Ana Freeway, while Reach 1 stretches from the Freeway south to its confluence with the LAR. During storm events, flows in Rio Hondo Reach 2 are diverted to the adjacent Rio Hondo Spreading Grounds and used to recharge the central basin groundwater aquifer. When the Spreading Grounds are not operating, the Rio Hondo flows into Rio Hondo Reach 1 and the Los Angeles River.

The total area of the LAR UR2 WMA is approximately 14,215 acres, or 22.21 square miles and it is located the lower half of the Los Angeles River Watershed, beginning at about East 26th Street, in the City of Vernon, and ending at Patata Street, in the City of Cudahy. The Cities of Bell Gardens and Commerce are along the western bank of the Rio Hondo. As shown in **Figure 1-4**, a the receiving or surface waters defined by the Basin Plan within the LAR UR2 WMA include:

- Los Angeles River, Reach 2
- Rio Hondo, Reach 1

Watershed boundaries and other features, developed by the United States Geological Survey as Hydrologic Units Codes (HUC-12), are mapped in MS4 Permit Attachment B. In-lieu of these Permit specified boundaries, the March 26, 2014 Regional Board Reasonable Assurance Analysis (RAA) Guidelines allows WMP or EWMP groups to use equivalent HUC-12 boundaries, prepared by the LACFCD. Following the LACFCD equivalent HUC-12 boundaries and nomenclature conventions, **Figure 1-4** identifies the relevant LAR UR2 WMA receiving water tributary areas as follows:

- Compton Creek – Los Angeles River (180701050402)
- Chavez Ravine – Los Angeles River (180701050401)
- Alhambra Wash – Rio Hondo (180701050303)

The LAR UR2 WMA municipal and LACFCD equivalent HUC-12 boundaries, are shown in **Figure 1-5**, overlain on the Los Angeles County Geospatial Library layer of the LACFCD MS4 and City of Vernon drainage system elements, along with the LACFCD major outfalls, both within and adjacent to the WMA**.** The other LAR UR2 WMA Permittees did not identify any additional drainage infrastructure elements to supplement the available County GIS data.

The LAR UR2 WMA drainage element specific to each Permittee are also identified in **Appendix A**

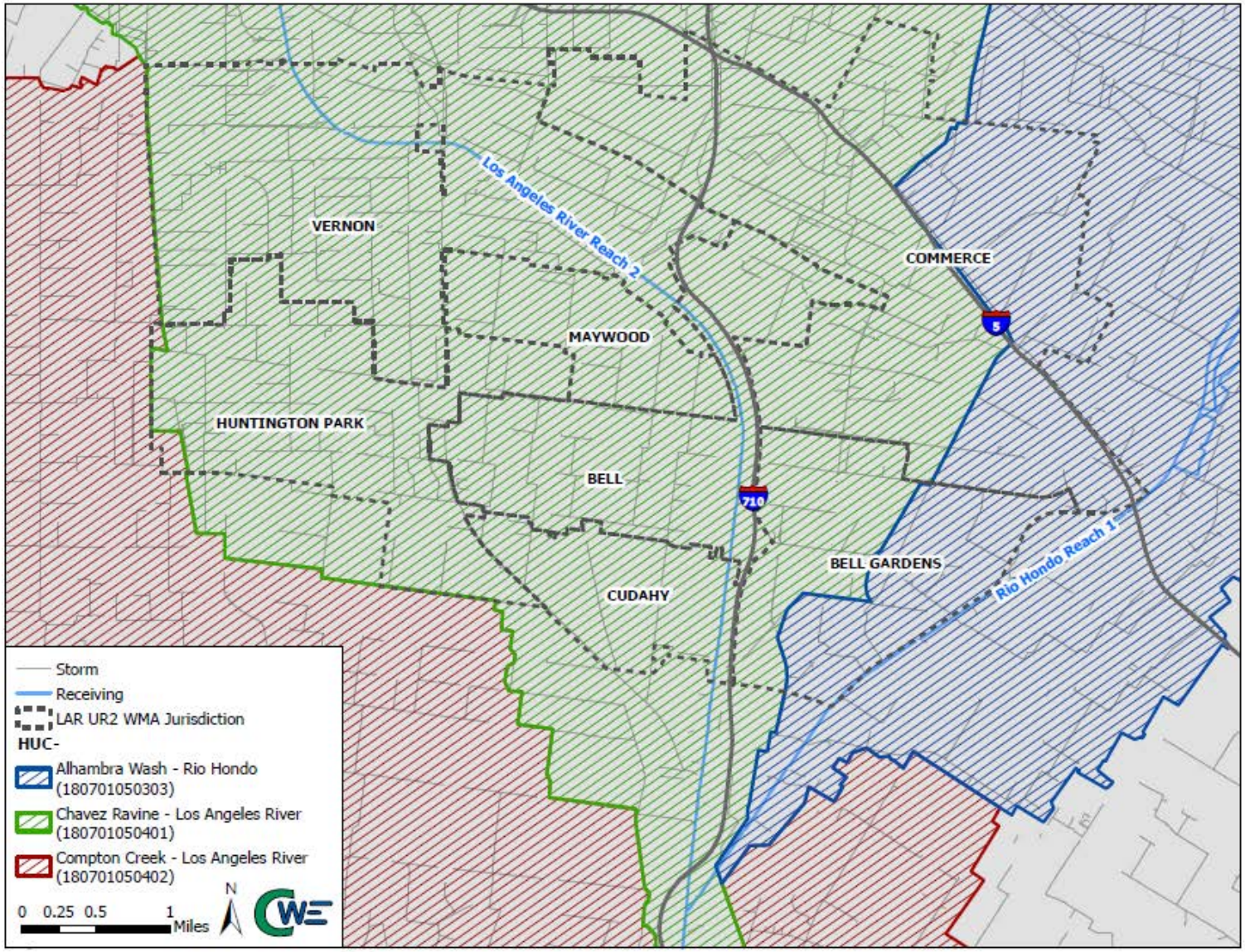

Figure 1-4 County Equivalent HUC-12 Subwatersheds

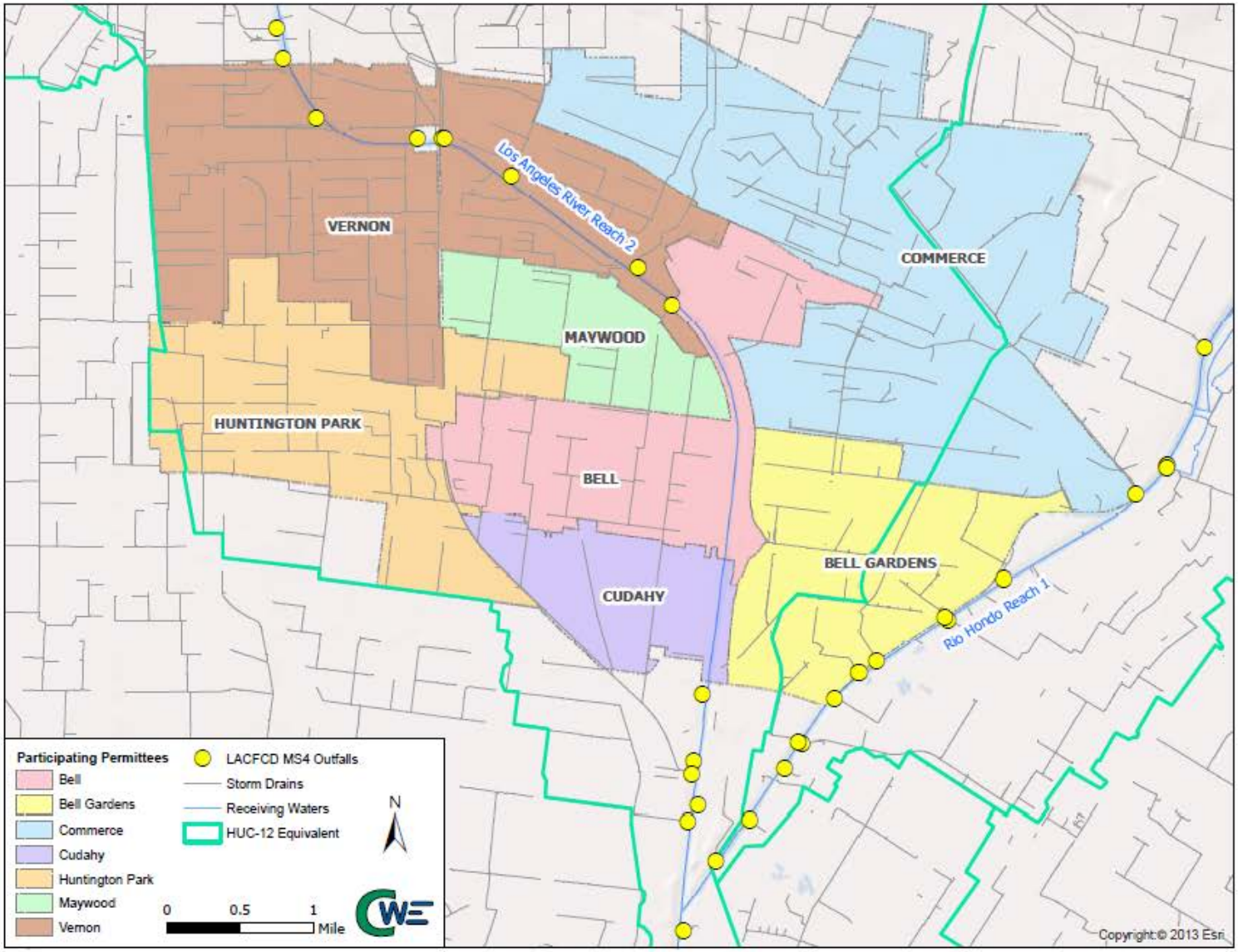

Figure 1-5 Participating Permittees with HUC-12, MS4 Drainage System and County Outfalls

1.2 Water Quality Priorities

In accordance with Permit Part IV.C.5(a)ii, water body–pollutant combinations (WBPCs) were classified into the following three categories:

- Category 1: WBPC subject to TMDL
- Category 2: WBPC on 2010 Clean Water Act (CWA) 303(d) List
- Category 3: WBPC with RWL exceedances

In accordance with Permit Part VI.C.5 water quality priorities were identified based on the WBPC compliance deadlines as follows:

- Priority 1(a) – TMDLs controlling pollutants for which there are numeric limits with interim or final compliance deadlines within the permit term or TMDL compliance deadlines that have already passed and the limitations have not been achieved.
- Priority 1(b) – TMDLs controlling pollutants for which the numeric limits with interim or final compliance deadlines between September 6, 2012 and October 25, 2017 have not been achieved.
- Priority 2 – All other controlling pollutants for which data indicate impairment or exceedances of RWLs in the receiving water and the findings from the source assessment implicates discharges from the MS4 shall be considered the second highest priority.

This process is intended to prioritize WBPCs to guide implementation of structural and institutional best management practices (BMPs) and monitoring activities in the CIMP. **Table 1-2** lists the identified water quality priorities, WBPCs categories, and compliance deadlines for the LAR UR2 WMA where nutrients and trash were identified as Priority 1 WBPCs. As part of the adaptive management process (AMP), categorization of WBPCs may be adjusted based on data obtained from monitoring, source evaluations, and BMP implementation. Approved CIMP derived data may result in future Category 3 designations in instances where MS4 discharges are identified as contributing to RWLs exceedances. Under these conditions, the appropriate LAR UR2 WMA Permittees will follow the guidance in Permit Part VI.C.2.a.iii.

1.3 Total Maximum Daily Load Monitoring Requirements

One of the regulatory mechanisms for addressing water quality impairments is the development and implementation of a TMDL, which may be established by the State Water Resources Control Board (State Board), or the United States Environmental Protection Agency (USEPA), or proposed by Permittees and approved by the regulatory agencies. MS4 Permit Attachment O identifies four TMDLs that impact Los Angeles River Reach 2 and the LAR UR2 WMA. These TMDLs, along with their Board resolution number and most recent amendment effective or significant revision dates, are as follows:

- Los Angeles River Bacteria TMDL – Resolution 2010-007 and became effective on March 23, 2012
- Los Angeles River and Tributary Metals TMDL – Resolution 2007-014 and became effective on October 29, 2008, and Resolution 2010-003 effective on November 3, 2011
- Los Angeles River Nitrogen Compounds and Related Effects TMDL – Resolution 2003-009 and became effective on March 23, 2004. Site Specific Objectives (SSOs) for Ammonia were approved by the State Water Resources Control Board (SWRCB) June 4, 2013
- Los Angeles River Trash TMDL – adopted Resolution 2007-012 and became effective on September 23, 2008.

The TMDL numeric limits are summarized in the following subsections and MS4 Permit Attachment O.

Table 1-2 Identified Water Quality Priorities					
Priority	Category	Pollutant	Water Body		Compliance Deadline
			Los Angeles River Reach 2	Rio Hondo Reach 1	
1a	1	Ammonia (NH_3-N)	x	x	23-Mar-04
	1	Nitrate (NO_3-N)	x	x	23-Mar-04
	1	Nitrite (NO_2-N)	x	x	23-Mar-04
	1	NO_3-N+NO_2-N	x	x	23-Mar-04
1b	1	Trash	x	x	September 30, 2016 (effectively 10/1/15)
2	1	*E.coli* Dry-Weather	x	x	March 23, 2022 (Group Interim Single sample/Final WQBEL)
	1	Copper Dry-Weather	x	x	11-Jan-24
	1	Lead Dry-Weather	x	x	11-Jan-24
	1	Zinc Dry-Weather		x	11-Jan-24
	1	Copper Wet-Weather	x	x	11-Jan-28
	1	Lead Wet-Weather	x	x	11-Jan-28
	1	Zinc Wet-Weather	x	x	11-Jan-28
	1	Cadmium Wet-Weather	x	x	11-Jan-28
	1	*E.coli* Wet-Weather	x	x	23-Mar-37
	2	Oil	x		N/A
	2	Coliform Bacteria*		x	N/A
	2	Toxicity		x	N/A
	3	To Be Determined based on results of future CIMP monitoring			

* Addressed by a TMDL

1.3.1 Los Angeles River Bacteria TMDL

The Los Angeles River Bacteria TMDL was adopted by the LARWQCB as Resolution 2010-007 and became effective on March 23, 2012, after approval by the State Board and USEPA. Ambient monitoring, monitoring to assess attainment with WLAs, monitoring to support Load Reduction Strategies (LRS) or alternative compliance strategies, and monitoring to support wet-weather implementation plans are identified in the TMDL. A CMP was submitted to the Regional Board by the Los Angeles River Watershed Bacteria TMDL Technical Committee, on behalf of the LAR Watershed Permittees, however, monitoring was pre-empted in anticipation of CIMP development. The TMDL has multiple implementation phases, wet and dry compliance schedules, numeric WLAs, and allows Permittees to developing Load Reduction Strategies (LRS) to gain an extended compliance schedule. Permit Attachment O Part D.4, summarizes TMDL monitoring requirements, while **Table 1-3** summarizes applicable effluent limits for LAR UR2 WMA.

Table 1-3 Los Angeles River Bacteria TMDL Numeric Limits				
Constituent	Effluent Limitation (MPN or cfu)		Final Compliance Date	
	Daily Maximum	Geometric Mean	Wet-Weather	Dry-Weather
E. coli	235/100 mL	126/100 mL	March 23, 2037	March 23, 2022

The interim dry-weather limits are group-based and shared among the Permittees within a drainage area. However, they may be distributed based on proportion of drainage area, upon approval of the Regional Board. **Table 1-4** presents the group interim dry-weather limits for the LAR UR2 WMA.

Table 1-4 Grouped Interim Dry-Weather Single Sample Bacteria Numeric Limits

River Segment of Tributary	Daily Maximum E. coli Load (10^9 MPN/day)	First Phase Compliance Date	Second Phase Compliance Date
Los Angeles River Segment B (Rosecrans to Figueroa)	518	March 23, 2022	September 23 2028
Rio Hondo	2	September 23, 2023	March 23, 2030

In addition to the numeric limits for MS4 discharges, the Los Angeles River Bacteria TMDL includes allowable exceedance limits, based on the number of days, or weeks, per year, where the allowable bacteria limits are not achieved. The final compliance dates, for the annually assessed grouped single sample bacteria limits are stated to be March 23, 2022 for dry- and March 23, 2037 for wet-weather. These requirements are on **Table 1-5**, while the numeric water quality objectives are on **Table 1-6**.

Table 1-5 Grouped Final Single Sample Bacteria Allowable Exceedances

Time Period	Annual Allowable Exceedance Days of the Single Sample Objective (days)	
	Daily Sampling	Weekly Sampling
Dry-Weather	5	1
Non-High Flow Suspension (HFS[1]) Waterbodies Wet-Weather	15	2
HFS[1] Waterbodies Wet-Weather	10 (not including HFS days)	2 (not including HFS days)

[1] HFS stands for high flow suspension as defined in Chapter 2 of the Basin Plan shall apply to water contact recreational activities associated with the swimmable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use, non-contact water recreation involving incidental water contact regulated under the REC-2 use, and the associated bacteriological objectives set to protect those activities. WQO set to protect (1) other recreational uses associated with the fishable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use and (2) other REC-2 uses (e.g., uses involving the aesthetic aspects of water) shall remain in effect at all times for waters where the (ad) footnote appears in Table 2-1a. The High Flow Suspension shall apply on days with rainfall greater than or equal to ½ inch and the 24 hours following the end of the ½-inch or greater rain event, as measured at the nearest local rain gauge, using local Doppler radar, or using widely accepted rainfall estimation methods. The High Flow Suspension only applies to engineered channels, defined as inland, flowing surface water bodies with a box, V-shaped or trapezoidal configuration that have been lined on the sides and/or bottom with concrete. The water bodies to which the High Flow Suspension applies are identified in Table 2-1a in the column labeled "High Flow Suspension".

Table 1-6 Los Angeles River Bacteria TMDL Geometric Mean Allowable Limit

Constituent	Geometric Mean (MPN or cfu)
E. coli	126/100 mL

1.3.2 Los Angeles River and Tributaries Metal TMDL

The Los Angeles River and Tributaries Metals TMDL was adopted by the Regional Board as Resolution 2007-014 and became effective on October 29, 2008, after approval by the State Board and USEPA. The TMDL assesses the load or concentration of several metals in comparison to California Toxic Rule values, during dry- and wet-weather conditions. Dry-weather is defined as days when the maximum daily flow in

the river is less than 500 cubic feet per second (cfs) as measured at the Wardlow Street gauge station. Since metal toxicity is correlated to bioavailability, as assessed by water hardness, the permit and TMDL WQBELs values were determined using total to dissolved "translator" values, prepared by the USEPA. Weather and water body specific hardness data result in a relatively significant variability in the limit among the various water body and weather combinations. Local water characteristics, such as organic content, may result in Water Effect Ratios (WERs) and Site Specific Objectives (SSOs) that alter the preliminary toxicity assessment used in developing a TMDL and may change the final numeric WQBELs.

Table 1-7 through **Table 1-10** lists the applicable LAR UR2 WMA final numeric limits, subject to any future basin plan amendments, established by the Los Angeles River and Tributaries Metals TMDL and identified in Attachment O, Section C.2 and C.3 of the MS4 Permit. **Table 1-7** lists the grouped (shared) dry-weather final numeric limits, expressed as total recoverable metals daily loads. Dry-weather flows in Rio Hondo Reach 1, have normally been much lower than the TMDL estimate of 0.5 cfs, however TMDL watershed compliance has generally been first assessed based on concentration, rather than load.

Table 1-7 Dry-Weather Final WQBELs Expressed as Total Recoverable Metals

Waterbody	Effluent Limitations Daily Maximum (kg/day)		
	Copper	Lead	Zinc
LA River Reach 2	WER[1] x 0.53	WER[1] x 0.33	--
Rio Hondo Reach 1	WER[1] x 0.01	WER[1] x 0.006	WER[1] x 0.16

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved through a Basin Plan Amendment

Concentration based dry-weather numeric limits applicable to the LAR UR2 WMA are summarized in **Table 1-8**. Ambient water quality monitoring is implemented through the Los Angeles River Metals TMDL Coordinated Monitoring Program (LAR MTMDL CMP).

Table 1-8 Concentration Based Dry-Weather Final WQBELs Expressed as Total Recoverable Metals

Waterbody	Effluent Limitations Daily Maximum (µg)		
	Copper	Lead	Zinc
LA River Reach 2	WER[1] x 22	WER[1] x 11	--
Rio Hondo Reach 1	WER[1] x 13	WER[1] x 5.0	WER[1] x 131

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved through a Basin Plan Amendment

Load and approximate concentration based wet-weather numeric limits applicable to the LAR UR2 WMA are summarized in **Table 1-9**. Since the TMDL includes both LAs and WLAs, and multiple discharge groups, the numeric limit concentration for MS4 Permittees varies with the volume of runoff measured at Wardlow Street, but the rightmost column is a serviceable first order estimate.

Table 1-9 Wet-Weather Final WQBEL Expressed as Total Recoverable Metals

Constituent	Effluent Limitations Daily Maximum (kg/day)	Approximate Effluent Limitation (µg/L)
Cadmium	WER[1] x 2.8 x 10^{-9} x daily volume (L) - 1.8	WER[1] x 2.8
Copper	WER[1] x 1.5 x 10^{-8} x daily volume (L) - 9.5	WER[1] x 15
Lead	WER[1] x 5.6 x 10^{-8} x daily volume (L) - 3.85	WER[1] x 56
Zinc	WER[1] x 1.4 x 10^{-7} x daily volume (L) - 83	WER[1] x 140

Table 1-10 outlines the interim and final Metals TMDL numeric limits schedule which Permittees may comply with through compliance with the WMP and RAA development process. Since the LAR UR2 WMA is located within Reach 2, it should be noted that the June 29, 2012 Implementation Study, funded by the Permittees, identifies Watershed Control Measures to achieve the interim and final WLAs. Among the more important measures was State Senate Bill 346, chaptered in September 2010, which called for phased elimination of copper from automotive brake pads. A similar effort to reduce the zinc content in automotive tires has also been initiated.

Table 1-10 Schedule of Interim and Final WQBELs for Los Angeles River Metals TMDL

Deadline	Total Drainage Area Served by the MS4 required to meet the water quality-based effluent limitations (%)	
	Dry-Weather	Wet-Weather
January 11, 2012	50	25
January 11, 2020	75	-
January 11, 2024	100	50
January 11, 2028	100	100

Along with most other Los Angeles River Watershed municipalities, the LAR UR2 WMA Permittees supported a study to develop Copper WER and Lead Recalculation SSOs that is currently pending before the Regional Board for approval as a Basin Plan Amendment. If the Basin Plan Amendment is approved, the study suggests for copper, in both dry- and wet-weather, a final WER of 3.971 and 9.691 should be adopted for LAR Reach 2 and the Rio Hondo, respectively. The lead recalculation study suggest an increase in the dry-weather WQBEL from 11 to 94 µg/L for LAR Reach 2, while the dry-weather WQBEL would rise from 5 to 37 µg/L for the Rio Hondo. In wet-weather, the allowable lead numeric limit should increase from 62 to 94 µg/L in both of these water bodies. Favorable translators between total and dissolved metal concentrations were also determined by these studies, but are not explicitly referenced in the MS4 Permit so their eventual impact is unclear at this time. As a result of these studies and legislative efforts, the LAR Metals TMDL appears to have moved from a regional to specific outfall priority.

1.3.3 Los Angeles River Nitrogen Compounds and Related Effects TMDL

The LAR Nutrients TMDL was adopted by the LARWQCB as Resolution 2003-009 and became effective on March 23, 2004, after State Board and USEPA approval. SSOs for Ammonia were approved by the State Board on June 4, 2013. This TMDL targets Publically Owned Treatment Works (POTW), or Water Recovery Plants (WRP); MS4 Permittee discharges do not appear to cause or contribute to the exceedance of the applicable loads. **Table 1-11** lists the currently effective TMDL numeric limit, as identified in Attachment O, Section B.2 of the MS4 Permit.

Table 1-11 LAR Nitrogen Compounds and Related Effects TMDL Final WLAs

Water Body	NH_3-N (mg/L)		NO_3-N (mg/L)	NO_2-N (mg/L)	NO_3-N+NO_2-N (mg/L)
	One-hour Average	Thirty-day Average	Thirty-day Average	Thirty-day Average	Thirty-day Average
Los Angeles River below LAG	8.7	2.4	8.0	1.0	8.0
Rio Hondo Reach 1 and 2	10.1	2.3	8.0	1.0	8.0

1.3.4 Los Angeles River Watershed Trash TMDL

The Los Angeles River Trash TMDL was adopted by the Los Angeles Regional Water Quality Control Board as Resolution 2007-012, which became effective on September 23, 2008, after State Board and USEPA approval. Simplistically, TMDL compliance is assessed based on Daily Generation Rate (DGR) studies, the remainder of the catchment not protected by Full Capture Certified Devices (FCCDs), or a combination of both metrics. The LAR UR2 WMA Permittees have generally chosen to track the installation of FCCDs, such as Connector Pipe Screens (CPS). **Table 1-12** and **Table 1-13** lists (in gallons and pounds) interim and final DGR estimated residual limits from Permit Attachment O Part A.3, while the allowable remainder of the catchment unprotected by FCCDs is identified in parentheses within the table header.

Table 1-12 LAR Watershed Trash TMDL Effluent Limitations per Storm Year (gallons of uncompressed trash)

Permittees	Baseline	2012 (30%)	2013 (20%)	2014 (10%)	2015 (3.3%)	2016 (0%)
Bell	16026	4808	3205	1603	529	0
Bell Gardens	13500	4050	2700	1350	446	0
Commerce	58733	17620	11747	5873	1938	0
Cudahy	5935	1781	1187	594	196	0
Huntington Park	19159	5748	3832	1916	632	0
Maywood	6129	1839	1226	613	202	0
Vernon	47203	14161	9441	4720	1558	0

Table 1-13 LAR Watershed Trash TMDL Effluent Limitations per Storm Year (pounds of drip dry trash)

Permittees	Baseline	2012 (30%)	2013 (20%)	2014 (10%)	2015 (3.3%)	2016 (0%)
Bell	25337	7601	5067	2534	836	0
Bell Gardens	23371	7011	4674	2337	771	0
Commerce	85481	25644	17096	8548	2821	0
Cudahy	10061	3018	2012	1006	332	0
Huntington Park	30929	9279	6186	3093	1021	0
Maywood	10549	3165	2110	1055	348	0
Vernon	66814	20044	13363	6681	2205	0

The final WLA of zero trash discharged, or catchment area unprotected, is to be achieved for the 2016 storm year that begins on October 1, 2015 and ends on September 30, 2016. During the current period from, October 1, 2013 to September 30, 2014, 90% of the baseline study trash volume or weight must be captured based on DGR study analysis and only 10% estimated to have been discharged. Alternatively, 90% of a Permittee catchment may be protected by FCCDs, leaving 10% unprotected.

With the assistance of a grant to the Gateway Water Management Authority (GWMA), over 2,700 FCCDs were installed throughout the LAR UR2 WMA catchment area by December 31, 2011, as summarized in **Table 1-14**. Completion of the installation of FCCDS will be subject to significantly more difficult design, permitting, funding, and construction related challenges, but remains an LAR UR2 WMA priority.

Table 1-14 Installation of FCCDs Within the LAR UR2 WMA by December 31, 2011			
Permittees	**Number of LAR Catch Basins**	**Number of FCCDs Installed**	**Percent of Catch Basins Protected**
Bell	259	238	92%
Bell Gardens	271	248	92%
Commerce	659	545	83%
Cudahy	147	130	88%
Huntington Park	522	442	85%
Maywood	178	151	85%
Vernon	902	847	94%

1.4 Existing and Past Monitoring Programs

A review of existing monitoring programs within the LAR UR2 WMA was conducted to establish and assess the magnitude of water quality challenges. **Figure 1-6** presents the location of the existing or past monitoring locations near LAR UR2 WMA. The following summaries characterize specific water quality data, pollutant priorities and study findings relevant to the LAR UR2 WMA.

1.4.1 LA County Annual Stormwater Monitoring (2002-2012)

The Los Angeles County Department of Public Works Annual Stormwater Monitoring Report (LACDPW SMR) presents stormwater quality findings for each July to June storm season. The 2002–2003, 2003–2004, 2005–2006, 2006–2007, 2007–2008, 2008–2009, 2009–2010, 2010-2011, and 2011-2012 monitoring reports addressed the following programs and associated elements:

- Core Monitoring Program – mass emission, tributary, water column toxicity, and trash monitoring.
- Regional Monitoring Program – estuary sampling and bioassessment.
- Special studies – New Development Impacts Study in the Santa Clara Watershed, Peak Discharge Impact Study and BMP Effectiveness Study.

Figure 1-6 shows the Core Monitoring Program for the LA River mass emission station (S10) nearest the LAR UR2 WMA, and the Rio Hondo Channel tributary monitoring station (TS06) studied during the 2002-2003 and 2003-2004 storm seasons. The S10 station is located at the existing stream gauge station (i.e., Stream Gauge F319-R) between Willow Street and Wardlow Road in the City of Long Beach and was chosen to avoid tidal influences. The Rio Hondo Channel monitoring station TS06 is located on Beverly Boulevard, downstream of Whittier Narrows dam, at the USGS – U.S. Army Corps of Engineers (ACOE) Stream gage No. 1102300 or E327-R and upstream of the LAR UR2 WMA.

A minimum of three wet-weather and two dry-weather events were monitored for all sites during each annual storm season. Grab samples were collected and analyzed for conventional pollutants and bacteria during both dry and wet-weather events. Additionally, composite samples were collected for both dry- and wet-weather events and were analyzed for general minerals, metals, semi-volatiles, chlorinated pesticides, organophosphate pesticides, herbicides, PCBs and TSS.

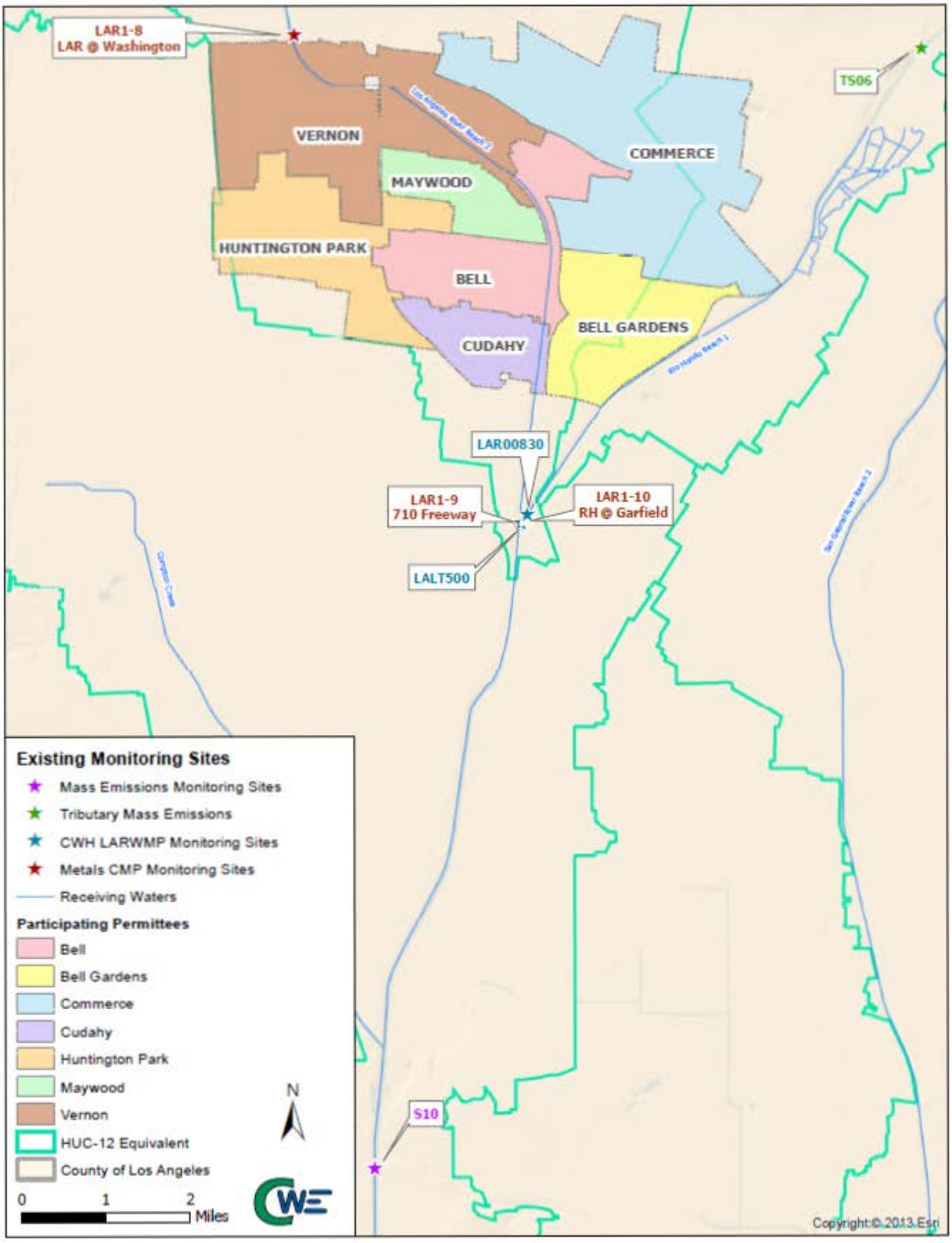

Figure 1-6 Existing Monitoring Sites

1.4.2 Council for Watershed Health: Los Angeles River Watershed Monitoring

The Council for Watershed Health (CWH) coordinates the Los Angeles River Watershed Monitoring Program (LARWMP) to assess Watershed health based on five broad objectives: 1) Are stream conditions improving; 2) Are specific critical site conditions improving; 3) Do discharges meet WQOs; 4) Is it safe to swim; and 5) Are locally caught fish safe to eat. The CWH LARWMP collects water samples and performs bioassessments following a stratified randomized sampling scheme that separates the watershed into natural, urban and mainstem portions to facilitate comparisons. Sampling occurs annually, during the late spring or early summer, and the water is analyzed for general chemistry (nutrients), metals (total and dissolved), organophosphorus, and pyrethroid pesticides. The CWH responded to our request for monitoring data from 2009 – 2012, which was reviewed. The nearest monitoring sites to the LAR UR2 WMA are LALT500, located at the LAR and Rio Hondo confluence, and LAR00830, which is located within Rio Hondo. As shown in **Figure 1-6**, both sites are located downstream of the LAR UR2 WMA.

1.4.3 LA River Metals TMDL Coordinated Monitoring Plan and Ambient Monitoring Submittal (2010-2011, 2011-2012)

At its July 17, 2006 meeting, the Los Angeles River Watershed Management Committee recommended formation of a Los Angeles River Metals TMDL Technical Committee (TC) and tasked the group with preparation of a Coordinated Monitoring Plan (CMP). The CMP includes both ambient (Tier I) and effectiveness monitoring (Tier II). The Tier I ambient monitoring program collects monthly samples at thirteen locations. Tier I monitoring site LAR1-8, LAR1-9, and LAR1-10, shown in **Figure 1-6**, are located adjacent to the LAR UR2 WMA and the data from these sites have given the LAR UR2 WMA a better understanding of the distribution of metals concentrations in the adjacent WMAs.

1.4.4 LA River Copper Water-Effect Ratio (WER) and Lead Recalculation Site Specific Objectives (SSO) Study

The California Toxic Rule (CTR) and MS4 Permit allows WER SSO, that reflect local water column conditions, to be developed so long as they provide equivalent aquatic life protection to that intended in the "Guidelines for deriving numerical national Water Quality Criteria" (USEPA 1985). If the WER value for a pollutant exceeds 1, site water reduces the toxic effect of that pollutant, while a WER of less than 1, signals that the toxic effect of site water is greater than laboratory water. Once a WER is approved, ambient acute and chronic CTR criteria are multiplied by the locally developed WER value. Similarly, CTR values may be recalculated based on new laboratory toxicity studies, as occurred for lead. The primary purpose of the subject study was to determine one or more copper WER value for the Los Angeles River and some tributaries, along with a recalculation of criteria for lead. The results suggest that appropriate wet- and dry-weather copper WERs, for the Rio Hondo and Los Angeles River, would be about 9.691 and 3.971 respectively, resulting in substantially higher, but equally protective, water quality objectives.

1.5 CIMP Overview

The CIMP has been designed to provide the information necessary to guide management decisions in addition to providing a means to measure compliance with the Permit and is composed of six elements:

1. Receiving Water Monitoring;
2. Stormwater (SW) Outfall Monitoring;
3. Non-Stormwater (NSW) Outfall Monitoring;
4. New Development/Redevelopment Effectiveness Tracking;
5. Special Studies; and
6. Regional Studies.

1.5.1 Receiving Water Monitoring

Receiving water monitoring is intended to assess whether water quality objectives are being achieved, whether beneficial uses are supported, and to track trends in constituent concentrations over time. **Section 2** discusses the proposed LAR UR2 WMA receiving water monitoring site and program.

1.5.2 Stormwater Outfall Monitoring

Stormwater outfall monitoring assesses compliance with municipal action limits (MALs), WQBELs derived from TMDL WLAs, as well as the potential of the LAR UR2 WMA to have caused or contributed to exceedances of RWLs derived from TMDL WLAs or receiving water quality objectives. The majority of storm drains within the LAR URS2 WMA initially drain south and seven potential stormwater outfall monitoring sites were found to comprise about 79% of the LAR UR2 WMA catchment area. The selected sites are representative of a combination of the HUC-12 equivalents, jurisdictions, and/or land uses within each catchment area which they have been chosen to represent. A synopsis of each potential outfall's catchment area, along with an analysis of its land use/zoning characteristics is summarized in **Section 4**.

1.5.3 Non-Stormwater Outfall Program

To further fulfill the Permit requirements, the MRP requires Permittees to implement a non-stormwater outfall based screening and monitoring program. The Non-Stormwater Outfall Screening and Monitoring Program (Non-Stormwater Program) is focused on non-stormwater discharges to receiving waters from MS4 outfalls. The Non-Stormwater Program will collect information necessary to identify significant non-stormwater discharges and conduct the screening and prioritization process to non-stormwater outfall monitoring. Additional details of the Non-Stormwater Program are presented in **Section 5**.

1.5.4 New Development and Redevelopment Effectiveness Tracking

The New Development/Re-Development Effectiveness Tracking is required to identify the information necessary for data management and annual compliance reporting. Each jurisdiction will be individually responsible for tracking Permit requirements, based on their specific operational procedures and internal processes. The LAR UR2 WMA permittees will maintain an informational database record for each new development/re-development project subject to the minimum control measure (MCM) and their adopted Low Impact Development (LID) Ordinance. In addition, LAR UR2 WMA permittees will implement a tracking system for new development/re-development projects that have been conditioned for post-construction BMPs. **Section 6** presents the new development and redevelopment effectiveness tracking system for the LAR UR2 WMA.

1.5.5 Regional Studies

One Regional Study is identified in the MRP: Southern California Stormwater Monitoring Coalition (SMC), which is overseen by the Southern California Coastal Water Research Project (SCCWRP). The LAR UR2 WMA will participate and support the most recent SMC study, the bioassessment monitoring program. The LAR UR2 WMA will coordinate with SCCWRP and participate in the Bioassessment Program. **Section 7** presents the regional studies approach for the LAR UR2 WMA.

1.5.6 Special Studies

The MRP requires each Permittee to be responsible for conducting special studies required in an effective TMDL or an approved TMDL Monitoring Plan. Special studies options are further discussed in **Section 8**.

1.6 2012 MS4 Permit Review Process and Planned Implementation

On December 10, 2012 the cities of Commerce, Huntington Park and Vernon (hereinafter "the Cities") submitted Administrative Petitions (Petitions) to the California State Water Resources Control Board (SWRCB) pursuant to section 13320(a) of the California Water Code requesting that the SWRCB review various terms and requirements set forth in the 2012 MS4 Permit, Order No. R4-2012-0175 (Permit) adopted by the California Regional Water Quality Control Board, Los Angeles Region (Regional Board). The Petitions were subsequently referred to as SWRCB/OCC File Nos. A-2236(a) through (kk). In particular, and among other terms/requirements contained in the Permit, the Cities have sought review of all numeric limits, both interim and final, and whether derived from a TMDL or provided from the application of an adopted water quality standard, or through a discharge prohibition set forth in the Permit. The challenges to the various numeric limits set forth in the Permit include a challenge to all such numeric limits that may be complied with through the implementation of an approved Watershed Management Plan (WMP) and/or an Enhanced Watershed Management Plan (EWMP). In essence, the Petitions are challenging the fundamental premise for the various WMPs and the EWMPs requirements in the Permit, on various grounds, including, but not limited to, on the grounds that such Permit terms exceed the maximum extent practicable (MEP) standard, and were not adopted in accordance with the requirements of California Water Code (CWC) sections 13000, 13263 and 13241 The Cities are reserving all of their rights to subsequently assert that the identified BMPs need not be implemented, on the grounds that they are not technically or economically feasible. In other words, that the BMPs are impracticable and contrary to the MEP standard, and that it is not possible to provide the reasonable assurances required under the Permit in a manner that is consistent with the MEP standard, if at all. The Cities agree that it is not possible to provide the reasonable assurances required under the Permit in a manner that is consistent with the MEP standard. On July 8, 2013 the SWRCB advised the Cities that the respective Petitions were complete and all such Petitions remain pending at this time.

In spite of the pending Petitions, the Cities are acting in good faith and moving forward to attempt to comply with all of the applicable terms of the Permit, and look forward to working with the Regional Board to assess and implement the strategies and requirements necessary for compliance, including the development of an acceptable WMP. Nevertheless, because, through their Petitions, the Cities believe that many of the terms of the Permit are invalid, including the terms involving compliance with numeric limits which the Cities are seeking to comply with through the development and implementation of this WMP. the Cities hereby expressly reserve and are not waiving, with this submission or otherwise, any of their rights to challenge the need for any WMP, including their rights to seek to void or otherwise compel modifications to the Permit terms involving the WMP, or to void or compel revisions to any other part or portion of the Permit. In addition, the Cities are not waving, and hereby expressly reserve, any and all rights they have or may have to seek to recover the costs from the State to develop and implement this WMP, on the grounds that the WMP is being developed and will be implemented in order to comply with various mandates involving TMDLs, water quality standards and other similar Permit requirements, which requirements in the Permit are not mandated by the Clean Water Act, and with the Cities being unable to impose fees in order to recover their costs for developing and implementing this WMP.

2. Receiving Water Monitoring Approach

As outlined in the MRP, receiving water monitoring is intended to assess whether water quality objectives are being achieved, whether beneficial uses are supported, and to track trends in constituent concentrations over time. The requirements in the MRP include receiving water monitoring sites at previously designated County of Los Angeles Department of Public Works (LACDPW) mass emission stations (MES), TMDL receiving water compliance points, and additional receiving water locations representative of the impacts from MS4 discharges.

Through the evaluation of previously-utilized and existing receiving water monitoring sites, as summarized in **Section 1**, no existing MES were located within the LAR UR2 WMA. Additionally, there are no other existing receiving water monitoring sites located in relation to the LAR UR2 WMA. The existing downstream MES and other surrounding monitoring sites were not considered because they would be ineffective for characterizing local discharges, as they are located further downstream of the LAR UR2 WMA and receive significant tributary flows that are unrepresentative of the group. New receiving water monitoring locations were selected and are summarized in the following sections.

2.1 Receiving Water Monitoring Objectives

The objectives of the receiving water monitoring include the following (Part II.E.1 of the MRP):

- Determine whether the receiving water limitations are being achieved;
- Assess trends in pollutant concentrations over time, or during specified conditions; and
- Determine whether the designated beneficial uses are fully supported as determined by water chemistry, as well as aquatic toxicity and bioassessment monitoring.

2.2 Receiving Water Monitoring Sites

The primary objective of receiving water monitoring is to assess trends in pollutant concentrations over time, or during specified conditions. To address the receiving water monitoring objectives and WBPCs, one receiving water monitoring site was selected, LAR-UR2-RW, to represent the Los Angeles River, Reach 2. A receiving water monitoring site in the Rio Hondo, Reach 1 was not selected. In lieu of a receiving water monitoring site, for the Rio Hondo, an outfall site was selected. Additional information is summarized below. **Figure 2-1** presents the approximate location of the receiving water monitoring site for LAR UR2 WMA. A fact sheet summary for the receiving water monitoring site is presented in **Appendix D**.

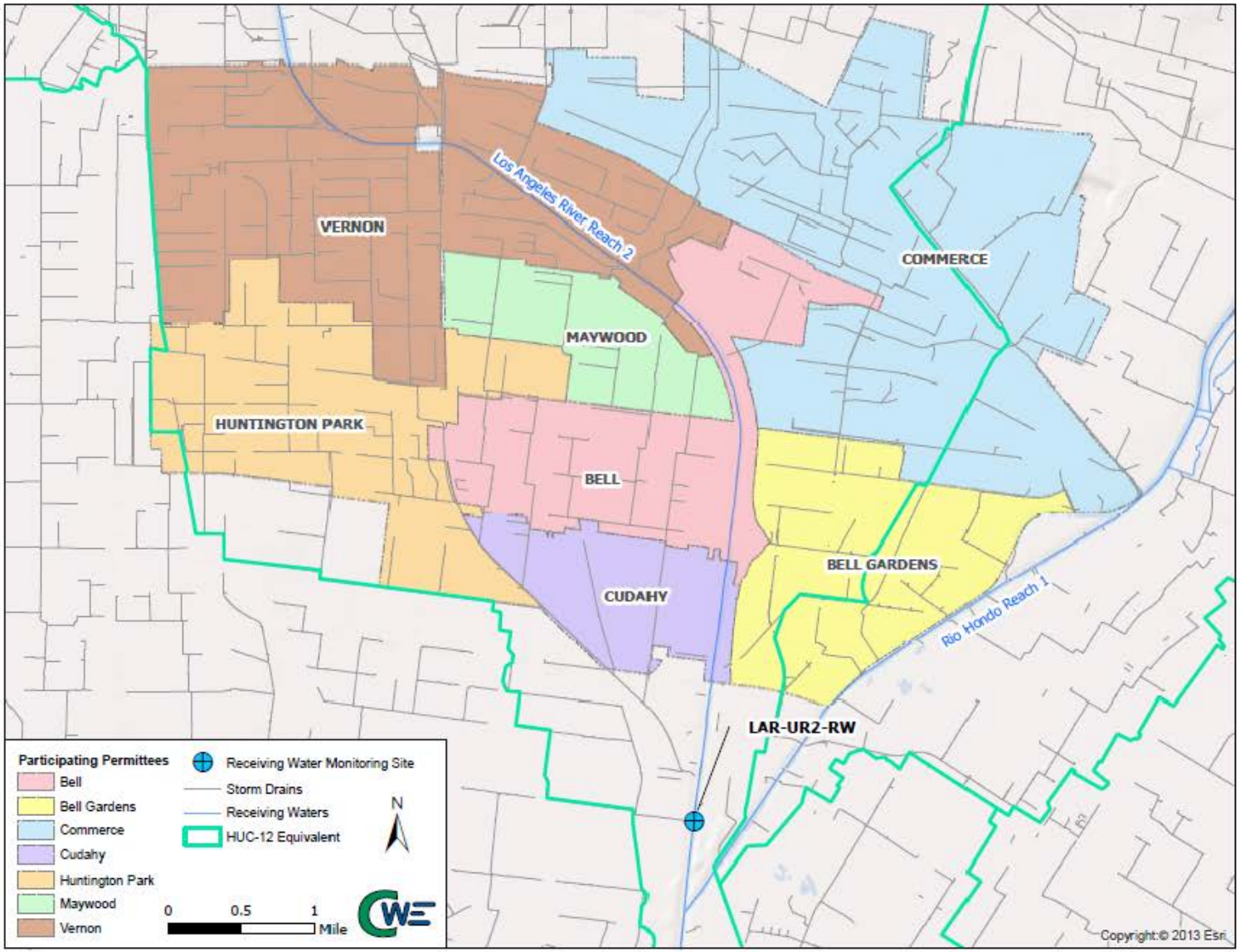

Figure 2-1 Receiving Water Monitoring Site Location

2.2.1 Los Angeles River (LAR-UR2-RW)

LAR-UR2-RW will be located in the City of South Gate, near the railroad trestle, or extension of Tweedy Boulevard. Sampling data from this location will assess the impact of LAR UR2 WMA MS4 discharges on the receiving water. The LAR-UR2-RW monitoring site is slightly downstream of the LAR UR2 WMA and receives discharges from the City of South Gate, which is not a LAR UR2 WMA member. The site is immediately downstream of major outfalls on both the east and west sides of the Los Angeles River that drain over 60% of the LAR UR2 WMA. Collection of samples will be done utilizing a fixed continuous autosampler.

Upstream receiving water monitoring will be coordinated with the Upper Los Angeles River Watershed Management Group (ULARWMG). The ULARWMG has identified a monitoring site that is located in the City of Los Angeles at Washington Boulevard, just upstream of LAR UR2 WMA. Water quality data at this location would be valuable for assessing the true impact of LAR UR2 WMA discharges on the receiving water. **Table 2-1** provides a summary of information for the LAR-UR2-RW site.

Table 2-1 LAR-UR2-RW Receiving Water Monitoring Site Summary

Site ID	Water Body/Location	Coordinates		Monitoring Type	
		Latitude	Longitude	RW	TMDL
LAR-UR2-RW	Los Angeles River/ near the railroad trestle, or extension of Tweedy Boulevard	33.940550	-118.174528	X	X

2.2.2 Rio Hondo

A receiving water monitoring site in the Rio Hondo in Reach 1 was not selected for the LAR UR2 WMA. Within the LAR UR2 WMA, the Rio Hondo is located on the entire eastern jurisdictional boundary. Adjacent to the LAR UR2 WMA, flows in the Rio Hondo are completely comingled with runoff from the Lower Los Angeles River (LLAR) group's cities of Pico Rivera and Downey. The discharge from these cities would confound the assessment of receiving water quality for the LAR UR2 WMA. The Los Angeles River Metals TMDL CMP has demonstrated that during dry-weather there is normally no dry-weather flow present in the Rio Hondo. During wet-weather, flows in this area are primarily derived from upstream areas which will be assessing their own receiving water quality. In lieu of selecting a receiving water monitoring site, the group has selected an outfall to monitor the discharges to the Rio Hondo. The stormwater outfall monitoring site, LAR-UR2-RHO, is representative of the LAR UR2 WMA Rio Hondo catchment, allowing direct water quality and pollutant load assessments. LAR-UR2-RHO encompasses about 74% of the total LAR UR2 WMA Rio Hondo catchment area. LAR-UR2-RHO is discussed further in **Section 4.2.1.**

2.3 TMDL Monitoring

TMDL monitoring requirements, as discussed in **Section 1**, within the LAR UR2 WMA are as follows:

- Los Angeles River Bacteria TMDL – Resolution 2010-007 and became effective on March 23, 2012
- Los Angeles River and Tributary Metals TMDL – Resolution 2007-014 and became effective on October 29, 2008, and Resolution 2010-003 effective on November 3, 2011
- Los Angeles River Nitrogen Compounds and Related Effects TMDL – Resolution 2003-009 and became effective on March 23, 2004. Site Specific Objectives (SSOs) for Ammonia were approved by the State Water Resources Control Board (SWRCB) June 4, 2013

- Los Angeles River Trash TMDL – adopted Resolution 2007-012 and became effective on September 23, 2008

To satisfy TMDL monitoring requirements, LAR UR2 WMA will monitor each specific TMDL constituent at all proposed receiving water, stormwater outfall-based and non-stormwater outfall-based monitoring sites. Additional monitoring requirements are summarized in the sections below.

2.3.1 Los Angeles River Bacteria TMDL

The LAR UR2 WMA is in the process of developing and submitting a Load Reduction Strategy (LRS) plan. Submittal of this plan will be separate from the CIMP. Until the LRS has been developed and approved by the Regional Board, LAR UR2 WMA will commence monitoring for *E. coli* at the proposed monitoring sites and frequency for each CIMP monitoring program (Receiving Water, Stormwater Outfall and Non-stormwater outfall). The LAR UR2 WMA is proposing this frequency schedule since monitoring for bacteria has not been conducted within the LAR UR2 WMA.

2.3.2 Los Angeles River and Tributary Metals TMDL

The existing Los Angeles River Metals TMDL Coordinated Monitoring Plan (CMP) is expected to be replaced by the incoming proposed CIMPs and IMPs, pending Regional Board Approval. Currently, the Metals CMP includes a three-tiered assessment of jurisdictional progress towards attainment of wet- and dry-weather water quality objectives. Three Tier I monitoring sites, near but not within the LAR UR2 WMA, are monitored monthly as grab samples. One site is located directly north of the City of Vernon. Two other Tier I monitoring sites are located immediately north of the confluence of the Rio Hondo and Los Angeles River. These sites receive runoff from, and are about one and a half miles downstream of, the LAR UR2 WMA.

The LAR UR2 WMA will continue to participate and cooperate in the CMP. Prior to the end of the CMP, LAR UR2 WMA will initiate Los Angeles River and Tributary Metals TMDL monitoring at the monitoring locations and frequency proposed in this CIMP. The LAR UR2 WMA is proposing this frequency schedule since monitoring for bacteria has not been conducted within the LAR UR2 WMA.

2.3.3 Los Angeles River Nitrogen Compounds and Related Effects TMDL

Outside of POTW or WRP, monitoring requirements for the Los Angeles River Nitrogen Compounds and Related Effects TMDL were not identified. To meet the TMDL monitoring requirements, the LAR UR2 WMA will monitor for these listed TMDL constituents at the CIMP monitoring sites and frequencies.

2.3.4 Los Angeles River Trash TMDL

Los Angeles River Trash TMDL does not require monitoring, and the LAR UR2 WMA is not required to conduct any type of monitoring if it is complying with the WLAs through the implementation of BMPs. Each of the individual LAR UR2 WMA permittees have submitted a compliance strategy through the development of BMP installation schedules, based on the DGR studies. To show compliance, a progress report based on installation of structural BMPs, such as full capture or partial capture systems, institutional controls, or any BMPs, is to be included in each individual LAR UR2 WMA permittees Annual Report.

2.4 Monitored Parameters and Frequency

Each constituent required for monitoring by the MRP is addressed by the receiving water monitoring site LAR-UR2-RW. Wet- and dry-weather monitoring frequency, parameters, and duration will be addressed in the following sections. Parameters for monitoring were based on the water quality priorities, as discussed in **Section 1.2**. Additional analytical and monitoring procedures are presented in the Quality Assurance Project Program (QAPP) Plan in **Appendix E**.

2.4.1 Wet-weather

For receiving water monitoring within LAR UR2 WMA, wet-weather will be defined as when the flow within the receiving water is at least 20 percent greater than the base flow. Wet-weather samples will be collected using a fixed continuous autosampler and sampled three times a year for all parameters except for aquatic toxicity which will be performed twice a year, per Part VI.C.1.a of the MRP. Wet-weather monitoring will target the first significant rain event of the wet season (October to April) of the storm year (July 1 to June 30) with a predicted rainfall of at least 0.25 inch at a seventy percent probability of rain fall at least 24 hours prior to the event start time. Because a significant storm event is based on predicted rainfall, it is recognized that monitoring may be triggered without 0.25 inches of rainfall actually occurring. If monitoring occurs, without the projected 0.25 inches of rainfall, but exceed the 20 percent or greater base flow of the receiving water, the event will still qualify as meeting the monitoring requirement provided that sufficient sample volume is collected to perform all required laboratory analysis. Documentation will be provided showing the predicted rainfall depth. LAR UR2 WMA will then target at least two subsequent wet-weather events that forecast sufficient rainfall and base flow. Sampling events will be separated by a minimum of three day of dry conditions (less than 0.1 inch of rain each day). Wet-weather receiving water monitoring will be performed in a close coordination with stormwater outfall monitoring to be reflective of potential impacts from MS4 discharges. Parameters to be collected and sampling frequency to meet to the receiving water monitoring requirements of the MPR are summarized in **Table 16**. Wet-weather receiving water monitoring will be conducted for the duration of the MS4 permit.

2.4.2 Dry-weather

Dry-weather, for LAR UR2 WMA receiving water monitoring, will be defined as when the flow is less than 20 percent greater than the base flow. Dry-weather receiving water monitoring will be conducted two times per year for all parameters except aquatic toxicity, which will be monitored once per year, as outlined in Part VI.D.1.a of the MRP. A summary of constituents and monitoring frequency for the receiving water monitoring sites is presented in **Table 2-2**. Dry-weather receiving water monitoring will be conducted for the duration of the MS4 permit.

Table 2-2 Schedule and Constituent Summary for Receiving Water Monitoring Sites and Annual Frequency (wet/dry)[1]	
Constituents	**Site ID**
	LAR-UR2-RW
Flow and field parameters[2]	3/2
Pollutants identified in Table E-2 of the MRP[3]	1[4]/1[4]
Aquatic Toxicity and	2/1
Toxicity Identification Evaluation (TIE)	
E. coli	3/2[5]
Cadmium[6]	3/2
Copper[6]	
Lead[6]	
Zinc[6]	
Ammonia	
Nitrate - N	
Nitrite - N	
Nitrate-N + Nitrite-N	
Oil	

1. Annual frequency listed as number of wet-weather/dry-weather events per year, respectively (e.g., 3/2 signifies three wet-weather and two dry-weather events per year).
2. Field parameters are defined as DO, pH, temperature, and specific conductivity.
3. All pollutants identified in Table E-2 of the MRP not already explicitly addressed by monitoring at this site.
4. Monitoring frequency only applies during the first year of monitoring. For pollutants identified in Table E-2 of the MRP that are not detected at the Method Detection Limit (MDL) or the result is below the lowest applicable water quality objective, additional monitoring will not be conducted (i.e., the monitoring frequency will become 0/0). For pollutants detected above the lowest applicable water quality objective, future monitoring will be conducted at the frequency specified in the MRP (i.e., the monitoring frequency will become 3/2).
5. *E. coli* will be monitored at the receiving water site.
6. TSS and Hardness will be monitored when metals are monitored.

3. GIS Database

To meet the requirements of Part VII of the MRP, a map(s) and/or database of the MS4 storm drains, channels, and outfalls must be submitted with the CIMP and include the following information (Part VII.A of the MRP):

1. Surface water bodies within the Permittee(s) jurisdiction
2. Sub-watershed (HUC-12) boundaries
3. Land use overlay
4. Effective Impervious Area (EIA) overlay (if available)
5. Jurisdictional boundaries
6. The location and length of all open channel and underground pipes 18 inches in diameter or greater (with the exception of catch basin connector pipes)
7. The location of all dry-weather diversions
8. The location of all major MS4 outfalls within the Permittee's jurisdictional boundary. Each major outfall shall be assigned an alphanumeric identifier, which must be noted on the map
9. Notation of outfalls with significant NSW discharges (to be updated annually)
10. Storm drain outfall catchment areas for each major outfall within the Permittee(s) jurisdiction
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    a. Ownership
    b. Coordinates
    c. Physical description
    d. Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time
    e. Determination of whether the outfall conveys significant NSW discharges
    f. Stormwater and NSW monitoring data

Attachment A of the MS4 Permit defines major MS4 outfall (or ''major outfall'') as a municipal separate storm sewer outfall that discharges from a single pipe with an inside diameter of 36 inches or more or its equivalent (discharge from a single conveyance other than circular pipe which is associated with a drainage area of more than 50 acres); or for municipal separate storm sewers that receive stormwater from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), an outfall that discharges from a single pipe with an inside diameter of 12 inches or more or from its equivalent (discharge from other than a circular pipe associated with a drainage area of 2 acres or more) (40 CFR § 122.26(b)(5)).

Available Geographic Information System (GIS) data were reviewed to determine whether components 1 through 11.f from the list specified in the MRP were available for submittal. Based on the review of the GIS data, components 1 through 11.f from the list specified in the MRP were divided into available information or pending information and schedule for completion, **Section 3.2** and **3.3**, respectively.

3.1 Program Objectives

Each year, storm drains, channels, outfalls map and associated database for the LAR UR2 WMA are required to be updated to incorporate the most recent characterization data for outfalls with significant non-stormwater discharge.

3.2 Available Information

The LAR UR2 WMA reviewed Part VII.A of the MRP and gathered the available information for the group. The following data are readily available for submittal as a map and/or in a database (note, the numbering corresponds to the item number in the Permit list):

1. Surface water bodies within the Permittee(s) jurisdiction
2. Sub-watershed (HUC-12) boundaries
3. Land use overlay
5. Jurisdictional boundaries
6. The location and length of all open channel and underground pipes 18 inches in diameter or greater (with the exception of catch basin connector pipes)
7. The location of all dry-weather diversions
8. The location of all major MS4 outfalls within the Permittee's jurisdictional boundary
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    b. Coordinates
    c. Physical description
    d. Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time
    f. Stormwater and NSW monitoring data

In addition, some of the following data are readily available but have data gaps that will be addressed through review of existing information or will be generated based on additional data processing (i.e., Non-Stormwater Outfall Screening and Inventory) by the LAR UR2 WMA Permittees:

10. Storm drain outfall catchment areas for each major outfall within the Permittee(s) jurisdiction
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    a. Ownership

Figure 1-2 through **Figure 1-5** contain available information, listed above, for the LAR UR2 WMA, while **Appendix B** contains an map of the approximately 100 outfalls observed adjacent to the Permittees, some of which may be associated with individual or general Permittee, other than the LAR UR2 WMA members. **Appendix C** contains an initial database for tracking Stormwater Outfall based monitoring, but no analytical data has yet been collected so that portion of the work sheet was not inserted.

3.3 Pending Information and Schedule for Completion

From the review, the following data are not currently available for submittal as a map and/or in a database, but are scheduled for completion:

4. Effective Impervious Area (EIA) overlay
9. Notation of outfalls with significant NSW discharges (to be updated annually)
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    e. Determination of whether the outfall conveys significant NSW discharges

Completion of the data, listed above, is in progress and will be collected through the implementation of the CIMP, specifically the Non-Stormwater Outfall Monitoring Program.

4. Stormwater Outfall Monitoring Approach

Stormwater outfall monitoring assesses compliance with municipal action limits (MALs), WQBELs derived from TMDL WLAs, as well as the potential to have caused or contributed exceedances of RWLs derived from TMDL WLAs or receiving water quality objectives. The majority of LAR UR2 WMA storm drains generally drain south through multiple jurisdictions. An analysis of land use per HUC-12, drainage area and LAR UR2 WMA was conducted for each monitoring site.

4.1 Program Objectives

As outlined in the MRP (Part VIII.A of the MRP), stormwater discharges from the MS4 shall be monitored at outfalls and/or alternative access points such as manholes, or in channels representative of the land uses within the Permittee's jurisdiction to support meeting the three objectives of the stormwater outfall based monitoring program:

1. Determine the quality of a Permittee's discharge relative to municipal action levels, as described in Attachment G of the MS4 Permit;
2. Determine whether a Permittee's discharge is in compliance with applicable stormwater WQBELs derived from TMDL WLAs; and
3. Determine whether a Permittee's discharge causes or contributes to an exceedance of receiving water limitations.

Each stormwater outfall monitoring site was evaluated and assessed on how representative they are of the surrounding land use of the LAR UR2 WMA, jurisdictions, and the HUC-12. Each zoning category provided by the RAA guidance manual was fit into one of the following eight land use categories:

- Agricultural;
- Industrial;
- Single Family Residential;
- Open Space
- Commercial;
- Education;
- Multi-Family Residential; and
- Transportation

4.2 Stormwater Outfall Monitoring Sites

The Permit provides monitoring site "default" requirements, one site per HUC-12 per jurisdiction, for achieving stormwater outfall monitoring objectives. The MS4 Permit also allows for an alternative approach to increase the cost efficiency and effectiveness of the monitoring program. The LAR UR2 WMA has chosen an alternative to the default Permit approach. Seven stormwater outfall monitoring sites, as shown in **Figure 4-1**, were selected as part of the alternative approach. The seven monitoring sites comprise about 79% of the catchment area of the LAR UR2 WMA. The selected sites are representative of a combination of the HUC-12 equivalents, jurisdictions, and/or land uses within each drainage area which they have been chosen to represent. LAR UR2 WMA Stormwater outfall samples will be collected upstream of the outfalls at manholes, utilizing a portable autosampler. One stormwater outfall monitoring site (LAR-UR2-RHO) will be monitored at every wet-weather event and the remaining six stormwater outfall monitoring sites will be monitored on a rotation basis, where one site to the north and one site to the south will be monitored per storm event. A synopsis of each potential outfall catchment area, along with an analysis of its land use/zoning characteristics are summarized below. **Table 4-1** provides a summary for the seven stormwater outfall monitoring sites and **Appendix D** provides a summary of fact sheet summary for the stormwater outfall monitoring sites.

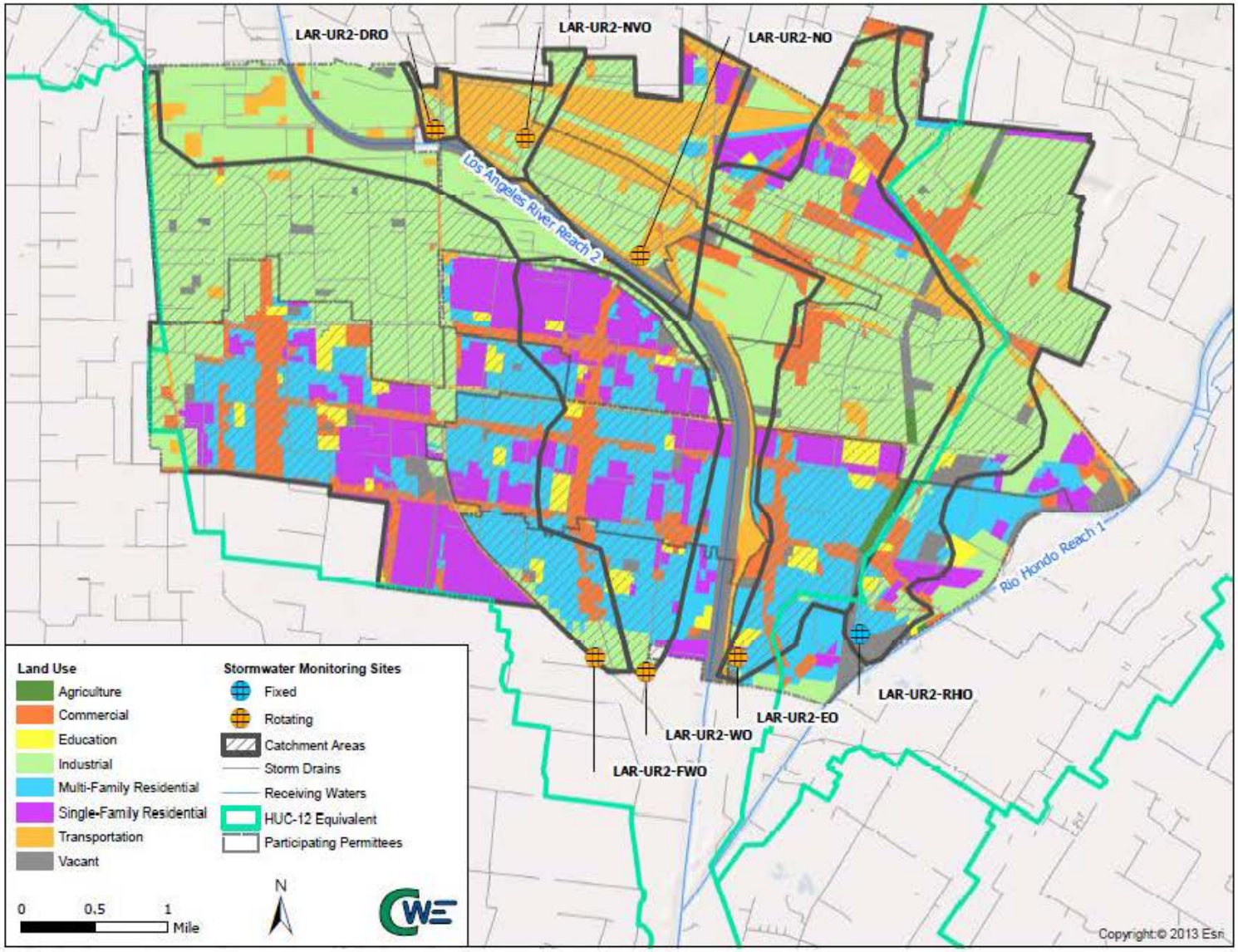

Figure 4-1 Stormwater Outfall Monitoring Sites Location

Table 4-1 Stormwater Outfall Monitoring Site Summary						
Outfall ID	**Tributary HUC-12 Area**	**Jurisdiction Where Site is Located**	**Jurisdictions Draining to the Site**	**Facility**	**Latitude**	**Longitude**
Fixed Site						
LAR-UR2-RHO	Alhambra Wash - Rio Hondo	Bell Gardens	Bell Gardens, Commerce	Manhole	33.959003	-118.154614
Rotating Sites						
LAR-UR2-DRO	Chavez Ravine - Los Angeles River	Vernon	Vernon	Manhole	34.008539	-118.205166
LAR-UR2-EO	Chavez Ravine - Los Angeles River	Bell Gardens	Bell, Bell Gardens, Commerce, Vernon	Outfall	33.956663	-118.169102
LAR-UR2-NO	Chavez Ravine - Los Angeles River	Vernon	Bell, Commerce, Vernon	Manhole	33.996050	-118.180775
LAR-UR2-WO	Chavez Ravine - Los Angeles River	Cudahy	Bell, Cudahy, Huntington Park, Maywood, Vernon	Manhole	33.955146	-118.179975
LAR-UR2-NVO	Chavez Ravine - Los Angeles River	Vernon	Commerce, Vernon	Manhole	34.007733	-118.194464
LAR-UR2-FWO	Chavez Ravine - Los Angeles River	Cudahy	Bell, Cudahy, Huntington Park, Maywood, Vernon	Manhole	33.956591	-118.186050

4.2.1 LAR-UR2-RHO

As discussed in **Section 2.2.2**, Rio Hondo receiving water monitoring in not being proposed as the WMA makes up only about four percent of the subwatershed. Stormwater outfall site LAR-UR2-RHO, shown in **Figure 4-2**, receives runoff from about 71% of the total LAR UR2 WMA Rio Hondo tributary area. This location is proposed as a "fixed outfall site" meaning that it will be sampled for three wet-weather events annually and can contribute data towards other receiving water monitoring efforts. The LAR-UR2-RHO location is the BI0539 – Line A –storm drain manhole located in the John Anson Ford Park parking lot near the intersection of Park Lane and Gillard Avenue in the City of Bell Gardens. It receives runoff from the Cities of Bell Gardens and Commerce and is representative of MS4 discharge to the Rio Hondo, within the Alhambra Wash HUC-12 areas. A comparative analysis, presented in **Table 4-2**, demonstrates that the land use composition of the catchment tributary to site LAR-UR2-RHO should be representative of the total LAR UR2 WMA draining to the Rio Hondo.

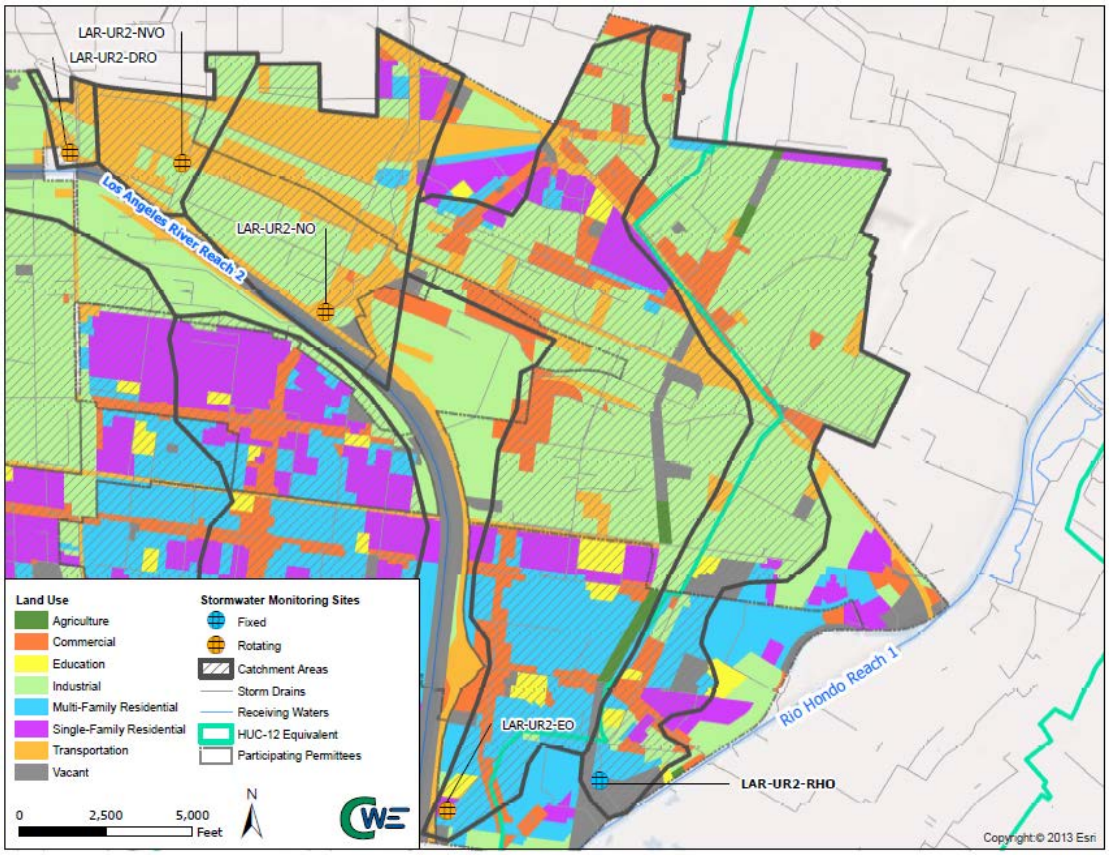

Figure 4-2 LAR-UR2-RHO Stormwater Outfall Monitoring Site

Table 4-2 LAR-UR2-RHO Tributary Area

Land Use Category	Catchment		LAR UR2 WMA Portion of Rio Hondo HUC-12 area		LAR UR2 WMA Total	
	Acres	Percentage	Acres	Percentage	Acres	Percentage
Agriculture	9.30	0.52%	11.02	0.48%	46.00	0.32%
Commercial	162.49	9.09%	179.17	7.88%	1418.94	9.98%
Education	23.31	1.30%	41.10	1.81%	311.42	2.19%
Industrial	1195.52	66.88%	1232.08	54.16%	6028.97	42.41%
MF Residential	123.20	6.89%	380.11	16.71%	2412.98	16.98%
SF Residential	65.85	3.68%	164.16	7.22%	1783.77	12.55%
Transportation	85.50	4.78%	66.34	2.92%	1369.82	9.64%
Vacant	122.38	6.85%	200.88	8.83%	843.43	5.93%
Total	1787.55	100%	2274.86	100%	14215.34	100%

Based on the findings from the comparative analysis of the watershed drainage to the Rio Hondo, there is no necessity or value in conducting receiving water monitoring in the Rio Hondo for the LAR UR2 WMA. Under these circumstances, the most definitive source of LAR UR2 WMA water quality data to the Rio Hondo receiving water would be the data provided by the LAR-UR2-RHO stormwater outfall monitoring site. A summary of the LAR-UR2-RHO stormwater monitoring site information is presented in **Table 4-3**.

Table 4-3 LAR-UR2-RHO Stormwater Outfall Monitoring Site Summary						
Outfall ID	**Tributary HUC-12 Area**	**Jurisdiction Where Site is Located**	**Jurisdictions Draining to the Site**	**Facility**	**Latitude**	**Longitude**
LAR-UR2-RHO	Alhambra Wash - Rio Hondo	Bell Gardens	Bell Gardens, Commerce	Manhole	33.959003	-118.154614

4.2.2 Rotating Stormwater Outfall Monitoring Sites

LAR UR2 WMA has decided to rotate monitoring between the six stormwater outfall sites that are representative of the entire watershed. The six rotating stormwater outfall sites will be sampled in conjunction with the receiving water site and the "fixed" LAR-UR2-RHO stormwater outfall monitoring site. Two stormwater outfall monitoring sites will be monitored during each storm event, where one site in the north and one site in the south will be monitored. Each group of monitoring sites will be monitored once per year and will rotate between the first, second and third storm event. **Table 4-4** presents the preliminary rotation schedule for the six stormwater outfall monitoring sites.

Table 4-4 Stormwater Outfall Monitoring Rotation Schedule						
Outfall ID	**Storm Year**					
	2014-2015	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**
Group 1						
LAR-UR2-DRO	1	2	3	1	2	3
LAR-UR2-EO						
Group 2						
LAR-UR2-NO	2	3	1	2	3	1
LAR-UR2-WO						
Group 3						
LAR-UR2-NVO	3	1	2	3	1	2
LAR-UR2-FWO						

1 First storm event
2 Second storm event
3 Third storm event

4.2.2.1 LAR-UR2-DRO (Downey Road)

The stormwater outfall monitoring site LAR-UR2-DRO receives runoff from the BI5206 – Los Angeles storm drain, which primarily receives runoff from the non WMA group member, City of Los Angeles, and a small portion of the City of Vernon. Samples for LAR-UR2-DRO will be collected, utilizing portable autosamplers, in a manhole located on the sidewalk on the southwest corner of Bandini Boulvard and South Downey Road. Stormwater outfall monitoring site LAR-UR2-DRO is located in the Chavez Ravine - Los Angeles River HUC-12 area.

An analysis comparing the land use composition within the LAR UR2 WMA portion of the LAR-UR2-DRO catchment area, to that of the greater LAR UR2 WMA, indicates the LAR-UR2-DRO area is not representative of the LAR UR2 WMA or the City of Vernon. However, from the comparative analysis, stormwater outfall monitoring site LAR-UR2-DRO is representative entirely of the industrial land use category. Based on these findings, water quality data from LAR-UR2-DRO will be used to represent the findings for the industrial land use category in the LAR UR2 WMA.

Table 4-5 presents the land use comparative analysis of the LAR-UR2-DRO tributary area. A summary of stormwater outfall monitoring site LAR-UR2-DRO is found in **Table 4-6**.

Table 4-5 LAR-UR2-DRO Tributary Area

Land Use Category	Catchment		Vernon		LAR UR2 WMA Portion of Los Angeles River HUC-12 area	
	Acres	Percentage	Acres	Percentage	Acres	Percentage
Agriculture	0	0%	0	0%	34.98	0.29%
Commercial	0	0%	16.37	0.50%	1239.48	10.38%
Education	0	0%	2.67	0.08%	270.08	2.26%
Industrial	25.57	35.91%	2556.40	77.52%	4796.90	40.18%
MF Residential	0	0%	0.23	0.01%	2032.77	17.03%
SF Residential	0	0%	0.93	0.03%	1618.17	13.55%
Transportation	37.75	53.00%	494.04	14.98%	1303.48	10.92%
Vacant	0.29	0.40%	226.95	6.88%	642.48	5.38%
Unincorporated	7.61	10.68%	0	0%	0	0%
Total	71.22	100%	3297.60	100%	11938.34	100%

Table 4-6 LAR-UR2-DRO Stormwater Outfall Monitoring Site Summary

Outfall ID	Tributary HUC-12 Area	Jurisdiction Where Site is Located	Jurisdictions Draining to the Site	Facility	Latitude	Longitude
LAR-UR2-DRO	Chavez Ravine - Los Angeles River	Vernon	Vernon	Manhole	34.008539	-118.205166

Figure 4-3 and **Figure 4-4** illustrate the catchment area of LAR-UR2-DRO as well as the monitoring site location in relation to the LAR UR2 WMA.

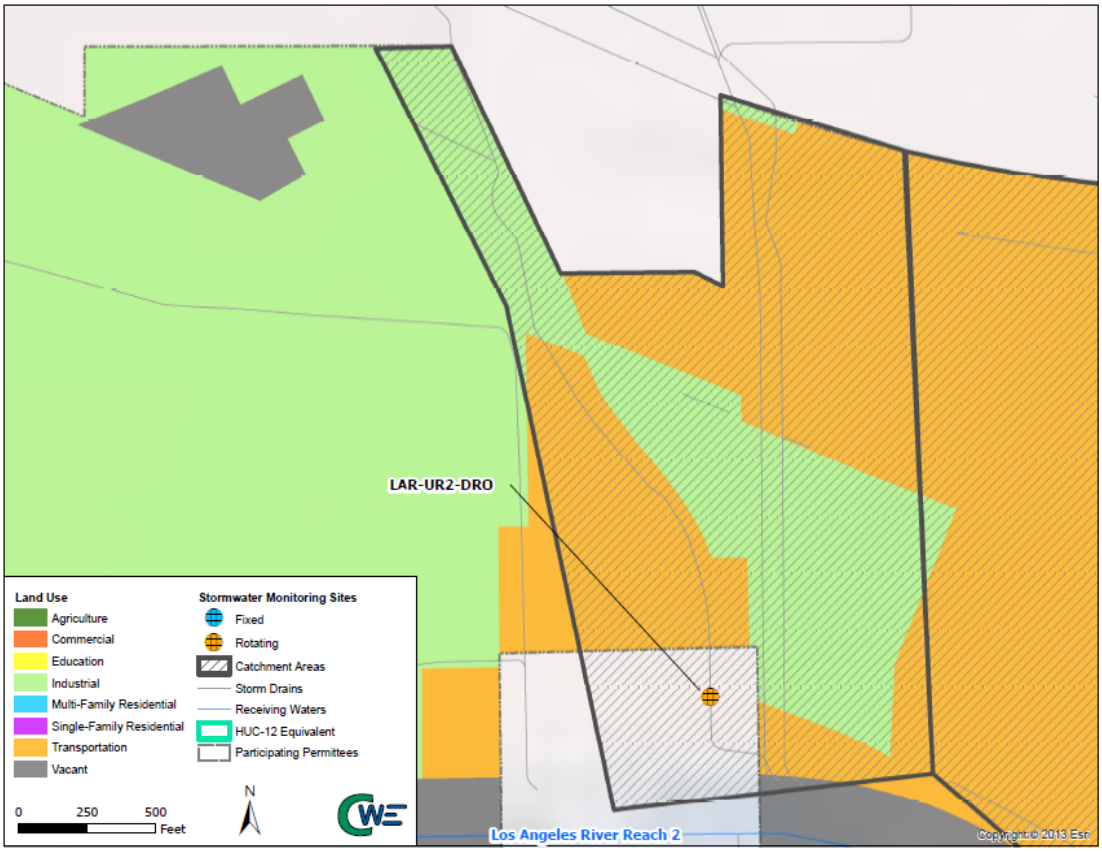

Figure 4-3 LAR-UR2-DRO Stormwater Outfall Monitoring Site

4.2.2.2 LAR-UR2-EO (East Los Angeles River)

Stormwater outfall monitoring site LAR-UR2-EO, presented in **Figure 4-4**, receives runoff from the DDI 23 storm drain, which receives drainage from the Cities of Bell, Bell Gardens, Commerce and a small portion of Vernon. Samples for LAR-UR2-EO will be collected over the outfall, which can be accessed in the channel near 8287 Jaboneria Road in the City of Bell Gardens. LAR UR2 WMA will install portable autosamples over the outfall prior to the storm event to collect the samples for LAR-UR2-EO. Monitoring site LAR-UR2-EO is located in the Chavez Ravine - Los Angeles River HUC-12 area.

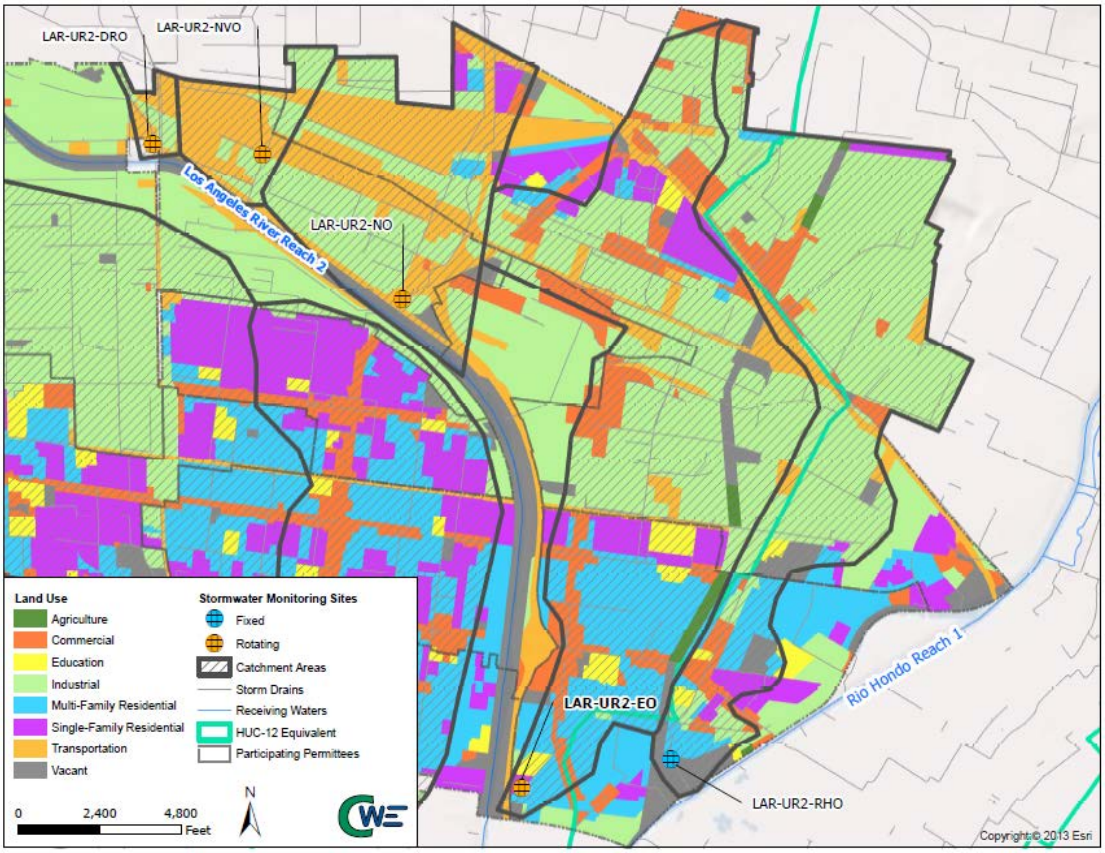

Figure 4-4 LAR-UR2-EO Stormwater Outfall Monitoring Site

Table 4-7 presents an analysis comparing the land use composition within the LAR-UR2-EO catchment area, to that of the whole LAR UR2 WMA. From the analysis, drainage from LAR-UR2-EO is representative of the LAR UR2 WMA as a whole. Land use categories commercial, industrial, high density single family residential as well as open space are well represented in the LAR-UR2-EO catchment area.

Table 4-7 LAR-UR2-EO Tributary Area

Land Use Category	Catchment		LAR UR2 WMA Portion of Los Angeles River HUC-12 area		LAR UR2 WMA Total	
	Acres	Percentage	Acres	Percentage	Acres	Percentage
Agriculture	34.96	1.44%	34.98	0.30%	46.00	0.32%
Commercial	364.37	15.07%	1239.48	10.38%	1418.94	9.98%
Education	75.08	3.11%	270.08	2.26%	311.42	2.19%
Industrial	1036.52	42.88%	4796.90	40.18%	6028.97	42.41%
MF Residential	443.02	18.33%	2032.77	17.03%	2412.98	16.98%
SF Residential	187.43	7.75%	1618.17	13.55%	1783.77	12.55%
Transportation	188.99	7.82%	1303.48	10.92%	1369.82	9.64%
Vacant	87.00	3.60%	642.48	5.38%	843.43	5.93%
Total	2417.35	100%	11938.34	100%	14215.34	100%

A summary of stormwater outfall monitoring site LAR-UR2-EO is found in **Table 4-8**.

Table 4-8 LAR-UR2-EO Stormwater Outfall Monitoring Site Summary

Outfall ID	Tributary HUC-12 Area	Jurisdiction Where Site is Located	Jurisdictions Draining to the Site	Facility	Latitude	Longitude
LAR-UR2-EO	Chavez Ravine - Los Angeles River	Bell Gardens	Bell, Bell Gardens, Commerce, Vernon	Outfall	33.956663	-118.169102

4.2.2.3 LAR-UR2-NO (North Los Angeles River)

Stormwater Outfall Monitoring Site LAR-UR2-NO, presented in **Figure 4-5**, is located in the Chavez Ravine - Los Angeles River HUC-12 area. LAR-UR2-NO receives runoff from the BI 0014 – U3 – DDI 22 storm drain line. The Cities of Commerce, Vernon and a small portion of Bell within LAR UR2 WMA as well as the non WMA group member, City of Los Angeles drains to LAR-UR2-NO. Samples for LAR-UR2-NO will be collected by a portable autosampler, installed in a manhole located in lane number 3 on South Atlantic Boulevard in the City of Vernon.

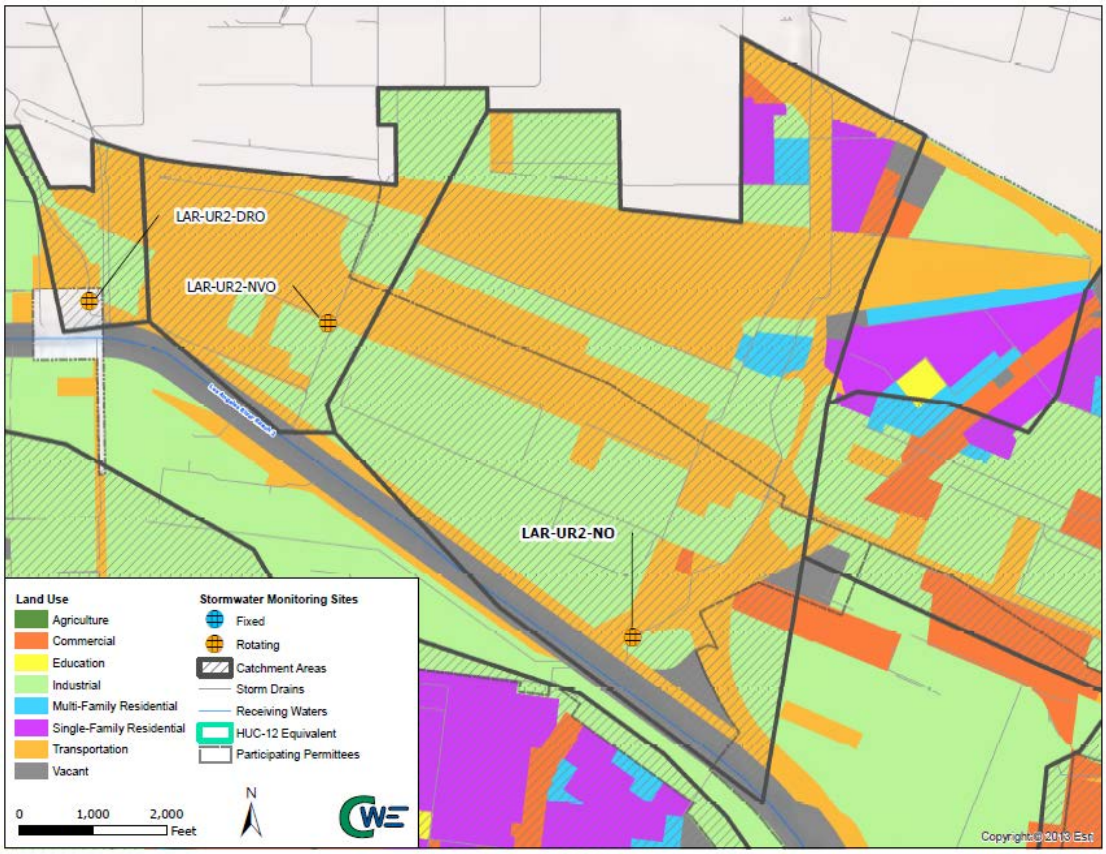

Figure 4-5 LAR-UR2-NO Stormwater Outfall Monitoring Site

Land use composition within the LAR-UR2-NO catchment area was compared to the total land use composition of all the LAR UR2 WMA. **Table 4-9** presents the findings from the land use analysis. From the analysis, LAR-UR2-NO area is not representative of the LAR UR2 WMA. However, LAR-UR2-NO is more comparable to the Cities of Commerce and Vernon, which is relatively dense in industrial land use and makes up approximately 86% of the catchment area. Based on these comparisons, samples collected at LAR-UR2-NO will be representative of the industrial land uses for the Cities of Commerce and Vernon.

Table 4-9 LAR-UR2-NO Tributary Area

Land Use Category	Catchment		Commerce		Vernon		LAR UR2 WMA Total	
	Acres	%	Acres	%	Acres	%	Acres	%
Agriculture	0	0%	19.46	0.46%	0	0%	46.00	0.32%
Commercial	19.83	1.95%	383.03	9.13%	16.37	0.50%	1418.94	9.98%
Education	0	0%	24.46	0.58%	2.67	0.08%	311.42	2.19%
Industrial	406.41	39.91%	2523.00	60.15%	2556.40	77.52%	6028.97	42.41%
MF Residential	18.94	1.86%	129.28	3.09%	0.23	0.01%	2412.98	16.98%
SF Residential	34.44	3.38%	292.25	6.97%	0.93	0.03%	1783.77	12.55%
Transportation	473.28	46.48%	650.51	15.51%	494.04	14.98%	1369.82	9.64%
Vacant	65.39	6.42%	172.50	4.11%	226.95	6.88%	843.43	5.93%
Total	1018.29	100%	4194.48	100%	3297.60	100%	14215.34	100%

A summary of stormwater outfall monitoring site LAR-UR2-NO is presented in **Table 4-10**.

Table 4-10 LAR-UR2-NO Stormwater Outfall Monitoring Site Summary

Outfall ID	Tributary HUC-12 Area	Jurisdiction Where Site is Located	Jurisdictions Draining to the Site	Facility	Latitude	Longitude
LAR-UR2-NO	Chavez Ravine - Los Angeles River	Vernon	Bell, Commerce, Vernon	Manhole	33.996050	-118.180775

4.2.2.4 LAR-UR2-WO (West Los Angeles River)

Stormwater outfall monitoring site LAR-UR2-WO, **Figure 4-6**, receives runoff from the BI 001 – U1 Line A – East Compton Creek, which primarily drains the Cities of Bell, Cudahy, Maywood and a small portion of Huntington Park. Stormwater outfall monitoring site LAR-UR2-WO is located in the Chavez Ravine - Los Angeles River HUC-12 area. Samples for LAR-UR2-WO will be collected in a manhole, via portable autosampler, at the T-intersection of Wilcox Avenue and Patata Street.

An analysis comparing land use composition within the LAR-UR2-WO catchment area, to that of the greater LAR UR2 WMA, **Table 4-11**, indicates the LAR-UR2-WO area is not representative of the LAR UR2 WMA as a whole, but has a high percentage of high density single family and multi-family/mixed residential land uses making up approximately 72% of the area. From these comparisons, LAR-UR2-WO will be used to represent the high density single family and multi-family/mixed residential land uses within LAR UR2 WMA.

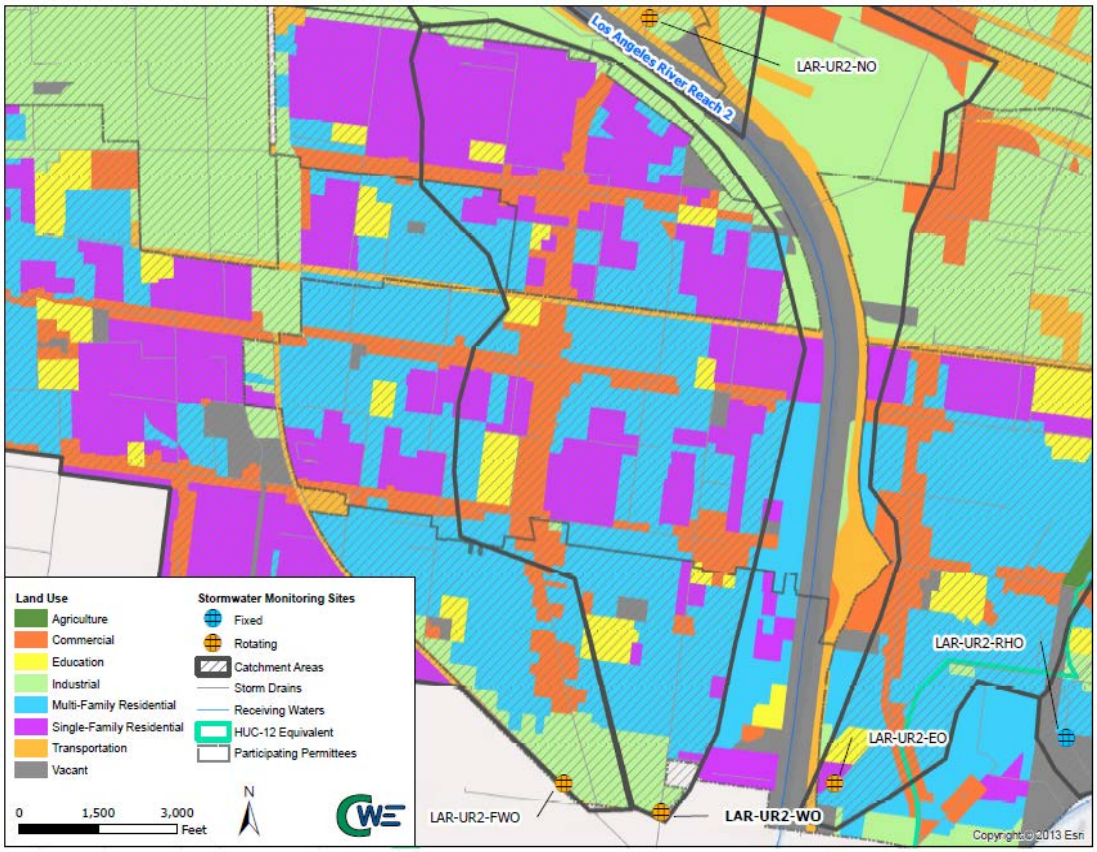

Figure 4-6 LAR-UR2-WO Stormwater Outfall Monitoring Site

Table 4-11 LAR-UR2-WO Tributary Area

Land Use Category	Catchment		LAR UR2 WMA Portion of Los Angeles River HUC-12 area		LAR UR2 WMA Total	
	Acres	Percentage	Acres	Percentage	Acres	Percentage
Agriculture	0	0%	34.98	0.30%	46.00	0.32%
Commercial	244.09	15.97%	1239.48	10.38%	1418.94	9.98%
Education	66.85	4.37%	270.08	2.26%	311.42	2.19%
Industrial	91.61	6.00%	4796.90	40.18%	6028.97	42.41%
MF Residential	565.52	37.01%	2032.77	17.03%	2412.98	16.98%
SF Residential	515.64	33.74%	1618.17	13.55%	1783.77	12.55%
Transportation	16.66	1.09%	1303.48	10.92%	1369.82	9.64%
Vacant	19.87	1.30%	642.48	5.38%	843.43	5.93%
South Gate	7.87	0.52%	0	0%	0	0%
Total	1528.12	100%	11938.34	100%	14215.34	100%

A summary of stormwater outfall monitoring site LAR-UR2-WO attributes are presented in **Table 4-12.**

Table 4-12 LAR-UR2-WO Stormwater Outfall Monitoring Site Summary						
Outfall ID	**Tributary HUC-12 Area**	**Jurisdiction Where Site is Located**	**Jurisdictions Draining to the Site**	**Facility**	**Latitude**	**Longitude**
LAR-UR2-WO	Chavez Ravine - Los Angeles River	Cudahy	Bell, Cudahy, Huntington Park, Maywood, Vernon	Manhole	33.955146	-118.179975

4.2.2.5 LAR-UR2-NVO (North Vernon)

The LAR-UR2-NVO stormwater outfall monitoring site, **Figure 4-7**, receives runoff from the DDI 26 storm drain, which receives discharge from the Cities of Vernon and a small portion of Commerce as well as non WMA group member, City of Los Angeles. Stormwater outfall monitoring site LAR-UR2-NVO is located in the Chavez Ravine - Los Angeles River HUC-12 area. Samples for LAR-UR2-NVO will be collected, utilizing portable autosamplers, in a manhole located in the center median near 3890 East 26th Street in the City of Vernon.

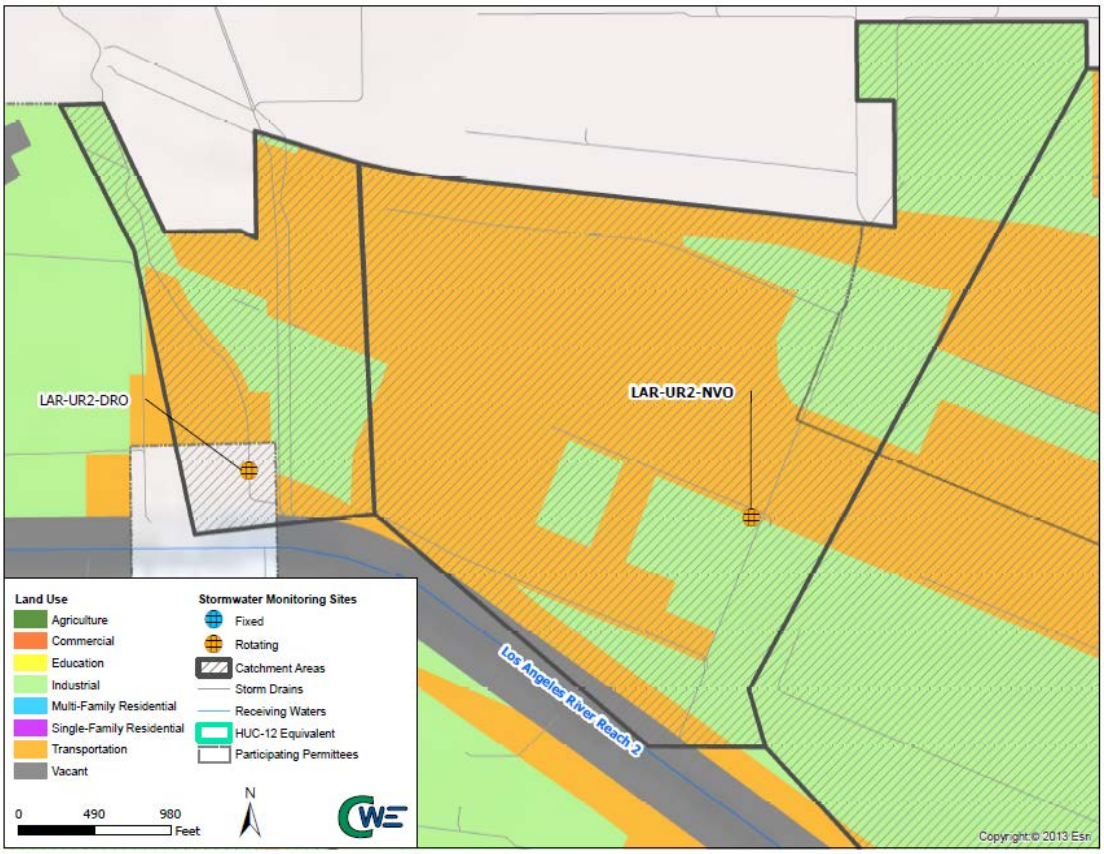

Figure 4-7 LAR-UR2-NVO Stormwater Outfall Monitoring Site

An analysis comparing the land use composition within the LAR-UR2-NVO catchment area within LAR UR2 WMA, **Table 4-13**, to that of the greater LAR UR2 WMA, indicates the LAR-UR2-NVO area is not representative of the LAR UR2 WMA. However, further analysis indicates the LAR-UR2-NVOarea is like the Cities of Commerce and Vernon, relatively dense in industrial land use categories which make up

approximately 98% of the area. Based on these findings, water quality data from LAR-UR2-NVO will be used to represent the industrial land use category in the LAR UR2 WMA.

Table 4-13 LAR-UR2-NVO Tributary Area

Land Use Category	Catchment		Commerce		Vernon		LAR UR2 WMA Total	
	Acres	%	Acres	%	Acres	%	Acres	%
Agriculture	0	0%	19.46	0.46%	0	0%	46.00	0.32%
Commercial	0	0%	383.03	9.13%	16.37	0.50%	1418.94	9.98%
Education	0	0%	24.46	0.58%	2.67	0.08%	311.42	2.19%
Industrial	91.70	35.09%	2523.00	60.15%	2556.40	77.52%	6028.97	42.41%
MF Residential	0	0%	129.28	3.09%	0.23	0.01%	2412.98	16.98%
SF Residential	0	0%	292.25	6.97%	0.93	0.03%	1783.77	12.55%
Transportation	165.58	63.36%	650.51	15.51%	494.04	14.98%	1369.82	9.64%
Vacant	4.07	1.56%	172.50	4.11%	226.95	6.88%	843.43	5.93%
Total	261.35	100%	4194.48	100%	3297.60	100%	14215.34	100%

A summary of attributes for stormwater outfall monitoring site LAR-UR2-NO is presented in **Table 4-14**.

Table 4-14 LAR-UR2-NVO Stormwater Outfall Monitoring Site Summary

Outfall ID	Tributary HUC-12 Area	Jurisdiction Where Site is Located	Jurisdictions Draining to the Site	Facility	Latitude	Longitude
LAR-UR2-NVO	Chavez Ravine - Los Angeles River	Vernon	Commerce, Vernon	Manhole	34.007733	-118.194464

4.2.2.6 LAR-UR2-FWO (Far West Los Angeles River)

LAR-UR2-FWO, **Figure 4-8**, stormwater outfall monitoring site receives runoff from the East Compton Creek No. 1 storm drain, which primarily receives discharge from the Cities of Cudahy, Huntington Park, Maywood, Vernon and a small portion of Bell. Samples for LAR-UR2-FWO will be collected using a portable autosampler in a manhole located on Salt Lake Avenue in the City of Cudahy, between Ardine Street and Atlantic Avenue. Stormwater outfall monitoring site LAR-UR2-FWO is located in the Chavez Ravine - Los Angeles River HUC-12 area.

Land use composition within the LAR-UR2-FWO catchment area was compared to the total land use composition of all the LAR UR2 WMA. **Table 4-15** presents the findings from the land use analysis. From the analysis, LAR-UR2-FWO catchment area to that of the greater LAR UR2 WMA, indicates the LAR-UR2-FWO area is representative of the area as a whole. Land use categories commercial, industrial, high density single family residential as well as open space are well represented in the LAR-UR2-FWO catchment area. A summary of attributes for stormwater outfall monitoring site LAR-UR2-FWO is presented in **Table 4-16**.

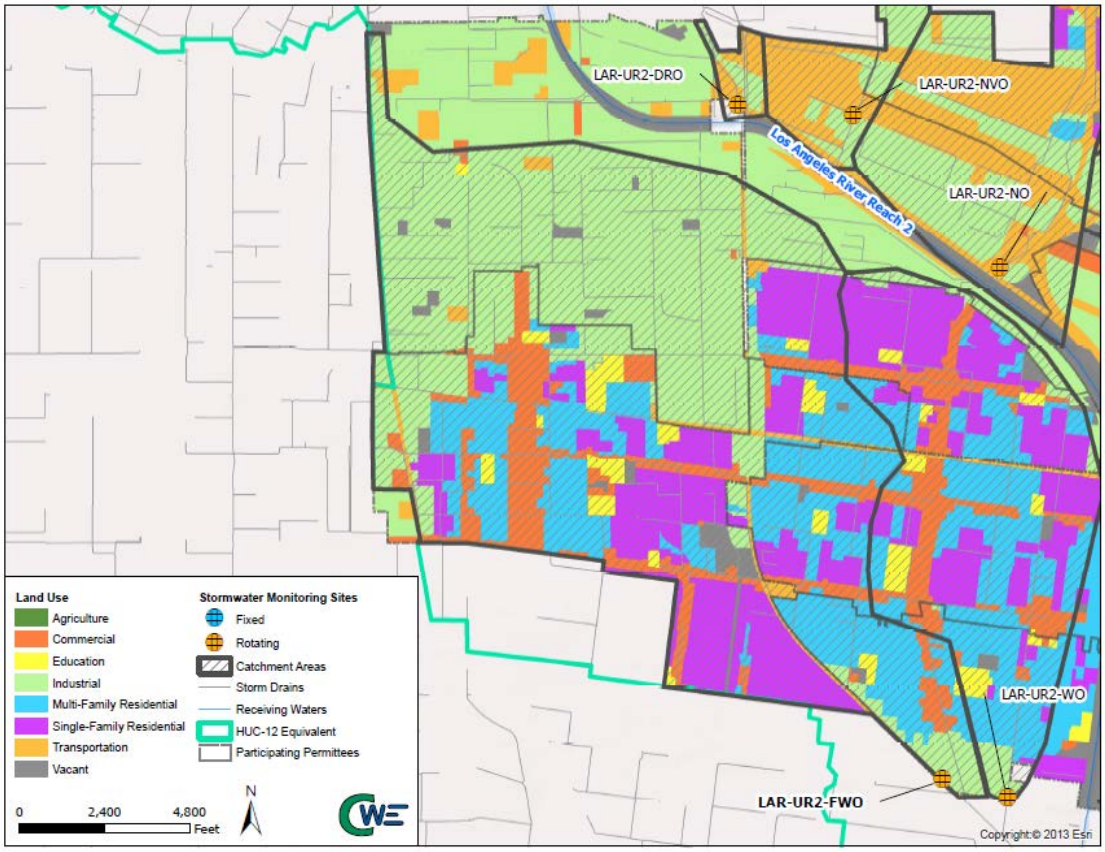

Figure 4-8 LAR-UR2-FWO Stormwater Outfall Monitoring Site

Table 4-15 LAR-UR2-FWO Tributary Area

Land Use Category	Catchment		LAR UR2 WMA Portion of Los Angeles River HUC-12 area		LAR UR2 WMA Total	
	Acres	Percentage	Acres	Percentage	Acres	Percentage
Agriculture	0	0%	34.98	0.29%	46.00	0.32%
Commercial	454.93	10.87%	1239.48	10.38%	1418.94	9.98%
Education	114.25	2.73%	270.08	2.26%	311.42	2.19%
Industrial	1763.25	42.14%	4796.90	40.18%	6028.97	42.41%
MF Residential	879.38	21.02%	2032.77	17.03%	2412.98	16.98%
SF Residential	749.79	17.92%	1618.17	13.55%	1783.77	12.55%
Transportation	111.22	2.66%	1303.48	10.92%	1369.82	9.64%
Vacant	100.63	2.40%	642.48	5.38%	843.43	5.93%
Unincorporated	10.86	0.26%	0	0%	0	0%
Total	4184.31	100%	11938.34	100%	14215.34	100%

Table 4-16 LAR-UR2-FWO Stormwater Outfall Monitoring Site Summary						
Outfall ID	**Tributary HUC-12 Area**	**Jurisdiction Where Site is Located**	**Jurisdictions Draining to the Site**	**Facility**	**Latitude**	**Longitude**
LAR-UR2-FWO	Chavez Ravine - Los Angeles River	Cudahy	Bell, Cudahy, Huntington Park, Maywood, Vernon	Manhole	33.956591	-118.186050

4.3 Monitored Frequency and Parameters

Stormwater outfall monitoring sites will be monitored for three storm events per year, prior to receiving water monitoring, for all required constituents except aquatic toxicity. Aquatic toxicity will be monitored when triggered by recent receiving water toxicity monitoring, where a toxicity identification evaluation (TIE) on the observed receiving water toxicity test was inconclusive. The requirements for monitored constituents at each outfall are outlined in the MRP Section VIII.B.1.c and presented in **Table 4-17**. Parameters in Table E-2 of the MRP, will not be identified as exceeding applicable water quality objectives until after the first year of receiving water monitoring. Monitoring for the selected sites would occur for at least the duration of the Permit term, unless an alternative site is warranted, per the adaptive management process, as presented in **Section 10**. Additional analytical and monitoring procedures are discussed in **Appendix E**.

Table 4-17 List of Constituents for Stormwater Outfall Monitoring							
Constituent	**Site ID**						
	LAR-UR2-RHO	**LAR-UR2-EO**	**LAR-UR2-FWO**	**LAR-UR2-WO**	**LAR-UR2-NO**	**LAR-UR2-NVO**	**LAR-UR2-DRO**
Flow, hardness, pH, dissolved oxygen, temperature, specific conductivity, and TSS	X	X1	X1	X	X	X	X
Table E-2 pollutants detected above relevant objectives	X	X	X	X	X	X	X
Aquatic Toxicity and Toxicity Identification Evaluation (TIE)(1)							
E. coli	X	X	X	X	X	X	X
Cadmium	X	X	X	X	X	X	X
Copper	X	X	X	X	X	X	X
Lead	X	X	X	X	X	X	X
Zinc	X	X	X	X	X	X	X
Ammonia		X	X	X	X	X	X
Nitrate - N		X	X	X	X	X	X
Nitrite - N		X	X	X	X	X	X
Nitrate-N + Nitrite-N		X	X	X	X	X	X
Oil		X	X	X	X	X	X

1. Toxicity is only monitored from outfalls when triggered by recent receiving water toxicity monitoring where a TIE on the observed receiving water toxicity test was inconclusive. If toxicity is observed at the outfall a TIE must be conducted.
2. E. coli will be monitored at each storm event.

5. Non-stormwater Outfall Monitoring Approach

The Non-Stormwater Outfall Screening and Monitoring Program is focused on dry-weather discharges to receiving waters from major outfalls. The program fills two roles: (1) to provide assessment of whether the non-stormwater discharges are potentially impacting the receiving water, and (2) to determine whether significant non-stormwater discharges are allowable. The non-stormwater outfall program is complimentary to the IC/ID program minimum control measure. Non-stormwater outfall monitoring sites will be determined after outfall screening, determination of discharge significance, and source identification. The outfall screening and monitoring process is intended to prioritize outfalls for assessment and, where appropriate, scheduling of BMPs to address the non-stormwater flows.

5.1 Program Objectives

The objectives of the non-stormwater outfall program include the following (Part II.E.3 of the MRP):

a. Determine whether discharge is in compliance with applicable non-stormwater WQBELs derived from TMDL WLAs;
b. Determine whether discharge exceeds non-stormwater action levels, as described in Attachment G of the MS4 Permit;
c. Determine whether discharge contributes to or causes an exceedance of receiving water limitations; and
d. Assist in identifying illicit discharges as described in Part VI.D.10 of the MS4 Permit.

Additionally, the outfall screening and monitoring process is intended to meet the following objectives (Part IX.A of the MRP):

1. Develop criteria or other means to ensure that all outfalls with significant non-stormwater discharges are identified and assessed during the term of this MS4 Permit.
2. For outfalls determined to have significant non-stormwater flow, determine whether flows are the result of illicit connection/illicit discharge (IC/IDs), authorized or conditionally exempt non-stormwater flows, natural flows, or from unknown sources.
3. Refer information related to identified IC/IDs to the IC/ID Elimination Program (Part VI.D.10 of the MS4 Permit) for appropriate action.
4. Based on existing screening or monitoring data or other institutional knowledge, assess the impact of non-stormwater discharges (other than identified IC/IDs) on the receiving water.
5. Prioritize monitoring of outfalls considering the potential threat to the receiving water and applicable TMDL compliance schedules.
6. Conduct monitoring or assess existing monitoring data to determine the impact of non-stormwater discharges on the receiving water.
7. Conduct monitoring or other investigations to identify the source of pollutants in non-stormwater discharges.
8. Use results of the screening process to evaluate the conditionally exempt non-stormwater discharges identified in Parts III.A.2 and III.A.3 of the MS4 Permit and take appropriate actions pursuant to Part III.A.4.d of the MS4 Permit for those discharges that have been found to be a source of pollutants. Any future reclassification shall occur per the conditions in Parts III.A.2 or III.A.6 of the MS4 Permit.
9. Maximize the use of Permittee resources by integrating the screening and monitoring process into existing or planned Integrated Monitoring Program (IMP) and/or CIMP efforts.

The outfall screening and investigations must be completed prior to initiating monitoring at an individual outfall. A flowchart of the program is presented as **Figure 5-1**. Detailed discussion of each element is provided in the following subsections.

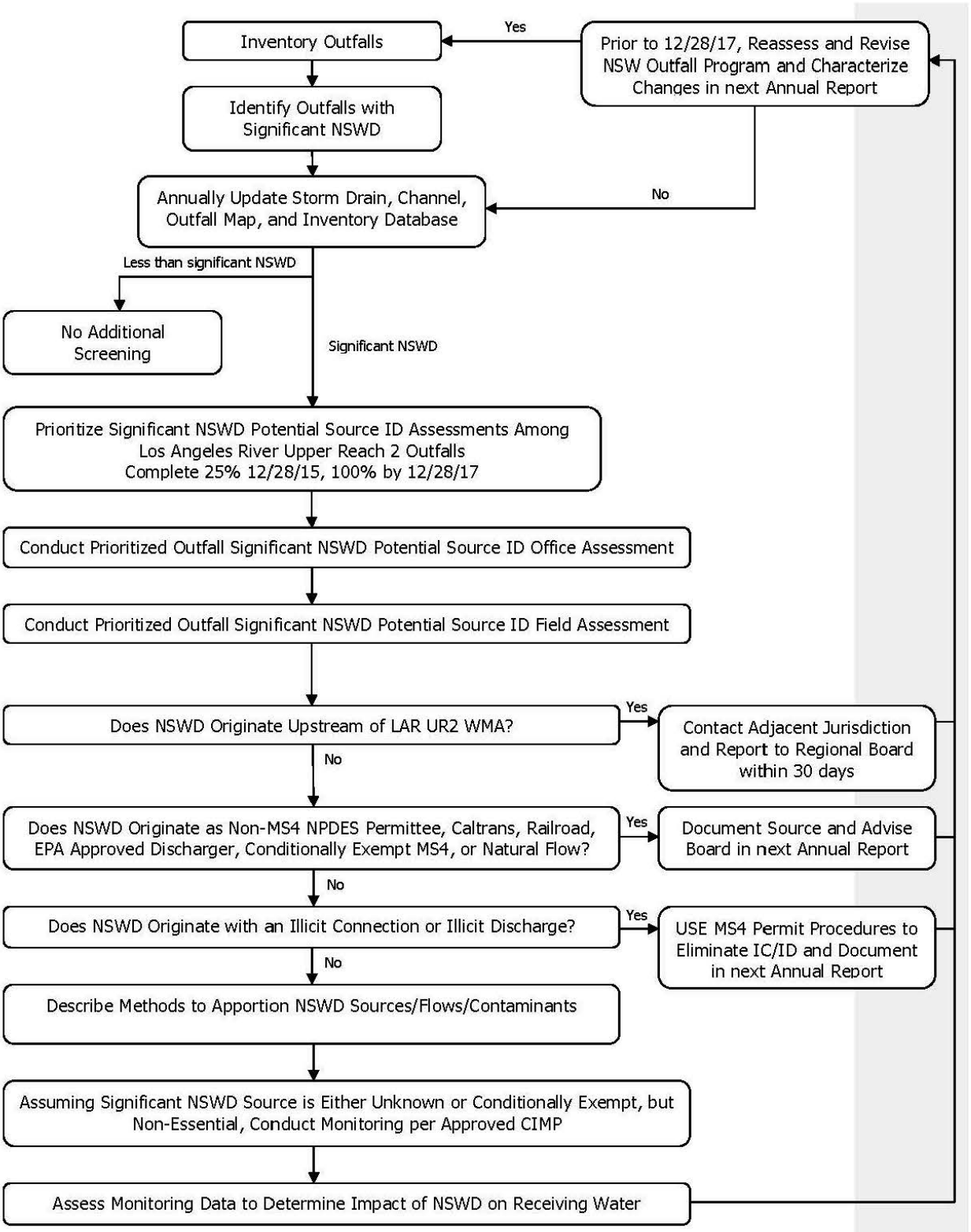

Figure 5-1 Non-stormwater Outfall Monitoring Program Flow Chart

5.2 Screen and Identify Outfalls with Significant Non-Stormwater Discharge

In December 2013, a field survey was conducted in the Los Angeles River and Rio Hondo within the LAR UR2 WMA to allow for the identification of outfalls. Based on a review of the available information, identification of significant non-stormwater discharges is not available at this time. Under this task, the LAR UR2 WMA will undertake one additional outfall screening to evaluate all major outfalls within its jurisdiction. The major outfalls for the LAR UR2 WMA are defined as follows:

- 36-inch or larger pipes with a drainage area of more than 50 acres, and
- 12-inch or larger pipes from industrial zoned areas with a drainage area of 2 acres or more.

In order to collect data to determine significant non-stormwater outfalls, the LAR UR2 WMA will perform one outfall screening during the first year after CIMP approval. The outfall screening is necessary to collect the information to identify outfalls exhibiting significant non-stormwater discharges and to develop the information needed for the inventory of outfalls with significant non-stormwater discharges. The LAR UR2 WMA will screen for flow and plans to collect a sample for analytical monitoring; however it has not determined what parameters will be analyzed. Analytes may include *E. coli*; metals; and nutrients.

During the outfall screening process, all outfalls within the LAR UR2 WMA area will be visited. A standard field data collection form will be used, consisting of:

- Channel bottom, visual estimate of flow rate
- Whether discharge ponds, or reaches the receiving water
- Clarity
- Presence of odors and foam
- Analytical sampling

Additionally needed information for the GIS database will be collected, including geographically referenced photographs, as discussed in **Section 3**. **Table 5-1** outlines the LAR UR2 WMA screening process. Based on the estimated flow rate and the preponderance of the analytical data, the outfalls will be ranked and the top 20% will be identified as outfalls with significant non-stormwater discharges.

Table 5-1 Non-Stormwater Outfall Screening Process Utilizing Flow and WQOs

Component	Description
Characteristics for Defining Significant Non-Stormwater Discharges	The top 20% ranked outfalls will be assessed as significant non-stormwater discharges. The ranking score is the sum of the following criteria:
	1. Does the non-stormwater discharge reach the receiving water during dry-weather? If yes, give a score of 1 and continue through the ranking criteria.
	2. WQO Exceedances: for each outfall monitored during the non-stormwater outfall screening process, a score will be given to the outfall depending on whether an exceedance of WQO was observed during monitoring. A score of 1 will be given for each exceedance of WQO, and 0 for meeting criteria.
Data Collection	Data that would need to be collected include accurate flow measurements AND Constituents (To be determined). Additionally, information needed to complete the inventory would be collected.
Timeline	The screening process will occur within 90 day of approval of the CIMP, to be scheduled during dry-weather.

5.3 Inventory MS4 Outfalls

An inventory of MS4 Outfalls will be developed and maintained by the LAR UR2 WMA after outfall screening. The LAR UR2 WMA inventory database, will include available existing data from past outfall screening efforts, monitoring, and initiated data collection efforts. The data within the database will include the physical attributes MS4 outfalls determined to have significant non-stormwater discharges as well as those requiring no further assessment. If the MS4 outfall requires no further assessment, the inventory will include the rationale for the determination of no further action required based on the following:

- The outfall does not have flow;
- The outfall does not have a known significant non-stormwater discharge; or
- Discharges observed were determined to be exempt during the source identification (**Section 5.5**).

The inventory will be recorded in the database as required in Part VII.A of the MRP. Each year, the inventory will be updated to incorporate the most recent characterization data for outfalls with significant non-stormwater discharges. The following physical attributes of outfalls with significant non-stormwater discharges will be included in the inventory and should be collected as part of the screening process:

- Date and time of last visual observation or inspection;
- Outfall alpha-numeric identifier;
- Description of outfall structure including size (e.g., diameter and shape);
- Description of receiving water at the point of discharge (e.g., concrete channel);
- Latitude/longitude coordinates;
- Nearest street address;
- Parking, access, and safety considerations;
- Photographs of outfall condition;
- Photographs of significant non-stormwater discharge (or indicators of discharge) unless safety considerations preclude obtaining photographs;
- Estimation of discharge rate;
- All diversions either upstream or downstream of the outfall;
- Observations regarding discharge characteristics such as turbidity, odor, color, presence of debris, floatables, or monitoring characteristics that could aid in pollutant source identification; and
- Monitoring data.

5.4 Prioritized Source Identification

Once the significant non-stormwater outfalls have been identified through the screening process and incorporated into the inventory, Part IX.E of the MRP requires Permittees to prioritize outfalls for further source investigations. The LAR UR2 WMA proposes the following alternative prioritization criteria to be utilized:

Outfalls in the top 20% with the highest ranking score based on **Table 5-2**, and

1. Outfalls for which monitoring data exist and indicate recurring exceedances of one or more of the Action Levels identified in Attachment G of the Permit.

Once the prioritization is completed, a source identification of designated significant non-stormwater outfall will be achieved. The LAR UR2 WMA proposes the following schedule:

- Complete 25% of significant outfalls – within 5 years of the effective date of the MS4 NPDES Permit (December 28, 2017); and
- Complete 100% of significant outfalls – within 7 years of the effective date of the MS4 NPDES Permit (December 28, 2019)

5.5 Source Identification of Significant Non-Stormwater Discharge

Based on the prioritized list of major outfalls with significant non-stormwater discharge, source identification will be conducted to identify the source(s) or potential source(s) of non-stormwater discharge.

Part IX.A.2 of the MRP requires Permittees to classify the source identification results into the following types and summarized in **Table 5-2**:

A. IC/IDs: If the source is determined to be an illicit discharge, the Permittee must implement procedures to eliminate the discharge consistent with IC/ID requirements (Permit Part VI.D.10) and document actions.
B. Authorized or conditionally exempt non-stormwater discharges: If the source is determined to be an NPDES permitted discharge, a discharge subject to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or a conditionally exempt essential discharge, the group member must document the source. For non-essential conditionally exempt discharges, the group member must conduct monitoring consistent with Part IX.G of the MRP.
C. Natural flows: If the source is determined to be natural flows, the Permittee must document the source.
D. Unknown sources: If the source is unknown, the Permittee must conduct monitoring consistent with Part IX.G of the MRP.

Table 5-2 Summary of Source Identification Types

Type	Follow-up	Action Required by Permit
A. Illicit Discharge or Connection	Refer to IC/ID program	Implement control measures and report in annual report. Monitor if it cannot be eliminated.
B. Authorized or Conditionally Exempt Discharges[1]	Document and identify if essential or non-essential	Monitor non-essential discharges
C. Natural Flows	End investigation	Document and report in annual report
D. Unknown	Refer to IC/ID program	Monitor
E. Upstream of LAR UR2 WMA	End investigation	Inform upstream WMA and the Regional Board in writing within 30 days of identifying discharge.

1 Discharges authorized by a separate NPDES permit, a discharge subject to a Record of Decision approved by USEPA pursuant to section 121 of CERCLA, or is a conditionally exempt NSW discharge addressed by other requirements. Conditionally exempt NSW discharges addressed by other requirements are described in detail in Part III.A. Prohibitions – NSW Discharges of the Permit.

Source identification will be conducted using site-specific procedures based on the characteristics of the non-stormwater discharge. Investigations could include:

- Performing field measurements to characterize the discharge;

- Following dry-weather flows from the location where they are first observed in an upstream direction along the conveyance system; and
- Compiling and reviewing available resources, including past monitoring and investigation data, land use/MS4 maps, aerial photography, and property ownership information.

Where the source identification has determined the non-stormwater source to be authorized, natural, or essential conditionally-exempt flows, the outfall will require no further assessment, and source identification will continue to the next highest priority outfall. However, if the source identification determines that the source of the discharge is non-essential conditionally exempt, an ID, or is unknown, then further investigation will be conducted to eliminate the discharge or to demonstrate that it is not causing or contributing to receiving water impairments, and will be added to the monitoring list until the non-stormwater discharge is eliminated.

In some cases, source investigations may ultimately lead to prioritized programmatic or structural BMPs. Where the LAR UR2 WMA has determined that they will address the non-stormwater discharge through modifications to programs or by structural BMP implementation, the LAR UR2 WMA will incorporate the approach into the implementation schedule developed in the WMP, and the outfall can be eliminated from the monitoring list.

5.6 Monitoring of Non-Stormwater Outfalls Exceeding Criteria

As outlined in the MRP (Part II.E.3), outfalls with significant non-stormwater discharges that remain unaddressed after source investigation shall be monitored to meet the following objectives:

a. Determine whether discharge is in compliance with applicable dry-weather WQBELs derived from TMDL WLAs;
b. Determine whether the quality of discharge exceeds non-stormwater action levels, as described in Attachment G of the Permit; and
c. Determine whether discharge causes or contributes to an exceedance of receiving water limitations.

Thus, outfalls that have been determined to convey significant non-stormwater discharges where the source identification concluded that the source is attributable to an ongoingID (Type A from **Table 5-2**, non-essential conditionally exempt (Type B from **Table 5-2**), or unknown (Type D from **Table 5-2**) must be monitored. Monitoring will begin within 90 days of completing the source identification.

5.6.1 Non-Stormwater Outfall Monitoring Sites

The information to determine the number and location of outfalls requiring monitoring is not available at this time. After the outfall inventory, identification of outfalls with significant non-stormwater discharge, prioritization, and source identification, outfalls identified to require monitoring will be monitored as described in the following section.

5.6.2 Monitored Frequency and Parameters

After the outfall screening and source identification, non-stormwater monitoring sites will be sampled for two times per year to coincide with receiving water dry-weather monitoring. Coordination with receiving water monitoring will allow for an evaluation of whether the non-stormwater discharges are causing or contributing to any observed exceedances of water quality objectives in the receiving water. Significant non-stormwater outfalls will be monitored for all required constituents, per receiving water bodies, as outlined in Part IX.G.1.a-e of the MRP, except toxicity. Toxicity monitoring is only required when

triggered by recent receiving water toxicity monitoring where a TIE on the observed receiving water toxicity test was inconclusive. An overview of the constituents to be monitored and the corresponding frequency is listed in **Table 5-3**. Outfalls on the monitoring list will be monitored for at least the duration of the Permit term, or until the non-stormwater discharge is eliminated. Additional analytical and monitoring procedures are discussed in **Appendix D**.

Table 5-3 List of Constituents for Non-stormwater Outfall Monitoring

Constituent	Receiving Water Bodies of Outfalls	
	Los Angeles River	Rio Hondo
Flow, hardness, pH, dissolved oxygen, temperature, specific conductivity, and TSS	X	X
Table E-2 pollutants detected above relevant objectives	X	X
Aquatic Toxicity and Toxicity Identification Evaluation (TIE)[1]		
E. coli	X	X
Copper	X	X
Lead	X	X
Zinc	X	X
Ammonia	X	
Nitrate - N	X	
Nitrite - N	X	
Nitrate-N + Nitrite-N	X	
Oil	X	

1. Toxicity is only monitored from outfalls when triggered by recent receiving water toxicity monitoring where a TIE on the observed receiving water toxicity test was inconclusive. If toxicity is observed at the outfall a TIE must be conducted.
2. E. coli will be monitored at each non-stormwater outfall monitoring event.

6. New Development/Re-Development Effectiveness

New Development/Re-Development Effectiveness Tracking is used for tracking information data about new and re-development activities. To meet the MRP requirements of Permit Attachment E, Part X.A, the LAR UR2 WMA members will maintain an informational database record for each new development/re-development project subject to the minimum control measure (MCM) requirements in Part VI.D.7 of the Permit and their adopted Low Impact Development (LID) Ordinance. The database should track the following information:

1. Name of the Project and Developer,
2. Mapped project location (preferably linked to the Geographic Information System (GIS) storm drain map),
3. Issuance date of the project Certificate of Occupancy,
4. 85th percentile 24-hour storm event for project design (inches),
5. 95th percentile 24-hour storm event for projects draining to natural water bodies (inches),
6. Other design criteria required to meet hydromodification requirements for drainages to natural water bodies,
7. Project design storm (inches per 24 hours),
8. Project design storm volume (gallons or MGD),
9. Percent of design storm volume to be retained onsite,
10. Design volume for water quality mitigation treatment BMPs (if any),
11. If flow through, water quality treatment BMPs are approved, provide the one-year, one-hour storm intensity as depicted on the most recently issued isohyetal map published by the Los Angeles County Hydrologist,
12. Percent of design storm volume to be infiltrated at an off-site mitigation or groundwater replenishment project site,
13. Percent of design storm volume to be retained or treated with biofiltration at an off-site retrofit project,
14. Location and maps (preferably linked to the GIS storm drain map) of off-site mitigation, groundwater replenishment, or retrofit sites, and
15. Documentation of issuance of requirements to the developer.

Upon approval of the WMP by the Regional Board or the Executive Officer, the LAR UR2 WMA members will begin implementing the new development and re-development effectiveness tracking requirements. In addition to the requirements in Part X.A of the MRP, Part VI.D.7.d.iv of the Permit requires that the LAR UR2 WMA implement a tracking system for new development/re-development projects that have been conditioned for post-construction BMPs. The following information is to be tracked using GIS or another electronic system:

1. Municipal Project ID
2. State Waste Discharge Identification (WDID) Number
3. Project Acreage
4. BMP Type and Description
5. BMP Location (coordinates)
6. Date of Acceptance
7. Date of Maintenance Agreement
8. Maintenance Records
9. Inspection Date and Summary
10. Corrective Action
11. Date Certificate of Occupancy Issued
12. Replacement or Repair Date

The procedures for reviewing projects, tracking data, and reporting are different for each jurisdiction and may even be different across departments within the same jurisdiction. Due to the complexity of land development processes across jurisdictions, data management and tracking procedures will vary by jurisdiction. The LAR UR2 WMA members will develop a complete tracking system that works for their individual needs and internal processes.

6.1 Program Objectives

The objective of the New Development/Re-Development Effectiveness Tracking is to assess whether post-construction Best Management Practice (BMP), as outlined in permits issued by the Permittees, are implemented and to ensure the volume of stormwater associated with the design storm is retained onsite, as required by Part VI.D.7.c.i. of the Permit. The New Development/Re-Development Effectiveness Tracking will gather necessary data to assess whether construction MCM, LID ordinances', and BMPs are effective and being implemented.

6.2 Existing New Development/Re-Development Tracking Procedures

Within the LAR UR2 WMA, each jurisdiction has a unique approach to tracking some or the entire 27 required development program tracking elements (15 elements identified in Attachment E.X.A and 12 elements in Part VI.D.7.d.iv.). For private development projects, a Building Department, or a variation of, is typically the entity responsible for collecting and recording the program tracking elements. In contrast, public improvement projects are normally the responsibility of a Public Works Department.

Based on a review of the existing new development/re-development tracking procedure for the different jurisdictions within the LAR UR2 WMA, additional effort will be needed to track the 27 program tracking elements required by the Permit. Information has currently been recorded and stored differently across jurisdictions, with some using commonly available software packages, such as Microsoft Office products and GIS, and others using proprietary software programs, such as Plan Check and Inspection System (PCIS), or in some instances paper files. LAR UR2 WMA members will need to develop or modify their current tracking systems to setting up a centrally located spreadsheet template that includes the required information fields for each project that can be tracked separately by the individual jurisdiction's proprietary software system if integrated accordingly. Each jurisdiction will dedicate resources to develop a complete tracking system that works for their individual needs and internal processes.

6.3 Data Management

Each jurisdiction will conduct tracking that will meet the Permit requirements and facilitate reporting. The data management protocols will include:

- Designing and testing data entry sheets for the required information fields identified in **Section 6.1**;
- Describing the procedures and identifying the departments/divisions responsible for inputting data, assessing accuracy and consistency, and coordinating follow up actions when questions arise;
- Strategy for checking and validating data entry, including identifying departments/divisions responsible for managing and safeguarding data, performing data entry, supervising the data entry, and ensuring quality control of the data; and
- Specifying procedures for routinely and safely archiving data files.

Data collection for development review processes generally consist of the following similar steps:

- **Planning** – Project proponents submit an application to agency planning department to determine whether or not the project meets jurisdictional requirements. When required, the project may require a public hearing for conditions and entitlements. Project conditions may include water quality related requirements.
- **Building** – Projects may be conditioned subject to engineering, community services, or building department review and approval of plans or technical reports. During review, required water quality BMP designs are reviewed and accepted. When a building and/or grading permit is issued, project construction usually proceeds without further discretionary approvals.
- **Construction** – During construction, approved BMPs are implemented then verified by the jurisdiction's inspector prior to issuance of a Certificate of Occupancy.
- **Post-Construction Inspections** – Once constructed, inspection and verification of maintenance is transferred to the jurisdiction's water quality program manager.

Relevant project data is collected during each phase of the development review process described above.

6.3.1 Additional Data

To facilitate annual assessment and reporting and future Reasonable Assurance Analyses (RAA) input data compilation, the LAR UR2 WMA may also track the following information:

- Do any modified MCMs apply to this project?
- Assessor's Identification Number (AIN)
- Street address
- Revised land use (based on City/County Land Use Categories)
- BMP maintenance funding source
- Tributary area to each BMP

6.3.2 Reporting

Annual Assessment and Reporting requirements to be included in an Annual Report are outlined in Part XVIII.A.1 through A.7 of the MRP. Relevant to New Development/Re-Development Effectiveness Tracking, each permittee within LAR UR2 WMA is required to annually track, analyze, and report on the following stormwater control measures in Part XVIII.A.1:

- Estimate the cumulative change in percent effective impervious area (EIA) since the effective date of the Permit and, if possible, the estimated change in the stormwater runoff volume during the 85th percentile storm event.
- Summarize new development/re-development projects constructed within the Permittee's jurisdictional area during the reporting year.
- Summarize retrofit projects that reduced or disconnected impervious area from the MS4 during the reporting year.
- Summarize other projects designed to intercept stormwater runoff prior to discharge to the MS4 during the reporting year.
- For the projects summarized above, estimate the total runoff volume retained onsite by the implemented projects.
- Summarize actions taken in compliance with Total Maximum Daily Load (TMDL) implementation plans or approved Watershed Management Programs to implement TMDL provisions in Part VI.E and Attachments L-R of the Permit.

- Summarize riparian buffer/wetland restoration projects completed during the reporting year. For riparian buffers include width, length and vegetation type; for wetland include acres restored, enhanced or created.
- Summarize other MCMs implemented during the reporting year, as deemed relevant.
- Provide status of all multi-year efforts that were not completed in the current year and will therefore continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, the Permittee shall provide a discussion of the factor(s) limiting its acquisition and steps that will be taken to improve future data collection efforts.

The LAR UR2 WMA is also required to track, evaluate, and provide an effectiveness assessment of stormwater control measures per Attachment E, Part XVIII.A.2:

- Summarize rainfall for the reporting year. Summarize the number of storm events, highest volume event (inches/24 hours), highest number of consecutive days with measureable rainfall, total rainfall during the reporting year compared to average annual rainfall for the subwatershed. Precipitation data may be obtained from the Los Angeles County Department of Public Works rain gauge stations available at http://www.ladpw.org/wrd/precip/.
- Provide a summary table describing rainfall during stormwater outfall and wet-weather receiving water monitoring events. The summary description shall include the date, time that the storm commenced and the storm duration in hours, the highest 15-minute recorded storm intensity (converted to inches/hour), the total storm volume (inches), and the time between the storm event sampled and the end of the previous storm event.
- Where control measures were designed to reduce impervious cover or stormwater peak flow and flow duration, provide hydrographs or flow data of pre- and post-control activity for the 85^{th} percentile, 24-hour rain event, if available.
- For natural drainage systems, develop a reference watershed flow duration curve and compare it to a flow duration curve for the subwatershed under current conditions.
- Provide an assessment as to whether the quality of stormwater discharges as measured at designed outfalls is improving, staying the same or declining. The Permittee may compare water quality data from the reporting year to previous years with similar rainfall patterns, conduct trends analysis, or use other means to develop and support its conclusions (e.g., use of non-stormwater action levels or municipal action levels as provided in Attachment G of the Permit).
- Provide an assessment as to whether wet-weather receiving water quality within the jurisdiction of the Permittee is improving, staying the same or declining, when normalized for variations in rainfall patterns. The Permittee may compare water quality data from the reporting year to previous years with similar rainfall patterns, conduct trends analysis, draw from regional bioassessment studies, or use other means to develop and support its conclusions.
- Provide status of all multi-year efforts, including TMDL implementation, that were not completed in the current year and will continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, the Permittee shall provide a discussion of the factor(s) limiting its acquisition and steps that will be taken to improve future data collection efforts.

Additional reporting elements required are identified in Part VI.D.7 of the Permit and include:

- A summary of total offsite project funds raised to date and a description (including location, general design concept, volume of water expected to be retained, and total estimated budget) of all pending public offsite projects.
- A list of mitigation project descriptions and estimated pollutant and flow reduction analyses.
- A comparison of the expected aggregate results of alternative compliance projects to the results that would otherwise have been achieved by retaining onsite the stormwater quality design volume.

Part XV.A of the MRP requires each Permittee or group to submit an Annual Report to the Regional Board by December 15th of each year. The annual reporting period is from July 1st through June 30th and information reported will cover approved and constructed projects that have been issued occupancy permits.

6.4 Summary of New Development/Re-development Effectiveness Tracking

New Development/Re-Development Effectiveness Tracking is used for tracking information data in regards to new and re-development activities and their associated post-construction BMPs. The information is stored and will be submitted in an annual compliance report. Each jurisdiction will be individually responsible for tracking Permit requirements, based on their specific operational procedures and internal processes.

7. Regional Studies

The MRP identifies one regional study: the SMC Regional Watershed Monitoring Program. The SMC is a collaborative effort between SCCWRP, State Water Board's Surface Water Ambient Monitoring Program (SWAMP), three Southern California Regional Water Quality Control Boards, and several county stormwater agencies. SCCWRP acts as a facilitator to organize the monitoring program, conducts the data analysis, and prepares monitoring results reports. The goal of the SMC is to develop a monitoring program on a regional level for Southern California's coastal streams and rivers.

7.1 Regional Study Participation

The MRP states that each Permittee shall be responsible for supporting the monitoring described at the sites within the watershed management area(s) that overlap with the Permittee's jurisdictional area. One program initiated under the SMC is the Regionally Consistent and Integrated Freshwater Stream Bioassessment Monitoring Program (Bioassessment Program), which included six monitoring sites that were monitored annually within the WMP Group area.

The LAR UR2 WMA will continue to participate in the Biosassessment Program being managed by the SMC, through the LACFCD. The LACFCD will contribute necessary resources to implement the bioassement monitoring requrement of the MS4 permit on behalf of all permitees in Los Angeles County during the current permit cycle. Initiated in 2008, the SMC's Regional Bioassement Program is designed to run over a five-year cycle. Monitoring under the first cycle concluded in 2013, with reporting of findings and additional special studies planned to occur in 2014. SMC, including LACFCD, is currently working on designing the bioassessment monitoring program for the next five-year cycle, which is scheduled to run from 2015 to 2019.

8. Special Studies

LAR UR2 WMA is responsible for conducting special studies that are required in an effective TMDL or an approved TMDL Monitoring Plan applicable to a watershed that is within the LAR UR2 WMA's jurisdictional boundary. At this time there are no special studies required by any of the TMDLs within the LAR UR2 WMA. LAR UR2 WMA will take into consideration the optional special studies. One such study the LAR UR2 WMA is currently interested in pursuing, is the Site Specific Objective (SSO) for zinc in the Los Angeles River and Tributary waters.

9. Adaptive Management

An adaptive management approach provides a structured process that allows for taking action under uncertain conditions based on the best available science, closely monitoring and evaluating outcomes, and re-evaluating and adjusting decisions as more information is collected.

The CIMP, as with the WMP, is to be implemented as an adaptive process. As new program elements are implemented and data are gathered over time, the WMP and CIMP will undergo revision to reflect the most current understanding of the watershed and present a sound approach to addressing changing conditions. As such, the WMP and CIMP will employ an adaptive management process utilizing BMPs that meet the maximum extent practicable standard and that will allow the two programs to evolve over time.

9.1 Annual Assessment and Reporting

MRP Part XVIII.A details the annual assessment and reporting that is required as part of the annual report. The annual assessment and reporting is composed of seven parts, which are the following:

1. Stormwater Control Measures
2. Effectiveness Assessment of Stormwater Control Measures
3. Non-stormwater Control Measures (including the MAL Assessment Report per Attachment G, see page G-17)
4. Effectiveness Assessment of Non-stormwater Control Measures
5. Integrated Monitoring Compliance Report
6. Adaptive Management Strategies
7. Supporting Data and Information

Based on the findings of the annual assessment, revisions to the CIMP will be included as part of the Adaptive Management Strategies.

9.2 CIMP Revision Process

CIMP implementation used to develop data on receiving water conditions and stormwater/non-stormwater quality to assess the effectiveness of the WMP. As part of the adaptive management process, re-evaluation of the CIMP will need to be conducted to better inform the LAR UR2 WMA of ever changing conditions of the watershed. Each program of the CIMP will be re-evaluated for the following:

- **Monitored site locations:** as water quality priorities change and certain WBPCs are being addressed or identified, monitoring site locations may need to be added or modified. Outfall monitoring locations determined not to be representative of MS4 discharges may also be relocated.
- **Monitoring constituents**: eliminate or reduced monitoring of certain constituents. If constituents were initially detected during the initiation of CIMP monitoring and are eventually addressed through the implementation of a watershed control measure which results in non-detect in future monitoring results, elimination or reduction in monitoring will be submitted for approval to the Regional Board.
- **Monitoring frequency**: increased or decreased in monitoring frequency will be based on the evaluation of RWL, WQBELs, non-stormwater action levels.
- **Monitoring methods**: Analytical methods or analytical labs may need to be modified.

Based on the re-evaluation, CIMP revisions will be made and submitted to the Regional Board for approval in conjunction with the WMPs every two years.

10. Reporting

Analysis and reporting of data is an integral part of communicating to the Regional Board of whether the CIMP is meeting MRP objectives. The MRP, establishes NPDES permit monitoring, reporting, and recordkeeping requirements, including those for large MS4s, based on federal Clean Water Act (CWA) section 308(a) and Code of Federal Regulations (40 CFR) sections 122.26(d)(2)(i)(F), (iii)(D), 122.41(h)-(l), 122.42(c), and 122.48. In addition, California Water Code (CWC) section 13383 authorizes the Regional Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The sections below will outline the CIMP reporting process for the LAR UR2 WMA.

10.1 Documents and Records

Consistent with the Part XIV.A of the MRP requirements, LAR UR2 WMA will retain records of all monitoring information, including: all calibration, major maintenance records, all original lab and field data sheets, all original strip chart recordings for continuous monitoring instrumentations, copies of all reports required by the permit, and records of data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report, or application. Monitoroing records will include:

1. The sampling date, time of measurements, exact place, weather conditions, and rain fall amount;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used;
6. The results of such analyses; and
7. The data sheets showing toxicity test results.

10.1.1 Event Summary Reports

At the conclusion of each monitoring event for receiving water (wet- and dry-weather), stormwater outfall, and non-stormwater outfall monitoring, or all of the above, an event summary report for the LAR UR2 WMA will be produced and submitted annually as an attachment with the Integrated Monitoring Compliance Report. The event summary report will give an overview of what was conducted during the monitoring event, the result findings from the monitoring events, summary exceedances, and the monitoring records as mentioned above.

10.1.2 Semi-Annual Analytical Data Submittal

Monitoring results data will be submitted semi-annually, as stated in Part XIV.L of the MRP, with suggested reporting dates of April and October first. The transmitted data will be in the most recent update of the Southern California Municipal Storm Water Monitoring Coalition's (SMC) Standardized Data Transfer Formats (SDTFs) and sent electronically to the LARWQCB Stormwater site to MS4stormwaterRB4@waterboards.ca.gov. The SMC SDTFs can be found at the Southern California Coastal Water Research Project (SCCWRP) web page http://www.sccwrp.org/data/DataSubmission.aspx. The submitted monitoring data should highlight the following:

1. Exceedances of applicable WQBELs,
2. Receiving water limitations,
3. Action levels, and/or
4. Aquatic toxicity thresholds for all test results, with corresponding sampling dates per receiving water monitoring station.

10.2 Monitoring Reports

Part XVIII.A.5, of the MPR presents the requirements of the Integrated Monitoring Compliance Report (IMCR) that will be included and submitted on an annual basis as part of the Annual Report. As discussed in **Section 9**, the IMCR is one of seven parts of the Annual Assessment and Reporting.

The IMCR will include the following information as required by the MRP:

- Summary of exceedances against all applicable RWL, WQBELs, non-stormwater action levels, and aquatic toxicity thresholds for:
    1. Receiving water monitoring – wet- and dry-weather;
    2. Stormwater outfall monitoring; and
    3. Non-stormwater outfall monitoring.
- Summary of actions taken:
    1. To address exceedances for WQBELs, non-stormwater action levels, or aquatic toxicity for stormwater and non-stormwater outfall monitoring.
    2. To determine whether MS4 discharges contributed to RWL exceedances and efforts taken to control the discharge causing the exceedances to the receiving water.
- If aquatic toxicity was confirmed and a TIE was conducted, identify the toxic chemicals determined by the TIE, and include all relevant data to allow the Regional Board to review the adequacy and findings of the TIE.

The IMCR will be submitted as part of the Annual Assessment Report to the Regional Board by December 15th of each year, for at least the duration of the Permit term. As indicated above, event summary reports will be attached to the IMCR.

10.3 Signatory and Certification Requirements

Part V.B of Attachment D of the Permit presents the Signatory and Certification Requirements and states:

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below [40 CFR section 122.41(k)(1)].
2. All applications submitted to the Regional Water Board shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer includes: (i) the chief executive officer of the agency (e.g., Mayor), or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., City Manager, Director of Public Works, City Engineer, etc.).[40 CFR section 122.22(a)(3)].
3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
    a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above [40 CFR section 122.22(b)(1)];
    b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named

individual or any individual occupying a named position.) [40 CFR section 122.22(b)(2)]; and

c. The written authorization is submitted to the Regional Water Board [40 CFR section 122.22(b)(3)].

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative [40 CFR section 122.22(c)].
5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." [40 CFR section 122.22(d)].

All required signatures and statements will be included as an attachment of the Annual Report, which will cover the MS4 Permit period from July 1 to June 30, of each year and be submitted to the Regional Board by December 15th of each year, for at least the duration of the Permit term.

11. Schedule for CIMP Implementation

As stated in Part IV.C.6 of the MRP, the LAR UR2 WMA's CIMP implementation will commence within 90 days after approval by the Executive Officer of the Regional Board. CIMP monitoring will start on July 1, 2015 to coincide with the Annual Report period of the Permit as well as to coordinate monitoring with other WMA groups' CIMP monitoring. For seven of the sites, portable equipment will be used allowing for the monitoring to begin, on a rotational basis as described in **Section 4**. Implementation of the CIMP for the one monitoring site in Los Angeles River is subject to the availability and approval of construction permits from LACFCD and Army Corps of Engineers. If the availability and approval of permits are not obtained before the 90 day deadline, the LAR UR2 WMA will inform the Regional Board on the progress of obtaining the permits. Monthly updates will be provided to the Regional Board until the permits are obtained. Monitoring at the one monitoring site in Los Angeles River will commence within 30 days after the approval of required permits. It is anticipated that the permitting and installation process may take a minimum of 18 months.

12. Quality Assurance Project Program Plan

A final Quality Assurance Project Program (QAPP) Plan will be prepared once a monitoring program contract is issued. This is necessary as the QAPP should identify specific individuals, contact points, Analytical Method Detection and Reporting Limits that are Sampling Consultant and Analytical Laboratory specific. A generic QAPP is attached to the CIMP as **Appendix E**, while a Summary of Laboratory Capabilities in Relation to Permit Minimum Levels can be found within **Appendix F**.

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Appendix A

Drainage Facilities Maps by LAR UR2 WMA Permittee

BELL
2.6 sq. miles
14.8 miles of storm drain
263 catch basins

N
W E
S

0 1,300 2,600 5,200 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- MaintenanceHole_Clip
- PumpStation_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip

RB-AR5744

LAR UR2 WMA		
GIS SPATIAL LIBRARY **DRAINAGE FACILITIES** **CITY OF BELL**	C.R.	08/28/2013
	13039	**1**

BELL GARDENS
2.5 sq. miles
14.3 miles of storm drain
315 catch basins

N
W E
S

0 1,000 2,000 4,000 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- MaintenanceHole_Clip
- PumpStation_Clip
- Culvert_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip

RB-AR5745

LAR UR2 WMA		
GIS SPATIAL LIBRARY **DRAINAGE FACILITIES** **CITY OF BELL GARDENS**	C.R.	08/28/2013
	13039	**1**

COMMERCE
6.6 sq. miles
32.5 miles of storm drain
663 catch basins

N
W E
S

0 1,625 3,250 6,500 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- MaintenanceHole_Clip
- PumpStation_Clip
- AbandonedLine_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip

RB-AR5746

LAR UR2 WMA		
GIS SPATIAL LIBRARY **DRAINAGE FACILITIES** **CITY OF COMMERCE**	C.R.	08/28/2013
	13039	**1**

CUDAHY
1.2 sq. miles
8.8 miles of storm drain
146 catch basins

N
W E
S

0 650 1,300 2,600 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- MaintenanceHole_Clip
- PumpStation_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip

RB-AR5747

LAR UR2 WMA		
GIS SPATIAL LIBRARY **DRAINAGE FACILITIES** **CITY OF CUDAHY**	C.R.	08/28/2013
	13039	**1**

HUNTINGTON PARK
3.0 sq. miles
19.1 miles of storm drain
586 catch basins

N
W E
S

0 1,125 2,250 4,500 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- MaintenanceHole_Clip
- PumpStation_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip

RB-AR5748

LAR UR2 WMA		
GIS SPATIAL LIBRARY **DRAINAGE FACILITIES** **CITY OF HUNTINGTON PARK**	C.R.	08/28/2013
	13039	**1**

MAYWOOD
1.2 sq. miles
5.8 miles of storm drain
183 catch basins

N
W E
S

0 650 1,300 2,600 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- MaintenanceHole_Clip
- PumpStation_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip
- City Boundary

RB-AR5749

LAR UR2 WMA		
GIS SPATIAL LIBRARY **DRAINAGE FACILITIES** **CITY OF MAYWOOD**	C.R.	08/28/2013
	13039	**1**

VERNON
5.2 sq. miles
47.5 miles of storm drain
1,166 catch basins

N
W E
S

0 1,150 2,300 4,600 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- PumpStation_Clip
- MaintenanceHole_Clip
- AbandonedLine_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip

City Facilities

- Catch Basin
- Manhole
- Lateral
- Gravity Main

RB-AR5750

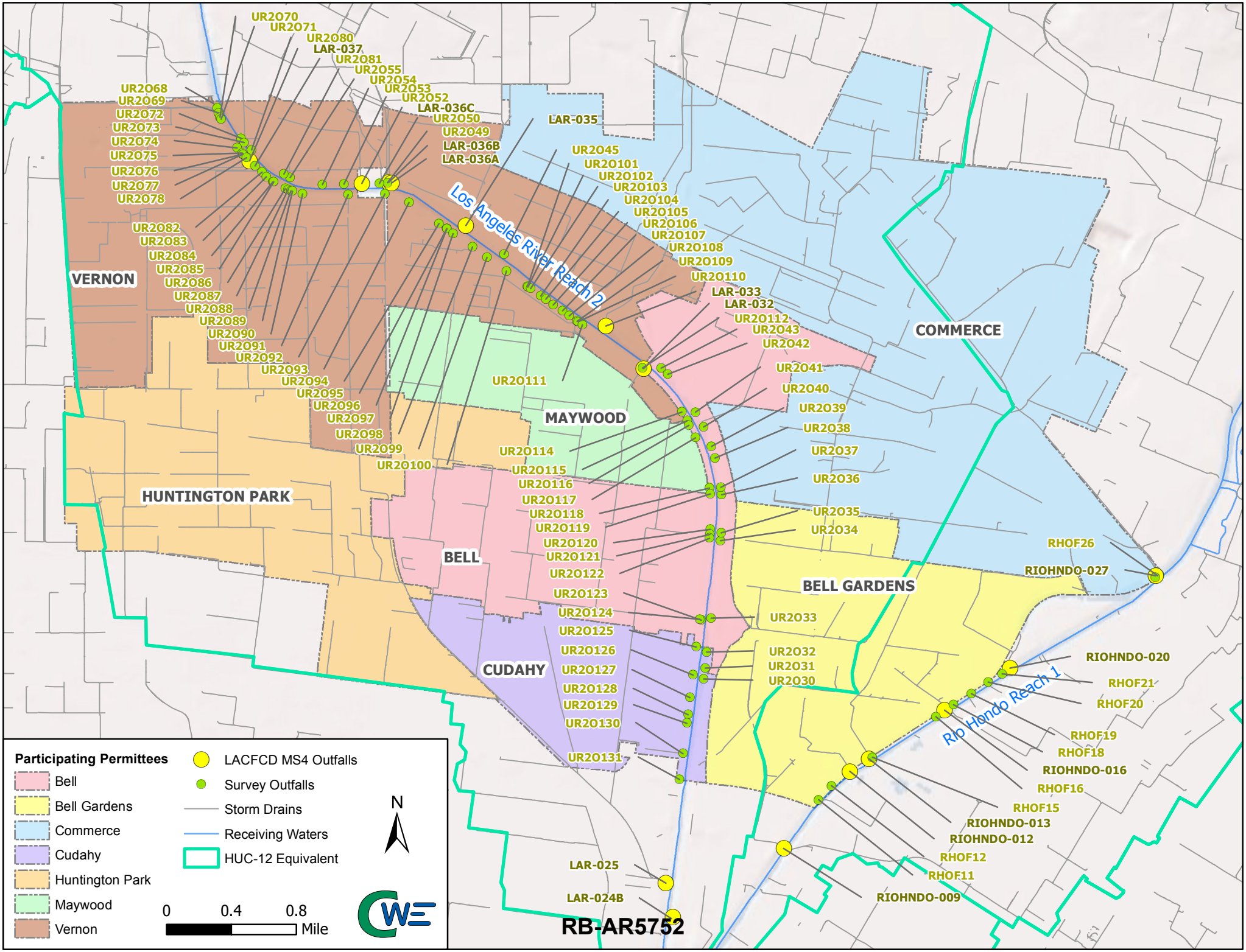
LAR UR2 WMA

GIS SPATIAL LIBRARY
DRAINAGE FACILITIES
CITY OF VERNON

C.R.	08/28/2013
13039	**1**

Appendix B

Outfall Locations Survey Map


UR2070
UR2071
UR2080
LAR-037
UR2081
UR2055
UR2054
UR2053
UR2052
LAR-036C
UR2050
UR2049
LAR-036B
LAR-036A
LAR-035
UR2045
UR2101
UR2102
UR2103
UR2104
UR2105
UR2106
UR2107
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UR2109
UR2110
LAR-033
LAR-032
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UR2119
UR2120
UR2121
UR2122
UR2123
UR2124
UR2125
UR2126
UR2127
UR2128
UR2129
UR2130
UR2131
Los Angeles River Reach 2
VERNON
MAYWOOD
COMMERCE
HUNTINGTON PARK
BELL
BELL GARDENS
CUDAHY
RHOF26
RIOHNDO-027
RIOHNDO-020
RHOF21
RHOF20
Rio Hondo Reach 1
RHOF19
RHOF18
RIOHNDO-016
RHOF16
RHOF15
RIOHNDO-013
RIOHNDO-012
RHOF12
RHOF11
RIOHNDO-009
LAR-025
LAR-024B
RB-AR5752
Participating Permittees
Bell
Bell Gardens
Commerce
Cudahy
Huntington Park
Maywood
Vernon
LACFCD MS4 Outfalls
Survey Outfalls
Storm Drains
Receiving Waters
HUC-12 Equivalent
N
0
0.4
0.8
Mile

Appendix C

Preliminary Outfall Database

Outfall Inventory Values		
Column Header	**Permit Parts/Exemplar values**	**Definition**
Outfall ID	E.VII.A.8	Alphanumeric identifier
NSW/RW Outfalls	LAR-##X RIOHNDO-### UR2O### RHOF##	LACFCD ID for Los Angeles River, where # is a number and when present X is letter LACFCD ID for the Rio Hondo, where # is a number UR2 LAR Outfall, where ### is a number UR2 Rio Hondo Outfall, where ## is a number
Owner	E.VII.A.11.a LACFCD ACOE Private Unknown	Agency Name (e.g. Vernon, Bell) Los Angeles County Flood Control District Army Corps of Engineers Name of Company or Undocumented
Latitude	E.VII.A.11.b	Decimal degrees with up to 6 decimals
Longitude	E.VII.A.11.b	Decimal degrees with up to 6 decimals
City	E.VII.A.11.c BL, BG, CM, CU, HP, MW, SG, VR	Jurisdiction where outfall/facility is located (mostly UR2, but also South Gate, City/County of LA) Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, South Gate (not UR2), Vernon
Type	E.VII.A.11.c FG, FGP, G, LFD VCP, CMP, CMA, STLP RCP, 2RCP, 3RCP RCB, 2RCB, 3RCB Manhole	Outfall Type/Shape Flap Gate, Flap Gated (Unknown Material) Pipe, Grated, Low Flow Ditch to LFC (Vitrified) Clay Pipe, Corrugated Metal Pipe, Corrugated Metal Arch, Steel Pipe Reinforced Concrete Pipe (single, double, triple, etc.) Reinforced Concrete Box (single, double, triple, etc.) Utility Access Way
D/H"	E.VII.A.11.c	Diameter/Height (inches)
W"	E.VII.A.11.c	Width (inches)
Wall H"	E.VII.A.11.c	Estimated Wall Height from floor of main channel (inches)
Photo Link	E.VII.A.11.d	Hyperlink to Photo (Needs editing if spreadsheet or photos copied to other sources)
Date	E.VII.A.11.e	Date of Observation (also date of last observation)
Time	E.VII.A.11.e	Time of Observation (also time of last observation)
Q(GPM)	E.VII.A.11.e	Estimated Non-Stormwater Discharge Flow Rate in Gallons Per Minute
Flow Observations	E.VII.A.11.e T, S/G, Veg, HV, PW	Discharge Characteristics Trash, Sediment/Gravel, Vegetation, Heavy Vegetation, Ponded Water
Determination	Significant, Not Significant, None, Not Determined	Use characteristics to clarify why significant

LAR UR2 Outfall Inventory

Identification		Coordinates		Physical Description					Photos	Non-Stormwater Significance Screening				
Outfall Identifier	Owner	Latitude	Longitude	City	Type	D/H "	W "	Wall H"	Photo Link	Date	Time	Q (GPM)	Flow Observations	Significance
RIOHNDO-009	LACFCD	33.948215	-118.161866	SG	RCP	66"		0"	RIOHNDO-009	12/23/2013	10:02	Trickle	T, S/G, PW	ND
RHOF11	LACFCD	33.952646	-118.158152	BG	RCP	36	NA	60	RHOF11	12/23/2013	10:22	0		ND
RHOF12	LACFCD	33.953884	-118.156790	BG	RCP	24	NA	180	RHOF12	12/23/2013	10:26	0	T, S/G	ND
RIOHNDO-012	LACFCD	33.955080	-118.154845	LACFCD	RCB	45	72	60	RIOHNDO-012	12/23/2013	10:30	0	T, S/G	ND
RIOHNDO-013	LACFCD	33.956118	-118.152857	LACFCD	2RCB	132	114	0	RIOHNDO-013	12/23/2013	10:35	0	T, S/G, Veg, PW	ND
RHOF15	LACFCD	33.956420	-118.152374	LACFCD	RCP	24	NA	48	RHOF15	12/23/2013	10:40	0	T, S	ND
RHOF16	LACFCD	33.960056	-118.145573	LACFCD	RCP	24	NA	0	RHOF16	12/23/2013	10:45	0	S/G, Veg	ND
RIOHNDO-016	LACFCD	33.960492	-118.144764	LACFCD	RCP	84	NA	0	RIOHNDO-016	12/23/2013	10:50	0	T, S/G, PW	ND
RHOF18	LACFCD	33.961140	-118.143722	LACFCD	RCP	21	NA	120	RHOF18	12/23/2013	10:52	0	T	ND
RHOF19	LACFCD	33.962101	-118.141793	LACFCD	RCP	18	NA	120	RHOF19	12/23/2013	10:55	0	S/G	ND
RHOF20	Unknown	33.963161	-118.139996	LACFCD	RCP	18	NA	180	RHOF20	12/23/2013	10:58	0	T	ND
RHOF21	Unknown	33.963895	-118.138475	LACFCD	2RCP	54	NA	12	RHOF21	12/23/2013	11:02	0	T, S/G	ND
RIOHNDO-020	LACFCD	33.964332	-118.137716	LACFCD	RCP	96	NA	0	RIOHNDO-020	12/23/2013	11:06	0.5	T, S/G	ND
RHOF26	LACFCD	33.972528	-118.122099	CM	GRCP	66	NA	0	RHOF26	12/23/2013	11:22	0	Musty, T	ND
RIOHNDO-027	LACFCD	33.972690	-118.121862	LACFCD	RCP	72	NA	0	RIOHNDO-027	12/23/2013	11:25	0	S/G, oily	ND
LAR-024B	Unknown	33.942006	-118.173898	SG	3RCP	90	NA	24	LAR-024B	12/23/2013	12:50	1.7	S/G	ND
UR2O30	Unknown	33.963409	-118.170493	CU	RCP	24	NA	36	UR2O30	12/23/2013	13:10	0		ND
UR2O31	Unknown	33.964368	-118.170323	CU	RCP	24	NA	12	UR2O31	12/23/2013	13:16	0	T, S/G	ND
UR2O32	LACFCD	33.965817	-118.170164	CU	RCP	30	NA	36	UR2O32	12/23/2013	13:20	0	PW	ND
UR2O33	Unknown	33.968846	-118.169692	BL	RCP	24	NA	36	UR2O33	12/23/2013	13:24	0	T, S/G, Veg, PW, Black Water	ND
UR2O34	Unknown	33.975765	-118.168712	BL	RCP	24	NA	60	UR2O34	12/23/2013	13:32	0		ND
UR2O35	Unknown	33.976465	-118.168621	BL	RCP	24	NA	120	UR2O35	12/23/2013	13:37	0		ND
UR2O36	Unknown	33.979864	-118.168606	BL	2RCP	30	NA	60	UR2O36	12/23/2013	13:39	0	T	ND
UR2O37	LACFCD	33.980534	-118.168673	BL	RCP	30	NA	60	UR2O37	12/23/2013	13:43	0		ND
UR2O38	Unknown	33.983126	-118.169302	BL	RCP	42	NA	60	UR2O38	12/23/2013	13:46	0	Oily	ND
UR2O39	LACFCD	33.984193	-118.169673	BL	RCP	18	NA	60	UR2O39	12/23/2013	13:49	0	S/G	ND

LAR UR2 Outfall Inventory

Identification		Coordinates		Physical Description					Photos	Non-Stormwater Significance Screening				
Outfall Identifier	Owner	Latitude	Longitude	City	Type	D/H "	W "	Wall H"	Photo Link	Date	Time	Q (GPM)	Flow Observations	Significance
UR2O40	LACFCD	33.985911	-118.170513	BL	RCP	24	NA	96	UR2O40	12/23/2013	13:54	T	T, S/G, PW	ND
UR2O41	LACFCD	33.987231	-118.171399	BL	RCB	39	72	36	UR2O41	12/23/2013	13:59	0.05	S/G, Veg	ND
UR2O42	LACFCD	33.990594	-118.174405	BL	2RCB	78	144	144	UR2O42	12/23/2013	14:05	0.17	T, S/G	ND
UR2O43	LACFCD	33.991176	-118.175116	BL	FGP	24	NA	120	UR2O43	12/23/2013	14:10	0		ND
LAR-033	LACFCD	33.994726	-118.180943	VR	RCB	126	174	0	UR2O44	12/23/2013	14:14	0.8	Veg	ND
UR2O45	Unknown	34.001302	-118.191964	VR	STLP	6	NA	60	UR2O45	12/23/2013	14:20	0		ND
LAR-035	LACFCD	34.003732	-118.196125	VR	3RCB	102	168	72	LAR-035	12/23/2013	14:25	T	Veg	ND
LAR-036A	LACFCD	34.007580	-118.203954	LACFCD	RCB	48	96	36	LAR-036A	12/23/2013	14:30	0.08	S/G,	ND
LAR-036B	LACFCD	34.007590	-118.204154	LACFCD	RCB	120	144	0	LAR-036B	12/23/2013	14:35	0.3	S/G	ND
UR2O49	LACFCD	34.007691	-118.204464	VR	RCB	84	168	144	UR2O49	12/23/2013	14:38	0.3	S/G, oily, Veg	ND
UR2O50	LACFCD	34.007619	-118.205344	UNK	RCP	24	NA	96	UR2O50	12/23/2013	14:43	0	T, S/G	ND
LAR-036C	LACFCD	34.007500	-118.207139	LACFCD	GRCP	96	NA	48	LAR-036C	12/23/2013	14:46	T		ND
UR2O52	LACFCD	34.007532	-118.209129	VR	Pipe	18	NA	120	UR2O52	12/23/2013	14:50	0		ND
UR2O53	LACFCD	34.007483	-118.211436	VR	Pipe	18	NA	60	UR2O53	12/23/2013	14:55	0		ND
UR2O54	Unknown	34.008126	-118.214918	VR	VCP	18	NA	180	UR2O54	12/23/2013	14:58	0		ND
UR2O55	Unknown	34.008418	-118.215586	VR	CMP	16	NA	180	UR2O55	12/23/2013	15:02	0	T	ND
UR2O68	VR	34.014351	-118.222761	VR	RCP	45	NA	240	UR2O68	12/31/2013	9:31	0		ND
UR2O69	Unknown	34.013897	-118.222619	VR	4STLP	8	NA	360	UR2O69	12/31/2013	9:36	0		ND
UR2O70	Unknown	34.013494	-118.222444	VR	RCB	12	12	288	UR2O70	12/31/2013	9:37	0		ND
UR2O71	Unknown	34.013313	-118.222340	VR	RCP	18	NA	240	UR2O71	12/31/2013	9:39	0		ND
UR2O72	Unknown	34.011614	-118.220184	VR	RCP	18	NA	300	UR2O72	12/31/2013	9:44	0		ND
UR2O73	LACFCD	34.011255	-118.219835	VR	RCP	30	NA	240	UR2O73	12/31/2013	9:47	0		ND
UR2O74	Unknown	34.010755	-118.220614	VR	RCP	18	NA	168	UR2O74	12/31/2013	9:48	0		ND
UR2O75	Unknown	34.010295	-118.220051	VR	RCP	8	NA	168	UR2O75	12/31/2013	9:52	0		ND
UR2O76	Unknown	34.010202	-118.219975	VR	RCP	8	NA	240	UR2O76	12/31/2013	9:55	0		ND
UR2O77	Unknown	34.010202	-118.219975	VR	RCP	8	NA	168	UR2O77	12/31/2013	9:55	0		ND
UR2O78	Unknown	34.009890	-118.219581	VR	STLP	36	NA	192	UR2O78	12/31/2013	9:57	0		ND
LAR-037	Unknown	34.009506	-118.219101	VR	RCP	75	NA	12	UR2O79	12/31/2013	9:59	0	PW	ND

LAR UR2 Outfall Inventory

Identification		Coordinates		Physical Description					Photos	Non-Stormwater Significance Screening				
Outfall Identifier	Owner	Latitude	Longitude	City	Type	D/H "	W "	Wall H"	Photo Link	Date	Time	Q (GPM)	Flow Observations	Significance
UR2O80	Unknown	34.010577	-118.219058	VR	STLP	36	NA	192	UR2O80	12/31/2013	9:58	0		ND
UR2O81	VR	34.009167	-118.218674	VR	RCP	45	NA	72	UR2O81	12/31/2013	10:03	T	PW	ND
UR2O82	LACFCD	34.008589	-118.217931	VR	RCP	48	NA	72	UR2O82	12/31/2013	10:06	0		ND
UR2O83	Unknown	34.008184	-118.217457	VR	CMP	10	NA	120	UR2O83	12/31/2013	10:11	0		ND
UR2O84	LACFCD	34.007746	-118.216753	VR	STLP	14	NA	120	UR2O84	12/31/2013	10:16	T	Algae	ND
UR2O85	LACFCD	34.007741	-118.216661	VR	CMP	12	NA	120	UR2O85	12/31/2013	10:16	0		ND
UR2O86	Unknown	34.007139	-118.215420	VR	VCP	10	NA	120	UR2O86	12/31/2013	10:21	0		ND
UR2O87	LACFCD	34.007029	-118.215140	VR	VCP	10	NA	120	UR2O87	12/31/2013	10:24	0		ND
UR2O88	LACFCD	34.006954	-118.214845	VR	VCP	12	NA	120	UR2O88	12/31/2013	10:27	0		ND
UR2O89	LACFCD	34.006891	-118.214660	VR	VCP	12	NA	120	UR2O89	12/31/2013	10:28	0		ND
UR2O90	LACFCD	34.006660	-118.213570	VR	VCP	18	NA	120	UR2O90	12/31/2013	10:30	0		ND
UR2O91	LACFCD	34.006585	-118.208677	VR	RCP	36	NA	120	UR2O91	12/31/2013	10:33	0		ND
UR2O92	VR	34.006667	-118.204775	VR	RCB	45	45	0	UR2O92	12/31/2013	10:38	UNK	Invert below WL.	ND
UR2O93	LACFCD	34.005929	-118.202161	VR	VCP	12	NA	120	UR2O93	12/31/2013	10:42	0		ND
UR2O94	LACFCD	34.004057	-118.198962	VR	VCP	12	NA	120	UR2O94	12/31/2013	10:47	0		ND
UR2O95	LACFCD	34.003585	-118.198112	VR	VCP	16	NA	120	UR2O95	12/31/2013	10:50	22	Odor, cantaloupe seeds	ND
UR2O96	LACFCD	34.003563	-118.198095	VR	VCP	16	NA	240	UR2O96	12/31/2013	10:53	0		ND
UR2O97	LACFCD	34.003146	-118.197417	VR	VCP	12	NA	240	UR2O97	12/31/2013	10:54	0		ND
UR2O98	LACFCD	34.001946	-118.195324	VR	RCB	51	NA	72	UR2O98	12/31/2013	10:56	T	Odor	ND
UR2O99	LACFCD	34.001023	-118.193785	VR	FG RCP	24	NA	120	UR2O99	12/31/2013	11:00	0		ND
UR2O100	LACFCD	33.999795	-118.191687	VR	FG CMP	24	NA	120	UR2O100	12/31/2013	11:03	0		ND
UR2O101	LACFCD	33.998459	-118.189427	VR	FGP	48	NA	96	UR2O101	12/31/2013	11:08	0	Orange residue	ND
UR2O102	LACFCD	33.998398	-118.189390	VR	FGP	18	NA	120	UR2O102	12/31/2013	11:10	0	T	ND
UR2O103	LACFCD	33.998232	-118.189112	VR	FGP	12	NA	120	UR2O103	12/31/2013	11:11	0	T	ND
UR2O104	LACFCD	33.997592	-118.188034	VR	FGP	12	NA	240	UR2O104	12/31/2013	11:13	0		ND
UR2O105	LACFCD	33.997312	-118.187477	VR	FGP	24	NA	120	UR2O105	12/31/2013	11:14	0		ND
UR2O106	LACFCD	33.996795	-118.186691	VR	FGP	12	NA	240	UR2O106	12/31/2013	11:16	0		ND
UR2O107	LACFCD	33.996254	-118.185682	VR	FGP	24	NA	120	UR2O107	12/31/2013	11:18	0		ND
UR2O108	LACFCD	33.995822	-118.184960	VR	FGP	24	NA	120	UR2O108	12/31/2013	11:19	0		ND
UR2O109	LACFCD	33.995345	-118.184136	VR	RCP	51	NA	48	UR2O109	12/31/2013	11:21	T	Grey, turbid, T	ND

LAR UR2 Outfall Inventory

Identification		Coordinates		Physical Description					Photos	Non-Stormwater Significance Screening				
Outfall Identifier	Owner	Latitude	Longitude	City	Type	D/H "	W "	Wall H"	Photo Link	Date	Time	Q (GPM)	Flow Observations	Significance
UR2O110	LACFCD	33.995294	-118.184012	VR	FGP	24	NA	48	UR2O110	12/31/2013	11:23	0		ND
UR2O111	LACFCD	33.995020	-118.183544	VR	FGP	36	NA	48	UR2O111	12/31/2013	11:25	T	Algae	ND
UR2O112	LACFCD	33.991179	-118.177106	BL	FGP	24	NA	96	UR2O112	12/31/2013	11:29	0		ND
LAR-032	LACFCD	33.991148	-118.177012	LACFCD	FGP	36	NA	48	LAR-032	12/31/2013	11:31	T	T	ND
UR2O114	LACFCD	33.987248	-118.172871	BL	FGP	30	NA	48	UR2O114	12/31/2013	11:32	0	PW	ND
UR2O115	LACFCD	33.986462	-118.172274	BL	FGP	30	NA	48	UR2O115	12/31/2013	11:36	0	Veg	ND
UR2O116	LACFCD	33.986055	-118.172110	BL	FG CMP	18	NA	240	UR2O116	12/31/2013	11:37	0		ND
UR2O117	LACFCD	33.984939	-118.171397	BL	FGP	30	NA	96	UR2O117	12/31/2013	11:40	T	T	ND
UR2O118	LACFCD	33.980469	-118.169901	BL	FGP	30	NA	48	UR2O118	12/31/2013	11:43	20	HV, T	ND
UR2O119	Unknown	33.979930	-118.169824	BL	FGP	48	NA	72	UR2O119	12/31/2013	11:46	0		ND
UR2O120	BL	33.976753	-118.169809	BL	FGP	10	NA	120	UR2O120	12/31/2013	11:47	0		ND
UR2O121	Unknown	33.976325	-118.169845	BL	FGP	30	NA	96	UR2O121	12/31/2013	11:48	T	T	ND
UR2O122	Unknown	33.975975	-118.169901	BL	FGP	30	NA	120	UR2O122	12/31/2013	11:52	0		ND
UR2O123	BL	33.968669	-118.170764	BL	FGP	42	NA	24	UR2O123	12/31/2013	11:58	T	T, PW	ND
UR2O124	BL	33.968712	-118.170926	BL	FGP	42	NA	48	UR2O124	12/31/2013	12:01	0		ND
UR2O125	LACFCD	33.966243	-118.171266	CU	FG CMP	36	NA	72	UR2O125	12/31/2013	12:02	T		ND
UR2O126	Unknown	33.963755	-118.171621	CU	2FGP	30	NA	72	UR2O126	12/31/2013	12:05	0		ND
UR2O127	LACFCD	33.961713	-118.171947	CU	FGP	24	NA	48	UR2O127	12/31/2013	12:07	T	Veg	ND
UR2O128	LACFCD	33.960210	-118.172156	CU	FGP	16	NA	12	UR2O128	12/31/2013	12:10	0	Dead Hveg	ND
UR2O129	LACFCD	33.959439	-118.172286	CU	FGP	24	NA	24	UR2O129	12/31/2013	12:12	0		ND
UR2O130	LACFCD	33.956731	-118.172699	CU	FGP	24	NA	24	UR2O130	12/31/2013	12:13	T	Veg	ND
UR2O131	Unknown	33.954406	-118.173061	CU	FGP	24	NA	120	UR2O131	12/31/2013	12:15	0		ND
LAR-025	LACFCD	33.945129	-118.174509	SG	5RCB	96	96	0	UR2O135	12/31/2013	12:26	320	T	ND

Appendix D

Monitoring Site Fact Sheets

Summary Sheet for LAR-UR2-RW

Watershed: Los Angeles River	**Monitoring Type:** Receiving Water
Latitude: 33.940550	**Longitude:** -118.174528
Thomas Guide Grid: pg.705 F5	**Nearest Street Address:** 5437 Tweedy Boulevard, South Gate, CA 90280
Site Description: LAR-UR2-RW is a receiving water monitoring location in the City of South Gate, near the railroad trestle, or extension of Tweedy Boulevard. It is immediately downstream of major outfalls on both the east and west sides of the river that drains from over 60% of the LAR UR2 WMA.	
Site Location: Please see **Figure 7**	
Site View: 	

Summary Sheet for LAR-UR2-RHO

Watershed: Los Angeles River			**Monitoring Type:** Fixed Stormwater Outfall			
Latitude: 33.959003		**Longitude:** -118.154614				
Represented Area: Cities of Bell Gardens and Commerce						
Thomas Guide Grid: pg. 705 H2			**Drainage System:** BI0539 – Line A – Bell Gardens			
Outfall Shape: Round		**HUC-12:** Alhambra Wash – Rio Hondo				
Outfall Type: Manhole		**Nearest Street Address:** 7854 Gilliland Avenue, Bell Gardens, CA 90201				
	Catchment Area		**LAR UR2 WMA HUC-12 Portion**		**LAR UR2 WMA Total**	
Land Use Category	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	9.30	0.52%	11.02	0.48%	46.00	0.32%
Commercial	162.49	9.09%	179.17	7.88%	1418.94	9.98%
Education	23.31	1.30%	41.10	1.81%	311.42	2.19%
Industrial	1195.52	66.88%	1232.08	54.16%	6028.97	42.41%
Multi-Family Residential	123.20	6.89%	380.11	16.71%	2412.98	16.97%
Single Family Residential	65.85	3.68%	164.16	7.22%	1783.77	12.55%
Transportation	85.50	4.78%	66.34	2.92%	1369.82	9.64%
Vacant	122.38	6.85%	200.88	8.83%	843.43	5.93%
Total	1787.55	100%	2274.86	100%	14215.34	100%

Site Description: LAR-UR2-RHO encompasses about 70% of the total LAR UR2 WMA Rio Hondo tributary area. It is located in the parking lot of the John Anson Ford Park in the City of Bell Gardens, across from the intersection of Gilliland Avenue and Park Lane. Minimal traffic controls will be utilized to alert drivers of the samplers' location and prevent parking in a few parking spots.

Site Location: Please See **Figure 9**

Site View:

Summary Sheet for LAR-UR2-DRO

Watershed: Los Angeles River	**Monitoring Type:** Rotating Stormwater Outfall					
Latitude: 34.008539	**Longitude:** -118.205166					
Represented Area: Cities of Commerce, Vernon, and Bell						
Thomas Guide Grid: pg.675 B3	**Drainage System:** BI5206 – Los Angeles					
Outfall Shape: Round	**HUC-12:** Chavez Ravine – Los Angeles River					
Outfall Type: Manhole	**Nearest Street Address:** 3344 Bandini Boulevard, Vernon, CA 90058					
	Catchment		**Vernon**		**LAR UR2 WMA Total**	
Land Use	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	0	0%	0	0%	34.98	0.29%
Commercial	0	0%	16.37	0.50%	1239.48	10.38%
Education	0	0%	2.67	0.08%	270.08	2.26%
Industrial	25.57	35.91%	2556.40	77.52%	4796.90	40.18%
Multi-Family Residential	0	0%	0.23	0.01%	2032.77	17.03%
Single Family Residential	0	0%	0.93	0.03%	1618.17	13.55%
Transportation	37.75	53.00%	494.04	14.98%	1303.48	10.92%
Vacant	0.29	0.40%	226.95	6.88%	642.48	5.38%
Unincorporated	7.61	10.68%	0	0%	0	0%
Total	71.22	100%	3297.60	100%	11938.34	100%

Site Description: LAR-UR2-DRO is located on the sidewalk at the intersection of Bandini Boulevard and South Downey Road. Due to its location and access to parking, traffic controls would not be required to collect samples.

Site Location: Please See **Figure 10**

Site View:

Summary Sheet for LAR-UR2-EO

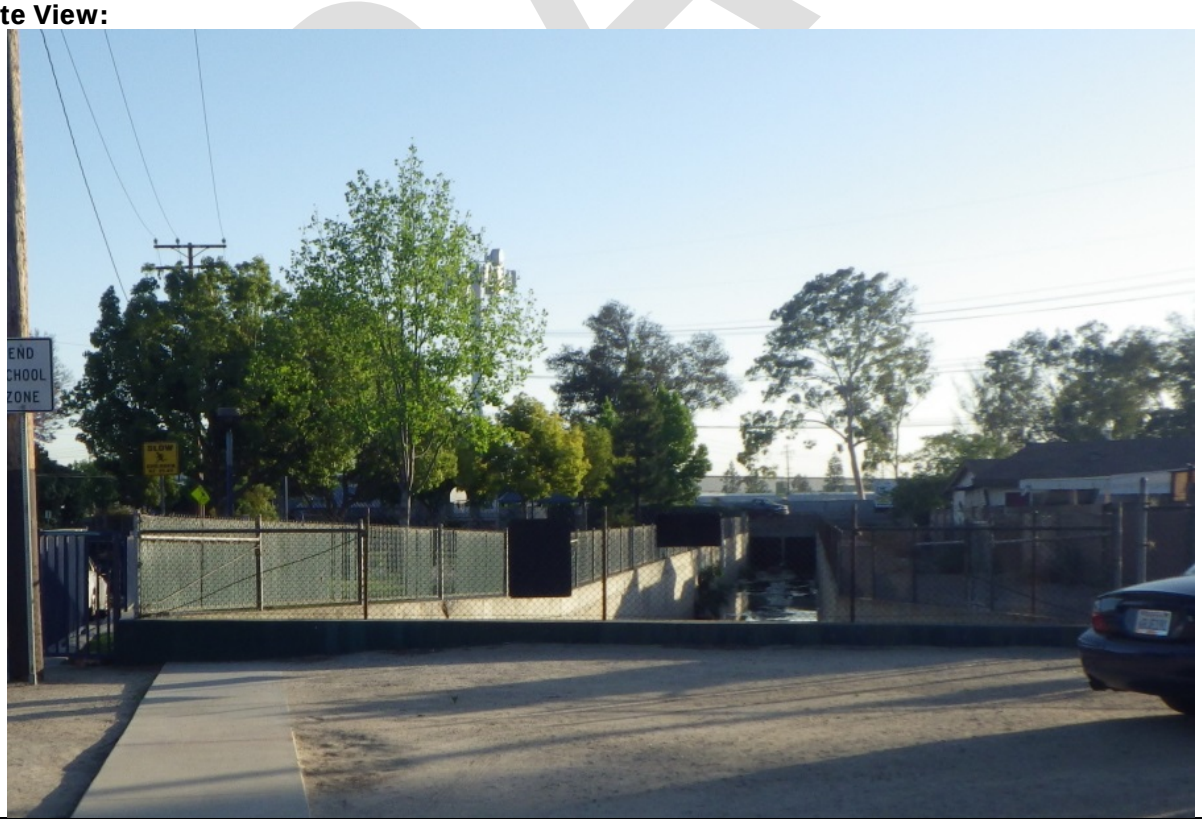
Watershed: Los Angeles River	**Monitoring Type:** Rotating Stormwater Outfall
Latitude: 33.956663	**Longitude:** -118.169102
Represented Area: Cities of Bell Gardens, Commerce, and Vernon	
Thomas Guide Grid: pg.705 F3	**Drainage System:** DD123
Outfall Shape: Rectangle	**HUC-12:** Chaves Ravine – Los Angeles River
Outfall Type: Concrete Channel	**Nearest Street Address:** 8287 Jaboneria Rd., Bell Gardens, CA 90201

	Catchment		LAR UR2 WMA HUC-12 Portion		LAR UR2 WMA Total	
Land Use	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	34.96	1.44%	34.98	0.30%	46.00	0.32%
Commercial	364.37	15.07%	1239.48	10.38%	1418.94	9.98%
Education	75.08	3.11%	270.08	2.26%	311.42	2.19%
Industrial	1036.52	42.88%	4796.90	40.18%	6028.97	42.41%
Multi-Family Residential	443.02	18.33%	2032.77	17.03%	2412.98	16.98%
Single Family Residential	187.43	7.75%	1618.17	13.55%	1783.77	12.55%
Transportation	188.99	7.82%	1303.48	10.92%	1369.82	9.64%
Vacant	87.00	3.60%	642.48	5.38%	843.43	5.93%
Total	2417.35	100%	11938.34	100%	14215.34	100%

Site Description: Stormwater outfall monitoring site LAR-UR2-EO is located in a residential area in Bell Gardens. Samples will be collected from the concrete channel that is located on Jaboneria Road just north of the Jaboneria Road and Fostoria Street intersection. Access to the channel may require a permit from the Los Angeles County Flood Control District (LACFCD).

Site Location: Please See **Figure 11**

Site View:



Summary Sheet for LAR-UR2-NO

Watershed: Los Angeles River	**Monitoring Type:** Rotating Stormwater Outfall
Latitude: 33.996050	**Longitude:** -118.180775
Represented Area: Cities of Commerce, Vernon, and Bell	
Thomas Guide Grid: pg.675 E4	**Drainage System:** BI0014 – U3 – DD122
Outfall Shape: Round	**HUC-12:** Chavez Ravine – Los Angeles River
Outfall Type: Manhole	**Nearest Street Address:** 3077 S. Atlantic Blvd, Vernon, CA 90058

	Catchment		Commerce		Vernon		LAR UR2 WMA Total	
Land Use	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	0	0%	19.46	0.46%	0	0%	46.00	0.32%
Commercial	19.83	1.95%	383.03	9.13%	16.37	0.50%	1418.94	9.98%
Education	0	0%	24.46	0.58%	2.67	0.08%	311.42	2.19%
Industrial	406.41	39.91%	2523.00	60.15%	2556.40	77.52%	6028.97	42.41%
Multi-Family Residential	18.94	1.86%	129.28	3.09%	0.23	0.01%	2412.98	16.98%
Single Family Residential	34.44	3.38%	292.25	6.97%	0.93	0.03%	1783.77	12.55%
Transportation	473.28	46.48%	650.51	15.51%	494.04	14.98%	1369.82	9.64%
Vacant	65.39	6.42%	172.50	4.11%	226.95	6.88%	843.43	5.93%
Total	1018.29	100%	4194.48	100%	3297.60	100%	14215.34	100%

Site Description: LAR-UR2-NO is located on South Atlantic Boulevard west of Highway 710, in the number 3 southbound lane. It is two feet above the crosswalk. Traffic controls would be needed to obtain the samples.

Site Location: Please See **Figure 12**

Site View:

Summary Sheet for LAR-UR2-WO

Watershed: Los Angeles River	**Monitoring Type:** Rotating Stormwater Outfall					
Latitude: 33.955146	**Longitude:** -118.179975					
Represented Area: Cities of Bell, Cudahy, and Maywood						
Thomas Guide Grid: pg.705 E3	**Drainage System:** BI001 – Line A – East Compton Creek					
Outfall Shape: Round	**HUC-12:** Chavez Ravine – Los Angeles River					
Outfall Type: Manhole	**Nearest Street Address:** 8497 Wilcox Ave, Cudahy, CA 90201					
	Catchment		**LAR UR2 WMA HUC-12 Portion**		**LAR UR2 WMA Total**	
Land Use	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	0	0%	34.98	0.30%	46.00	0.32%
Commercial	244.09	16.06%	1239.48	10.38%	1418.94	9.98%
Education	66.85	4.40%	270.08	2.26%	311.42	2.19%
Industrial	91.61	6.03%	4796.90	40.18%	6028.97	42.41%
Multi-Family Residential	565.52	37.20%	2032.77	17.03%	2412.98	16.98%
Single Family Residential	515.64	33.92%	1618.17	13.55%	1783.77	12.55%
Transportation	16.66	1.10%	1303.48	10.92%	1369.82	9.64%
Vacant	19.87	1.31%	642.48	5.38%	843.43	5.93%
Total	1520.24	100%	11938.34	100%	14215.34	100%

Site Description: LAR-UR2-WO is located at the intersection of Wilcox Avenue and Patata Street in the City of Cudahy. The manhole in the westbound lane of Patata Street and is just beyond the turn line in the intersection. There is semi-trailer truck traffic in the area that will require the use of traffic controls to collect the samples.

Site Location: Please See **Figure 13**

Site View:

Summary Sheet for LAR-UR2-NVO

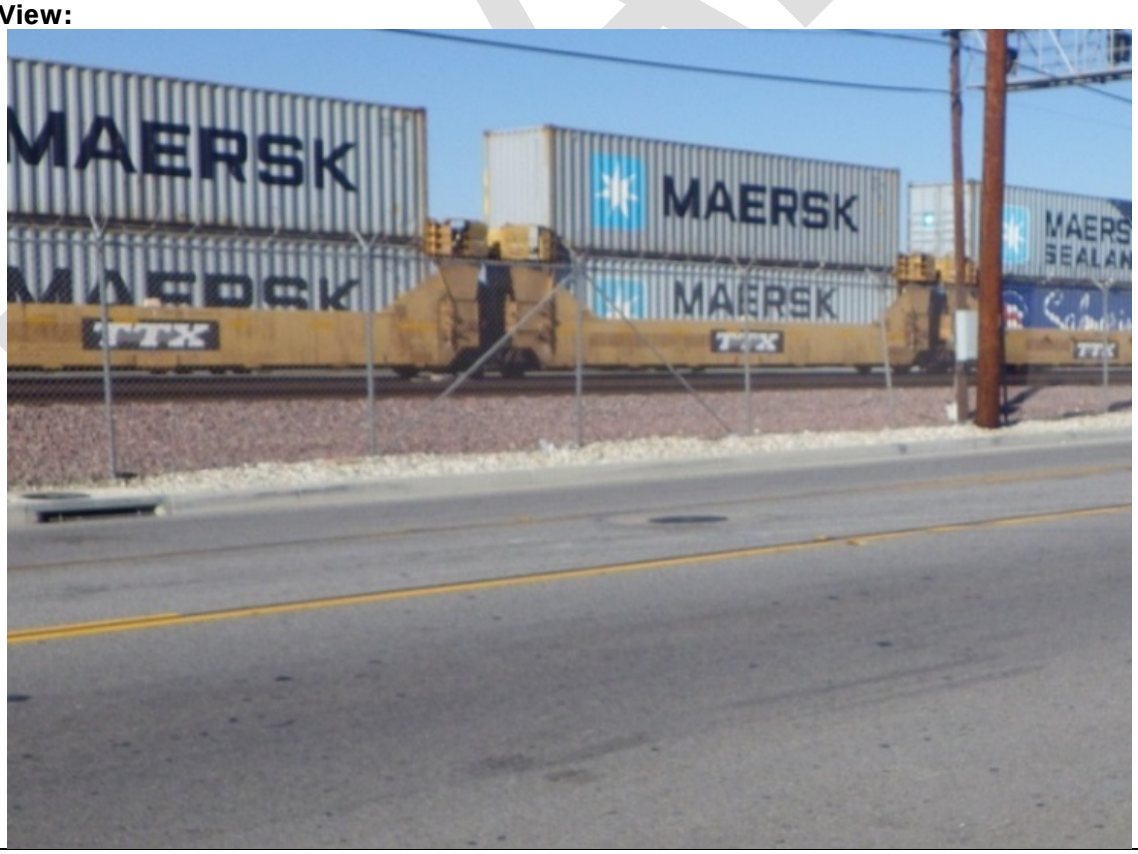
Watershed: Los Angeles River	**Monitoring Type:** Rotating Stormwater Outfall
Latitude: 34.007733	**Longitude:** -118.194464
Represented Area: Cities of Vernon and Commerce	
Thomas Guide Grid: pg.675 C3	**Drainage System:** DD126
Outfall Shape: Round	**HUC-12:** Chavez Ravine – Los Angeles River
Outfall Type: Manhole	**Nearest Street Address:** 3890 E. 26th Street, Vernon, CA 90058

	Catchment		Commerce		Vernon		LAR UR2 WMA Total	
Land Use	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	0	0%	19.46	0.46%	0	0%	46.00	0.32%
Commercial	0	0%	383.03	9.13%	16.37	0.50%	1418.94	9.98%
Education	0	0%	24.46	0.58%	2.67	0.08%	311.42	2.19%
Industrial	91.70	35.09%	2523.00	60.15%	2556.40	77.52%	6028.97	42.41%
Multi-Family Residential	0	0%	129.28	3.09%	0.23	0.01%	2412.98	16.98%
Single Family Residential	0	0%	292.25	6.97%	0.93	0.03%	1783.77	12.55%
Transportation	165.58	63.36%	650.51	15.51%	494.04	14.98%	1369.82	9.64%
Vacant	4.07	1.56%	172.50	4.11%	226.95	6.88%	843.43	5.93%
Total	261.35	100%	4194.48	100%	3297.60	100%	14215.34	100%

Site Description: LAR-UR2-NVO is located on East 26th Street, east of South Downey Road, in the median. The sampling team could park in the median and utilize minimal traffic controls to obtain samples.

Site Location: Please See **Figure 14**

Site View:



Summary Sheet for LAR-UR2-FWO

Watershed: Los Angeles River	**Monitoring Type:** Rotating Stormwater Outfall					
Latitude: 33.956591	**Longitude:** -118.186050					
Represented Area: Cities of Cudahy, Huntington Park, Maywood, Vernon, and Bell						
Thomas Guide Grid: pg.705 D3	**Drainage System:** East Compton Creek No. 1					
Outfall Shape: Round	**HUC-12:** Chavez Ravine – Los Angeles River					
Outfall Type: Manhole	**Nearest Street Address:** Salt Lake Avenue					
	Catchment		**LAR UR2 WMA HUC-12 Portion**		**LAR UR2 WMA Total**	
Land Use	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	0	0%	34.98	0.29%	46.00	0.32%
Commercial	454.93	10.90%	1239.48	10.38%	1418.94	9.98%
Education	114.25	2.74%	270.08	2.26%	311.42	2.19%
Industrial	1763.25	42.25%	4796.90	40.18%	6028.97	42.41%
Multi-Family Residential	879.38	21.07%	2032.77	17.03%	2412.98	16.98%
Single Family Residential	749.79	17.97%	1618.17	13.55%	1783.77	12.55%
Transportation	111.22	2.66%	1303.48	10.92%	1369.82	9.64%
Vacant	100.63	2.41%	642.48	5.38%	843.43	5.93%
Total	4173.45	100%	11938.34	100%	14215.34	100%

Site Description: Outfall monitoring location LAR-UR2-FWO is located in the City of Cudahy. The manhole is in the southbound, number 1 lane, south of the Ardine Street and Salt Lake Avenue intersection. Traffic controls will be required to partially block the lane to obtain samples.

Site Location: Please See **Figure 15**

Site View:

Appendix E

Quality Assurance Project Program (QAPP) Plan

Los Angeles River Upper Reach 2 Watershed Management Area

Generic

Quality Assurance Project Plan (QAPP)

Prepared for:

Los Angeles Gateway Region
Integrated Regional Water Management Authority
16401 Paramount Boulevard
Paramount California 90641
TEL (626) 485-0338

On Behalf of the Cities of Bell (WDID 4B190153001), Bell Gardens (WDID 4B190139002), Commerce (WDID 4B190161001), Cudahy (WDID 4B190164001), Huntington Park (WDID 4B190177001), Maywood (WDID 4B190192001), Vernon (WDID 4B190216001), and the Los Angeles County Flood Control District (WDID4B190107101)

Prepared by:

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June 26, 2014

RB-AR5769

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Acronyms

AMP	Adaptive Management Process
CFU	Colony Forming (Microbial) Unit
CIMP	Coordinated Integrated Monitoring Program
DBM	Data Base Manager
DO	Dissolved Oxygen
DQO	Data Quality Objectives
GIS	Geographic Information System
LAR UR2 WMA	Los Angeles River Upper Reach 2 Watershed Management Area
LARWQCB	Los Angeles Regional Water Quality Control Board
MAL	Municipal Action Limit
MES	Mass Emission Station
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
PM	Project Manager
QA	Quality Assurance
QAM	Quality Assurance Manual
QAPP	Quality Assurance Project Program
RWL	Receiving Water Limitation
QC	Quality Control
SCCWRP	Southern California Coastal Water Research Project
SMC	Stormwater Monitoring Coalition
SSC	Suspended Sediment Concentration
SSCs	Site Safety Coordinators
TIE	Toxicity Identification Evaluation
TSS	Total Suspended Solids
UR2	Upper Reach 2
USEPA	United States Environmental Protection Agency
WBPC	Water Body- Pollutant Combination
WDR	Waste Discharge Requirements
WLA	Waste Load Allocation
WMA	Watershed Management Area
WMP	Watershed Management Program
WQO	Water Quality Objectives
WQBEL	Water Quality-Based Effluent Limitation

1. Introduction

The California Regional Water Quality Control Board, Los Angeles Region (LARWQCB), adopted the fourth term Coastal Los Angeles County Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit as Order No. R4-2012-0175, on November 8, 2012, which then became effective on December 28, 2012. The Permit encourages Permittees to join together into Watershed Management Groups and develop a Coordinated Integrated Monitoring Program (CIMP) Plan as further characterized in Attachment E to that Permit. This generic Quality Assurance Project Plan (QAPP) is intended to serve as a guide to Los Angeles River Upper Reach 2 Watershed Management Area (LAR UP2 WMA), its contractors, and analytical laboratories for sample analysis and laboratory performance evaluations for the Coordinated Integrated Monitoring Plan (CIMP).

2. Purpose

The intended purpose of this QAPP is to provide program Quality Assurance/Quality Control (QA/QC) consistency for all CIMP monitoring and reporting program activities. Additional information on the data quality review process is described in the USEPA document *Guidance for Data Quality Assessment: Practical Methods for Data Analysis* (USEPA 2000). This document provides the guidance to perform the scientific and statistical evaluation of the data to ensure the project data objectives of quality and quantity are met to support project needs and their intended use.

This QAPP presents the guidelines for monitoring the performance of the analytical laboratory and is not intended to supersede the laboratory's Quality Assurance Manual (QAM). All project personnel will be required to read the QAPP. A copy of the QAPP will be brought to the field during sampling events. Although this QAPP details specific QA/QC requirements applicable to the CIMP, it is a placeholder document for reference until a specific sampling consultants and/or analytical laboratory are contractually retained. These QA/QC requirements are designed to assist in achieving the project data quality objectives (DQOs) and analytical DQOs for all sampling activities that will be performed in the field.

3. Background

Pursuant to the requirements set forth in the Permit, LAR UR2 WMA has agreed to complete CIMP monitoring and reporting. This QAPP has been prepared to ensure that the appropriate levels of QA/QC are maintained throughout monitoring work. The QAPP serves as the controlling mechanism during monitoring and identifies the QA/QC techniques needed for sampling, sample handling, sample storage, Chain-of-Custody procedures, laboratory analytical protocols, data interpretation, reporting, and documentation requirements. The QAPP further provides a summary of the project, its organizational hierarchy, and objectives. QA/QC procedures will be in accordance with applicable professional technical standards, USEPA requirements, RWQCB requirements, specific project goals, and client requirements. This QAPP was prepared utilizing: the 2012 Coastal Los Angeles County MS4 Permit, *Guidance on Systematic Planning Using the Data Quality Objectives Process* (USEPA 2006), *Requirements for Quality Assurance Project Plans* (USEPA 2001), and *Guidance for Quality Assurance Project Plans* (USEPA 2002).

4. Document Organization

The guidelines for preparing this QAPP are presented in USEPA document *Requirements for Quality Assurance Project Plans* (USEPA 2001) and conforms to the following format:

Project Management This section of the QAPP covers the basic areas of project management, including project history, objectives, and the roles or responsibilities of the project participants. The

objectives of this QAPP section are to define and ensure that the participants understand the project goals and approaches to be used. This section also includes management of project documents and records.

Data Generation and Acquisition This section describes the technical design and implementation of the QAPP. Effective implementation of these elements ensures that appropriate methods for sampling, measurement, analysis, data collection, data handling, utilization of field and laboratory QA/QC samples are employed during sample collection and analysis. It also directs proper documentation of QC activities.

Assessment and Oversight This section describes the data quality activities for assessing that the QAPP is being implemented as prescribed and measures the effectiveness of project implementation and associated QA/QC activities.

Data Review, Verification, and Validation This section describes the data quality assessment methods to be used to evaluate field sample results against the established project and analytical DQOs.

5. Project Management

This section describes the overall project organization, schedule, quality objectives, and documentation.

5.1 Roles and Responsibilities

The LARWQCB will conduct oversight of the monitoring and reporting program as the regulatory lead and has external oversight responsibilities for all phases of monitoring, reporting, and should be informed of investigation findings and activities.

LAR UR2 WMA Project Manager The Project Manager (PM) will be the primary point of contact for the LAR UR2 WMA and will be responsible for the coordination of the activities described in the CIMP. All project-related activities will be addressed with the LAR UR2 WMA PM. In addition, any updates or revisions recommended for future versions of the QAPP should be presented to the LAR UR2 WMA PM. At this time, the LAR UR2 WMA has not designated a PM.

Consultant A consultant, or consultant team, will be contracted by LAR UR2 WMA to provide clear lines of authority and communication that will expedite and enhance the flow of information vital to effective technical controls, cost, and schedule performance. The functional roles of personnel within the organizational structure will also be clearly defined. Individuals are given the authority to accomplish their respective project assignments. Since the individuals listed below may change from time to time, this QAPP uses “designee” to include an alternate to the proposed or normal project organization. The following paragraphs define functional titles, positions, and responsibilities.

Consultant Program Manager The Consultant PM designee, will report directly to the LAR UR2 WMA PM. The Consultant PM is the direct line of communication between Consultant and LAR UR2 WMA, and is responsible for ensuring the availability of resources and overall quality of the activities completed under the Monitoring and Reporting Program (MRP). The Consultant PM will provide programmatic guidance to support staff and ensure that documents, procedures, and project activities meet the respective standards and quality requirements. The Consultant PM will also be responsible for resolving project concerns related to technical matters.

The Consultant PM is the focal point for control of project activities, continuity, quality, accountability, and leadership responsibility throughout all phases of the project. The Consultant PM will be supported

by QA personnel, who provide reviews, guidance, and technical advice on project execution and issues resolution. The project team, consisting of supervisory, health and safety, and technical personnel, will support the Consultant PM to ensure that the project meets professional standards, is safely executed, and in compliance with applicable laws, regulations, statutes, and industry codes. Individuals on the project team are responsible for fulfilling appropriate portions of the project QA program, in accordance with assignments made by the Consultant PM. The Consultant PM is responsible for satisfactory completion of the project QA program, may assign specific responsibilities to other members of the project staff, and will notify LAR UR2 WMA of any long-term changes in personnel.

Consultant Storm Water Event Manager The Consultant Storm Water Event Manager designee reports directly to the Consultant PM and will oversee all phases of technical work related to monitoring, reporting data and document generation. Additionally, he is responsible for field activity preparations and execution of sampling activities. This includes overseeing sampling in accordance with approved procedures and methodologies, collection of QA/QC samples, completion of sampling forms, labels, chain-of-custody forms, applying custody seals, and packaging or shipping samples to the approved laboratory.

Consultant Quality Assurance/Quality Control Manager The Consultant QA/QC Manager (QA/QCM), designee, will be available to ensure that management activities are consistent with project objectives. The Consultant QA/QCM will be responsible for monitoring the project analytical QA/QC program. Additional responsibilities include laboratory coordination, project tracking, data validation, data quality assessment, data reporting procedures, calculations, and QC. The Consultant QA/QCM or designee will assume primary responsibility for maintaining and reviewing the QAPP.

Consultant Health and Safety Officer The Consultant Program Health and Safety Manager or designee, reports to the Consultant PM and will be responsible for final approval of the Site Health and Safety Plan (HASP) to ensure that health and safety procedures for the project are conducted in accordance with the Occupational Safety and Health Association (OSHA) regulations and guidelines. The designee will also be responsible for updating the HASP as needed, ensuring that proper health and safety procedures are followed, directing periodic field audits, and assigning Site Safety Coordinators (SSCs).

Consultant Database Manager The designee, will act as the Data Base Manager (DBM) who will report to the Consultant PM and be responsible for maintenance of the LAR UR2 WMA GIS database and the Geographic Information Systems (GIS) component of the database. The DBM is responsible for providing routine data reporting deliverables as well as non-routine and special-circumstance data requests. All non-routine and special-circumstance data requests are routed through both the DBM and Consultant PM and will be prioritized by the latter if scheduling conflicts arise.

Consultant GIS Specialist The Consultant GIS Specialist designee will report to the Consultant PM and is responsible for creating, editing, and manipulating georeferenced spatial data to efficiently display the LAR UR2 WMA information in a visual form. The Consultant GIS Specialist is responsible for producing high quality maps using appropriate software.

Consultant Field Scientist, Geologists, Engineers, and Technicians Consultant field scientist, geologists, engineers, and technicians report to the Consultant PM, and are responsible for field activities, including sampling, and are responsible for following the QA/QC elements of the QAPP.

Consultant Project Administrators Project Administrators, designated by each Consultant business unit, report to the Consultant PM, other Consultant project personnel, and will be responsible for project subcontractor procurement, purchasing, and project file maintenance. In addition, the Consultant Contracting and Procurement Group will be involved in major subcontractor procurement and will be

responsible for enforcement on subcontracted terms, including imposing liquidated damages and other legal remedies.

Laboratory Project Manager The Laboratory Project Manager, designated by each primary laboratory, will be the laboratory's primary project contact and will coordinate with the Consultant QA/QCM. Analytical services may be subcontracted with the prior approval of the QA/QCM team; however, the Laboratory PM holds primary responsibility for delivery of all subcontracted services. The laboratory will be an USEPA and California or Oregon Department of Health Services (DHS) approved laboratory. The lab is designated as the primary analytical subcontractor and will perform the analyses for the standard analytical methods. Key positions and quality related responsibilities for laboratory personnel are discussed in the laboratory QAM.

Laboratory Quality Assurance Manager The Laboratory Quality Assurance Manager, designated by each primary laboratory, is the QA Manager for all laboratory services and deliverables. The QA Manager will be responsible for implementing the laboratory's QA/QC programs, as described in the laboratory QAM and implementing any additional and project-specific QA/QC procedures included in this QAPP.

5.2 Problem Statement

On November 8, 2012, the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) reissued the National Pollutant Discharge Elimination System (NPDES) Permit No. CAS004001, by adopting Order No. R4-2012-0175, *Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating From The City of Long Beach MS4* (MS4 Permit). The primary purpose of the Permit is to assess whether MS4 discharges are causing or contributing to the impairment of receiving water beneficial uses in Los Angeles County. The LAR UR2 WMG will assess progress towards these objectives through the CIMP. The CIMP is intended to contribute to the assessment of compliance with Order No. R4-2012-0175. The MRP, outlined in Permit Attachment E, establishes requirements for appropriate monitoring, reporting, and recordkeeping of MS4 discharge and receiving water quality data.

5.3 Project/Task Description

The monitoring of water constituents and pollutants will allow the LAR UR2 WMG to assess compliance with MS4 permit requirements within its watershed management area (WMA). Data collected will also be utilized to assess progress towards complying with Total Maximum Daily Load (TMDL) Waste Load Allocation (WLAs) numeric limits expressed as Water Quality Based Effluent Limits (WQBELs) and/or Receiving Water Limits (RWLs). Water quality monitoring data can be utilized to identify and characterize the effectiveness of instituted watershed control measures and refine their future implementation to reduce the discharge of pollutants into receiving waters. Ultimately, this will improve water quality and enhance beneficial use of the relevant receiving waters.

The CIMP is intended to guide the monitoring of receiving waters and MS4 outfalls to assess whether discharges from the LAR UR2 WMA Permittees are in compliance with the MS4 permit. These monitoring results will be used to assess proper control measures or best management practices (BMPs) to be implemented to maximize pollutant load reductions in the most effective manner.

Mobilization for wet-weather monitoring will occur when the National Weather Service predicted rainfall exceeds 0.25 inch with a 70% occurrence probability, at least 24 hours prior to the event start time, within the WMA. Local flows should also be at least 20% above base flow, or other value as defined by applicable TMDL Monitoring Plans; however, the Rio Hondo is often dry along with many of the MS4 outfalls. As indicated by the Permit, the LAR UR2 WMG will target the first storm event of the storm

year, and two subsequent storm events, that are forecast to generate sufficient rainfall and runoff to meet program objectives and allow the collection of the necessary water quality sample volume. Sampling events will be separated by a minimum of 72 hours of dry conditions (less than 0.1 inch of rain on each day). Monitoring samples collected as grab samples will first be collected at outfall monitoring sites, followed by the receiving water monitoring site, as directed by the Permit.

Dry-weather receiving water monitoring will occur when receiving water flows are less than 20% above base flow. Monitoring is expected to occur during the critical dry-weather event, which is defined as the month with the historically lowest flows or driest weather. It is proposed that July and August are essentially equally dry and that water quality monitoring should be coordinated among adjacent WMP groups to facilitate data comparability, compliance assessment, and runoff or pollutant source assessment.

5.3.1 Geographical Setting

The Los Angeles River begins in the Santa Monica Mountains at the western end of the San Fernando Valley. It flows 51 miles through the Los Angeles Basin, exiting into the Pacific Ocean at Long Beach Harbor and San Pedro Bay. Including tributaries, the 824 square mile watershed has a total stream length of about 837 miles and 4.6 square miles of lake area. The LAR UR2 WMA is located near central Los Angeles County and consists of the cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon, along with the Los Angeles County Flood Control District. Los Angeles River Reach 2 begins at the Arroyo Seco confluence flows through the LAR UR2 WMG cities of Vernon and Bell and adjacent to the Cities of Maywood, Cudahy, and Bell Gardens before terminating at the Compton Creek confluence. The boundaries for the LAR UR2 WMA specifically start at East 26th Street in the City of Vernon and ends at Patata Street in City of Cudahy. The LAR UR2 WMG Cities of Bell Gardens and Commerce line the western bank of Rio Hondo Reach 1, a 120 square mile Los Angeles River tributary from the eastern side of the LAR watershed. **Figure 1** illustrates the LAR UR2 WMA municipal and jurisdictional boundaries in relation to Los Angeles River Reach 2 and Rio Hondo Reach 1.

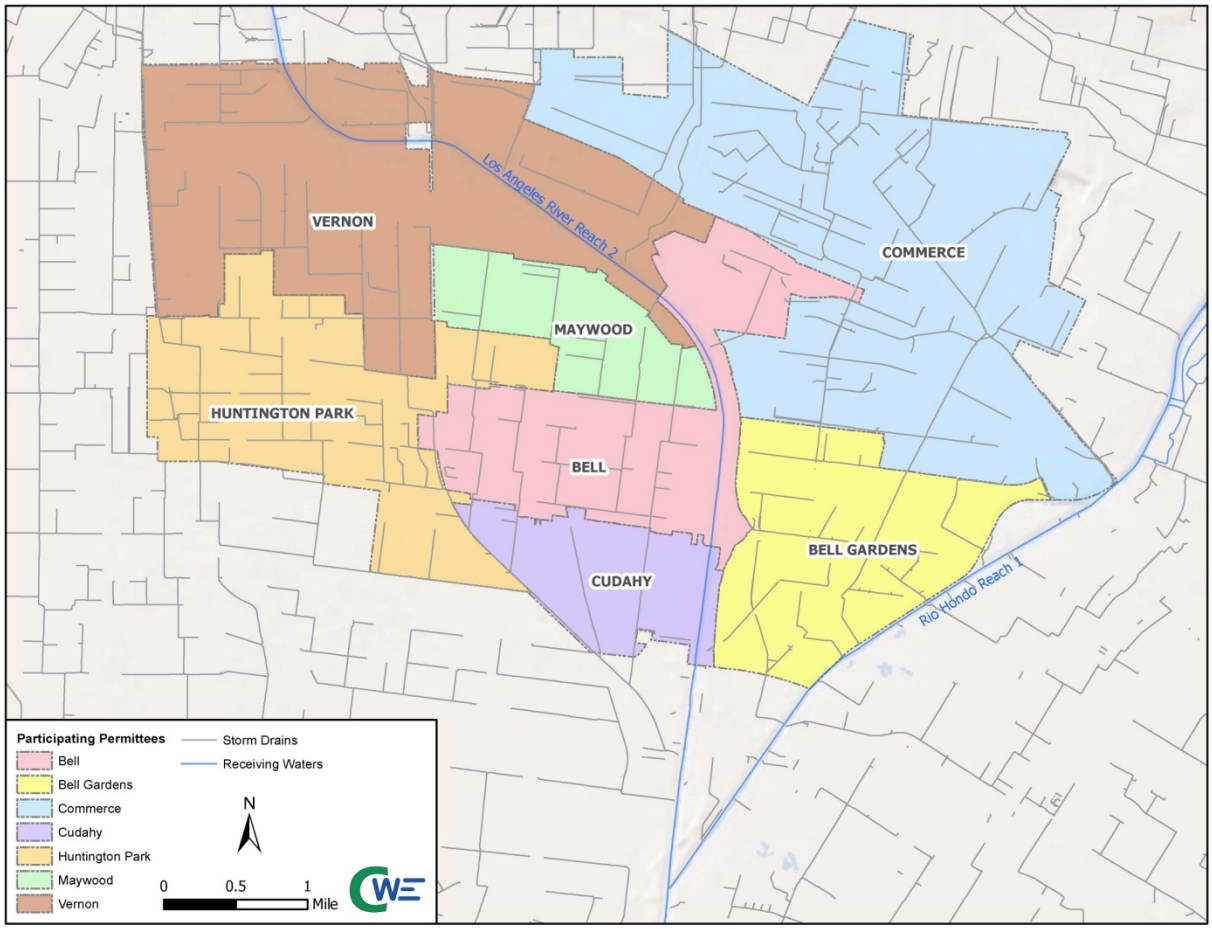

Figure 1 Los Angeles River Upper Reach 2 Watershed Management Area General Location

5.3.2 Programs and Agencies

Agency oversight of the CIMP rests with the Regional Board. The Regional Board will have the opportunity to review and provide comment on all CIMP related work.

5.3.3 Project Schedule

As stated in Permit Attachment E, Part IV.C.6 of the MRP, the LAR UR2 WMA's CIMP implementation will commence within 90 days following CIMP approval by the Executive Officer of the Regional Board, or coordinated with other regional agencies to begin simultaneously for the benefit of comparability of data among adjacent agencies. Implementation of the CIMP for the Los Angeles River receiving water monitoring site is subject to the availability and approval of construction permits from the LACFCD and Army Corps of Engineers (ACOE). If permit approval is not completed within the 90 day schedule, the LAR UR2 WMA will provide quarterly updates to inform the Regional Board of progress in obtaining the permits and constructing the monitoring site facilities. It is anticipated that the permitting and installation of the receiving water monitoring site may take a minimum of 18 months.

CIMP monitoring will start on July 1, 2015, to coincide with the Annual Report period of the Permit as well as to coordinate monitoring with other WMA. Wet-weather monitoring will target the first significant rain event of the wet season (October to April) of the storm year (July 1 to June 30) with a predicted

rainfall of at least 0.25 inch at a seventy percent probability of rain fall, within the LAR UR2 WMA, at least 24 hours prior to the event start time. Dry-weather, for LAR UR2 WMA receiving water monitoring, will be characterized by an estimated flow of less than 20 percent greater than the base flow. The dry season will be from May to September.

5.3.4 Constraints

Stormwater outfall monitoring sites may require encroachment permits and coordination with adjacent agencies and the Los Angeles County Flood Control District (LACFCD). The LAR UR2 WMA Project Manager and Consultant Program Manager will contact, coordinate, and complete the necessary documentation to obtain the necessary permits.

Traffic control plans and/or permits may be required to access the outfall sample locations within the public right-of-way or on public properties. Traffic Control Permits take an estimated five days to process and are generally valid for a limited duration. Traffic controls are necessary for the safety of the field crew and to minimize the overall impact to the flow of traffic on city streets, especially during inclement weather. Safety of the field staff is an overriding concern and sample collection will not be initiated until the location is deemed sufficiently safe to initiate the sampling effort. Depending on storm characteristics, collection of samples may be deemed unsafe during wet-weather conditions.

5.4 Analytical Procedures

The sections below discuss the analytical procedures for data generated in the field and in the laboratory.

5.4.1 Field Parameters

Temperature, pH, dissolved oxygen, turbidity and conductivity will be measured on-site in the same period as grab sampling. The instrument will be calibrated before use and used according to the manufacturer's instructions. After use, the instrument will be cleaned in preparation for the next sampling event. Maintenance will also be performed per the manufacturer's instructions, and the instrument will be stored to prevent fouling of the probes.

This section will contain information on the field equipment specifications once the equipment has been selected.

5.4.2 Analytical Methods and Method Detection and Reporting Limits

Table 1 lists the constituents to be initially analyzed based on Table E-2 of Permit Attachment E and the proposed method of analysis will be determined by the LAR UR2 WMA's members, through the selection of the contracted laboratories, upon CIMP approved.

Table 1 Water Analytical Constituents		
Constituent	**Matrix**	**Method**
Conventional		
Oil and Grease	Water	*TBD*
Total Phenols	Water	*TBD*
Cyanide	Water	*TBD*
pH	Water	*TBD*
Temperature	Water	*TBD*
Dissolved Oxygen	Water	*TBD*
Bacteria (single sample limits)		
Total coliform (marine waters)	Water	*TBD*
Enterococcus (marine waters)	Water	*TBD*
Fecal coliform (marine & fresh waters)	Water	*TBD*
E. coli (fresh waters)	Water	*TBD*
General		
Dissolved Phosphorus	Water	*TBD*
Total Phosphorus	Water	*TBD*
Turbidity	Water	*TBD*
Total Suspended Solids	Water	*TBD*
Total Dissolved Solids	Water	*TBD*
Volatile Suspended Solids	Water	*TBD*
Total Organic Carbon	Water	*TBD*
Total Petroleum Hydrocarbon	Water	*TBD*
Biochemical Oxygen Demand	Water	*TBD*
Chemical Oxygen Demand	Water	*TBD*
Total Ammonia-Nitrogen	Water	*TBD*
Total Kjeldahl Nitrogen	Water	*TBD*
Nitrate-Nitrite	Water	*TBD*
Alkalinity	Water	*TBD*
Specific Conductance	Water	*TBD*
Total Hardness	Water	*TBD*
MBAS	Water	*TBD*
Chloride	Water	*TBD*
Fluoride	Water	*TBD*
Methyl tertiary butyl ether (MTBE)	Water	*TBD*
Perchlorate	Water	*TBD*
Metals (Total & Dissolved)		
Aluminum	Water	*TBD*
Antimony	Water	*TBD*
Arsenic	Water	*TBD*
Beryllium	Water	*TBD*
Cadmium	Water	*TBD*

Table 1 Water Analytical Constituents		
Constituent	**Matrix**	**Method**
Chromium (total)	Water	*TBD*
Chromium (Hexavalent)	Water	*TBD*
Copper	Water	*TBD*
Iron	Water	*TBD*
Lead	Water	*TBD*
Mercury	Water	*TBD*
Nickel	Water	*TBD*
Selenium	Water	*TBD*
Silver	Water	*TBD*
Thallium	Water	*TBD*
Zinc	Water	*TBD*
Semivolatile Organic Compounds		
ACIDS	Water	*TBD*
2-Chlorophenol	Water	*TBD*
4-Chloro-3-methylphenol	Water	*TBD*
2,4-Dichlorophenol	Water	*TBD*
2,4-Dimethylphenol	Water	*TBD*
2,4-Dinitrophenol	Water	*TBD*
2-Nitrophenol	Water	*TBD*
4-Nitrophenol	Water	*TBD*
Pentachlorophenol	Water	*TBD*
Phenol	Water	*TBD*
2,4,6-Trichlorophenol	Water	*TBD*
Base / Neutral		
Acenaphthene	Water	*TBD*
Acenaphthylene	Water	*TBD*
Anthracene	Water	*TBD*
Benzidine	Water	*TBD*
1,2 Benzanthracene	Water	*TBD*
Benzo(a)pyrene	Water	*TBD*
Benzo(g,h,i)perylene	Water	*TBD*
3,4 Benzoflouranthene	Water	*TBD*
Benzo(k)flouranthene	Water	*TBD*
Bis(2-Chloroethoxy) methane	Water	*TBD*
Bis(2-Chloroisopropyl) ether	Water	*TBD*
Bis(2-Chloroethyl) ether	Water	*TBD*
Bis(2-Ethylhexl) phthalate	Water	*TBD*
4-Bromophenyl phenyl ether	Water	*TBD*
Butyl benzyl phthalate	Water	*TBD*
2-Chloroethyl vinyl ether	Water	*TBD*

Table 1 Water Analytical Constituents		
Constituent	**Matrix**	**Method**
2-Chloronaphthalene	Water	*TBD*
4-Chlorophenyl phenyl ether	Water	*TBD*
Chrysene	Water	*TBD*
Dibenzo(a,h)anthracene	Water	*TBD*
1,3-Dichlorobenzene	Water	*TBD*
1,4-Dichlorobenzene	Water	*TBD*
1,2-Dichlorobenzene	Water	*TBD*
3,3-Dichlorobenzidine	Water	*TBD*
Diethyl phthalate	Water	*TBD*
Dimethyl phthalate	Water	*TBD*
di-n-Butyl phthalate	Water	*TBD*
2,4-Dinitrotoluene	Water	*TBD*
2,6-Dinitrotoluene	Water	*TBD*
4,6 Dinitro-2-methylphenol	Water	*TBD*
1,2-Diphenylhydrazine	Water	*TBD*
di-n-Octyl phthalate	Water	*TBD*
Fluoranthene	Water	*TBD*
Fluorene	Water	*TBD*
Hexachlorobenzene	Water	*TBD*
Hexachlorobutadiene	Water	*TBD*
Hexachloro-cyclopentadiene	Water	*TBD*
Hexachloroethane	Water	*TBD*
Indeno(1,2,3-cd)pyrene	Water	*TBD*
Isophorone	Water	*TBD*
Naphthalene	Water	*TBD*
Nitrobenzene	Water	*TBD*
N-Nitroso-dimethyl amine	Water	*TBD*
N-Nitroso-diphenyl amine	Water	*TBD*
N-Nitroso-di-n-propyl amine	Water	*TBD*
Phenanthrene	Water	*TBD*
Pyrene	Water	*TBD*
1,2,4-Trichlorobenzene	Water	*TBD*
Polychlorinated Biphenyls and Pesticides		
Aldrin	Water	*TBD*
alpha-BHC	Water	*TBD*
beta-BHC	Water	*TBD*
delta-BHC	Water	*TBD*
gamma-BHC (lindane)	Water	*TBD*
alpha-chlordane	Water	*TBD*
gamma-chlordane	Water	*TBD*

Table 1 Water Analytical Constituents		
Constituent	**Matrix**	**Method**
4,4'-DDD	Water	*TBD*
4,4'-DDE	Water	*TBD*
4,4'-DDT	Water	*TBD*
Dieldrin	Water	*TBD*
alpha-Endosulfan	Water	*TBD*
beta-Endosulfan	Water	*TBD*
Endosulfan sulfate	Water	*TBD*
Endrin	Water	*TBD*
Endrin aldehyde	Water	*TBD*
Heptachlor	Water	*TBD*
Heptachlor Epoxide	Water	*TBD*
Toxaphene	Water	*TBD*
Aroclor-1016	Water	*TBD*
Aroclor-1221	Water	*TBD*
Aroclor-1232	Water	*TBD*
Aroclor-1242	Water	*TBD*
Aroclor-1248	Water	*TBD*
Aroclor-1254	Water	*TBD*
Aroclor-1260	Water	*TBD*
Organophosphate Pesticides		
Atrazine	Water	*TBD*
Chlorpyrifos	Water	*TBD*
Cyanazine	Water	*TBD*
Diazinon	Water	*TBD*
Malathion	Water	*TBD*
Prometryn	Water	*TBD*
Simazine	Water	*TBD*
Herbicides		
2,4-D	Water	*TBD*
Glyphosate	Water	*TBD*
2,4,5-TP-SILVEX	Water	*TBD*

Multiple ELAP-accredited laboratories were surveyed in order to assess their capabilities to achieve the Permit identified analyte Minimum Levels. Proposed laboratory analytical methods, to be used in the water quality analysis, along with laboratory identified Method Detection Limit (MDL) and Reporting Limit (RL) were gathered. Several laboratories reported difficulties in achieving the Permit identified MDLs for standard pollutants which are usually quantified at higher concentrations in runoff water, an observation which should be conveyed to the Regional Board for consideration. This is often the result of applying a potable or ground water derived assessment standard to runoff water analysis, where the detection limit is rarely approached. Please refer to CIMP Appendix F for a complete summary of the laboratories surveyed and their reported methods and analytical limits.

Table 2 summarizes the analytical procedures reported for use in this project by ES Babcock Laboratory. Footnoted cells represent limits which exceed the Minimum Levels (MLs) stated in Table E-2 of the MS4 permit. For Minimum Levels that meet the MDL, but not by the RL, laboratories typically report the results flagged with a "J" qualifier to signify that it is an estimate. Of the Analytical Methods proposed by each laboratory, a number have not been approved under the stipulations placed in Attachment E, XIV.A.1.d of the MS4 permit. These methods should be approved for use by the Regional Board prior to final laboratory selection.

Of the laboratories surveyed in preparing Appendix F of the CIMP, none were able to comprehensively report at the MLs stated in Table E-2 of the MS4 permit. However, the individual requirements of WMA may render the Minimum Levels irrelevant if the maximum loads or limitations are greater than the MLs. For example, the ES Babcock Laboratory RL is 5 mg/L for Total Suspended Solids. The permit identified ML for Total Suspended Solids is 2 mg/L, thus ES Babcock does not achieve the stated Permit ML, but if the analyte concentration in runoff is above the laboratory's RL, then it would likely be irrelevant that the laboratory RL is above the permit ML.

Table 2 ES Babcock Laboratory Analytical Methods Sample

Analyte	Laboratory / Organization	Analytical Method		Achievable Laboratory Limits		
		Analytical Method / SOP	Modified for Method	MDL	RL	Unit
Conventional Pollutants						
Oil and Grease	ES Babcock	EPA 1664A	No	0.92	2.5	mg/L
Total Phenols	ES Babcock	EPA 420.4	No	0.016	0.02	mg/L
Cyanide	ES Babcock	SM 4500-CN- E	No	4.9	5	µg/L
pH	Field Test	N/A	N/A	N/A	N/A	N/A
Temperature	Field Test	N/A	N/A	N/A	N/A	N/A
Dissolved Oxygen	Field Test	N/A	N/A	N/A	N/A	N/A
BACTERIA (single sample limits)						
Total coliform (marine waters)	ES Babcock	SM9221B	No	2	2	MPN/ 100ml
Enterococcus (marine waters)	ES Babcock	SM 9230B	No	2	2	MPN/ 100ml
Fecal coliform (marine & fresh waters)	ES Babcock	SM 9221E	No	2	2	MPN/ 100ml
E. coli (fresh waters)	ES Babcock	SM 9221E	No	2	2	MPN/ 100ml
General						
Dissolved Phosphorus	ES Babcock	SM 4500-P B	No	0.014	0.05	mg/L
Total Phosphorus	ES Babcock	SM 4500-P B	No	0.014	0.05	mg/L
Turbidity	Field Test	N/A	N/A	N/A	N/A	N/A
Total Suspended Solids	ES Babcock	SM 2540D	No	2.8[1]	5[1]	mg/L
Total Dissolved Solids	ES Babcock	SM 2540C	No	5.5[1]	10[1]	mg/L
Volatile Suspended Solids	ES Babcock	EPA 160.4	No	5[1]	5[1]	mg/L
Total Organic Carbon	ES Babcock	SM 5310B	No	0.16	0.7	mg/L
Total Petroleum Hydrocarbon	ES Babcock	EPA 418.1	No	0.5	1	mg/L

Table 2 ES Babcock Laboratory Analytical Methods Sample						
Analyte	**Laboratory / Organization**	**Analytical Method**		**Achievable Laboratory Limits**		
		Analytical Method / SOP	**Modified for Method**	**MDL**	**RL**	**Unit**
Biochemical Oxygen Demand	ES Babcock	SM 5210 B	No	1	2	mg/L
Chemical Oxygen Demand	ES Babcock	SM 5220 D	No	6.3	10	mg/L
Total Ammonia-Nitrogen	ES Babcock	SM 4500-NH3 C	No	0.059	0.1	mg/L
Total Kjeldahl Nitrogen	ES Babcock	EPA 351.2	No	0.063	0.1	mg/L
Nitrate-Nitrite	ES Babcock	SM 4500-NO3 F	No	0.11	0.2	mg/L
Alkalinity	ES Babcock	SM 2320B	No	1.7	3[1]	mg/L
Specific Conductance	Field Test	N/A	N/A	N/A	N/A	N/A
Total Hardness	ES Babcock	SM 2340B/EP	No	0.5	3[1]	mg/L
MBAS	ES Babcock	SM 5540C	No	0.035	0.05	mg/L
Chloride	ES Babcock	EPA 300.0	No	1	1	mg/L
Fluoride	ES Babcock	SM 4500-F C	No	0.05	0.1	mg/L
Methyl tertiary butyl ether (MTBE)	ES Babcock	EPA 624	No	0.43	3.0	µg/L
Perchlorate	ES Babcock	EPA 314.0	No	0.49	4	µg/L
METALS (Dissolved & Total)						
Aluminum	ES Babcock	EPA 200.7	No	25	100	µg/L
Antimony	ES Babcock	EPA 200.8	No	0.25	0.5	µg/L
Arsenic	ES Babcock	EPA 200.8	No	0.5	1	µg/L
Beryllium	ES Babcock	EPA 200.8	No	0.25	0.5	µg/L
Cadmium	ES Babcock	EPA 200.8	No	0.12	0.25	µg/L
Chromium (total)	ES Babcock	EPA 200.8	No	0.4	0.5	µg/L
Chromium (Hexavalent)	ES Babcock	EPA 218.6	No	0.013	1	µg/L
Copper	ES Babcock	EPA 200.8	No	0.4	0.5	µg/L
Iron	ES Babcock	EPA 200.7	No	2.3	50	µg/L
Lead	ES Babcock	EPA 200.8	No	0.25	0.5	µg/L
Mercury	ES Babcock	EPA 200.8	No	0.033	0.2	µg/L
Nickel	ES Babcock	EPA 200.8	No	0.5	1	µg/L
Selenium	ES Babcock	EPA 200.8	No	0.5	1	µg/L
Silver	ES Babcock	EPA 200.8	No	0.12	0.25	µg/L
Thallium	ES Babcock	EPA 200.8	No	0.5	1	µg/L
Zinc	ES Babcock	EPA 200.8	No	0.66	1	µg/L
SEMIVOLATILE ORGANIC COMPOUNDS						
ACIDS						
2-Chlorophenol	ES Babcock	EPA 625	No	1.8	2	µg/L
4-Chloro-3-methylphenol	ES Babcock	EPA 625	No	1	1	µg/L
2,4-Dichlorophenol	ES Babcock	EPA 625	No	1	1	µg/L
2,4-Dimethylphenol	ES Babcock	EPA 625	No	1	1	µg/L

Table 2 ES Babcock Laboratory Analytical Methods Sample						
Analyte	Laboratory / Organization	Analytical Method		Achievable Laboratory Limits		
		Analytical Method / SOP	Modified for Method	MDL	RL	Unit
2,4-Dinitrophenol	ES Babcock	EPA 625	No	1.6	5	µg/L
2-Nitrophenol	ES Babcock	EPA 625	No	2.1	10	µg/L
4-Nitrophenol	ES Babcock	EPA 625	No	1.1	5	µg/L
Pentachlorophenol	ES Babcock	EPA 625	No	1	1	µg/L
Phenol	ES Babcock	EPA 625	No	1	1	µg/L
2,4,6-Trichlorophenol	ES Babcock	EPA 625	No	1.9	10	µg/L
BASE / NEUTRAL						
Acenaphthene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
Acenaphthylene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
Anthracene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
Benzidine	ES Babcock	EPA 625	No	5	5	µg/L
1,2 Benzanthracene	ES Babcock	EPA 625	No	0.05	0.05	µg/L
Benzo(a)pyrene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
Benzo(g,h,i)perylene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
3,4 Benzoflouranthene	ES Babcock	EPA 625	No	0.05	0.05	µg/L
Benzo(k)flouranthene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
Bis(2-Chloroethoxy) methane	ES Babcock	EPA 625	No	1.8	5	µg/L
Bis(2-Chloroisopropyl) ether	ES Babcock	EPA 625	No	1.9	2	µg/L
Bis(2-Chloroethyl) ether	ES Babcock	EPA 625	No	1	1	µg/L
Bis(2-Ethylhexl) phthalate	ES Babcock	EPA 625	No	2.3	5	µg/L
4-Bromophenyl phenyl ether	ES Babcock	EPA 625	No	1.6	5	µg/L
Butyl benzyl phthalate	ES Babcock	EPA 625	No	1.6	10	µg/L
2-Chloroethyl vinyl ether	ES Babcock	EPA 625	No	1	5[1]	µg/L
2-Chloronaphthalene	ES Babcock	EPA 625	No	1.8	10	µg/L
4-Chlorophenyl phenyl ether	ES Babcock	EPA 625	No	1.8	5	µg/L
Chrysene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
Dibenzo(a,h)anthracene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
1,3-Dichlorobenzene	ES Babcock	EPA 624	No	0.15	0.5	µg/L
1,4-Dichlorobenzene	ES Babcock	EPA 624	No	0.072	0.5	µg/L
1,2-Dichlorobenzene	ES Babcock	EPA 624	No	0.2	0.5	µg/L
3,3-Dichlorobenzidine	ES Babcock	EPA 625	No	2.1	5	µg/L
Diethyl phthalate	ES Babcock	EPA 625	No	1.8	2	µg/L
Dimethyl phthalate	ES Babcock	EPA 625	No	1.7	2	µg/L
di-n-Butyl phthalate	ES Babcock	EPA 625	No	1.9	10	µg/L
2,4-Dinitrotoluene	ES Babcock	EPA 625	No	1.8	5	µg/L

Table 2 ES Babcock Laboratory Analytical Methods Sample						
Analyte	Laboratory / Organization	Analytical Method		Achievable Laboratory Limits		
		Analytical Method / SOP	Modified for Method	MDL	RL	Unit
2,6-Dinitrotoluene	ES Babcock	EPA 625	No	1.9	5	µg/L
4,6 Dinitro-2-methylphenol	ES Babcock	EPA 625	No	1.8	5	µg/L
1,2-Diphenylhydrazine	ES Babcock	EPA 625	No	1	1	µg/L
di-n-Octyl phthalate	ES Babcock	EPA 625	No	2.6	10	µg/L
Fluoranthene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
Fluorene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
Hexachlorobenzene	ES Babcock	EPA 625	No	1	1	µg/L
Hexachlorobutadiene	ES Babcock	EPA 625	No	1	1	µg/L
Hexachloro-cyclopentadiene	ES Babcock	EPA 625	No	1.7	5	µg/L
Hexachloroethane	ES Babcock	EPA 625	No	1	1	µg/L
Indeno(1,2,3-cd)pyrene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
Isophorone	ES Babcock	EPA 625	No	1	1	µg/L
Naphthalene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
Nitrobenzene	ES Babcock	EPA 625	No	1	1	µg/L
N-Nitroso-dimethyl amine	ES Babcock	EPA 625	No	1.4	5	µg/L
N-Nitroso-diphenyl amine	ES Babcock	EPA 625	No	1	1	µg/L
N-Nitroso-di-n-propyl amine	ES Babcock	EPA 625	No	1.7	5	µg/L
Phenanthrene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
Pyrene	ES Babcock	EPA 625 SIM	No	0.05	0.05	µg/L
1,2,4-Trichlorobenzene	ES Babcock	EPA 625	No	1	1	µg/L
POLYCHLORINATED BIPHENYLS and PESTICIDES						
Aldrin	ES Babcock	EPA 608	No	0.005	0.005	µg/L
alpha-BHC	ES Babcock	EPA 608	No	0.01	0.01	µg/L
beta-BHC	ES Babcock	EPA 608	No	0.005	0.005	µg/L
delta-BHC	ES Babcock	EPA 608	No	0.005	0.005	µg/L
gamma-BHC (lindane)	ES Babcock	EPA 608	No	0.02	0.02	µg/L
alpha-chlordane	ES Babcock	EPA 608	No	0.045	0.1	µg/L
gamma-chlordane	ES Babcock	EPA 608	No	0.045	0.1	µg/L
4,4'-DDD	ES Babcock	EPA 608	No	0.016	0.05	µg/L
4,4'-DDE	ES Babcock	EPA 608	No	0.01	0.05	µg/L
4,4'-DDT	ES Babcock	EPA 608	No	0.01	0.01	µg/L
Dieldrin	ES Babcock	EPA 608	No	0.01	0.01	µg/L
alpha-Endosulfan	ES Babcock	EPA 608	No	0.011	0.02	µg/L
beta-Endosulfan	ES Babcock	EPA 608	No	0.01	0.01	µg/L
Endosulfan sulfate	ES Babcock	EPA 608	No	0.044	0.05	µg/L
Endrin	ES Babcock	EPA 608	No	0.01	0.01	µg/L
Endrin aldehyde	ES Babcock	EPA 608	No	0.01	0.01	µg/L

Table 2 ES Babcock Laboratory Analytical Methods Sample						
Analyte	Laboratory / Organization	Analytical Method		Achievable Laboratory Limits		
		Analytical Method / SOP	Modified for Method	MDL	RL	Unit
Heptachlor	ES Babcock	EPA 608	No	0.01	0.01	µg/L
Heptachlor Epoxide	ES Babcock	EPA 608	No	0.01	0.01	µg/L
Toxaphene	ES Babcock	EPA 608	No	0.5	0.5	µg/L
Aroclor-1016	ES Babcock	EPA 608	No	0.5	0.5	µg/L
Aroclor-1221	ES Babcock	EPA 608	No	0.5	0.5	µg/L
Aroclor-1232	ES Babcock	EPA 608	No	0.42	0.5	µg/L
Aroclor-1242	ES Babcock	EPA 608	No	0.41	0.5	µg/L
Aroclor-1248	ES Babcock	EPA 608	No	0.28	0.5	µg/L
Aroclor-1254	ES Babcock	EPA 608	No	0.5	0.5	µg/L
Aroclor-1260	ES Babcock	EPA 608	No	0.5	0.5	µg/L
ORGANOPHOSPHATE PESTICIDES						
Atrazine	ES Babcock	EPA 525.2	No	0.063	0.5	µg/L
Chlorpyrifos	ES Babcock	EPA 8270C	No	1.2[1]	4[1]	µg/L
Cyanazine	ES Babcock	N/A	N/A	N/A	N/A	N/A
Diazinon	ES Babcock	EPA 525.2	No	0.25[1]	0.25[1]	µg/L
Malathion	ES Babcock	EPA 8270C	No	0.073	4	µg/L
Prometryn	ES Babcock	EPA 525.2	No	0.079	2	µg/L
Simazine	ES Babcock	EPA 525.2	No	0.061	1	µg/L
HERBICIDES						
2,4-D	ES Babcock	EPA 8151A	No	0.17	10	µg/L
Glyphosate	ES Babcock	EPA 547	No	4.5	25[1]	µg/L
2,4,5-TP-SILVEX	ES Babcock	EPA 8151A	No	0.15	1[1]	µg/L

1 – Laboratory RL or MDL exceeds the MS4 Permit MRP Table E-2 Minimum Level

The sample-specific MDL and RL will be reported by the laboratory and will take into account any factors relating to the sample analysis that might decrease or increase the reporting limit (e.g. dilution factor, percent moisture, sample volume, sparge volume or matrix interferences). The contracted laboratory should be directed to report all analytical results to the MDL. In the event that the MDL and reporting limit are elevated due to a matrix limitation and subsequent dilution or reduction in the sample aliquot, the data will be evaluated by Consultant Program Manager and Laboratory Project Manager to determine if an alternative course of action is warranted. Should elevated reporting limits and MDLs continue to occur, the Consultant Program Manager shall consult with the LARWQCB prior to initiating significant corrective actions.

5.5 Data Quality Objectives and Criteria

DQOs describe the anticipated data quality needs necessary to support the analysis and characterization of the CIMP study questions. A seven-step process to identify the required data quality is described in *Guidance on Systematic Planning Using the Data Quality Objectives Process* (USEPA 2006). The MS4 Permit MRP and CIMP-specific DQO process steps are as follows:

1. Assess the chemical, physical, and biological impacts of MS4 discharges on receiving waters.
2. Assess compliance with RWLs and WQBELs numeric limits established to implement Total Maximum Daily Load (TMDL) wet weather and dry weather Waste Load Allocations (WLAs).
3. Characterize pollutant loads in MS4 discharges.
4. Identify sources of pollutants in MS4 discharges.
5. Measure and improve the effectiveness of pollutant controls implemented under the Order.

In order to accomplish these specific DQO, the QAPP process steps will include:

1. State the Problem
2. Identify the Decision
3. Identify Inputs to the Decision
4. Define the Study Area Boundaries
5. Develop a Decision Rule
6. Specify Limits on the Decision Errors
7. Optimize the Design for Obtaining Data

Typical field and laboratory analytical measurement quality objectives, as evaluated based on precision, accuracy, completeness, sensitivity, representativeness, and comparability, are summarized in the following paragraphs and presented in **Table 3**.

5.5.1 Precision

Precision refers to the agreement or reproducibility of a set of duplicate or replicate results obtained from independent analyses completed under identical conditions. Both sampling and laboratory precision will be evaluated by the performance of field duplicates (if collected), laboratory duplicates, and Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSDs).

Precision is expressed as the relative percent difference (RPD) in concentration between the original and duplicate analyses, as determined in the formula:

$$\mathbf{RPD} = \frac{|\mathbf{S} - \mathbf{D}|}{\frac{\mathbf{1}}{\mathbf{2}} \times (\mathbf{S} + \mathbf{D})} \times \mathbf{100}$$

Where:
RPD = Relative percent difference
S = Concentration of analyte in the original sample
D = Concentration of analyte in duplicate sample

Table 3 Data Quality Objectives				
Parameter	**Accuracy**	**Precision**	**Recovery**	**Completeness**
Field Measurements				
Water Velocity (for Flow calc.)	2%	NA	NA	90%
pH	+ 0.2 pH units	+ 0.5 pH units	NA	90%
Temperature	+ 0.5° C	+ 5%	NA	90%
Dissolved Oxygen	+ 0.5 mg/L	+ 10%	NA	90%
Turbidity	10%	10%	NA	90%
Conductivity	5%	5%	NA	90%
Laboratory Analyses – Water				
Conventionals and Solids	80 – 120%	0 – 25%	80 – 120%	90%
Aquatic Toxicity	(1)	(2)	NA	90%
Nutrients(3)	80 – 120%	0 – 25%	90 – 110%	90%
Metals(3)	75 – 125%	0 – 25%	75 – 125%	90%
Semi-Volatile Organics(3)	50 – 150%	0 – 25%	50 – 150%	90%
Volatile Organics(3)	50 – 150%	0 – 25%	50 – 150%	90%
Triazines(3)	50 – 150%	0 – 25%	50 – 150%	90%
Herbicides(3)	50 – 150%	0 – 25%	50 – 150%	90%
OC Pesticides(3)	50 – 150%	0 – 25%	50 – 150%	90%
PCB Aroclors(3)	50 – 150%	0 – 25%	50 – 150%	90%
OP Pesticides(3)	50 – 150%	0 – 25%	50 – 150%	90%

1. Must meet all method performance criteria relative to the reference toxicant test.
2. Must meet all method performance criteria relative to sample replicates.
3. See **Table 2** for a list of individual constituents in each suite for water.

5.5.2 Accuracy

Accuracy, or measurement bias, is an assessment of the agreement between an experimental or observed value and the true value of the parameter being measured. A measurement is evaluated for accuracy by comparing a given observed value to a true value and against an established range specifying a lower limit and an upper limit of acceptability. Laboratory Control Standards (LCS), their duplicates (LCSD), and surrogate spikes will be used to evaluate the accuracy and bias for the project samples. Accuracy is expressed as percent recovery '%R', as determined from the formula:

$$\%\mathbf{R} = \frac{\mathbf{SSR} - \mathbf{SR}}{\mathbf{SA}} \times \mathbf{100}$$

Where:
%R = Percent recovery (percent)
SSR = Spike sample result (concentration units)
SR = Original sample result (concentration units)
SA = Spike added (concentration units)

Method-specific recovery criteria will be reported in the final QAPP for the selected laboratory. For data validation, the more stringent of either the laboratory-specific criteria or the method-specific criteria will be used.

5.5.3 Completeness

Completeness is an assessment of the adequacy of the available data resulting from the sampling and analysis program. It is evaluated for each method, matrix, and analyte combination in order to prevent misinterpretation of the data and to meet the needs of the sampling program. Another aspect of completeness involves the adequacy of the data package in documenting the associated QC data for the project samples. The validated data will provide a measure of completeness, but the usability of the validated data will be determined by the selected Consultants, the LAR UR2 WMA Project Manager, and reviewed by the LARWQCB. The completeness goal for this project is 90 percent; however, for critical samples, the completeness goal will be 95 percent. Percent completeness is expressed as '%PC', as determined from the formula:

$$\%\mathbf{PC} = \frac{\mathbf{N_A}}{\mathbf{N_1}} \times \mathbf{100}$$

N_A = actual number of valid analytical results obtained
N_1 = theoretical number of results obtainable under ideal conditions

5.5.4 Sensitivity

The MDL is defined as the minimum concentration at which a given target analyte can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. Laboratory practical quantification limits (PQLs), contract required quantification limits (CRQLs) or RLs are defined as the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. Laboratory MDLs and RLs will be used to evaluate the method sensitivity and/or applicability. MLs are for use in reporting and compliance determination. To assess the respective method capability, the project criteria listed in Table E-2 of Attachment E of the MS4 Permit for each contaminant of concern have been screened against exemplar laboratory MDLs, RLs, and MLs.

5.6 Special Training Needs/Certification

Field personnel will be properly trained in the use of monitoring equipment and clean/dirty hand sample collection and handling techniques along with all appropriate health and safety protocols prior to conducting monitoring activities. The following elements will be included in the training of field personnel:

- Review of Health and Safety Plan
- Field training

Personnel will have had prior experience performing field sampling and laboratory analyses for the type of water quality monitoring required. All Standard Operating Procedures for collection, records, handling, and analysis will be monitored by the Project and Laboratory QA/QC officers.

5.7 Documents and Records

All field observations will be recorded in standard Field Conditions Data Log sheets. The sheets will be reviewed for errors prior to leaving the sample site. Chain-of-custody (COC) forms will be completed for all water samples before the samples are delivered to the laboratory. Field sheets and COCs will be scanned and stored as an electronic PDF by the Project Manager for a minimum of five years from the time the MRP is completed. Additionally, the records saved shall include the following information:

- Site identification and location
- Date and time that sampling or measurements were taken
- Individual(s) who performed the sampling or measurements
- Analytical methods used
- Results of analyses
- Data sheets showing toxicity test results

The Laboratory Manager reviews the laboratory analytical results, verifies completeness, and logs the date of sample receipt, analysis, internal QA/QC and final reporting to the client. The reports and data are then transferred to the Project Manager and filed with all other original project documentation in order to maintain complete project records. The laboratory will provide analytical data in electronic format for maintenance and management in Microsoft® Excel® Access®. The Project Manager will semi-annually submitted to the LARWQCB as directed in MS4 Permit Attachment E Part XIV.L.

Table 4 summarizes the record retention, archival, and disposition guidelines for each type of document.

Table 4 Document and Record Retention, Archival, and Disposition Information

Records	Identify Type Needed	Retention	Archival	Disposition
Project Plan	Monitoring and Reporting Program	Paper/Electronic	Document	Minimum 5 years
	QAPP	Paper/Electronic	Document	Minimum 5 years
Field Data	Field Conditions Data Log Sheets	Paper/Electronic	Project File/PDFs	Minimum 5 years
	Photographs	Electronic	Project File	Minimum 5 years
Sample Collection Records	Chain-of-Custody	Paper/Electronic	Project File	Minimum 5 years
	Calibration and Maintenance	Paper	Project File	Minimum 3 years
	Original strip charts	Paper/Electronic	Project File	Minimum 3 years
Analytical Records	Lab Notebooks	Paper	Notebook	Minimum 5 years
	Lab Reports (include COCs)	Electronic	Notebook/Excel	Minimum 5 years
	Electronic Data File	Electronic	Database	Minimum 5 years
Assessment Records	QA/QC Assessment	Paper/Electronic	Document	Minimum 5 years
	Final Report	Paper/Electronic	Document	Minimum 5 years

6. Sampling Methods and Sample Handling

The sections below discuss the steps to be taken to properly prepare for and initiate water quality sampling for the CIMP.

6.1 Sampling Process Design and Method

The monitoring plan schedule, rationale behind sampling design, and sampling design assumptions for locating and selecting environmental samples (sampling locations, frequencies, rationale for selection) are detailed in the Sections 2, 4, and 5 of the CIMP to comply with the requirements of the MS4 Permit. Additional sampling may be requested during field operations. The exact sample locations and the total number of samples may change from those established upon approval from the RWQCB.

6.2 Sample Handling

The laboratory will provide appropriate sample containers according to **Table 5**. All samples will be pre-labeled with the project name, site ID, sample type, bottle number, sampler name, preservative, and analysis. All sample bottles will also be pre-labeled with a unique Sample ID to track the sample throughout its analyses. At the time of sample collection, the sample labels will be completed in the field with the date and time. The Sample IDs will also be entered directly onto the Field Conditions Data Log Sheets and the COC Forms. The COC forms will accompany the collection of all samples.

The following sample handling protocols will be followed when collecting samples to minimize the possibility of contamination:

- New unused sample bottles will be employed. Sample bottles and bottle caps will be protected from contact with solvents, dust, or other contaminants during storage and handling.
- Samplers will make a reasonable effort to prevent large gravel and uncharacteristic floating debris from entering the sample containers. The sampler will avoid sediments disturbance from storm drain invert.
- The inside of the sampling container will not be touched to the maximum extent practicable during preparation and sampling activities.
- Vehicle engines will be turned off during sampling activities to minimize exposure of samples to exhaust fumes.
- All samples will be collected in accordance with clean sampling techniques.
- Manual water grab samples will be collected by inserting the transfer container under or down current of the direction of flow, with the container opening facing upstream.
- Once sample containers are filled, they will be promptly placed on ice, in a clean cooler (target temperature 6 degrees Celsius), in the dark and transported to the laboratory for processing to meet holding times. All necessary pre-processing for analysis, such as filtration and acidification, will take place in the laboratory by certified personnel.
- After the field crew collects and delivers the samples to the laboratory, the laboratory will conduct the analysis within appropriate holding times. These field and laboratory activities will be coordinated to make sure all samples are handled within the proper holding time.

When the laboratory receives composited water samples, laboratory technicians will dispense the sample into containers that contain the required analytical volume specified in **Table 5**. The laboratory will preserve the water samples using the appropriate preservative and the laboratory will conduct the analysis within the maximum holding time limits. Following completion of analyses, the laboratory will dispose of expired samples in a manner appropriate to local discharge laws.

Table 5 Sample Handling and Custody				
Constituent	**Container Type**	**Minimum Sample Volume**	**Preservation**	**Holding Time**
Nutrients (Water Analysis)				
TBD	*TBD*	*TBD*	*TBD*	*TBD*

6.3 Sampling Techniques for the Collection of Water

The following subsections provide details on the various techniques that can be utilized to collect water quality samples. Should field crews feel that it is unsafe to collect samples for any reason, the field crews **SHOULD NOT COLLECT** a sample and note on the field log that the sample was not collected, why the sample was not collected, and provide photo documentation, if feasible.

6.3.1 Direct Submersion: Hand Technique

Where practical, all grab samples will be collected by direct submersion at mid-stream, mid-depth using the following procedures:

1. Remove the lid, submerge the container to mid-stream/mid-depth, let the container fill and secure the lid. In the case of mercury samples, remove the lid underwater to reduce the potential for contamination from the air.
2. Place the sample on ice.
3. Collect the remaining samples including quality control samples, if required, using the same protocols described above.

6.3.2 Autosamplers

Automatic sample compositors (autosamplers) are used to characterize the entire flow of a storm in one analysis. They can be programmed to take aliquots at either time- or flow-based specified intervals. Before beginning setup in the field, it is recommended to read the manufacturer's instructions. The general steps to set up the autosampler are described below:

1. Install pre-cleaned tubing into the pump. Clean tubing will be used at each site and for each event, in order to minimize contamination.
2. Attach strainer to intake end of the tubing and install in sampling channel.
3. If running flow based composite samples; install flow sensor in sampling channel and connect it to the automatic compositor.
4. Label and install composite bottle(s). If sampler is not refrigerated, then add enough ice to the composite bottle chamber to keep sample cold for the duration of sampling or until such time as ice can be refreshed. Make sure not to contaminate the inside of the composite bottle with ice.
5. Program the autosampler as per the manufacturer's instructions and make sure the autosampler is powered and running before leaving the site.

After the sample collection is completed the following steps must be taken to ensure proper sample handling:

1. Upon returning to the site, check the status of the autosampler and record any errors or missed samples. Note the last sample time on the field log, as this will be used on COCs.
2. Remove the composite bottle and store on ice. If dissolved metals are required, then begin the sample filtration process outlined in the following subsection, within 15 minutes of the last

composite sample, unless compositing must occur at another location, in which case the filtration process should occur as soon as possible upon sample compositing.

3. Power down the autosampler and secure sampling site.
4. The composite sample will need to be split into the separate analysis bottles either before being shipped to the laboratory or at the laboratory. This is best done in a clean and weatherproof environment, using clean sampling technique.

6.4 Chain of Custody

The laboratory will supply the Chain-of-Custody (COC) forms that will be utilized by the sampling team. COC procedures will be used for all samples throughout the collection, transport, and analytical process to ensure the most accurate results. COCs will be pre-printed along with the bottle labels and will contain the same data as the labels. The COCs will be completed in the field with dates, times, and sample team names, and will be cross-checked with the bottles to make sure proper samples have been collected. Documentation of sample handling and custody will include the following:

- Sample identification;
- Type of sample;
- Sample collection date and time;
- Any special notations on sample characteristics or analysis;
- Analyses to be performed;
- Initials of the sampling team member that collected the sample; and
- Date the sample was delivered to/sent to the laboratory.

The COC forms for the samples will be transported with the samples to the analytical laboratory. Sampled water will be kept properly chilled and transferred to an analytical laboratory within specified holding times. When custody of the samples is transferred to the laboratory, the COC will be signed and dated, and a PDF copy will be sent from the laboratory. An example COC form is included in **Figure 2**. The COCs will be reviewed by personnel at the receiving laboratory to make sure no samples have been lost in transport. The laboratory will also verify that each sample has been received within the appropriate holding times. COC records will be included in the final reports prepared by the analytical laboratory and are considered an integral part of the report. Analytical methods and detection limits for this project are listed in **Table 2**.

CHAIN OF CUSTODY RECORD

Company:				Phone:				Job No.														Page _____ of _____	
Project Manager:				Email:				Analysis Requested														Test Instruction & Comments	
Project Name:				Project #																			
Site Name: & Address:																							
	Sample ID	**Lab ID**	**Date**	**Time**	**Matrix**	**Container Number/Size**	**Pres.**																
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							
13																							
14																							
15																							

Sample Receipt: To Be Filled By Lab	**Turn Around Time**	Relinquished By: 1	Relinquished By: 2	Relinquished By: 3
Total Number of Containers	Normal	Signature	Signature	Signature
Custody Seals Yes No N/A	Rush	Printed Name		Printed Name
Received in Good Condition Yes No	Same Day	Date Time	Date Time	Date Time
Properly Cooled Yes No N/A	24 Hrs	Received By 1	Received By 2	Received By 3
Samples Intact Yes No N/A	48 Hrs	Signature	Signature	Signature
Samples Accepted Yes No	72 Hrs	Printed Name	Printed Name	Printed Name
		Date Time	Date Time	Date Time

Figure 2 Example Chain-of-Custody Form

6.5 Laboratory Custody Procedures

Laboratories will follow sample custody procedures as outlined in the laboratory's Quality Assurance (QA) Manual. A copy of each contract laboratory's QA Manual should be available at the laboratory upon request. Laboratories shall maintain custody logs sufficient to track each sample submitted and to analyze or preserve each sample within specified holding times. The following sample control activities must be conducted at the laboratory:

- Initial sample login and verification of samples received with the COC form;
- Document any discrepancies noted during login on the COC;
- Initiate internal laboratory custody procedures;
- Verify sample preservation (e.g., temperature);
- Notify the SMB EWMP Group if any problems or discrepancies are identified; and
- Perform proper sample storage protocols, including daily refrigerator temperature monitoring and sample security.

Laboratories shall maintain records to document that the above procedures are followed. Once samples have been analyzed, remaining water samples will be stored at the laboratory for at least 60 days. After this period, samples may be disposed of properly.

7. Quality Assurance/Quality Control

This section describes the quality assurance and quality control requirements and processes. Quality control samples will be collected in conjunction with environmental samples to verify data quality. Quality control samples collected in the field will generally be collected in the same manner as environmental samples. There are no requirements for quality control for field analysis of general parameters (e.g., temperature, pH, conductivity, dissolved oxygen, and pH) outlined in the SWAMP. However, field crews will be required to calibrate equipment as outlined in **Section 2** of this Attachment. **Table 6** presents the quality assurance parameter addressed by each quality assurance requirement as well as the appropriate corrective action if the acceptance limit is exceeded.

Table 6 Quality Control Requirements

QC Sample Type	QA Parameter	Frequency[(1)]	Acceptance Limits	Corrective Action
Quality Control Requirements – Field				
Equipment Blanks	Contamination	5% of all samples[(2)]	< MDL	Identify equipment contamination source. Qualify data as needed.
Field Blank	Contamination	1 per Sampling Event	< MDL	Examine field log. Identify contamination source. Qualify data as needed.
Field Duplicate	Precision	5% of all samples	RPD < 25% if |Difference| > RL	Reanalyze both samples if possible. Identify variability source. Qualify data as needed.
Quality Control Requirements – Laboratory				
Method Blank	Contamination	1 per analytical batch	< MDL	Identify contamination source. Reanalyze method blank and all samples in batch. Qualify data as needed.

Table 6 Quality Control Requirements				
QC Sample Type	**QA Parameter**	**Frequency[1]**	**Acceptance Limits**	**Corrective Action**
Lab Duplicate	Precision	1 per analytical batch	RPD < 25% if |Difference| > RL	Recalibrate and reanalyze.
Matrix Spike	Accuracy	1 per analytical batch	80-120% Recovery for GWQC 75-125% for Metals 50-150% Recovery for Pesticides [3]	Check LCS/CRM recovery. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Matrix Spike Duplicate	Precision	1 per analytical batch	RPD < 30% if |Difference| > RL	Check lab duplicate RPD. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Laboratory Control Sample (or CRM or Blank Spike)	Accuracy	1 per analytical batch	80-120% Recovery for GWQC 75-125% for Metals 50-150% Recovery for Pesticides [3]	Recalibrate and reanalyze LCS/ CRM and samples.
Blank Spike Duplicate	Precision	1 per analytical batch	RPD < 25% if |Difference| > RL	Check lab duplicate RPD. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Surrogate Spike (Organics Only)	Accuracy	Each environmental and lab QC sample	30-150% Recovery3	Check surrogate recovery in LCS. Attempt to correct matrix problem and reanalyze sample. Qualify data as needed.

MDL = Method Detection Limit RL = Reporting Limit RPD = Relative Percent Difference
LCS = Laboratory Control Sample/Standard
CRM = Certified/ Standard Reference Material
GWQC = General Water Quality Constituents

1. "Analytical batch" refers to a number of samples (not to exceed 20 environmental samples plus the associated quality control samples) that are similar in matrix type and processed/prepared together under the same conditions and same reagents (equivalent to preparation batch).
2. Equipment blanks will be collected by the field crew before using the equipment to collect sample.
3. Or control limits set at + 3 standard deviations based on actual laboratory data.

7.1 QA/QC Requirements and Objectives

Quality assurance/quality control requirements include comparability, representativeness, and completeness. Each of these requirements is summarized in the subsections below.

7.1.1 Comparability

Comparability of the data can be defined as the similarity of data generated by different monitoring programs. For this monitoring program, this objective will be ensured mainly through use of standardized procedures for field measurements, sample collection, sample preparation, laboratory analysis, and site selection; adherence to quality assurance protocols and holding times; and reporting in standard units. Additionally, comparability of analytical data will be addressed through the use of standard operating procedures and extensive analyst training at the analyzing laboratory.

7.1.2 Representativeness

Representativeness can be defined as the degree to which the environmental data generated by the monitoring program accurately and precisely represent actual environmental conditions. For the CIMP, this objective will be addressed by the overall design of the program. Representativeness is attained through the selection of sampling locations, methods, and frequencies for each parameter of interest, and by maintaining the integrity of each sample after collection. Sampling locations were chosen that are representative of various areas within the watershed and discharges from the MS4, which will allow for the characterization of the watershed and impacts MS4 discharges may have on water quality.

7.1.3 Completeness

Data completeness is an assessment of the cumulative number of successfully collected and validated data relative to the amount of data planned for collection during the project. It is usually expressed as a percentage value. A project objective for percent completeness is typically based on the percentage of the data needed for the program or study to reach valid conclusions.

Because the LAR UR2 WMA CIMP is intended to be a long term monitoring program, data that are not successfully collected during a specific sample event will not be recollected at a later date. Rather subsequent events conducted over the course of the monitoring will provide robust data sets to appropriately characterize conditions at individual sampling sites and the watershed in general. For this reason, most of the data planned for collection cannot be considered absolutely critical, and it is difficult to set a meaningful objective for data completeness.

Reasonable data objectives are desirable to measure the effectiveness of the program when conditions allow for the collection of samples (i.e., flow is present). The program goals for data completeness, shown in **Table 3**, are based on the planned sampling frequency, SWAMP recommendations, and a subjective determination of the relative importance of the monitoring element within the CIMP. If, however, sampling sites do not allow for the collection of enough samples to provide representative data due to conditions (i.e., no flow) alternate sites will be considered. Data completeness will be evaluated on a yearly basis.

7.2 QA/QC Field Procedures

Quality control samples to be prepared in the field will consist of equipment blanks, field blanks, and field duplicates as described below.

7.2.1 Equipment Blanks

The purpose of equipment blanks is to demonstrate that sampling equipment is free from contamination. Equipment blanks will be collected by the analytical laboratory responsible for cleaning equipment and analyzed for relevant pollutants before sending the equipment to the field crew. Equipment blanks will

consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment that will be used to collect environmental samples.

The equipment blanks will be analyzed using the same analytical methods specified for environmental samples. If any analytes of interest are detected, at levels greater than the MDL, the source(s) of contamination will be identified and eliminated (if possible), the affected batch of equipment will be re-cleaned, and new equipment blanks will be prepared and analyzed before the equipment is returned to the field crew for use.

7.2.2 Field Blanks

The purpose of analyzing field blanks is to demonstrate that sampling procedures do not result in contamination of the environmental samples. Per the Quality Assurance Management Plan for SWAMP (SWRCB, 2008) field blanks are to be collected as follows:

- At a frequency of one per sampling event for: trace metals in water (including mercury), VOC samples in water and sediment, DOC samples in water, and bacteria samples.
- Field blanks for other media and analytes should be conducted upon initiation of sampling, and if field blank performance is acceptable (as described in **Table 6**), further collection and analysis of field blanks for other media and analytes need only be performed on an as-needed basis, or during annual performance audits.

Field blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment using the same procedures used for environmental samples.

If analytes of interest are detected at levels greater than the MDL, the source(s) of contamination should be identified and eliminated, if possible. The sampling crew should be notified so that the source of contamination can be identified (if possible) and corrective measures taken prior to the next sampling event.

7.2.3 Field Duplicates

The purpose of analyzing field duplicates is to demonstrate the precision of sampling and analytical processes. Field duplicates will be prepared at the rate of 5% of all samples, and analyzed along with the associated environmental samples. Field duplicates will consist of two samples collected simultaneously, to the extent practicable. If the Relative Percent Difference (RPD) of field duplicate results is greater than the percentage stated in **Table 6** and the absolute difference is greater than the RL, both samples should be reanalyzed, if possible. The sampling crew should be notified so that the source of sampling variability can be identified (if possible) and corrective measures taken prior to the next sampling event.

7.3 QA/QC Laboratory Analyses

Quality control samples prepared in the laboratory will consist of method blanks, laboratory duplicates, matrix spikes/duplicates, laboratory control samples (standard reference materials), and toxicity quality controls.

7.3.1 Method Blanks

The purpose of analyzing method blanks is to demonstrate that sample preparation and analytical procedures do not result in sample contamination. Method blanks will be prepared and analyzed by the

contract laboratory at a rate of at least one for each analytical batch. Method blanks will consist of laboratory-prepared blank water processed along with the batch of environmental samples. If the result for a single method blank is greater than the MDL, or if the average blank concentration plus two standard deviations of three or more blanks is greater than the RL, the source(s) of contamination should be corrected, and the associated samples should be reanalyzed.

7.3.2 Laboratory Duplicates

The purpose of analyzing laboratory duplicates is to demonstrate the precision of the sample preparation and analytical methods. Laboratory duplicates will be analyzed at the rate of one pair per sample batch. Laboratory duplicates will consist of duplicate laboratory fortified method blanks. If the RPD for any analyte is greater than the percentage stated in **Table 6** and the absolute difference between duplicates is greater than the RL, the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared again, and laboratory duplicates should be reanalyzed.

7.3.3 Matrix Spikes and Matrix Spike Duplicates

The purpose of analyzing matrix spikes and matrix spike duplicates is to demonstrate the performance of the sample preparation and analytical methods in a particular sample matrix. Matrix spikes and matrix spike duplicates will be analyzed at the rate of one pair per sample batch. Each matrix spike and matrix spike duplicate will consist of an aliquot of laboratory-fortified environmental sample. Spike concentrations should be added at five to ten times the reporting limit for the analyte of interest.

If the matrix spike recovery of any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. If recovery of laboratory control samples is acceptable, the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix. An attempt will be made to correct the problem (e.g., by dilution, concentration, etc.), and the samples and matrix spikes will be re-analyzed.

If the matrix spike duplicate RPD for any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. If the RPD for laboratory duplicates is acceptable, the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix. An attempt will be made to correct the problem (e.g., by dilution, concentration, etc.), and the samples and matrix spikes will be re-analyzed.

7.3.4 Laboratory Control Samples

The purpose of analyzing laboratory control samples (or a standard reference material) is to demonstrate the accuracy of the sample preparation and analytical methods. Laboratory control samples will be analyzed at the rate of one per sample batch. Laboratory control samples will consist of laboratory fortified method blanks or a standard reference material. If recovery of any analyte is outside the acceptable range, the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared again, and the laboratory control sample should be reanalyzed.

7.3.5 Surrogate Spikes

Surrogate recovery results are used to evaluate the accuracy of analytical measurements for organics analyses on a sample-specific basis. A surrogate is a compound (or compounds) added by the laboratory to method blanks, samples, matrix spikes, and matrix spike duplicates prior to sample preparation, as specified in the analytical methodology. Surrogates are generally brominated, fluorinated or isotopically

labeled compounds that would rarely be present in environmental media. Results are expressed as percent recovery of the surrogate spike.

7.4 Review of Procedures

Data collected from the aforementioned processes will be regularly reviewed against the Data Quality Objectives in Section 5.5. In the event of suspect data or failed checks, corrective action will be taken. Corrective actions will verify the procedures done and review analytical techniques. If any issues are found, errors will be corrected, when possible. The sample will also be re-analyzed, when possible.

8. Instrument/Equipment Testing, Inspection, and Maintenance

All field testing equipment used in monitoring and sampling will be tested, operated, and maintained according to the manufacturer's specifications and associated SOPs. Probes will be inspected for any deficiencies and corrective action will be taken for any problems that arise. All equipment will also be cleaned and inspected before and after each sampling event. Field personnel will be trained in the operation and maintenance of instruments and equipment.

Laboratories will test, inspect, and maintain equipment in accordance with laboratory SOPs and QA procedures, which include those specified by the manufacturer. The laboratory will document and resolve any issues that arise. The Laboratory Manager will oversee testing, inspection, and maintenance of laboratory equipment. The Project QA Officer will review all laboratory procedures to ensure compliance with project requirements.

9. Instrument/Equipment Calibration and Frequency

All instruments and equipment will be calibrated daily or prior to each usage event according to the manufacturer's specifications and/or associated SOPs. Calibration will be done by trained personnel. If the calibration is unsuccessful, the instrument will be cleaned and parts will be replaced until calibration is successful. If calibration cannot be completed successfully, the Project Director will be notified and any sampling or analysis will be postponed until the problem is resolved. Any affected data will be flagged. Documentation of all calibration will be maintained in a log book appropriate to the equipment.

10. Inspection/Acceptance of Supplies and Consumables

All glassware, sample bottles, and collection equipment will be inspected upon receipt and prior to use. Supplies will be sourced from the accredited laboratory. The Sampling Manager and Laboratory Manager will oversee the inventory of sampling supplies and reorder when necessary. Logs will be maintained for all supplies used and any deficiencies will be recorded.

Upon receipt, buffer solutions, standards, reagents, and field test kits used will be inspected for leaks or broken seals. Reagents will be replaced before they exceed the manufacturer's recommended shelf life. Bottles and glassware will be inspected for sterility and structural integrity prior to use. All inspections will occur according to individual SOPs. Test organisms will be maintained and inspected for health prior to testing.

11. Non-Direct Measurements

Section 1 of the CIMP details existing and past monitoring programs relevant to the region. Based on the review of past monitoring programs, monitoring data for the LAR UR2 WMA is limited. Due to the limitations, compliance evaluation cannot be achieved. LAR UR2 WMA will analyze all constituents listed in Table E-2 of the MS4 Permit. Photo documentation, topographical maps, land use, and hydrological maps from Los Angeles County and individual cities within LAR UR2 WMA will be requested for use when appropriate.

All of the study data will be generated directly by the CIMP. However, any new data involving water quality and flow from other sources will be reviewed against the data quality objectives listed in Section A5 of this document and only data which meet all of the criteria will be used when appropriate. The SOP and QAPP involved for the external sources will also be reviewed to ensure that the data is valid. Questionable data will be rejected. Data obtained from this method will be integrated with study data to evaluate compliance with the MS4 permit.

12. Data Management

The Sampling Manager will be responsible for the proper management of field measurement and observation data. The Sampling Manager will review all Field Conditions Data Log Sheets for completeness and maintain the original hardcopies in the project file. All data sheets will be signed by the Sampling Manager after review. The Field Conditions Data Log Sheet responses will also be manually entered into an electronic version of the Field Conditions Data Log Sheet and these fields will be saved into a database. The data will be checked for accuracy before being saved in the database. Photographs of the monitoring sites taken by field personnel will be uploaded into the project file. Field team members will name the photographs using the photograph naming convention developed specifically for this project.

The Laboratory Manager will be responsible for the proper management of laboratory data. The laboratory will conduct quality control checks on the data per laboratory QA/QC procedures, and record the data electronically. The results of the analysis will be sent to Project Manager in the form of a hard copy and electronic copy. The Project Manager will review the data for completeness and errors. The results will then be filed with the project data and recorded in the database. All original documentation such as lab notes will be kept with project files in a secure location.

13. Assessment and Response Actions

The Project Manager will oversee day-to-day activities within the project. The QA Officer will oversee all QA/QC activities within the project and ensure that procedures are being followed. The Sampling Manager will regularly review procedures in reference to the QAPP to ensure that all elements of it are being implemented correctly. The use of approved equipment and methods when obtaining water samples and conducting field measurements will be verified for proper techniques following SOPs in cleaning, inspection, maintenance, calibration, and sampling. Equipment quality and record keeping techniques will also be reviewed. All documentation will be reviewed before leaving the sample sites to ensure that the data is complete and accurate. If there are any issues presented, the Sampling Manager will review the necessary procedures with the field technician(s) and take any necessary corrective action. The sample will be re-collected and noted, if possible. If not, the error will be noted in the sample documents. In the event of a situation that may affect the integrity of the data, the field technician(s) will contact the Project Manager or QA Officer to determine the corrective actions necessary. The issue and actions taken will be documented in the project file.

The Laboratory QA Specialist will periodically review procedures in the analysis of samples and verify proper techniques following SOPs in cleaning, inspection, maintenance, calibration, and analysis. Equipment and record keeping will also be reviewed. The QA Specialist will also review QA/QC of all data generated from analysis in the lab. If in any case the data is deemed erroneous, the samples will be re-analyzed when possible, and the error will be noted with the analysis results. The QA Specialist will review procedures and take corrective action for issues that lead to the error. The Project Manager will be notified of any issues that occur in the laboratory. All actions taken will be documented and submitted to the QA officer for filing.

The QA officer will manage all activities and has the authority to halt all sampling and analytical work if deviations are detrimental to the quality of the data. The QA Officer may follow up and inspect results when deemed necessary.

14. Reports to Management

The field monitoring data, calibration records, and other quality assurance/quality control forms will be reviewed for completeness, correctness and other errors by the Project Manager on a regular basis. The laboratory results will be reviewed by the Laboratory Manager prior to the release of results to the Project Manager and consultant team. The laboratory submission will be signed as a confirmation of completeness and correctness of the procedures and results of the analysis.

Results of monitoring from each receiving water or outfall based monitoring station conducted in accordance with the Standard Operating Procedures under Standard Provision 14 of Attachment E will be submitted semi-annually to the Regional Water Board's Storm Water website. Results in excess of limitations, action levels, and aquatic toxicity thresholds will be highlighted. The data will be in the Southern California Municipal Storm Water Monitoring Coalition's Standardized Data Transfer Format. Additionally, the results will be included in an annual monitoring report to be submitted to the Regional Water Board Executive Officer as outlined in **Table 7**.

Table 7 Reports to Program Management

Type of Report	Frequency	Projected Delivery Date (s)	Person(s) Responsible for Preparation	Report Recipients
TBD	*TBD*	*TBD*	*TBD*	*TBD*

15. Data Review, Verification and Validation

Data generated by project activities will be reviewed against the DQO listed in Section 5.5 and the quality assurance/quality control practices cited in Section 7.0. The field and laboratory personnel, as well as the QA Officers will be responsible for verifying that the sample collection, handling, and analysis were done in accordance with the approved QAPP. Field and laboratory personnel will review any calculation, transcription, recording, and transformation of the data for correctness and completeness. In addition, the QA officer will be primarily responsible for reviewing the data for completeness and compliance with necessary requirements such as method or contractual specifications.

If the data meets all quality and QA/QC objectives, the data will be qualified as acceptable for the project. If the results fail to meet any DQO, the results will be flagged by the Laboratory QA Specialist and/or the Project QA Officer for further review. Batch QA samples will be reviewed to determine the potential cause of failure to meet the DQO. If the cause cannot be readily ascertained, reserve samples will be reanalyzed, provided they are within the appropriate sample holding time. If samples fail to meet the DQOs a second time, or the cause of failure cannot be identified and rectified, the data will be excluded from the study results. All rejected data will be retained in the project database, qualified as rejected data. Data that is only accepted after further review will be flagged as such.

15.1 Verification and Validation Methods

Data verification is the process of evaluating the completeness, correctness, and conformance of the dataset against the method, procedural, or contractual requirements. Data quality indicators will be continuously monitored by the analyst producing the data (field and lab personnel), as well as the Reporting and Laboratory Manager and Sampling Manager, with assistance from the QA Officer, throughout the project to make sure corrective actions are taken in a timely manner. Laboratory and field personnel responsible for conducting QA analysis will be responsible for documenting when data does not meet measurement quality objectives as determined by data quality indicators.

In coordination with the QA Officer, the Sampling Manager will validate and verify field measurements and activities (sample collection and handling) and the Laboratory QA Specialist will validate and verify laboratory analysis (sample analysis and handling). Following sample delivery, the laboratory will maintain COCs and sample manifests. Laboratory validation and verification of the data generated is the responsibility of the laboratory. The Laboratory Manager maintains analytical reports in a database format as well as all QA/QC documentation for the laboratory. The Laboratory QA Specialist will perform checks of all of its records.

The Laboratory and Sampling Managers are responsible for oversight of data collection and the analysis of the raw data obtained from the field and the laboratory. Reconciliation and correction of data that fails to meet the DQOs will be done by the responsible manager in consultation with the project QA Officer and the Project Manager. Corrections require a unanimous agreement that the correction is appropriate.

Data verification and validation of field sample collection and handling consists of the following tasks:

- Verification that the sampling activities, sample locations, number of samples collected, and type of analysis performed is in accordance with QAPP requirements.
- Documentation of any field changes or discrepancies.
- Verification that the field activities (including sample location, sample type, sample date and time, name of field personnel. etc) were properly documented.
- Verification of sample labels, COCs forms, and secure storage of samples.

Data verification and validation for the laboratory sample analysis and handling activities will include the following tasks:

- Verification that all samples recorded on COCs forms were received by the laboratory.
- Verification that the appropriate analytical methodology has been followed.
- Verification that QC samples meet performance criteria.
- Verification that analytical results and documentation are complete.

Verification and validation of data entry includes:

- Sorting data to identify missing or mistyped (too large or too small) values.
- Double-checking all typed values.
- Data is entered in the proper format for each database fields (i.e., text for text, integers for integers, number for numbers, dates for dates, times for times, etc.).

15.2 Reconciliation with User Requirements

The data quality will be evaluated according to this document with respect to the sampling design, sampling methods, field and laboratory analyses, quality control, and maintenance. By properly following the guidelines in this document and references, the data quality will be validated. If samples or procedures used in this study fail to meet the guidelines listed in this document, the data will be flagged and reported to the Project Manager. The limitations and assumptions of the data will be provided to the end-user to allow the user to determine the data's usefulness.

The end-user will use this data to determine the compliance of the MS4 discharges within the management area. This data will help to characterize pollutant loads and identify the sources responsible for pollutants. The results will identify areas where the permittees must refine and improve pollutant control measures. Any pollutants found in excess of maximum levels will require continuous monitoring for the remainder of the life of the permit. A summary of this will be published in an annual report, to be submitted to the Regional Water Board.

16. References

California Regional Water Quality Control Board, Los Angeles Region. "Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City of Long Beach MS4." California Environmental Protection Agency. 2012 November 8.

California Watershed Engineering (CWE). "Quality Assurance Project Plan for City of Carson Machado Lake Nutrient TMDL Monitoring and Reporting Plan." 2011 October 27.

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Nichol, G. and E. Reyes. "Electronic Template for SWAMP-Compatible Quality Assurance Project Plans." California Environmental Protection Agency. 24 March 2004.

State Water Resources Control Board. "Quality Assurance/Quality Control." California Environmental Protection Agency. 31 January 2014. http://www.swrcb.ca.gov/water_issues/programs/quality_assurance/index.shtml

Thermo Scientific. "Applications Tip of the Week: Laboratory Duplicates and Matrix Spike Duplicates." http://static.fishersci.com/cmsassets/downloads/segment/Scientific/pdf/WaterAnalysis/Log113TipLaboratoryDuplicatesMatrixSpikeDuplicates.pdf. 21 December 2011.

United States Environmental Protection Agency, Office of Water Engineering and Analysis Division (4303). Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels. July 1996

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Appendix F

Summary of Laboratory Capabilities in Relation to Permit Minimum Levels

Summary of Laboratory Capabilities																			
Analytical Method	**Analyte**	**Permit ML**	**Unit**	**Advanced Technology Laboratories**			**BSK Associates**		**CalScience Laboratories**			**ES Babcock**			**Orange Coast**			**Weck Labs**	
				PQL	**MDL**	**Comment**	**MRL**	**MDL**	**RL**	**MDL**	**Comment**	**MRL**	**MDL**	**Comment**	**MRL**	**MDL**	**Comment**	**MRL**	**MDL**
Conventional Pollutants																			
EPA 1664A	Oil and Grease	5	mg/L	2	1.9		5	0.718				2.5	0.92					5	1.3
EPA 413.2	Oil and Grease	5	mg/L						1	0.33									
SM 5220B	Oil and Grease	5	mg/L				5	0.718							5	2.64			
EPA 420.1	Total Phenols	0.1	mg/L	0.03	0.02		[a]	[a]	0.1	0.046					0.5[b]	0.033[b]	0.1 possible	0.01	0.0042
EPA 420.4	Total Phenols	0.1	mg/L				[a]	[a]				0.02	0.016						
SM 4500-CN-E	Cyanide	0.005	mg/L	0.0005	0.00019		0.005	0.0017	0.001	0.00069		0.005	0.0049		0.02[a]	0.0059[a]			
ASTM D7511	Cyanide	0.005	mg/L															0.002	0.00048
SM 4500-H+ B	pH	0 - 14	pH	0.1	0.1	Field test	[a]	[a]	0.01	0.01		1	1		0-14	0-14		0.1	0.1
SM 2550B	Temperature	N/A	C	N/A	N/A	Field test	[a]	[a]				1	1						
SM 4500-O G	Dissolved Oxygen	Sensitivity to 5	mg/L	1	1	Field test	[a]	[a]	0.01	0.01		0.1	0.1		0.1	0.1		1	0.5
Bacteria (single sample limits)																			
SM9221B	Total coliform (marine waters)	10,000	MPN/100ml	[a]	[a]		2		1	1		2	2		[a]	[a]	contract	2	
SM9221B/E	Enterococcus (marine waters)	104	MPN/100ml	[a]	[a]		[a]	[a]	1	1					[a]	[a]	contract	1	
SM 9230B	Enterococcus (marine waters)	104	MPN/100ml	[a]	[a]		[a]	[a]				2	2		[a]	[a]	contract		
SM 9221E	Fecal coliform (marine & fresh waters)	400	MPN/100ml	[a]	[a]		2					2	2		[a]	[a]	contract	2	
SM9230B	Fecal coliform (marine & fresh waters)	400	MPN/100ml	[a]	[a]				1	1					[a]	[a]	contract		
SM 9221E	E. coli (fresh waters)	235	MPN/100ml	[a]	[a]							2	2		[a]	[a]	contract		
SM9221B/F	E. coli (fresh waters)	235	MPN/100ml	[a]	[a]		2		1	1					[a]	[a]	contract	2	
General																			
SM 4500-P E	Dissolved Phosphorus	0.05	mg/L				0.01	0.007											
SM 4500-P E	Dissolved Phosphorus	0.05	mg/L	0.01	0.01				0.1[b]	0.026[b]					0.05	0.0076		0.01	0.00083
SM 4500-P B	Dissolved Phosphorus	0.05	mg/L									0.05	0.014						
SM 4500-P E	Total Phosphorus	0.05	mg/L	0.01	0.01				0.1[b]	0.022[b]					0.05	0.0076		0.01	0.0014
SM 4500-P B	Total Phosphorus	0.05	mg/L									0.05	0.014						
EPA 365.4	Total Phosphorus	0.05	mg/L				0.01	0.0068											
SM 2130 B	Turbidity	0.1	NTU			Field test	0.1	N/A	0.05	0.044		0.2	0.1						
EPA 180.1	Turbidity	0.1	NTU	0.1	0.1	Field test									0.5	0.064		0.1	0.024
SM 2540D	Total Suspended Solids	2	mg/L	1	1		5[b]	N/A	1	0.95		5[a]	2.8[a]	may reach with J flag or out of reach	2	2		2	

Summary of Laboratory Capabilities

Analytical Method	Analyte	Permit ML	Unit	Advanced Technology Laboratories			BSK Associates		CalScience Laboratories			ES Babcock			Orange Coast			Weck Labs	
				PQL	MDL	Comment	MRL	MDL	RL	MDL	Comment	MRL	MDL	Comment	MRL	MDL	Comment	MRL	MDL
SM 2540C	Total Dissolved Solids	2	mg/L	10[a]	10[a]		1	N/A	1	0.82		10[a]	5.5[a]	may reach with J flag or out of reach	10[a]	7.99[a]		10[a]	4[a]
SM 2540E	Volatile Suspended Solids	2	mg/L	10[a]	5[a]		5[b]	N/A	1	1								a	a
EPA 160.4	Volatile Suspended Solids	2	mg/L	10[a]	5[a]							5[a]	5[a]	may reach with J flag or out of reach	5[a]	3.1[a]		5[a]	3.1[a]
SM 5310B	Total Organic Carbon	1	mg/L	0.3	0.09		0.2	0.047	0.5	0.24		0.7	0.16		1	0.388			
EPA 1664A	Total Petroleum Hydrocarbon	5	mg/L	2	0.61		1	0.72	1	0.8					5			a	a
EPA 418.1	Total Petroleum Hydrocarbon	5	mg/L						1	0.95		1	0.5						
SM 5210 B	Biochemical Oxygen Demand	2	mg/L	5[a]	5[a]		1	N/A	1	0.58		2	1		2	2		2	2
EPA 410.4	Chemical Oxygen Demand	20-900	mg/L	5	4.4		3	N/A							15	3.5		5	0.73
SM 5220 C	Chemical Oxygen Demand	20-900	mg/L						5	4.8									
SM 5220 D	Chemical Oxygen Demand	20-900	mg/L				3	1.1				10	6.3						
SM 4500-NH3 C	Total Ammonia-Nitrogen	0.1	mg/L	0.03	0.02		0.1	0.029	0.1	0.067		0.1	0.059		0.05	0.0345		0.1	0.048
EPA 351.2	Total Kjeldahl Nitrogen	0.1	mg/L	0.1	0.05		0.1	0.055	0.2[b]	0.047[b]		0.1	0.063		0.1			0.1	0.05
SM4500-NH3 C	Total Kjeldahl Nitrogen	0.1	mg/L	0.1	0.05										0.1				
SM 4500-NO3 F	Nitrate-Nitrite	0.1	mg/L	0.1	0.03		0.1	0.033	0.1	0.029		0.2[a]	0.11[a]	may reach with J flag or out of reach	0.1			0.1	0.02
SM 2320B	Alkalinity	2	mg/L	5[b]	1.6[b]		3[b]	N/A				3[b]	1.7[b]	may reach with J flag or out of reach	2	4.75		2	0.56
EPA 120.1	Specific Conductance	1	umho/cm	0.1	0.1	Field test	1	N/A							10	0.44			
SM 2510 B	Specific Conductance	1	umho/cm			Field test			1	0.5		1	1					1	0.23
SM 2340C	Total Hardness	2	mg/L	2	0.45				2	0.99					1	0.799			
SM 2340B/EP	Total Hardness	2	mg/L									3[b]	0.5[b]	may reach with J flag or out of reach					
EPA 200.7	Total Hardness	2	mg/L				0.1	0.0455										0.1	0.016
SM 5540C	MBAS	0.5	mg/L	0.05	0.02		0.05	0.0055	0.1	0.064		0.05	0.035		0.05	0.0477		0.05	0.019
EPA 300.0	Chloride	2	mg/L	0.5	0.05		1	0.45	1	0.12		1	1		0.1	0.033		0.5	0.1
EPA 300.0	Fluoride	0.1	mg/L	0.1	0.06				0.1	0.025					0.1	0.015		0.1	0.02
SM 4500-F C	Fluoride	0.1	mg/L				0.1	0.015				0.1	0.05						

Summary of Laboratory Capabilities																		
Analytical Method	**Analyte**	**Permit ML**	**Unit**	**Advanced Technology Laboratories**			**BSK Associates**		**CalScience Laboratories**			**ES Babcock**			**Orange Coast**			**Weck Labs**	
				PQL	**MDL**	**Comment**	**MRL**	**MDL**	**RL**	**MDL**	**Comment**	**MRL**	**MDL**	**Comment**	**MRL**	**MDL**	**Comment**	**MRL**	**MDL**
EPA 624	Methyl tertiary butyl ether (MTBE)	1	mg/L	0.0005	0.000259				0.0005	0.000059	524.2	0.003	0.00043					1	0.25
EPA 8260B	Methyl tertiary butyl ether (MTBE)	1	mg/L				0.5	0.1							1	0.2			
EPA 314.0	Perchlorate	4	µg/L	2	0.91		2	0.18				4	0.49		2	0.391		2	0.95
EPA 331.0 (M)	Perchlorate	4	µg/L						0.1	0.021									
Metals (Total & Dissolved)																			
EPA 200.8	Aluminum	100	µg/L	5	7.6		5	2.9							5	0.354		5	2.1
EPA 200.7	Aluminum	100	µg/L									100	25						
EPA 1640	Aluminum	100	µg/L						1	0.227									
EPA 200.8	Antimony	0.5	µg/L	0.5	0.11		0.5	0.34				0.5	0.25		0.5	0.0155		0.5	0.034
EPA 1640	Antimony	0.5	µg/L						0.05	0.0154									
EPA 200.8	Arsenic	1	µg/L	1	0.93		0.1	0.041				1	0.5		0.5	0.277		0.4	0.13
EPA 1640	Arsenic	1	µg/L						0.03	0.0122									
EPA 200.8	Beryllium	0.5	µg/L	0.5	0.11		0.5	0.36				0.5	0.25		0.1	0.0122		0.1	0.015
EPA 1640	Beryllium	0.5	µg/L						0.5	0.0635									
EPA 200.8	Cadmium	0.25	µg/L	0.5[b]	0.07[b]		0.25	0.025				0.25	0.12		0.1	0.0169		0.1	0.017
EPA 1640	Cadmium	0.25	µg/L						0.03	0.00567									
EPA 218.6	Chromium (Hexavalent)	5	µg/L	0.2	0.06		0.2	0.027				1	0.013		0.3			0.3	0.0048
EPA 7199	Chromium (Hexavalent)	5	µg/L						1	0.067									
EPA 200.8	Chromium (total)	0.5	µg/L	0.5	0.21		0.5	0.17				0.5	0.4		0.5	0.0702		0.2	0.024
EPA 1640	Chromium (total)	0.5	µg/L						0.5	0.164									
EPA 200.8	Copper	0.5	µg/L	1[b]	0.18[b]		0.5	0.33				0.5	0.4		0.1	0.0375		0.5	0.036
EPA 1640	Copper	0.5	µg/L						0.03	0.00898									
EPA 200.8	Iron	100	µg/L	10	5.7		10	0.61							10	1.86			
EPA 200.7	Iron	100	µg/L									50	2.3					0.01	0.011
EPA 1640	Iron	100	µg/L						0.5	0.0634									
EPA 200.8	Lead	0.5	µg/L	1[b]	0.08[b]		0.1	0.034				0.5	0.25		0.1	0.0745		0.2	0.024
EPA 1640	Lead	0.5	µg/L						0.03	0.0135									
EPA 245.1	Mercury	0.5	µg/L	0.2	0.06													0.05	0.0039
EPA 200.8	Mercury	0.5	µg/L				0.2	0.091							1[b]	0.02[b]			
EPA 200.8	Mercury	0.5	µg/L									0.2	0.033						
EPA 7470A	Mercury	0.5	µg/L						0.2	0.0453									
EPA 200.8	Nickel	1	µg/L	1	0.12		1	0.05				1	0.5		0.5	0.0326		0.8	0.091
EPA 1640	Nickel	1	µg/L						0.05	0.00607									
EPA 200.8	Selenium	1	µg/L	5[b]	0.28[b]		1	0.14				1	0.5		0.5	0.18		0.04	0.081
EPA 1640	Selenium	1	µg/L						0.05	0.0121									
EPA 200.8	Silver	0.25	µg/L	0.5[b]	0.08[b]		0.25	0.2				0.25	0.12		0.5[b]	0.0581[b]		0.2	0.012
EPA 1640	Silver	0.25	µg/L						0.05	0.00822									
EPA 200.8	Thallium	1	µg/L	0.5	0.09		1	0.21				1	0.5		0.5	0.0119		0.2	0.034

Summary of Laboratory Capabilities																			
Analytical Method	Analyte	Permit ML	Unit	Advanced Technology Laboratories			BSK Associates		CalScience Laboratories			ES Babcock			Orange Coast			Weck Labs	
				PQL	MDL	Comment	MRL	MDL	RL	MDL	Comment	MRL	MDL	Comment	MRL	MDL	Comment	MRL	MDL
EPA 1640	Thallium	1	µg/L						0.03	0.0087									
EPA 200.8	Zinc	1	µg/L	10[a]	4.8[a]		1	0.45				1	0.66		1	0.356		1	0.5
EPA 1640	Zinc	1	µg/L						0.5	0.0736									
Semivolatile Organic Compounds																			
Acids																			
EPA 625	2-Chlorophenol	2	µg/L	5[b]	1.6[b]		0.5	0.11	0.5	0.13		2	1.8					1	0.28
EPA 8270	2-Chlorophenol	2	µg/L												2	0.02			
EPA 625	4-Chloro-3-methylphenol	1	µg/L	5[a]	2.4[a]		0.5	0.1	0.5	0.12		1	1					1	0.23
EPA 8270	4-Chloro-3-methylphenol	1	µg/L												1	0.06			
EPA 625	2,4-Dichlorophenol	1	µg/L	5[a]	2.1[a]		0.5	0.1	0.5	0.12		1	1					1	0.26
EPA 8270	2,4-Dichlorophenol	1	µg/L												1	0.02			
EPA 625	2,4-Dimethylphenol	2	µg/L	5[b]	2[b]		0.5	0.15	1	0.22		1	1					1	0.3
EPA 8270	2,4-Dimethylphenol	2	µg/L												2	0.06			
EPA 625	2,4-Dinitrophenol	5	µg/L	50[b]	3.5[b]		1	0.27	5	1.3		5	1.6					5	1.6
EPA 8270	2,4-Dinitrophenol	5	µg/L												5	0.5			
EPA 625	2-Nitrophenol	10	µg/L	10	3		0.5	0.21	0.5	0.11		10	2.1					1	0.26
EPA 8270	2-Nitrophenol	10	µg/L												5	0.02			
EPA 625	4-Nitrophenol	5	µg/L	50[b]	2.1[b]		1	0.26	10[b]	0.52[b]		5	1.1					5	0.45
EPA 8270	4-Nitrophenol	5	µg/L												5	0.5			
EPA 625	Pentachlorophenol	2	µg/L	20[b]	2.3[b]		0.5	0.2	0.5	0.13		1	1					1	0.19
EPA 8151A	Pentachlorophenol	2	µg/L									0.6	0.42						
EPA 515.3	Pentachlorophenol	2	µg/L				0.2	0.011											
EPA 8270	Pentachlorophenol	2	µg/L												2	0.04			
EPA 625	Phenol	1	µg/L	10[b]	0.78[b]		0.5	0.1	0.5	0.06		1	1					1	0.16
EPA 8270	Phenol	1	µg/L												1	0.02			
EPA 625	2,4,6-Trichlorophenol	10	µg/L	10	3		0.5	0.14	0.5	0.15		10	1.9					1	0.22
EPA 8270	2,4,6-Trichlorophenol	10	µg/L												5	0.02			
Base / Neutral																			
EPA 625	Acenaphthene	1	µg/L	10[b]	0.72		0.01	0.004										1	0.4
EPA 625 SIM	Acenaphthene	1	µg/L									0.05	0.05					0.1	0.1
8310/8270SIM	Acenaphthene	1	µg/L						0.2	0.021					0.05	0.03			
EPA 625	Acenaphthylene	2	µg/L	10[b]	0.52[b]		0.01	0.0023										1	0.1
8310/8270SIM	Acenaphthylene	2	µg/L						0.2	0.018					0.05	0.005			
EPA 625 SIM	Acenaphthylene	2	µg/L									0.05	0.05					0.1	0.1
EPA 625	Anthracene	2	µg/L	10[b]	0.54[b]		0.01	0.002										1	0.34
EPA 625 SIM	Anthracene	2	µg/L									0.05	0.05					0.1	0.1
8310/8270SIM	Anthracene	2	µg/L						0.2	0.034					0.05	0.02			
EPA 625	Benzidine	5	µg/L	5	1.2		5	1.4	5	2.2		5	5					5	3.7
8270	Benzidine	5	µg/L												5	0.2			

Summary of Laboratory Capabilities																			
Analytical Method	Analyte	Permit ML	Unit	Advanced Technology Laboratories			BSK Associates		CalScience Laboratories			ES Babcock			Orange Coast			Weck Labs	
				PQL	MDL	Comment	MRL	MDL	RL	MDL	Comment	MRL	MDL	Comment	MRL	MDL	Comment	MRL	MDL
EPA 625	1,2 Benzanthracene	5	µg/L	10[b]	0.54[b]	Benzo(a)Ant						0.05	0.05						
8310/8270SIM	Benz(a)anthracene	5	µg/L			1,2 Benzan			0.2	0.024					0.05	0.02			
EPA 625	Benzo(a)pyrene	2	µg/L	10[b]	1.8[b]		0.01	0.0033										1	0.13
EPA 625 SIM	Benzo(a)pyrene	2	µg/L									0.05	0.05					0.1	0.1
EPA 525.2	Benzo(a)pyrene	2	µg/L									0.1	0.09						
8310/8270SIM	Benzo(a)pyrene	2	µg/L						0.2	0.036					0.05	0.02			
EPA 625	Benzo(g,h,i)perylene	5	µg/L	10[b]	0.76[b]		0.01	0.0038										2	0.1
EPA 625 SIM	Benzo(g,h,i)perylene	5	µg/L									0.05	0.05					0.1	0.1
8310/8270SIM	Benzo(g,h,i)perylene	5	µg/L						0.2	0.022					0.05	0.03			
EPA 625	3,4 Benzoflouranthene	10	µg/L	10	0.58	Benzo(b)fluor	10	0.00207				0.05	0.05						
8310/8270SIM	Benzo(b)fluoranthene	10	µg/L			3,4 Benzofluoranth			0.2	0.025					0.05	0.02			
EPA 625	Benzo(k)flouranthene	2	µg/L	10[b]	0.62[b]		0.01	0.0028										1	0.22
8310/8270SIM	Benzo(k)fluoranthene	2	µg/L						0.2	0.023					0.05	0.02			
EPA 625 SIM	Benzo(k)flouranthene	2	µg/L									0.05	0.05					0.1	0.1
EPA 625	Bis(2-Chloroethoxy) methane	5	µg/L	10[b]	0.58[b]		0.5	0.1	0.5	0.066		5	1.8					1	0.25
8270	Bis(2-Chloroethoxy) methane	5	µg/L												5	0.07			
EPA 625	Bis(2-Chloroisopropyl) ether	2	µg/L	2	1.2		0.5	0.12	0.5	0.068		2	1.9					1	0.38
8270	Bis(2-Chloroisopropyl) ether	2	µg/L												2	0.03			
EPA 625	Bis(2-Chloroethyl) ether	1	µg/L	5[b]	1.2[b]		0.5	0.15	0.5	0.096		1	1					1	0.27
8270	Bis(2-Chloroethyl) ether	1	µg/L												1	0.03			
EPA 625	Bis(2-Ethylhexyl) phthalate	5	µg/L	10[b]	0.63[b]		1	0.29	5	0.91		5	2.3					5	2.3
8270	Bis(2-Ethylhexyl) phthalate	5	µg/L												3	0.06			
EPA 625	4-Bromophenyl phenyl ether	5	µg/L	10[b]	0.54[b]		0.5	0.1	5	1.4		5	1.6					1	0.36
8270	4-Bromophenyl phenyl ether	5	µg/L												5	0.04			
EPA 625	Butyl benzyl phthalate	10	µg/L	10	0.56		0.5	0.1	5	1.2		10	1.6					1	0.18
8270	Butyl benzyl phthalate	10	µg/L												5	0.03			
EPA 625	2-Chloroethyl vinyl ether	1	µg/L						1	0.36		5[b]	1[b]	may reach with J flag or out of reach					
EPA 624	2-Chloroethyl vinyl ether	1	µg/L	0.5	0.27		1	0.39											
8260	2-Chloroethyl vinyl ether	1	µg/L												1	0.2			
EPA 625	2-Chloronaphthalene	10	µg/L	10	0.5		0.5	0.1	5	1.4		10	1.8					1	0.45
8270	2-Chloronaphthalene	10	µg/L												5	0.04			

Summary of Laboratory Capabilities																			
Analytical Method	Analyte	Permit ML	Unit	Advanced Technology Laboratories			BSK Associates		CalScience Laboratories			ES Babcock			Orange Coast			Weck Labs	
				PQL	MDL	Comment	MRL	MDL	RL	MDL	Comment	MRL	MDL	Comment	MRL	MDL	Comment	MRL	MDL
EPA 625	4-Chlorophenyl phenyl ether	5	µg/L	10[b]	0.59[b]		0.5	0.23	5	1.3		5	1.8					1	0.41
8270	4-Chlorophenyl phenyl ether	5	µg/L												5	0.05			
EPA 625	Chrysene	5	µg/L	10[b]	0.56[b]		0.01	0.0011										1	0.19
EPA 625 SIM	Chrysene	5	µg/L									0.05	0.05					0.1	0.1
8310/8270SIM	Chrysene	5	µg/L						0.2	0.019					0.05	0.02			
EPA 625	Dibenzo(a,h)anthracene	0.1	µg/L	10[b]	0.72[b]		0.01	0.0031										2	0.08
EPA 625 SIM	Dibenzo(a,h)anthracene	0.1	µg/L									0.05	0.05					0.1	0.1
8310/8270SIM	Dibenzo(a,h)anthracene	0.1	µg/L						0.2[b]	0.027[b]					0.05	0.01			
EPA 625	1,3-Dichlorobenzene	1	µg/L	10[b]	0.56[b]		0.5	0.1	1	0.27								1	0.53
EPA 624	1,3-Dichlorobenzene	1	µg/L									0.5	0.15						
8270	1,3-Dichlorobenzene	1	µg/L												1	0.03			
EPA 625	1,4-Dichlorobenzene	1	µg/L	10[b]	0.66[b]		0.5	0.1	1	0.29		1	1					1	0.55
EPA 624	1,4-Dichlorobenzene	1	µg/L									0.5	0.072						
8270	1,4-Dichlorobenzene	1	µg/L												1	0.03			
EPA 625	1,2-Dichlorobenzene	1	µg/L	10	0.65		0.5	0.1	1	0.23		2	1.8					1	0.57
EPA 624	1,2-Dichlorobenzene	1	µg/L	0.5	0.44							0.5	0.2						
8270	1,2-Dichlorobenzene	1	µg/L												1	0.02			
EPA 625	3,3-Dichlorobenzidine	5	µg/L	5	3.3		1	0.54	5	1.2		5	2.1					5	1.2
8270	3,3'-Dichlorobenzidine	5	µg/L												5	0.4			
EPA 625	Diethyl phthalate	2	µg/L	10[b]	0.55[b]		0.5	0.1	0.5	0.1		2	1.8					1	0.15
8270	Diethyl phthalate	2	µg/L												2	0.03			
EPA 625	Dimethyl phthalate	2	µg/L	10[b]	0.63		0.5	0.1	0.5	0.11		2	1.7					1	0.18
8270	Dimethyl phthalate	2	µg/L												2	0.03			
EPA 625	di-n-Butyl phthalate	10	µg/L	10	0.7		0.5	0.14	0.5	0.073		10	1.9					1	0.24
8270	Di-n-butyl phthalate	10	µg/L												5	0.05			
EPA 625	2,4-Dinitrotoluene	5	µg/L	10[b]	0.83[b]		0.5	0.1	0.5	0.15		5	1.8					1	0.18
8270	2,4-Dinitrotoluene	5	µg/L												5	0.02			
EPA 625	2,6-Dinitrotoluene	5	µg/L	10[b]	0.7[b]		0.5	0.36	5	1.2		5	1.9					1	0.27
8270	2,6-Dinitrotoluene	5	µg/L												5	0.05			
EPA 625	4,6 Dinitro-2-methylphenol	5	µg/L	50[b]	3.5[b]		0.5	0.11	5	1.1		5	1.8					5	1.7
8270	4,6-Dinitro-2-methylphenol	5	µg/L												5	0.03			
EPA 625	1,2-Diphenylhydrazine	1	µg/L	10[b]	0.62[b]		0.5	0.1	0.5	0.098		1	1					1	0.25
8270	1,2-Diphenylhydrazine	1	µg/L												1	0.06			
EPA 625	di-n-Octyl phthalate	10	µg/L	10	0.58		0.5	0.1	5	1.2		10	2.6					1	0.19
8270	Di-n-octyl phthalate	10	µg/L												5	0.02			
EPA 625	Fluoranthene	0.05	µg/L	10[b]	0.56[b]		0.01	0.0012										1	0.22

Summary of Laboratory Capabilities																			
Analytical Method	Analyte	Permit ML	Unit	Advanced Technology Laboratories			BSK Associates		CalScience Laboratories			ES Babcock			Orange Coast			Weck Labs	
				PQL	MDL	Comment	MRL	MDL	RL	MDL	Comment	MRL	MDL	Comment	MRL	MDL	Comment	MRL	MDL
EPA 625 SIM	Fluoranthene	0.05	µg/L	2[b]	1.6[b]							0.05	0.05					0.05	0.05
8310/8270SIM	Fluoranthene	0.05	µg/L						0.2[b]	0.027[b]					0.05	0.009			
EPA 625	Fluorene	0.1	µg/L	10[b]	0.53[b]		0.01	0.0043										1	0.35
EPA 625 SIM	Fluorene	0.1	µg/L	2[b]	1.6[b]							0.05	0.05					0.1	0.1
8310/8270SIM	Fluorene	0.1	µg/L						0.2[b]	0.024[b]					0.05	0.02			
EPA 625	Hexachlorobenzene	1	µg/L	10[b]	0.78[b]		0.5	0.15	0.5	0.19		1	1					1	0.49
8270	Hexachlorobenzene	1	µg/L												1	0.03			
EPA 625	Hexachlorobutadiene	1	µg/L	20[b]	0.56[b]		0.5	0.13	1	0.33		1	1					1	0.47
8270	Hexachlorobutadiene	1	µg/L												1	0.05			
EPA 625	Hexachloro-cyclopentadiene	5	µg/L	10[b]	0.67[b]		0.5	0.14	0.5	0.15		5	1.7					5	1.5
8270	Hexachloro-cyclopentadiene	5	µg/L												5	0.2			
EPA 625	Hexachloroethane	1	µg/L	10[b]	0.69[b]		0.5	0.1	1	0.3		1	1					1	0.52
8270	Hexachloroethane	1	µg/L												1	0.02			
EPA 625	Indeno(1,2,3-cd)pyrene	0.05	µg/L	10[b]	1.5[b]		0.01	0.0027										2	1.2
EPA 625 SIM	Indeno(1,2,3-cd)pyrene	0.05	µg/L	2[b]	1.9[b]							0.05	0.05					0.05	0.05
8310/8270SIM	Indeno(1,2,3-cd)pyrene	0.05	µg/L						0.2	0.022					0.05	0.03			
EPA 625	Isophorone	1	µg/L	10[b]	0.6[b]		0.5	0.11	0.5	0.14		1	1					1	0.21
8270	Isophorone	1	µg/L												1	0.2			
EPA 625	Naphthalene	0.2	µg/L	10[b]	0.46[b]		0.01	0.0027										1	0.49
EPA 625 SIM	Naphthalene	0.2	µg/L	2[b]	1.8[b]							0.05	0.05					0.1	0.1
8310/8270SIM	Naphthalene	0.2	µg/L						0.2	0.023					0.05	0.01			
EPA 625	Nitrobenzene	1	µg/L	10[b]	0.65[b]		0.5	0.11	1	0.24		1	1					1	0.36
8270	Nitrobenzene	1	µg/L												1	0.02			
EPA 625	N-Nitroso-dimethyl amine	5	µg/L	50	1.9[b]		0.5	0.48	0.5	0.13		5	1.4					1	0.14
8270	N-Nitroso-dimethyl amine	5	µg/L												5	0.02			
EPA 625	N-Nitroso-diphenyl amine	1	µg/L	10[b]	0.57[b]		0.5	0.24	0.5	0.14		1	1					1	0.19
8270	N-Nitroso-diphenyl amine	1	µg/L												1	0.03			
EPA 625	N-Nitroso-di-n-propyl amine	5	µg/L	10[b]	0.72[b]		0.5	0.1	5	0.92		5	1.7					1	0.26
8270	N-Nitroso-di-n-propyl amine	5	µg/L												5	0.03			
EPA 625	Phenanthrene	0.05	µg/L	10[b]	0.56[b]		0.01	0.0024										1	0.32
EPA 625 SIM	Phenanthrene	0.05	µg/L	2[b]	1.8[b]							0.05	0.05					0.05	0.05
8310/8270SIM	Phenanthrene	0.05	µg/L						0.2[b]	0.031[b]					0.05	0.02			
EPA 625	Pyrene	0.05	µg/L	10[b]	0.57[b]		0.01	0.0014										1	0.25
EPA 625 SIM	Pyrene	0.05	µg/L	2[b]	1.6[b]							0.05	0.05					0.05	0.05
8310/8270SIM	Pyrene	0.05	µg/L						0.2[b]	0.025[b]					0.05	0.02			
EPA 625	1,2,4-Trichlorobenzene	1	µg/L	10[b]	0.53[b]		0.5	0.1				1	1					1	0.55

Summary of Laboratory Capabilities

Analytical Method	Analyte	Permit ML	Unit	Advanced Technology Laboratories			BSK Associates		CalScience Laboratories			ES Babcock			Orange Coast			Weck Labs	
				PQL	MDL	Comment	MRL	MDL	RL	MDL	Comment	MRL	MDL	Comment	MRL	MDL	Comment	MRL	MDL
8270	1,2,4-Trichlorobenzene	1	µg/L						0.5	0.06					1	0.03			
Chlorinated Pesticides																			
EPA 608	Aldrin	0.005	µg/L	0.02[b]	0.003[b]		0.005	0.00079	0.004	0.00065		0.005	0.005		0.1[b]	0.0001[b]		0.005	0.0015
EPA 608	alpha-BHC	0.01	µg/L	0.02[b]	0.003[b]		0.005	0.0025	0.004	0.00067		0.01	0.01		0.2[b]	0.0002[b]		0.01	0.0018
EPA 608	beta-BHC	0.005	µg/L	0.02[b]	0.004[b]		0.005	0.00054	0.004	0.0015		0.005	0.005		0.2[b]	0.0009[b]		0.005	0.0031
EPA 608	delta-BHC	0.005	µg/L	0.02[b]	0.003[b]		0.005	0.0006	0.004	0.00066		0.005	0.005		0.2[b]	0.0003[b]		0.005	0.0025
EPA 608	gamma-BHC (lindane)	0.02	µg/L	0.02	0.004		0.005	0.0025	0.004	0.00093		0.02	0.02		0.2[b]	0.0002[b]		0.02	0.0021
EPA 608	alpha-chlordane	0.1	µg/L	0.02	0.003		0.1	0.026	0.004	0.00062		0.1	0.045	"chlordane"	0.1			0.01	0.0041
EPA 608	gamma-chlordane	0.1	µg/L	0.02	0.003		0.1	0.026	0.004	0.0006		0.1	0.045	"chlordane"	0.1			0.01	0.0044
EPA 608	4,4'-DDD	0.05	µg/L	0.05	0.004		0.005	0.00072	0.004	0.00061		0.05	0.016		0.05	0.0007		0.05	0.003
EPA 608	4,4'-DDE	0.05	µg/L	0.05	0.003		0.005	0.00061	0.004	0.00089		0.05	0.01		0.05	0.0002		0.05	0.0025
EPA 608	4,4'-DDT	0.01	µg/L	0.05[b]	0.004[b]		0.005	0.0007	0.004	0.00059		0.01	0.01		0.01	0.002		0.01	0.0031
EPA 608	Dieldrin	0.01	µg/L	0.05[b]	0.004[b]		0.005	0.00097	0.004	0.00065		0.01	0.01		0.01	0.0002		0.01	0.0021
EPA 608	alpha-Endosulfan	0.02	µg/L	0.02	0.004		0.005	0.00089	0.004	0.00059		0.02	0.011		0.02	0.0002		0.02	0.0017
EPA 608	beta-Endosulfan	0.01	µg/L	0.05[b]	0.004[b]		0.005	0.0018	0.004	0.00065		0.01	0.01		0.01	0.0005		0.01	0.0019
EPA 608	Endosulfan sulfate	0.05	µg/L	0.05	0.004		0.005	0.00074	0.004	0.0006		0.05	0.044		0.05	0.0004		0.05	0.008
EPA 608	Endrin	0.01	µg/L	0.05[b]	0.003[b]		0.005	0.00081	0.004	0.00062		0.01	0.01		0.01	0.002		0.01	0.0028
EPA 608	Endrin aldehyde	0.01	µg/L	0.05[b]	0.005[b]		0.005	0.00067	0.004	0.00064		0.01	0.01		0.01	0.002		0.01	0.003
EPA 608	Heptachlor	0.01	µg/L	0.02[b]	0.003[b]		0.005	0.00069	0.004	0.00072		0.01	0.01		0.01	0.0003		0.01	0.0017
EPA 608	Heptachlor Epoxide	0.01	µg/L	0.02[b]	0.004[b]		0.005	0.00069	0.004	0.00068		0.01	0.01		0.01	0.0002		0.01	0.0019
EPA 608	Toxaphene	0.5	µg/L	2.5[b]	0.36[b]		0.1	0.035	0.05	0.0092		0.5	0.5		0.5	0.03		0.5	0.12
Polychlorinated Biphenyls																			
EPA 608	Aroclor-1016	0.5	µg/L	0.5	0.07		0.1	0.05	0.2	0.059		0.5	0.5		0.5			0.5	0.05
EPA 608	Aroclor-1221	0.5	µg/L	0.5	0.07		0.1	0.063	0.2	0.057		0.5	0.5		0.5			0.5	0.06
EPA 608	Aroclor-1232	0.5	µg/L	0.5	0.07		0.1	0.05	0.2	0.05		0.5	0.42		0.5			0.5	0.15
EPA 608	Aroclor-1242	0.5	µg/L	0.5	0.07		0.1	0.05	0.2	0.025		0.5	0.41		0.5			0.5	0.07
EPA 608	Aroclor-1248	0.5	µg/L	0.5	0.07		0.1	0.02	0.2	0.04		0.5	0.28		0.5			0.5	0.06
EPA 608	Aroclor-1254	0.5	µg/L	0.5	0.07		0.1	0.05	0.2	0.045		0.5	0.5		0.5			0.5	0.04
EPA 608	Aroclor-1260	0.5	µg/L	0.5	0.07		0.1	0.015	0.2	0.053		0.5	0.5		0.5			0.5	0.04
Organophosphate Pesticides																			
EPA 525.2	Atrazine	2	µg/L	0.1	0.1							0.5	0.063		0.1	0.034		0.1	0.022
EPA 8141B	Atrazine	2	µg/L						0.02	0.0044									
EPA 8270C	Atrazine	2	µg/L				0.1	0.028				4[b]	1.4[b]						
EPA 525.2	Chlorpyrifos	0.05	µg/L												0.01	0.0069		0.01	0.0069
EPA 8141B	Chlorpyrifos	0.05	µg/L	1[b]	1[b]				0.01	0.0026									
EPA 8270C	Chlorpyrifos	0.05	µg/L				0.01	0.0029				4[a]	1.2[a]	may reach with J flag or out of reach					
EPA 525.2	Cyanazine	2	µg/L	0.1	0.1													[a]	[a]

Summary of Laboratory Capabilities																			
Analytical Method	**Analyte**	**Permit ML**	**Unit**	**Advanced Technology Laboratories**			**BSK Associates**		**CalScience Laboratories**			**ES Babcock**			**Orange Coast**			**Weck Labs**	
				PQL	**MDL**	**Comment**	**MRL**	**MDL**	**RL**	**MDL**	**Comment**	**MRL**	**MDL**	**Comment**	**MRL**	**MDL**	**Comment**	**MRL**	**MDL**
EPA 8141B	Cyanazine	2	µg/L						0.02	0.0035									
EPA 8270C	Cyanazine	2	µg/L				0.1	0.036							0.1	0.024			
EPA 525.2	Diazinon	0.01	µg/L	0.1[b]	0.1[b]				0.01	0.0026		0.25[a]	0.25[a]	may reach with J flag or out of reach	0.1	0.096		0.01	0.052
EPA 8141B	Diazinon	0.01	µg/L	1[b]	1[b]				0.01	0.0026									
EPA 8270C	Diazinon	0.01	µg/L				0.01	0.0036											
EPA 525.2	Malathion	1	µg/L												0.01	0.0076		0.01	0.0076
EPA 8141B	Malathion	1	µg/L	1	1				0.02	0.0055									
EPA 8270C	Malathion	1	µg/L				0.01	0.0046				4	0.073						
EPA 525.2	Prometryn	2	µg/L	0.1	0.1							2	0.079		0.1	0.036		0.1	0.024
EPA 8141B	Prometryn	2	µg/L						0.02	0.0039									
EPA 8270C	Prometryn	2	µg/L				0.1	0.019											
EPA 525.2	Simazine	2	µg/L	0.1	0.1		0.1	0.024				1	0.061		0.1	0.015		0.1	0.015
EPA 8141B	Simazine	2	µg/L						0.02	0.0045									
EPA 8270C	Simazine	2	µg/L				0.1	0.024				4[b]	0.84[b]						
Herbicides																			
EPA 515.3	2,4-D	10	µg/L	0.4	0.4		10	0.074										0.4	0.07
EPA 8151A	2,4-D	10	µg/L	0.5	0.5				5	1.8		10	0.17		2	0.083			
EPA 547	Glyphosate	5	µg/L	5	5		5	2.1	5	1.8	Sub to Weck	25[b]	4.5[b]	may reach with J flag or out of reach	5	1.8		5	1.8
EPA 8151A	2,4,5-TP-SILVEX	0.5	µg/L	0.5	0.5				0.5	0.22		1[b]	0.15[b]	may reach with J flag or out of reach	1[b]	0.074[b]			
EPA 515.3	2,4,5-TP-SILVEX	0.5	µg/L	0.2	0.2		1[b]	0.016[b]										0.2	0.09

[a] Laboratory is unable to test for or meet the Permit Minimum Level

[b] MDL is below Permit Minimum Level and will be reported with a “J” Flag qualifier

AGENDA REPORT
CITY OF MAYWOOD

DATE: JUNE 10, 2013

TO: HONORABLE MAYOR AND MEMBERS OF THE CITY COUNCIL

FROM: LILIAN MYERS, CITY MANAGER

BY: ELROY L. KIEPKE, ASSISTANT CITY ENGINEER

SUBJECT: ADOPTION OF GREEN STREETS POLICY FOR TRANSPORTATION CORRIDORS

RECOMMENDATION

That the City Council review the proposed Green Streets Policy (the "Policy") as presented by staff and either adopt the Policy or provide staff direction to amend the Policy and return it to the City Council for approval to implement the policy as identified in the new MS4 permit.

FISCAL IMPACT

The adoption of this proposed Policy will have no immediate fiscal impact on the City Budget. The proposed Policy would establish a practice to consider the feasibility of implementing Green Streets Best Management Practices ("BMPs") for City and private projects that result in the improvement of transportation corridors that pass through the City of Maywood.

LEGAL REVIEW

This report and the draft Policy have been reviewed by the City Attorney.

BACKGROUND

On November 8, 2012, the Regional Water Quality Control Board – Los Angeles Region, adopted the new Municipal Separate Storm Sewer System permit (MS4) which became effective December 28, 2012. This new MS4 permit made changes to the Planning and Land Development Program that seeks to have Cities evaluate the feasibility of Green Streets BMPs during the design phase of transportation corridors through the City. These changes are presented to you as a proposed policy for implementation by City staff during

the design of City Capital Projects and for private developments that make improvements to the transportation corridors that run through the City.

DISCUSSION

Cities adopt and implement policies in a number of situations, primarily in the implementation of the General Plan, but also in areas related to Engineering and Public Works. This proposed Policy is requested by the Regional Water Quality Control Board when improvements are made to the City's transportation corridors. For Maywood, this will probably be limited to the Slauson Avenue corridor and the Atlantic Boulevard corridor.

Green Streets

Beginning with a basic understanding of what Green Streets policies are, roads present many opportunities for green infrastructure application. One principle of green infrastructure involves reducing and treating stormwater close to its source. Urban transportation right-of-ways integrated with green techniques are often called "Green Streets".

Green Streets provide a source control for a main contributor of stormwater runoff and pollutant load. In addition, green infrastructure complements street facility upgrades, street aesthetic improvements, and urban tree canopy efforts that also make use of the right-of-way and allow it to achieve multiple goals and benefits. Using the right-of-way for treatment also links green with gray infrastructure by making use of the engineered conveyance of roads and providing connections to conveyance systems when needed.

With this basic understanding of what Green Streets accomplishes, it is staff's goal to present a Policy for consideration that will allow the City to consider the feasibility of implementing Green Streets where neighborhood conditions will support it and where the facility will enhance the Urban environment while also functionally treating storm water pollutants.

Attachments: 1) Proposed Green Streets Policy
2) Managing Wet Weather with Green Infrastructure Municipal Handbook Green Streets-33-F-08-009

ATTACHMENT 1
Proposed Green Streets Policy

Green Street Policy

Purpose

The City of Maywood, has established a policy on the implement green street Best Management Practices (BMPs) for transportation corridors associated with new and redevelopment street and roadway projects, including Capital Improvement Projects (CIPs). This policy is implemented to demonstrate compliance with the NPDES MS4 Permit for the Los Angeles Region (Order No. R4-2012-0175).

Green streets are an amenity that provides many benefits including water quality improvement, groundwater replenishment, creation of attractive streetscapes, creation of greenbelts, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, biofiltration, and/or storage and use BMPs to collect, retain, or detain stormwater runoff as well as a design element that creates attractive streetscapes.

Policy

A. Application. The City of Maywood shall require new private development and/or redevelopment streets and roadway projects and CIP projects conducted within the right-of-way of transportation corridors to incorporate green street BMPs where the BMPs will not lead to excessive maintenance or deterioration of the street improvements. Transportation corridors projects are major arterials as defined in the City of Maywood General Plan which add at least 10,000 square feet of impervious surface. Routine maintenance or repair and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are maintained.

B. Amenities. The City of Maywood shall consider opportunities to replenish groundwater, create attractive streetscapes, and provide pedestrian and bicycle accessibility through new private development and redevelopment of streets and roadway projects and CIPs.

C. Guidance. The Department of Public Works shall use the City of Los Angeles Green Streets guidance, USEPA's *Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets*[1], or equivalent guidance developed by the Department of Public Works for use in public and private developments.

D. Retrofit Scope. The City of Maywood shall use the City's Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the City Engineer based on the availability of adequate funding and the soils condition at the site that may lead to excessive maintenance or deterioration of the proposed improvements.

E. Training. The City of Maywood shall incorporate aspects of green streets into internal annual staff trainings.

[1] EPA-833-F-08-009, December 2008.

ATTACHMENT 2

Managing Wet Weather with Green Infrastructure
Municipal Handbook Green Streets-33-F-008-09

Managing Wet Weather with Green Infrastructure

Municipal Handbook

Green Streets

RB-AR5823

Managing Wet Weather with Green Infrastructure

Municipal Handbook

Green Streets

prepared by

Robb Lukes
Christopher Kloss
Low Impact Development Center

The Municipal Handbook is a series of documents
to help local officials implement green infrastructure in their communities.

December 2008

EPA-833-F-08-009

Front Cover Photos
Top: rain garden; permeable pavers; rain barrel; planter; tree boxes.
Large photo: green alley in Chicago

Green Streets

Introduction

By design and function, urban areas are covered with impervious surfaces: roofs, roads, sidewalks, and parking lots. Although all contribute to stormwater runoff, the effects and necessary mitigation of the various types of surfaces can vary significantly. Of these, roads and travel surfaces present perhaps the largest urban pollution sources and also one of the greatest opportunities for green infrastructure use.

The Federal Highway Administration (FHA) estimates that more than 20% of U.S. roads are in urban areas.[1] Urban roads, along with sidewalks and parking lots, are estimated to constitute almost two-thirds of the total impervious cover and contribute a similar ratio of runoff.[2] While a significant source of runoff, roads are also a part of the infrastructure system, conveying stormwater along gutters to inlets and the buried pipe network. Effective road drainage, translated as moving stormwater into the conveyance system quickly, has been a design priority while opportunities for enhanced environmental management have been overlooked especially in the urban environment.

Table 1. Examples of Stormwater Pollutants Typical of Roads.[3,4]

Pollutant	Source	Effects
Trash	—	Physical damage to aquatic animals and fish, release of poisonous substances
Sediment/solids	Construction, unpaved areas	Increased turbidity, increased transport of soil bound pollutants, negative effects on aquatic organisms reproduction and function
Metals • Copper • Zinc • Lead • Arsenic	• Vehicle brake pads • Vehicle tires, motor oil • Vehicle emissions and engines • Vehicle emissions, brake linings, automotive fluids	Toxic to aquatic organisms and can accumulate in sediments and fish tissues
Organics associated with petroleum (e.g., PAHs)	Vehicle emissions, automotive fluids, gas stations	Toxic to aquatic organisms
Nutrients	Vehicle emissions, atmospheric deposition	Promotes eutrophication and depleted dissolved oxygen concentrations

The altered flow regime from traditional roadways, increased runoff volume, more frequent runoff events, and high runoff peak flows, are damaging to the environment and a risk to property downstream. These erosive flows in receiving streams will cause down cutting and channel shifting in some places and excessive sedimentation in others. The unnatural flow regime destroys stream habitat and disrupts aquatic systems.

Compounding the deliberate rapid conveyance of stormwater, roads also are prime collection sites for pollutants. Because roads are a component of the stormwater conveyance system, are impacted by atmospheric deposition, and exposed to vehicles, they collect a wide suite of pollutants and deliver them into the conveyance system and ultimately receiving streams (See Table 1). The metals, combustion by-products, and automotive fluids from vehicles can present a toxic mix that combines with the ubiquitous nutrients, trash, and suspended solids.

While other impervious surfaces can be replaced, for example using green roofs to decrease the amount of impervious roof surface, for the most part, impervious roads will, for some time to come, constitute a significant percentage of urban imperviousness because of their current widespread existence. Reducing road widths and other strategies to limit the amount of impervious surface are critical, but truly addressing road runoff requires mitigating its effects.

Green Streets achieve multiple benefits, such as improved water quality and more livable communities, through the integration of stormwater treatment techniques which use natural processes and landscaping.

Roads present many opportunities for green infrastructure application. One principle of green infrastructure involves reducing and treating stormwater close to its source. Urban transportation right-of-ways integrated with green techniques are often called "green streets". Green streets provide a source control for a main contributor of stormwater runoff and pollutant load. In addition, green infrastructure approaches complement street facility upgrades, street aesthetic improvements, and urban tree canopy efforts that also make use of the right-of-way and allow it to achieve multiple goals and benefits. Using the right-of-way for treatment also links green with gray infrastructure by making use of the engineered conveyance of roads and providing connections to conveyance systems when needed.

Green streets are beneficial for new road construction and retrofits. They can provide substantial economic benefits when used in transportation applications. Billions of dollars are spent annually on road construction and rehabilitation, with a large percentage focused on rehabilitation especially in urban areas. Coordinating green infrastructure installation with broader transportation improvements can significantly reduce the marginal cost of stormwater management by including it within larger infrastructure improvements. Also, and not unimportantly, right-of-way installations allow for easy public maintenance. A large municipal concern regarding green infrastructure use is maintenance; using roads and right-of-ways as locations for green infrastructure not only addresses a significant pollutant source, but also alleviates access and maintenance concerns by using public space.

In urban areas, roads present many opportunities for coordinated green infrastructure use. Some municipalities are capitalizing on the benefits gained by introducing green infrastructure in transportation applications. This paper will evaluate programs and policies that have been used to successfully integrate green infrastructure into roads and right-of-ways.

Green Street Designs

Green streets can incorporate a wide variety of design elements including street trees, permeable pavements, bioretention, and swales. Although the design and appearance of green streets will vary, the functional goals are the same: provide source control of stormwater, limit its transport and pollutant conveyance to the collection system, restore predevelopment hydrology to the extent possible, and provide environmentally enhanced roads. Successful application of green techniques will encourage soil and vegetation contact and infiltration and retention of stormwater.

Alternative Street Designs (Street Widths)

A green street design begins before any BMPs are considered. When building a new street or streets, the layout and street network must be planned to respect the existing hydrologic functions of the land (preserve wetlands, buffers, high-permeability soils, etc.) and to minimize the impervious area. If retrofitting or redeveloping a street, opportunities to eliminate unnecessary impervious area should be explored.

Implementation Hurdles

Many urban and suburban streets, sized to meet code requirements for emergency service vehicles and provide a free flow of traffic, are oversized for their typical everyday functions. The Uniform Fire Code requires that streets have a *minimum 20 feet of unobstructed width;* a street with parking on both sides would require a width of at least 34 feet. In addition to stormwater concerns, wide streets have many detrimental implications on neighborhood livability, traffic conditions, and pedestrian safety.[5]

Oregon State Code Granting Authority for Street Standards to Local Government

ORS 92.044 - Local governments shall *supersede and prevail over any specifications and standards for roads and streets set forth in a uniform fire code adopted by the State Fire Marshal, a municipal fire department or a county firefighting agency....* Local governments shall consider the needs of the fire department or fire-fighting agency when adopting the final specifications and standards.

The Transportation Growth and Management Program of Oregon, through a Stakeholder Design Team, developed a guide for reducing street widths titled the *Neighborhood Street Design Guidelines.*[6] The document provides a helpful framework for cities to conduct an inclusive review of street design profiles with the goal of reducing widths. Solutions for accommodating emergency vehicles while minimizing street widths are described in the document. They include alternative street parking configurations, vehicle pullout space, connected street networks, prohibiting parking near intersections, and smaller block lengths.

Figure 1. The street-side swale and adjacent porous concrete sidewalk are located in the High Point neighborhood of Seattle, WA
(Source: Abby Hall, US EPA).

In 1997, Oregon, which has adopted the *Uniform Fire Code,* specifically granted local government the authority to establish alternative street design standards but requires them to consult with fire departments before standards are adopted. Table 2 provides examples of alternative street widths allowed in U.S. jurisdictions.[7]

Swales

Swales are vegetated open channels designed to accept sheet flow runoff and convey it in broad shallow flow. The intent of swales is to reduce stormwater volume through infiltration, improve water quality through vegetative and soil filtration, and reduce flow velocity by increasing channel roughness. In the simple roadside grassed form, they have been a common historical component of road design. Additional benefit can be attained through more complex forms of swales, such as those with amended soils, bioretention soils, gravel storage areas, underdrains, weirs, and thick diverse vegetation.

Implementation Hurdles

There is a common misconception of open channel drainage being at the bottom of a street development hierarchy in which curb and gutter are at the top. Seattle's Street Edge Alternative Project and other natural drainage swale pilot projects have demonstrated that urban swales not only mitigate stormwater impacts, but they can also enhance the urban environment.[8]

Table 2. Examples of Alternative Street Widths

Jurisdiction	Street Width	Parking Condition
Phoenix, AZ	28'	parking both sides
Santa Rosa, CA	30'	parking both sides, <1000ADT
	26'-28'	parking one side
	20'	no parking
	20'	neck downs @ intersection
Orlando, FL	28'	parking both sides, res. Lots<55' wide
	22'	parking both sides, res. Lots>55' wide
Birmingham, MI	26'	parking both sides
	20'	parking one side
Howard County, MD	24'	parking unregulated
Kirkland, WA	12'	alley
	20'	parking one side
	24'	parking both sides – low density only
	28'	parking both sides
Madison, WI	27'	parking both sides, <3DU/AC
	28'	parking both sides, 3-10 DU/AC

ADT: Average Daily Traffic DU/AC: dwelling units per acre

Bioretention Curb Extensions and Sidewalk Planters

Bioretention is a versatile green street strategy. Bioretention features can be tree boxes taking runoff from the street, indistinguishable from conventional tree boxes. Bioretention features can also be attractive attention grabbing planter boxes or curb extensions. Many natural processes occur within bioretention cells: infiltration and storage reduces runoff volumes and attenuates peak flows; biological and chemical reactions occur in the mulch, soil matrix, and root zone; and stormwater is filtered through vegetation and soil.

Figure 2. This bioretention area takes runoff from the street through a trench drain in the sidewalk as well as runoff from the sidewalk through curb cuts *(Source: Abby Hall, US EPA).*

Implementation Hurdles

A few municipal DOT programs have instituted green street requirements in roadway projects, but as of yet, specifications for street bioretention have not yet been incorporated into municipal DOT specifications. Many cities do have street bioretention pilot projects; two of the well documented programs are noted in the table. Several concerns and considerations have prevented standard implementation of bioretention by DOTs.

Table 3. Municipalities with Swale Specifications and Standard Details

Municipality	Document	Section Title	Section #
City of Austin[9]	Standard Specifications and Standard Details	Grass-Lined Swale and Grass-Lined Swale with Stone Center	627S
City of Seattle[10]	2008 Standard Specifications for Municipal Construction	Natural Drainage Systems	7-21

Table 4. Municipalities with Bioretention Pilot Projects in the Right-of-Way

Municipality	Bioretention Type	Document
Maplewood, MN	Rain gardens	*Implementing Rainwater in Urban Stormwater Management* [11]
Portland, OR	• Curb extensions • Planters • Rain gardens	*2006 Stormwater Management Facility Monitoring Report* [12]

The diversity of shapes, sizes, and layouts bioretention can take is a significant obstacle to their incorporation with DOT specifications and standards. Street configurations, topography, soil conditions, and space availability are some of the factors that will influence the design of the bioretention facility. These variables make documentation of each new bioretention project all the more important. By building a menu of templates from local bioretention projects, future projects with similar conditions will be easier to implement and cost less to design. The documentation should include copies of the details and specifications for the materials used. A section on construction and operation issues, costs, lessons learned, and recommendations for similar designs should also be included in project documentation. Portland's Bureau of Environmental Services has proven adept at documenting each of its Green Streets projects and making them accessible online.[13]

Utilities are a chief constraint to implementing bioretention as a retrofit in urban areas. The Prince George's County, MD Bioretention Design Specifications and Criteria manual recommends applying the same clearance criteria recommended for storm drainage pipes.[14] Municipal design standards should specify the appropriate clearance from bioretention or allowable traversing.

Prince George's County, MD - 2.12.1.16 Utility Clearance

Utility clearances that apply to storm drainage pipe and structure placement also apply to bioretention. Standard utility clearances for storm drainage pipes have been established at 1' vertical and 5' horizontal. However, bioretention systems are shallow, non-structural IMP's consisting of mostly plant and soil components, (often) with a flexible underdrain discharge pipe. For this reason, other utilities may traverse a bioretention facility without adverse impact. Conduits and other utility lines may cross through the facility but construction and maintenance operations must include safeguard provisions. In some instances, bioretention could be utilized where utility conflicts would make structural BMP applications impractical.

Plants are another common concern of municipal staff, whether it is maintenance, salt tolerance, or plant height with regard to safety and security. Cities actively implementing LID practices in public spaces maintain lists of plants which fit the vegetated stormwater management practice niche. These are plants that flourish in the regional climate conditions, are adapted to periodic flooding, are low maintenance, and, if in cold climates, salt tolerant. Most often these plants are natives, but sometimes an approved non-native will best fit necessary criteria. A municipal plant list should be periodically updated based on maintenance experience, and vegetation health surveys.

Permeable Pavement

Permeable pavement comes in four forms: permeable concrete, permeable asphalt, permeable interlocking concrete pavers, and grid pavers. Permeable concrete and asphalt are similar to their impervious counterparts but are open graded or have reduced fines and typically have a special binder added. Methods for pouring, setting, and curing these permeable pavements also differ from the impervious versions. The concrete and grid pavers are modular systems. Concrete pavers are installed with gaps between them that allow water to pass through to the base. Grid pavers are typically a durable plastic matrix that can be filled with gravel or vegetation. All of the permeable pavement systems have an aggregate base in common which provides structural support, runoff storage, and pollutant removal through filtering and adsorption. Aside from a rougher unfinished surface, permeable concrete and asphalt look very similar to their impervious versions. Permeable concrete and asphalt and certain permeable concrete pavers are ADA compliant.

Implementation Hurdles

Of all the green streets practices, municipal DOTs have been arguably most cautious about implementing permeable pavements, though it should be noted that some DOTs have, for decades, specified open-graded asphalt for low use roadways because of lower cost; to minimize vehicle hydroplaning; and to reduce road noise. The reticence to implement on a large-scale, however, is understandable given the lack of predictability and experience behind impervious pavements. However, improved technology, new and ongoing research, and a growing number of pilot projects are dispelling common myths about permeable pavements.

Figure 3. Pervious pavers used in the roadway of a neighborhood development in Wilsonville, OR *(Source: Abby Hall, US EPA).*

The greatest concern among DOT staff seems to be a perceived lack of long-term performance and maintenance data. Universities and DOTs began experimenting with permeable pavements in parking lots, maintenance yards, and pedestrian areas as early as twenty years ago in the U.S., even earlier in Europe. There is now a wealth of data on permeable pavements successfully used for these purposes in nearly every climate region of the country. In recent years, the cities of Portland, OR, Seattle, WA, and Waterford, CT and several private developments have constructed permeable pavement pilots within the roadway with positive results.

> Permeable pavement concerns in the roadway often raise concerns of safety, maintenance, and durability. Municipalities can replace impervious surfaces in other non-critical areas such as sidewalks, alleys, and municipal parking lots. These types of applications help municipalities build experience and a market for the technology.

The two typical maintenance activities are periodic sweeping and vacuuming. The City of Olympia, WA has experimented with several methods of clearing debris from permeable concrete sidewalks. Each of the methods was evaluated on the ease of use, debris removal, and the performance pace. The cost analysis by Olympia, WA found that the maintenance cost for pervious pavement was still lower than the traditional pavement when the cost of stormwater management was considered.

Table 5. Municipalities with Permeable Pavement Specifications and Standard Details

Municipality	Document	Section Title	Section #
Portland	2007 Standard Construction Specifications	Unit Pavers (includes permeable pavers)	00760
Olympia	WSDOT Specification	Pervious Concrete Sidewalks	8-30

Freeze/thaw and snow plows are the major concerns for permeable pavements in cold climate communities. However, these concerns have proven to be generally unwarranted when appropriate design and maintenance practices are employed. A well designed permeable pavement structure will always drain and never freeze solid. The air voids in the pavement allow plenty of space for moisture to freeze and ice crystals to expand. Also, rapid drainage through the pavement eliminates the occurrence of freezing puddles and black ice. Cold climate municipalities will need to make adjustments to snow plowing and deicing programs for permeable pavement areas. Snow plow blades must be raised enough to prevent scraping the surface of permeable pavements, particularly paver systems. Also, sand should not be applied.

Table 6. A Study in Olympia, WA Comparison of the cost of permeable concrete sidewalks to the cost of traditional impervious sidewalks[15]

Traditional Concrete Sidewalk		Permeable Concrete Sidewalk	
Construction Cost	Maintenance Cost	Construction Cost	Maintenance Cost
$5,003,000*	$156,000	$2,615,000*	$147,000
Total = $5,159,000 $101.16 per square yard		Total = $2,762,000 $54.16 per square yard	

*The cost of stormwater management (stormwater pond) for the added impervious surface is factored into the significantly higher cost of constructing the traditional concrete sidewalk. Maintenance of the stormwater pond is also factored into the traditional concrete sidewalk maintenance cost.

Sidewalk trees and tree boxes

From reducing the urban heat island effect and reducing stormwater runoff to improving the urban aesthetic and improving air quality, much is expected of street trees. Street trees are even good for the economy. Customers spend 12% more in shops on streets lined with trees than on those without trees.[16] However, most often street trees are given very little space to grow in often inhospitable environments. The soil around street trees often becomes compacted during the construction of paved surfaces and minimized as underground utilities encroach on root space. If tree roots are surrounded by compacted soils or are deprived of air and water by impervious streets and sidewalks, their growth will be stunted, their health will decline, and their expected life span will be cut short. By providing adequate soil volume and a good soil mixture, the benefits obtained from a street tree multiply. To obtain a healthy soil volume, trees can simply be provided larger tree boxes, or structural soils, root paths, or "silva cells" can be used under sidewalks or other paved areas to expand root zones. These allow tree roots the space they need to grow to full size. This increases the health of the tree and provides the benefits of a mature sized tree, such as shade and air quality benefits, sooner than a tree with confined root space.

Figure 4. Trees planted at the same time but with different soil volumes, Washington DC
(Source: Casey Trees)

Table 7. Healthy Tree Volume and Permeable Pavement Specifications and Standard Details

Jurisdictions	Minimum Soil Volume		Section Title	Section #
Prince William County, VA	Large tree Medium tree Small tree	970 cf 750 cf 500 cf	Design Construction Manual (Sec 800)	Table 8-8
Alexandria, VA		300 cf	Landscape Guidelines	II.B. (2)

Implementation Hurdles

Providing an adequate root volume for trees comes down to a trade off between space in the right-of-way and added construction costs. The least expensive way to obtain the volume needed for roots to grow to full size is providing adequate space unhindered by utilities or other encroachments. However, it is often hard to reserve space dedicated just to street trees in an urban right-of-way with so many other uses competing for the room they need. As a result, some creative solutions, though they cost more to install, have become useful alternatives in crowded subsurface space. Structural soils, root paths, and "silva cells" leave void space for roots and still allow sidewalks to be constructed near trees.

Root Paths can be used to increase tree root volume by connecting a small tree root volume with a larger subsurface volume nearby. A tunnel-like system extends from the tree underneath a sidewalk and connects to an open space on the other side.

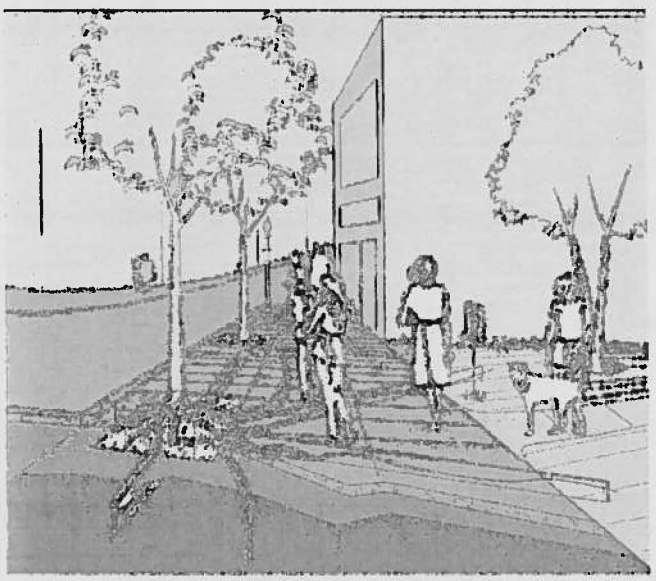

Figure 5. Root Paths direct tree roots under paving and into better soil areas for tree root growth
(Source: Arlington County, VA).

Silva Cells[17] are another option for supporting sidewalks near trees while still providing enough space for roots to grow. These plastic milk crate-like frames fit together and act as a supporting structure for a sidewalk while leaving room for uncompacted soil and roots inside the frame.

Permeable pavement sidewalks are another enhancement to the root space. They provide moisture and air to roots under sidewalks. Soils under permeable pavements can still become compacted. Structural soils[18] are a good companion tree planting practice to permeable pavement. When planting a tree in structural soils an adequate tree root volume is excavated and filled with a mix of stone and soil that still provides void space for healthy roots and allows for sidewalks, plazas or other paved surfaces to be constructed over them.

Case Studies

Portland, OR: Green Street Pilot Projects

Portland, Oregon is a national leader in developing green infrastructure. Portland's innovation in stormwater management was necessitated by the need to satisfy a Combined Sewer Overflow consent decree, Safe Drinking Water Act requirements, impending Total Maximum Daily Load limitations, Superfund cleanup measures and basement flooding. Through the 1990s, over 3 billion gallons of combined sewer overflow discharged to the Willamette River every year.[19] All of these factors plus leadership and local desires to create green solutions and industries compelled the city to implement green infrastructure as a complement to adding capacity to the sewer system with large pipe overflow interceptors. Despite gaps in long-term performance data, Portland took a proactive approach in implementing green infrastructure pilot projects.

Portland's green infrastructure pilot projects have their roots in the city's 2001 Sustainable Infrastructure Committee. The committee, consisting of representatives from Portland's three infrastructure management Bureaus, documented the city's ongoing efforts toward sustainable infrastructure, gathered research on green infrastructure projects from around the country, and identified opportunities for local pilots.[20, 21, 22]

Figure 6. Silva cell structures support the sidewalk while providing root space for street trees
(Source: Deep Root Partners, LP).

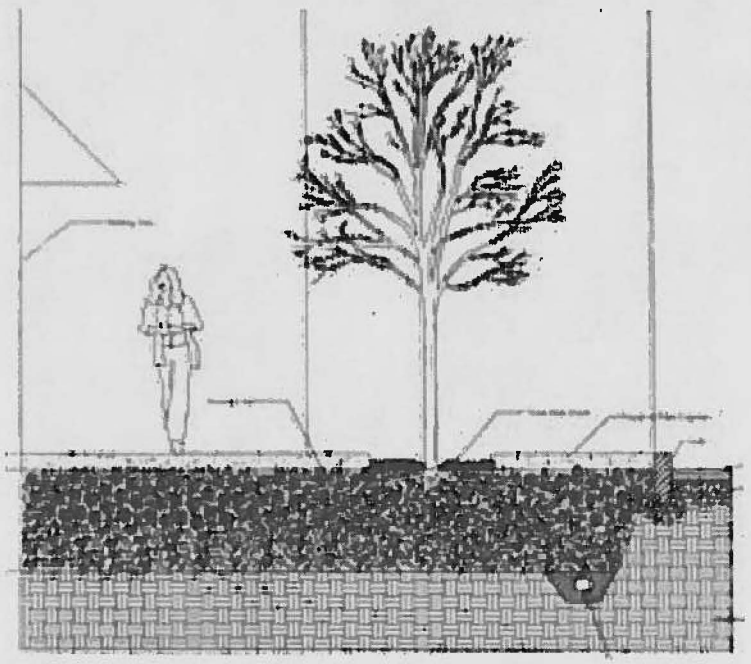

Figure 7. Structural soils provide void space for root growth and load-bearing for sidewalk
(Source: Urban Horticulture Institute, Cornell University).

One of the Bureau of Environmental Services' (BES) earliest green infrastructure retrofit projects within the right-of-way was a set of two stormwater curb extensions on NE Siskiyou Street. Portland had been retrofitting many streets with curb extensions for the purpose of pedestrian safety, but this was the first done for the purpose of treating street runoff. In a simulated 25-year storm event flow test, the curb extensions captured 85% of the runoff volume that would be discharged to the combined sewer system and reduced peak flow by 88%.[23]

Between 2003 and 2007, Portland designed and implemented a variety of Green Street pilots. Funding sources for these projects have come from BES, Portland Department of Transportation, U.S. EPA, and an Innovative Wet Weather Fund. BES combined funds with an EPA grant to create the Innovative Wet Weather Fund. In 2004, nearly $3 million from the Innovative Wet Weather Fund was budgeted for a long list of projects from city green roofs, public-private projects, and a number of pilot projects within the right-of-way.[24] Several pilots have been cost competitive with or less costly than conventional upgrades. The Bureau recognizes that costs will decrease once these projects become more routine. Many of the pilot project costs included one time costs such as the development of outreach materials and standard drawings.

Figure 8: NE Siskiyou Vegetated Curb Extensions
Source: City of Portland – Bureau of Environmental Services

Table 8. Portland, OR - Green Street Pilot Projects

Location	Design	Year Completed	Cost
NE Siskiyou b/w NE 35th Pl. and NE 36th Ave	Stormwater curb extension	2003	$20,000
3 blocks of the Westmoreland Neighborhood	Permeable Pavers in parking lanes and curb to curb	2004	$412,000
SE Ankeny b/w SE 56th and SE 57th Ave.	Stormwater curb extensions	2004	$11,946
NE Fremont b/w NE 131st and 132nd Av	Stormwater curb extension	2005	$20,400
SW 12th Ave b/w SW Montgomery and Mill	Stormwater planters	2005	$34,850
East Holladay Park	Pervious paver parking lot	2005	$165,000
4 blocks of North Gay Avenue b/w N Wygant and N Sumner	Porous concrete in curb lanes and curb to curb; porous asphalt in curb lanes and curb to curb	2005	--
SW Texas	Stormwater wetlands and swales	2007	$2.3 million
Division St. – New Seasons Market	Stormwater planters and swales	--	--
SE Tibbetts and SE 21st Ave.	Stormwater curb extension and planters	--	--

Source: Portland Bureau of Environmental Services, 2008
http://www.portlandonline.com/bes/index.cfm?c=44463&

Each of the pilot projects have been well documented by BES. A consistent format has been used to describe pilot background, features, engineering design, landscaping, project costs, maintenance, monitoring, and, most importantly, lessons learned. These case studies as well as other Green Street documentation can be found on BES's Sustainable Stormwater webpage, http://www.portlandonline.com/BES/index.cfm?c=34598. Due to physical factors (drainage, slope, soil, existing utilities, multiple uses) and development factors (retrofit, redevelopment, and new construction), there will be many variations on Green Streets. As part of the program, a continually updated Green Street Profile Notebook will catalog the successful green street projects. Users can use the Notebook for permitting guidance, to identify green streets facilities appropriate for various factors, but the document is not a technical document with standard details.

The Green Streets Team

The City of Portland, OR is widely acknowledged for long term, forward thinking, and comprehensive transportation and environmental planning. Portland recognized the fact that 66% of the City's total runoff is collected from streets and the right-of-way.[25] The city also saw the potential for transportation corridors to meet multiple objectives, including:

- Comprehensively address numerous City goals for neighborhood livability, sustainable development, increased green spaces, stormwater management, and groundwater protection;
- Integrate infrastructure functions by creating "linear parks" along streets that provide both pedestrian/bike areas and stormwater management;
- Avoid the key impacts of unmanaged stormwater whereby surface waterbodies are degraded, and water quality suffers;
- Manage stormwater with investments citizens can support, participate in, and see;
- Manage stormwater as a resource, rather than a waste;
- Protect pipe infrastructure investments (extend the life of pipe infrastructure, limit the additional demand on the combined sewer system as development occurs);
- Protect wellhead areas by managing stormwater on the surface; and
- Provide increased neighborhood amenities and value.

In a two phased process from 2005 to 2007, the Green Streets Team, a cross agency and interdisciplinary team, developed a comprehensive green streets policy and a way forward for the green streets agenda. Phase 1 identified challenges and issues and began a process for addressing them. Barriers to the public initiation of green street projects included a code and standards that would disallow or discourage green street strategies, long term performance unknowns, and maintenance responsibilities. To address these barriers, the Green Streets Team organized into subgroups focusing on outreach, technical guidance, infrastructure, maintenance, and resources.

Phase 2 of the Green Streets project synthesized the opportunities and solutions identified in Phase 1 into a citywide Green Streets Program. The first priority for this phase was the drafting of a binding citywide policy. The resolution was adopted by the Portland City Council in March 2007.

Prior to the start of the Portland effort, 90% of implemented green street projects were issued by private permits rather than city initiated projects.

Six Approaches to Implementing Green Streets	
Pathway	**Implementation**
City-initiated street improvement projects	City designs, manages, maintains
City-initiated stormwater retrofits	City designs, manages, maintains
Neighborhood-initiated LIDs	
Developer-initiated subdivisions with public streets	Developer designs and builds via City permit and review process, then turns over new right of way to the City after warranty period
Developer-initiated subdivisions with private streets	Developer designs and builds via City permit and review process, and turns over to home-owner association
Developer-related initiated frontage improvements on existing public streets	Developer designs and builds new sidewalks and curbs via City permit and review process, usually because the City required it via a building permit or via a land division

Source: Portland Green Streets, Phase 1

Portland City Council Approved Green Streets Policy

Goal: City of Portland will promote and incorporate the use of green street facilities in public and private development.

City elected officials and staff will:

1. Infrastructure Projects in the Right of Way:

   a. Incorporate green street facilities into all City of Portland funded development, redevelopment or enhancement projects as required by the City's September 2004 (or updated) Stormwater Management Manual. Maintain these facilities according to the May 2006 (or updated) Green Streets Maintenance Policy.

      If a green street facility (infiltrating or flow through) is not incorporated into the Infrastructure Project, or only partial management is achieved, then an off site project or off site management fee will be required.

   b. Any City of Portland funded development, redevelopment or enhancement project, that does not trigger the Stormwater Manual but requires a street opening permit or occurs in the right of way, shall pay into a "% for Green" Street fund. The amount shall be 1% of the construction costs for the project.
      Exceptions: Emergency maintenance and repair projects, repair and replacement of sidewalks and driveways, pedestrian and trail replacement, tree planting, utility pole installation, street light poles, traffic, signal poles, traffic control signs, fire hydrants, where this use of funds would violate contracted or legal restrictions.

2. Project Planning and Design:

   a. Foster communication and coordination among City Bureaus to encourage consideration of watershed health and improved water quality through use of green street facilities as part of planning and design of Bureau projects.
   b. Coordinate Bureau work programs and projects to implement Green Streets as an integrated aspect of City infrastructure.
   c. Plan for large-scale use of Green Streets as a means of better connecting neighborhoods, better use of the right of way, and enhancing neighborhood livability.
   d. Strive to develop new and innovative means to cost-effectively construct new green street facilities.
   e. Develop standards and incentives (such as financial and technical resources, or facilitated permit review) for Green Streets projects that can be permitted and implemented by the private sector. These standards and incentives should be designed to encourage incorporation of green street facilities into private development, redevelopment and enhancement projects.

3. Project and Program Funding:

   a. Seek opportunities to leverage the work and associated funding of projects in the same geographic areas across Bureaus to create Green Street opportunities.
   b. Develop a predictable and sustainable means of funding implementation and maintenance of Green Street projects.

4. Outreach:

   a. Educate citizens, businesses, and the development community/industry about Green Streets and how they can serve as urban greenways to enhance, improve, and connect neighborhoods to encourage their support, demand and funding for these projects.
   b. Establish standard maintenance techniques and monitoring protocols for green street facilities across bureaus, and across groups within bureaus.

5. Project Evaluation:

   a. Conduct ongoing monitoring of green street facilities to evaluate facility effectiveness as well as performance in meeting multiple City objectives for:
      - Gallons managed;
      - Projects distributed geographically by watershed and by neighborhood; and

The second priority for Phase 2 was developing communication and planning procedures for incorporating multi-bureaus plans into the scheduled Portland DOT Capital Improvement Program (CIP). Three timeframes for green street project planning were recommended. In the short term, the CIP Planning Group, backed by the citywide policy directive, will shift to a focus on "identifying and evaluating opportunities to partner." For example, coordinating Water Bureau and BES pipe replacement

projects with DOT maintenance, repair, and improvement projects. The mid-term approach is more proactive and involves forecasting potential green street projects using existing bureau data and GIS tools. As for the long term, green street objectives will be incorporated into the citywide systems plan which guides city bureaus for the next 20 years.

The Green Street Team methodology propelled Portland's early green street pilot projects into a comprehensive, citywide multi-bureau program. The program built on previous efforts by the Sustainable Infrastructure Committee as well as other efforts such as the 2005 Portland Watershed Management Plan, established a City Council mandated policy, and institutionalized green street development. The outcome of this approach is multi-agency buy-in and responsibility for the effort. For instance, because of their knowledge of plant maintenance, Portland Parks and Recreation is responsible for the maintenance of some DOT installations.

Chicago, IL: Green Alleys Program

The City of Chicago, Illinois has an alley system that is perhaps the largest in the world. These 13,000 publicly owned alleys result in 1,900 miles, or 3,500 acres, of impermeable surfaces in addition to the street network. Because the alley system was not originally paved, there are no sewer connections as part of the original design. Over time the alleys were paved and flooding in garages and basements began to occur as a result of unmanaged stormwater runoff. Since the city already spends $50 million each year to clean and upgrade 4,400 miles of sewer lines and 340,000 related structures, the preferred solution to the flooded alleys is one that doesn't put more stress on an already overburdened and expensive sewer system.[26]

In 2003, the Chicago Department of Transportation (CDOT) used permeable pavers and French drain pilot applications to remedy localized flooding problems in alleys in the 48th Ward.[27] These applications proved to be successful and by 2006, CDOT launched its Green Alley Program with the release of the Chicago Green Alley Handbook (Handbook).[28]

The Chicago Green Alley Program is unique because it marries green infrastructure practices in the public right-of-way with green infrastructure efforts on private property. The user-friendly Handbook, which describes both facets of the program including the design techniques and their benefits, is an award winning document. The American Society of Landscape Architects awarded the creators of the Handbook the 2007 Communications Honor Award for the clear graphics and simple, yet effective, message.[29] The Handbook explains to the residents why green infrastructure is important, how to be good stewards of the Green Alley in their neighborhood, and what sorts of "green" practices they can implement on their property to reduce waste, save water, and help manage stormwater wisely.

While the initial impetus behind the Green Alley Program was stormwater management, Chicago decided to use this opportunity to address other environmental concerns as well as reducing the urban heat island effect, recycling, energy conservation, and light pollution.

Green Infrastructure in the Right-of-Way

Chicago's Green Alley Program uses the following five techniques in the public right-of-way to "green" the alley:

1. Changing the grade of the alley to drain to the street rather than pond water in the alley or drain toward garages or private property.
2. Using permeable pavement that allows water to percolate into the ground rather than pond on the surface.
3. Using light colored paving material that reflects sunlight rather than adsorbing it, reducing urban heat island effect.

4. Incorporating recycled materials into the pavement mix to reduce the need for virgin materials and reduce the amount of waste going into the landfill.

5. Using energy efficient light fixtures that focus light downward, reducing light pollution.

Figure 9: Permeable Asphalt Installation Using Ground Tire Rubber.
Source: Chicago Department of Transportation, Sustainable Development Initiatives; Streetscape and Urban Design Program, CDOT Division of Project Development.

Four design approaches were created using these techniques. Based on the local conditions, the most appropriate approach is selected. In areas where soils are well-draining, permeable pavement is used. In areas where buildings come right up to the edge of pavement and infiltrated water could threaten foundations, impermeable pavement strips are used on the outside with a permeable pavement strip down the middle. In areas where soils do not provide much infiltration capacity, the alley is regraded to drain properly and impermeable pavement made with recycled materials is used. Another approach utilizes an infiltration trench down the middle of the alley. Light colored (high albedo) pavement, recycled materials, and energy efficient, glare reducing lights are a part of each design approach.

Green Infrastructure on Private Property

The Handbook also describes actions that property owners can take to "green" their own piece of Chicago. The Handbook describes the costs, benefits, and utility of the following practices:

- Recycling;
- Composting;
- Planting a tree;
- Using native landscape vegetation;
- Constructing a rain garden;
- Installing a rain barrel;
- Using permeable pavement for patios;
- Installing energy efficient lighting; and
- Utilizing natural detention.

By bringing this wide range of "green" practices to the attention of homeowners, the positive impacts of the Green Alley Program spread beyond the boundaries of the right-of-way, increasing awareness and providing practical resources to help community members be a part of the solution.

Chicago Green Alley Cost Considerations

When the program began in 2006, repaving the alleys with impermeable pavement ranged in cost from $120,000 to $150,000, whereas a total Green Alley reconstruction was more along the lines of $200,000 to $250,000.[30] While less expensive conventional rehabilitation options may seem more attractive, they don't provide a solution to the localized flooding issues or the combined sewer system overflow problems. Sewer system connections could be established to solve the localized flooding problem, but it would add to the already overburdened sewer system and increase the cost of the reconstruction to that of the impermeable alley option. Consequently, the higher priced Green Alley option proved to be the best investment as it has multiple benefits in addition to solving localized flooding and reducing flow into the combined sewer system. The additional benefits of the Green Alley Program include not only urban heat

island effect reduction, material recycling, energy conservation, and light pollution reduction, but also the creation of a new market.

In 2006, when the Green Alley Program began, the city paid about $145 per cubic yard of permeable concrete. Just one year later, the cost of permeable concrete had dropped to only $45 per cubic yard. Compared with the cost of ordinary concrete, $50 per cubic yard, permeable concrete may have seemed like an infeasible option in the past to customers wanting to purchase concrete.[31] After the city's initial investment in the local permeable concrete market, the product cost has come down making permeable concrete a more affordable option for other consumers besides the city. This has resulted in an increased application of permeable concrete throughout the region.

Figure 10: Permeable Pavers and Permeable Concrete Chicago Alleys
(Source: Abby Hall, US EPA)

The success of the Chicago Green Alley Program is evident. Not only are the alleys been "greened" as a result of the program, the surrounding properties and even the surrounding neighborhoods are experiencing the positive impacts of the program's implementation.

Conclusions and Recommendations

Incorporating green streets as a feature of urban stormwater management requires matching road function with environmental performance. Enhancing roads with green elements can improve their primary function as a transportation corridor while simultaneously mitigating their negative environmental impacts. In theory and practice many municipalities are not far removed from dedicated green streets programs. Street tree and other greenscaping programs are often identified and promoted along urban transportation corridors. Adapting them to become fully functional green streets requires minor design modifications and an evaluation of how to maximize the benefits of environmental systems.

Portland's green streets program demonstrates how common road and right-of-way elements (e.g., traffic calming curb extensions, tree boxes) can be modified and optimized to provide stormwater management in addition to other benefits. The curb cuts and design variations to allow runoff to enter the vegetated areas are subtle changes with a significant impact and demonstrate how stormwater can be managed successfully at the source. One of the biggest successes of the program was reassessing common design features and realizing that environmental performance can be improved by integrating stormwater management.

Where Portland used vegetation, Chicago's Green Alley Program similarly demonstrates that hardscape elements can be an integral part of a greening program. By incorporating permeable pavements that simulate natural infiltration, Chicago enhances the necessary transportation function of alleys while enhancing infrastructure and environmental management. Portland also contrasts the "soft" and "hard"

elements of green streets by using both permeable pavements and vegetated elements. The green options available demonstrate the flexibility of green infrastructure to satisfy road function and environmental objectives and highlight why transportation corridors are well suited for green infrastructure.

Elements necessary for a successful green streets program:

- **Pilot projects are critical.** The most successful municipal green street programs to date all began with well documented and monitored pilot projects. These projects have often been at least partially grant funded and receive the participation of locally active watershed groups working with the city infrastructure programs. The pilot projects are necessary to demonstrate that green streets can work in the local environment, can be relied upon, and fit with existing infrastructure. Pilot projects will help to dispel myths and resolve concerns.
- **Leadership in sustainability from the top.** The cities with the strongest green streets programs are those with mayors and city councils that have fully bought into sustainable infrastructure. Council passed green policies and mayoral sustainability mandates or mission statements are needed to institutionalize green street approaches and bring it beyond the token green project.
- **Buy-in from all municipal infrastructure departments.** By their nature, green streets cross many municipal programs. Green street practices impact stormwater management, street design, underground utilities, public lighting, green space planning, public work maintenance, and budgeting. When developing green streets, all of the relevant agencies must be represented. Also, coordination between the agencies on project planning is important for keeping green infrastructure construction costs low. Superior green street design at less cost occurs when sewer and water line replacement projects can be done in tandem with street redevelopment. These types of coordination efforts must happen at the long-term planning stage.
- **Documentation.** Green street projects need to be documented on two levels, the design and construction level and on a citywide tracking level. Due to the different street types and siting conditions, green street designs will take on many variations. By documenting the costs, construction, and design, the costs of similar future projects can be minimized and construction or design problems can be avoided or addressed. Tracking green street practices across the city is crucial for managing maintenance and quantifying aggregate benefits.
- **Public outreach.** Traditional pollution prevention outreach goes hand in hand with green street programs. Properly disposing of litter, yard waste, and hazardous chemicals and appropriately applying yard chemicals will help prolong the life of green street practices. An information campaign should also give the public an understanding of how green infrastructure works and the benefits and trade offs. In many cases, remedial maintenance of green street practices will be performed by neighboring property owners; they need to know how to maintain the practices to keep them performing optimally.

As public spaces, roads are prime candidates for green infrastructure improvements. In addition to enabling legislation, and technical guidance, developing a green streets program requires an institutional re-evaluation of how right-of-ways are most effectively managed. This process typically includes:

- Assessing the necessary function of the road and selecting the minimum required street width to reduce impervious cover;
- Enhancing streetscaping elements to manage stormwater and exploring opportunities to integrate stormwater management into roadway design; and
- Integrating transportation and environmental planning to capitalize on economic benefits.

The use of green streets offers the capability of transforming a significant stormwater and pollutant source into an innovative treatment system. Green streets optimize the performance of public space easing maintenance concerns and allowing municipalities to coordinate the progression and implementation of stormwater control efforts. In addition, green streets optimize the performance of both the transportation and water infrastructure. Effectively incorporating green techniques into the transportation network provides significant opportunity to decrease infrastructure demands and pollutant transport.

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ORDINANCE NO. 13-03

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MAYWOOD, CALIFORNIA, AMENDING THE MAYWOOD MUNICIPAL CODE CHAPTER 6-10, TO EXPAND THE APPLICABILITY OF THE EXISTING URBAN STORM WATER MITIGATION PLANS BY IMPOSING RAINWATER LOW IMPACT DEVELOPMENT (LID) STRATEGIES ON PROJECTS THAT REQUIRE BUILDING, GRADING AND ENCROACHMENT PERMITS

WHEREAS, the City Council is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity; and

WHEREAS, the federal Clean Water Act establishes Regional Water Quality Control Boards in order to prohibit the discharge of pollutants in stormwater runoff to waters of the United States; and

WHEREAS, the City is a permittee under the California Regional Water Quality Control Board, Los Angeles Region Order No. R4-2012-0175, issued on November 08, 2012 which establishes Waste Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4; and

WHEREAS, Order No. R4-2012-0175 contains requirements for municipalities to establish an LID Ordinance in order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program; and

WHEREAS, the Regional Board has adopted Total Maximum Daily Loads (TMDLs) for pollutants which are numerical limits that must be achieved effectively through LID implementation; and

WHEREAS, the City Council has the authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity that might degrade waters of the State; and

WHEREAS, the City is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental and economic considerations; and

WHEREAS, urbanization has led to increased impervious surface areas resulting in increased water runoff and less percolation to groundwater aquifers causing the transport of pollutants to downstream receiving waters; and

WHEREAS, is it the intent of the City Council to expand the applicability of the existing LID requirements by providing stormwater and rainwater LID strategies for all projects for Development and Redevelopment projects as defined under "Applicability."

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MAYWOOD, CALIFORNIA, DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. The City Council finds and determines the foregoing recitals to be true and correct and hereby makes them a part of this ordinance.

SECTION 2. Section 6-10.01 (Definitions) of Chapter 10 (Urban Storm Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby amended with the replacement of the following terms and/or definitions:

Replace the term and definition of "Automotive repair shops" in its entirety with the following:

"Automotive service facility" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5511, 5541, 7532-7534, and 7536-7539 provided that these facilities have no outside activities or materials that may be exposed to stormwater (Order No. R4-2012-0175).

Replace the definition for the term "Basin plan" in its entirety with the following:

"Basin plan" means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments (Order No. R4-2012-0175).

Replace the definition for the term "Best Management Practice (BMP)" in its entirety with the following:

"Best management practice (BMP)" means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water (Order No. R4-2012-0175).

Replace the definition for the term "Commercial development" in its entirety with the following:

"Commercial development" means any development on private land that is not heavy industrial or residential. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities; mini-malls and other business complexes, shopping

malls, hotels, office buildings, public warehouses and other light industrial complexes (Order No. R4-2012-0175).

Replace the definition for the term "Discharge" in its entirety with the following:

"Discharge" means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

Replace the term and definition of "MS4" in its entirety with the following:

"Municipal separate storm sewer system (MS4)" means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) Designed or used for collecting or conveying stormwater;

(iii) Which is not a combined sewer; and

(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR Section 122.2.

(40 CFR Section 122.26(b)(8)) (Order No. R4-2012-0175)

Replace the definition for the term "NPDES" in its entirety with the following:

"National Pollutant Discharge Elimination System (NPDES)" means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA Section 307, 402, 318, and 405. The term includes an "approved program" (Order No. R4-2012-0175).

Replace the definition for the term "New development" in its entirety with the following:

"New development" means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision (Order No. R4-2012-0175).

Replace the definition for the term "Pollutant" in its entirety with the following:

"Pollutant" means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Section 13373 (Order No. R4-2012-0175).

Replace the definition for the term "Redevelopment" in its entirety with the following:

"Redevelopment" means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Order No. R4-2012-0175).

Replace the definition for the term "Regional Board" in its entirety with the following:

"Regional Board" means the California Regional Water Quality Control Board, Los Angeles Region.

Replace the definition for the term "Restaurant" in its entirety with the following:

"Restaurant" means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812) (Order No. R4-2012-0175).

Replace the definition for the term "Storm drain system" in its entirety with the following:

"Storm Drain System" means any facility or any parts of the facility, including streets, gutters, conduits, natural or artificial drains, channels and watercourse that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the City.

SECTION 3. Section 6-10.01 (Definitions) of Chapter 10 (Urban Storm Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby amended with the addition of the following definitions, to be incorporated in the definition list of the Section in alphabetical order:

"Biofiltration" means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales (Order No. R4-2012-0175).

"Bioretention" means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in this Ordinance, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by Order No. R4-2012-0175 as biofiltration (Order No. R4-2012-0175).

"Bioswale" means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes (Order No. R4-2012-0175).

"City" means the City of Maywood.

"Clean Water Act (CWA)" means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

"Commercial malls" means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers (Order No. R4-2012-0175).

"Construction activity" means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that result in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan (Order No. R4-2012-0175).

"Control" means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities (Order No. R4-2012-0175).

"Development" means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Order No. R4-2012-0175).

"Directly adjacent" means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area (Order No. R4-2012-0175).

"Disturbed area" means an area that is altered as a result of clearing, grading, and/or excavation (Order No. R4-2012-0175).

"Flow-through treatment BMPs" means a modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain (Order No. R4-2012-0175).

"Full capture system" means any single device or series of devices, certified by the Executive Officer, that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate Q resulting from a one-year, one-hour storm in the sub-drainage area (Order No. R4-2012-0175).

"General Construction Activities Storm Water Permit (GCASP)" means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions (Order No. R4-2012-0175).

"General Industrial Activities Storm Water Permit (GIASP)" means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions (Order No. R4-2012-0175).

"Green Roof" means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain (Order No. R4-2012-0175).

"Hillside" means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes (Order No. R4-2012-0175).

"Industrial/Commercial Facility" means any facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods

and/or commodities, and any facility involved and/or used in providing professional and non-professional services. This category of facilities includes, but is not limited to, any facility defined by either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS). Facility ownership (federal, state, municipal, private) and profit motive of the facility are not factors in this definition (Order No. R4-2012-0175).

"Industrial park" means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry (Order No. R4-2012-0175).

"Infiltration BMP" means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement (Order No. R4-2012-0175).

"Low Impact Development (LID)" consists of building and landscape features designed to retain or filter stormwater runoff (Order No. R4-2012-0175).

"Natural drainage system" means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system (Order No. R4-2012-0175).

"Non-stormwater discharge" means any discharge to a municipal storm drain system that is not composed entirely of stormwater (Order No. R4-2012-0175).

"Outfall" means a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances with connect segments of the same stream or other waters of the United Sates and are used to convey waters of the United States. (40 CFR Section 122.26(b)(9)) (Order No. R4-2012-0175).

"Parking lot" means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces (Order No. R4-2012-0175).

"Project" means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code Section 21065) (Order No. R4-2012-0175).

"Rainfall Harvest and Use" means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department (Order No. R4-2012-0175).

"Receiving Water" means "water of the United States" into which waste and/or pollutants are or may be discharged (Order No. R4-2012-0175).

"Retail gasoline outlet" means any facility engaged in selling gasoline and lubricating oils (Order No. R4-2012-0175).

"Routine Maintenance" includes, but is not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.
4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.

** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Order No. R4-2012-0175).

"Significant Ecological Areas (SEAs)" means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.

5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (Order No. R4-2012-0175).

"Site" means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity (Order No. R4-2012-0175).

"Storm Water or Stormwater" means runoff and drainage related to precipitation events (pursuant to 40 CFR Section 122.26(b)(13); 55 Fed. Reg. 47990, 47995 (Nov. 16, 1990)).

"Urban Runoff" means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial or industrial activities involving the use of potable and non-potable water.

SECTION 4. Section 6-10.08 (Urban storm water mitigation plan required) of Chapter 10 (Urban Strom Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby repealed in its entirety and replaced with the following:

6-10.08 – Low impact development measures for new development and/or redevelopment planning and construction activities.

a) Objective. The provisions of this Section establish requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Order No. R4-2012-0175," lessen the water quality impacts of development by using smart growth practices, and integrate LID practices and standards for stormwater pollution mitigation through means of infiltration, evapotranspiration, biofiltration, and rainfall harvest and use. LID shall be inclusive of new development and/or redevelopment requirements.

b) Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the City to further define and adopt stormwater pollution control measures, and to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, grant waivers from the LID requirements, and collect funds for projects that are granted waivers. Except as otherwise provided herein, the City shall administer, implement and enforce the provisions of this Section.

c) Applicability. Development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, prior to completion of the project(s), are:

(1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

(2) Industrial parks 10,000 square feet or more of impervious surface area.

(3) Commercial malls 10,000 square feet or more of impervious surface area.

(4) Retail gasoline outlets with 5,000 square feet or more of impervious surface area.

(5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of impervious surface area.

(6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(7) Streets and roads construction of 10,000 square feet or more of impervious surface area. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

(8) Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) 5,000 square feet or more of impervious surface area.

(9) Redevelopment Projects

a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

b. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

d) Specific Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) Street and road construction of 10,000 square feet or more of impervious surface shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

(2) The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:

a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:

i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or

ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.

b. Minimize hydromodification impacts to natural drainage systems as defined in Order No. R4-2012-0175.

c. To demonstrate technical infeasibility, the project applicant must demonstrate that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:

i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.

ii. Locations where seasonal high groundwater is within five to ten feet of surface grade;

iii. Locations within 100 feet of a groundwater well used for drinking water;

iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;

v. Locations with potential geotechnical hazards;

vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

d. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in Order No. R4-2012-0175.

   i. Additional alternative compliance options such as offsite infiltration and groundwater replenishment projects may be available to the project Site. The project Site should contact the City of Maywood to determine eligibility.

e. The remaining SWQD that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per Order No. R4-2012-0175. Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

   i. 0.2 inches per hour, or

   ii. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

SECTION 5. Section 6-10.09 (Content of urban storm water mitigation plan) of Chapter 10 (Urban Strom Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby amended as follows: *(Revisions are highlighted with strikethrough for words to be deleted and underline for words to be added)*

6-10.09 - Content of ~~urban storm water mitigation~~ Low Impact Development (LID) plan.

The ~~USWMP~~ LID required by this section shall be prepared by a Registered Civil Engineer, Licensed Architect, Landscape Architect or any other professional knowledgeable about storm water management issues and shall evaluate and propose BMP's to address each source of pollutants identified by the project evaluation. As a minimum the designer shall address the BMP's listed in the Commercial Site Visit Program, for the proposed use of the site, as approved by the Regional Water Quality Control Board—Los Angeles by Resolution 98-08 on April 13, 1998. All ~~USWMP's~~ LID's shall contain the following elements: . . .

SECTION 6. Section 6-10.10 (Project specific issues to be addressed by the USWMP) of Chapter 10 (Urban Strom Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby amended as follows: *(Revisions are highlighted with strikethrough for words to be deleted and underline for words to be added)*

6-10.10 – Project specific issues to be addressed by the ~~USWMP~~ LID.

In addition to the ~~six (6) items~~ listed in Section 6-10.08 ~~11.12.542 BGMC~~ of MMC, the following projects must ~~also~~ consider issue unique to the occupancy: . . .

SECTION 7. Section 6-10.11 (Review of urban storm water mitigation plan by City) of Chapter 10 (Urban Strom Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby amended as follows: *(Revisions are highlighted with strikethrough for words to be deleted and underline for words to be added)*

6-10.11 - Review of the ~~urban storm water mitigation~~ Low Impact Development LID plan by City.

The City shall review the ~~USWMP~~ LID to assure that all elements of the plan have been addressed and that the applicant has identified the BMP's necessary to protect the MS4. The Director or his designee shall identify any deficiencies in the plan and return it to the applicant for modification. When the plan is found to comply with the provisions of this section the grading or building permits may be issued for the project. If, during construction, the plan is found to be deficient by the City or any other interested party the applicant shall amend the plan to address the deficiency.

SECTION 8. Section 6-10.12 (Filing of the urban storm water mitigation plan) of Chapter 10 (Urban Strom Water Mitigation, Management and Discharge) of Title 6 (Sanitation and Health) of the Maywood Municipal Code is hereby amended as follows: *(Revisions are highlighted with strikethrough for words to be deleted and underline for words to be added)*

6-10.12 - Filing of the ~~urban storm water mitigation~~ Low Impact Development LID plan.

Upon acceptance of the ~~USWMP~~ LID by the City the applicant shall file a signed original of the plan with the County Recorder. The document shall contain sufficient legal description to identify the property covered and shall be binding on the applicant and all successors in interest to the property. The form shall be provided by the City and shall only be amended or removed from title with the consent of the City.

SECTION 9. The City Council finds that this Ordinance is not subject to the California Environmental Quality Act ("CEQA") pursuant to Sections 15060(c)(2) (the activity will not result in a direct or reasonably foreseeable indirectly physical change in the environment) and 15060(c)(3) (the activity is not a project as defined in Section 15378) of the CEQA Guidelines, California Code of Regulations, Title 14, Chapter 3, because it has no potential for resulting in physical change to the environment, directly or indirectly.

SECTION 10. If any section, subsection, subdivision, sentence, clause, phrase, or portion of the Ordinance for any reason is held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City council hereby declares that it would have adopted this Ordinance, and each section, subsection, subdivision, sentence, clause, phrase, or portion thereof, irrespective of the fact that any one or more sections, subsections, subdivisions, sentences, clauses, phrases, or portions thereof be declared invalid or unconstitutional.

SECTION 11. This ordinance shall take affect thirty (30) days after its final passage and within fifteen (15) days after its passage, the City Clerk of the City of Maywood shall certify to the passage and adoption of this ordinance and to its approval by the Mayor and City Council and shall cause the same to be published in a newspaper in the manner required by law.

PASSED, APPROVED AND ADOPTED ON this 12th day of Aug. 2013.

Oscar Magana, Mayor

ATTEST:

Sergio Calderon, City Clerk

APPROVED AS TO FORM:

Richard L. Adams II, City Attorney

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES)
CITY OF MAYWOOD)

I, Sergio Calderon, Secretary of the City Council of the City of Maywood, do hereby certify the foregoing Ordinance, being Ordinance No. 13-03 as passed by the City Council of the City of Maywood, signed by the Mayor of said Council, and attested by the City Clerk, at a regular meeting of the City Council held on the 12 of Aug. 2013, and that the same was passed by the following vote, to wit:

AYES: Mayor Magana, Mayor Pro Tem Varela, Councilmembers Aguirre, Guardado and Martin

NAYS: None

ABSENT: None

ABSTAINED: None

Chapter 10 - URBAN STORM WATER MITIGATION, MANAGEMENT AND DISCHARGE

Sections:

6-10.01 - Definitions.

When used in this chapter, the following words and phrases shall have the following meanings:

"100,000 square foot commercial development" means any commercial development that creates at least 100,000 square feet of impermeable area, including parking areas.

"Act" means the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251.

"Adverse impact" means a detrimental effect on water quality or beneficial uses caused by a discharge of a pollutant or pollutants.

"Area susceptible to runoff' means any surface exposed to precipitation or in the path of runoff caused by precipitation which leads directly to neighboring properties or to the street.

"Authorized enforcement officer" means the City Manager, including any person designated by the City Manager.

"Automotive repair shops" means and includes the following retail businesses which are identified with a Standard Industrial Code (SIC):

(1) Motor vehicle supplies and new parts as identified by SIC 5013 except if the business has no outside storage of any recycled oil or hazardous materials;

(2) Tires and tubes as identified by SIC 5014, except if the business does not engage in

"Illicit connection" means any device through or by which illicit discharges are made into the City's storm drain system, including, but not limited to, floor drains, pipes, or any fabricated or natural conduits.

"Illicit discharge" means any discharge of any substance or material to the City's storm drain system that is not composed entirely of storm water runoff, except for the following:

(1) Any discharge regulated under an NPDES permit issued to the discharger and administered by the State of California under the authority of the United States Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit and other applicable laws or requirements;

(2) Discharges from the following activities, when properly managed; water line flushing, and other discharges from potable water sources, landscape irrigation and lawn watering, irrigation waters, diverted stream flows, rising ground water, uncontaminated pumped ground water, foundation and footing drains, water from crawl space pumps, residential air conditioning condensation, springs, dechlorinated swimming pool discharges, flows from riparian habitats and wetlands, and fire fighting activities;

(3) Other discharges permitted by law.

"MS4" means municipal separate storm sewer system.

"New development" means any land disturbing activity, structural development, including the construction or installation of a building or structure, creation of impervious surfaces, and land division.

"NPDES" means the National Pollutant Discharge Elimination System.

"Peak storm runoff rate" means the storm water accumulated and discharged from a property during an average ten (10) minute period in a twenty-five (25) year storm.

"Pollutant" means and includes, but is not limited to, dredged soil; solid waste; incinerator residue; animal wastes; sewage; gray water; garbage; sewage sludge; chemical wastes; biological materials; radioactive materials; wrecked or discarded equipment; rock; sand; cellar dirt; industrial, municipal and agricultural waste discharge; and fertilizers; pesticides; herbicides and fungicides.

"Redevelopment" means any improvement on an already developed site, the creation or addition of at least 5,000 square feet of impervious surfaces. Redevelopment includes, but is not limited to: the expansion of a building footprint or addition or replacement of a structure; structural development including an increase in gross floor area and/or exterior construction or remodeling; replacement of impervious surface that is not part of routine maintenance activity; and land disturbing activities related to structural or impervious surfaces. Where redevelopment results in an increase of less than fifty (50%) percent of the impervious surfaces of a previous existing development, and the existing development is not subject to these SUSMP's, the design standards apply only to the addition, and not to the entire development.

"Receiving waters" means all surface water bodies within the county that are identified by the regional board in a basin plan.

"Regional Board" means Regional Water Quality Control Board—Los Angeles.

"Restaurants" means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods for immediate consumption.

owner, lessee, or proprietor of any real property in the City in front of which there is a paved sidewalk, shall maintain said sidewalk free of dirt or litter to the maximum extent practicable. Sweepings from said sidewalk shall not be swept or otherwise allowed to go into the gutter or roadway, but shall be disposed of in receptacles maintained on said real property as required for disposal of the refuse.

(c) *Parking lots and similar structures.* Persons owning or operating a parking lot, private street or road or similar road structure shall clean these structures as frequently and thoroughly as practicable in a manner that eliminates the discharge of pollutants to the City storm drain system to the maximum extent practicable.

(d) *Construction activities—New developments.* The City may adopt regulations establishing controls on the volume and rate of storm water runoff from the construction activities and developments, as may be appropriate to minimize the discharge and transport of pollutants. The City Manager or his/her designee may require any developer or construction contractor performing work in the City to provide a storm water pollution prevention plan prior to beginning such work. Construction activity does not include routine maintenance for the maintain of the original line and grade, hydraulic capacity or original purpose of a facility, or emergency construction activities required to protect the public health and safety.

(e) *Compliance with best management practices.* Where BMPs, guidelines or requirements have been adopted by any Federal, State, regional and/or local regulation for any activity, operation or facility which may cause or contribute to storm water pollution or illicit discharges to the storm water system, every person undertaking such activity or operation, or owning or operating such facility, shall comply with the guidelines or requirements as may be identified by the City Manager.

(§ 4, Ord. 01-474, eff. February 15, 2001)

6-10.05- Prohibited activities.

(a) *Illicit discharges and connections.* No person shall cause or permit illicit discharges to be made into the City's storm drain system, nor shall any person establish, use or maintain an illicit connection to the City's storm drain system.

(b) *Littering.* No person shall throw, deposit, place, leave, maintain or keep or permit to be thrown, deposited, placed, left or maintained or kept, any refuse, rubbish, garbage, or any other discarded or abandoned objects, articles or accumulation, in or upon any street alley, sidewalk, storm drain, inlet, catch basin conduit or drainage structure, business place, or upon any public or private plot of land in the City, so that the same might become a pollutant, except in containers, recycling bags or other lawfully established waste disposal facilities. It shall be illegal to dump, discard, abandon or otherwise deposit any refuse where the natural flow of storm water might carry the same to any such flood water channel or structure, or in any fountain, pond, lake, stream or any other body of water in a park or elsewhere in the City.

(c) *Blowing debris.* No person shall use or operate any mechanical device to blow leaves, dirt or other debris into or upon any street, alley, sidewalk, parkway, or other public right-of-way.

(d) *Disposal of landscape debris.* No person shall intentionally dispose of leaves, dirt or other landscape debris into or upon any street, alley, sidewalk, parkway, storm drain, or other public right-of-way.

(e) *Industrial activities.* No person shall conduct any industrial activity in the City without obtaining all permits required by State or Federal law, including an NPDES General Industrial Activity Storm Water Permit, when required. Each industrial discharger associated with construction activity, or other discharger described in any general storm water permit addressing such discharges, as may be adopted by the United States Environmental Protection Agency, the

disposal so as to cause a discharge to the MS4;

(6) In areas exposed to storm water, the removal of and unlawful disposal of all fuels, chemicals, fuel and chemical wastes, garbage, batteries, and other materials which have potential adverse effects on water quality.

(§ 4, Ord. 01-474, eff. February 15, 2001)

6-10.06- Requirements for existing properties.

Any owner or occupant of property within the City shall comply with the following requirements:

(a) *Use of water.* Runoff of water used for irrigation purposes shall be minimized to the maximum extent practicable. In addition, washing down of paved surfaces is prohibited unless necessary for health or safety purposes as determined by the City Manager, and if not in violation of any other provision of this Code. Runoff of water from the permitted washing down of paved areas shall be minimized to the maximum extent practicable.

(b) *Storage of materials, machinery and equipment.*

(1) Objects, such as motor vehicle parts containing grease, oil or other hazardous substances, and unsealed receptacles containing hazardous materials, shall not be stored in areas susceptible to runoff.

(2) Any machinery or equipment that is to be repaired or maintained in areas susceptible to runoff shall be placed on a pad of absorbent material to contain leaks, spills or small discharges.

(c) *Gray water.* The discharge of gray water to the street or storm drain is prohibited.

(§ 4, Ord. 01-474, eff. February 15, 2001)

6-10.07- Enforcement.

(a) Whenever necessary to make an inspection to enforce any of the provisions of this chapter or whenever an authorized enforcement officer has reasonable cause to believe that there exists in any building or upon any premises any condition which constitutes a violation of the provisions of this chapter, the officer may, upon consent or upon obtaining an inspection warrant, enter such building or premises at all reasonable times to inspect the same or perform any duty imposed upon the officer by this chapter.

(b) Routine or area inspections shall be based upon such reasonable selection process as may be deemed necessary to carry out the objectives of this chapter, including but not limited to, random sampling and/or sampling in areas with evidence of storm water contamination, discharges of non-storm water into the City's storm drain system, discharges which are not pursuant to an NPDES permit or similar factors.

(c) For the first failure to comply with any provision of this chapter, the City Manager, or his or her designee, shall issue to the person believed to be the violator, a written notice, which includes the following:

(1) A statement specifying the violation committed;

(2) A specified time period within which the affected person shall correct the failure or file a written notice disputing the notice of violation;

(3) A statement of the penalty for continued noncompliance.

(d) Each subsequent failure to comply with any provision of this chapter following written notice issued pursuant to subsection (c) of this section, shall constitute an infraction punishable as provided in Section 1-2.04 of the Maywood Municipal Code. Each day during which a person fails to comply with the provisions of this chapter following written notice shall constitute a

inspection upon request by the City Engineer or the designated agent.

(§ 4, Ord. 01-474, eff. February 15, 2001)

6-10.10- Project specific issues to be addressed by the USWMP.

In addition to the six (6) items listed in Section 11.12.542 BGMC, the following projects must also consider issue unique to the occupancy:

(a) *Automotive repair shops.*

(1) *Properly designed fueling areas.* Fueling facilities for a new automotive repair project shall be constructed in compliance with the Service Station Managers Association Guidelines.

(2) *Proper design of outside material storage areas.* Areas used for storage of vehicles under repair or for storage of spare parts shall be designed to minimize, to the greatest extent practicable, the exposure of stored parts or vehicles to rainfall.

(3) *Proper design of repair/maintenance bays.* Repair/maintenance bays shall be designed to allow for collection of all fluid spills and floor wash down runoff and provide for the proper discharge of these fluid to the sanitary sewer system. Automotive fluids and greases shall not be discharged to areas exposed to rainfall.

(4) *Properly designed loading and unloading areas.* Loading and unloading of materials and vehicles shall be handled to limit the discharge of pollutants to the storm drain system. Spill prevention and cleanup materials shall be maintained on site and staff shall be trained in its proper use.

(b) *Residential subdivisions of ten (10) or more lots.*

(1) *Mitigate storm water runoff.* The project shall use, to the greatest extent practicable, pervious surfaces for drainage structures, walkways, parking areas and recreation facilities. The project shall also evaluate the feasibility of reducing impervious surfaces, to the greatest extent practical, by reducing street widths, reducing sidewalk areas, and limiting impervious site improvements.

(c) *100,000 square foot commercial developments.*

(1) *Mitigate storm water runoff.* The project shall use, to the greatest extent practicable, pervious surfaces for drainage structures, walkways, parking areas and recreation facilities. The project shall also evaluate the feasibility of incorporating infiltration and treatment BMP's into the project design.

(2) *Proper design of outside material storage areas.* Areas used for storage of raw materials or for storage of finished products or merchandise shall be designed to minimize, to the greatest extent practicable, the exposure of stored materials to rainfall.

(3) *Proper design of repair/maintenance bays.* Repair/maintenance bays shall be designed to allow for collection of all fluid spills and floor wash down runoff and provide for the proper discharge of these fluid to the sanitary sewer system. Automotive fluids and greases shall not be discharged to areas exposed to rainfall.

(4) *Properly designed loading and unloading areas.* Loading and unloading of materials and equipment shall be handled to limit the discharge of pollutants to the storm drain system. Spill prevention and cleanup materials shall be maintained on site and staff shall be trained in its proper use.

If after evaluating the issues related to a project the designer determines that all BMP's are impractical for their project a waiver may be granted. The waiver for impracticability shall only be granted when all other structural or treatment BMP's have been considered and rejected as infeasible. The following situations will be recognized as grounds for an impracticability waiver:

(a) Extreme limitations of space for treatment on a redevelopment project.

(b) Unfavorable or unstable soils conditions at a site to attempt infiltration.

(c) Risk of ground water contamination because a known unconfined aquifer lies beneath the site or an existing or potential underground source of drinking water is less than ten (10) feet from the soil surface.

The Regional Water Quality Control Board—Los Angeles must approve any justification not identified above, upon application by the City before a waiver for impracticality may be approved by the City. A waiver granted by the City may be revoked by the Regional Board's Executive Officer for cause with proper notice upon petition. Any waivers granted for impracticability shall be filed as required by Section 6-10.12.

(§ 4, Ord. 01-474, eff. February 15, 2001)

6-10.14- Public education.

Storm Water and Urban Runoff Pollution Educational Program. The City Engineer, along with other City departments, shall conduct an informational program to educate the public about the dangers of runoff pollution and the means of controlling such pollution. The program shall educate residents and business persons that operate within the City about the contents of this chapter. The Public Education Program may be conducted in conjunction with the countywide NPDES educational effort.

(§ 4, Ord. 01-474, eff. February 15, 2001)

6-10.15- Inspection.

Whenever necessary to make an inspection to enforce any of the provisions of this chapter, or whenever any officer authorized by the City Manager to enforce this chapter has reasonable cause to believe that there exists in any building or upon any premises a condition which constitutes a violation of the provisions of this chapter, the officer may, in a manner prescribed by law, enter such building or premises at all reasonable times to inspect the same or perform any duty necessary to enforce this chapter.

(§ 4, Ord. 01-474, eff. February 15, 2001)

6-10.16- Disclaimer of liability.

The degree of protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific, engineering and other relevant technical considerations. The standards set forth herewith are minimum standards and this chapter does not imply that compliance will ensure that there will be no unauthorized discharge of pollutants into the waters of the United States. This chapter shall not create liability on the part of the City, or any officer, employee, or agents thereof, and for damages that result from reliance on this chapter or any administrative decision lawfully made thereunder.

(§ 4, Ord. 01-474, eff. February 15, 2001)

RESOLUTION NO. 2013-24

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BELL GARDENS, CALIFORNIA, APPROVING A GREEN STREETS POLICY

The City Council of the City of Bell Gardens, California, hereby resolves, determines and orders as follows:

Section 1. The Municipal Separate Storm Sewer System (MS4) Permit (Order No. R-2012-0175) was adopted by the California Regional Water Quality Control Board, Los Angeles Region on November 8, 2012. Municipalities electing to prepare a Watershed Management Program or an Enhanced Watershed Management Program under this Permit are required to demonstrate that Green Street policies are in place that specify the use of green street strategies for transportation corridors.

Section 2. Green Streets are enhancements to street and road projects to improve the quality of storm water and urban runoff through the implementation of infiltration, bio-treatment, xeriscaping parkways and tree lined streets.

Section 3. That the City Council of the City of Bell Gardens, California, hereby directs the Public Works Director to implement Green Streets for transportation corridors for publicly owned street and road projects that add 10,000 square feet or more of impervious area. The USEPA's Wet Weather with Green Infrastructure guidance (December 2008 EPA-833-F-08-009) shall be followed to the maximum extent practicable.

Section 4. Routine maintenance including but not limited to: slurry seals, grind and overlay and reconstruction to maintain original line are grade are excluded from the Green Street Policy.

Section 5. At its regular meeting held on June 10, 2013, the City Council determined that the public interest and necessity justify the adoption of the Green Street Policy as set forth in the Green Streets Manual.

Section 6. This resolution was posted in 3 public places in the City of Bell Gardens, California.

PASSED, APPROVED, AND ADOPTED this 10th day of June, 2013.

Pedro Aceituno, Mayor

APPROVED AS TO FORM:

Arnold M. Alvarez-Glasman
City Attorney

ATTEST:

Rosalia A. Conde, CMC
City Clerk

I, ROSALIA A. CONDE, CMC, City Clerk of the City of Bell Gardens, hereby CERTIFY that **City Council Resolution No. 2013-24** was adopted by the Bell Gardens City Council at a regular meeting of the City Council held on **Monday, June 10, 2013** and was approved and passed by the following vote:

AYES: Council Members Crespo, Flores, Mayor Pro-Tem Infanzon, Mayor Aceituno
NOES: None
ABSTAIN: None
ABSENT: Council Member Rodriguez

Rosalia A. Conde, CMC
City Clerk

CITY OF BELL

LOS ANGELES COUNTY, CALIFORNIA

ORDINANCE NO. 1197

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF BELL, CALIFORNIA, REPEALING SECTION 13.08.085 OF THE BELL MUNICIPAL CODE, TITLED STANDARD URBAN STORMWATER MITIGATION PLAN (SUSMP) AND REPLACING WITH THE FOLLOWING SECTION 13.08.085 ENTITLED LOW IMPACT DEVELOPMENT (LID)

WHEREAS, the City of Bell (City) is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity; and

WHEREAS, the City is a permittee under the California Regional Water Quality Control Board, Los Angeles Region Order No. R4-2012-0175, which also serves as an NPDES Permit under the Federal Clean Water Act (NPDES No. CAS4001), issued on November 08, 2012 which establishes waste discharge requirements for municipal separate storm sewer system (MS4) discharges within the coastal watersheds of Los Angeles County, except those discharges originating from the City of Long Beach MS4 (hereinafter referred to as the MS4 Permit); and

WHEREAS, the MS4 Permit contains requirements for municipalities to establish an LID Ordinance in order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program; and

WHEREAS, the California Regional Board, Los Angeles Region has adopted Total Maximum Daily Loads (TMDLs) for pollutants, which are maximum limits of pollutants that a receiving water can accept and still meet water quality standards, that must be achieved effectively through LID implementation; and

WHEREAS, the City has the authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity that might degrade waters of the State; and

WHEREAS, the City is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental and economic considerations; and

WHEREAS, urbanization has led to increased impervious surface areas resulting in increased water runoff and less percolation to groundwater aquifers causing the transport of pollutants to downstream receiving waters; and

WHEREAS, the City is being required to take a new approach to managing stormwater and urban runoff while mitigating the impacts of development and urbanization; and

WHEREAS, LID is widely recognized as a sensible approach to managing the quantity and quality of stormwater and non-stormwater by setting standards and practices to maintain or restore the natural hydrologic character of a development site, reduce off-site runoff, improve water quality, and provide groundwater recharge; and

WHEREAS, is it the intent of the City to expand the applicability of the existing LID requirements by providing stormwater and rainwater LID strategies for all Development and Redevelopment projects as defined under "Applicability."; and

WHEREAS, currently Section 10.08.085 of the Bell Municipal Code provides for the regulation of stormwater and non-stormwater pollutants to the City's municipal stormwater system, and the City's new MS4 permit requires the adoption of an LID Ordinance to replace previous methods of regulating storm water and non-storm water pollutants.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF BELL, CALIFORNIA, DOES HEREBY ORDAIN AS FOLLOWS:

Section 1: Section 13.08.085 of the City of Bell Municipal Code is repealed in its entirety and replaced with the following:

13.08.085 Low Impact Development Plan (LID) – Development Projects

Definitions:

"Automotive Service Facility" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5511, 5541, 7532-7534, and 7536-7539 provided that these facilities have no outside activities or materials that may be exposed to stormwater (Order No. R4-2012-0175).

"Basin Plan" means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments (Order No. R4-2012-0175).

"Best Management Practice (BMP)" means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water (Order No. R4-2012-0175).

"Biofiltration" means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales (Order No. R4-2012-0175).

"Bioretention" means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in this Ordinance, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain it is regulated by Order No. R4-2012-0175 as biofiltration (Order No. R4-2012-0175).

"Bioswale" means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes (Order No. R4-2012-0175).

"City" means the City of Bell.

"Clean Water Act (CWA)" means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

"Commercial Development" means any development on private land that is not heavy industrial or residential. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities; mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes (Order No. R4-2012-0175).

"Commercial Malls" means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers (Order No. R4-2012-0175).

"Construction Activity" means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that result in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan (Order No. R4-2012-0175).

"Control" means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities (Order No. R4-2012-0175).

"Development" means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Order No. R4-2012-0175).

"Directly Adjacent" means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area (Order No. R4-2012-0175).

"Discharge" means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

"Disturbed Area" means an area that is altered as a result of clearing, grading, and/or excavation (Order No. R4-2012-0175).

"Flow-through treatment BMPs" means a modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain (Order No. R4-2012-0175).

"Full Capture System" means any single device or series of devices, certified by the Executive Officer, that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate Q resulting from a one-year, one-hour storm in the sub-drainage area (Order No. R4-2012-0175).

"General Construction Activities Storm Water Permit (GCASP)" means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions (Order No. R4-2012-0175).

"General Industrial Activities Storm Water Permit (GIASP)" means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions (Order No. R4-2012-0175).

"Green Roof" means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain (Order No. R4-2012-0175).

"Hillside" means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes (Order No. R4-2012-0175).

"Industrial/Commercial Facility" means any facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, and any facility involved and/or used in providing professional and non-professional services. This category of facilities includes, but is not limited to, any facility defined by either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS). Facility ownership (federal, state, municipal, private) and profit motive of the facility are not factors in this definition (Order No. R4-2012-0175).

"Industrial Park" means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry (Order No. R4-2012-0175).

"Infiltration BMP" means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement (Order No. R4-2012-0175).

"Low Impact Development (LID)" consists of building and landscape features designed to retain or filter stormwater runoff (Order No. R4-2012-0175).

"Municipal Separate Storm Sewer System (MS4)" means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;

(ii) Designed or used for collecting or conveying stormwater;

(iii) Which is not a combined sewer; and

(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR Section 122.2.

(40 CFR Section 122.26(b)(8)) (Order No. R4-2012-0175)

"**National Pollutant Discharge Elimination System (NPDES)"** means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA Section 307, 402, 318, and 405. The term includes an "approved program" (Order No. R4-2012-0175).

"Natural Drainage System" means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system (Order No. R4-2012-0175).

"New Development" means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision (Order No. R4-2012-0175).

"Non-Stormwater Discharge" means any discharge to a municipal storm drain system that is not composed entirely of stormwater (Order No. R4-2012-0175).

"Outfall" means a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances with connect segments of the same stream or other waters of the United Sates and are used to convey waters of the United States. (40 CFR Section 122.26(b)(9)) (Order No. R4-2012-0175).

"Parking Lot" means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces (Order No. R4-2012-0175).

Planning Priority Projects means development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, prior to completion of the project(s) (Modified from: Order No. R4-2012-0175).

"Pollutant" means any "pollutant" defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Section 13373 (Order No. R4-2012-0175).

"Project" means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code Section 21065) (Order No. R4-2012-0175).

"Rainfall Harvest and Use" means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department (Order No. R4-2012-0175).

"Receiving Water" means "water of the United States" into which waste and/or pollutants are or may be discharged (Order No. R4-2012-0175).

"Redevelopment" means land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of routine maintenance activity; and land disturbing activity related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety (Order No. R4-2012-0175).

"Regional Board" means the California Regional Water Quality Control Board, Los Angeles Region.

"Restaurant" means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812) (Order No. R4-2012-0175).

"Retail Gasoline Outlet" means any facility engaged in selling gasoline and lubricating oils (Order No. R4-2012-0175).

"Routine Maintenance" includes, but is not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Includes road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.
4. Update existing lines* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new** lines or facilities resulting from compliance with applicable codes, standards and regulations.

* Update existing lines includes replacing existing lines with new materials or pipes.

** New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Order No. R4-2012-0175).

"Significant Ecological Areas (SEAs)" means an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan. Areas are designated as SEAs, if they possess one or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species.
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis.
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County.
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County.
5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community.
6. Areas important as game species habitat or as fisheries.
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County.
8. Special areas (Order No. R4-2012-0175).

"Site" means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity (Order No. R4-2012-0175).

"Storm Drain System" means any facility or any parts of the facility, including streets, gutters, conduits, natural or artificial drains, channels and watercourse that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the City.

"Storm Water or Stormwater" means runoff and drainage related to precipitation events (pursuant to 40 CFR Section 122.26(b)(13); 55 Fed. Reg. 47990, 47995 (Nov. 16, 1990)).

"Urban Runoff" means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial or industrial activities involving the use of potable and non-potable water.

A. **Objective**. The provisions of this Section establish requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Order No. R4-2012-0175," to lessen the water quality impacts of development by using smart growth practices, and integrate LID practices and standards

for stormwater pollution mitigation through means of infiltration, evapotranspiration, biofiltration, and rainfall harvest and use. LID shall be inclusive of new development and/or redevelopment requirements.

B. Scope. This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the City to further define and adopt stormwater pollution control measures, and to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, grant waivers from the LID requirements, and collect funds for projects that are granted waivers. Except as otherwise provided herein, the City shall administer, implement and enforce the provisions of this Section.

C. Applicability. Development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, prior to completion of the project(s), are:

(1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.

(2) Industrial parks with 10,000 square feet or more of surface area.

(3) Commercial malls with 10,000 square feet or more of surface area.

(4) Retail gasoline outlets with 5,000 square feet or more of surface area.

(5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.

(6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(7) Streets and roads construction of 10,000 square feet or more of impervious surface area. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects.

(8) Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) 5,000 square feet or more of surface area.

(9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:

a. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

b. Create 2,500 square feet or more of impervious surface area

(10) Single-family hillside homes.

(11) Redevelopment Projects

a. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

b. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

D. Effective Date. The Planning and Land Development requirements contained in Section 7 of Order No. R4-2012-0175 shall become effective 90 days from the adoption of the Order (February 6, 2013). This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Order. Projects that have been deemed complete within 90 days of adoption of the Order are not subject to the requirements Section 7.

E. Specific Requirements. The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) A new single-family hillside home development shall include mitigation measures to:

a. Conserve natural areas;

b. Protect slopes and channels;

c. Provide storm drain system stenciling and signage;

d. Divert roof runoff to vegetated areas before discharge unless the diversion would result in slope instability; and

e. Direct surface flow to vegetated areas before discharge, unless the diversion would result in slope instability.

(2) Street and road construction of 10,000 square feet or more of impervious surface shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.

(3) The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:

a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:

   i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or

   ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.

b. Minimize hydromodification impacts to natural drainage systems as defined in Order No. R4-2012-0175.

c. To demonstrate technical infeasibility, the project applicant must demonstrate that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:

   i. The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.

   ii. Locations where seasonal high groundwater is within five to ten feet of surface grade;

   iii. Locations within 100 feet of a groundwater well used for drinking water;

   iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;

   v. Locations with potential geotechnical hazards;

   vi. Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.

d. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in Order No. R4-2012-0175.

   i. Additional alternative compliance options such as offsite infiltration and groundwater replenishment projects may be available to the project Site. The project Site should contact the City to determine eligibility.

e. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per Order No. R4-2012-0175. Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:

   i. 0.2 inches per hour, or

ii. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.

F. Permits. No permit may be issued for any new development or redevelopment project until the director finds that the project plans comply with the applicable LID requirements. As a condition for issuing a certificate of occupancy for a new development or redevelopment project, the director shall require the applicant, facility operators and/or owners, as appropriate, to construct all stormwater pollution control BMP's and structural or treatment control BMP's shown on the approved project plans and submit a signed certification stating that the project site and all structural or treatment control BMP's will be maintained in compliance with the LID and other applicable regulatory requirements until responsibility for such maintenance is legally transferred. Applicant, facility operators and/or owners shall also provide, as requested by the director, any other legally enforceable agreement that assigns responsibility for the maintenance of post-construction structural or treatment control BMP's.

G. Transfer of Properties Subject to Structural and Treatment Control BMP Maintenance.

a. The transfer or lease of a property subject to a requirement for maintenance of structural or treatment control BMP's shall include conditions requiring the transferee and its successors and assigns to either (a) assume responsibility for maintenance of any existing structural or treatment control BMP; or (b) to replace an existing structural or treatment control BMP with new control measures or BMP's meeting the then current standards of the City and the LID guidelines. Such requirement shall be included in any sale or lease agreement or deed for such property. The condition of transfer shall include a provision that the successor property owner or lessee conduct maintenance inspections of all structural or treatment control BMP's at least once a year and retain proof of such inspection.

b. Conditions, covenants and restrictions for residential properties where structural or treatment control BMP's are located that are to be maintained by a homeowner's association shall provide for maintenance of the structural or treatment control BMP's by the homeowner's association. If such BMP's are to be maintained by individual property owners, a written explanation of the maintenance responsibility shall be included with any deed transferring title to said individual property as well as being attached to the conditions, covenants and restrictions for the property.

H. Other Agencies of the City. All City Departments, offices, entities and agencies, shall establish administrative procedures necessary to implement the provisions of this Article on their Development and Redevelopment projects and report their activities annually to the Community Development Department.

Section 2: Severability. The City Council hereby declares that the provisions of this chapter are reversible and if for any reason any sentence, paragraph or section of this Ordinance shall be held invalid, such decision shall not affect the validation of the remaining parts of this Ordinance.

Section 3: Except as specifically amended or restated in this Ordinance, all other provisions of Chapter 13 of the Bell Municipal Code shall remain in full force and effect.

Section 4: Effective Date. This ordinance shall take effect thirty days after its adoption. The City Clerk or his/her duly appointed deputy shall certify to the adoption of this Ordinance to be published as required by law.

PASSED, APPROVED, AND ADOPTED at a regular meeting of the City Council of the City of Bell, California, on this 13th day of November 2013.

CITY OF BELL:

BY: _____

Violeta Alvarez, Mayor

ATTEST:

CITY OF BELL

_____

Janet Martinez, Interim City Clerk

APPROVED AS TO FORM
AND LEGAL CONTENT:

ALESHIRE & WYNDER, LLP

_____

Dave Aleshire, City Attorney

CERTIFICATION

I, Janet Martinez, Interim City Clerk of the City of Bell, California, do hereby certify that Ordinance No. 1197 was duly introduced at a regular meeting of the City Council of the City of Bell held on the 16th day of October 2013, and was duly adopted by the City Council at a regular meeting held on the 13th day of, November 2013, by the following vote, to wit:

AYES: Councilmembers Romero, Saleh, Valencia, Mayor Pro Tem Quintana and Mayor Alvarez

NOES: None

ABSENT: None

ABSTAIN: None

Janet Martinez, Interim City Clerk

6330 Pine Avenue
Bell, California 90201
(323) 588-6211
(323) 771-9473 fax

CITY OF BELL

December 6, 2013

Pavlova Vitale
Los Angeles Regional Water Quality Control Board
320 West Fourth Street Suite 200
Los Angeles, CA 90013

LOS ANGELES RIVER UPPER REACH 2 WATERSHED MANGEMENT AREA

STATUS OF THE DEVELOPMENT OF A LOW IMPACT DEVELOPMENT ORDINANCE AND GREEN STREET POLICY

Dear Ms. Vitale:

In the past, the City of Bell had implemented Standard Urban Stormwater Mitigation Plan (SUSMP) to improve the quality of stormwater and urban runoff under the old MS4 permit. The new MS4 permit requires the City to jointly working with neighboring cities in the development of a Watershed Management Program (WMP) to have a LID Ordinance and Green Street policy in place at the time of submittal of the draft WMP.

This letter is to serve to confirm that an adopted LID Ordinance and a draft Green Street policy were prepared in place. The City of Bell LID Ordinance 1197 became effective as of November 13, 2013 (see attached). Similarly, a draft Green Street policy based on the EPA's Green Street Municipal Handbook as referenced in the MS4 permit has been developed in conjunction with the Gateway Water Management Authority (GWMA). The draft policy with resolution is also attached. The policy with resolution will be taken to the City Council for approval in January, 2014.

If you have any further question, please contact Young Park at (323) 588-6211 Ext. 206 or e-mail ypark@cityofbell.org.

Sincerely,

Terry Rodrigue, P.E
City Engineer

Attachment: A copy of adopted LID Ordinance
A copy of draft Green Street Policy Resolution

RESOLUTION NO. 2013-

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BELL, CALIFORNIA, APPROVING A GREEN STREETS POLICY

The City Council of the City of Bell, California, hereby resolves, determines and orders as follows:

Section 1. The Municipal Separate Storm Sewer System (MS4) Permit (Order No. R-2012-0175) was adopted by the California Regional Water Quality Control Board, Los Angeles Region on November 8, 2012. Municipalities electing to prepare a Watershed Management Program or an Enhanced Watershed Management Program under this Permit are required to demonstrate that Green Street policies are in place that specify the use of green street strategies for transportation corridors.

Section 2. Green Streets are enhancements to street and road projects to improve the quality of storm water and urban runoff through the implementation of infiltration, bio-treatment, xeriscaping parkways and tree lined streets. Green streets are also an amenity that provide many benefits including groundwater replenishment, creation of attractive streetscapes, and pedestrian and bicycle accessibility. Green streets are defined as right-of-way areas that incorporate infiltration, bio-infiltration, and/or storage.

Section 3. That the City Council of the City of Bell, California, hereby directs the Community Director to implement Green Streets for transportation corridors for publicly owned street and road projects that add 10,000 square feet or more of impervious surface.

Section 4. Routine maintenance including but not limited to: slurry seals, grind and overlay and reconstruction to maintain original line and grade are excluded from the Green Street Policy.

Section 5. At its regular meeting held on _____, 2013, after holding a duly noticed Public Hearing and passing upon all protests, the City Council determined that the public interest and necessity justify the adoption of the Green Street Policy.

Section 6. This resolution was posted in public places in the City of Bell, California.

Section 7. The Community Development Department shall incorporate aspects of green streets into internal annual staff trainings.

NOW, THEREFORE, TE CITY COUNILOF THE CITY OF BELL DOES HREBY

PASSED, APPROVED, AND ADOPTED at a regular meeting of the City Council of the City of Bell, California, on this _____ of 2013.

_____

Violeta Alvarez, Mayor

APPROVED AS TO FORM

_____

DAVID Aleshire, City Atorney

CERTICATE OF ATTESTATION ADN ORIGINALIY

I, Janet Martinez, Interim City Clerk of the City of Bell, hereby certify that the above ad foregoing resolution No. 2013 - ___ was duly adopted by the Bell City Council at its regular meeting held on the _____day of _____, 2013, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

_____
Jose Luis Valdez, City Clerk

6330 Pine Avenue
Bell, California 90201
(323) 588-6211
(323) 771-9473 fax

CITY OF BELL

CERTIFICATION

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) SS
CITY OF BELL)

I, JANET MARTINEZ, INTERIM CITY CLERK OF THE CITY OF BELL, DO HEREBY CERTIFY that the attached Ordinance No. 1197 is a true and correct copy approved by the City Council at the Bell City Council Meeting held on November 13, 2013

Janet Martinez
Interim City Clerk

12/5/13
Date Certified

OFFICIAL SEAL
JANET MARTINEZ
INTERIM CITY CLERK
BELL, CALIFORNIA

ORDINANCE NO. 1216

AN ORDINANCE OF THE CITY OF VERNON, CALIFORNIA, AMENDING CERTAIN SECTIONS OF CHAPTER 21 OF THE CODE OF THE CITY OF VERNON REGARDING SEWERS AND STORM DRAINS TO COMPLY WITH THE MUNICIPAL NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

WHEREAS, the City of Vernon (the "City"), is a municipal corporation and a chartered city of the State of California organized and existing under its Charter and the Constitution of the State California; and

WHEREAS, this Ordinance amends sections of Chapter 21, Sewers and Storm Drains, of the Code of the City of Vernon to comply with the recently-enacted requirements of the municipal NPDES Permit, and to expand the applicability of the existing Development Planning Program requirements by imposing Stormwater Low Impact Development ("LID") strategies on projects that require building, grading and encroachment permits; and

WHEREAS, stormwater runoff remains a major water quality problem in the Los Angeles region, posing a threat to human health and water ecosystems insofar as pollutants in runoff have caused beach closings, fish consumption warnings, reduced habitat for threatened and endangered species and unsightly accumulations of trash and debris in waters of the county; and

WHEREAS, urbanization has led to increased impervious surface areas resulting in increased water runoff and less percolation to groundwater aquifers causing the transport of pollutants to downstream receiving waters; and

WHEREAS, the Clean Water Act provides the statutory basis for the National Pollutant Discharge Elimination System permit program ("NPDES Program") and the basic structure for regulating the discharge of pollutants from point sources to waters of the United States under the NPDES Program; and

WHEREAS, under the auspices of the United States Environmental Protection Agency, the State Water Resources Control Board and the nine (9) Regional Water Quality Control Boards are authorized to enforce the NPDES Program; and

WHEREAS, under said authorization, on November 8, 2012, the Los Angeles Regional Water Quality Control Board ("Regional Board") issued Final Order No. R4-2012-0175, a municipal storm water runoff permit which contains regulations designed to prevent trash, metals, bacteria, chemicals and pesticides from being washed into storm drains and into creeks, rivers and the ocean entitled, "Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating From the City of Long Beach MS4" ("Municipal NPDES Permit") and said permit became effective as of December 28, 2012; and

WHEREAS, the Municipal NPDES Permit requires most municipalities in Los Angeles County including the City of Vernon to develop a plan to reduce stormwater pollutants, monitor the results and take corrective action if goals are not met, provides for a wide range of strategies to reduce pollution from public education of the community, to low impact development regulations that require construction of retention basins and the use of permeable material for

paving parking lots to allow water to seep back into the groundwater; and

WHEREAS, the City of Vernon is authorized by Article XI, Section 7 of the State Constitution to make and enforce within its limits all local, police, sanitary and other ordinances and regulations not in conflict with general laws of the state by adopting regulations to promote public health, public safety and general prosperity; and

WHEREAS, the City of Vernon has the authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity that might degrade receiving waters; and

WHEREAS, the City of Vernon is committed to conducting an effective stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental, social and economic considerations; and

WHEREAS, among other things, the Municipal NPDES Permit requires municipalities to conduct the following activities:

(a) prohibit and eliminate illicit discharges and illicit connections to the MS4;

(b) eliminate spillage, dumping and disposal of pollutant materials into the MS4;

(c) reduce pollutant loads in stormwater and urban runoff from certain land uses and activities identified in the Municipal NPDES Permit through the implementation of total maximum daily load requirements which establish the allowable pollutant loadings for a water body and thereby provide a basis to establish water quality-based controls;

(d) prohibit all non-stormwater discharges into the MS4 or to a receiving water not otherwise authorized or conditionally exempt pursuant to the Municipal NPDES Permit;

(e) require the use of stormwater Best Management Practices ("BMP" or "BMPs") to eliminate or prevent the discharge of pollutants to achieve water quality standards and receiving water limitations;

(f) reduce the water quality impacts of new development and redevelopment by using smart growth practices and integrated Low Impact Development ("LID") practices and standards for stormwater pollution mitigation; and

(g) require that stormwater structural BMPs are properly operated, maintained and documented, including their effectiveness in reducing the discharge of pollutants to the MS4; and

WHEREAS, it is the intent of the City of Vernon to amend Chapter 21 of the Vernon Municipal Code pertaining to sewers and storm drains, to comply with the new requirements of the Municipal NPDES Permit and expand the applicability of the existing development planning program requirements by providing stormwater LID strategies for new development and redevelopment projects as set forth in Exhibit "A" of this Ordinance; and

WHEREAS, by memorandum dated November 5, 2013, the Director of Community Services & Water has recommended that Vernon Municipal Code Chapter 21, Sections 21.1.1, 21.1.2, 21.1.3, 21.2.2, 21.2.3, 21.2.4, 21.2.5, 21.2.6, 21.2.7, 21.2.8, 21.2.9, 21.2.10, 21.2.11, 21.4.2, 21.4.3, 21.4.4, 21.4.5, 21.4.6, 21.5.1, 21.5.2, 21.5.3,

21.5.4, 21.5.5, 21.5.6, 21.5.7, 21.5.8, 21.5.9, 21.6.1, 21.6.2, 21.6.3, 21.6.4 and 21.6.6 be amended as specified in this Ordinance.

THE CITY COUNCIL OF THE CITY OF VERNON HEREBY ORDAINS AS FOLLOWS:

SECTION 1: Recitals. The City Council of the City of Vernon hereby finds and determines that all the foregoing recitals are true and correct.

SECTION 2: Exempt from CEQA. The City Council of the City of Vernon finds that this action is exempt under the California Environmental quality Act (CEQA) California Public Resources Code Sections 21000 et seq., and CEQA Guidelines, 14 California Code of Regulations Sections 15000 et seq. as follows:

a) The ordinance is exempt from CEQA pursuant to CEQA Guidelines Section 15308 in that the ordinance is an action taken by the City in its role as a regulatory agency authorized by state regulation and is intended to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment. No construction activities or relaxation of standards allowing environmental degradation are proposed in conjunction with the adoption of this ordinance.

b) The ordinance is covered by the general rule set forth in CEQA Guidelines Section 15061(b)(3) which provides that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant

effect on the environment, the activity is not subject to CEQA. Here, the Ordinance involves procedures for the protection of the environment and has no significant adverse effect on the environment.

SECTION 3: Code Amendments. The City Council of the City of Vernon hereby amends Sections 21.1.1, 21.1.2, 21.1.3, 21.2.2, 21.2.3, 21.2.4, 21.2.5, 21.2.6, 21.2.7, 21.2.8, 21.2.9, 21.2.10, 21.2.11, 21.4.2, 21.4.3, 21.4.4, 21.4.5, 21.4.6, 21.5.1, 21.5.2, 21.5.3, 21.5.4, 21.5.5, 21.5.6, 21.5.7, 21.5.8, 21.5.9, 21.6.1, 21.6.2, 21.6.3, 21.6.4 and 21.6.6 of Chapter 21, Sewers and Storm Drains of the Code of the City of Vernon, as set forth in Exhibit "A" which is attached hereto and made a part hereof by reference.

SECTION 4: Severability. If any chapter, article, section, subsection, subdivision, paragraph, sentence, clause, phrase, or word in this Ordinance or any part thereof is for any reason held to be unconstitutional or invalid or ineffective by any court of competent jurisdiction, such decision shall not affect the validity or effectiveness of the remaining portions of this Ordinance or any part thereof. The City Council hereby declares that it would have adopted this Ordinance and each chapter, article, section, subsection, subdivision, paragraph, sentence, clause or phrase thereof, irrespective of the fact that any one or more chapters, articles, sections, subsections, subdivisions, paragraphs, sentences, clauses, phrases or words be declared unconstitutional, or invalid, or ineffective.

SECTION 5: Publication. Pursuant to Section 36933 of the Government Code, within 15 days of the adoption of this Ordinance, the Interim City Clerk, or Deputy City Clerk, shall cause this Ordinance

to be published or posted with the names of those City Council members voting for and against the Ordinance as required by law.

SECTION 6: Book of Ordinances. The Interim City Clerk, or Deputy City Clerk, shall attest and certify to the adoption of this Ordinance and shall cause this Ordinance and the Interim City Clerk's, or Deputy City Clerk's, certification to be entered in the Book of Ordinances of the Council of this City.

SECTION 7: This Ordinance shall go into effect and be in full force and effect at 12:01 a.m. on the thirty-first (31st) day after its passage.

APPROVED AND ADOPTED this 19th day of November, 2013.

Name: W. Michael McCormick

Title: Mayor / ~~Mayor Pro-Tem~~

ATTEST:

Dana Reed

Interim City Clerk / ~~Deputy City Clerk~~

APPROVED AS TO FORM:

Christine R. Sansone, Esq.
Sansone Law Firm
Special Counsel to the City

STATE OF CALIFORNIA)
) ss
COUNTY OF LOS ANGELES)

I, DANA REED, Interim City Clerk of the City of Vernon, do hereby certify that the foregoing Ordinance, being Ordinance No. 1216, was duly and regularly introduced at a regular meeting of the City Council of the City of Vernon, held in the City of Vernon on Tuesday, November 5, 2013, and thereafter adopted at a meeting of said City Council held on Tuesday, November 19, 2013, by the following vote:

AYES:	Councilmembers:	Mayor McCormick, Mayor Pro-Tem Davis, Maisano, Martinez, Ybarra
NOES:	Councilmembers:	None
ABSENT:	Councilmembers:	None

And thereafter was duly signed by the Mayor or Mayor Pro-Tem of the City of Vernon.

Executed this 20 day of November, 2013, at Vernon, California.

Dana Reed
Interim City Clerk

(SEAL)

EXHIBIT A

Article I. Introduction.

Sec. 21.1.1. Title.

This chapter shall be known as the Storm Sewer System Ordinance of the City of Vernon (hereinafter "this chapter").

Sec. 21.1.2. Statutory authority.

The provisions of this chapter are adopted pursuant to the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. §§ 1251, et seq. Nothing in this chapter prohibits the director of community services and the health officer from regulating sewers or stormwater in a manner that exceeds the requirements of the Clean Water Act, the State Water Resources Control Board and Regional Boards.

Sec. 21.1.3. Purpose and intent.

The purpose and intent of the provisions in this chapter are to enhance and protect the water quality of the receiving waters of the United States in a manner that is consistent with the Clean Water Act and acts amendatory thereof or supplementary thereto; applicable implementing regulations; the Municipal NPDES Permit and any amendment, revision, or reissuance thereof. This chapter is intended to protect and control the city's sanitary sewer system; and to reduce stormwater and urban runoff pollutants by improving the quality of stormwater that are discharged into the regional stormwater system within Los Angeles County known as the "MS4," as defined herein. The reduction of stormwater pollutants draining into the MS4 shall be achieved by any or all of the following:

(a) Prohibiting and eliminating Illicit Discharges into the MS4 to the maximum extent practicable.

(b) Prohibiting and eliminating Illicit Connections into the MS4.

(c) Eliminating spillage, dumping and disposal of pollutant materials into the MS4.

(d) Reducing pollutant loads in stormwater and urban runoff from land uses and activities identified in the Municipal NPDES permit as defined herein.

(e) Prohibiting all unauthorized non-stormwater discharges into the MS4 or into a receiving water which discharges are not otherwise authorized or conditionally exempt pursuant to the Municipal NPDES Permit.

(f) Requiring the use of stormwater Best Management Practices to eliminate or prevent the discharge of pollutants to achieve water quality standards or receiving water limitations, or both.

(g) Reducing the water quality impacts of New Development and Redevelopment by using smart growth practices and integrated low impact development practices and standards for stormwater pollution mitigation.

(h) Requiring that stormwater structural best management practices for new developments and redevelopments are properly operated and maintained.

(i) Requiring documentation on the operation and maintenance of stormwater structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4.

Article II. Definitions.

See. 21.2.1. Purpose of definitions; words defined.

For the purposes of this chapter, certain words and terms are defined and shall be construed as herein set forth, unless otherwise expressly stated, or unless the context in which the words or terms are used clearly indicates a different intention.

Sec. 21.2.2. Definitions (A-B).

ARARs means water quality standards that are considered by the USEPA to be applicable or relevant and appropriate requirements.

Authorized Non-Stormwater Discharge means a discharge that is not composed entirely of stormwater and that is either:

(1) separately regulated by an individual or general NPDES permit and allowed to discharge to the MS4 when in compliance with all NPDES permit conditions;

(2) authorized by USEPA pursuant to sections 104(a) or 104(b) of CERCLA that either

(i) will comply with water quality standards as ARARs under section 121(d)(2) of CERCLA or

(ii) are subject to:

(a) a written waiver of ARARs by USEPA pursuant to section 121(d)(4) of CERCLA or;

(b) a written determination by USEPA that compliance with ARARs is not practicable considering the exigencies of the situation, pursuant to 40 CFR section 300.415(j); or

(3) necessary for emergency responses purposes, including flows from emergency fire fighting activities.

Automotive Service Facility means a facility that is categorized in any of the following SIC codes: 5013, 5014, 5511, 5541, 7532-7534, and 7536-7539, or the North American Industry Classification System ("NAICS") codes that are equivalent to said SIC codes.

Best Management Practice or *BMP* means a method, or physical device or system designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges into the MS4, or designed to reduce the volume of stormwater or non-stormwater discharged into the MS4 to the Maximum Extent Practicable.

Bioretention means a soil and plant-based BMP that captures and biologically degrades pollutants as water infiltrates through sub-surface layers containing microbes that treat pollutants. Treated runoff is then slowly infiltrated and recharges the groundwater. Bioretention includes but is not limited to the reduction of stormwater runoff by intercepting rainfall on a

vegetative canopy and allowing the stormwater to escape through evapotranspiration and infiltration.

Sec. 21.2.3. Definitions (C-D).

CERCLA means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended, 49 U.S.C. §§ 9601 *et seq.*

Cesspool means a lined excavation in the ground which receives the discharge of a wastewater drainage system or part thereof, designed and constructed so as to retain the organic matter and solids therein, but permitting the liquids to seep through the bottom and sides.

City means the City of Vernon, California.

City council means the city council of the City of Vernon.

Clean Water Act or *CWA* means the Federal Water Pollution Control Act enacted in 1972, 33 U.S.C. §§ 1251, et seq. as amended. The Clean Water Act prohibits the discharge of pollutants to the storm sewers and/or waters of the United States unless the discharge is in accordance with an NPDES permit.

Commercial Malls means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A Commercial Mall includes but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers.

Construction Activity means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity that results in land disturbance. Construction Activity does not include emergency construction activities required to immediately protect public health and safety or Routine Maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work provided such work maintains the original line and grade, hydraulic capacity, or original purposes of the facility.

Control means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities.

Development means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; or mass grading for future construction. The term "development" does not include: (a) Routing Maintenance; or (b) emergency construction activities required to immediately protect public health and safety.

Directly Adjacent means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of an environmentally sensitive area.

Discharge means any releasing, spilling, leaking, pumping, escaping, dumping, tracking or disposal of any liquid, semi-solid substance, or solid substance.

Disturbed Area means an area of land that is altered as a result of clearing, grading, and/or excavation.

Domestic Wastewater means wastewater from non-industrial activities that result from normal human living processes irrespective of whether these wastes are discharged into the sewer system, a cesspool, or a septic tank.

Drinking Water Supplier Distribution Systems Releases means discharges of water from drinking water supplier storage, supply and distribution systems including but not limited to flows from the following causes: system failures, pressure releases; system maintenance; distribution line testing; fire hydrant flow testing; flushing and dewatering of pipes, reservoirs, vaults, and minor non-invasive well maintenance; and flushing activities not involving the addition of any chemicals. It does not include wastewater discharges from activities that occur at wellheads, such as well construction, well development including but not limited to aquifer pumping tests and well purging or major well maintenance. Drinking water supplier distribution system releases include but are not limited to releases of treated and raw water from raw water pipelines, reservoirs, and storage tanks that are dedicated for drinking water supply purposes.

Sec. 21.2.4. Definitions (E-H).

Erosion and Sediment Control Plan or *ESCP* means a plan for projects including but not limited to soil disturbance, grading, vegetation clearing, soil compaction, paving, re-paving and linear underground or overhead project; and identifying potential pollutant sources and describing the design, placement and implementation of BMPs to effectively prevent non-stormwater discharges and reduce pollutants in stormwater discharges during construction activities.

Executive Officer means the Executive Officer of the California Regional Water Quality Control Board, Los Angeles Region.

Flow-Through Treatment BMPs means a modular, vault type high flow biotreatment devices contained within an impervious vault with an underdrain or designed with an impervious liner and an underdrain.

General Construction Activities Stormwater NPDES Permit or *GCASP* means the general NPDES permit adopted by the State Water Resources Control Board which authorizes the discharge of stormwater from construction activities under certain conditions.

General Industrial Activities Stormwater NPDES Permit or *GIASP* means the general NPDES permit adopted by the State Water Resources Control Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions.

Sec. 21.2.5. Definitions (I).

Illicit Connection means any man-made conveyance that is connected to the storm drain system without a permit, excluding roof drains and other similar type connections. Examples include but are not limited to channels, pipelines, conduits, inlets, or outlets that are connected directly to the storm drain system.

Illicit Discharge means any non-exempted, or non-approved discharge into the MS4 that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. The term Illicit Discharge includes any Non-Stormwater Discharge, except Authorized Non-Stormwater Discharges; under a General Industrial Activities Storm Water NPDES Permit, or a General Construction Activities Storm Water NPDES Permit, allowed by the Executive Officer, any conditionally exempt non-stormwater discharges; and non-stormwater discharges resulting from natural flows as specifically identified in the Municipal NPDES Permit.

Illicit Disposal means any disposal, either intentionally or unintentionally, of material(s) or waste(s) that can pollute stormwater.

Industrial Activity means any of the ten classifications of industrial facilities specified in 40 Code of Federal Regulations § 122.26(b)(14), specifically § 122.26(b)(14)(i)-(ix), and (xi), defined by a Standard Industrial Classification (SIC) and which is required to obtain an NPDES permit. Industrial Activity does not include construction activities as defined in 40 Code of Federal Regulations § 122.26(b)(14)(x).

Industrial/Commercial Facility means any facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, and any facility involved and/or used in providing professional and non-professional services. This category of facilities includes, but is not limited to, any facility defined by either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS) code equivalent to the SIC code. Facility ownership (federal, state, municipal, private) and profit motive of the facility are not factors in this definition.

Industrial Park means land development that is set aside for Industrial/Commercial Facility development. Industrial parks are usually located close to transport facilities especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks which have offices and light industry and associated parking area(s).

Industrial Wastewater means all wastewater, excluding domestic wastewater. Industrial wastewater may include all wastewater from any producing, manufacturing, processing, institutional, commercial, agricultural, or other operation where the wastewater discharged includes significant quantities of wastes of non-human origin. All liquid wastes hauled by truck, rail, or other means for disposal to the sewer, including Domestic Wastewater so delivered, shall be considered industrial wastewater regardless of the original source of the wastes.

Infiltration means the process by which water penetrates into soil from the ground surface. Infiltration is a BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended on-site soils. Examples of Infiltration BMPs include but are not limited to infiltration basins, dry wells and pervious pavement.

Sec. 21.2.6. Definitions (J-M).

Low Impact Development or *LID* consists of building and landscape features designed to retain or filter stormwater runoff.

Maximum Extent Practicable or *MEP* means, within the context of BMP selection, choosing effective BMPs and rejecting applicable BMPs only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive.

Municipal NPDES Permit means the California Regional Water Quality Control Board, Los Angeles Region, Order No. R4-2012-0175, NPDES Permit No. CAS004001, Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City of Long Beach MS4, and any amendment, reissuance or revision thereto.

Municipal Separate Storm Sewer System or *MS4* means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) that have all of the following features:

(a) owned or operated by the state, city, town, borough, county, parish, district, association, or other public body created by or pursuant to State law including but not limited to a special district, sewer district, flood control district, drainage district or similar entity, an Indian tribe, authorized Indian tribal organization or any designated and approved management agency under section 208 of the Clean Water Act; that discharges to the waters of the United States; and has jurisdiction over the disposal of sewage, industrial wastes, stormwater, or other wastes;

(b) designed or used for collecting or conveying stormwater;

(c) not a combined sewer; and

(d) not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR § 122.2.

Sec. 21.2.7. Definitions (N-O).

National Pollutant Discharge Elimination System or *NPDES* means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under the Clean Water Act § 307, 318, 402, and 405.

Natural Drainage System means a drainage system that has not been improved (e.g., channelized or armored). The clearing or dredging of a Natural Drainage System does not cause the system to be classified as an improved drainage system.

New Development means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision.

Non-Stormwater Discharge means any discharge to the MS4 or to a receiving water that is not composed entirely of stormwater.

Outfall means a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.

Owner as applied to a building or real property, means any owner of record including but not limited to part owner, joint tenant, tenant in common, tenant in partnership or tenant by the entirety of the whole or part of such building or real property.

Sec. 21.2.8. Definitions (P-Q).

Parking Lot or *Parking Area* means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces.

Person means an individual, trust, firm, partnership, corporation, or other legal entity.

Planning Priority Projects means development projects subject to the City's conditioning and approval for the design and implementation of post-construction controls to mitigate stormwater pollution, prior to completion of the project(s).

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

Pollutant as used in this chapter, has the same meaning as set forth in California Water Code §13373 and includes but is not limited to garbage, debris, lawn clippings, leaves, fecal waste, biological waste, sediment, sludge, manure, fertilizers, pesticides, oil, grease, gasoline, paints, solvents, cleaners, and any fluid or solid containing toxic or non-toxic chemicals, metals, including batteries.

Potable Water means water that meets the drinking water standards of the U.S. Environmental Protection Agency.

Privy means a structure used as a toilet room in which human wastes are deposited directly onto the surface of the ground or into a hole dug into the ground. Privies are also commonly known as outhouses. Privy shall not include a portable toilet used at construction sites or for temporary events as approved by the health officer.

Project means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under the California Environmental Quality Act, California Public Resources Code §21065.

Public Sanitary Sewer System means as used in California Penal Code § 374.2 as amended including the city's sewers.

Sec. 21.2.9. Definitions (R).

Rainfall Harvest and Use means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses.

Raw Water means water that is taken from the environment by drinking water suppliers with the intent to subsequently treat or purify it to produce potable water. Raw water does not include wastewater discharges from activities that occur at wellheads, such as well construction, major well maintenance, or well development such as aquifer pumping tests and well purging.

Receiving waters means waters of the United States into which waste and/or pollutants are or may be discharged.

Redevelopment means land-disturbing activity that results in the creation, addition, or replacement of five thousand square feet or more of impervious surface area on an already developed site. Redevelopment includes but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land disturbing activities related to structural or impervious surfaces. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Redevelopment does not include the repaving of existing roads to maintain original line and grade.

Regional Board means the California Regional Water Quality Control Board, Los Angeles Region.

Restaurant means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption and is identified as SIC Code 5812.

Retail Gasoline Outlet means any facility engaged in selling gasoline and lubricating oils.

Routine Maintenance means projects including, but are not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility.
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities.
3. Road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts.
4. Update existing lines and facilities to comply with applicable codes, standards, and regulations regardless of whether such projects result in increased capacity. The updating of existing lines includes replacing existing lines with new materials or pipes but does not include construction of new lines or facilities necessary to comply with applicable codes, standards or regulations that are not associated with existing facilities and are not part of a project to update or replace existing lines.
5. Replace impervious surfaces such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity.
6. Repair leaks.

Runoff means any discharge including stormwater and dry weather flows from a drainage area that reaches a receiving water body or subsurface. During dry weather it is typically

comprised of base flow either contaminated with pollutants or uncontaminated, and nuisance flows.

Sec. 21.2.10. Definitions (S-V).

Sanitation Districts means County Sanitation Districts Number 1, 2, and 23 of Los Angeles County.

Septic Tank means a watertight receptacle, which receives the discharge of a wastewater drainage system or part thereof, designed and constructed so as to retain solids, to digest organic matter though a period of detention, and to allow the liquids to discharge into the soil outside of the tank through a system of open joint piping or a seepage pit.

Sewer means the lateral and connecting pipes, sumps, tanks, and all other means of handling, gathering, and disposing of wastewater into the city sewer system, and shall exclude the storm drain system.

Sewerage means any and all stationary facilities used for collecting, conveying, pumping, treating, and disposing of waste and wastewater.

SIC means the Standard Industrial Classification code which is a system for classifying industries by a four-digit code.

Site means the land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity.

Source Control BMP means any schedules of activities, prohibitions of practices, maintenance procedures, managerial practices or operational practices that aim to prevent storm-water pollution by reducing the potential for contamination at the source of pollution.

State Board or *SWRCB* means the State Water Resources Control Board of the California Environmental Protection Agency.

State Stormwater Pollution Prevention Plan or *State SWPPP* means a plan, as required by a State General Permit, identifying potential pollutant sources and describing the design, placement and implementation of BMPs, to effectively prevent non-stormwater discharges and reduce pollutants in stormwater discharges during activities covered by a State General Permit.

Storm Drain means any pipe, curb, gutter, catch basin, street, road, alley, waterway, watercourse, drain, ditch, channel, stream bed, river bed, or tributary, whether a Natural Drainage System or artificial drainage system, which is designed for or serves the purpose of carrying off stormwaters, but does not include a sewer.

Storm Drain System means any facility or any parts of the facility, including streets, gutters, conduits, Natural Drainage Systems, or artificial drains, channels and watercourse that are used for the purpose of collecting, storing, transporting or disposing of stormwater and are located within the City.

Storm Water or Stormwater means runoff, snow melt runoff, and surface runoff and drainage related to precipitation events.

Stormwater Quality Management Plan or *SQMP* means the Los Angeles Countywide Stormwater Quality Management Program, which includes descriptions of programs, collectively developed by permittees in accordance with provisions of the Municipal NPDES Permit, to comply with applicable federal and state law, as the same is amended from time to time.

Structural BMP means any structural facility designed and constructed to mitigate the adverse impacts of stormwater and urban runoff pollution (e.g. canopy, structural enclosure). The category may include both Treatment Control BMPs and Source Control BMPs.

Total Maximum Daily Load or *TMDL* means the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background.

Urban Runoff means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial or industrial activities involving the use of potable and non-potable water.

USEPA means the United States Environmental Protection Agency.

Sec. 21.2.11. Definitions (W-Z).

Wastewater means the liquid carried wastes of the community including all constituents and residues thereof. Wastewater is also called sewage and includes domestic and industrial wastewater, but wastewater does not include rainwater, stormwater, groundwater or drainage of other water.

Water Quality-Based Effluent Limitation or *WQBEL* means any restriction imposed on quantities, discharge rates, and concentrations of pollutants, which are discharged from point sources to waters of the United States necessary to achieve a water quality standard.

Article III. In General.

Sec. 21.3.1. Local authority.

The director of community services, as the city engineer, shall have charge and control of all sewers and storm drains in the city and shall construct, operate, maintain, and repair all such systems subject to the direction of the city council. The city engineer and/or the health officer shall enforce the provisions of this chapter.

Article IV. Sewers.

Sec. 21.4.1. Damage to the public sewer.

It shall be unlawful to place, throw, dump, drain, or deposit by any means, or cause to be placed, thrown, dumped, drained, or deposited by any means, any solid matter, liquids, chemicals, poisonous or explosive liquids or gases, oils, grease, or any other thing whatsoever which would, or could, cause damage, obstruct, or in any way interfere with or prevent the effective use or operation of the public sewer or create a condition that would require excessive maintenance of the public sewer.

Sec. 21.4.2. Stormwater shall not be drained to the public sanitary sewer system.

It shall be unlawful for any Person to connect any roof conductor, yard drain or any other conduit used for carrying off stormwater with any sanitary sewer of the city, unless said connection is provided with a stormwater diversion system approved by the city engineer.

Sec. 21.4.3. Privies, cesspools and septic tanks prohibited.

It shall be unlawful for any Person to erect or maintain a privy in the city or to install a cesspool or septic tank in the city. Existing cesspools and septic tanks may be continued by written permit from the city engineer, but shall be connected to the city sewer when access becomes available.

Sec. 21.4.4. Connection to sewer required.

Each property or parcel on which domestic or industrial wastewater is generated shall have a connection to the city sewer for the disposal of said wastewater or shall have other means of disposing of the wastewater subject to the approval of the city engineer. Any new connections to the Public Sanitary Sewer System shall require the approval of the city engineer and the Sanitation Districts.

Sec. 21.4.5. Industrial wastewater discharge permit required.

It shall be unlawful for any Person to discharge industrial wastewater into the city sewer unless said person acquires, and maintains in effect, an industrial wastewater discharge permit from the Sanitation Districts. Said permit shall be obtained prior to discharging any industrial wastewater. The quality and quantity of the wastewater shall be subject to the approval of the city engineer and the Sanitation Districts. Certain industrial wastewater discharges may be exempted from the requirement for an industrial wastewater discharge permit at the sole discretion of the Sanitation Districts. All applications for an industrial wastewater discharge permit shall be submitted to the city for approval prior to submittal to the Sanitation Districts, and the city and the Sanitation Districts may impose fees for the issuance of said permit.

Sec. 21.4.6. Excessive flow rates prohibited.

It shall be unlawful for any Person to discharge any industrial wastewater in a manner such that the peak flow rate exceeds the designed capacity of the city sewer, or the peak flow rate exceeds the peak flow rate approved by the city engineer in the person's industrial wastewater discharge permit, or the peak flow rate causes adverse hydraulic conditions within the sewer as determined by the city engineer. Any design, construction, and administrative expenses incurred in an effort to accommodate excessive flow rates in the city sewer system shall be borne by the person who discharged the excessive flow of industrial wastewater.

Article V. Storm Drains.

Sec. 21.5.1. Illicit Discharges, dumping, and non-stormwater discharges.

(a) No Person shall cause or allow an Illicit Discharge into the MS4.

(b) No Person shall place, dump, dispose, litter, accumulate, maintain, discharge, track, or cause to enter into the MS4 any pollutant or any foreign object including but not limited to batteries, tires, waste receptacles, yard debris, refuse, rubbish, food waste, chemicals, animal waste or oil cans. Such actions are considered Illicit Discharges.

(c) Any Person causing an Illicit Discharge may be required to reimburse the city for all clean-up and remediation costs.

(d) Any Owner of private property from which an Illicit Discharge occurs may be required to reimburse the city for all costs of collection, analysis, cleanup and remediation.

(e) The following Non-Stormwater discharges are not considered Illicit Discharges:

(1) Authorized Non-Stormwater discharges separately regulated by an individual or general NPDES permit.

(2) Temporary non-stormwater discharges authorized by the USEPA pursuant to sections 104(a) or 104(b) of CERCLA that either (i) will comply with water quality standards as ARARs under section 121 (d)(2) of CERCLA or (ii) are subject to (a) a written waiver of ARARs by USEPA pursuant to section 121(d)(4) of CERCLA or (b) a written determination by USEPA that compliance with ARARs is not practicable considering the exigencies of the situation pursuant to 40 CFR section 300.415(j). These typically include short-term, high volume discharges resulting from the development or redevelopment of groundwater extraction wells, or USEPA or State-required compliance testing of potable water treatment plants, as part of a USEPA authorized groundwater remediation action under CERCLA.

(3) Natural Drainage System flows, including: natural springs; flows from riparian habitats and wetlands; diverted stream flows, authorized by the State or the Regional Board; uncontaminated ground water infiltration; or rising ground waters, where ground water seepage is not otherwise covered by an NPDES permit.

(4) Discharges from Drinking Water Supplier Distribution Systems, where not otherwise regulated by an individual or general NPDES permit, provided appropriate BMPs, monitoring and reporting requirements are implemented based on the City's MS4 BMP Manual for Non-Stormwater Discharges and any amendment, revision, or reissuance thereof.

(5) Discharges listed as follows, have been determined not to be a source of pollutants but shall meet all required conditions specified in the city's MS4 BMP Manual for Non-Stormwater Discharges and any amendment, revision, or reissuance thereof: landscape irrigation runoff; dechlorinated/debrominated swimming pool/spa discharges where not otherwise regulated by a separate NPDES permit; dewatering of lakes and decorative fountains; non-commercial car washing by residents or by nonprofit organizations; and street/sidewalk wash water.

Sec. 21.5.2. Illicit Connections.

(a) No Person shall maintain or intentionally use a connection that operates to convey an Illicit Discharge to the MS4.

(b) Upon discovery of an Illicit Connection, the Person owning or operating such connection shall at his or her sole cost either remove it or render it incapable of conveying an Illicit Discharge.

Sec. 21.5.3. Reduction of pollutants in runoff.

No person shall cause or threaten to cause the discharge of pollutants into the MS4 by exposing such pollutants to stormwater runoff.

Sec. 21.5.4. Control of pollutants from commercial facilities.

Subject commercial facilities shall implement BMPs prescribed by the Regional Board or its Executive Officer, through programs or actions made pursuant to the Municipal NPDES Permit, and any amendment, revision, or reissuance thereto.

Sec. 21.5.5. Control of pollutants from industrial activities.

(a) It shall be a violation of this chapter for any industry in the city that is subject to waste discharge requirements specified in the State Water Resources Control Board (hereinafter "SWRCB") Water Quality Order No. 97-03-DWQ, Permit No. CAS000001, and any amendment, revision or reissuance thereof, to operate without a General Industrial Activities Stormwater NPDES Permit.

(b) Industries that require a General Industrial Activities Stormwater NPDES Permit shall retain on-site the following documents: (i) a copy of the Notice of Intent for General Permit to Discharge Stormwater Associated with Industrial Activities; (ii) a waste discharge identification number issued by the SWRCB; and (iii) a State Stormwater Pollution Prevention Plan.

(c) Any industry in the city requiring a General Industrial Activities Stormwater NPDES Permit shall, upon reasonable request from a duly authorized officer of the city, provide any of the documents described in paragraph (b) of this section.

Sec. 21.5.6. Control of pollutants from other industrial facilities.

Industrial facilities not subject to the General Industrial Activities Stormwater NPDES Permit but are subject to pollution control requirements under the Municipal NPDES Permit shall implement BMPs prescribed by the Regional Board or its Executive Officer, through programs or actions made pursuant to the Municipal NPDES Permit and any amendment, revision or reissuance thereof.

Sec. 21.5.7. Control of pollutants from state permitted construction activities.

(a) No Person shall be granted a grading permit or shall commence or continue any construction activity that is subject to a General Construction Activities Stormwater NPDES Permit without showing proof of having applied for such permit.

(b) For projects (including but not limited to soil disturbance, grading, vegetation clearing, soil compaction, paving, re-paving and linear underground/overhead projects) of one (1) acre or more or part of a larger project, including projects requiring a General Construction Stormwater NPDES Permit, each project applicant shall submit to the City, for review and written approval, an Erosion and Sediment Control Plan (ESCP) prior to the disturbance of land. The construction site operator is prohibited from commencing construction activity prior to receipt of written approval by the City.

(c) Any Person engaged in a construction activity requiring a General Construction Activities Stormwater NPDES Permit shall retain at the construction site the following documents: (i) a copy of the Notice of Intent to Comply with Terms of the General Permit to Discharge Water Associated with Construction Activities; (ii) a waste discharge identification number issued by the SWRCB; (iii) a State Stormwater Pollution Prevention Plan for the construction activity requiring the construction permit; (iv) a ESCP approved by the City for the construction activity requiring the construction permit, and; (v) records of all inspections, compliance and non-compliance reports, evidence of self-inspection and good housekeeping practices.

(d) Any Person engaged in a construction activity in the city requiring an NPDES General Construction Activities Stormwater NPDES Permit shall, upon reasonable request from a duly authorized officer of the city, provide any of the documents specified in paragraph (b) of this section and shall retain said documents for at least three years after completion of construction.

Sec. 21.5.8. Control of pollutants from other construction activities.

Any Person engaged in a construction activity that is not subject to the General Construction Activities Stormwater NPDES Permit but is subject to the Municipal NPDES Permit, shall be required to comply with requirements contained therein and any amendments, revisions, or reissuance thereof.

Sec. 21.5.9. Control of pollutants from new developments/redevelopment projects.

This Section contains requirements for stormwater pollution control measures in new development and redevelopment projects, termed Planning Priority Project and authorizes the City to further define and adopt stormwater pollution control measures, and to develop LID principles and requirements, including but not limited to the objectives and specifications for integration of LID strategies, grant waivers from the LID requirements, and collect funds for projects that are granted waivers. Except as otherwise provided herein, the City shall administer, implement, develop guidelines and enforce the provisions of this Section.

(a) The site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(b) Planning Priority Projects subject to City conditioning and approval for the design and implementation of post-construction controls to mitigate potential stormwater pollution, prior to completion of the project(s), are:

(1) All Development projects equal to 1 acre or greater of Disturbed Area that adds more than 10,000 square feet of impervious surface area.

(2) Industrial Parks 10,000 square feet or more of surface area.

(3) Commercial Malls 10,000 square feet or more of surface area.

(4) Retail Gasoline Outlets with 5,000 square feet or more of surface area.

(5) Restaurants, SIC code 5812with 5,000 square feet or more of surface area.

(6) Parking Lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.

(7) Streets and roads construction of 10,000 square feet or more of impervious surface area. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects. Such projects shall be in accordance with the City's green streets policy and manual and any amendment, revision or reissuance thereof.

(8) Automotive Service Facilities, SIC codes 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539, 5,000 square feet or more of surface area.

(9) Projects located in or Directly Adjacent to, or discharging directly to an environmentally sensitive area where the Development will:

i. Discharge stormwater runoff that is likely to impact a sensitive biological species or habitat; and

ii. Create 2,500 square feet or more of impervious surface area

(10) Redevelopment projects

i. Land disturbing activity that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site on Planning Priority Project categories.

ii. Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, the entire project must be mitigated.

iii. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not

subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.

iv. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

(c) Design standards for the implementation of post-construction controls to mitigate potential stormwater pollution requirements shall be in accordance with the City's Low Impact Development Guidance Manual and any amendment, revision or reissuance thereof.

Article VI. Enforcement.

Sec. 21.6.1. Violation of this chapter a public nuisance.

Every violation of this chapter is a misdemeanor and a public nuisance. Any Person who is cited for any violation of this chapter shall abate said violation forthwith. The city engineer (a) may revoke the certificate of occupancy of any person and (b) to the extent necessary, may terminate water and power service to any occupancy in order to abate a violation of this chapter.

Sec. 21.6.2. Containment and testing.

The health officer may order any Person who stores any material that may adversely affect stormwater quality to provide adequate secondary containment for such material. If the health officer has a reasonable basis to believe that any person's stormwater runoff may adversely affect stormwater quality, the health officer may order said person to take representative samples of the stormwater runoff and have these samples tested as directed by the health officer.

Sec. 21.6.3. Charge for excessive maintenance.

Any excessive sewer, sewerage, or storm drain maintenance expenses or reconstruction costs including administrative costs attributable to any illicit discharge or otherwise unlawful activity under this chapter shall be invoiced to the Person or Persons causing or contributing to such conditions. If the invoice is not paid within sixty days, the city council may authorize a lien upon and against the real property from which the discharge was made. If the lien is not satisfied within ninety days of imposition, the lien may be enforced in like manner to other real property liens, including sale under execution.

See. 21.6.4. Abatement of illicit or unlawful discharges.

When wastewater, any noxious or dangerous material, or any other substance, is discharged illicitly or is overflowing or being discharged, deposited, drained, or placed upon the surface of the ground, or when any unlawful material has been placed, thrown, deposited, or discharged into a sewer or storm drain, the health officer may order the Person or Persons who caused or contributed to such condition and, if applicable, the property owner to abate the same forthwith, and to restore all property affected or damaged. If not so abated within the time allowed or in an emergency, the health officer may take any reasonable action to abate such condition and restore all property affected or damaged.

October 27, 2014

Los Angeles River Upper Reach 2 Watershed
Management Group
(See Distribution List)

REVIEW OF THE LOS ANGELES RIVER UPPER REACH 2 WATERSHED MANAGEMENT GROUP'S DRAFT WATERSHED MANAGEMENT PROGRAM, PURSUANT TO PART VI.C OF THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear Los Angeles River Upper Reach 2 Watershed Management Group:

The Regional Water Board has reviewed the draft Watershed Management Program (WMP) submitted on June 26, 2014 by the Los Angeles River Upper Reach 2 Watershed Management Group. This program was submitted pursuant to the provisions of NPDES Permit No. CAS004001 (Order No. R4-2012-0175), which authorizes discharges from the municipal separate storm sewer system (MS4) operated by 86 municipal Permittees within Los Angeles County (hereafter, LA County MS4 Permit). The LA County MS4 Permit allows Permittees the option to develop either a Watershed Management Program (WMP) or Enhanced Watershed Management Program (EWMP) to implement permit requirements on a watershed scale through customized strategies, control measures, and best management practices (BMPs). Development of a WMP or EWMP is voluntary and may be developed individually or collaboratively.

The purpose of a WMP or EWMP is for a Permittee to develop and implement a comprehensive and customized program to control pollutants in MS4 discharges of stormwater and non-stormwater to address the highest water quality priorities. These include complying with the required water quality outcomes of Part V.A (Receiving Water Limitations) and Part VI.E and Attachments L through R (Total Maximum Daily Load (TMDL) Provisions) of the LA County MS4 Permit. If a Permittee opts to develop a WMP or EWMP, the WMP or EWMP must meet the requirements, including conducting a Reasonable Assurance Analysis (RAA), of Part VI.C (Watershed Management Programs) of the LA County Permit and must be approved by the Regional Water Board.

As stated above, on June 26, 2014, the Los Angeles River Upper Reach 2 Watershed Management Group submitted a draft Watershed Management Program (WMP) for their entire jurisdiction to the Regional Water Board pursuant to Part VI.C.4.c of the LA County MS4 Permit.

The Regional Water Board has reviewed the draft WMP and has determined that, for the most part, the draft WMP includes the elements and analysis required in Part VI.C of the LA County MS4 Permit. However, some revisions to the Los Angeles River Upper Reach 2 Watershed

Management Group's draft WMP are necessary. The Regional Water Board's comments on the draft WMP, including detailed information concerning necessary revisions to the draft WMP, are found in Enclosure 1 and Enclosure 2, respectively. The specific Permit provisions cited in the enclosures refer to provisions in the LA County MS4 Permit. The LA County MS4 Permit includes a process through which necessary revisions to the draft WMP can be made (Part VI.C.4 in the LA County MS4 Permit). The process requires that a final WMP, revised to address Regional Board comments identified in the enclosures, must be submitted to the Regional Water Board not later than three months after comments are received by the Permittees on the draft program. Please make the necessary revisions to the draft WMP as identified in the enclosures to this letter and submit the revised WMP as soon as possible and no later than **January 27, 2015.**

The revised WMP must be submitted to losangeles@waterboards.ca.gov with the subject line "LA County MS4 Permit – Revised Draft LA River Upper Reach 2 WMP" with a copy to Ivar.Ridgeway@waterboards.ca.gov.

If the necessary revisions are not made, the Los Angeles River Upper Reach 2 Watershed Management Group will be subject to the baseline requirements in Part VI.D of the Order and shall demonstrate compliance with receiving water limitations pursuant to Part V.A and with applicable interim and final water quality-based effluent limitations (WQBELs) in Part VI.E and Attachments O and P pursuant to subparts VI.E.2.d.i.(1)-(3) and VI.E.2.e.i.(1)-(3), respectively.

Until the draft WMP is approved, the Los Angeles River Upper Reach 2 Watershed Management Group is required to:

(a) Continue to implement all watershed control measures in its existing storm water management programs, including actions within each of the six categories of minimum control measures consistent with Title 40, Code of Federal Regulations, section 122.26(d)(2)(iv);
(b) Continue to implement watershed control measures to eliminate non-storm water discharges through the MS4 that are a source of pollutants to receiving waters consistent with Clean Water Act section 402(p)(3)(B)(ii);
(c) Target implementation of watershed control measures in (a) and (b) above to address known contributions of pollutants from MS4 discharges to receiving waters; and
(d) Implement watershed control measures to ensure that MS4 discharges are achieving compliance with final WQBELs for the Los Angeles River Nitrogen Compounds and Related Effects TMDL, and interim and final WQBELs for the Los Angeles River Trash TMDL pursuant to Part VI.E and set forth in Attachment O consistent with the compliance deadlines therein.

In addition on June 26, 2014, the Los Angeles River Upper Reach 2 Watershed Management Group submitted a draft Coordinated Integrated Monitoring Program (CIMP) to the Regional Water Board pursuant to Part IV.C of Attachment E of the LA County MS4 Permit. The Regional Water Board review and comments on the draft CIMP will be provided under separate cover.

If you have any questions, please contact Mr. Ivar Ridgeway, Chief of the Storm Water Permitting Unit, by electronic mail at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

Enclosures:

Attachment 1 Comments and Necessary Revisions to Draft WMP
Attachment 2 Comments on Reasonable Assurance Analysis for the Los Angeles River Upper Reach 2 Watershed Management Group

cc: Mr. Gerry Greene, CWE

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Attachment to October 27, 2014 Letter Regarding the Los Angeles River Upper Reach 2 Watershed Management Group's Draft Watershed Management Program (WMP) Submittal Pursuant to Part VI.C of the LA County MS4 Permit (Order No. R4-2012-0175)

Comments and Necessary Revisions to Draft WMP

Issue and MS4 Permit Provision (Permit Page Number)	Regional Water Board Staff Comment and Necessary Revision
Part VI.C.5.a.ii. Waterbody-Pollutant Classification (page 59)	The Group must identify and address Category 3 Waterbody-Pollutant Combinations (WBPCs). The water quality monitoring data from the sites located downstream is appropriate to use to characterize the receiving water quality in the vicinity of the Group's watershed area. The Group can use its monitoring data once available to confirm whether the Category 3 WBPCs are appropriate or whether the list should be modified. Regional Water Board staff note that Table 2-7 identifies several pollutants as Category 3; however, the reasonable assurance analysis (RAA) does not address these nor does the draft WMP analyze load reductions for these pollutants from the proposed watershed control measures. The revised WMP must include a discussion of the Category 3 pollutants identified in Table 2-7, and provide a similar analysis to what is provided for Category 1 pollutants.
Part VI.C.5.a.iii. Source Assessment (page 59-60)	• The draft WMP, including the RAA, excludes stormwater runoff from non-MS4 facilities within the WMA from the stormwater treatment target. While the draft WMP inventories General Industrial Facilities within the watershed management area, the WMP should utilize General Industrial Storm Water Permittee monitoring results (available from SMARTS) to assess and potentially refine estimates of pollutant loading from the identified "non-MS4" areas. In addition to General Industrial Storm Water Permittee monitoring results, Permittees should also review their inspection findings, including past violations and enforcement actions, of Industrial/Commercial facilities to assess potential pollutant sources. • Although the RAA includes modeling to assess existing loads overall, the source assessment (Section 2.3) does not use modeling to evaluate specific sources. The draft WMP does refer to statements included in the various TMDLs applicable to the watershed area, but there is no indication that the model results from the different TMDLs were used in the pollutant source assessment. The draft WMP should consider existing TMDL modeling data, where available, when refining the source assessment. • A process and schedule for developing the required spatial information on catchment areas to major outfalls should be proposed, if this information does not already exist. (Regional Water Board staff note that Figure 1-5 in the CIMP provides a map of the MS4 including some outfalls. Additional information on outfalls and controls is provided in Appendices A and B of the CIMP as well as Appendix G to the draft WMP itself; this appears to be a good start in responding to the permit requirements. If additional information such as the catchment areas for the major outfalls still needs to be developed, the process and schedule for developing this should be indicated.)
Part VI.C.5.a.iv. Prioritization (page 60)	While Table 2-7 acknowledges the past due dates for the Los Angeles River Nitrogen Compounds and Related Effects TMDL and final deadlines for the LA River Metals TMDL, LA River Bacteria, and other TMDLs, the LA River Metals TMDL includes interim dry and wet weather limitations with a deadline (2012) that has passed. The WMP needs to specify why this TMDL is not included in Table 2-7 in the priority 1a category (highest priority), since some compliance deadlines have already passed.

Issue and MS4 Permit Provision (Permit Page Number)	Regional Water Board Staff Comment and Necessary Revision
Part VI.C.5.b. Selection of Watershed Control Measures (pages 61-64)	<u>Selection of Watershed Control Measures to Comply with Interim WQBELs and Associated Compliance Deadlines</u> • The draft WMP does not clearly specify a strategy to comply with the interim WQBELs for the LA River metals TMDL (January 11, 2012; January 11, 2020 and January 11, 2024 deadlines). Table 3-1 presents a phased implementation plan, which suggests that Phase 2 activities will be conducted to meet the 2020 deadline and Phase 3 activities, to meet the 2024 deadline; however, the draft WMP needs to be revised to include documentation that the 2012 past deadlines have been achieved or specify an appropriate strategy for achieving compliance with the past due interim WQBELs. • Further discussion of current compliance with the LA River nitrogen compounds TMDL, for which there is a final compliance deadline of 2004, is also needed, since this is a priority 1a pollutant in Table 2-7. Section 1.3.3 of the CIMP notes that MS4 discharges appear to comply with applicable loads already, but additional discussion and support for this assertion should be included in the WMP itself. • The draft WMP is unclear on a schedule for BMPs implemented to comply with the LA River Trash TMDL. The draft Plan states, Most of the cities are 90 percent or more compliant with the trash TMDL and are investigating opportunities to complete this implementation effort. The draft WMP needs to include a firm schedule for the implementation of Trash TMDL BMPs. <u>Support for Use of Limiting Pollutants</u> • The draft WMP states, "[t]he limiting pollutant used to control the implementation efforts of the LAR UR2 WMA is bacteria for the area draining to the Los Angeles River and metals for the area draining to the Rio Hondo." The draft WMP needs to clarify and provide support for the assumption that Category 2 and Category 3 pollutants will be addressed by focusing on these limiting pollutants. • Alternatively, if Category 2 and 3 pollutants will not be addressed by focusing on the limiting pollutants, identified above, the WMP must separately address Category 2 and Category 3 pollutants. <u>Specificity of Proposed Watershed Control Measures</u> • Although the draft WMP includes several specific regional BMPs (Section 4.3.3.3) the specific LID street projects and their locations are not identified. The draft WMP should provide as much specificity as feasible in describing the potential locations for LID streets. Additionally, the permittees that would be responsible for implementing LID street projects should be specified. Specificity is particularly important where LID streets are relied upon to achieve some of the pollutant reductions necessary to achieve interim WQBELs with compliance deadlines in this permit term and the next permit term. <u>Legal Authority</u> • The draft WMP asserts that the "legal authority demonstration in respect to the WMP appears more specific than that required in the Annual Report." The Plan appears to acknowledge appropriate legal authority to construct most projects but note that some of the proposed projects are located within property easements owned by other entities. The draft WMP needs to provide greater detail regarding the Group's legal authority. <u>Adaptive Management Process</u> • While the draft WMP notes revisions will occur as part of the "Adaptive Management Process" in referral to multiple proposed actions it does not include a comprehensive strategy for the Adaptive Management process. The draft WMP should provide more detail on how the "Adaptive Management Process" will be implemented.

Issue and MS4 Permit Provision (Permit Page Number)	Regional Water Board Staff Comment and Necessary Revision
Part VI.C.5.b. Selection of Watershed Control Measures (pages 61-64)	<u>Assumptions regarding Non-structural BMPs and Source Control Measures</u> • The draft WMP assumes a 5% load reduction from non-structural BMP enhancements. However, Section 3.3.1 of the WMP only indicates that such enhancements would be considered, and a firm commitment to implement them is lacking. The draft WMP needs to include specific commitments to implement the non-structural BMP enhancements, or it should not rely upon the 5% load reduction anticipated from these non-structural BMP enhancements to meet compliance deadlines in this permit term or the next permit term. • The WMP assumes a significant reduction in copper based on the phase-out of copper in automotive brake pads, via approved legislation SB346, to achieve the necessary copper load reductions. Given the combination of other copper sources identified in various LA TMDLs such as building materials, other vehicle wear, air deposition from fuel combustion and industrial facilities, and that SB346 progressively phases out copper content in brakes of new cars (5% by weight until 2021, 0.5% by weight until 2025), additional structural BMPs may still be needed to reduce copper loads prior to entering receiving waters and eliminate copper exceedences of RWLs. <u>Assumptions regarding Pollutant Loading from Permitted Industrial Facilities</u> • The draft WMP, including the RAA, excludes stormwater runoff from non-MS4 facilities within the WMA from the stormwater treatment target. In particular, industrial facilities that are permitted by the Water Boards under the Industrial General Permit or an individual stormwater permit were identified and subtracted from the treatment target. Regional Water Board staff recognizes that this was done with the assumption that these industrial facilities will eliminate their cause/contribution to receiving water exceedances, as required by their respective NPDES permit. However, it is important that the Group's actions under its Industrial/Commercial Facilities Program—including tracking critical industrial sources, educating industrial facilities regarding BMP requirements, and inspecting industrial facilities—ensure that all industrial facilities are implementing BMPs as required.
Reasonable Assurance Analysis – Category 1 Pollutants Part VI.C.5.b.iv.(5)	See attached memorandum with specific comments on the Group's Reasonable Assurance Analysis for Category 1 pollutants.

Issue and MS4 Permit Provision (Permit Page Number)	Regional Water Board Staff Comment and Necessary Revision
Reasonable Assurance Analysis – Categories 2 and 3 Pollutants Part VI.C.5.b.iv.(5)	The WMP did not model any pollutants in Categories 2 and 3. These pollutants or surrogates need to be included in the RAA, or supported justification for the use of the proposed limiting pollutants as surrogates for each Category 2 and Category 3 waterbody-pollutant combination.

Los Angeles Regional Water Quality Control Board

TO: Los Angeles River Upper Reach 2 Watershed Management Group

FROM: C.P. Lai, Ph.D., P.E. and Thanhloan Nguyen
LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

DATE: October 27, 2014

SUBJECT: COMMENTS ON SECTION 4, REASONABLE ASSURANCE ANALYSIS, OF THE DRAFT WATERSHED MANAGEMENT PROGRAM FOR THE LOS ANGELES RIVER UPPER REACH 2 WATERSHED MANAGEMENT AREA

This memorandum contains comments on Section 4, Reasonable Assurance Analysis, of the draft Watershed Management Program, dated June 26, 2014, which was submitted by the Los Angeles River Upper Reach 2 Management Group.

A. General comments on the draft Reasonable Assurance Analysis (RAA) section of the Watershed Management Program.

1. The LA County MS4 Permittees in the Los Angeles River Upper Reach 2 Watershed Management Area are subject to interim and final water quality-based effluent limitations pursuant to Attachment O, Part A "Los Angeles River Watershed Trash TMDL", Part B "Los Angeles River Nitrogen Compounds and Related Effects TMDL", Part C "Los Angeles River and Tributaries Metals TMDL", and Part D "Los Angeles River Watershed Bacteria TMDL". Note that Table 1-5 on page 15 of the draft WMP should be updated to include the effective date for revisions to the Los Angeles River Nitrogen Compounds and Related Effects TMDL, which is August 7, 2014.

2. The water quality monitoring data for the Los Angeles River Upper Reach 2 water body segments were gathered, assessed, and analyzed for both wet and dry weather in the draft WMP. Selected monitoring sites include LAR 008 30, LAR1-9, LAR1-10, and LALT500 which are located in Los Angeles River Reach 2, near or below confluence of Rio Hondo Reach 1 and above the confluence of Compton Creek. These sampling locations are suitable to represent the receiving water quality for the Los Angeles River Upper Reach 2 watershed management area. All data were analyzed to identify exceedances of water quality objectives and should be used to identify Category 3 priority pollutants. The draft WMP should be revised to include Category 3 waterbody-pollutant combinations based on the data that were already analyzed in the draft WMP. Pursuant to Section VI.C.5.a., the WMP should identify potential sources, strategies, control measures and BMPs to address Category 3 priority pollutants, as required. Category 3 WBPCs can be revised once monitoring data have been collected, through the adaptive management process.

The concentration-based WQBELs for metals listed on page 78 of the WMP are incorrect and should not be used to set allowable loads. The correct concentration-based WQBELs for metals, which can be used in lieu of calculating allowable loads during dry weather, are identified in Attachment O, Part C.2.c. The load-based WQBELs for metals applicable during wet weather, which are identified in Attachment O, Part C.2.d of the permit should be used to calculate the allowable load and required reduction for metals during wet weather conditions. In summary, allowable pollutant loadings should be calculated separately for wet and dry weather using the WQBELs listed in Attachment O, Parts C.2.c and C.2.d of the permit. Loads must be expressed as daily loads, consistent with the expression of the WQBELs; Table 4-4 should be revised to specify that the loads presented are daily loads.

3. Allowable loads for metals based on the required WQBELs and potential WER / SSO values for copper and lead should be presented clearly and separately in Section 4.3.1.3 of the WMP, since the copper WERs and recalculated lead values have not been approved by the Regional Water Board as of this time. If concentration-based WQBELs are selected to be used to calculate the allowable loads, and these allowable loads are different from the mass-based WQBELs listed in Attachment O, the WMP should provide a clear explanation on how the proposed concentration-based WQBELs and allowable loads were derived from the WQBELs in Attachment O.

B. Modeling comments regarding analysis of copper, lead, zinc, nitrogen and bacteria concentrations/loads:

1. The model predicted loads presented in Table 4-3 for the baseline condition are not consistent with those results directly from model output (see Figures A and B, for example). These discrepancies could be due to the usage of the 90th percentile year for the predicted results of pollutant loads. Further, all model results of pollutant loads are presented in terms of lbs/year in Table 4-3 through Table 4-6. However, the results for the RAA should be presented in units consistent with the expression of each of the WQBELs in Attachment O of the MS4 Permit.

2. For the baseline condition, the model predicted runoff volume and the concentrations for copper, lead, zinc, nitrogen, and bacteria should also be presented in Table 4-3 for the wet weather condition. For cadmium, no model results are included in Table 4-3. An explanation is needed for the exclusion of cadmium from the modeling, or alternatively, supporting documentation/analysis to demonstrate that the model results for copper, lead and zinc or total sediment adequately represent the baseline condition and required reduction for cadmium.

3. The differences between baseline concentrations/loads and allowable concentrations/loads should be presented in a time series for each pollutant under long term continuous simulation and then as a summary of 90th percentile of the differences between pollutant concentrations/loads and allowable concentrations/loads for wet weather periods, in units consistent with the applicable WQBELs and Receiving Water Limitations (e.g., mass or number per day), instead of using the predicted results of selected year presented only as an annual reduction in load to represent for load reduction target. In addition, a detailed explanation should be provided of the calculations used to derive the target load reductions.

4. The report used a pollutant load-based approach to evaluate BMP performance and compliance with applicable WQBELs for wet weather conditions. However, the report should also provide predicted concentrations in the receiving water or at the downstream outlets under the BMP scenarios. Additionally, Table 4-17 to Table 4-20 need to be revised to clarify the units for the values presented in each table. Finally, it appears that model output is only provided for final compliance deadlines. Model output should also be provided for phased BMP implementation to demonstrate that interim WQBELs for metals and bacteria will be met.

5. The ID number for each of the 50 subwatersheds from the model input file should be provided and be shown in the simulation domain to present the geographic relationship of the subwatersheds within the watershed area that are simulated in the LSPC model.

6. The flow, runoff volume and water quality (pollutant concentration and pollutant mass) time series output at the watershed outlet as well as for each modeled subbasin should be provided using the 90th percentile critical condition consistent with the expression of the WQBELs in Attachments N and O to estimate the baseline condition. In addition, per RAA Guidelines, the model output should include stormwater runoff volume and pollutant concentration/load at the outlet and for each modeled subbasin for each BMP scenario as well (see Table 5. Model Output for both Process-based BMP Models and Empirically-based BMP Models, pages 20-21 of the RAA Guidelines).

7. Model simulation for copper, lead, zinc, nitrogen, and bacteria under the dry weather condition was not included in the Report and needs to be addressed.

8. The report did not describe how the model was calibrated, including calibration results compared to calibration criteria in Table 3.0 of the RAA Guidelines, and no historical hydrology and water quality monitoring data were used for comparison with the model results for the baseline prediction. According to Part G, pages 12-13 of the RAA Guidelines, model calibration is necessary to ensure that the model can properly assess all the variables and conditions in a watershed system.

9. The identification of the 90th percentile years in Table 4-2 needs to be supported by presenting historical hydrological data to demonstrate the selected critical period will capture the variability of rainfall and storm sizes/conditions. The input rainfall should be also presented in the report along with the historical precipitation frequency analysis for wet days and rainfall depth.

November 21, 2014

Los Angeles River Upper Reach 2 Watershed Management Group
(See Distribution List)

REVIEW OF THE LOS ANGELES RIVER UPPER REACH 2 WATERSHED MANAGEMENT GROUP'S DRAFT COORDINATED INTEGRATED MONITORING PROGRAM, PURSUANT TO PART VI.B AND ATTACHMENT E PART IV.B OF THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear Los Angeles River Upper Reach 2 Watershed Management Group:

The Regional Water Board has reviewed the draft Coordinated Integrated Monitoring Program (CIMP) submitted on June 26, 2014 by the Los Angeles River Upper Reach 2 (LAR UR2) Watershed Management Group. This program was submitted pursuant to the provisions of NPDES Permit No. CAS004001 (Order No. R4-2012-0175), which authorizes discharges from the municipal separate storm sewer system (MS4) operated by 86 municipal Permittees within Los Angeles County (hereafter, LA County MS4 Permit).

The LA County MS4 Permit allows Permittees the option to develop and implement, in coordination with an approved Watershed Management Program per Part VI.C, a customized monitoring program that achieves the five Primary Objectives set forth in Part II.A of Attachment E and includes the elements set forth in Part II.E of Attachment E. Customized monitoring programs may be developed on an individual jurisdictional basis, referred to as an Integrated Monitoring Program (IMP), or a on watershed basis, referred to as a CIMP. These programs must be approved by the Executive Officer of the Regional Water Board.

The Regional Water Board has reviewed the draft CIMP and has determined that, for the most part, the CIMP includes the elements set forth in Part II.E and will achieve the Primary Objectives set forth in Part II.A of Attachment E of the LA County MS4 Permit. However, some additions and revisions to the CIMP are necessary. The Regional Water Board's comments on the CIMP, including detailed information concerning necessary additions and revisions to the CIMP, are found in Enclosure 1 and Enclosure 2.

Please make the necessary additions and revisions to the CIMP as identified in the enclosures to this letter and submit the revised CIMP as soon as possible and no later than **February 19, 2015.** The revised CIMP must be submitted to losangeles@waterboards.ca.gov with the subject line "LA County MS4 Permit – Revised LAR UR2 CIMP" with a copy to Ivar.Ridgeway@waterboards.ca.gov.

Upon approval of the revised CIMP by the Executive Officer, the Permittees must prepare to commence their monitoring program within 90 days. If the necessary revisions are not made, the Permittees must comply with the Monitoring and Reporting Program (MRP) and future revisions thereto, in Attachment E of the LA County MS4 Permit.

Until the Permittees' CIMP is approved by the Executive Officer, the monitoring requirements pursuant to Order No. 01-182 and MRP CI 6948, and pursuant to approved TMDL monitoring plans shall remain in effect for the Permittees.

If you have any questions, please contact Mr. Ivar Ridgeway, Chief of the Storm Water Permitting Unit, by electronic mail at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

Enclosures:

Enclosure 1 – Summary of Comments and Necessary Revisions to Draft CIMP
Enclosure 2 – Comments on Aquatic Toxicity Monitoring
Los Angeles River Upper Reach 2 Watershed Management Group Distribution List

Enclosure 1 to November 20, 2014 Letter Regarding the Los Angeles River Upper Reach 2 Watershed Management Area Draft Integrated Monitoring Program
Summary of Comments and Required Revisions to the Draft Integrated Monitoring Program

CIMP Reference	MRP Element/ Reference (Attachment #)	Comment and Necessary Revision
Quality Assurance Project Plan Pages 9-11	Att. D Part III page D-5	The draft CIMP does not include the sampling analysis methods specified in Attachment D (***test procedures approved under 40 CFR Part 136 for the analysis of pollutants unless another test procedure is required under 40 CFR subchapters N or O***). The draft CIMP notes that several of the laboratories under consideration to conduct the analyses reported difficulties in achieving the Permit-identified MDLs for standard pollutants. The draft CIMP must include the sampling analysis methods specified in Attachment D and Permittees must ensure that the laboratory(ies) selected to conduct the sample analysis are certified and can achieve the Permit-identified MDLs.
Section 2	TMDL Monitoring	The Los Angeles River Upper Reach 2 WMP Group does not include receiving water monitoring at the mouth of the Los Angeles River as required by the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL (Harbor Toxics TMDL). Los Angeles River Watershed responsible parties identified in effective metals TMDLs for the Los Angeles River are responsible for conducting water and sediment monitoring above the Los Angeles River Estuary to determine the River's contribution to the impairments in the Greater Harbor waters. The monitoring required above the Los Angeles River Estuary includes: • Water Column Monitoring Water samples and total suspended solids samples shall be collected at, at least one site during two wet weather events and one dry weather event each year. The first large storm event of the season shall be included as one of the wet weather monitoring events. Water samples and total suspended solid samples shall be analyzed for metals, DDT, PCBs, and PAHs. Sampling shall be designed to collect sufficient volumes of suspended solids to allow for analysis of the listed pollutants in the bulk sediment. General water chemistry (temperature, dissolved oxygen, pH, and electrical conductivity) and a flow measurement shall be required at each sampling event. General chemistry measurements may be taken in the laboratory immediately following sample collection if auto samplers are used for sample collection or if weather conditions are unsuitable for field measurements. • Sediment Monitoring For sediment chemistry, sediment samples shall be collected at, at least one site every two years for analysis of general sediment quality

		constituents and the full chemical suite as specified in SQO Part 1. All samples shall be collected in accordance with SWAMP protocols. The details including sampling location and all methods must be specified in the LAR UR2 WMG's revisions to its proposed Coordinated Integrated Monitoring Program. One option is for the LAR UR2 WMG to coordinate with another Watershed Management Program group to meet this requirement.
Quality Assurance Project Plan Pages 9-11	Analytical Procedures	Note that for mercury, Method 245.7 or 1631E should be utilized (not 245.1) to get sufficiently sensitive minimum levels for analytical results to be compared with the water quality objective. Monitoring for PCBs in sediment or water should be reported as the summation of aroclors and a minimum of 40 (and preferably at least 50) congeners. See Table C8 in the state's Surface Water Ambient Monitoring Program's Quality Assurance Program Plan (Page 72 of Appendix C), which can be downloaded at http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/qapp/qaprp082209.pdf for guidance. It is preferable samples be analyzed using EPA Methods 8270 or 1668C (as appropriate), and High Resolution Mass Spectrometry. The Regional Water Board also recommends that the LAR UR2 WMG conduct sampling for Suspended-Sediment Concentration (SSC) in addition to TSS.
Section 5	Att. E Part VI.D.1.a page E-16	The draft CIMP did not specify that one of the dry-weather monitoring event would occur during the month with the historically lowest instream flows, or where instream flow data are not available, during the historically driest month. The draft CIMP needs to be revised to comply with this requirement.
Section 4	Att. E Parts VIII.B.1.b.i & VIII.B.1.b.ii page E-22	The draft CIMP does not clearly state what wet-weather conditions trigger stormwater outfall monitoring. It is assumed that stormwater outfall monitoring is triggered by the same wet-weather condition that triggers wet-weather receiving water monitoring and will be coordinated to occur in conjunction with wet-weather receiving water monitoring. This needs to be stated.
Section 4	Att. E Part VIII.B1.b.iii page E-22	Similarly, the draft CIMP does not clearly state what dry-weather conditions trigger non-stormwater outfall monitoring. It is assumed that non-stormwater outfall monitoring is triggered by the same dry-weather condition that triggers dry-weather receiving water monitoring and will be coordinated to occur in conjunction with dry-weather receiving water monitoring. This needs to be stated.
Section 4	Att. E Part VIII.C.1	The draft CIMP did not specify that stormwater outfall samples will be collected during the first 24 hours of the storm event or for the entire

	page E-23	storm event if it is less than 24 hours. The revised CIMP needs to include this information.
Section 5	Att. E Part IX.C.1 pp. E-24 & E-25	The draft CIMP proposes to use a ranking process applied to outfalls with non-stormwater discharges to define, in part, those outfalls with significant non-stormwater discharges. However, identifying only the top 20% of outfalls per the criteria in Table 5-1 as outfalls with significant non-stormwater discharges is not acceptable. However, the Permittees may instead choose to use this ranking process to prioritize the scheduling of source identification and monitoring for outfalls with significant non-stormwater discharges.
Section 5	Att. E Part IX.C.1 pp. E-24 & E-25	The draft CIMP needs to be revised to identify the specific parameters that will be analyzed during the non-stormwater outfall screening and which will be used, as described in Table 5-1, to identify significant non-stormwater discharges. In addition, the draft CIMP needs to be revised to clarify what constitutes a non-stormwater discharge reaching the receiving water (i.e., the non-stormwater discharge reaches the main channel).
Section 5	Att. E Part IX.E.2	The schedule to complete investigation of outfalls with significant non-stormwater discharge is too long. Permittee are required to develop a source identification schedule based on the prioritized list of outfalls exhibiting significant non-stormwater discharges. The schedule shall ensure that source investigations are conducted for no less than 25% of the outfalls in the inventory within three years of the effective date of the LA County MS4 Permit and 100% of the outfalls in the inventory within 5 years of the effective date. While Permittees can request an alternative schedule, the timeframe in the draft CIMP is too long. An alternate schedule under which completion of investigations of 25% of the outfalls is done by December 28, 2016 and 100% of the outfalls with significant non-stormwater discharge by December 28, 2017.
Section 5	Att. E Part IX.H.1 page E-28	The draft CIMP needs to include clear criteria for, consistent with Permit requirements, when non-stormwater discharges should be monitored (e.g., during days when precipitation is < 0.1 inch and those days not less than 3 days after a rain day).
Section 5	Att. E Part IX.H.2 page E-28	The draft CIMP does not specify that flow-weighted composite samples will be taken for a non-stormwater discharge using a continuous sampler, or be taken as a combination of a minimum of 3 sample aliquots, taken in each hour during a 24-hour period. The sampling protocol for non-stormwater monitoring needs to be included in the revised CIMP.
Section 2.4 and Section 4.3	Toxicity Monitoring	Toxicity monitoring is mentioned in the draft CIMP but there is no specific guidance included on how toxicity testing is to be conducted. The draft CIMP needs to be revised to include information on how toxicity testing is to be conducted. See Enclosure 2.
Section 11	Att. E Part VI.C.1.c	The draft CIMP notes that monitoring at the one receiving water monitoring site in Los Angeles River will commence within 30 days

	page E-15	after the approval of required permits. The draft CIMP states that, it is anticipated that the permitting and installation process may take a minimum of 18 months. Monitoring at this site should be started using portable equipment no later than July 1, 2015, so that monitoring data are available for the 2015-16 storm year.

ENCLOSURE 2
COMMENTS ON AQUATIC TOXICITY TESTING
LOS ANGELES RIVER UPPER REACH 2 CIMP

Part XII.G (Pages E-30 through E-32) of the Monitoring and Reporting Program states that Permittees shall conduct aquatic toxicity monitoring utilizing the critical life stage chronic toxicity test methods listed. The draft CIMP does not state the toxicity testing species and methods to be used, and the approach to be used to screen for the most sensitive test species. This must be corrected.

Suggested Special Study: The 2013 study released by the California Stormwater Quality Association (CASQA) entitled "Review of Pyrethroid, Fipronil and Toxicity Monitoring Data from California Urban Watersheds" reviewed stormwater data from studies conducted during 2005 - 2012 and highlighted the toxicity impacts from use of pesticides not currently required to be monitored for by the MRP. We suggest the group begin monitoring for these chemicals in the receiving water and, in addition, assess toxicity using the 2002 acute toxicity testing protocol (EPA-821-R-02-012) with the amphipod *Hyalella azteca* as the test organism. *H. azteca* is known to be much more sensitive to pyrethroids than is *Ceriodaphnia dubia*, while the latter is useful for its sensitivity to OP pesticides. The two species together may also prove to be more useful in detecting toxicity from fipronil. And, should 50% or greater effect be detected in the toxicity test, we suggest a procedure to incorporate pyrethroids into the subsequent TIE be documented (three possible treatments have been identified by researchers, see http://www.pubfacts.com/detail/20018342/Focused-toxicity-identification-evaluations-to-rapidly-identify-the-cause-of-toxicity-in-environment). While fipronil does not have a TIE procedure identified currently, chemical testing for the parameter (and degradates) and comparison to U.S. EPA Office of Pesticide Program's aquatic life benchmarks at http://www.epa.gov/oppefed1/ecorisk_ders/aquatic_life_benchmark.htm will aid in determining the cause(s) of toxicity in order to follow up with outfall testing of the parameter(s) with the ultimate goal of removing the source. This approach will also help minimize inconclusive TIE results which would lead to required toxicity testing in a representative upstream outfall.

Los Angeles River Upper Reach 2 Distribution List

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Philip Wagner	Bell Gardens	pwagner@bellgardens.org
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Gina Nila	Commerce	ginan@ci.comerce.ca.us
Aaron Hernandez-Torres	Cudahy	ahernandez@cityofcudahyca.gov
Jose Pulido	Cudahy	jpulido@cityofcudahyca.gov
Desi Alvarez	Huntington Park	dalvarez@huntingtonpark.org
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Los Angeles River Upper Reach 2 Watershed Management Area

Revised Watershed Management Program (WMP) Plan

Submittal Date: June 26, 2014
Revision Submittal Date: January 27, 2015

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RB-AR5926

Los Angeles River Upper Reach 2 Watershed Management Area

Watershed Management Program (WMP) Plan

Prepared for the:

Los Angeles Gateway Region
Integrated Regional Water Management Authority
16401 Paramount Boulevard
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TEL (626) 485-0338

On Behalf of the Cities of Bell (WDID 4B190153001), Bell Gardens (WDID 4B190139002), Commerce (WDID 4B190161001), Cudahy (WDID 4B190164001), Huntington Park (WDID 4B190177001), Maywood (WDID 4B190192001), Vernon (WDID 4B190216001), and the Los Angeles County Flood Control District (WDID4B190107101)

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June 26, 2014
January 27, 2015 Revision

RB-AR5927

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Acronyms

AIN	Assessor Identification Number
AMP	Adaptive Management Process
ARS	Automatic Retracting Screen
BMP	Best Management Practice
BSI	Bacteria Source Identification
CARE	Community Action for a Renewed Environment
CBE	Communities for a Better Environment
CDS	Continuous Deflective Separation
CEEIN	California Environmental Education Interagency Network
CIMP	Coordinated Integrated Monitoring Program
CMP	Coordinated Monitoring Plan
COG	Council of Governments
CPI	Catchment Priority Index
CPS	Connector Pipe Screen
CREST	Cleaner Rivers through Effective Stakeholder-led TMDLs
CTR	California Toxics Rule
CWA	Clean Water Act
CWH	Council for Watershed Health
CWSRF	Clean Water State Revolving Fund
DTSC	Department of Toxic Substances Control
EWMP	Enhanced Watershed Management Program
GIS	Geographic Information System
GWMA	Gateway Water Management Authority
HCF	Habitat Conservation Fund
HFS	High Flow Suspension
HHWC	Household Hazardous Waste Collection
HSPF	Hydrologic Simulation Program - FORTRAN
IC/ID	Illicit Connection and Illicit Discharges
IDDE	Illicit Discharge Detection Elimination
IRWM	Integrated Regional Water Management
ISRF	Infrastructure State Revolving Fund
LACFCD	Los Angeles County Flood Control District
LAR	Los Angeles River
LAR UR2 WMA	Los Angeles River Upper Reach 2 Watershed Management Area
LARWMP	Los Angeles River Watershed Monitoring Program
LARWQCB	Los Angeles Regional Water Quality Control Board
LID	Low Impact Development
LRS	Load Reduction Strategy
LSPC	Loading Simulation Program in C++
LWCF	Land and Water Conservation Fund
MAL	Municipal Action Limit

MCM	Minimum Control Measure
MEP	Maximum Extent Practicable
MOU	Memorandum of Understanding
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm and Sewer System
NCPI	Nodal Catchment Priority Index
NGO	Non Governmental Organization
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OAL	Office of Administrative Law
P2	Pollution Prevention
PIPP	Public Information and Participation Program
POTW	Publically Owned Treatment Works
QA/QC	Quality Assurance/Quality Control
RAA	Reasonable Assurance Analysis
RTP	Recreational Trails Program
RWL	Receiving Water Limitation
SB	Senate Bill
SBPAT	Structural BMP Prioritization and Analysis Tool
SRP	Spill Response Plan
SSO	Site Specific Objective
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
TLR	Target Load Reduction
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
WBPC	Water Body-Pollutant Combination
WCB	Wildlife Conservation Board
WCM	Watershed Control Measure
WDR	Waste Discharge Requirement
WLA	Waste Load Allocation
WMA	Watershed Management Area
WMP	Watershed Management Program
WRP	Water Recovery Plant
WQBEL	Water Quality-Based Effluent Limitation
WQO	Water Quality Objective

Executive Summary

The California Regional Water Quality Control Board, Los Angeles Region (LARWQCB), adopted the fourth term Coastal Los Angeles County Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit as Order No. R4-2012-0175, on November 8, 2012, which then became effective on December 28, 2012. This Permit encourages Permittees to join together into Watershed Management Groups and develop Watershed Management Program (WMP), or Enhanced WMP (EWMP), Plans. These plans are intended to guide the iterative Adaptive Management Process (AMP) for the individual groups as they prioritize the implementation of Watershed Control Measures (WCMs) to reduce the discharge of runoff, and the pollutants it may convey, to local receiving waters, thereby contributing to the attainment and protection of water body beneficial uses.

In a June 27, 2013, Notice of Intent (NOI) letter, which was acknowledged in a September 25, 2013, NOI Approval letter from the Regional Board Executive Officer, the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon, along with the Los Angeles County Flood Control District (LACFCD), announced the formation of the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA). Furthermore these Permittees agreed to prepare a Reasonable Assurance Analysis (RAA), to guide development of the WMP Plan, and a Coordinated Integrated Monitoring Program (CIMP) Plan to track progress in attaining the Permit goals and objectives, through the iterative AMP identified within MS4 Permit Part VI.C.8.a.

The LAR UR2 WMA Cities lie exclusively within the Los Angeles River Watershed and each Permittee discharges to Reach 2 of the Los Angeles River, a concrete-lined river channel with year-round flows comprised primarily of treated wastewater. The Cities of Bell Gardens and Commerce also drain southeast to the normally dry concrete-lined Rio Hondo tributary channel. To the north and west, the LAR UR2 WMA is bordered by, and receives discharges from, the Upper Los Angeles River EWMP Group, while the Lower Los Angeles River WMP Group aligns with the east and south LAR UR2 WMA borders.

Many of the watershed water quality impairments were previously identified as Total Maximum Daily Loads (TMDLs) and are being successfully addressed by the LAR UR2 WMA Permittees. The Trash TMDL was primarily implemented through a grant to the Gateway Water Management Authority (GWMA) and remaining capital projects should be completed within two years. The nutrient TMDL was primarily directed at wastewater recovery plants and has been implemented. The Metals TMDL listings for copper and lead were addressed through a $2,100,000 Site Specific Objective (SSO) Study that should be adopted as a Regional Board Basin Plan Amendment. Permittees also instigated legislation to reformulate automotive friction (brake) pads as a copper source control and phase out lead wheel weights.

The RAA identified zinc and *E. coli* as the pollutants driving implementation of costly new pollutant source and watershed control measures, including Minimum Control Measures (MCMs), Low Impact Development (LID), LID and Green Street projects, Low Flow Diversions (LFDs), scientific studies, increased inspections and enforcement, and structural Best Management Practices (BMPs).

The LAR UR2 RAA and WMP identified six regional BMP projects, estimated to cost a total of $210 million, and an additional $90 million in residential and commercial LID street renovations that may need to be implemented, over the next two decades, to achieve Permit numeric limits. The six conceptual regional projects were located under public lands, such as parks and easements, to avoid land acquisition costs; however, the WMP costs are beyond the budgets of our Cities and will require outside funding support to implement. While the LAR UR2 WMA will begin applying for support to construct these facilities, City and regional management should also consider undertaking studies or efforts to more accurately characterize jurisdictional Event Mean Concentration (EMC) pollutant loads, a zinc water effects ratio (WER) SSO study, and identify land acquisition opportunities near subwatershed outfalls, where the effectiveness of regional structural BMPs to control the discharge of bacterial-laden runoff is maximized.

1. Introduction

This Watershed Management Program (WMP) Plan introduces the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA), characterizes water quality challenges faced by its Permittees, and describes implementation actions and activities to demonstrate that Municipal Separate Storm Sewer System (MS4) discharges achieve applicable Water Quality-Based Effluent Limitations (WQBELs) and do not cause or contribute to exceedances of Receiving Water Limitations (RWLs) as required by the fourth term 2012 Los Angeles County MS4 National Pollutant Discharge Elimination System (NPDES) Permit (Order No. R4-2012-0175). This WMP plan is a critical component of the iterative Adaptive Management Process (AMP) strategy and will be updated every two years as described in the MS4 Permit, or amended with minor corrections as warranted by changing regional precedents and the development of new scientific and technical data. The WMP is a comprehensive stormwater management plan intended to allow optimization of the extremely limited stormwater and financial resources of the participating Permittees. The development of this program required the determination of current water quality priorities in the LAR UR2 WMA and the identification of structural and non-structural Watershed Control Measures (WCMs) that would address those priorities. In addition, the LAR UR2 WMA Reasonable Assurance Analysis (RAA) demonstrates, through a calibrated model, that Water Quality Objectives (WQOs) will be met through implementation of the actions in this Plan.

1.1 Applicability for WMP Development

Permittees participating in the LAR UR2 WMA WMP include the Los Angeles County Flood Control District (LACFCD) and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. The LAR UR2 WMA is within the Los Angeles River (LAR) Watershed and based on Geographical Information System (GIS) subwatershed data available from Los Angeles County[1], directly drains to LAR Reach 2, Rio Hondo Reach 1, and potentially to Compton Creek, as illustrated in **Figure 1-1**. The reported tributary area to each of these receiving waters, on a jurisdictional basis, is summarized in **Table 1-1**. The LAR UR2 WMA Permittees prepared and submitted a Notice of Intent (NOI) on June 27, 2013, as found in **Appendix A,** which was acknowledged in a September 25, 2013, NOI Approval letter from the Regional Board Executive Officer, as found in **Appendix B**.

Table 1-1 Jurisdictions within LAR UR2 WMA

LAR UR2 WMA Member	Alhambra Wash Rio Hondo		Chavez Ravine Los Angeles River		Compton Creek Los Angeles River	
	Area (acres)	% LAR UR2 WMA	Area (acres)	% LAR UR2 WMA	Area (acres)	% LAR UR2 WMA
Bell	0	0%	1,676	14%	0	0%
Bell Gardens	797	35%	780	6%	0	0%
Commerce	1,478	65%	2,717	22%	0	0%
Cudahy	0	0%	786	6%	0	0%
Huntington Park	0	0%	1,885	15%	45	100%
Maywood	0	0%	754	6%	0	0%
Vernon	0	0%	3,298	31%	0	0%
LACFCD	N/A		N/A		N/A	
Total	**2,275**	**100%**	**11,896**	**100%**	**45**	**100%**

[1] http://dpw.lacounty.gov/general/spatiallibrary/

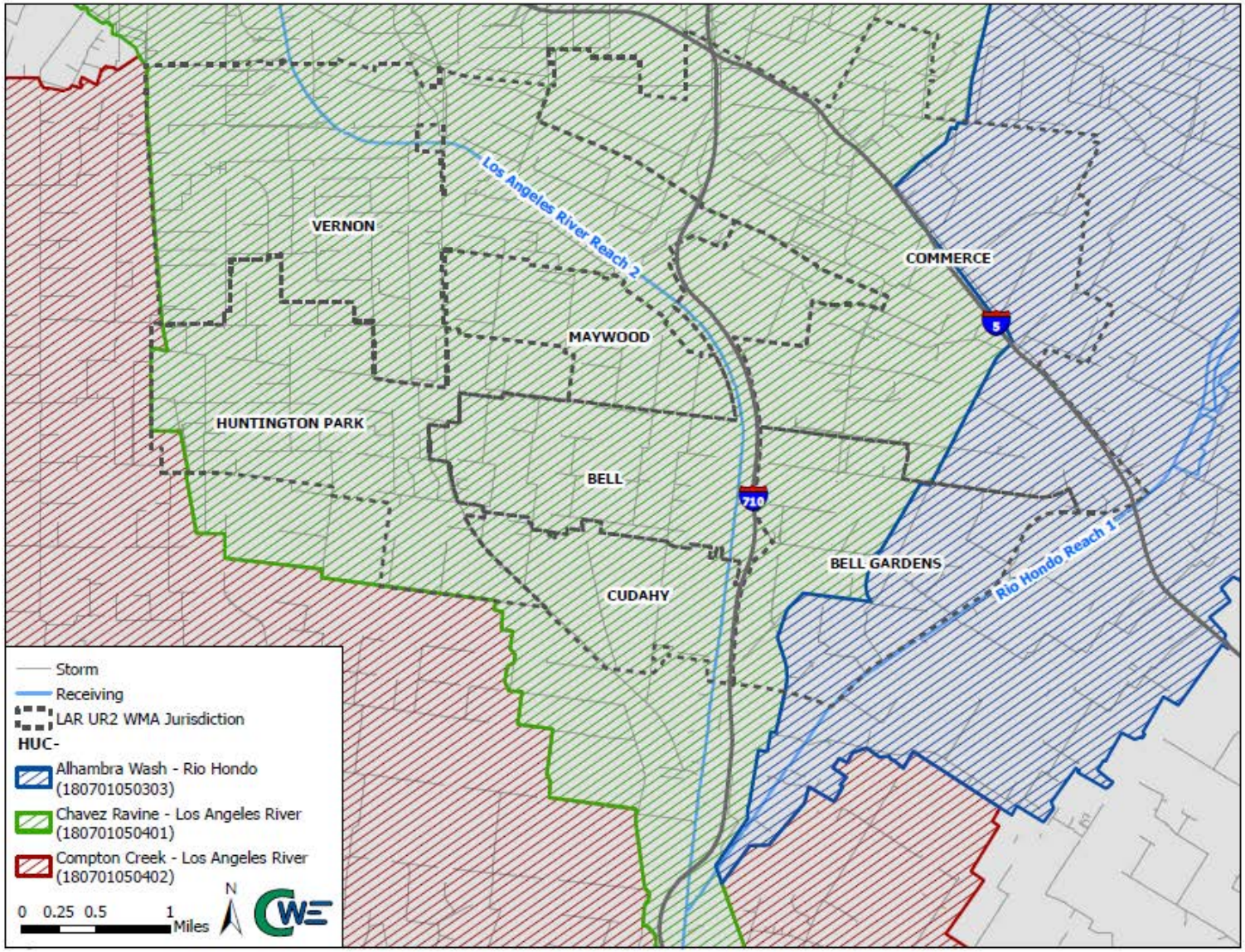


Figure 1-1 LAR UR2 WMA HUC-12s and Jurisdictions

1.2 Geographic Scope and Characteristics

The LAR UR2 WMA encompasses approximately 14,215 acres, or 22.21 square miles, and is located in the south central portion of the LAR Watershed as illustrated in **Figure 1-2**. Pertinent characteristics of the LAR UR2 WMA, including land use, soil type, hydrologic parameters, receiving waters, and their LARWQCB Basin Plan identified beneficial uses, are briefly summarized in the following subsections. Both the Cities of Bell and Vernon cross the LAR, while the City of Huntington Park is located a significant distance from it.

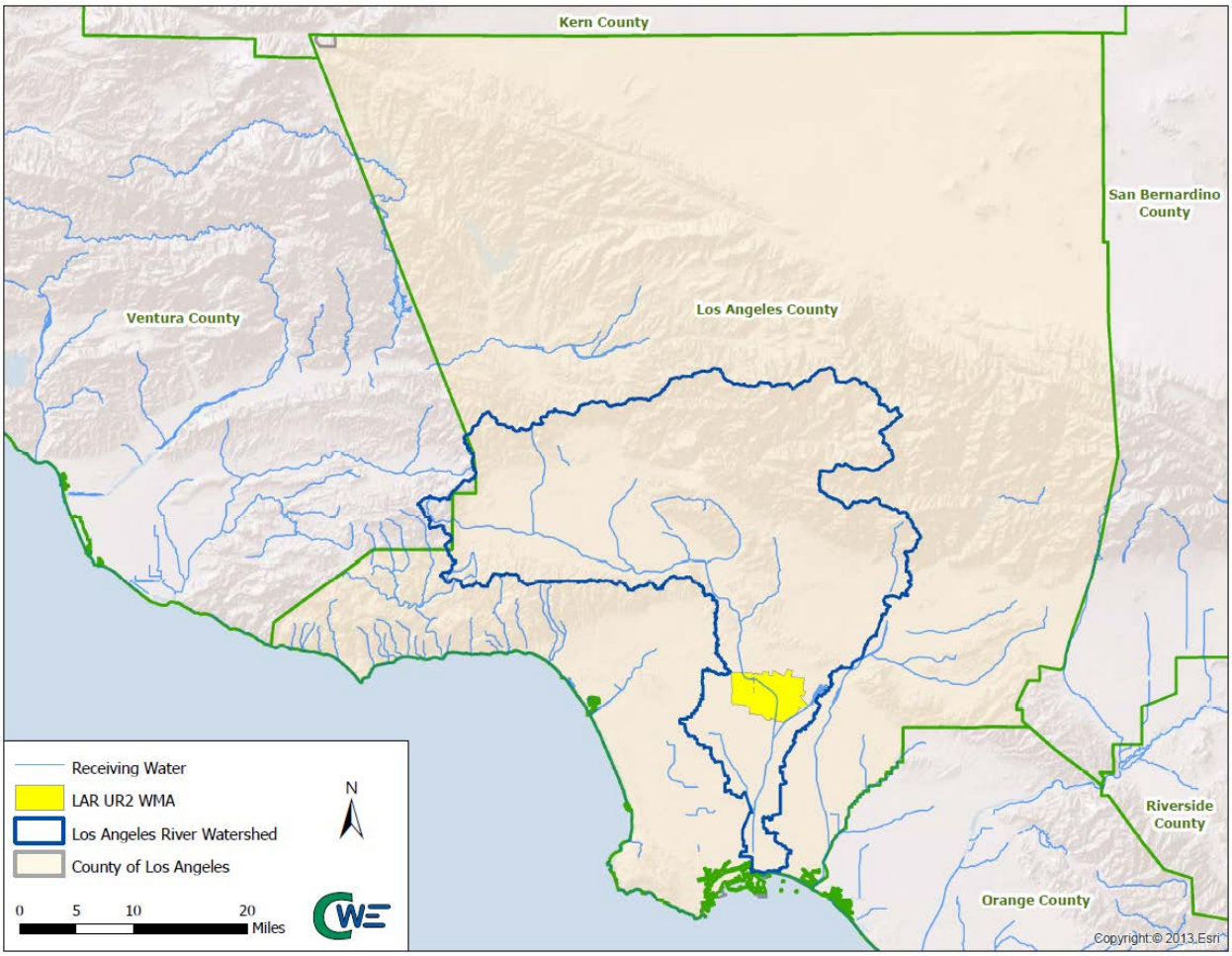


Figure 1-2 LAR UR2 WMA within the Los Angeles River Watershed

1.2.1 Watershed Management Area Hydrologic Characteristics

While each City has unique land use and zoning characteristics that may differentially impact pollutant generation, for the initial WMP and RAA development purposes, land use characteristics were initially identified based on the Los Angeles County Department of Public Works (LACDPW) GIS data as summarized in **Table 1-2** for the WMA and illustrated in **Figure 1-3**. The most prevalent land use in the Cities of Commerce, Vernon and the northern portions of Bell and Huntington Park is industrial, while the remaining areas are dominated by residential and commercial land use categories. **Table 1-3** provides a detailed description of WMA land use characteristics on a jurisdictional level.

Table 1-2 Land Use Designation within LAR UR2 WMA		
Land Use Category	**Area (acres)**	**Percent of LAR UR2 WMA**
Agriculture	46	0%
Commercial	1,419	10%
Education	311	2%
Industrial	6,029	42%
Multi-Family Residential	2,413	17%
Single Family Residential	1,784	13%
Transportation	1,370	10%
Vacant	843	6%
Total	14,215	100%

Table 1-3 Land Use Designation within LAR UR2 WMA by Jurisdiction

LAR UR2 WMA Member	Bell		Bell Gardens		Commerce		Cudahy		Huntington Park		Maywood		Vernon	
	Area (acre)	%	Area (acre)	%	Area (acre)	%	Area (acre)	%	Area (acre)	%	Area (acre)	%	Area (acre)	%
Agriculture	0	0	27	2	19	0	0	0	0	0	0	0	0	0
Commercial	271	16	230	15	383	9	58	7	352	18	109	14	16	0
Education	39	2	97	6	24	1	38	5	90	5	20	3	3	0
Industrial	296	18	164	10	2,523	60	104	13	333	17	52	7	2,556	78
MF Residential	513	31	736	47	129	3	434	55	480	25	121	16	0	0
SF Residential	272	16	175	11	292	7	51	6	562	29	430	57	1	0
Transportation	131	8	8	1	651	16	24	3	53	3	9	1	494	15
Vacant	154	9	141	9	173	4	76	10	59	3	13	2	227	7
Total:	**1,676**	**100**	**1,578**	**100**	**4,194**	**100**	**786**	**100**	**1,930**	**100**	**754**	**100**	**3,298**	**100**

MF = Multi-Family; SF = Single Family

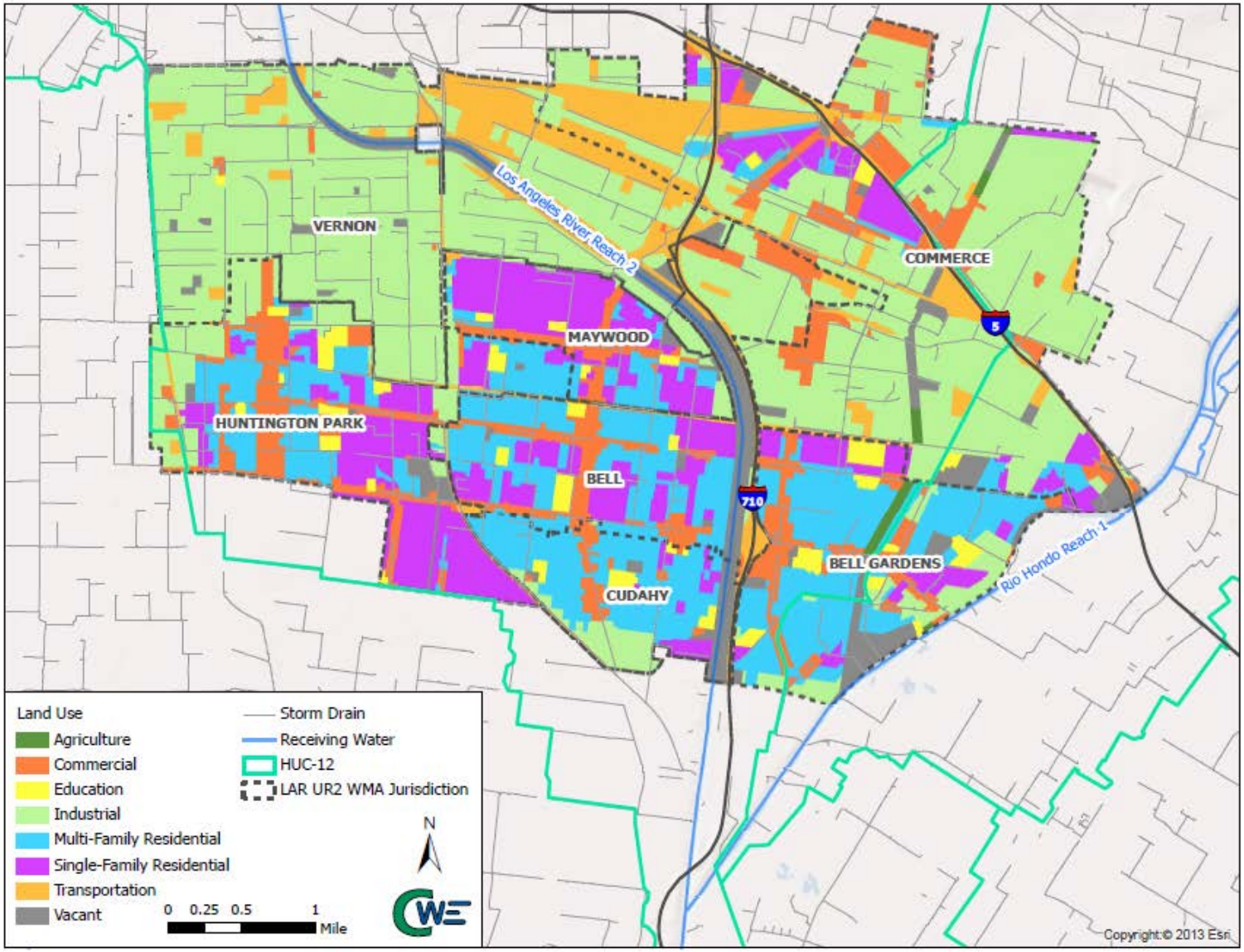


Figure 1-3 LAR UR2 WMA Land Use

The 2006 Los Angeles County Hydrology Manual[2] Appendices B and C, identifies soil types in the LAR UR2 WMA as being dominated by Hanford Fine Sandy Loam and other loam mixes as shown in **Figure 1-4**. Infiltration rates through these soils are generally unremarkable, but allowing percolation over extended periods, when vector access and egress can be prevented or controlled. While clay lenses are present, they are generally discontinuous and may sometimes be breached by utilizing moderate increase or variances in excavation depth, or through wick drains that maintain a wider than deep facility design configuration.

The 2004 LACFCD Analysis of 85th Percentile, 24-hour Rainfall Depth Analysis within the County of Los Angeles[3] reports that the lowest rainfall depth isohyetal of 0.88 inches is found in the northeastern corner of the WMA and that depths rise as you move to either the west or south of that location. The largest rainfall depth isohyetal of 0.98 is located in the northwest WMA, while the mean value is approximately 0.92 inches as shown by the isohyetal distribution map in **Figure 1-5**.

The 2006 Los Angeles County Hydrology Manual[2] Appendix B identifies the twenty four-hour, fifty-year design storm isohyetals within the LAR UR2 WMA as varying from 5.6 inches on the western side to 5.9 inches in the eastern portion of the WMA, as shown in **Figure 1-6**.

[2] http://ladpw.org/wrd/Publication/engineering/2006_Hydrology_Manual/2006%20Hydrology%20Manual-Divided.pdf
[3] http://ladpw.org/wrd/Publication/engineering/Final_Report-Probability_Analysis_of_85th_Percentile_24-hr_Rainfall1.pdf

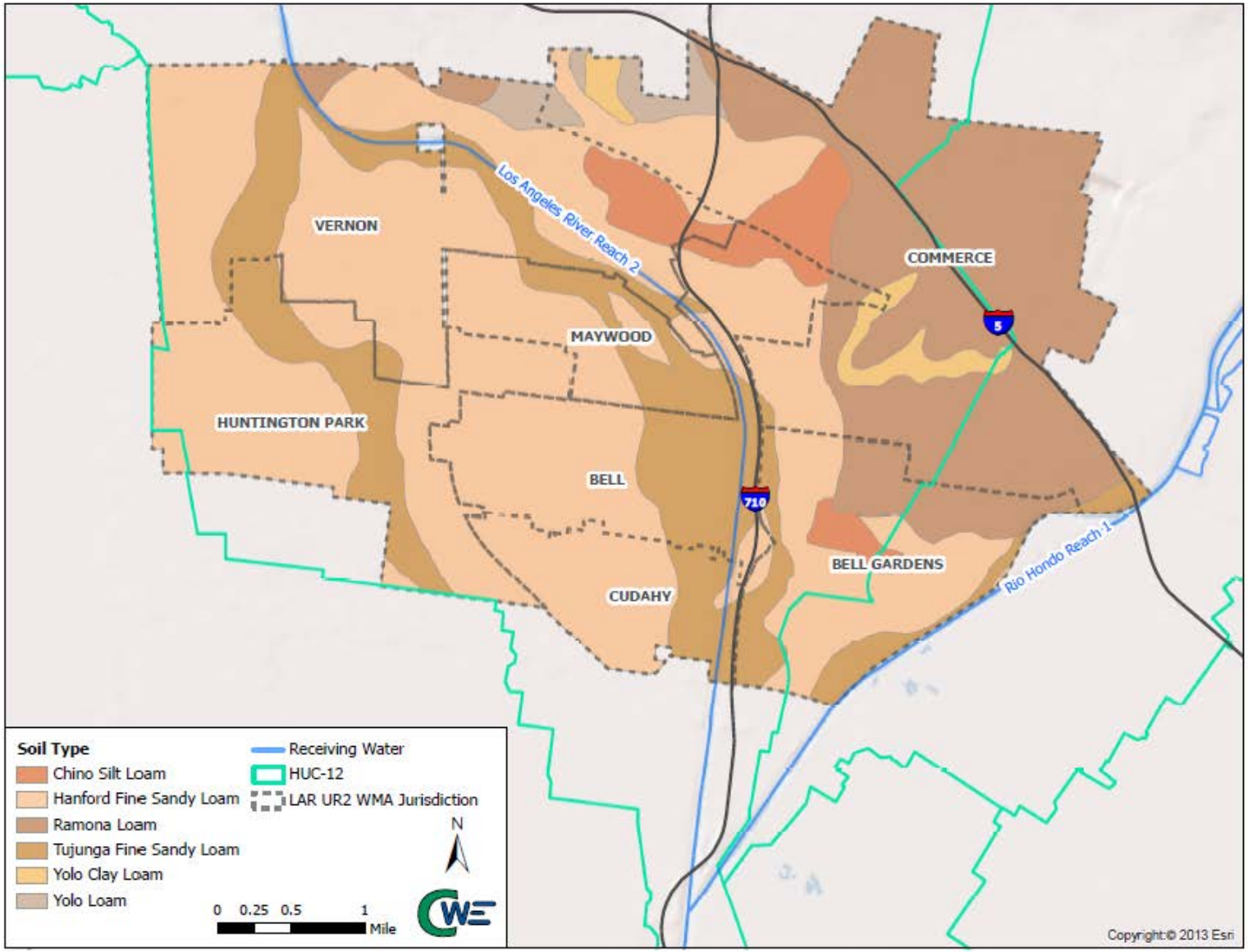


Figure 1-4 LAR UR2 WMA Soil Types

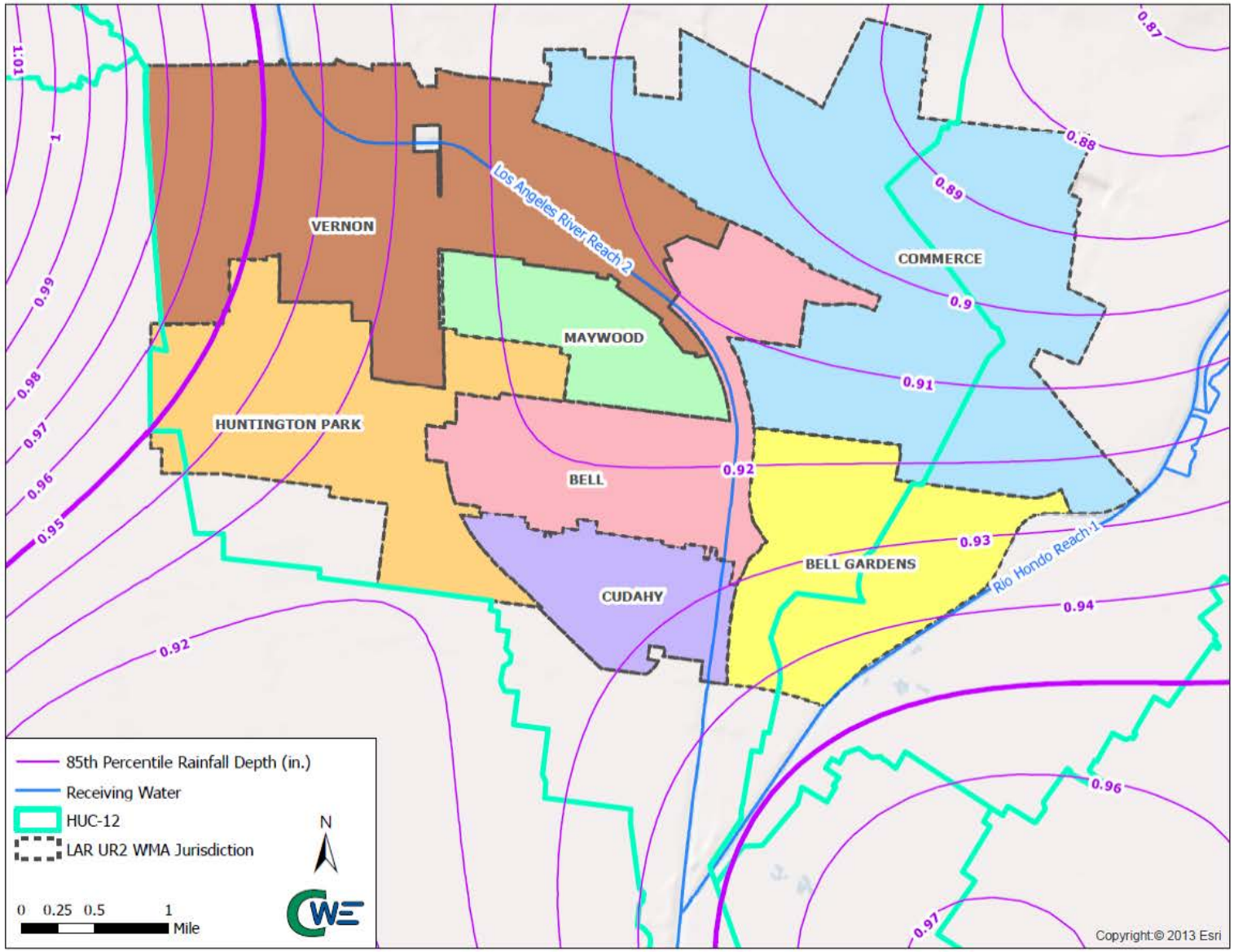


Figure 1-5 LAR UR2 WMA 85th Percentile, 24-Hour Rainfall Depths

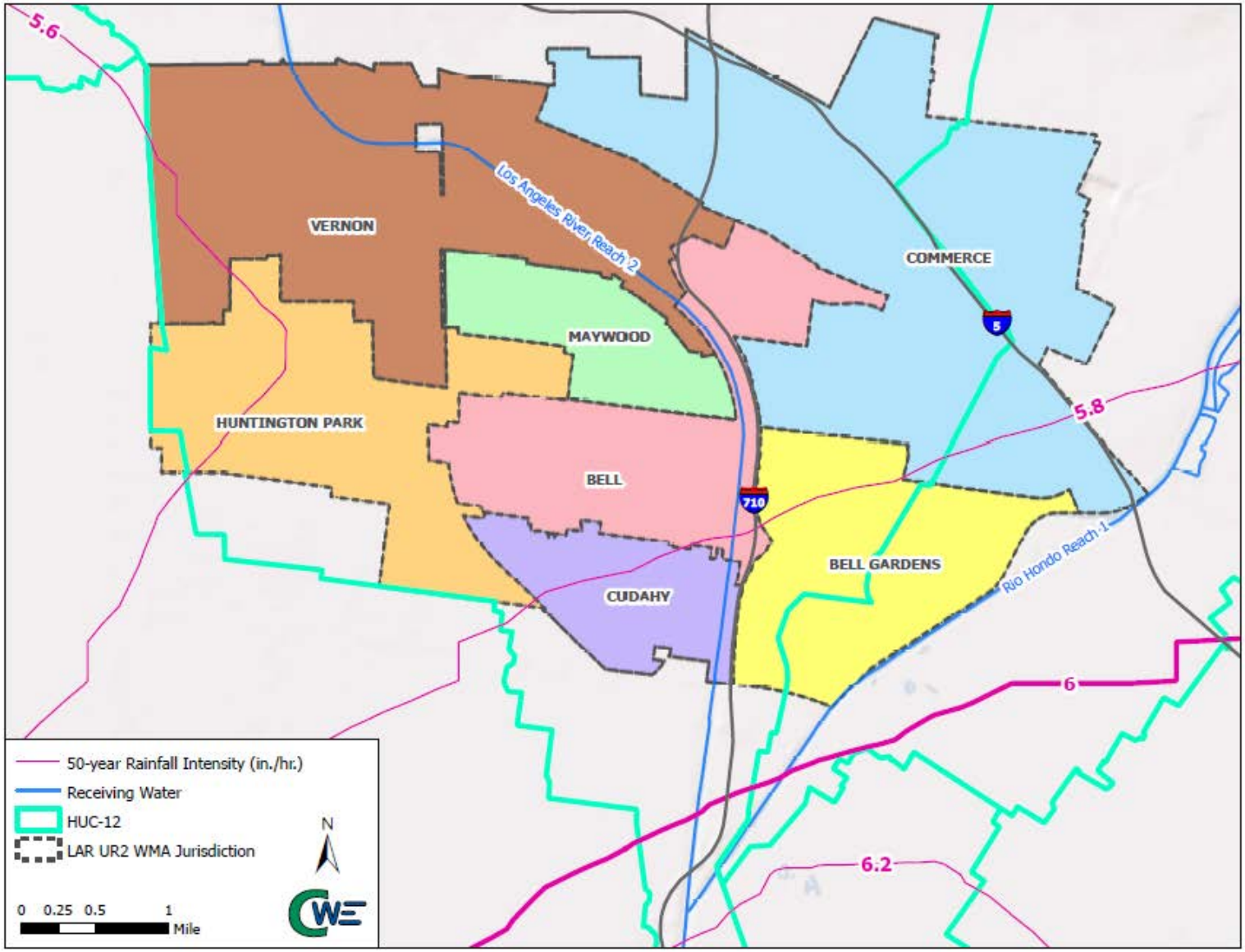


Figure 1-6 LAR UR2 WMA 50-Year, 24-Hour Rainfall Intensity

1.2.2 Water Body Characteristics

The LAR flows 51 miles from the Santa Monica Mountains, at the western end of the San Fernando Valley, to the Long Beach Harbor, San Pedro Bay, and Pacific Ocean. Including tributaries, such as the Rio Hondo and Compton Creek, the 824 square mile LAR watershed includes a total stream length of about 837 miles and about 4.6 square miles of lake area. No lakes are located within the LAR UR2 WMA. The watershed includes steep, easily eroded, undeveloped mountainous areas in the Angeles National Forest in the north and extensive urban areas in the midsection and south. Los Angeles River Reach 2 stretches from the Arroyo Seco confluence to the Compton Creek confluence. During dry-weather, the LAR conveys mostly treated wastewater effluent from upstream Public Owned Treatment Works (POTWs) and Water Recovery Plants (WRPs). Following exceptionally productive storm seasons, rising groundwater in Glendale Narrows may supplement these LAR flows, along with other Board-permitted industrial and individual dischargers, and dry-weather urban runoff discharges. The volume of these dry-weather discharges are expected to decline over time as more water is recycled.

The largest tributary to Reach 2 of the LAR is the Rio Hondo. The Rio Hondo drains approximately 120 square miles of the eastern LAR watershed. Below the Whittier Narrows, flows in Reach 2 of the Rio Hondo may be diverted to the adjacent Rio Hondo Spreading Grounds and used to recharge the Central Basin groundwater aquifer. These spreading grounds extend to the northeast corner of the WMA adjacent to the City of Commerce. Highly turbid "first flush" storm flows are not diverted into the spreading grounds, but drain into Rio Hondo Reach 1 which runs along the eastern boundary of the LAR UR2 WMA before flowing into the LAR below the LAR UR2 WMA. In conclusion, during dry-weather, flows in Reach 1 of the Rio Hondo are essentially absent, while during wet-weather, runoff volume and water quality my change abruptly due to upstream conditions that are beyond the control of the LAR UR2 WMA Permittees.

The LAR UR2 WMA is located within Reach 2 of the Los Angeles River, in the lower half of LAR Watershed, starting at East 26th Street in the City of Vernon and ending at Patata Street in City of Cudahy. The LAR UR2 WMA Cities of Bell Gardens and Commerce line the western bank of Rio Hondo Reach 1, while all WMA Permittees, except the City of Huntington Park, line the LAR, as illustrated in **Figure 1-7**. Throughout these reaches, both the LAR and Rio Hondo are conveyed within concrete-lined trapezoidal channels that have successfully contained regional flooding risks for decades. Dry-weather flows in some channel sections are further confined to narrow low-flow channels and the varying channel configurations in this area may impede water contact recreational beneficial uses. Given the large number and tributary area occupied by dischargers not regulated under the MS4 Permit, it may be challenging to separate their impact on dry-weather outfall and receiving water quality characteristics in the WMA. During dry- and wet-weather, it is likely that the LAR UR2 WMA's impact on receiving water conditions may be difficult to assess, given analytical limitations and the modest approximately 4% runoff contribution to the total flow in those receiving waters.

Waterfowl and other avian wildlife are commonly observed in the LAR within, and adjacent to, the MWA. Large congregations of gulls, are often observed near the proposed receiving water site at the extension of Tweedy Avenue in City of South Gate. However, this location is immediately downstream of the largest outfalls from the WMA and shifting the monitoring location northward would obfuscate the already modest contribution of the WMA on receiving water quality. Future water quality monitoring data collection, will guide the LAR UR2 WMA in resolving this monitoring challenge, or necessitate a special study to quantify the potential impact of this condition, further characterize the source of any Permit non-compliance, or guide the relocation of the monitoring site. Any study or monitoring changes would be proposed and coordinated in writing with Board staff.

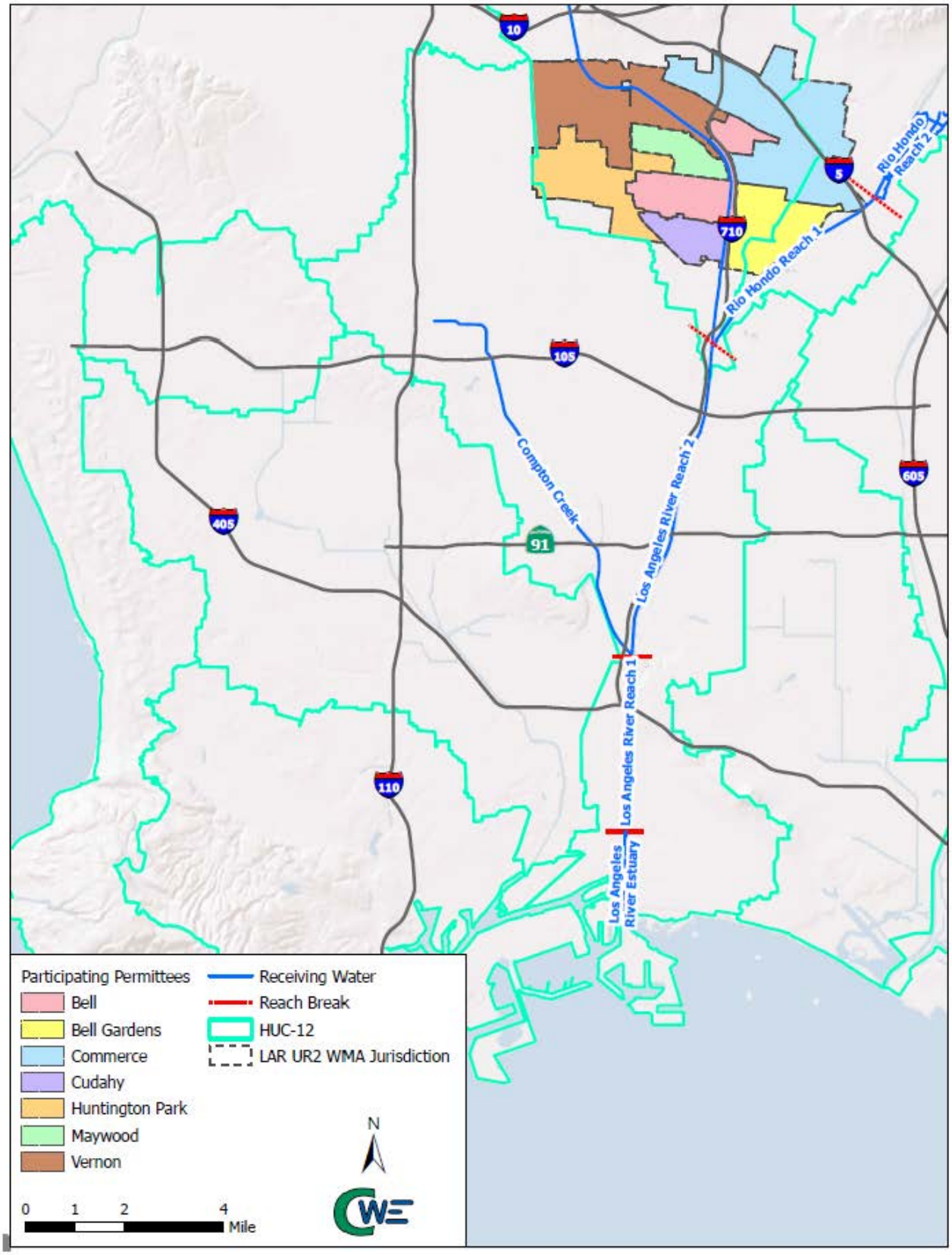


Figure 1-7 LAR UR2 WMA Water Bodies

1.3 Regulatory Framework

In 1972, provisions of the Federal Water Pollution Control Act, also known as the Clean Water Act (CWA), were amended so that the discharge of pollutants to waters of the United States from any point source is effectively prohibited, unless the discharge is in compliance with an NPDES permit. The CWA was amended, as the Water Quality Act of 1987, to require the United States Environmental Protection Agency (USEPA) to establish a program to address stormwater discharges. In response, USEPA promulgated NPDES stormwater permit application regulations. These regulations required that facilities with stormwater discharges "...from a large or medium municipal storm sewer system; or (3) a discharge which USEPA or the state/tribe determines to contribute to a violation of a water quality standard..." apply for an NPDES permit. On November 16, 1990, the USEPA published final regulations that established application requirements for stormwater permits for MS4s serving a population of over 100,000 (Phase I communities) and certain industrial facilities, including construction sites greater than five acres. On December 8, 1999, the USEPA published the final regulations for communities under 100,000 (Phase II MS4s) and construction sites between one and five acres.

The Porter-Cologne Act (Water Code 13000, et seq.) is the principal water quality management legislation for California, requiring that the State Water Resources Control Board (SWRCB) and Regional Boards develop plans to serve as guides for protecting water quality within the state.

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board or LARWQCB), Water Quality Control Plan (Basin Plan), identifies receiving waters, their beneficial uses, water quality objectives, and more specific discharge controls that may be applied to categories of discharges. The beneficial use designations for the LAR and the Rio Hondo include:

- **Municipal and Domestic Supply (MUN)** – Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
- **Industrial Service Supply (IND)** – Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
- **Ground Water Recharge (GWR)** – Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
- **Water Contact Recreation (REC-1)** – Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.
- **Non-contact Water Recreation (REC-2)** – Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
- **Warm Freshwater Habitat (WARM) –** Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
- **Wildlife Habitat (WILD) –** Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Table 1-4 summarizes the beneficial uses for the receiving water bodies located within the LAR UR2 WMA, as designated in the Basin Plan.

Table 1-4 Basin Plan Beneficial Use Designations Within the LAR UR2 WMA							
Receiving Water Bodies	**MUN**	**IND**	**GWR**	**REC-1**	**REC-2**	**WARM**	**WILD**
Los Angeles River	P*	P	E	Es	E	E	P
Rio Hondo below Spreading Grounds	P*		I	Pm	E	P	I

E: Existing beneficial Use
P: Potential beneficial Use
I: Intermittent beneficial Use
E, P, and I shall be protected as required.
Es: Access prohibited by Los Angeles County DPW
Pm: Access prohibited by Los Angeles County Department in the concrete-channelized areas.
* Asterisked MUN designations addressed by Senate Bill (SB) 88-63 and Regional Board (RB) Order 89-03.

Under Porter-Cologne, specific Waste Discharge Requirements (WDRs) are issued by the nine Regional Water Quality Control Boards and may serve as NPDES permits for discharges to surface waters.

1.3.1 MS4 Permit Requirements

The Regional Board adopted Order No. R4-2012-0175, WDRs for MS4 discharges within the Coastal Watersheds of Los Angeles County, except those discharges originating from the City of Long Beach MS4 (NPDES Permit No. CAS004001) on November 8, 2012, and it became effective on December 28, 2012. The MS4 Permit identifies Minimum Control Measures (MCMs), Total Maximum Daily Load (TMDL) provisions, the WMP Plan development process, and TMDL Waste Load Allocations (WLAs) as dry- and wet-weather numeric limits. Pursuant to Permit Part VI.C.1.d, WMPs must ensure that MS4 discharges:

(i) Achieve applicable WQBELs in Part VI.E and Attachment O based on the corresponding compliance schedules;
(ii) Do not cause or contribute to exceedances of the RWLs in Parts V.A and VI.E, and Attachment O of the MS4 Permit; and
(iii) Do not include non-stormwater discharges that are effectively prohibited based on Part III.A.

The WMP must also ensure that the controls are implemented to reduce the discharge of pollutants to the Maximum Extent Practicable (MEP), pursuant to Part IV.A.1, and as proposed in the LAR UR2 WMP Plan. Part VI.C.1.f of the Permit states that the WMP must be consistent with Parts VI.C.5-C.8 and shall:

i. Prioritize water quality issues resulting from stormwater and non-stormwater discharges from the MS4 to receiving waters within their WMA.
ii. Identify and implement strategies, control measures, and Best Management Practices (BMPs) to achieve the outcomes specified in Part VI.C.1.d and discussed above.
iii. Execute an integrated monitoring program and assessment program pursuant to Attachment E - Monitoring and Reporting Program (MRP), Part VI to determine progress towards achieving applicable limitation and/or action levels in Attachment G.
iv. Modify strategies, control measures, and BMPs as necessary based on analysis of monitoring data collected pursuant to the MRP to ensure that applicable numeric limits and other milestones set forth in the WMP are achieved in the required timeframes.
v. Provide appropriate opportunity for meaningful stakeholder input, including but not limited to, a permit-wide WMP Technical Advisory Committee (TAC) that will advise and participate in the development of the WMP from month six through the date of the program approval. The TAC may include at least one Permittee representative from each WMA for which a WMP will be developed, and must include a minimum of one public representative from a non-governmental organization (NGO) with public membership, staff from the Regional Board and USEPA Region IX.

Part VI.C.4.c.i of the MS4 Permit states that Permittees may elect to collaborate on the development and submission of a draft WMP by June 28, 2014, if the following conditions are met in greater than fifty percent of the land area covered by the WMP.

(1) Demonstrate that there are Low Impact Development (LID) ordinances in place and/or commence development of a LID ordinance(s) meeting the requirements of the MS4 Permit's Planning and Land Development Program by February 26, 2013, 60 days after the effective date of the MS4 Permit.
(2) Demonstrate that there are green streets policies in place and/or commence development of a policy(ies) that specifies the use of green street strategies for transportation corridors by February 26, 2013, 60 day after the effective date of the MS4 Permit.
(3) Demonstrate in the Notice of Intent (NOI) to develop a WMP that Parts VI.C.4.c.i. (1) and (2) have been met in greater than fifty percent of the watershed area.

The LAR UR2 WMA received Regional Board RAA and WMP comments on October 27, 2014 and, following meetings and correspondence through January 9, 2015, has addressed the remaining Board comments in this Revised WMP. The LAR UR2-WMA anticipates final approval of this WMP no later than April 28, 2015, by the Executive Officer on behalf of the Regional Board. Implementation of the WMP will begin upon receipt of this approval, and the existing stormwater management programs and associated control measures will continue to be implemented until that time.

The requirements associated with the WMP are identified in Part VI.C.5 of the MS4 Permit, Program Development, and focuses on the:

a. Identification of water quality priorities;
b. Selection of watershed control measures; and
c. Compliance schedules.

The 2012 Los Angeles County MS4 Permit and LAR UR2 WMP Plan do not require implementation to the exclusion of other municipal priorities and the prioritization of its recommendations, or planning elements, may be iteratively modified based on the permit identified AMP, changing technical consideration, fiscal limitations, and societal priorities of the individual Permittees, as they may change from time to time. Furthermore, the proposals within the WMP Plan, are subject to revision or reversal, following consideration of the Own-Motion order, regarding the Permit Appeal and contents, before the SWRCB.

1.3.1.1 2012 MS4 Permit Review Process and WMP Implementation

On December 10, 2012, the cities of Commerce, Huntington Park and Vernon (hereinafter “the Cities”) submitted Administrative Petitions (Petitions) to the California State Water Resources Control Board (SWRCB) pursuant to section 13320(a) of the California Water Code requesting that the SWRCB review various terms and requirements set forth in the 2012 MS4 Permit, Order No. R4-2012-0175 (Permit) adopted by the California Regional Water Quality Control Board, Los Angeles Region (Regional Board). The Petitions were subsequently referred to as SWRCB/OCC File Nos. A-2236(a) through (kk). In particular, and among other terms/requirements contained in the Permit, the Cities have sought review of all numeric limits, both interim and final, and whether derived from a TMDL or provided from the application of an adopted water quality standard, or through a discharge prohibition set forth in the Permit. The challenges to the various numeric limits set forth in the Permit include a challenge to all such numeric limits that may be complied with through the implementation of an approved Watershed Management Plan (WMP) and/or an Enhanced Watershed Management Plan (EWMP). In essence, the Petitions are challenging the fundamental premise for the various WMPs and the EWMPs requirements in the Permit, on various grounds, including, but not limited to, on the grounds that such Permit terms exceed the maximum extent practicable (MEP) standard, and were not adopted in accordance with the

requirements of California Water Code (CWC) sections 13000, 13263 and 13241 The Cities are reserving all of their rights to subsequently assert that the identified BMPs need not be implemented, on the grounds that they are not technically or economically feasible. In other words, that the BMPs are impracticable and contrary to the MEP standard, and that it is not possible to provide the reasonable assurances required under the Permit in a manner that is consistent with the MEP standard, if at all. The Cities agree that it is not possible to provide the reasonable assurances required under the Permit in a manner that is consistent with the MEP standard. On July 8, 2013 the SWRCB advised the Cities that the respective Petitions were complete and all such Petitions remain pending at this time.

On November 21, 2014, the SWRCB Chief Counsel released a Draft Order substantially supporting the Permit and rejecting the primary challenges identified within the Petitions. On December 16, 2014, the SWRCB convened a Workshop and accepted comments regarding the Petitions and Draft Order. Written comments, regarding the proposed Draft Order, were due to the Clerk of the Board on January 21, 2015.

In spite of the still pending Petitions and ongoing Final Order development, the Cities are acting in good faith and moving forward to attempt to comply with all of the applicable terms of the Permit, and look forward to working with the Regional Board to assess and implement the strategies and requirements necessary for compliance, including the development of an acceptable WMP. Nevertheless, because, through their Petitions, the Cities believe that many of the terms of the Permit are invalid, including the terms involving compliance with numeric limits which the Cities are seeking to comply with through the development and implementation of this WMP. The Cities hereby expressly reserve and are not waiving, with this submission or otherwise, any of their rights to challenge the need for any WMP, including their rights to seek to void or otherwise compel modifications to the Permit terms involving the WMP, or to void or compel revisions to any other part or portion of the Permit. In addition, the Cities are not waving, and hereby expressly reserve, any and all rights they have or may have to seek to recover the costs from the State to develop and implement this WMP, on the grounds that the WMP is being developed and will be implemented in order to comply with various mandates involving TMDLs, water quality standards and other similar Permit requirements, which requirements in the Permit are not mandated by the Clean Water Act, and with the Cities being unable to impose fees in order to recover their costs for developing and implementing this WMP.

1.3.2 Relevant TMDLs

TMDLs applicable to the LAR UR2 WMA are listed in **Table 1-5** and are further characterized in Section 2 regarding the WMP Plan water quality priorities. The resolutions numbers and effective dates reflect the most recent amendments to the Los Angeles River nitrogen and metals TMDLs. TMDL impacted reaches are highlighted in **Figure 1-8** and a detailed summary of the numeric WLAs specified in the MS4 Permit can be found in **Appendix C**.

Table 1-5 TMDLs Applicable to the LAR UR2 WMA

TMDL	LARWQCB Resolution Number	Effective Date
Los Angeles River Nitrogen Compounds and Related Effects TMDL	2003-009	March 23, 2004
	2012-010[1]	Not Yet Effective
Los Angeles River Trash	2007-012	September 23, 2008
Los Angeles River Metals TMDL	2007-014	October 29, 2008
	2010-003	November 3, 2011
Los Angeles River Bacteria TMDL	2010-007	March 23, 2012

[1] Site Specific Objectives (SSOs) for Ammonia were approved on June 4, 2013.

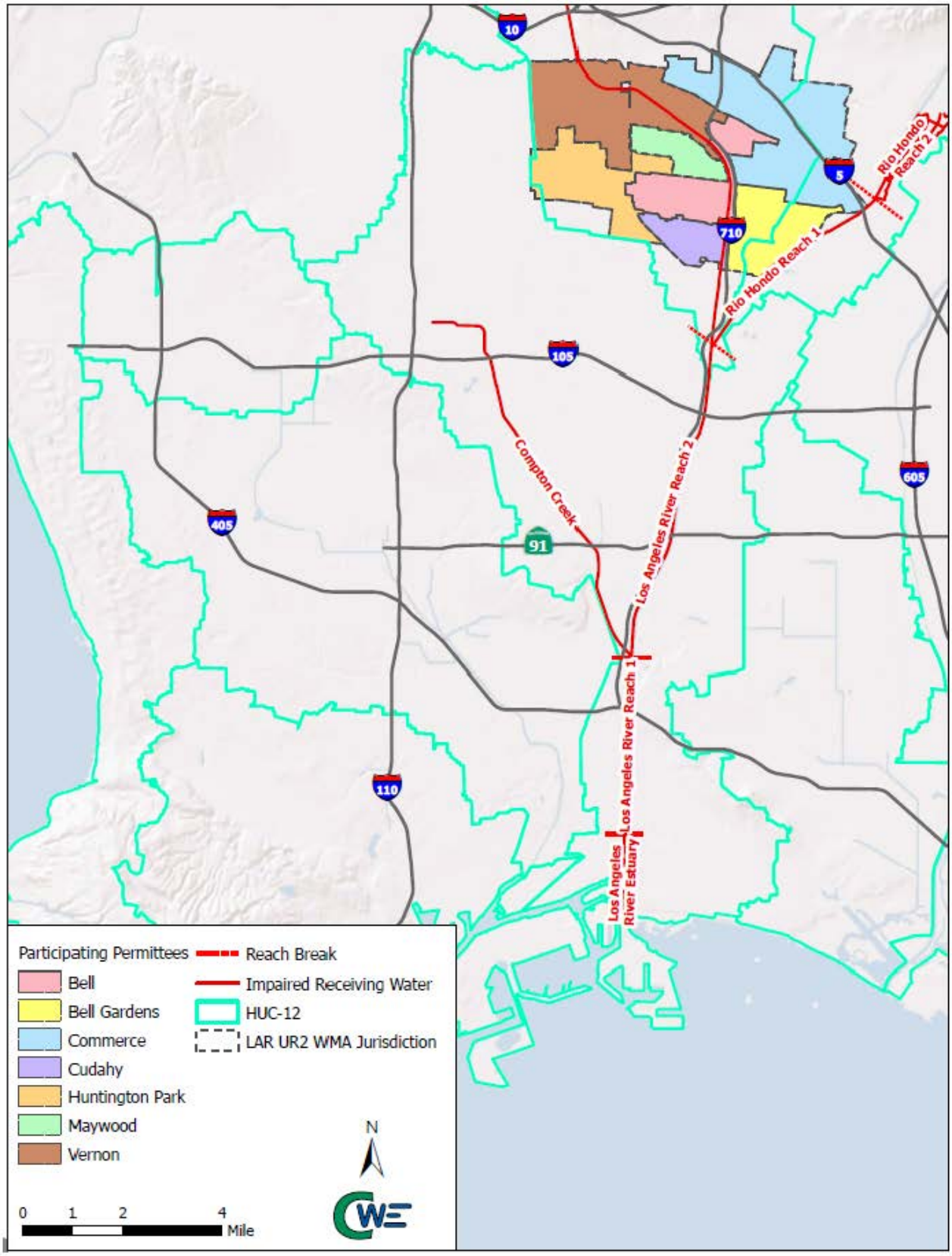


Figure 1-8 LAR UR2 WMA and Downstream Impaired Water Bodies

Regional Board adopted TMDLs include requirements to develop implementation plans, providing interim and final compliance dates. **Table 1-6** lists LAR UR2 WMA relevant interim and final compliance dates.

Two dry-weather compliance paths are applicable to the LAR bacteria TMDL, based on whether or not jurisdictions develop and implement a Load Reduction Strategy (LRS), which must quantitatively demonstrate that outfall specific actions result in attainment of the final WLAs. The LRS is based on six dry-weather "snapshot" monitoring events, and confirmed by three similar post-implementation events to assess effectiveness. Completing the LRS process provides regulatory relief by providing seven additional years before final effluent limitations become effective. The LAR UR2 WMA submitted a LRS, for its portion of Los Angeles River Segment B, on December 15, 2014. The LRS did not identify any priority drains, but identified four outlier drains to be investigated as part of the groups non-stormwater monitoring program, which is included in the CIMP. The Rio Hondo Channel LRS submittal date, along with corresponding interim and final compliance milestones for the Los Angeles River Bacteria TMDL, are included in **Table 1-6**.

Revised numeric limits were incorporated into the MS4 Permit by the Regional Board after adoption and Office of Administrative Law (OAL) approval of the TMDL amendment. Site Specific Objectives for Copper and Lead were developed (LWA 2013), at considerable Permittee expense, and have been presented to the LARWQCB for future consideration as a Basin Plan Amendment of the LAR Metals TMDL.

1.3.3 Relevant 303(d) Listings

Receiving water impairments on the CWA 303(d) List, otherwise known as the State Integrated Report, but not currently addressed by a TMDL, include the following for the LAR UR2 WMA:

- **Los Angeles River Reach 2**
  - **Oil** – This constituent has an estimated TMDL completion date of 2019. Impairments for oil are based on a qualitative assessment of sheen and may result from natural constituents associated with algal growth. It is anticipated that remaining anthropogenic oil and grease will continue to be controlled through the enhanced weekly street vacuuming/sweeping program utilized by each of the LAR UR2 WMA Permittees and the installation of the Full Capture Certified (FCC) trash control devices which should be completed before the TMDL completion date. Furthermore, this condition may have originated in upstream areas where the interval between sweeping events is months, rather than a single week. Finally, the LAR UR2 WMA CIMP includes analytical monitoring during the first year to numerically assess the presence of this contaminant.
- **Rio Hondo Reach 1**
  - **Coliform Bacteria** – This constituent has an estimated completion date of 2019; however, with the adoption of the Los Angeles River Bacteria TMDL this impairment is actually currently being addressed.
  - **Toxicity** – This impairment condition has an estimated TMDL completion date of 2021; however, other toxicity listings have been addressed as a specific toxicant, such as a metal, for which a TMDL has already been developed. It is unclear that a source assessment can be developed, or a pollutant reduction strategy implemented for a condition or unknown constituent. The impairment listing is based on a single line of evidence consisting of only two positive toxicity tests using Fathead Minnows and *Ceriodaphnia dubia*. The LAR UR2 WMA CIMP proposes required annual toxicity tests, to assess whether this impairment remains or was a result of TMDL addressed metals concentrations or other conditions associated with the extremely low dry weather flows that were previously present in the Rio Hondo.

Table 1-6 Schedule of TMDL Compliance Milestones Applicable to the LAR UR2 WMA

TMDL	Water Bodies	Constituents	Compliance Goal	Weather Condition	Compliance Dates and Milestones (Bolded **numbers** indicate milestone deadlines within the current MS4 Permit term)[1]														
					2012	2013	2014	2015	2016	2017	2020	2022	2023	2024	2026	2028	2030	2032	2037
LAR Nitrogen	All	Ammonia, Nitrate, Nitrite, Nitrate+Nitrite	Meet WQBELs	All	**Pre 2012**														
					Final														
LAR Trash	All	Trash	% Reduction	All	**9/30**	**9/30**	**9/30**	**9/30**	**9/30**										
					70%	**80%**	**90%**	**96.7%**	**100%**										
LAR Metals	All	Copper, Lead, Zinc	% of MS4 area Meets WQBELs	Dry	**1/11**						1/11			1/11					
					50%						75%			100%					
	All	Copper, Lead, Zinc, Cadmium		Wet	**1/11**									1/11		1/11			
					25%									50%		100 %			
LAR Bacteria	All	*E. Coli*	Meet WQBELs	Dry w/o LRS									Final						
				Rio Hondo Segment B Dry w/ LRS					**LAR UR2 LRS Due[2]**				Interim				Final		
				LAR Segment B Dry w/ LRS			**LAR UR2 LRS Due[2]**		[2]			Interim				Final			
				Wet															Final

Notes: LAR = Los Angeles River

[1] The MS4 Permit term is five years from the MS4 Permit effective date or December 27, 2017.

[2] The LRS requires coordinated effort by all MS4 Permittees within a segment or tributary. An LRS must quantitatively demonstrate that the actions for specific outfalls are sufficient to result in attainment of the *final* WLAs. Requires six snapshot sampling events prior to LRS and three post-LRS snapshot sampling events.

1.4 WMP Stakeholder Process

Permit Part VI.C.1.f.v, states that each WMP must provide an appropriate opportunity for meaningful stakeholder input, including, but not limited to, a permit-wide watershed management program TAC that will advise and participate in the development of the WMP from month six through the date of approval. The MS4 Permit requires that the TAC include at least one Permittee representative from each WMA for which a WMP is being developed and one public representative from an NGO with public membership, staff from the Regional Board and USEPA Region IX. The City of Huntington Park regularly participated on the TAC, with the assistance of the City of Commerce as an alternate.

Rather than reaching out to distant NGO stakeholders with priorities beyond the central LAR watershed, the LAR UR2 WMA reached out to a local advocacy group Communities for A Better Environment[4] (CBE) in the City of Huntington Park. On February 26, 2014, representatives for the Permittees and CBE met and discussed the MS4 Permit and development of the WMP, RAA, and CIMP Plans. After discussing WCM and BMP alternatives, CBE asserted a preference for a distributed rain barrel retrofit program to support residential agricultural projects. Since this recommendation would need to be compatible with the RAA, additional discussions were deferred until after the Regional Board RAA Guidelines were released on March 25, 2014, and modeling scenarios could be analyzed. With bacteria as a dominant or driving pollutant, the SB-PAT model favored infiltration BMPs near subwatershed outfalls, which accept runoff from smaller events and allow larger events to be addressed as allowable exceedance days, over large numbers of distributed BMPs sized to rare larger events. Furthermore, since agricultural areas are generally modeled as a greater sources of nearly all pollutants than residential areas (Table 3.3 of the Regional Board RAA Guidelines), it is unlikely that any benefit would accrue.

1.5 WMP Overview

The WMP documents the programs development process by detailing the water quality priorities within the LAR UR2 WMA, identifying existing, potential, and proposed control measures, and demonstrating through a model that WQOs will be satisfied in order to ensure compliance with the MS4 Permit. The WMP includes the following sections:

- **Section 2 - Water Quality Priorities**
  Receiving water bodies are identified and characterized based on available water quality data records. Water Body-Pollutant Classifications are developed so that categories can be assigned to each water body-pollutant combination. A source assessment was used to establish water quality priorities. The water quality priorities are the primary "driver" of the WMP.

- **Section 3 - Watershed Control Measures**
  This section outlines the existing, potential, and proposed control measures in LAR UR2 WMA. The current MCMs are described and an approach to modifying the programs, as well as potential modifications, is presented. Existing structural BMPs are identified as an approach to identifying and selecting additional regional BMPs is included. The proposed watershed control measures will be implemented to address the water quality priorities.

[4] http://www.cbecal.org/

- **Section 4 - Reasonable Assurance Analysis**
  The modeling system being used by the LAR UR2 WMA is described. The modeling approach and process are discussed which involve Target Load Reductions and reductions associated with both structural and non-structural BMPs. The BMP assumptions and proposed BMPs are detailed along with the model output. The RAA modeled combinations of watershed control measures and BMPs to demonstrate their effectiveness in addressing the water quality priorities. The RAA demonstrates Target Load Reductions will be met, using the Site Specific Objectives for metals as presented in the Draft Los Angeles River Copper and Lead Special Study Implementation Report (Larry Walker and Associates, 2013).

- **Section 5 - Compliance Schedules and Costs**
  The LAR UR2 WMA identified interim milestones and dates to compliment TMDL final Waste Load Allocation (WLA) and compliance dates. These milestone dates were chosen at intervals to reflect key Permit and TMDL dates, while allowing sufficient time for monitoring data permit and implementation to progress in a meaningful fashion that might guide the iterative adaptive management process.

- **Section 6 - Legal Authority**
  As summarized in their 2012-13 Annual Reports, the LAR UR2 WMA Permittees have established the Legal Authorities required in Permit Part VI.A.2 and provided individual Statements of Legal Authority, which can be found in **Appendix J**.

2. Water Quality Priorities

Identification of the water quality priorities in the LAR UR2 WMA is a key component of the WMP process. Part VI.C.5.a of the MS4 Permit outlines the pertinent elements of the prioritization process as follows:

1. Water quality characterization (VI.C.5.a.i) based on available monitoring data, TMDLs, 303(d) lists, storm water annual reports, etc.;
2. Water body-pollutant classification (VI.C.5.a.ii) to identify water body-pollutant combinations that fall into three MS4 Permit-defined categories;
3. Source assessment (VI.C.5.a.iii) for the water body-pollutant combinations in the three categories; and
4. Prioritization of the water body-pollutant combinations (VI.C.5.a.iv).

The three MS4 Permit defined categories are:

- Category 1 (Highest Priority): Water body-pollutant combinations for which numeric limits are established in Part VI.E and Attachments L through R of the MS4 Permit. Attachment O is the most applicable attachment for LAR UR2 WMA.

- Category 2 (High Priority): Pollutants for which data indicate water quality impairment in the receiving water according to the State's Water Quality Control Policy for Developing California's CWA Section 303(d) List (State Listing Policy) and for which MS4 discharges may be causing or contributing to the impairment.

- Category 3 (Medium Priority): Pollutants for which there are insufficient data to indicate water quality impairment in the receiving water according to the State's Listing Policy, but which exceed applicable receiving water limitations contained in the MS4 Permit and for which MS4 discharges may be causing or contributing to the exceedance.

The following sections presented below describe the characterization and prioritization of those water body-pollutant combinations (WBPCs) found to be issues in the LAR UR2 WMA.

2.1 Water Quality Characterization

Water quality monitoring data for the Los Angeles River Upper Reach 2 water body segments were gathered, assessed for quality and compiled into a database by wet-weather and dry-weather conditions and locations. Permittee specific discharge sampling has not been required under past permits; therefore, no information was identified. Water quality monitoring data was solicited from numerous sources, but the most useful and highest quality data relevant to the LAR UR2 WMA were obtained from the following sources:

- Los Angeles County Annual Mass Emission and Tributary Station Monitoring Data (2002 – 2012);
- Los Angeles River Metals TMDL Coordinated Monitoring Plan (CMP) Ambient Monitoring Program (2008 – 2013);
- Council for Watershed Health (CWH) Los Angeles River Watershed Monitoring Program (LARWMP) data (2009 – 2012); and
- Cleaner Rivers through Effective Stakeholder-led TMDLs (CREST) Los Angeles River Bacteria Source Identification (BSI) Study.

A review of these sources found that no monitoring locations were located within the LAR UR2 WMA. In order to conduct the MS4 Permit required data analysis, monitoring locations upstream or downstream of

the LAR UR2 WMA was assessed. Details of each data source are summarized below and a more detailed summary can be found in **Appendix D**.

All data were screened to identify potential water quality objective exceedances. The monitoring sites with relevant available data are illustrated in **Figure 2-1**. Monitoring data that met Quality Assurance and Quality Control (QA/QC) criteria were analyzed to determine constituents exceeding water quality objectives. The number of available analytical data values, detected data values, and total number of constituents analyzed in the primary LAR UR2 WMA receiving water bodies are summarized in **Table 2-1**.

Table 2-1 Summary of Water Quality Data Reviewed for LAR UR2 WMA

Receiving Water Body	10 Year (2002 – 2012)			5 Year (2007 – 2012)		
	Total Sample	Number Detect	Number of Constituents	Total Sample	Number Detect	Number of Constituents
Los Angeles River	10,524	3,529	169	6,700	2,425	165
Rio Hondo	2,006	715	157	70	70	7
Wet-Weather	7,761	2,413	169	3,891	1,226	165
Dry-Weather	4,769	1,831	170	2,879	1,269	167
Totals	**12,530**	**4,244**	**171**	**6,770**	**2,495**	**167**

Los Angeles County Annual Mass Emission and Tributary Station Monitoring Data

The Los Angeles County Department of Public Works Annual Stormwater Monitoring Report presents stormwater quality findings for each July to June storm season. The 2002–2003, 2003–2004, 2005–2006, 2006–2007, 2007–2008, 2008–2009, 2009–2010, 2010-2011 and 2011-2012 monitoring reports addressed the following programs and associated elements:

- Core Monitoring Program – mass emission, tributary, water column toxicity, shoreline, and trash monitoring.
- Regional Monitoring Program – estuary sampling and bioassessment.
- Special studies – New Development Impacts Study in the Santa Clara Watershed, Peak Discharge Impact Study and BMP Effectiveness Study.

Monitoring data from the Los Angeles County Annual Mass Emission and Tributary Station Monitoring were analyzed for mass emission station S10 (Los Angeles River at Wardlow) and TS06 (Rio Hondo at Whittier Narrows).

Los Angeles River Metals TMDL CMP Ambient Monitoring Program

The CMP includes Tier I ambient monitoring program which collects monthly samples at thirteen locations. Tier I monitoring sites LAR1-8, LAR1-9, and LAR1-10 are located adjacent to the LAR UR2 WMA and the data from these sites help LAR UR2 WMA have a better understanding of the distribution of metals concentrations in the adjacent WMAs. Data for monitoring location LAR1-8, LAR1-9, and LAR1-10 were analyzed from the Los Angeles River Metals TMDL CMP. LAR1-8 is located upstream of the LAR UR2 WMA at Arroyo Seco, LAR1-9 is located downstream of the LAR UR2 WMA just above the Rio Hondo confluence, and LAR1-10 is located on the Rio Hondo just above the Los Angeles River confluence.

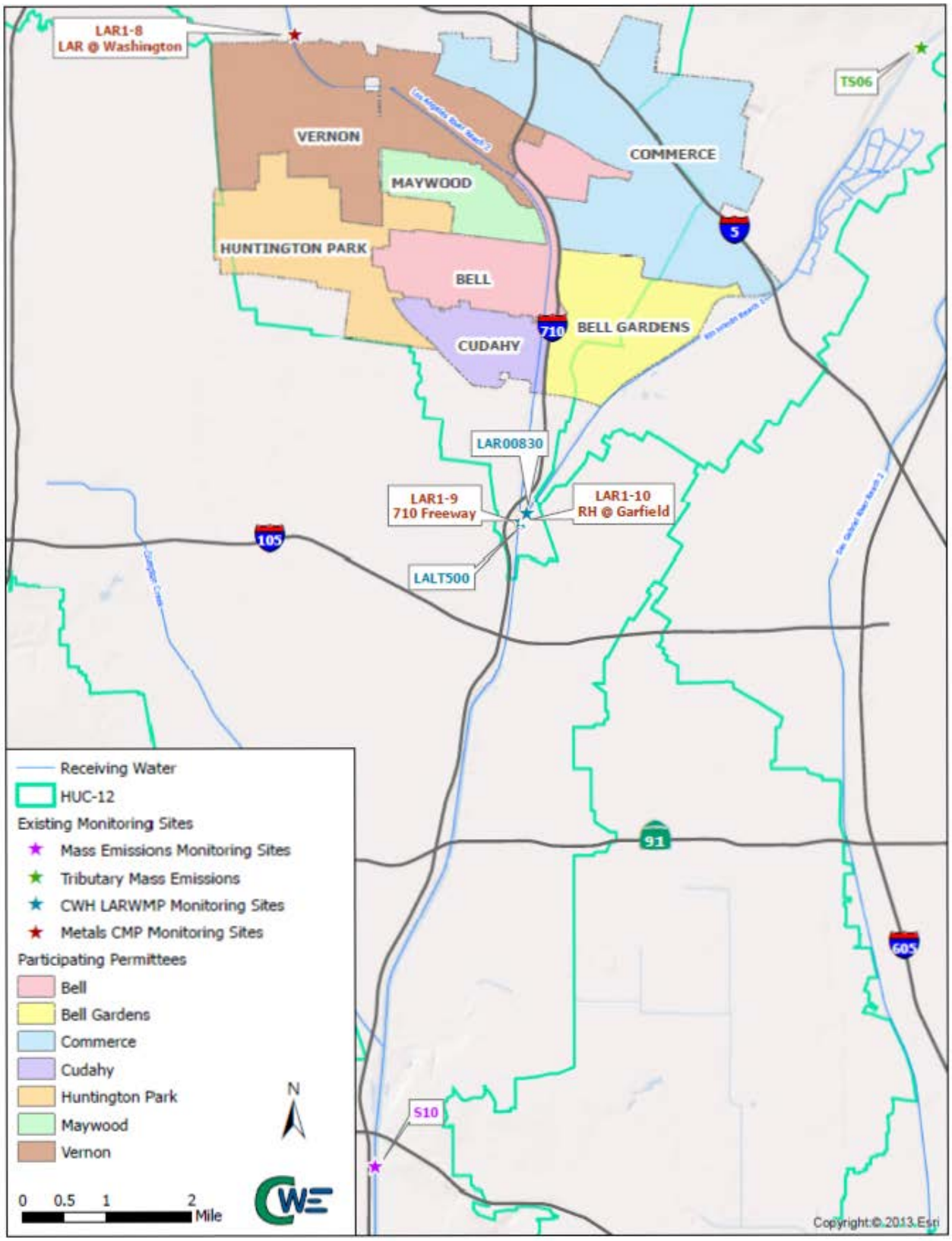


Figure 2-1 Existing Monitoring Sites Relevant to LAR UR2 WMA

CWH LARWMP

CWH coordinates the LARWMP to assess watershed health based on five broad objectives: are stream conditions improving; are specific critical site conditions improving; do discharges meet WQOs; is it safe to swim; and are locally caught fish safe to eat. CWH water quality monitoring data was collected under a stratified randomized strategy so that most sites were not revisited, and only a limited number of constituents were tested at each site. CWH monitoring data for locations LALT500 and LAR00830 were included in the analysis.

CREST Los Angeles River BSI Study

The CREST Los Angeles River BSI Study was designed to characterize the bacteria inputs to the LA River, support the development of the Bacteria TMDL source assessment, and assist with prioritization of the types and locations of TMDL implementation actions. Since bacteria are already categorized as a Category 1 pollutant, findings of the study were not included in the monitoring data analysis, as the study focuses solely on bacteria, which is a Category 1 pollutant because of existing Los Angeles River Bacteria TMDL. Additional details regarding this study and its findings can be found in **Appendix D**.

2.1.1 Characterization of Receiving Water Quality

Receiving water bodies and constituents, or WBPCs, identified during the data review were individually evaluated based on number of analyses reported, number of detects, and number of exceedances. Constituents subject to a TMDL underwent a data review to determine the status of compliance, as opposed to determining the appropriate Category of pollutant. Constituents on the CWA 303(d) list were analyzed based on the listing and current exceedance status. Constituents not TMDL or CWA 303(d) listed, but subject to basin plan, California Toxics Rule (CTR) or MS4 Permit water quality objectives were identified.

Analytes with exceedances in the past 10 years are presented in **Table 2-2** and subcategorized into TMDL, 303(d), and other source derivations. A comparison of the five and ten year data in **Table 2-2**, suggests a subtle decrease in the frequency with which exceedances are observed for most constituents. Cyanide, dissolved oxygen, chemical oxygen demand, chloride, and nitrite-N appeared to no longer demonstrate exceedances during the most recent 5 year period.

To further evaluate the data, comparisons of the Los Angeles River Reach 2 to Rio Hondo and wet- to dry-weather were also conducted. The comparison will help evaluate the constituents for each receiving water body during wet- and dry-weather conditions for five and ten year data sets. These comparisons are presented in **Table 2-3** to **Table 2-5**.

Table 2-3 demonstrates that, for the 10 year data set, wet-weather exceedances were more prevalent than dry-weather, for most constituents with the exception of cyanide, pH, nitrite-N, and mercury. The five year data set, presented in **Table 2-4**, shows an even greater percentage of exceedances in wet-weather. **Table 2-5** suggest that there were a higher percentage of exceedances in the Rio Hondo as compared to the Los Angeles River, with the exception of dissolved oxygen, pH, chemical oxygen demand, nitrite-N, total phosphorus, cadmium, chromium, mercury, nickel, and zinc. The higher percentages of exceedances may attribute to the limited number of samples collected for the Rio Hondo, as well as to the low or limited flow of the river.

This data has been presented to show a general characterization of the receiving water quality. However, as this data was obtained from sites outside of the LAR UR2 WMA, it does not reflect the water quality conditions caused by the LAR UR2 WMA.

Table 2-2 Summary of Exceedances for All Five Year and Ten Year Data Set										
Constituent	10 Year (2002-2012)					5 Year (2007 - 2012)				
	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed
TMDL										
E. coli	0	0	0	0%	0%	0	0	0	0%	0%
Copper	149	146	51	98%	34%	112	109	33	97%	29%
Lead	149	148	16	99%	11%	112	111	12	99%	11%
Zinc	149	149	25	100%	17%	112	112	19	100%	17%
Ammonia	50	42	0	84%	0%	42	35	0	83%	0%
CWA 303(d) List										
Total Coliform	75	75	56	100%	75%	38	38	26	100%	68%
Fecal Coliform	75	74	59	99%	79%	38	37	27	97%	71%
Oil and Grease	75	39	39	52%	52%	38	22	22	58%	58%
Basin Plan, CTR, MS4 Permit Water Quality Objective Exceedance										
Fecal Enterococcus	75	73	65	97%	87%	38	36	31	95%	82%
Cyanide	75	57	4	76%	5%	38	29	0	76%	0%
Dissolved Oxygen	74	74	1	100%	1%	38	38	0	100%	0%
pH	75	75	14	100%	19%	38	38	9	100%	24%
Chemical Oxygen Demand	75	74	1	99%	1%	38	37	0	97%	0%
Chloride	79	79	1	100%	1%	42	42	0	100%	0%
Kjeldahl-N	79	79	18	100%	23%	42	42	9	100%	21%
Nitrite-N	79	50	6	63%	8%	42	25	0	60%	0%
Nitrogen - Total	4	4	3	100%	75%	4	4	3	100%	75%
Phosphorus - Total (as P)	78	77	10	99%	13%	42	41	4	98%	10%
Total Suspended Solids	82	82	30	100%	37%	45	45	16	100%	36%
Cadmium	79	45	5	57%	6%	42	34	3	81%	7%
Chromium	79	77	9	97%	11%	42	40	6	95%	14%
Mercury	79	6	2	8%	3%	42	5	1	12%	2%
Nickel	79	77	6	97%	8%	42	40	3	95%	7%

Table 2-3 Ten Year (2002 – 2012) Comparison of Exceedances during Wet- and Dry-Weather										
Constituent	10-Year Wet-Weather					10-Year Dry-Weather				
	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed
TMDL										
E. coli	0	0	0	0%	0%	0	0	0	0%	0%
Copper	49	47	37	96%	76%	100	99	14	99%	14%
Lead	49	49	11	100%	22%	100	99	5	99%	5%
Zinc	49	49	25	100%	51%	100	100	0	100%	0%
Ammonia	29	25	0	86%	0%	21	17	0	81%	0%
CWA 303(d) List										
Total Coliform	49	49	49	100%	100%	26	26	7	100%	27%
Fecal Coliform	49	49	48	100%	98%	26	25	11	96%	42%
Oil and Grease	49	37	37	76%	76%	26	2	2	8%	8%
Other										
Fecal Enterococcus	49	49	49	100%	100%	26	24	16	92%	62%
Cyanide	49	34	2	69%	4%	26	23	2	88%	8%
Dissolved Oxygen	48	48	1	100%	2%	26	26	0	100%	0%
pH	49	49	2	100%	4%	26	26	12	100%	46%
Chemical Oxygen Demand	49	48	1	98%	2%	26	26	0	100%	0%
Chloride	49	49	1	100%	2%	30	30	0	100%	0%
Kjeldahl-N	49	49	15	100%	31%	30	30	3	100%	10%
Nitrite-N	49	26	0	53%	0%	30	24	6	80%	20%
Nitrogen - Total	0	0	0	0%	0%	4	4	3	100%	75%
Phosphorus - Total (as P)	48	48	8	100%	17%	30	29	2	97%	7%
Total Suspended Solids	56	56	29	100%	52%	26	26	1	100%	4%
Cadmium	49	31	5	63%	10%	30	14	0	47%	0%
Chromium	49	48	8	98%	16%	30	29	1	97%	3%
Mercury	49	1	1	2%	2%	30	5	1	17%	3%
Nickel	49	48	5	98%	10%	30	29	1	97%	3%

Table 2-4 Five Year (2007 – 2012) Comparison of Exceedances during Wet- and Dry-Weather										
Constituent	5 year Wet-Weather					5 year Dry-Weather				
	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed
TMDL										
E. coli	0	0	0	0%	0%	0	0	0	0%	0%
Copper	24	22	22	92%	92%	88	87	11	99%	13%
Lead	24	24	7	100%	29%	88	87	5	99%	6%
Zinc	24	24	19	100%	79%	88	88	0	100%	0%
Ammonia	24	21	0	88%	0%	18	14	0	78%	0%
CWA 303(d) List										
Total Coliform	24	24	24	100%	100%	14	14	2	100%	14%
Fecal Coliform	24	24	23	100%	96%	14	13	4	93%	29%
Oil and Grease	24	20	20	83%	83%	14	2	2	14%	14%
Other										
Fecal Enterococcus	24	24	24	100%	100%	14	12	7	86%	50%
Cyanide	24	17	0	71%	0%	14	12	0	86%	0%
Dissolved Oxygen	24	24	0	100%	0%	14	14	0	100%	0%
pH	24	24	0	100%	0%	14	14	9	100%	64%
Chemical Oxygen Demand	24	23	0	96%	0%	14	14	0	100%	0%
Chloride	24	24	0	100%	0%	18	18	0	100%	0%
Kjeldahl-N	24	24	7	100%	29%	18	18	2	100%	11%
Nitrite-N	24	13	0	54%	0%	18	12	0	67%	0%
Nitrogen - Total	0	0	0	0%	0%	4	4	3	100%	75%
Phosphorus - Total (as P)	24	24	4	100%	17%	18	17	0	94%	0%
Total Suspended Solids	31	31	16	100%	52%	14	14	0	100%	0%
Cadmium	24	20	3	83%	13%	18	14	0	78%	0%
Chromium	24	23	6	96%	25%	18	17	0	94%	0%
Mercury	24	0	0	0%	0%	18	5	1	28%	6%
Nickel	24	23	3	96%	13%	18	17	0	94%	0%

Table 2-5 Summary of Exceedances for Los Angeles River and Rio Hondo (2002 – 2012)										
Constituent	Los Angeles River					Rio Hondo				
	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed
TMDL										
E. coli	0	0	0	0%	0%	0	0	0	0%	0%
Copper	123	120	35	98%	28%	26	26	16	100%	62%
Lead	123	122	10	99%	8%	26	26	6	100%	23%
Zinc	123	123	24	100%	20%	26	26	1	100%	4%
CWA 303(d) List										
Total Coliform	63	63	46	100%	73%	12	12	10	100%	83%
Fecal Coliform	63	62	48	98%	76%	12	12	11	100%	92%
Oil and Grease	63	34	34	54%	54%	12	5	5	42%	42%
Other										
Fecal Enterococcus	63	61	54	97%	86%	12	12	11	100%	92%
Cyanide	63	50	1	79%	2%	12	7	3	58%	25%
Dissolved Oxygen	62	62	1	100%	2%	12	12	0	100%	0%
pH	63	63	12	100%	19%	12	12	2	100%	17%
Chemical Oxygen Demand	63	62	1	98%	2%	12	12	0	100%	0%
Chloride	63	63	0	100%	0%	16	16	1	100%	6%
Kjeldahl-N	63	63	13	100%	21%	16	16	5	100%	31%
Nitrite-N	63	43	6	68%	10%	16	7	0	44%	0%
Nitrogen - Total	0	0	0	0%	0%	4	4	3	100%	75%
Phosphorus - Total (as P)	63	62	9	98%	14%	15	15	1	100%	7%
Total Suspended Solids	70	70	24	100%	34%	12	12	6	100%	50%
Cadmium	63	39	5	62%	8%	16	6	0	38%	0%
Chromium	63	61	9	97%	14%	16	16	0	100%	0%
Mercury	63	3	2	5%	3%	16	3	0	19%	0%
Nickel	63	61	6	97%	10%	16	16	0	100%	0%

2.1.2 Characterization of Discharge Quality

Stormwater and non-stormwater discharges would be characterized if sufficient existing data were available. The necessary data is limited due to the typical lack of data for MS4 discharges within the LAR UR2 WMA and other Los Angeles County WMAs. Regional studies, modeling data, and/or land use data will be further evaluated in the future in order to characterize discharge quality. In addition, data will become available through the future Coordinate Integrated Monitoring Program (CIMP) Outfall Monitoring which will be utilized to characterize discharges from the LAR UR2 WMA.

2.2 Water Body Pollutant Classification

Based on the findings from the water quality characterization, the WBPCs can be classified into one of three categories, in accordance with the MS4 Permit Part VI.5.a.ii. Those WBPCs with a TMDL were classified as Category 1, those WBPCs listed on the State's 303(d) list as impairing a particular waterbody segment were classified as Category 2, and those remaining WBPCs without an associated TMDL or on the State's 303(d) list, but showing exceedances of water quality criteria were classified as Category 3. This categorization is intended to prioritize WBPCs in order to guide the implementation of structural and non-structural control measures in this WMP as well as the CIMP development. A classification of the constituents into each category was prepared and is summarized in **Table 2-6**. Category 3 pollutants were not identified for LAR UR2 WMA because all available water quality data was obtained downstream of LAR UR2 WMA, therefore its applicability is unknown. Through CIMP monitoring efforts, applicable data will be obtained and WBPCs will be revised through the adaptive management process.

Table 2-6 Categorized Water Body-Pollutant Combinations

Category 1 (TMDL)	Category 2 (303(d) List)	Category 3 (Insufficient Data
Ammonia-Nitrogen Nitrate-Nitrogen Nitrite-Nitrogen Nitrate-Nitrogen Plus Nitrite-Nitrogen *E. coli* Bacteria Cadmium Copper Lead Zinc Trash	Oil Coliform Bacteria Toxicity	Fecal Enterococcus pH Kjeldahl-Nitrogen Total Nitrogen Total Phosphorus Total Suspended Solids Chromium Nickel

2.3 Source Assessment

After the WBPC classification analysis, a source assessment, as outlined in MS4 Permit Part VI.C.5.a.iii, for LAR UR2 WMA Category 1 through 3 pollutants is warranted to identify whether MS4 discharges are likely to be causing or contributing to the impairments or exceedances. The assessment criteria may be based on the following facts or findings:

- Findings from LAR UR2 WMA Illicit Connections and Illicit Discharge Elimination Programs;
- Findings from LAR UR2 WMA Industrial/Commercial Facilities Programs;
- Findings from LAR UR2 WMA Development Construction Programs;
- Findings from LAR UR2 WMA Public Agency Activities Programs;
- TMDL source investigations;
- Watershed model results;

- Findings from LAR UR2 WMA monitoring programs, including but not limited to TMDL compliance monitoring and receiving water monitoring; and
- Any other pertinent data, information, or studies related to pollutant sources and conditions that contribute to the highest water quality priorities.

During WMP development, the LAR UR2 WMA Permittees were asked to provide summary data resulting from past industrial and commercial inspections, to identify whether pollutant sources or trends were apparent. During the last six years of the 2001 Permit, inspections were not required, so the available data was limited, dated, and rudimentary in content. As the primary emphasis of this program is implementing good housekeeping measures and protective measures, the reports emphasized the correction of obvious potential sources of pollutants, rather than actual pollutants or monitoring results. The report review did not provide useful information that could guide the source assessment and had been collected so far in the past as to border on hearsay. Future inspection initiated under 2012 MS4 Permit Part VI.D.6, will produce more focused and specific source assessment information.

Monitoring data, from non-MS4 Permittees in the LAR UR2 WMA, were also reviewed, however of 161 General Industrial Permittees within the WMA, only 35 were found to have submitted data to the State Storm Water Multiple Application and Report Tracking System (SMARTS) website. Initially, this data was briefly reviewed and appeared to have little diagnostic value in predicting pollutant sources or loads. Following receipt of the Board WMP comment letter, the analysis was repeated and again the data was found to be of limited value in guiding either current pollutant sources assessments or developing credible industrial land use pollutant EMCs. In the majority of cases, the monitoring data appeared variable and inconsistent, reported with mistaken concentration units, and the analytical parameters tracked were unrelated to likely facility pollutants or observed watershed impairments. A determination was made that this data did not meet the RAA Guideline criteria for being sustentative and defensible. In addition, the current versions of Permit approved RAA models are limited to less than 20 land use categories, preventing the application of SMARTS Monitoring Data to individual Industrial Permittees.

As apparent from the following subsections, TMDL pollutant source assessments and models reviewed during preparation of the WMP were inconclusive and overly broad upon which to take actionable source determinations or source control efforts. This follows past Regional Board studies, and the majority of environmental data, which suggest that a few "bad actors" are responsible for a significant share of environmental problems. At this time, models are not specific enough to accommodate a few specific sources, let alone the impact of a major source such as copper in brake pads. Current models are inadequate for distinguishing copper loads from a residential area adjacent to a freeway with those from a rural area. Such sources will likely be identified through implementation of the CIMP and the AMP.

Bacteria

The Los Angeles River Watershed Bacteria TMDL made the following assertions regarding the identification of indicator bacteria sources to the Los Angeles River:

> *Dry-weather urban runoff and stormwater conveyed by storm drains are the primary sources of elevated bacterial indicator densities to the Los Angeles River Watershed during dry- and wet-weather. The linkage between the numeric targets and the allocations is supported by the following scientific findings:*
>
> 1. *In Southern California, in dry-weather, local sources of bacteria principally drive exceedances (LARWQCB, 2002b; 2003b; 2004a).*
> 2. *Tiefenthaler et al. found that in natural streams bacteria levels were generally higher during lower flow condition (Tiefenthaler et al., 2008).*

3. *Ackerman et al. found that storm drains contribute roughly 13 percent of the flow in the Los Angeles River in dry-weather, while Water Reclamation Plants (WRPs) account for roughly 72 percent of the flow in the river during dry-weather. With this flow, storm drains were contributing almost 90 percent of the E. coli loading (Ackerman et al., 2003). E. coli concentrations were found to be as much as four orders of magnitude higher from storm drains than from the WRP discharges.*
4. *In the BSI study, the CREST team found that approximately 85 percent of the storm drain samples collected exceeded the E. coli objective. In the reaches investigated, E. coli loading from storm drains and tributaries greatly exceeded the allowable instream loading. The study also found that some of the loading in Reach 2 could not be attributed to the measured storm drain inputs.*
5. *In Southern California, in wet-weather, upstream or watershed sources principally cause the bacteria exceedances (LARWQCB, 2002b; 2003c; 2004a).*
6. *During wet-weather, WRP discharges may account for as little as 1 percent of the total flow in the river (CREST, 2009a).*
7. *Based on three experiments conducted by Noble et al. (1999) to mimic natural conditions in or near Santa Monica Bay (SMB), two in marine water and one in fresh water, bacteria degradation was shown to range from hours to days (Noble et al., 1999). Based on the results of the marine water experiments, the model assumes a first-order decay rate for bacteria of 0.8 d-1 (or 0.45 per day). Degradation rates were shown to be as high as 1.0 d-1 (Noble et al., 1999). These studies show that bacterial degradation and dilution during transport through the watershed do not significantly affect bacterial indicator densities in receiving waters.*

Based on this finding, further source assessment of the MS4 discharges will need to be conducted to determine the primary source of bacteria within MS4 of the LAR UR2 WMA.

Metals

The Los Angeles River Metals TMDL Coordinated Monitoring Program (CMP) Plan stated the following regarding sources of metals to MS4 discharges:

> *There are significant differences in the sources of metals loadings during dry-weather and wet-weather. During dry-weather, most of the metals loadings are in the dissolved form. The three major publicly owned treatment works (POTWs) that discharge to the river (Tillman WRP, LA-Glendale WRP, and Burbank WRP) constitute the majority of the flow and metals loadings during dry-weather. The storm drains also contribute a large percentage of the loadings during dry-weather because although their flows are typically low, concentrations of metals in urban runoff may be quite high. The remaining portion of the dry-weather flow and metals loadings represents a combination of tributary flows, groundwater discharge, and flows from other permitted NPDES discharges within the watershed.*
>
> *During wet-weather, most of the metals loadings are in the particulate form and are associated with wet-weather stormwater flow. On an annual basis, stormwater contributes about 40 percent of the cadmium loading, 80 percent of the copper loading, 95 percent of the lead loading and 90 percent of the zinc loading. This stormwater flow is permitted through two MS4 permits, a separate Caltrans MS4 permit, a general construction stormwater permit and a general industrial stormwater permit.*

Nonpoint sources of metals may include tributaries that drain the open space areas of the watershed. Direct atmospheric deposition of metals on the river is also a small source. Indirect atmospheric deposition on the land surface that is washed off during storms is a larger source, which is accounted for in the estimates of stormwater loadings.

As summarized in the Los Angeles River Metals TMDL CMP Annual Reports, dry-weather monitoring data from stations adjacent to the LAR UR2 WMA were rarely in exceedance for metals. Of the three stations, the exceedances associated with the Rio Hondo were generally associated with very low flows and the observation of very high hardness. Either of these observations alone might suggest the Permit identified concentrations are not relevant to impairments or daily loads. The LAR UR2 WMA will continue to monitor for dry weather metal concentrations, as proposed in the CIMP, and implement the watershed control measures identified in WMP Section 5 to further identify and control the sources of metals in runoff and LAR UR2 WMA receiving waters.

Nitrogen Compounds, pH, and Phosphorous

The Los Angeles River Nitrogen Compounds and Related Effects TMDL asserted that the principal sources of nitrogen compounds to the Los Angeles River were:

The principal source of nitrogen compounds to the Los Angeles River is discharges from the Donald C. Tillman WRP, the Los Angeles-Glendale WRP, and the Burbank WRP. During dry-weather period, the major POTWs contribute 84.1 percent of the total dry-weather nitrogen load. Urban runoff, stormwater, and groundwater discharge may also contribute nitrate loads. Further evaluation of these sources is set forth in the Implementation Plan.

Trash, Oil, Grease, and Sediments

The Trash TMDL for the Los Angeles River Watershed asserted the following in the source analysis section of the technical TMDL:

The major source of trash in the river results from litter, which is intentionally or accidentally discarded in watershed drainage areas. Transport mechanisms include the following:

1. *Storm drains: trash is deposited throughout the watershed and is carried to the various reaches of the river and its tributaries during and after significant rainstorms through storm drains.*
2. *Wind action: trash can also blow into the waterways directly.*
3. *Direct disposal: direct dumping also occurs.*

Extensive research has not been done on trash generation or the precise relationship between rainfall and its deposition in waterways. However, it has been found that the amount of gross pollutants entering the stormwater system is rainfall dependent but does not necessarily depend on the source (Walker and Wong, December 1999). The amount of trash which enters the stormwater system depends on the energy available to re-mobilize and transport deposited gross pollutants on street surfaces rather than on the amount of available gross pollutants deposited on street surfaces. The exception to this finding of course would be in the event that there is zero gross pollutants deposited on the street surfaces or other drainages tributary to the storm drain.

Where gross pollutants exist, a clear relationship between the gross pollutant load in the stormwater system and the magnitude of the storm event has been established. The limiting mechanism affecting the transport of gross pollutants, in the majority of cases, appears to be remobilization and transport processes (i.e., stormwater rates and velocities).

Several studies conclude that urban runoff is the dominant source of trash. The large amount of trash conveyed by urban stormwater to the Los Angeles River is evidenced by the amount of as trash that accumulates at the base of storm drains. The amount and type of trash that is washed into the storm drain system appears to be a function of the surrounding land use.

While this assessment may have been correct several years ago, the LAR UR2 WMA were recipients of a grant that resulted in full capture certified devices being placed where ever possible within the jurisdictions. Most of the cities are 90 percent or more compliant with the trash TMDL and are investigating opportunities to complete this implementation effort.

2.4 Prioritization

MS4 Permit Part VI.C.5.a.iv, directs Permittees to identify the water quality priorities within each WMA. At a minimum, these priorities shall include: 1) Achieving applicable WQBELs and/or RWLs established pursuant to TMDLs, as set for in the MS4 Permit Part VI.E and Attachment O for the LAR UR2 WMA. The MS4 Permit listed water quality priorities are as follows:

- **Priority 1(a)** – TMDLs controlling pollutants for which there are WQBELs and/or RWL with interim or final compliance deadlines within the permit term or TMDL compliance deadlines that have already passed and limitations have not been achieved.
- **Priority 1(b)** – TMDLs controlling pollutants for which the WQBELs and/or RWL with interim or final compliance deadlines between September 6, 2012 and October 25, 2017.
- **Priority 2** – All other controlling pollutants for which data indicate impairment or exceedances of RWL in the receiving water and the findings from the source assessment implicates discharges from the MS4 shall be considered the second highest priority.

Table 2-7 lists the identified water quality priorities and the WBPCs categories based on compliance deadlines. It should be noted that the Category 3 pollutants overlap significantly with Category 1 or 2 pollutants and in some cases, such as fecal coliform and *E. coli*, or total nitrogen and nitrate, they are essentially the same pollutant. Carrying out separate analyses for these overlapping WBPCs risks producing an RAA with conflicting implementation priorities, based on inaccurate assumptions regarding the independence of the variables and an misapplied implementation effort on duplicative parameters.

Table 2-7 LAR UR2 WMA Water Quality Priorities					
Priority	**Pollutant**	**Category**	**Water Body**		**Compliance Deadline**
			Los Angeles River Reach 2	**Rio Hondo Reach 1**	
1a	Ammonia (NH_3-N)	1	x	x	March 23, 2004
	Nitrate (NO_3-N)	1	x	x	March 23, 2004
	Nitrite (NO_2-N)	1	x	x	March 23, 2004
	NO_3-N+NO_2-N	1	x	x	March 23, 2004
1b	Trash	1	x	x	September 30, 2016 (effectively 10/1/15)
2	*E.coli* Dry-Weather	1	x	x	March 23, 2022 (Group Interim Single sample Final WQBEL)
	Copper Dry-Weather	1	x	x	January 11, 2024
	Lead Dry-Weather	1	x	x	January 11, 2024
	Zinc Dry-Weather	1		x	January 11, 2024
	Copper Wet-Weather	1	X	x	January 11, 2028
	Lead Wet-Weather	1	X	x	January 11, 2028
	Zinc Wet-Weather	1	X	x	January 11, 2028
	Cadmium Wet-Weather	1	X	x	January 11, 2028
	E.coli Wet-Weather	1	X	x	March 23, 2037
	Oil	2	X		N/A
	Coliform Bacteria	2		x	N/A
	Toxicity	2		x	N/A
	Fecal Enterococcus	3	x	x	N/A
	pH	3	x	x	N/A
	Kjeldahl-N	3	x	x	N/A
	Total Nitrogen	3		x	N/A
	Total Phosphorus - P	3	x		N/A
	Total Suspended Solids	3	x		N/A
	Cadmium	3	x		N/A
	Chromium	3	x		N/A
	Nickel	3	x		N/A

Note that Priority 1a pollutants are primarily associated with Water Reclamation Facilities Rather than MS4 discharges and additional emphasis on MS4 BMP implementation as a source control would divert resources from pollutants more likely to be associated with MS4 discharges.

3. Watershed Control Measures

Permit Part VI.C.5.b is titled *Selection of Watershed Control Measures* and directs Permittees to *identify strategies, control measures and BMPs ... with the goal of creating an efficient program to focus individual and collective resources on watershed priorities*. This section further identifies retrofitting of existing development and modification of Permit identified MCMs. The permit apparently introduces this verbiage as catch all for the many ways in which runoff and pollutants from a watershed can be reduced.

3.1 MCMs and Institutional BMPs

Permit Part VI.C.5.b.iv.(1).(a) directs that the MCMs, identified in Parts VI.D.4 to VI.D.10, be assessed for potential effectiveness and pollution control prioritization within WMP Plan, while Part VI.C.5.b.iv.(1).(c) allows some MCMs to be deleted, and wholly replaced, when accompanied by appropriate justification.

3.1.1 MCM Programs and Potential Modifications

MCMs Programs are identified beginning with Permit Part VI.D.5 include:

5. Public Information and Participation Program (PIPP)
6. Industrial/Commercial Facilities Program
7. Planning and Land Development Program
8. Development Construction Program
9. Public Agency Activities Program
10. Illicit Connection and Illicit Discharges (IC/ID) Detection and Elimination Program

As compared to the 30 pages of Special Provisions in the 2001 MS4 Permit, these six programs comprise 55 pages and impose many new and greatly expanded duties, tracking and reporting responsibilities on the Permittees and their staff, which will reduce the sources of runoff and the pollutants it conveys, by more than five percent. As an example, if we assume that the additional non-structural maintenance, resulting from the installation of over 3,500 full capture certified structural Connector Pipe Screens (CPS) and 1,700 Automatic Retracting Screens (ARS), collects ten pounds of trash, debris and sediments, per device-year, that would result in twenty five tons less pollution, much of it sediments to which other pollutants bind. While significant portions of the Los Angeles River Watershed have yet to commit to weekly street sweeping in residential areas, the LAR UR2 WMA Permittees have committee to upgrade from street sweeping to an enhanced weekly street vacuuming program, for most cities with parking enforcement, and contractual speed limitations when the vacuum is in use. This should result in additional tons of particulates, along with the attached metals, bacteria, and organic pollutants being collected in comparison to prior years. The Industrial and Commercial Facilities Inspection programs will significantly benefit from the greater emphasis on annual progress reporting and also the tables identified in the Permit and specifying specific BMPs, source controls, MCMs, and watershed control measures that should be apparent during commercial and industrial inspections. Additional details regarding specific enhancements that will be implemented by the LAR UR2 WMA are presented in **3.3.1**.

The following subsections provide an overview of the MS4 Permit requirements associated with each of the MCMs Programs.

3.1.1.1 Public Information and Participation Program

Since adoption of the first Los Angeles County MS4 Permit in 1990, PIPPs have been the most visible and important component of the stormwater quality protection program for the average Los Angeles County resident. The PIPP is introduced in Part VI.D.5 of the MS4 Permit with the following objectives:

1) Measurably increase target audience knowledge about the MS4, stormwater pollution, the impact of stormwater pollution on receiving waters, and solutions to mitigate the impact of stormwater;
2) Measurably change the waste disposal and pollution generating behavior of target audiences by encouraging implementation of alternatives by distributing educational material; and
3) Involve and engage socio-economic groups and ethnic communities in mitigating stormwater impacts.

The PIPP MCM objectives must be achieved by participating in a County, WMP, or Permittee-led program. Permittees may maintain the existing 888-CLEANLA hotline for reporting spills, clogged catch basins, faded PIPP markers, and identify staff/department responsible for receiving such reports, or establish similar new Watershed Management Area or Permittee specific hotlines and reporting websites. The LACFCD has committed to maintain the existing hotline as a resource for the foreseeable future. Permittees must also individually or collectively participate in public outreach events to raise community awareness regarding stormwater and urban runoff. Example events include Beach and River Clean-Up Days coordinated with Heal the Bay and the Los Angeles County Waterkeeper, the Los Angeles County Fairs, Electronic Recycling and community Household Hazardous Waste Collection (HHWC) events.

There must also be a residential outreach program to develop public service announcements and advise the public about appropriate handling and disposal of hazardous materials and animal wastes. During prior permit cycles, Permittees contributed to developing and purchasing print advertisements, movie trailers, mobile billboards, and advertisement spots during Dodger Baseball games. A "Point of Purchase" education or brochure distribution program must also be developed for display at automotive part, home improvement and gardening, pet, and feed stores. Permittees are also directed to have, or share; websites with educational materials along with educational programs based on the State's Erase the Waste and California Environmental Education Interagency Network (CEEIN) program.

Together these ongoing PIPP MCM efforts can be expected to continue to contribute to reducing the discharge of pollutants, educating the public about how to better implement LID opportunities during their home improvement projects, and generally improving the local and regional environment. For the LAR UR2 WMA, this is especially true as it relates to pet wastes which are likely to remain a predominant watershed source of indicator bacteria such as *E. coli*, which are likely to remain the most significant long term watershed pollutant priority. As in past permit cycles, a well supported and thoughtfully directed PIPP program, focused on bacteria and fecal wastes as a priority within the LAR UR2 WMA, should reach over 50% of the community with multiple impact opportunities per year, which can then be easily and substantially quantified as part of the annual report process. This program could focus on the proper disposal of dog and cat excrement, with linkages back to human and wildlife (e.g., Sea Otter) diseases such as toxoplasmosis with reputable supporting information provide by aquariums (Science Daily, 2002) and Health Departments (Los Angeles County, 2012). The potential modifications to this MCM are presented so that they may be referenced in the future during the adaptive management process. The program modifications incorporated through the WMP are documented in **Section 3.3.1**.

3.1.1.2 Industrial/Commercial Facilities Program

As required by Part VI.D.6 of the MS4 Permit, each Permittee must implement an industrial and commercial facilities program designed to prevent illicit discharges into the MS4, reduce runoff from these facilities to the MEP standard, and prevent their discharges from contributing to violations of receiving water limitations. At a minimum this program must:

1) Track critical industrial and commercial sources using a GIS based inventory and database;
2) Implement a Business Assistance Program to educate them about reducing pollutants in runoff;
3) Conduct inspections of Critical Commercial Sources to ensure effective BMP implementation;

4) Inspect and progressively enforce Critical Source and General Industrial Permit compliance; and
5) Verify the implementation of the Commercial and Industrial Source Control BMPs identified on Table 10 (page 93 and 94) of the MS4 Permit.

This MCM program has the potential to significantly reduce stormwater conveyed pollutant loadings, especially within the more industrialized areas of the LAR UR2 WMA. The potential modifications to this MCM are presented so that they may be referenced in the future during the adaptive management process. The program modifications incorporated through the WMP are documented in **3.3.1**. This program may provide the clearest example of a cost effective MCM modification. One example would be a State-led effort to educate General Industrial Permittees about their responsibilities to comply with TMDL WLAs under the State Board General Industrial Permit, which becomes effective on July 1, 2015. As detailed in **Section 4.3.2.1**, as industrial land use loadings are reduced to comply with general permit requirements, the LAR UR2 WMA RAA demonstrates significant reductions in key land use based pollutant loadings, such as trash, metals and bacteria (*E. coli*). Furthermore, as these facilities expand their monitoring effort to address these problematic pollutants, it should become easier to share the information with the MS4 Permittees and focus the education and Business Assistance Program on the more problematic facilities that have a true contribution to observed receiving water and (public or private) outfall exceedances. While enforcement should not be an immediate priority, more recalcitrant or negligent facilities could also be targeted for limited cost-effective (e.g. bacteria and metal) monitoring that can contribute to permit required coordination with State enforcement efforts. The impact of this program could be uneven across the LAR UR2 WMA, as most of the industrial sites are in the Cities of Vernon and Commerce, but each Permittee has significant areas of critical commercial source facilities such as retail gasoline outlets, restaurants, nurseries, and automotive repair shops.

3.1.1.3 Planning and Land Development Program

The Planning and Land Development Program in MS4 Permit Part VI.D.7 is probably the most complicated section of the current Permit. In the 2012 MS4 Permit this part continues to implement, expand, and quantify the SUSMP program. It also defines hydromodification controls that are expected to have little impact on the LAR UR2 WMA Permittees, as it is only applicable to projects located within natural drainage systems. The section contains specific BMP design criteria, as well as implementation priorities that may be subject to interpretation at the planning level and annually documented. The stated purposes or objectives of this permit section include:

1) Encourage Smart Growth and urban redevelopment to protect environmentally sensitive areas;
2) Protect natural drainage systems (limited applicability to the LAR UR2 WMA);
3) Minimize imperviousness through LID and runoff retention or use;
4) Maintain and enhance riparian buffer areas (limited applicability to the LAR UR2 WMA);
5) Minimize pollutant loads, from impervious surfaces, through appropriate BMP/LID technologies;
6) Properly design and maintain LID and BMP control pollutants and reduce changes in hydrology;
7) Prioritize BMP selection to remove pollutants, reduce runoff, and support integrated water management by first using on-site infiltration, bioretention, and rainfall harvesting, then secondarily utilizing on-site biofiltration, off-site replenishment and retrofit opportunities.

Typical redevelopment rates released by the City of Los Angeles (City of Los Angeles Bureau of Sanitation, 2009) assume complete or substantial building replacement at an annual rate of between two and five percent, meaning that a particular parcel is likely to be redeveloped every twenty to fifty years on average. Assuming typical interpretations of permit requirements, which would exclude residential redevelopments of less than an acre in area from the significant program requirements, this program is most likely to produce water quality improvements in industrial or commercial land use areas, rather than cities with more residential characteristics. Extrapolating current redevelopment rates will help quantify the impact of this program over time.

3.1.1.4 Development and Construction Program

Implementation of a Development Construction Program is required as a an MCM identified in MS4 Permit Part VI.D.8, with subparts directed at projects both less than, and greater than, one acre in extent. Permittees are required to implement a construction program with the following objectives:

1) Prevent the discharge of illicit construction-related pollutants into the MS4 and receiving waters;
2) Implement and maintain structural and non-structural BMPs to reduce pollutants in site runoff;
3) Prevent construction site discharges from causing or contributing to receiving water limitations;
4) Reduce construction site discharges of pollutants to the MS4 to the MEP standard; and
5) Establish an enforceable erosion/sediment control ordinance for soil disturbing construction sites.

MS4 Permit Part VI.D.8.d and Table 12 from the MS4 Permit apply exclusively to construction projects of less than one acre in extent and generally require the use of tracking and good housekeeping practices that are suitably implemented through typical municipal building and safety inspection programs. With the exception of concluding MS4 Permit Parts regarding enforcement and staff training, the remainder of this Part applies to construction sites of greater than, or equal to, one acre. Therefore, it significantly complements and documents implementation and competent tracking of the State General Construction Permit requirements, with Tables 13 through 17 of the MS4 Permit identifying specific BMP implementation and inspection requirements. Since this MS4 Permit Part addresses the construction phase of development/redevelopment, estimates of pollution reduction can be expected to vary annually and are only applicable in the year of occurrence. However, the reduction in pollution generation, especially for suspended solids and trash, can be significant and far greater than generation rates found on adjacent similarly sized occupied parcels. Potential modifications to this program are not identified, as they are unpredictable and vary over time.

3.1.1.5 Public Agency Activities Program

MS4 Permit Part VI.D.9 identifies the Public Agency Activities Program, which is directed at Permittees, their facilities, and maintenance operations. In previous MS4 Permits, the objectives of this program element were sometimes referred to as municipal "good housekeeping" practices, but they continue to evolve and have become significant municipal implementation efforts on their own. They include:

1) Public Construction Activities Management;
2) Public Facility Inventory;
3) Inventory of Existing Development for Retrofitting Opportunities;
4) Public Facility and Activity Management;
5) Vehicle and Equipment Wash Areas;
6) Landscape, Park, and Recreational Facilities Management;
7) Storm Drain Operation and Maintenance;
8) Streets, Roads and Parking Facilities Maintenance;
9) Emergency Procedures; and
10) Municipal Employee and Contractor Training.

The potential modifications to this MCM are presented so that they may be referenced in the future during the adaptive management process. The program modifications incorporated through the WMP are documented in **Section 3.3.1**. More frequent street cleaning, will enhance compliance with the Los Angeles River Trash TMDL, while street vacuuming in land use areas that generate high metals loads can also have significant positive results. Enhanced maintenance of catch basins, especially those containing connector pipe screens, may result in reduced bacteria loadings that are likely to be significant priority in this region. The cost and pollution reduction effectiveness of this MCM program would likely be

linked to the measures necessary to achieve RAA water quality objectives in the most cost effective and implementable WMP plan manner.

3.1.1.6 Illicit Connections and Illicit Discharges Elimination Program

Permit Part VI.D.10 expands the IC/ID program by substantially formalizing elements of the extant Permittee effort. Program formalization steps include the following:

1) Develop written procedures for conducting source investigations;
2) Develop written procedures for eliminating the source of illicit connections and illicit discharges;
3) Develop written procedures for public reporting of illicit discharges;
4) Develop written Spill Response Plans (SRPs); and
5) Educate employees, businesses, and the public about the hazards of illegal discharges and improper waste disposal.

The potential modifications to this MCM are presented so that they may be referenced in the future during the adaptive management process. The program modifications incorporated through the WMP are documented in **Section 3.3.1**. Ordinances with consistent enforcement actions, which include accelerated follow up timeframes may be beneficial. Reducing the amount of days for the follow up inspection will ensure prompt clean up.

3.1.2 Summary of Existing MCMs/Institutional BMPs

The existing MCMs/institutional BMPs within the LAR UR2 WMA were evaluated and summarized based on the Los Angeles County Unified Annual Stormwater Reports for the Fiscal Years 2010-2011 and 2011-2012. Tables summarizing the existing MCMs/institutional BMPs by LAR UR2 WMA are presented in **Appendix E**.

3.1.3 Non-Stormwater Discharge Control Measures

Part VI.C.5.b.iv.(2) of the MS4 Permit states that where Permittees identify non-stormwater discharges from the MS4 as a source of pollutants that cause or contribute to exceedance of RWLs, the proposed watershed control measures must include strategies, control measures, and/or BMPs that must be implemented to effectively eliminate the source of pollutants consistent with Parts III.A and VI.D.10 of the MS4 Permit. These may include measures to prohibit the non-stormwater discharge to the MS4, additional BMPs to reduce pollutants in the non-stormwater discharge or conveyed by the non-stormwater discharge, diversion to a sanitary sewer for treatment, or strategies to require the non-stormwater discharge to be separately regulated under a general NPDES Permit.

Among others, the Rio Hondo has been successful in controlling non-stormwater discharges and the channel is often either dry or lacks runoff flows. It is likely that efforts to control irrigation overspray and reduce outdoor water use will continue to benefit the LAR UR2 WMA Permittees. This combined with the non-stormwater outfall based inventory; screening and source assessment will be the group's initial focus for the next round of source control measures.

3.1.4 TMDL Control Measures

Part VI.C.5.b.iv.(3) of the MS4 Permit states that Permittees must compile control measures that have been identified in TMDLs and corresponding implementation plans. In addition, Permittees must identify those control measures to be modified, if any, to most effectively address TMDL requirements within the watershed. If TMDL implementation plans have not been developed, Permittees must include control

measures (baseline or modified) that will address both stormwater and non-stormwater discharges from the MS4s to ensure compliance with applicable TMDLs. This section identifies and summarizes TMDL implementation plans that have been developed by the LAR UR2 WMA members in response to applicable TMDLs. Proposed modifications to these control measures are presented in **Section 3.3.3**

3.1.5 TMDL Implementation Plans

TMDL implementation plans have not been developed for the applicable TMDLs, except for the Los Angeles River Metals TMDL. For the Los Angeles River Trash TMDL, LAR UR2 WMA implementation occurred primarily through a grant to the Gateway Water Management Authority, which succeeded in placing full captured certified CPS, often with ARS, in approximately 90% of area catch basins. The few remaining catch basins were incompatible with the devices and will probably require significant and costly reconstruction prior to October 1, 2015. For the Los Angeles River Bacteria TMDL, this WMP will serve as the implementation plan for all applicable TMDLs, while future impairments may be dealt with through the AMP, RAA and WMP revision process. The implementation plan corresponding to the Los Angeles River Metals TMDL is reviewed and summarized below in order to identify the TMDL control measures previously identified.

3.1.5.1 Los Angeles River Metals TMDL Implementation Plans

In compliance with the implementation schedule set forth in the Los Angeles River Metals TMDL, Permittees and groups of Permittees completed an implementation plan. The Final Implementation Plan for Reach 2 Participating Jurisdictions was accepted on December 14, 2010 and among the submitting jurisdictions were the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. As summarized in Tables ES-5 to 7 of that plan, the study identifies a four phased implementation for non-structural BMPs that starts in 2010 and ends in 2028 combined with the implementation of structural measures based on the priority of an area as determined through modeling of the reach 2 watershed area. Under that implementation plan, participating jurisdictions will initially implement non-structural BMPs to meet compliance for TMDL and complete an analysis to identify locations to place structural BMPs for later phases. The schedule for the phased implementation for non-structural BMPs is provided in **Table 3-1**. Since the plan is mostly summary in content, no conflicts with the proposed WMP Plan were apparent and the LAR UR2 WMA Permittees reported to be implementing its recommendations within the context of the 2012 MS4 Permit requirements. The success of the final outcome of this study will be assessed through the monitoring data from the CIMP and the need for implementation adjustments through the AMP.

Table 3-1 LAR Metals TMDL Jurisdictional Group 2 Non-Structural BMPs Phased Implementation Plan				
BMP	**Phase 1 (2010-2011)**	**Phase 2 (2012-2019)**	**Phase 3 (2020-2023)**	**Phase 4 (2024-2028)**
Vehicle Brake Pad Replacement	Senate Bill 346 into law September 27, 2010	Support Implementation activities		
Tire Wheel Weight Replacement	Support legislative efforts for passage of Senate Bill 757	No new activity (assumes legislative success by 2012)		
Pesticide Use	No activity	Evaluate potential for action and implement as needed by end of Phase 3		No new activity
Vehicle Tire Wear Reduction	No activity	Evaluate potential for action and implement as needed by end of Phase 3		No new activity
Roof Materials Control	Implement building and planning agency coordination activities; evaluate need for ordinance/revised specifications	Establish and implement as needed ordinance and/or revised specifications; implement downspout disconnect program	No new activity	
Street Sweeping	No new activity - continue to implement at current level	Evaluate existing program to identify opportunities to increase efficiency		No new activity
Catch Basin Cleaning	No new activity - continue to implement at current level	Evaluate existing program to identify opportunities to increase efficiency		No new activity
Public Education and Outreach	Evaluate and revise public education and outreach materials/programs as needed to focus on metals	Continue to review and revise as needed		
Water Conservation	Develop water conservation model ordinance	Establish ordinance by end of Phase 3		No new activity
Development Practices	Establish model requirements that reduce offsite runoff consistent with future MS4 Permit expectations	Revise MS4 program as needed and implement new practices; update as needed over long term to incorporate new concepts or methods		
Downspout Disconnect Program[1]	Establish program for implementation	Implement downspout disconnects at rate determined by Phase 1 structural BMP selection	Implement downspout disconnects at rate determined by Phase 1 structural BMP selection	Implement downspout disconnects at rate determined by Phase 1 structural BMP selection
General Plan Update	Identify areas for revision and establish schedule for implementation	Revise General Plan by end of Phase 3		No new activity
Watershed Coordination	Review existing coordination; identify improved mechanisms and implement	Continue high level of coordination		

[1] The number of downspout disconnections implemented in Reach 2 watershed is dependent on the number of structural BMPs implemented. The rate of implementation needed will be determined during Phase 1.

Note: Each jurisdiction will select from the phased non-structural BMP programs as outlined in Table ES-4 of the Final Implementation Plan for Reach 2 Participating Jurisdictions.

3.2 Structural BMPs

As part of the WMP development process, BMPs that will be considered sufficient in addressing water quality priorities and achieving compliance with MS4 Permit requirements were identified. Structural BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. The overarching goal of BMP implementation as part of the WMP is to reduce the impact of stormwater and non-stormwater flows on receiving water quality. This section identifies structural BMPs that are currently implemented, as well as potential BMPs that may be used in the future. The structural BMPs proposed in accordance to this WMP are identified in **Section 3.3.3**.

3.2.1 Categories of Structural BMPs

Structural BMPs include both regional and distributed BMPs categorized as illustrated in **Table 3-2**. This section provides detailed descriptions of various regional and distributed BMPs that were considered for use by the LAR UR2 WMA and may be considered in the future through the adaptive management process. The structural BMPs proposed through this WMP are identified in **Section 3.3.3**. Additionally, **Appendix F** provides a comparison matrix which ranks different BMP types for different ranking factors that include cost, effectiveness, implementation, and environmental/other factors.

Table 3-2 Summary of Structural BMP Categories and Major Functions

Category	Subcategory	Example BMP Types
Regional	Infiltration	Surface infiltration basin, subsurface infiltration gallery
	Detention	Surface detention basin, subsurface detention gallery
	Constructed Wetland	Constructed wetland, flow-through/linear wetland
	Treatment Facility	Facilities designed to treat runoff from and return it to the receiving water
	Low Flow Diversion	Facilities designed to divert dry-weather flows to the sanitary sewer
Distributed	Site-Scale Detention	Dry detention basin, wet detention pond, detention chambers, etc.
	Green Infrastructure	**Bioretention** and **biofiltration** (vegetated practices with a soil filter media, and the latter with an underdrain)
		Permeable pavement
		Green streets (often an aggregate of bioretention/biofiltration and/or permeable pavement)
		Infiltration BMPs (non-vegetated infiltration trenches, dry wells, rock wells, etc.)
		Bioswales (vegetative filter strips or vegetated swales)
		Rainfall harvest (green roofs, cisterns, rain barrels)
	Flow-Through Treatment BMP	Media/cartridge filters, high-flow biotreatment filters, etc.
	Source Control Treatment BMPs	Catch basin inserts, screens, hydrodynamic separators, trash enclosures, etc.

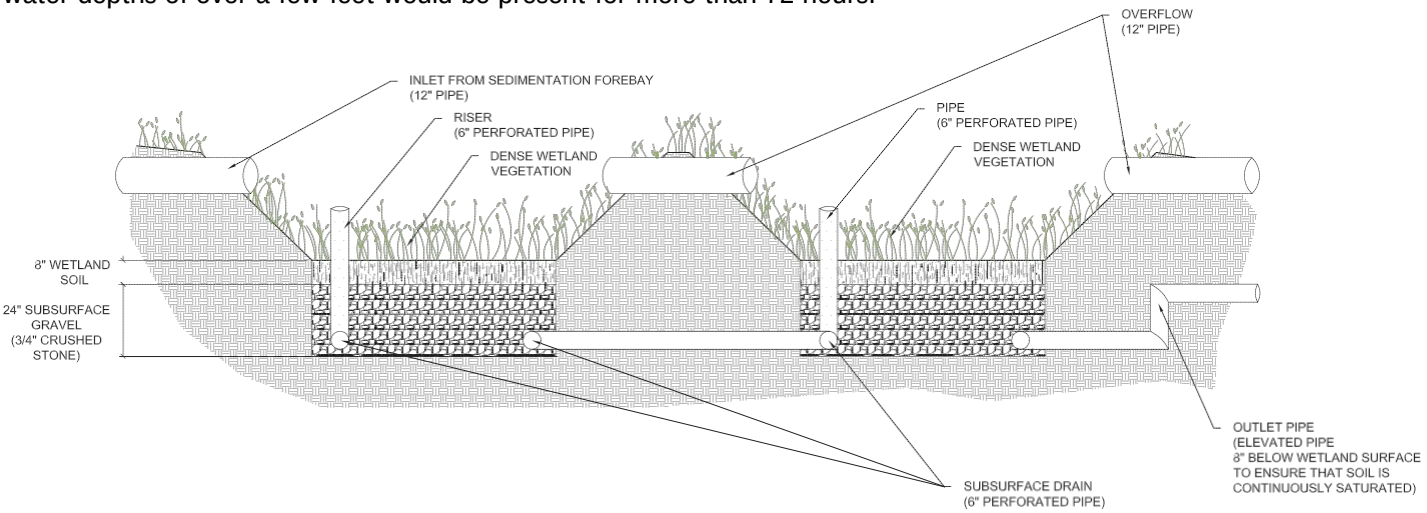
Regional BMPs

Regional BMPs are large scale runoff treatment and retention systems that accept runoff from tens to hundreds of acres of development. They generally support multiple beneficial uses such as groundwater recharge and recreation to achieve Integrated Regional Water Management Program objectives.

Typically the first flush of runoff, which carries the pollutants of concern and debris at high concentrations, receives solids removal pretreatment. In most areas, after the runoff is captured and stored it can be treated and discharged, used for non-potable purposes, infiltrated into the soil, or a combination of the three.

Subsurface Flow (SF) Wetlands

Unless extensive land area and substrate is available, subsurface flow wetlands are generally reserved as a tertiary treatment or polish for the effluent from wastewater treatment facilities, but can be utilized in relatively small catchments where nutrients are a significant issue. The design is generally based on either a relatively dependable and consistent inflow or the ability to primarily function in detention rather than extended retention. They may also be practical for remediation of dry-weather and very low first flush runoff drainage systems, so long as higher flows may be diverted away. They are impractical where water depths of over a few feet would be present for more than 72 hours.



Adapted from:
Subsurface Gravel Wetland
University of New Hampshire Stormwater Center. 2007 Annual Report.

Extended Retention Wetlands

Extended retention wetlands are favored where rainfall or runoff is present year round so that replenishment water is available to maintain the wetland and aquatic life. They must also discharge when large storm events or storm event series are encountered. While water depths are greater for subsurface flow wetland, and therefore the area requirements are lessened, there is a significant risk of the water becoming stagnant and overgrown with algae mats. In this case, where the wetland is expected to function for retention, the seasonal volume of water that must be accommodated, and the wetland, becomes excessively large, since the rainfall depth would grow from 0.75 inch to perhaps 2 feet. This BMP would be modeled as a constructed surface flow wetlands in the RAA.

Seasonal Dry Detention Pond

Seasonal detention ponds are an effective method for detaining runoff so that it can be metered out through a secondary treatment, such as a bioswale, sand filter, or media filter. They are also effective in avoiding damage associated with hydromodification or flooding due to limited downstream conveyance capacity. However, as with the prior wetland examples, they must either drain completely within a few days or be excessively large to accommodate the seasonal runoff from a large catchment.

Surface Infiltration Basins

Surface infiltration basins and spreading grounds can be found locally in the San Fernando Valley, below Whittier Narrows and in the Chino Basin, where they make an important contribution towards regional groundwater management. A key characteristic of these basins is placement over alluvial soils that allow rapid drawdown following the storm event. The area between the lower Rio Hondo and Los Angeles River has limited areas suitable for very rapid infiltration, but there may be opportunities on the east side of the Cities of Bell Gardens and Commerce or there are horizontal basins that parallel the rivers and can allow both settling and infiltration or horizontal wells. Spreading grounds owned by LACFCD may require storage and pre-treatment before being allowed for infiltration through the spreading grounds.

Underground Cisterns

For those WMP areas where infiltration is deemed infeasible, the MS4 Permit directs the implementation of water use projects, which can be supported using underground cisterns that temporarily store the runoff until needed for reuse such as for irrigation. These systems can take many forms such as below grade water tanks, mediums sized modular precast concrete units, or very large precast bridge or arch structures. Modular units are installed over a water proof geotextile to retain the water within the cistern. A recently constructed example of this technology is Garvanza Park in the City of Los Angeles. Here modular units were installed under an existing park to accept storm or urban runoff. Flows beyond the cistern capacity are bypassed down the pre-existing storm drain. The stored water is used for park irrigation, during the early morning hours when the park is closed and there is the least risk of bodily contact.

Subsurface Infiltration Basins

In areas where infiltration is favorable, a similar cistern design can be used, except the geotextile is omitted so that the runoff may infiltrate into the ground below the cistern and be naturally filtered before recharging the regional groundwater table. In the case of the City of Downey Discovery Park, the cistern provides 3.3 acre feet of infiltration storage and an additional 4.8 acre feet of peak flow detention to avoid regional flooding. Systems for this size warrant multiple entry points and a vent system to allow air to escape during periods of peak runoff inflow, which has been estimated at 100 cubic feet per second.

Low Flow Diversion Pump Station

Low flow diversion pump stations are operationally straight forward, but connection to the sanitary sewer system can be problematic due to capacity issues, connection limitations, treatment costs and unexpected prohibitions due to changes in the water quality. The Permittees within the LAR UR2 WMA are situated in an upper watershed that generates little or no summer flows, suggesting that seasonally, the only flows currently present may be urban runoff. This might provide a rationale for allowing a few diversion stations to be constructed to eliminate the flows and any contribution to downstream

impairments. Typically, they are constructed as a manhole adjacent to, and slightly deeper than, adjacent drainage channels so that flows can be easily diverted and then pumped to the sanitary sewer. This BMP would be modeled as a treatment facility in the RAA.

Sand and Media Filter

Surface, or Austin sand filters, are at ground-level and typically earthen. They are usually easier to maintain, but have a large footprint. Perimeter, or Delaware, sand filters consist of two parallel trench chambers located in concrete vaults below an impervious surface, such as a parking lot. Sand filters are estimated to remove 80 percent of total suspended solids, 50 percent of total phosphorus, 25 percent of total nitrogen, 40 percent of fecal coliform, and 50 percent of heavy metals from typical stormwater runoff. Media filters detain and treat stormwater via filtration and adsorption of pollutants to the filter media (San Francisco, 2010). Media filters containing both organic and mineral filtration materials generally have greater ion exchange capacity than sand filters, and therefore can more effectively remove soluble metals and other dissolved pollutants. This renders media filters particularly effective for roadways and highly industrial sites that contribute higher concentrations of metals to stormwater runoff, particularly zinc and copper. These filters have been shown to consistently remove over 85 percent of oil and grease, 82 percent of heavy metals, and around 40 percent of total phosphorus. While media filters are generally better at removing metals and organics, new media types may have the capabilities to reduce nutrients and sulfate in the future (Water Remediation Media, SWS).

Membrane Filtration

Membrane Filtration water treatment systems use semi-permeable membranes under high pressure to exude a clean water product, leaving behind a brine with the pollutants. The higher pressure membrane types such as reverse osmosis or ultra filtration are highly effective at removing dissolved contaminants, while lower pressure systems filter bacteria and viruses. These systems usually require pre-treatment as particulate matter can foul the ion selective membrane and reduce performance.

Ion Exchange

Ion exchange is a polishing step that specifically targets polar dissolved constituents, such as sulfate. Pretreatment is required prior to ion exchange as suspended solids will clog the exchange columns. Ion exchange systems can be used to treat stormwater from pollution generating impervious surfaces at end-of-pipe using a pump system; they are also commonly used to treat contaminated groundwater.

Distributed BMPs

The MS4 Permit encourages the use of LID BMPs, during planning, development and redevelopment, to manage runoff, and the pollutants it contains, at the source by encouraging infiltration. LID employs landscape and structural features to minimize imperviousness and manage stormwater as a resource. Broadly applied, LID can contribute to restoring a watershed's hydrologic functions by promoting infiltration and the natural movement of water (LID, USEPA). Since LID based BMPs encourage infiltration of runoff, and the pollutants it conveys, it has the potential to address most anthropogenic impairments and achieve WQOs for bacteria. The following paragraphs characterize several broad categories of applicable LID BMPs.

Bioretention Planters and Rain Gardens

With bacteria and nutrients being concerns for the LAR UR2 WMA, bioretention is a promising solution that relies on inundation tolerant vegetation and native or engineered soils with high organic content, to capture, infiltrate, and transpire runoff, while retaining pollutants. If designed properly, especially where native soils are sufficiently permeable and without other constraints to infiltration, rain gardens and larger bioretention facilities can be aesthetic amenities in addition to being cost effective and scalable stormwater retention sites that are easily integrated into highly urbanized retrofit projects. The planters should be flat and require maintenance such as weeding, trimming, and the replacement of dead plants (San Francisco, 2010).

Rain Barrels

Rain barrels hold roof runoff, usually delivered by rain gutters and downspouts, and store the water for later use. Screen installations at the downspout inlets prevent sediment, leaves, debris and mosquitoes from entering the rain barrel. Rain barrels are easily constructed for aesthetic purposes to compliment adjacent structures. Overall, maintenance requirements are minimal and include frequent visual inspections during the storm season and removal of accumulated sediment or debris. When effectively designed to capture and contain the runoff from a rooftop structure, a rain barrel can prevent runoff from small frequency storm events from ever leaving the property. This will reduce onsite water usage and the amount of pollutants that may potentially be carried offsite. This LID BMP can be implemented throughout residential areas.

Cisterns

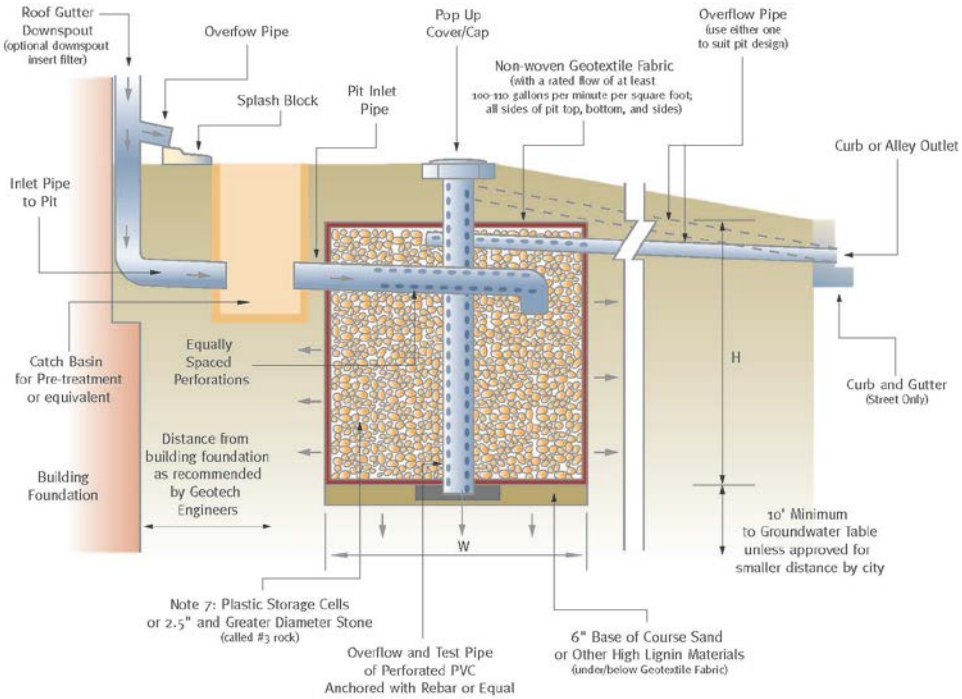
Cisterns provide retention storage in above or below ground storage tanks that accept divert roof runoff and distribute it for later use, usually by pump to adjacent landscaped areas. Runoff collected in the cistern tank is often used for onsite landscape irrigation since outdoor irrigation can account for 40 percent of water consumption during spring and summer. Cisterns can be constructed of nearly any impervious, water retaining material and are distinguishable from rain barrels only by their larger sizes and different shapes. Cisterns are an effective onsite retrofit option for treating rooftop runoff from selected residential, commercial, industrial, institutional, and municipal sites. By using cisterns, a quantifiable amount of stormwater runoff from impervious surfaces such as rooftops, parking structures, and elevated walkways can be captured and stored onsite to reduce the runoff volume and peak runoff flow rates. For smaller storm events, this captured runoff will reduce pollutant loads to the MS4 by preventing the first flush of contaminants from leaving the source site. Stored rainwater may also be used to conserve potable water supplies and reduce water utility bills.

Infiltration Pits and Drywells

Infiltration pits are among the first BMPs used in the Los Angeles region and are typically constructed by digging pits sized to accommodate the runoff source and design storm, lined with geotextile filter fabric, and filled with gravel or aggregate. The retention volume can be increased using various open retention systems or large diameter plastic half pipes in addition to the aggregate. The surface can be either open to accept incoming runoff or receive the downspout from a rain gutter and then covered with vegetation.

A dry well is operationally similar to an infiltration pit, but larger and more formally constructed. Pretreatment techniques, such as grass filter strips, a sand layer, clean aggregates, or a small settling chamber, are recommended to prevent clogging and maintain infiltration. It is recommended that dry wells maintain a minimum clearance of 10 feet from the surface of the seasonal high water table and any foundations. Dry wells are lined with geotextile filter fabric to prevent soil intrusion and filled with clean graded aggregate or volume enhancing structures, such as open plastic half pipes (San Francisco, 2010).

When designed properly, a dry well can serve small impervious areas such as residential rooftops, however if they are bored, drilled, or driven shaft, or a dug hole that is deeper than its widest surface dimension, it may be classified as a Class V injection well and requires permitting through the USEPA. This LID BMP has high pollutant removal efficiencies for sediments, nutrients, trash, metals, bacteria, oil, grease, and organics.



Infiltration Basins, Swales, and Trenches

An infiltration basin or trench is a shallow impoundment over permeable soil that holds and stores runoff until infiltration can occur, using the natural filtering ability of the soil to filter out pollutants. This LID BMP is effective at retaining sediments associated with pollutants, but can become clogged requiring removal of the upper soil. Use of a vegetated swale, or settling forebay, will extend the basin's longevity and reduce maintenance costs. Infiltration basins are best constructed over soils with infiltration rates of 0.5 inches/hour or greater and they should have at least a four foot separation from basin bottom to groundwater (San Francisco, 2010).

If adequate space is available, infiltration basins are cost-effective measures even for regional scale projects, because little infrastructure is needed for their construction. However, site-specific conditions can cause significant variations in cost. CASQA (2003) cites costs ranging from approximately $3 to $18 per cubic foot of storage. Annual maintenance costs are estimated to be approximately five to ten percent of the construction costs (Class V Wells, USEPA).

Porous/Pervious Pavements

Pervious pavement allows rainfall to drain into an aggregate bed or structural retention unit where it is stored until infiltration can occur. There are many pervious pavements including porous concrete, plastic grid system, interlocking paving stones, brick, grass pavers, gravel pavers, and crushed stones. These materials allow for onsite infiltration that efficiently filters out pollutants such as bacteria, nutrients, and metals. Infiltration rates of the native soil are a key element to the overall design. Pervious pavements can be designed with a perforated underdrain system to redirect stormwater to a storm drain in areas where infiltration is infeasible. Using an underdrain system still results in improved water quality since stormwater will have passed through the BMP and undergone natural filtration and treatment processes. This type of BMP can also be used to disconnect directly connected impervious areas such as rooftops and parking lots. Vegetated runoff should not drain onto the pervious pavement as it may clog the system and require more frequent maintenance. Permeable pavements may be used in many locations where conventional pavements are used, such as parking lots, driveways, and walkways. Areas with the potential for spills, such as gas stations, should be avoided. Using proper maintenance techniques, pervious pavement can remove a significant portion of pollutants in stormwater runoff and reduce pavement ponding.

Green Roofs

Green Roofs are commonly recommended LIDs that are appropriate in some climates, but may be challenging to maintain or support in areas with a risk of brush fires and little annual rainfall. Intensive systems have large depths and cover much of the roof while extensive systems features minimal plantings that require little maintenance. Green roofs enhance water quality, reduce runoff and are visually appealing as a rest area above office buildings. The amount of stormwater that a green roof can contain is proportional to the area of coverage, types of plants, slope, and many other factors. Green roofs can be constructed during the building's construction phase or included as a retrofit. When retrofitting, it must be noted that the building needs to support the weight of the green roof under fully saturated conditions. A waterproof membrane should be laid over the building to protect it from structural damage and overflow should be addressed through a drainage layer. Green roofs also provide insulation, help reduce building temperatures during summer months, and counter the heat island effect.

Green Streets

Like LID, Green Street design is strongly encouraged by the MS4 Permit and all of the Permittees within the LAR UR2 WMA have developed or adopted green streets policies. They can take many forms such as an inverted street cross section with a vegetated low center median, vegetated curb extensions, parkways that trap and hold gutter flows, planter boxes connected to the gutter and filled with highly porous soil and appropriate vegetation. In areas where sediment generation is limited or can be accommodated by pretreatment through a bioswale, porous concrete may be used to construct gutters so that flows may infiltrate. The City of Santa Monica is currently investigating the construction of large infiltration systems within the parkway that may be designed to accept dry weather or design storm flows for small residential catchments. When properly designed, these structural BMPs can alleviate many of the types of pollutant that are of particular concern to the City.

Connector Pipe Screens

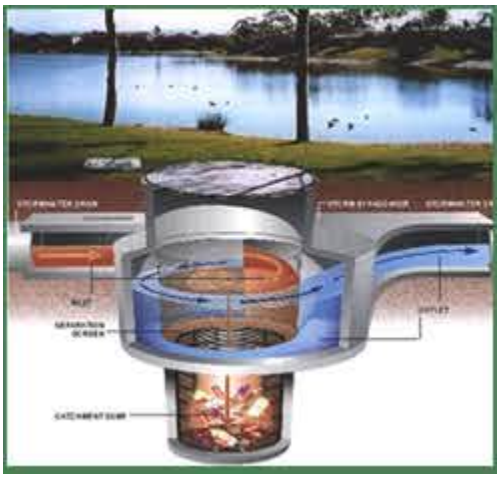
While several devices have been certified as meeting the LARWQCB definition of full capture (Full Capture, LARWQCB) the most commonly installed device in Los Angeles County is a Connector Pipe Screen (CPS). Generically, CPS are made from stainless steel mesh, with 5 mm openings, that stretch in front of the lateral or outlet from a catch basin and are secured to the walls and floor of the catch basin, with an opening above the screen that is greater in area than the outlet. During most events runoff will flow through the screen leaving the trash upstream of, or on, the screen. However, during high intensity storms or if the mesh becomes occluded, runoff can still flow over the screen and out of the catch basin to prevent flooding. Based on experience in other jurisdictions, 75-90 percent or more of the catch basins can be retrofitted with this device. While regular maintenance, to remove debris trapped on and on the upstream side of the screen, is required, the intensity of maintenance is correlated with the amount of trash and debris collected. The Regional Board is familiar with the device and assessing compliance through their use, so it is expected that implementation should be relatively straight forward. In locations were the trash load results in excessive maintenance costs, many communities also install Automatic Retracting Screens (ARSs).

Automatic Retracting Screens

An ARS extends across the opening or "mouth" of the catch basin and traps trash and debris at street level where street sweepers or hand crews may remove the trash before it can enter into the catch basin or drain. However, in order to avoid flooding, they will open or retract and allow the trash to enter the catch basin and be trapped on the CPS, where maintenance costs are higher. Areas that generate sufficient trash and debris to warrant the use of ARS in combination with a CPS are usually also subject to enhanced street sweeping, on a weekly or even more frequently, basis.


Open Position, Rear View

Hydrodynamic Separation Devices (CDS systems)



Hydrodynamic Separation Devices such as continuous deflective separation (CDS) systems are often used to ensure compliance with trash TMDLs. A CDS system effectively screens, separates and traps debris, sediment, and oil and grease from stormwater and urban runoff. The indirect screening capability of the system allows for 100 percent removal of floatables and neutrally buoyant materials, without binding. The system utilizes the natural motion of water to separate and trap sediments by indirect filtration. As the storm water flows through the system, a very fine screen deflects the pollutants, which are captured in a litter sump in the center of the system. CDS system screens are self-cleaning. The water velocities within the swirl chamber continually shear debris off the screen to keep it clean. CDS systems are ineffective in removing soluble pollutants and smaller, less-settleable solids. They can provide effective pretreatment when paired with filtration devices, such as media filters or bioretention area, covered in sections below, to achieve higher removals of nutrient, metals, and organics. Between storms, the CDS system can have standing water that could raise mosquito breeding concerns, which increase the concerns of vector control (San Francisco, 2010).

The processing capacities of a CDS unit vary from 3 to 300 cubic feet per second, depending on the application. Precast modules are available for flows up to 62 cubic feet per second, while higher flow processing requires cast-in-place construction. Every unit requires a detailed hydraulic analysis before it is installed to ensure that it achieves optimum solids separation. The cost per unit (including installation) ranges from $2,300 to $7,200 per cubic feet per second capacity, depending on site specific conditions and does not include any required maintenance (Hydrodynamic Separators, USEPA).

Maintenance of the CDS system is site-specific but manufacturer recommends that the unit be checked after every runoff event for the first 30 days after installation. During this initial installation period the unit should be visually inspected and the amount of deposition should be measured, to give the operator an idea of the expected rate of sediment deposition. After initial operational period, it is recommended that the CDS system be inspected at least once every thirty days after the wet season. During these inspections, the floatables should be removed and the sump cleaned out. It is also recommended that the CDS systems be pumped out and the screen inspected for damage at least once per year.

3.2.2 Summary of Existing Structural BMPs

The Los Angeles County Unified Annual Stormwater Reports identify the numbers and types of BMPs installed and maintained by jurisdiction. LAR UR2 WMA members identified the following stormwater pollutant watershed control measures as particularly effective:

- Street Sweeping
- Catch Basin Cleaning
- Catch Basin Inserts
- Trash Bins
- End-of-Pipe Controls such as Low-flow Sanitary Sewer Diversions
- Infiltration Controls
- Erosion Controls
- Public Education and Outreach

Based on Appendices B and C of the Los Angeles County MS4 Permittees 2010-2011 annual reports, the most frequently cumulatively installed and prevalent BMPs are summarized within **Table 3-3** and **Table 3-4**, respectively. Three of the four most frequently installed BMPs, were primarily implemented through a grant received by the Gateway Council of Governments (COG), suggesting that the most efficient means of achieving water quality objectives and implementing the BMPs desired by the Regional Board, would be by providing grants for them to be installed, so that local design engineers, developers, government, and contractors could become familiar with use of the devices.

Los Angeles County Unified Annual Stormwater Reports, Appendices B and C submitted from 2004 through 2012, were used to develop a BMP installation summary table specific to the LAR UR2 WMA Permittees, and is provided as a reference in **Appendix G**.

Table 3-3 Cumulatively Most Frequently Installed BMPs Countywide

BMP Type	Total Number Installed
Catch Basin CPS	6,377
Fossil Filter Catch Basin Insert	5,968
ARS	3,870
Clean Screen Catch Basin Insert	3,767
Extra Trash Can	3,681
Covered Trash Bin	3,119
Signage and Stenciling	1,884
Drain Pac Catch Basin Insert	1,625
Cultec Infiltration Systems	1,296
Infiltration Trenches	963
Infiltration Pit	958
Abtech Ultra Urban Catch Basin Insert	748
CDS Gross Pollutant Separator	438
United Stormwater Catch Basin Screen Inserts	403
Restaurants Vent Traps	258
Stormceptor Gross Pollutant Separators	211

Table 3-4 Most Prevalent BMPs Installed During 2010-11			
Types of Non-Proprietary BMPs Used By Most Permittees		**Types of Proprietary BMPs Used By Most Permittees**	
BMP Type	**Number of Cities**	**BMP Type**	**Number of Cities**
Infiltration Trenches	40	Fossil Filter Catch Basin Insert	46
Covered Trash Bins	32	CDS Gross Pollutant Separator	36
Extra Trash Bins	31	Drain Pac Catch Basin Insert	21
Enhanced Street Sweeping	26	Clean Screen Catch Basin Insert	21
Dog Parks	23	Stormceptor Gross Pollutant Separator	19

3.2.3 Approach to Screening for Potential Regional BMP Sites

In order to ensure compliance with the MS4 Permit specified numeric limits, regional projects can be used to enhance water quality. This approach was developed and used to identify a broader list of regional projects to include in this WMP, which could be initially short-listed through the RAA, but remain potentially viable if RAA projects became untenable. The approach may also be used in the future during the adaptive management process, therefore potential projects identified and not incorporated into the WMP are still identified. In order to identify and prioritize potential regional project sites, Structural BMP Prioritization and Analysis Tool (SBPAT) was used. SBPAT was also used to conduct the LAR UR2 WMA RAA, therefore additional details regarding this program can be found in **Section** 4. In addition to this approach, existing planning documents were referenced in order to determine if any regional BMPs are planned. Accessible planning documents show no indications that regional BMPs have already been planned in this area.

3.2.3.1 SBPAT Process for Identifying Potential Regional BMP Sites

SBPAT is able to prioritize among catchments and subcatchments based on water quality needs (i.e., pollutant load) and identify parcels that provide opportunities for implementation of structural BMPs. In order to reflect the anticipated relative challenge of achieving compliance with TMDL-based effluent limits, bacteria were assigned a relative weight of 20, while metals (copper, lead, and zinc) were collectively assigned a weight of 15 and all other pollutants set to zero.

After first evaluating and prioritizing watershed subcatchments, based on water quality needs, SBPAT identifies potential BMP opportunities by calculating regional BMP scores for each subcatchment within a watershed. Parcel scores are determined for each subcatchment based on parcel size, ownership, land use, and distance from major storm drains, then the parcel scores are integrated to determine a BMP score. BMP scores are compared with regional BMP scoring, resulting in a list of potential structural BMP opportunities based on parcel characteristics and water quality considerations. A comprehensive overview of the modeling framework can be found in the SBPAT User's Guide (Geosyntec, 2008). This SBPAT process will generally follow the steps established in the Los Angeles County-wide Structural BMP Prioritization Methodology (Geosyntec, 2006), as implemented within SBPAT.

Figure 3-1 ranks Catchment Prioritization Index (CPI) scores from 2 to 5, with the highest rankings (4 or 5) attributable to large subcatchments with primarily industrial, manufacturing, and commercial land use parcels, whose model attributes would be generally expected to generate data with high runoff rates and pollutant loads. The only low (2) priority subcatchments were in southeastern portion of Bell Gardens and are dominated by land use features that include a large park, electric transmission lines, and single family residential homes, which together would be expected to model as having low pollution loading and runoff volume potentials.

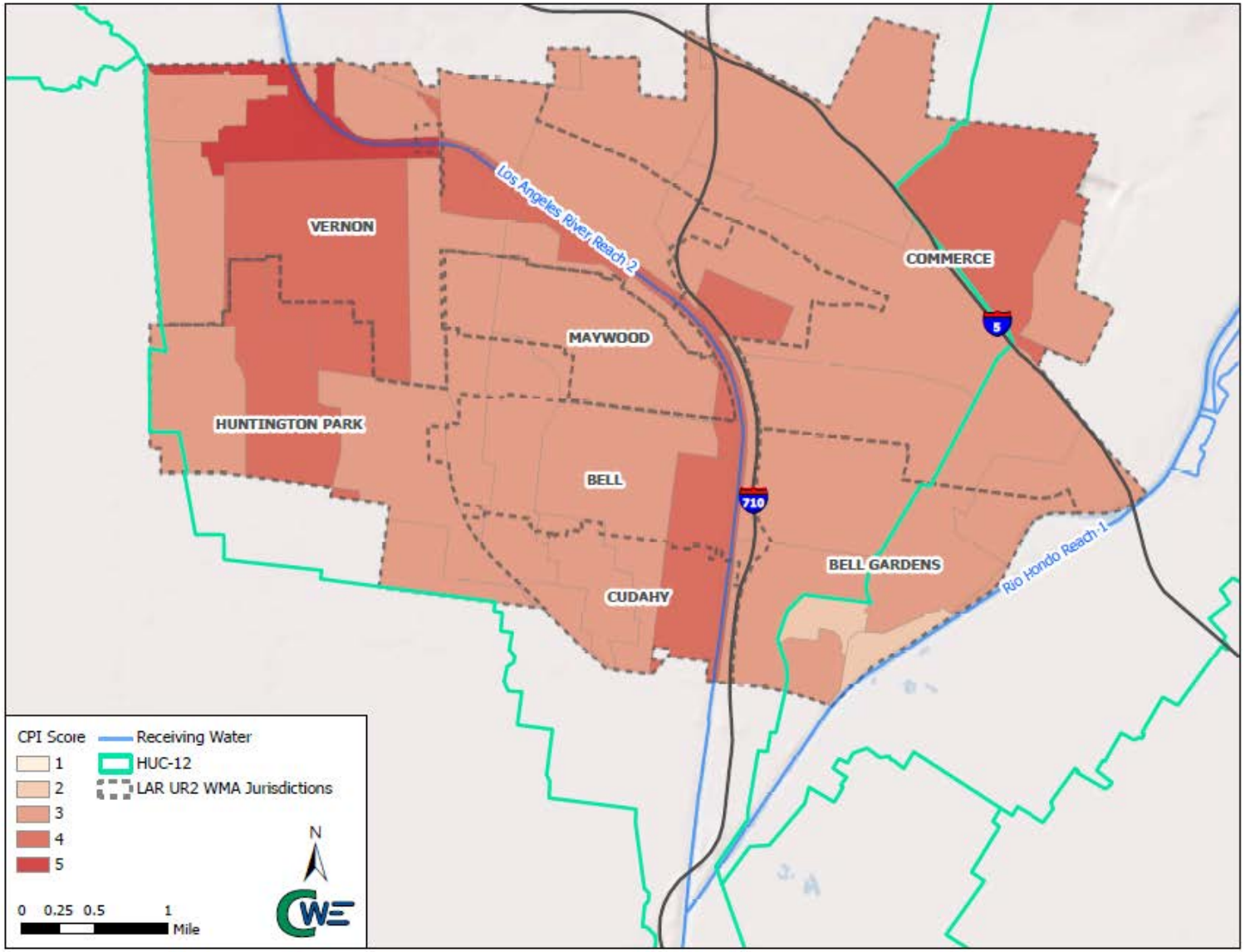


Figure 3-1 SBPAT CPI Scores

Figure 3-2 ranks Nodal Catchment Prioritization Index (NCPI) scores, from 2 to 4. This analysis cumulatively considers the discharge from tributary catchment so that one of the previously low ranking catchments in southeastern Bell Gardens, which receives flows from a more typical and large catchment to the north, no longer has a low ranking. Likewise, several previously high ranking headwater catchments now have reduced scores and rankings in comparison to catchments that received cumulative discharges from other tributary catchments, located outside of the LAR UR2 WMA, elsewhere in the Los Angeles River watershed. For the immediate purpose of locating potential regional BMP facilities for consideration during the RAA effort, NCPI scores, rather CPI scores were used in subsequent analyses; however, there is potential for distant tributary areas with high CPI scores to the primary source of runoff and contaminants, rather than downstream areas that receive the discharge and may have attributes that meet the preferred regional BMP location selection criteria. Subwatersheds with high CPI scores may represent good sites, as they would capture the primary source of contaminants, but were not the focus of this analysis.

Figure 3-3 illustrates the results of the GIS based SBPAT automated Potential Regional BMP Opportunity screening analysis. Although the selection criteria are flexible and subject to modification, for this analysis the criteria included a minimum acceptable parcel size of 0.5 acres and maximum parcel to storm drain distance of 100 feet. City or County-owned undeveloped parcels were assigned a score of five while other publicly-owned parcels were assigned a score of four, which drives the resultant analysis scoring. Parcels not meeting these criteria were not considered viable regional BMP locations and assigned a zero score. Fourteen subcatchments, or less than half of the LAR UR2 WMA subcatchments, were found to have one or more potential regional BMP opportunity sites that were identified as tributary to areas of high water quality improvement need. Normally, after potential regional BMP sites are identified, recommended BMP types are matched based on the water quality targets, runoff volumes, and site attributes. The pairing of a BMP type with a BMP site represents a potential regional BMP project. With bacteria being a main driver for the LAR UR2 WMP RAA, the initial selection of suitable regional BMP types was constrained to those capable of achieving recreational beneficial use objectives, which include infiltration basins and subsurface flow wetlands.

Figure 3-4 identifies the surficial soil types, which are primarily slowly infiltrating loams, the important regional groundwater basin, and SBPAT analysis identified potential regional BMP opportunities, illustrated in red as Potential Regional BMP Sites. The areas of Tujunga Fine Sandy Loam, located immediately adjacent to the lower Rio Hondo, Los Angeles River, and further west as a strip leading south through the middle of the Cities of Vernon and Huntington Park, may signify the presence of old deep river channels with relatively sandy soils that could potentially accommodate high infiltration rates. If present and protected from sediment induced blockage, these could horizontally distribute infiltrated runoff to other intermingled sandy layers that might otherwise seem inaccessible due to scattered clay lens of low permeability soils.

Figure 3-5 illustrates the RAA Guideline standard model land use classifications within the LAR UR2 WMA, particularly around the SBPAT identified potential regional BMP sites. As might be expected, the Cities of Vernon, Commerce and northeastern Bell contain a relatively high proportion of industrial or manufacturing and commercial land use areas and few vacant or agricultural areas. Most of the parcels in these categories, which might be more potentially accessible for the construction of infiltration basins are actually electrical transmission line easements or associated with the Long Beach (I-710) freeway. Since the number of subcatchments with potential regional BMP opportunities was limited and the identified parcels relatively small for these facilities, a coarse assessment of total catchment BMP sizing needs, regardless of site constraints, was prepared for comparison with future unanticipated private parcel acquisition opportunities. The major catchments in LAR UR2 WMA used for this analysis are consistent with monitoring sites in the CIMP and are illustrated in **Figure 3-6**. This analysis was prepared as the product of the sum of areas, for each of the major LAR UR2 WMA Cities, area weighted land use based imperviousness, and the weighted 85th percentile 24-hour rainfall depth.

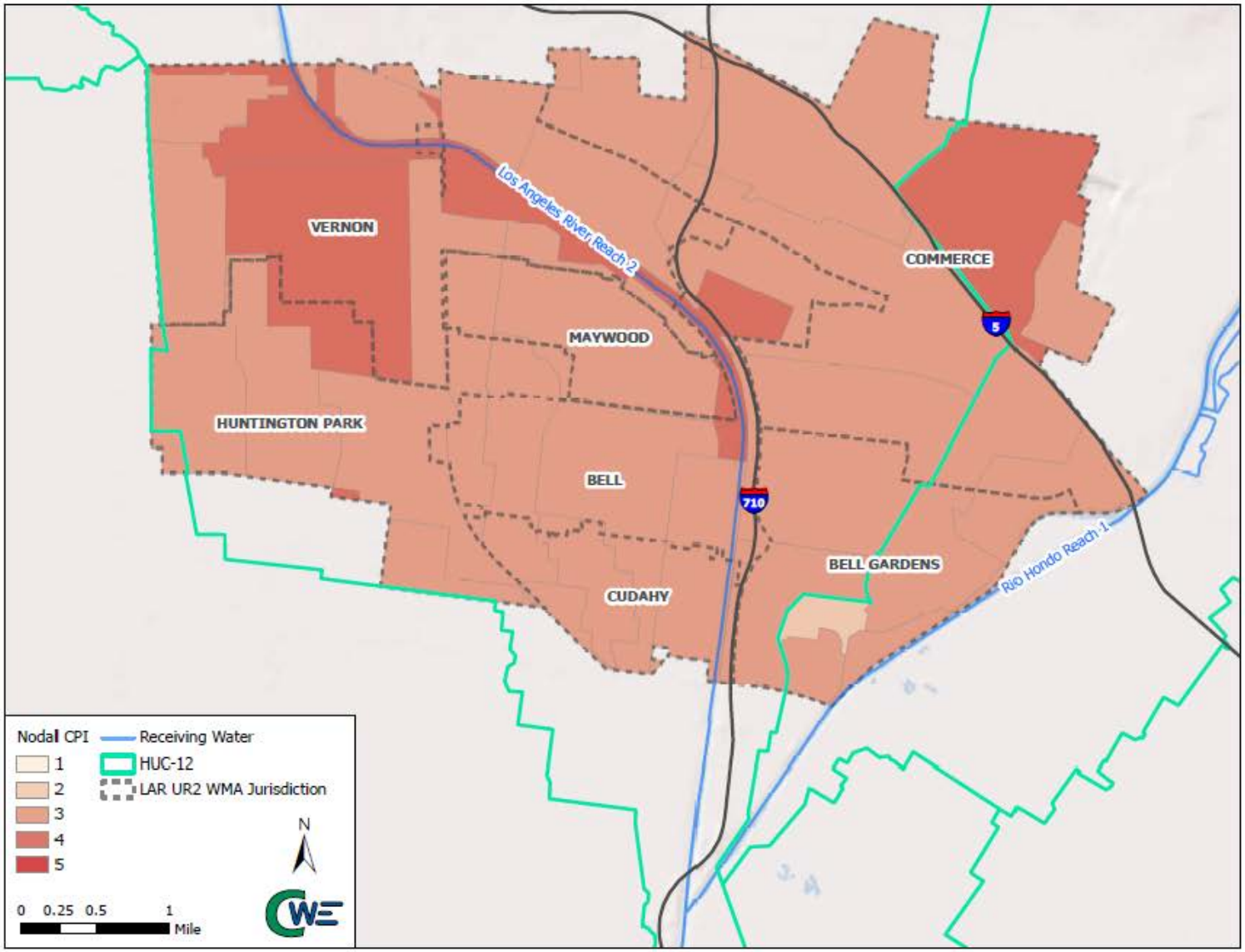


Figure 3-2 SBPAT NCPI Scores

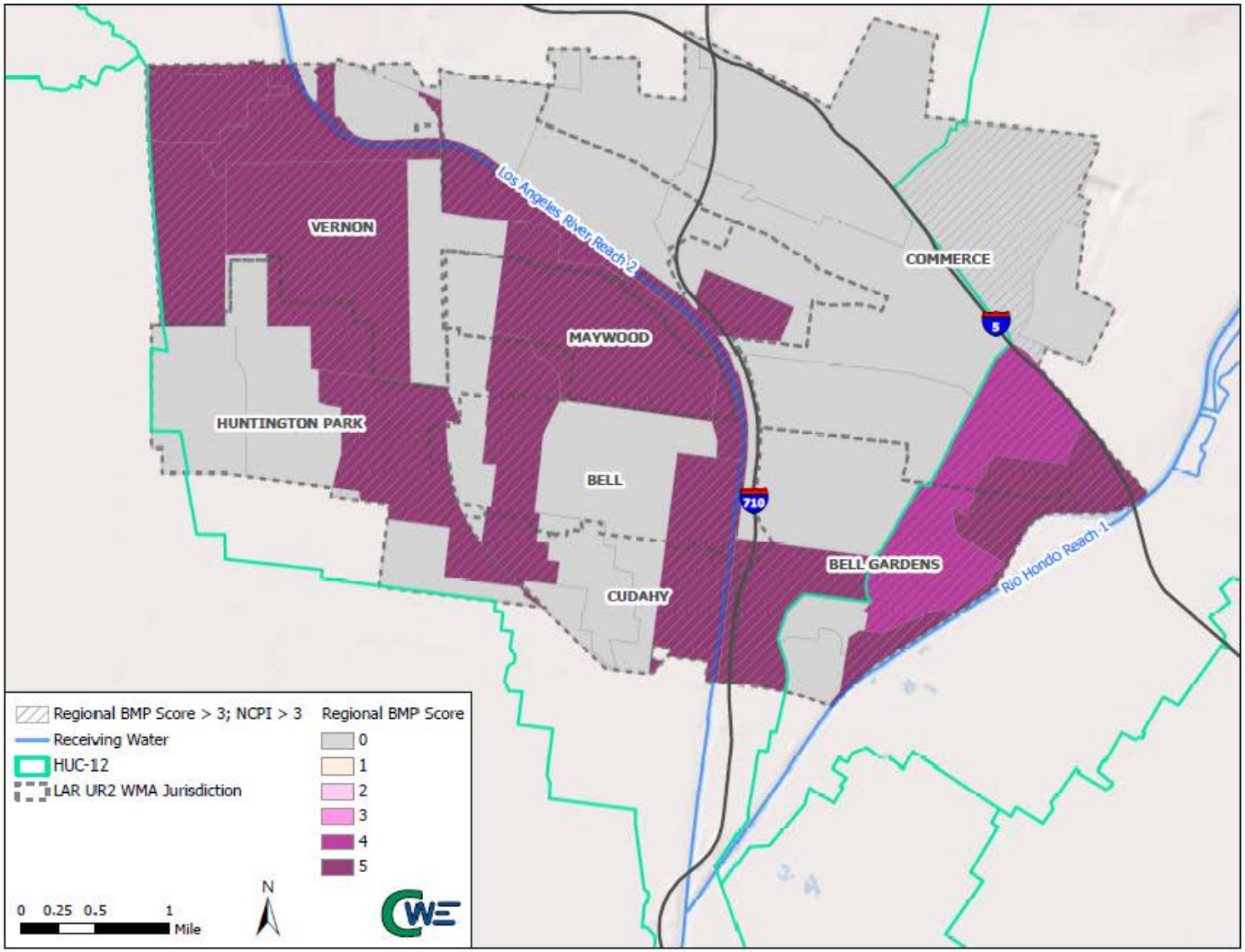


Figure 3-3 SBPAT Regional BMP Opportunity Scores (normalized to values of 0 to 5)

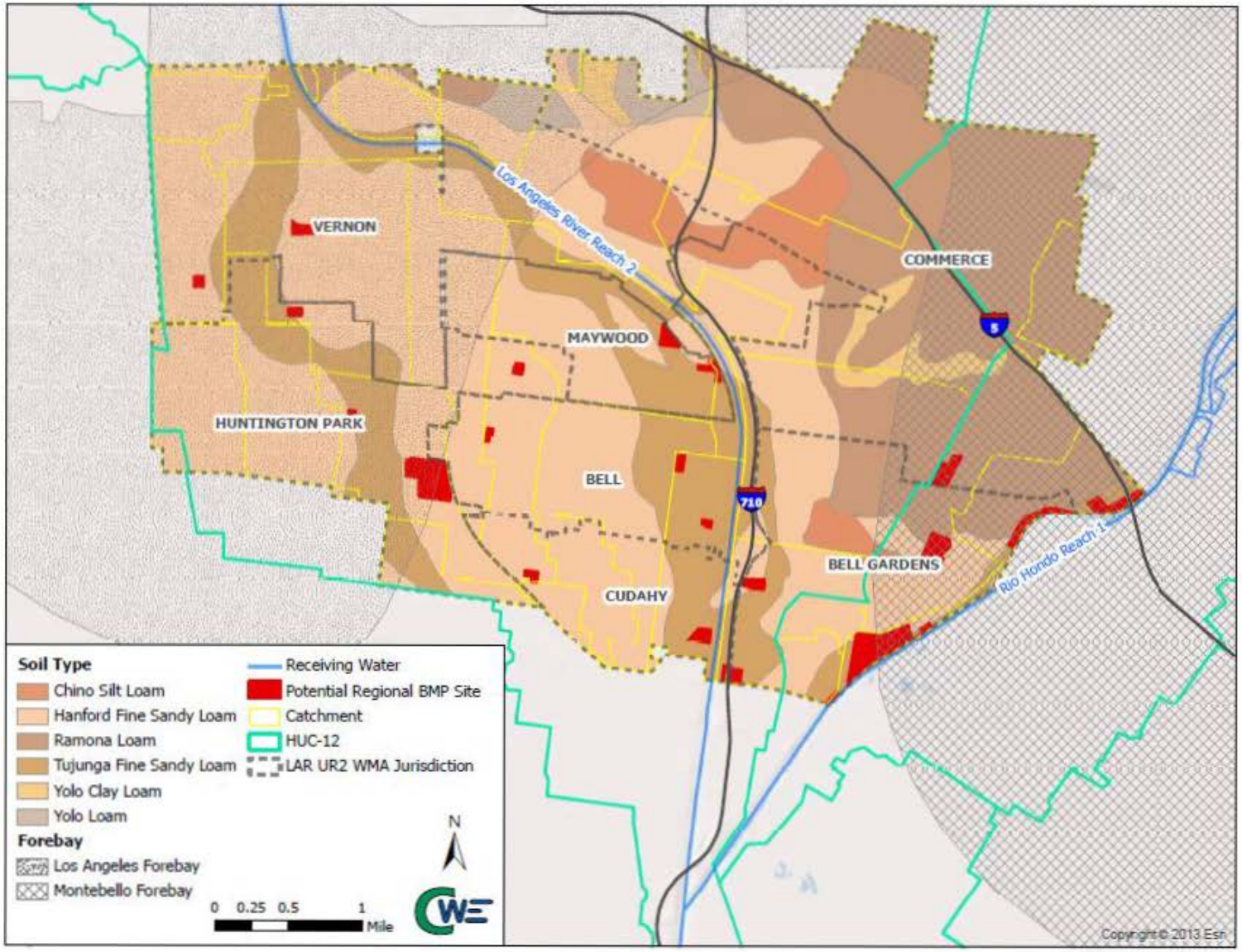


Figure 3-4 Surficial Soil Types, Groundwater Basins, and Potential Regional BMP Sites

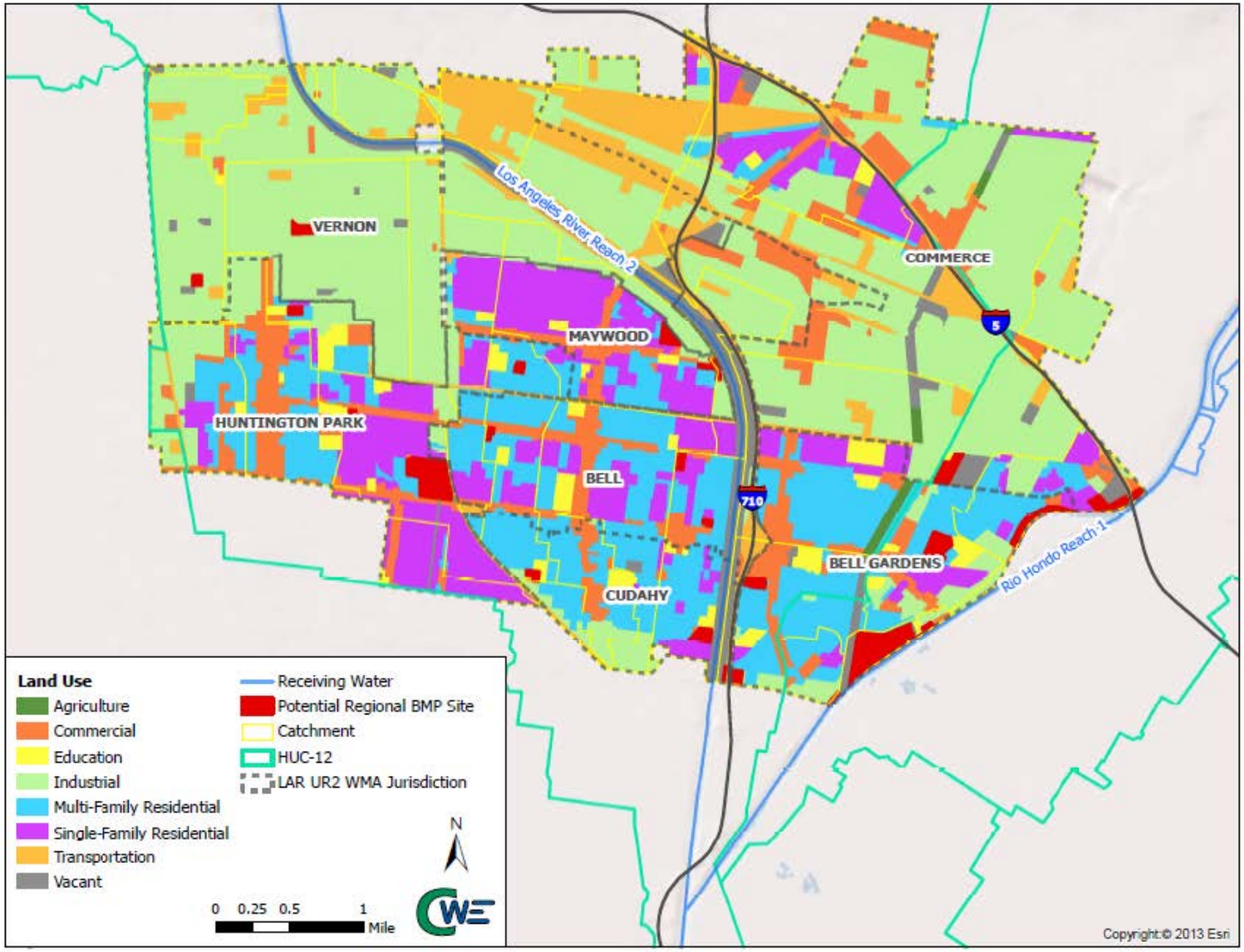


Figure 3-5 Land Use Classes Near Potential Regional BMP Locations

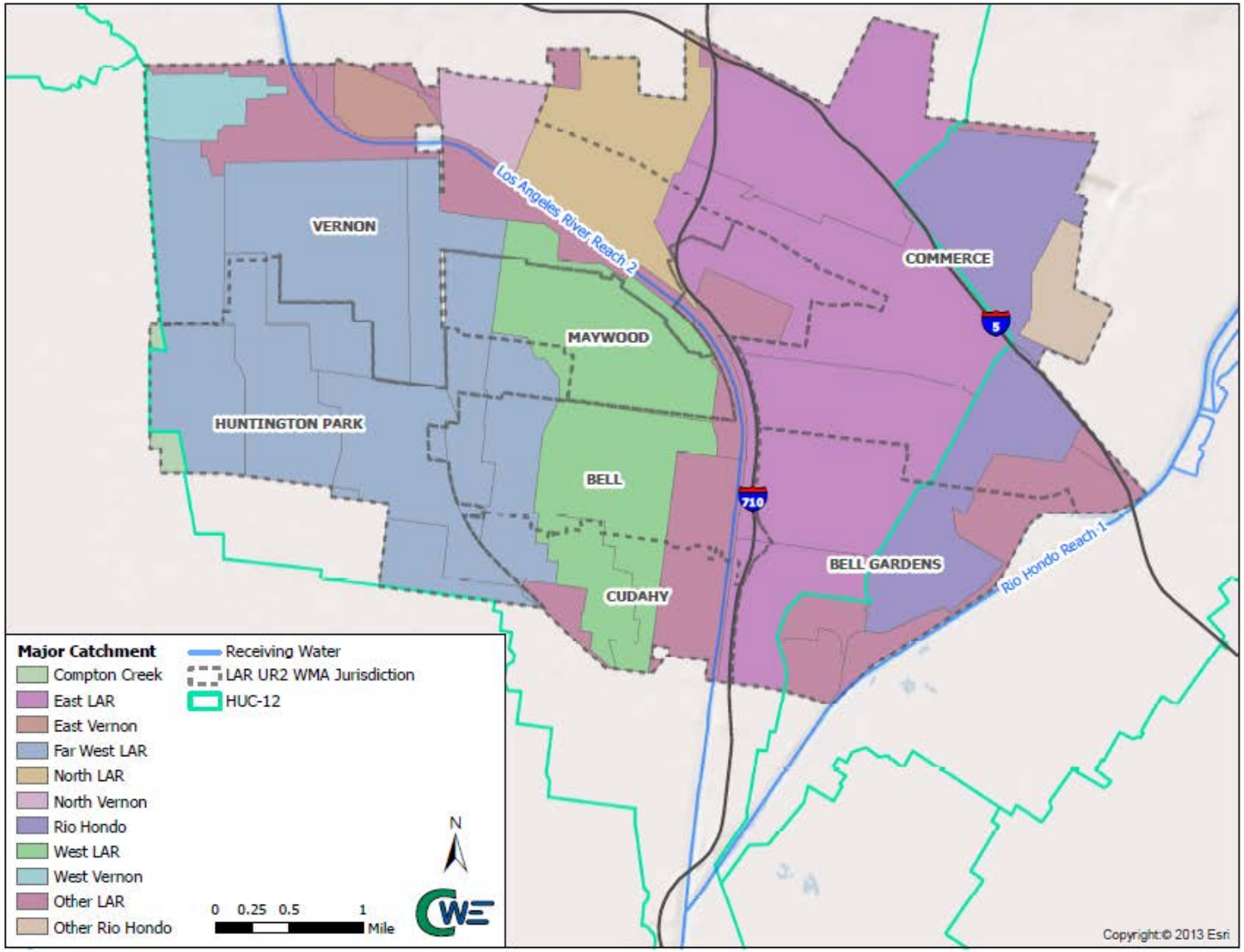


Figure 3-6 LAR UR2 WMA Major Catchments

The results expressed as runoff volume in acre-feet are in the second column from the right in **Table 3-5**. The area needed for a regional BMP holding an average water depth of 1 foot, would be approximately the same as this volume, while the area of a basin, or cistern, holding a depth of 10 feet of water would be approximately an order of magnitude less (i.e. one tenth the surface area size). Assuming an infiltration rate of 0.3 inches per hour (very low type B soil) and desired draw down time of 72 hours, results in a water depth of 1.8 feet and basin area as summarized in the rightmost columns of the two tables.

Table 3-5 Estimate Runoff Volume and Regional BMP Area by City and Catchment

City	Major Catchment	Area (Acres)	Weighted		Runoff Volume (Acre Feet)	Basin Area 1.8' Deep
			Imperviousness	Rain (inch)		
Bell	East LAR	388	0.832	0.91	24	14
	Far West LAR	329	0.609	0.92	15	9
	North LAR	10	0.741	0.91	1	0
	West LAR	539	0.666	0.92	28	15
	Other LAR	410	0.787	0.92	25	14
	Total	**1676**	**0.723**	**0.918**	**93**	**51**
Bell Gardens	East LAR	780	0.637	0.93	39	21
	Rio Hondo	354	0.677	0.94	19	10
	Other LAR	443	0.600	0.94	21	12
	Total	**1578**	**0.636**	**0.935**	**78**	**43**
Commerce	East LAR	2279	0.791	0.91	137	76
	North LAR	377	0.886	0.9	25	14
	North Vernon	1	0.910	0.91	0	0
	Rio Hondo	1025	0.857	0.9	66	37
	Other LAR	310	0.679	0.92	16	9
	Other Rio Hondo	203	0.899	0.91	14	8
	Total	**4194**	**0.813**	**0.907**	**258**	**143**
Cudahy	East LAR	38	0.639	0.94	2	1
	Far West LAR	113	0.621	0.93	5	3
	West LAR	339	0.792	0.93	21	12
	Other LAR	297	0.716	0.94	17	9
	Total	**786**	**0.731**	**0.934**	**45**	**25**
Huntington Park	Compton Creek	42	0.864	0.95	3	2
	Far West LAR	1853	0.667	0.93	96	53
	West LAR	31	0.565	0.93	1	1
	Other LAR	4	0.239	0.93	0	0
	Total	**1930**	**0.670**	**0.930**	**100**	**56**
Maywood	Far West LAR	131	0.620	0.92	6	3
	West LAR	601	0.551	0.92	25	14
	Other LAR	22	0.792	0.92	1	1
	Total	**754**	**0.570**	**0.920**	**33**	**18**

Table 3-5 Estimate Runoff Volume and Regional BMP Area by City and Catchment						
City	Major Catchment	Area (Acres)	Weighted		Runoff Volume (Acre Feet)	Basin Area 1.8' Deep
			Imperviousness	Rain (inch)		
Vernon	East LAR	85	0.758	0.91	5	3
	East Vernon	157	0.911	0.92	11	6
	Far West LAR	1448	0.885	0.96	103	57
	North LAR	367	0.840	0.93	24	13
	North Vernon	211	0.880	0.93	14	8
	West LAR	130	0.908	0.94	9	5
	West Vernon	202	0.903	0.95	14	8
	Other	697	0.889	0.93	47	26
	Total	**3298**	**0.880**	**0.944**	**228**	**126**
LAR UR2 WMA	**Total**	**14215**	**0.761**	**0.925**	**834**	**463**

3.2.3.2 Other Potential Regional BMP Project Sites

Based on the results of monitoring, water quality, technical studies, and source control studies it is questionable as to whether bacteria can be consistently controlled to meet the dry- and wet-weather numeric limits identified in Attachment O of the MS4 Permit, which are based on recreational beneficial use objectives within the Basin Plan, unless MS4 discharges can be eliminated.

Therefore LAR UR2 WMA identified a variety of exemplar projects which were further investigated during the initial phase of the WMP development process to identity new inter-agency opportunities for LID that reduces runoff and controls the discharge from within the LAR UR2 WMA. The potential projects are summarized in **Table 3-6.**

Table 3-6 Preliminary Assessment of Potential Regional BMP Sites						
Potential Project Name	**Catchment**	**Cross Streets**	**Area (ac)**	**Green Area (ac)**	**Attributes**	**Challenges**
Bell						
Bell High School	WLAR	Pine Avenue and Florence Avenue	18.1	4.9		Small Trib
Park Avenue School	WLAR	Florence Avenue and Wilcox Avenue	5.7	1.7	Large Trib	
Veterans Memorial Park	WLAR	Gage Avenue and Wilcox Avenue	3.3	2.4	Med Trib	
United States Army Reserve	Other LAR		UNK	N/A	Current Const	Federal Govt
I-710/Transmission Line	Other LAR	West of I-710	UNK	N/A	LFDs?	Small Trib
Abandoned RR Spurs	Other LAR	Various Locations	UNK	N/A		Pvt Property
Bell Gardens						
Bell Gardens Elementary School	ELAR	Quinn Street and Jaboneria Road	10.4	2.2	Large Trib	
Bell Gardens Intermediate School	ELAR	Florence Avenue and Jaboneria Road	14.6	4.5	Large Trib	
Bell Gardens Park	RH	Florence Avenue and Loveland Street	13.7	10.3		No Drain
Ford Park Golf Course	RH	Garfield Avenue and Park Lane	25.3	18.9	Large Trib	Golf Course
John Anson Ford Park	RH	Garfield Avenue and Park Lane	9.6	7.2	Large Trib	
I-710/Transmission Line	Various	West of I-710/Garfield Avenue	45.8	34.3	LFDs?	Small Trib
Commerce						
Bandini Park	NLAR	Astor Avenue and Hepworth Avenue	2.4	1.8		MS4 Unclear
Bristow Park	NLAR	Triggs Street and McDonnell Avenue	7.0	5.3		No MS4
Park Lawn Memorial Park	RH	Gage Avenue and Garfield Avenue	18.3	13.7		No MS4
Power Facilities Total	ELAR	West of Garfield Avenue	21.6	16.2	Nr Telegraph	
Rosewood Park	ELAR	Commerce Way and Harbor Street	11.3	8.5	Med Trib	
Veterans Park Total	Other RH	Gage Avenue and Zindell Avenue	9.7	7.3	Small Trib	
Abandoned RR Spurs	Various	Various Locations	UNK	N/A		Pvt Property

Table 3-6 Preliminary Assessment of Potential Regional BMP Sites						
Potential Project Name	**Catchment**	**Cross Streets**	**Area (ac)**	**Green Area (ac)**	**Attributes**	**Challenges**
Cudahy						
Clara Street Park	ELAR	Clara Street b/w Wilcox and Atlantic Ave	4.1	3.1		No MS4
Cudahy Park	Other LAR	River Drive and Santa Ana Street	7.0	5.2		Unk MS4
Lugo Park	FWLAR	Elizabeth Street and Otis Avenue	1.5	1.1	Med Trib	
Park Avenue Elementary School	Other LAR	River Drive and Elizabeth Street	1.5	1.1		Unk MS4
I-710/Transmission Line	Other LAR	West of I-710/Garfield Avenue	UNK	N/A	LFDs	Small Trib
Huntington Park						
Freedom Park Total	FWLAR	E. 61st Street and Carmelita Avenue	0.8	0.6		No MS4
Nimitz Middle School	FWLAR	E. 60th Street and Carmelita Avenue	8.5	2.3	Small Trib	
Salt Lake Park Total	FWLAR	E. Florence Avenue and Salt Lake Ave	33.4	25.1	Lrg Trib/Prcl	
Maywood						
Maywood Academy High School	WLAR	E. 61st Street and Pine Avenue	1.8	1.4		No MS4
Maywood Elementary School	WLAR	E. 52nd Place and Cudahy Avenue	0.5	0.4		Small Trib
Maywood Park	WLAR	E. 52nd Place and E. 58th Street	6.0	2.6		No MS4
Maywood Riverfront Park Total	Other LAR	E. 59th Place and Alamo Avenue	4.6	3.5		Unk MS4
Vernon						
Abandoned RR Spurs	Various	Various Locations	UNK	N/A		Pvt Property
Vacant Parcel	FWLAR	2221 E 55th Street	7.6	0.0		No Drains
Vernon Power Plant	FWLAR	2701 50th Street	5.510	0.00	South Parcel	Power Plant

3.2.3.3 Evaluating and Prioritizing Potential Regional BMP Project Sites

A planning-level, desktop-based feasibility screening assessment was performed to identify potential regional BMP projects for inclusion in the WMP Plan. The County Assessor's website was queried for current parcel ownership information and the County Department of Public Works searched for information pertinent to drainage conveyance characteristics for existing facilities. Aerial imagery were reviewed to verify actual and adjacent land use characteristics, assess potential engineering design alternatives, facility footprint, possible sizing and other criteria generally pertinent to an initial assessment of feasibility. Based on this information the subsequent RAA model evaluation step was undertaken to assess the potential beneficial impact of these parcels on LAR UR2 WMA MS4 discharges. The potential regional BMP projects were also evaluated using the cost and water quality analysis module in SBPAT.

The potential regional BMP project configurations and planning-level capital and operation and maintenance costs were evaluated (i.e., quantification of costs and water quality benefits) using SBPAT. SBPAT evaluates BMP performance by linking a long-term hydrologic output from USEPA's Stormwater Management Model (SWMM) to a stochastic Monte Carlo water quality model to develop statistical descriptions of stormwater quantity and quality. The statistics generated in this process are then used to characterize the low (25^{th} percentile), average (mean), and high (75^{th} percentile) values for the annual volume, pollutant loads, and pollutant concentrations in stormwater runoff from the modeled area, with and without BMPs implemented. Water quality benefits are reported as the difference between Monte Carlo-derived statistics of the modeled area without BMPs and the same area with a specific suite of BMPs. Additional details regarding the modeling system are provided in **Section** 4.

The prioritization of regional BMPs considers the relative costs, benefits, and ease of implementation associated with each potential project. Potential projects yielding higher water quality benefits at lower costs will receive higher prioritization rank in instances where ease of implementation is considered to be comparable. Regional BMP projects that are constrained by engineering or site considerations and projects that are seen to be more challenging to implement may receive a lower priority rank than projects with similar costs and benefits with less significant constraints.

3.2.3.4 Process for Selecting Regional BMP Projects

The process of selecting the final list of regional BMPs was based on the prioritization results, RAA results, and agency input. The RAA quantifies the water quality benefits from quantifiable non-structural BMPs and distributed structural BMPs that are included in this WMP. The sum of load reductions from non-structural, distributed, and regional BMPs will then be compared with the target load reductions necessary for compliance with final TMDL limits for the purpose of reasonable assurance demonstration. BMP phasing (i.e., the planned implementation of some BMPs before others) will then be developed to meet the schedule of interim compliance milestones. The selection process and results are detailed in **Section 4.3.3**.

3.2.4 Summary of BMP Performance Data

The CASQA Development and Municipal BMP Handbook provides a general summary of BMP performance data within Southern California, which is summarized in **Table 3-7**.

Table 3-7 Treatment Control BMP Removal Efficiency						
Pollutant of Concern	**Treatment Control BMPs**					
	Vegetated Swale / Strip	**Catch Basin Screen / Insert**	**Hydrodynamic Separator**	**Infiltration Basin / Trench**	**Bioswale**	**Grease Trap**
Sediment/ Turbidity/ Suspended Solids/ pH	High/Medium	High/Medium	High/Medium Low for Turbidity	High/Medium	High/Medium	Low
Nutrients	Low	Low	Low	High/Medium	Low	Low
Organic Compounds	Medium/Low	Low	Low	High/Medium	Medium	Low
Trash & Debris	Low	High/Medium	High/Medium	High/Medium	Low	Medium
Oxygen Demanding Substances	Low	Low	Low	High/Medium	Low	Low
Pathogens (Bacteria/ Viruses)	Low	Low	Low	High/Medium	low	Low
Oil & Grease	High/Medium	Medium	Medium/Low	High/Medium	High/Medium	Medium
Pesticides/PCBs	Medium	Low	Low	High/Medium	Medium	Low
Metals	High/Medium	Medium	Low	High	High/Medium	Low

3.3 Proposed Control Measures

Through the RAA iterative modeling process, detailed in **Section** 4, control measures were identified which will ensure compliance with applicable numeric limits in the time frame required by existing TMDLs. The types of control measures are outlined in this section, while the quantities are discussed in **Section** 4. Through the adaptive management process, the proposed control measures may change.

3.3.1 Proposed MCM / Institutional BMP Modifications

Load reductions derived from non-modeled non-structural BMPs are assumed to be five percent of baseline loads, based on the extensive additional permit requirements and programs as previously identified in Section 3.1.1. Enhanced programs will be implemented in order to ensure they result in at least a five percent load reduction. These non-structural BMPs will include the following program enhancements (i.e., beyond the MS4 Permit minimum):

- Enhanced street sweeping
- Enhanced catch basin and storm drain cleaning
- Enhanced commercial and food outlet inspection
- Enhanced pet waste controls
- Enhanced education and outreach
- Enhanced homeless waste control efforts
- Enhanced Illicit Discharge Detection Elimination (IDDE) efforts

Potential non-structural BMP enhancements were identified in the Los Angeles River Reach 2 Metals TMDL Implementation Plan. **Table 3-8** provides potential enhancements associated with each of the programs listed above. Each LAR UR2 WMA City will have the flexibility to implement some or all of the enhancements, which may vary among the group members based on their individual assessment of priorities and the applicability of the potential enhancement.

3.3.2 Proposed Non-Stormwater Discharge Control Measures

California Senate Bill 346 (SB 346) was chaptered on September 27, 2010 and phases out the use of copper in automotive friction (brake) pads and prevent its replacement with other toxic substances. Similarly, the US EPA and automotive manufactures signed a Copper-Free Brake Initiative on January 21, 2015[5]. The law prohibit new vehicle brake friction material from exceeding 5 percent copper by weight, by 2021, and 0.5% copper by weight by 2025. As a result of SB 346, over 40 percent of cars manufactured in 2014 contained less than 0.5 percent friction pad copper and the laws implementation is well ahead of schedule. Other copper sources and discharges will be addressed by source controls for zinc, and the effectiveness of BMPs in controlling copper and other pollutants will be reassessed through the AMP. Copper load reductions due to SB 346 are further detailed in Section 4.3.2.2.

Permit Attachment E Part IX introduces an aggressive non-stormwater outfall based screening and monitoring program. The LAR UR2 WMA CIMP describes how the non-stormwater screening program will be implemented. Given that the Rio Hondo is normally dry, or at least does not have flowing runoff, the LAR UR2 WMA anticipates that non-storm water discharge source assessment will result in the development of new control measures specific to the unique characteristics of the LAR UR2 WMA.

[5] http://water.epa.gov/polwaste/npdes/stormwater/copperfreebrakes.cfm

Table 3-8 Potential Non-Structural BMP Enhanced Implementation Efforts	
Non-Structural BMP Program	**Proposed Implementation Approaches for Consideration**
Street Vacuuming	More frequent street sweeping
	Modify parking enforcement strategies
	Require sweepers to travel at slower speeds
	Expand vacuuming to include medians of larger streets
	Contractually require regenerative vacuum equipment
Catch Basin and Storm Drain Cleaning	Enhance cleaning schedule for catch basins with CPS or ARS
	Modify the extent, timing, and frequency of cleaning
	Conduct study to evaluate opportunities to enhance/modify program and consider implementing based on the findings
Commercial and Food Outlet Inspection	Develop a targeted outreach effort related to bacterial discharges
	Develop and enforce Trash Bin source control ordinances
	Focused education and Business Assistance Program
	Increased inspection and enforcement of grease removal equipment
Pet Waste Controls	Developing and enforce Impervious Surface Pet Waste ordinances
	Develop and implement targeted outreach effort
	Expand the use of alternative media outlets
Education and Outreach	Develop targeted pollutant source control outreach efforts
	Expand the use of alternative media outlets
	Conduct study of opportunities to enhance/modify program and implement its findings
Homeless Waste Control	Develop and implement program to reduce homelessness
	Develop ordinances to reduce encampments
	Target evening hour enforcement efforts
IDDE	Develop and implement ordinances that include enforcement actions and accelerated follow up inspections
	Conduct studies that evaluate opportunities to enhance/modify program and implement findings

3.3.3 Proposed Structural Control Measures

The proposed structural control measures are discussed in greater detail in **Section 4.3.3**, including sizing and other design parameters. The proposed structural control measures include both distributed and regional BMPS. Distributed BMPs will be implemented throughout the watershed in accordance with the Planning and Land Development Program specified by the MS4 Permit. The types and sizes of these BMPs are not identified, but assumptions are provided to support the quantities incorporated into the RAA. Following the Los Angeles River Reach 2 metals TMDL Implementation Plan, structural BMPs will be used to meet wet weather TMDL target compliance if the water quality data indicates non-compliance. LID Streets or Green Streets generally consist of bioretention system. These distributed BMPs will be implemented in LAR UR2 WMA as described in **Section 4.3.3**.

Six regional projects have been identified through the development, as listed below. The design details associated with the projects will be determined in the future, but as currently conceptualized include infiltration trenches, infiltration basins, and subsurface infiltration systems.

- Randolph Street Green Rail Trail;
- LADWP Transmission Easement;
- John Anson Ford Park;
- Rosewood Park;
- Lugo Park; and
- Salt Lake Park.

4. Reasonable Assurance Analysis

The purpose of the RAA is to demonstrate that the implementation scenarios proposed in the WMP will meet the MS4 Permit effluent and receiving water limits for the priority pollutants of concern identified in **Section** 2. The WQOs are specified in the TMDLs and included in **Appendix C**, along with other MS4 Permit limitations for each WBPC addressed in the WMP. The limiting pollutant used to control the implementation efforts of the LAR UR2 WMA is bacteria for the area draining to the Los Angeles River and metals for the area draining to the Rio Hondo. Bacteria and metals were determined to be the limiting pollutants because they meet the following criteria:

- Relatively high priority with respect to meeting TMDL WLAs and/or other WQOs;
- Conservative with respect to attenuation during fate and transport modeling; and
- Require the greatest amount of volumetric control to achieve TMDL WLAs and other objectives.

This section summarizes the modeling approach that was carried out as part of the greater RAA development effort, specifically the process of:

- Setting target load reductions based on MS4 Permit limitations;
- Modeling identified structural BMPs and quantifying their associated load reductions;
- Demonstrating, with reasonable assurance, that target load reductions (and therefore MS4 Permit limitations) can be met by the final compliance dates; and
- Phasing of structural and non-structural BMPs to achieve interim milestones.

The RAA modeling approach presented herein conforms to Part VI.C.5.b.iv(5) of the MS4 Permit, which states:

> *"Permittees shall conduct a Reasonable Assurance Analysis for each water body-pollutant combination addressed by the [WMP]. [The] RAA shall be quantitative and performed using a peer-reviewed model in the public domain. Models to be considered for the RAA, without exclusion, are the Watershed Management Modeling System (WMMS), Hydrologic Simulation Program-FORTRAN (HSPF), and the Structural BMP Prioritization and Analysis Tool (SBPAT. The objective of the RAA shall be to demonstrate the ability of [the WMP] to ensure that Permittees' MS4 discharges achieve applicable water quality based effluent limitations and do not cause or contribute to exceedances of receiving water limitations."*

The Regional Board has developed a guidance document titled, "Guidelines for Conducting Reasonable Assurance Analysis in a Watershed Management Program, Including an Enhanced Watershed Management Program (March 25, 2014)." Although the guidance document presents guidelines and not necessarily requirements, the results of the RAA presented in this WMP have been developed to conform to the Regional Board guidance document. The approach described was presented to the Regional Board by Geosyntec on April 9, 2014 (Geosyntec, 2014) and was found to be consistent with their guidelines.

4.1 Modeling System

The RAA approach leverages the strengths of publicly available, MS4 Permit-approved GIS-based models that are widely utilized including within this region. The decision to use these models in the manner described below was based on the unique characteristics of the LAR UR2 WMA in regards to water quality priorities, hydrologic processes, and BMP opportunities, as well as to the capabilities of the models approved by the MS4 Permit.

Loading Simulation Program in C++ (LSPC), a publically available watershed model that uses Hydrologic Simulation Program - FORTRAN (HSPF) algorithms to simulate hydrology, sediment transport, water quality, and the fate and transport of pollutants within receiving waters and through a watershed. GIS was also used for the spatial component of the analysis as well as general visualization.

SBPAT is a public-domain GIS-based water quality analysis tool used to evaluate structural BMP performance for the purposes of this RAA. SBPAT links a modified USEPA SWMM hydrologic engine to a Monte Carlo analysis capable of repeated random sampling of pollutant EMCs and BMP effectiveness distributions to obtain numerical results regarding the expected performance of a specific BMP configuration. Each Monte Carlo analysis typically involves 10,000 iterations of EMC distributions and BMP effluent concentrations from the International BMP Database. SBPAT's land use EMCs are presented in Table 5. SBPAT is capable of quantifying model output variability, which is a component of the Regional Board's recent RAA guidance. The model:

- Calculates and tracks inflows to BMPs, treated discharge, bypassed flows, evaporation, and infiltration at a user-defined time step (e.g., 15 minutes);
- Distinguishes between individual runoff events by defining six-hour minimum inter-event times in the rainfall record, yet tracks inter-event antecedent conditions;
- Tracks volume treated by BMPs and summarizes and records these metrics by storm event; and
- Produces a table of each BMP's hydrologic performance, including concentration and load metrics by storm event, and consolidates these outputs on an annual basis.

SBPAT is specifically referenced in the MS4 Permit Part VI.C.5.b.iv and was presented at the first two MS4 Permit Group TAC RAA Subcommittee meetings. Additional information regarding SBPAT can be found in the SBPAT portal (SBPAT, 2013a).

Table 4-1 SBPAT RAA EMCs - Arithmetic Estimates of the Lognormal Summary Statistics												
Land Use	**TSS (mg/L)**	**TP (mg/L)**	**DP (mg/L)**	**NH3 (mg/L)**	**NO3 (mg/L)**	**TKN (mg/L)**	**DCu (µg/L)**	**TCu (µg/L)**	**TPb (µg/L)**	**DZn (µg/L)**	**TZn (µg/L)**	**FC (#/100mL)**
Agriculture (row crop)	999.2 (648.2)	3.34 (1.53)	1.41 (1.04)	1.65 (1.67)	34.40 (116.30)	7.32 (3.44)	22.50 (17.50)	100.1 (74.8)	30.2 (34.3)	40.1 (49.1)	274.8 (147.3)	60,300 (153,000)
Commercial	67.0 (47.1)	0.40 (0.33)	0.29 (0.25)	1.21 (4.18)	0.55 (0.55)	3.44 (4.78)	12.3 (10.2)	31.4 (25.7)	12.4 (34.2)	153.4 (96.1)	237.1 (150.3)	51,600 (173,400)[a]
Education (Municipal)	99.6 (122.7)	0.30 (0.17)	0.26 (0.2)	0.4 (0.99)	0.61 (0.67)	1.71 (1.13)	12.2 (11.0)	19.9 (13.6)	3.6 (4.9)	75.4 (52.3)	117.6 (83.1)	11,800[b] (23,700)
Industrial	219.2 (206.9)	0.39 (0.41)	0.26 (0.25)	0.6 (0.95)	0.87 (0.96)	2.87 (2.33)	15.2 (14.8)	34.5 (36.7)	16.4 (47.1)	422.1 (534.0)	537.4 (487.8)	3,760 (4,860)
Multi-Family Residential	39.9 (51.3)	0.23 (0.21)	0.20 (0.19)	0.50 (0.74)	1.51 (3.06)	1.80 (1.24)	7.40 (5.70)	12.1 (5.60)	4.5 (7.80)	77.5 (84.1)	125.1 (101.1)	11,800[c] (23,700)
Single Family Residential	124.2 (184.9)	0.40 (0.30)	0.32 (0.21)	0.49 (0.64)	0.78 (1.77)	2.96 (2.74)	9.4 (9.0)	18.7 (13.4)	11.3 (16.6)	27.5 (56.2)	71.9 (62.4)	31,100[d] (94,200)
Transportation	77.8 (83.8)	0.68 (0.94)	0.56 (0.82)	0.37 (0.68)	0.74 (1.05)	1.84 (1.44)	32.40 (25.5)	52.2 (37.5)	9.2 (14.5)	222.0 (201.7)	292.9 (215.8)	1,680 (456)
Vacant/Open Space	216.6 (1482.8)	0.12 (0.31)	0.09 (0.27)	0.11 (0.25)	1.17 (0.79)	0.96 (0.9)	0.60 (1.90)	10.6 (24.4)	3.0 (13.1)	28.1 (12.9)	26.3 (69.5)	484 (806)

Note: EMC statistics are calculated based on 1996-2000 data for Los Angeles County land use sites (Los Angeles County, 2000), except for agriculture which are based on Ventura County MS4 EMCs (Ventura County, 2003) and fecal coliform which are based on 2000-2005 SCCWRP Los Angeles region land use data (SCCWRP, 2007b). These EMC datasets are summarized in the SBPAT User's Guide (Geosyntec, 2012).

[a] The default log distribution best fit summary statistics for this land use-pollutant combination produced an unreasonably high deviation, therefore the arithmetic estimate of the log mean was held constant while the log summary statistics were recomputed based on the log CoV for SFR (SCCWRP's low-density residential EMC).

[b] Multi-family residential EMC used here since educational land use site not available in the SCCWRP fecal coliform dataset.

[c] The fecal coliform EMC for the multi-family residential land use is based on SCCWRP dataset for "high-density residential"

[d] The fecal coliform EMC for the single-family residential land use is based on SCCWRP's dataset for "low-density residential".

4.2 Modeling Approach

This section gives an overview of the modeling approach, while the findings and results identified using this approach are described in **Section 4.3**. The modeling approach involves the establishment of target load reductions and the evaluation of non-structural and structural BMP pollutant load reductions. In addition, load reductions associated with non-MS4 parcels must also be established.

4.2.1 Establish Target Load Reductions

This initial step established target pollutant load reductions for the water quality priorities identified in **Section** 2, which includes applicable TMDL and 303(d)-listed pollutants (excluding trash) for the LAR UR2 WMA compliance modeling locations. It is possible that for some pollutants, such as nutrients, no MS4 load reduction relative to existing conditions would be necessary to meet the TMDL-based compliance requirements. The compliance modeling locations will consist of a location in Los Angeles River Reach 2 (or Segment B in the bacteria TMDL) and another in the lower Rio Hondo tributary.

The target load reductions represent a model-able expression of the MS4 Permit compliance metrics (e.g., bacteria allowed exceedance days for dry- and wet-weather), and serve as a basis for confirming that the WMP reasonably assures compliance with the MS4 Permit through quantitative analyses. Target load reductions were established using the calibrated LSPC watershed model for the TMDL pollutants total nitrogen, total copper, total lead, total zinc, and fecal coliform. LSPC does not model TMDL pollutants nitrate, nitrate plus nitrite, ammonia (total nitrogen will be used as a surrogate for all regulated nitrogen species), total cadmium (copper, lead, and zinc will be used as surrogates), or E. coli (fecal coliform will be used as a surrogate).

Land use loadings were reduced in LSPC until daily average pollutant concentrations at the compliance modeling locations met concentration or (single sample) exceedance day-based limits. Alternatively, daily maximum values may be used; however, such an approach is considered overly conservative. The resulting load reductions that were found necessary to meet the MS4 Permit limits became the target load reductions that BMP benefits were modeled against. For bacteria, the wet-weather allowable exceedance days include High Flow Suspension (HFS) days.

4.2.2 Evaluate Non-Structural BMP Pollutant Load Reductions

Existing recently-initiated non-structural BMPs (i.e., those that have been initiated post-TMDL effective date) and planned non-structural BMPs were evaluated in terms of ability to reduce loads at the two compliance modeling locations. Both wet- and dry-weather water quality benefits of these BMPs were evaluated for all TMDL and 303(d) pollutants (excluding trash) where data was available to support such estimates.

Non-structural BMP load reductions include redevelopment (i.e., implementation of the MS4 Permit's post-construction retention and treatment requirements), Industrial General Permit compliance (i.e., stormwater discharge permittees meeting TMDL limits), and other non-structural BMPs, such as MCMs/institutional BMPs. Load reductions were quantifiable based on available BMP performance data and literature. These assumptions are documented in **Section 4.3.2.** For example, the load reductions resulting from phase-out of copper in brake pads and of zinc in rubber tires (assuming implementation of Department of Toxic Substances Control's (DTSC's) Safer Consumer Product Regulations, and inclusion of zinc in tires in the Priority Products list) was determined based on recent quantitative mass balance estimates developed by Kelly Moran for CASQA's True Source Control subcommittee. As another example, bacteria and dry-weather runoff reduction BMPs were quantified consistent with methodologies employed in recent San Diego Combined Load Reduction Plans (examples available online (SBPAT,

2013b)). **Figure 4-1** shows a general schematic of non-structural BMP load reduction quantification through an example using pet waste programs.

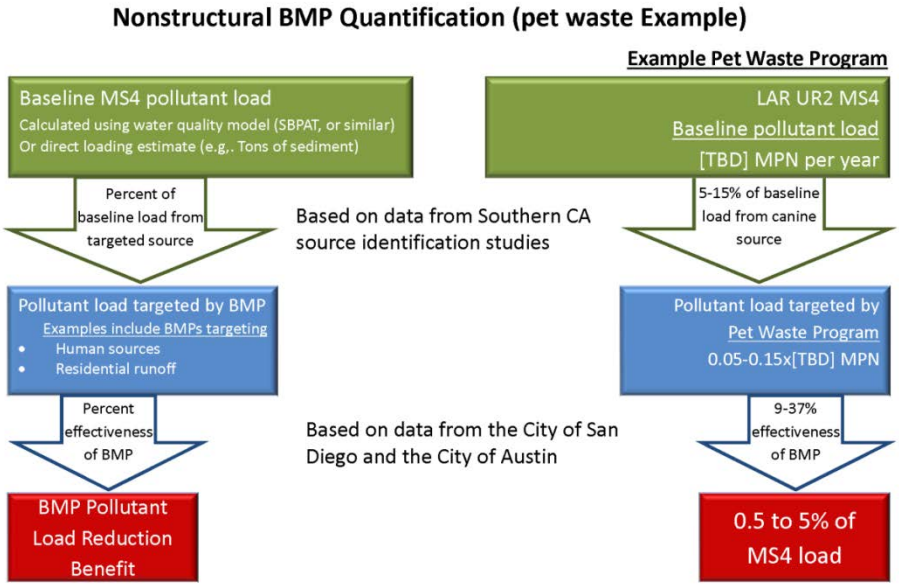


Figure 4-1 Non-Structural BMP Quantification (San Diego Pet Waste Example)

To avoid double-counting of load reductions where non-structural and structural BMPs overlap, the greater load reduction was applied.

4.2.3 Evaluate Structural BMP Pollutant Load Reductions

The goal of this step is to achieve the remaining target load reductions needed after accounting for the benefits of non-structural BMPs. Existing jurisdictional boundaries, as well as subwatershed and conveyance facility characteristics, were considered to delineate pollutant source, runoff control, and outfall monitoring strategies. This involved a detailed review of existing conditions and datasets.

Existing (i.e., implemented post-TMDL) and planned structural BMPs were provided by the agencies with sufficient conceptual design detail to support quantitative analysis. The additional "proposed" structural BMPs opportunities were identified and prioritized using SBPAT's structural retrofit planning methodology. Structural BMPs were modeled iteratively for the final TMDL compliance scenario (interim compliance milestone scenarios, were quantified by summing load reductions of phased BMP subsets as required). The final TMDL compliance scenario reflects the dates in which the final TMDL limits become effective. Milestones and final scenario dates for pacing water quality control measure implementation and iterative adaptive management reanalysis are (assuming the responsible parties implement the LRS approach for the bacteria TMDL):

- October 1, 2015 (final WQBEL - trash TMDL)
- January 11, 2020 (75% dry-weather WQBEL - metals TMDL)
- January 11, 2024 (final dry-weather, 50% wet-weather WQBEL - metals TMDL)
- January 11, 2028 (final wet-weather WQBEL metals TMDL)
- September 23, 2028 (Los Angeles River Segment B dry-weather second phase WQBEL - bacteria TMDL)
- March 23, 2030 (Rio Hondo dry-weather second phase WQBEL - bacteria TMDL)
- March 23, 2037 (final wet-weather WQBEL and RWL - bacteria TMDL)

The water quality benefits (in terms of expected pollutant load reductions) associated with existing, planned, and proposed structural BMPs were evaluated for wet-weather using SBPAT, consistent with methods used in previous TMDL Implementation Plans and Combined Load Reduction Plans. SBPAT uses recent effluent quality data from the WERF/EPA/ASCE International Stormwater BMP Database (www.bmpdatbase.org) to characterize structural BMP performance for all TMDL and 303(d)-listed pollutants of concern, based on available data. SBPAT estimates pollutant load reductions by comparing "existing" loads (corresponding to the effective date of the TMDL) with "post-BMP implementation" loads. Load estimates for the existing condition rely primarily on hydrology (which is modeled in SBPAT using UESPA's SWMM and Los Angeles region land use EMCs).

Following evaluation of the water quality benefits associated with these BMPs, the remaining need in terms of additional pollutant load reductions required to achieve the target load reductions was calculated to determine whether additional BMPs are needed to demonstrate Reasonable Assurance.

Estimated load reductions were compared with the target pollutant load reductions and were used to assess compliance with both load-based and exceedance day-based TMDL compliance metrics. Expected pollutant reduction ranges were provided, thereby capturing the variability of BMP performance, and reflecting the specific compliance risk tolerance of the LAR UR2 WMA.

For dry-weather (which includes days with <0.1-inch rainfall as defined by the Los Angeles River Bacteria TMDL), structural BMP quantification is based on static volume and load reduction calculations. An example of a static mass or volume balance calculation would be for characterizing the effects of overspray irrigation control programs (e.g., water conservation outreach and incentives) in combination with a number of low flow diversion (to sewer) projects, which together may be estimated to reduce 100 percent of dry-weather discharge volumes for the entire drainage area tributary to the implementation sites. This was done consistent with methods employed for recent TMDL Implementation Plans and Combined Load Reduction Plans, and took into account local knowledge and data provided for dry-weather runoff sources and discharge locations within LAR UR2 WMA. For pollutants that are covered within the RAA, but lack data to support a quantitative modeling analysis, surrogate pollutants were used to estimate load reductions (e.g., TSS for particulate-associated toxicants). Non-stormwater pollutants (e.g., pH, cyanide, ammonia), as determined by the water quality prioritization and source assessment presented in **Section** 2, as well as trash were not addressed by the RAA.

4.3 Modeling Process

This section goes into greater detail regarding the RAA completed using the approach described in **Section 4.2**, while the final RAA output is provided in **Section 4.4**.

It should be noted that model simulations for copper, lead, zinc, nitrogen, and bacteria under dry weather conditions are not included. The Regional Board's approved RAA models are rainfall-dependent and inapplicable to dry weather flow conditions. For non-MS4 Permittees, over 70 percent are dry-weather flows, and the LAR UR2 WMA is about 4 percent of the total watershed area. The contribution of LAR UR2 WMA to the dry-weather pollutant concentration is about 1 percent, which is below the resolution of available RAA methods. Although model simulations for dry weather are not included, dry weather compliance is demonstrated by the Los Angeles River Bacteria TMDL Load Reduction study, Los Angeles River Metals TMDL CMP Annual Reports, and will continue to be assessed through CIMP implementation, particularly dry-weather receiving water monitoring and non-stormwater outfall screening, source assessments, and monitoring.

Based on the yearly CMP monitoring reports, the pollutant levels from areas around LAR UR2 can be looked at in terms of compliance since samples are representative of daily loads. Stations LAR 1-8 at

Washington Boulevard, LAR 1-9 at 710 Freeway, LAR 1-10 at Rio Hondo Tributary, and LAR 1-11 at Del Amo Boulevard are all locations near the LAR UR2. For the fiscal year 2013-2014, only one sample was retrieved in August 2013 at Station LAR 1-10 because the channel was dry during other months. The samples found in dry weather from these monitoring stations show that only one sample from the fiscal year 2013 – 2014 was in exceedence for TMDL numeric targets. The sample collected from Station LAR 1-10 exceeded TMDL numeric targets for copper. Samples for lead and zinc are in compliance for each station.

4.3.1 Target Load Reductions

The Determination of Target Load Reductions began with a January 30, 2014 meeting with Board staff to clarify our assumptions and approach to conducting the RAA. Based on staff comments, we began by identifying the 90th percentile rain event years, then determined baseline pollutant loads based on those years, and made a determination of allowable loads for both the LAR and Rio Hondo based on TMDL and MS4 Permit requirements. The difference between the baseline and allowable loads then became the Target Load Reduction which must be reduced through the imposition of watershed control measures. The final step is an iterative adaptive management process, which will be subject to changing information and experience with the modeling methods and RAA assumptions. As an example, the current land use EMCs are primarily derived from data developed around the time that the 2001 MS4 Permit was just being implemented. Although models have been used to determine watershed pollutant loads, approximately 40% of the Los Angeles River watershed, as a whole, follows a reduced street sweeping schedule, as compared to the enhanced weekly schedule, followed by the LAR UR2 WMA Permittees.

4.3.1.1 90th Percentile Years for Bacteria and Metals

The Regional Board's RAA Guidance document requires that RAAs consider critical conditions when evaluating structural and non-structural BMPs. Additional communication with the Regional Board indicated that two separate methods could be used to establish critical or 90th percentile years for different pollutant classes. Based on Regional Board guidance, the 90th percentile year was established for bacteria by applying the regulatory definition of a wet day, a calendar day with precipitation greater than 0.1-inch and the three days that follow, to the period of record for a representative rain gage, ranking years by the number of wet days, and identifying the 90th percentile TMDL year based on the number of wet days. The year representing the critical condition for all other pollutants under consideration, specifically metals and nutrients, was established by summing rainfall totals by TMDL year and identifying the corresponding 90th percentile year based on annual rainfall depths.

The 90th percentile years are comprised of storm events that make up the years. Data from rain gages is first collected as real time data and then converted to daily data. Once the data is converted to daily data, the load days are then sorted from highest to lowest and any loads lower than 0.1 inches are removed from the year. Once loads lower than 0.1 inches are removed, the load days from the 90th percentile can be analyzed for the flow and pollutants Copper, Lead, Zinc, Fecal, Nitrogen, and Phosphorus of subwatersheds.

Subwatersheds 6078 and 6083 contribute to the LAR UR2 and were used to analyze the flows in terms of LAR UR2. From the years 1988 to 2011, 8401 rain events were recorded and converted to daily rainfall. After removing rainfall that fell < 0.1 inches, a total of 528 storm events were left, and the 90th percentile was determined. The results of the 90th percentile years are demonstrated in Figure for Subwatershed 6078 and the results for Subwatershed 6083 are demonstrated in Figure . The 90th percentile flow found for subwatershed 6078 is 433 cfs and 85 cfs.

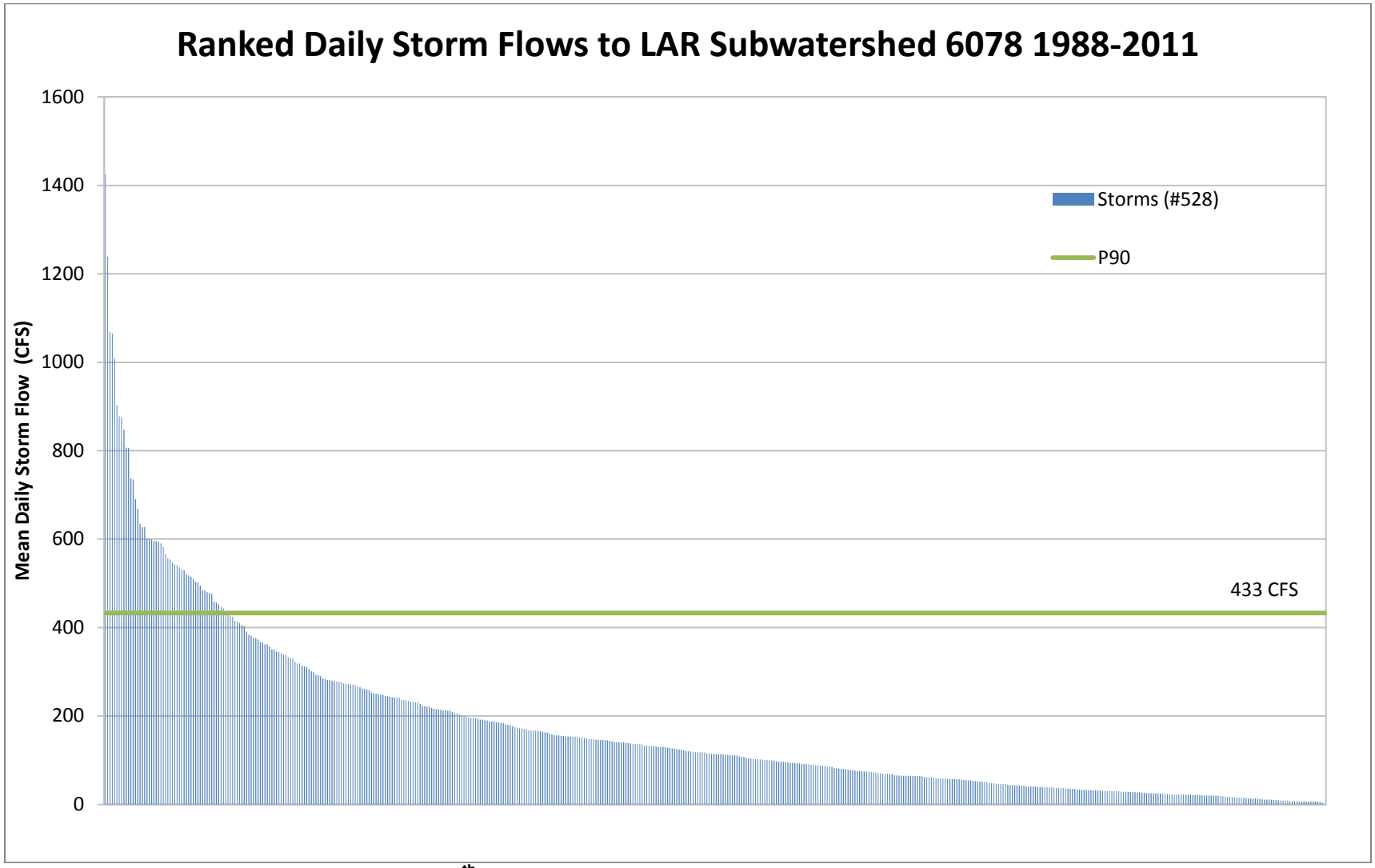


Figure 4-2 Ranked 90th Percentile Mean Daily Storm Flows for LAR Subwatershed 6078

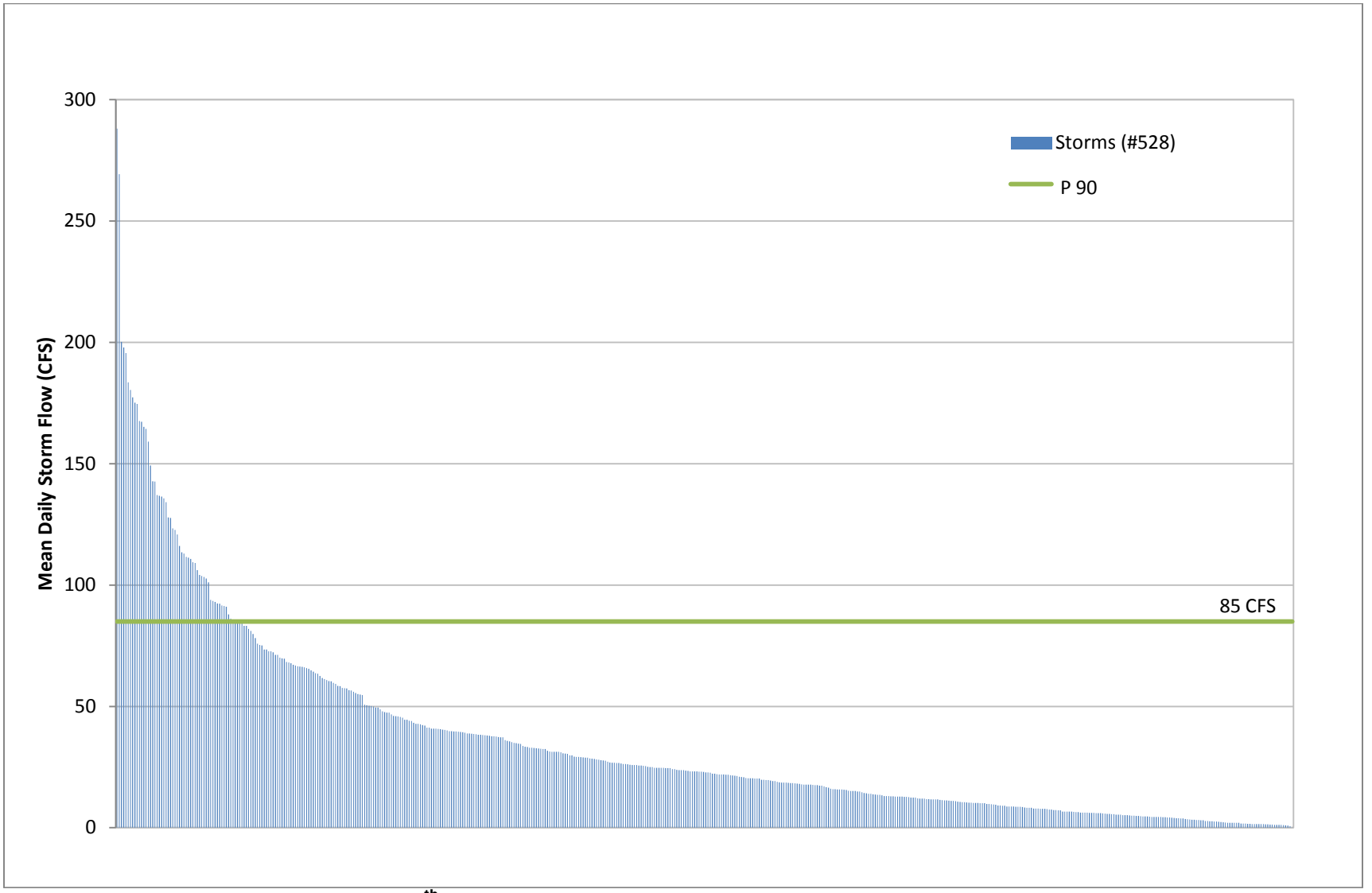


Figure 4-3 Ranked 90th Percentile Mean Daily Storm Flows for Rio Hondo Subwatershed 6083

Subwatersheds within LSPC are assigned a rain gage reflecting thiessen polygons or areas of influence for each precipitation gage within the model. LACFCD's South Gate Transfer Station (D1256) is associated with the largest unit area within the WMA, as demonstrated in **Figure 4-2** and was therefore assumed to be representative of atmospheric conditions for the sub-region. The period of record for the gage is 1986-2011. The 90th percentile year for bacteria and metals are outlined in **Table 4-2**.

Table 4-2 90th Percentile Years for Limiting Pollutants

Pollutant	TMDL Year	Year Definition
Bacteria[1]	2011	November 1, 2010 - October 31, 2011
Metals and Nutrients[2]	1995	November 1, 1994 - October 31, 1995

[1] Applicable to area directly draining to Los Angeles River
[2] Applicable to area directly draining to Rio Hondo

4.3.1.2 Baseline Loads

In order to determine the baseline loads, the default Los Angeles County scale LSPC model was revised to reflect the subwatershed portions that fall within the LAR UR2 WMA as defined by the Regional Board. **Figure 4-3** presents LSPC model catchments, storm drains, and receiving waters for the WMA.

In order to establish baseline pollutant loads, a single model run without any BMPs or treatment control measures was carried out for both the Los Angeles River and Rio Hondo sides of the LAR UR2 WMA. Bacteria loads were extracted for the 2011 TMDL year while metals and nutrient loads were isolated for the 1995 TMDL year. Baseline loads for copper, lead, zinc, total nitrogen, and fecal coliform (used as the representative fecal indicator bacteria parameter) are reported in **Table 4-3**. To be consistent with Attachment O of the MS4 Permit, loads for copper, lead, and zinc shall be in kg/day, nitrogen shall be in mg/L, and fecal coliform shall be in MPN/day.

Table 4-3 Baseline Loads Derived from LSPC for 90th Percentile Model Years

Receiving Water Segment	Total Copper (lbs)	Total Lead (lbs)	Total Zinc (lbs)	Fecal Coliform (MPN*10^12)	Total Nitrogen (lbs)
Los Angeles River	672	536	6,784	997	99,952
Rio Hondo	147	105	1,594	181	23,183

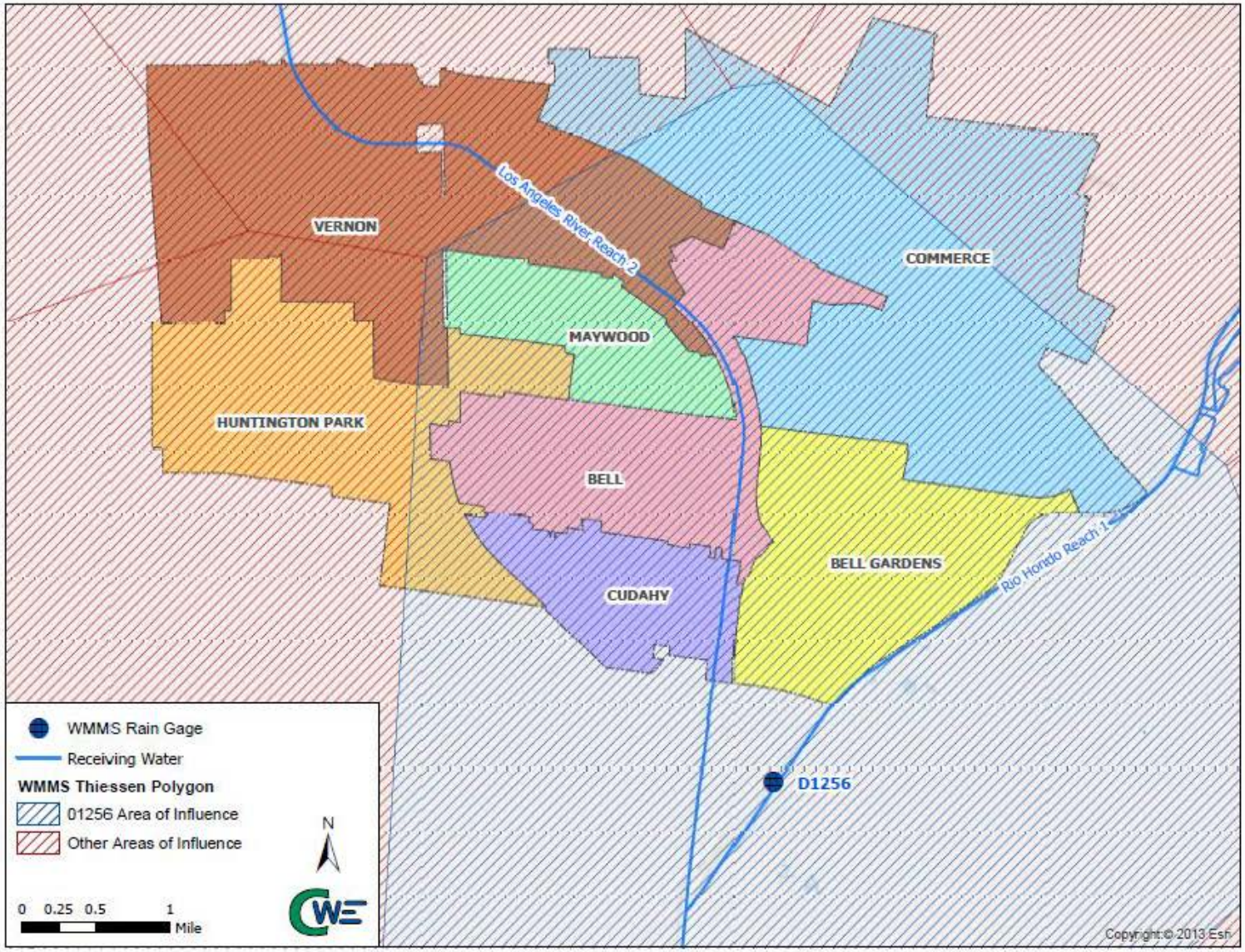


Figure 4-4 LAR UR2 WMA LSPC / HSPF Thiessen Polygons

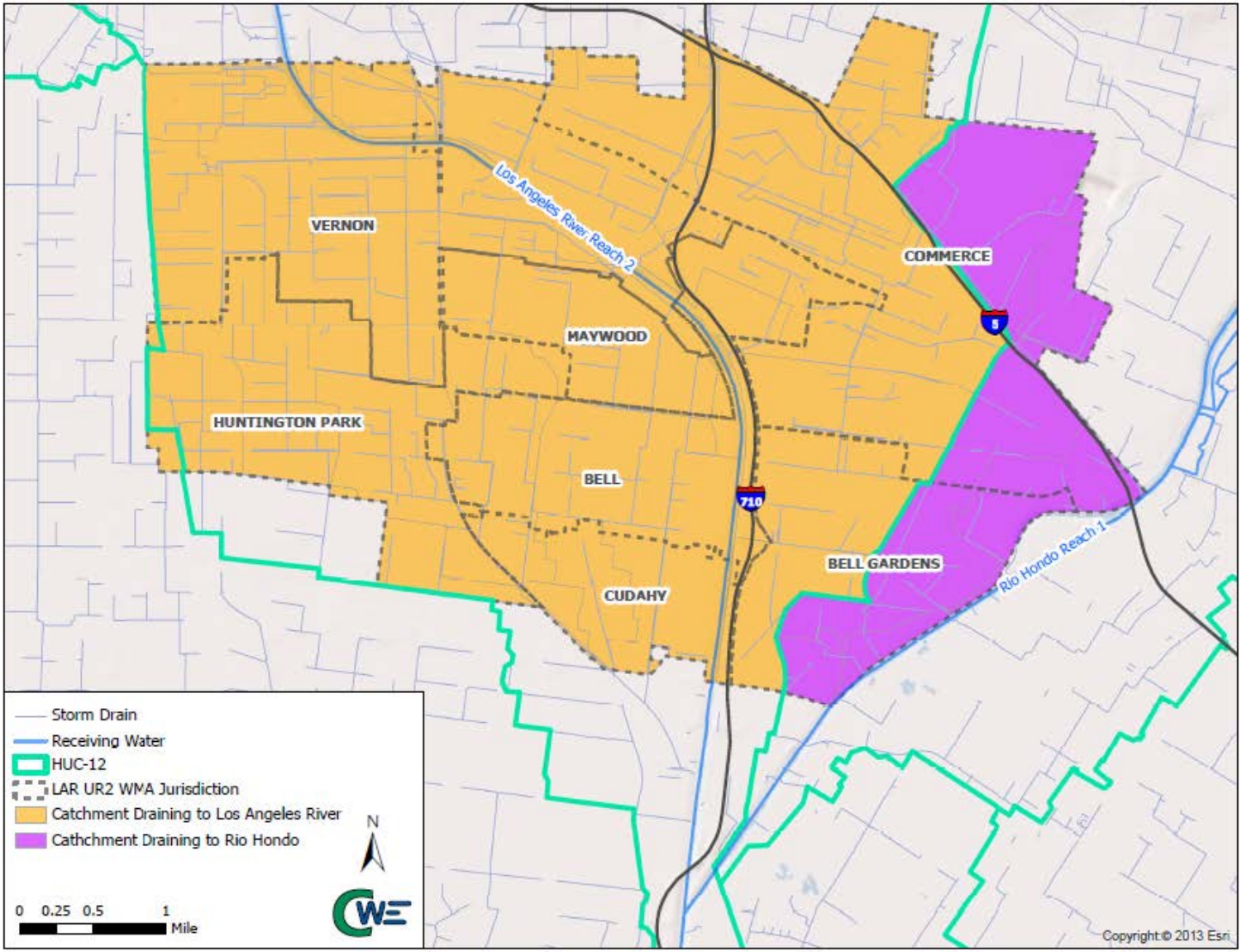


Figure 4-5 LSPC Model Catchments, Storm Drains, and Receiving Waters

4.3.1.3 Allowable Loads for Metals and Nutrients

Allowable loads for metals and nutrients were computed by multiplying relevant concentration-based WQBELs or SSOs by LSPC-derived daily runoff volumes for the periods modeled. The observed or modeled daily flow volumes can be used to translate concentration-based WQBELs to load-based WQBELs by multiplying the daily flow volumes with concentration-based WQBELs. Copper, lead, zinc, and nitrogen WQBELs are identified in Attachment O of the MS4 Permit, and provided in **Appendix C**. Copper and lead SSOs presented in the Draft Los Angeles River Copper and Lead Special Study Implementation Report (Larry Walker and Associates, 2013) were used in place of the WQBELs presented in the MS4 Permit for a parallel allowable load scenario. The concentration-based WQBELs that were used to set allowable loads are as follows:

- Total Copper: 15 µg/L;
- Total Lead: 56 µg/L;
- Total Zinc: 140 µg/L; and
- Total Nitrogen: 10.4 mg/L (based on sum of nitrate and ammonia WQBELs [8 mg/L + 2.4 mg/L], and assuming zero organic nitrogen).

SSOs used for the alternative allowable loads for copper and lead are as follows:

- Total Copper: 60 µg/L (3.971 Water Effects Ratio), and
- Total Lead: 85 µg/L

Table 4-4 shows the allowable loads for metals and nitrogen which may not exceed the baseline loads, shown in parenthesis, derived from the Los Angeles County scale LSPC model. Where allowable loads exceed baseline loads (e.g. values subject to SSOs), allowable loads are set equal to baseline loads.

Table 4-4 Allowable Loads Derived for 90th Percentile Model Years (SSO-Derived Allowable Loads in Parenthesis)

Receiving Water Segment	Total Copper (lbs)	Total Lead (lbs)	Total Zinc (lbs)	Total Nitrogen (lbs)
Los Angeles River	464 (672)	536 (536)	4,342 (NA)	99,952 (NA)
Rio Hondo	88 (147)	105 (105)	813 (NA)	23,183 (NA)

NA = Not applicable (no SSO available)

4.3.1.4 Allowable Loads for Bacteria

Although allowable load-based WQBELs for metals and nutrients can be computed by multiplying concentration-based WQBELs with daily runoff volumes, this method cannot be done for bacteria. It cannot be done for bacteria due to HFS and AEDs, where effluent limitations may be exceeded and may not be noncompliant. Runoff volumes are to be reduced through WCMs, so concentration compliance will be assessed based on baseline runoff volumes.

Permit limitations for bacteria are expressed in terms of allowable exceedance days (i.e., number of wet days with instream fecal coliform concentrations above 400 MPN/100 mL, minus ten reference stream-based allowed exceedance days and 15 days during which the high flow recreational use is suspended for 2011 [i.e., days with rainfall greater than or equal to 0.5 inches]). The allowable exceedance days were used to directly calculate target load reductions (described in the next section). Allowable loads (**Table 4-5**) for bacteria for the 90th percentile year were calculated by subtracting target load reductions from baseline loads.

Table 4-5 Allowable Loads for 90th Percentile Model Years for Bacteria	
Receiving Water Segment	**Fecal Coliform (MPN*10^12)**
Los Angeles River	708
Rio Hondo	125

4.3.1.5 Target Load Reductions

Target Load Reductions (TLRs) are the reduction of baseline loads needed to achieve MS4 Permit WQOs. TLRs (**Table 4-6**) were calculated as the difference between baseline loads and allowable loads, for all pollutants except bacteria.

TLRs for bacteria were established as the load reduction from baseline conditions that are required to decrease the number of wet-weather exceedance days (i.e., days with receiving water concentrations above 400 MPN/100mL) in the 90th percentile bacteria year (2011) to the MS4 Permit's allowable exceedance days, or ten allowed days (excluding high flow recreational use suspension days, or days with rainfall greater than or equal to 0.5 inches and the following 24 hours). In order to calculate the required load reductions, SBPAT was used to model hypothetical infiltration basins located at the outlets of the Los Angeles River and Rio Hondo drainage areas. The two basins were iteratively sized until modeled receiving water exceedance days meet the allowed number. This is achieved through elimination of discharge on non-allowed exceedance days. The fecal coliform target load reductions (**Table 4-6**) were then set to the load reductions that were achieved by these hypothetical infiltration basins.

For lead and total nitrogen, no load reductions were needed for baseline loads to meet allowable loads, therefore TLRs were zero . The same is true for copper with SSOs considered.

For copper (without SSOs) and zinc, TLRs as a percentage of baseline loads vary from 31-49 percent. For bacteria, TLRs as a percentage of baseline loads vary from 29-31 percent.

Table 4-6 TLRs for 90th Percentile Model Years, with SSO-based LTRs in Parenthesis					
Receiving Water Segment	**Total Copper (lbs)**	**Total Lead (lbs)**	**Total Zinc (lbs)**	**Fecal Coliform (MPN*10^12)**	**Total Nitrogen (lbs)**
Los Angeles River	209 (0)	0	2,442	289	0
Rio Hondo	59 (0)	0	781	56	0

4.3.2 Non-Structural BMP Modeling Assumptions

In order to take credit in the load reductions that will result from non-structural BMP implementation, the load reductions had to be quantified and justified. Load reductions were incorporated into the model for various types of non-structural BMPs, including the following:

- Non-MS4 NPDES Permittee Parcels
- Senate Bill (SB) 346 Copper Load Reductions
- Non-Modeled Non-Structural BMPs

4.3.2.1 Non-MS4 NPDES Facility Parcels

In addition to MS4 Permittees, such as those agencies that make up the LAR UR2 WMA, there are several other groups of NPDES Permittees that are responsible for ensuring that their own discharges are in compliance with the various TMDL WLAs including WQBELs. These include Individual NPDES, General NPDES, General Industrial NPDES and General Construction NPDES facilities or sites. With the exception of the General Construction Permittees, which constantly change, the remaining NPDES Permittees are long lasting and are generally attributable to the industrial, commercial and manufacturing land uses categories and are therefore attributed with high pollutant loadings that may adversely skew the results of a RAA. These parcels make up substantial portions of some cities, so to simply exclude them from the analysis would impact water volumes in the water and possible preclude or at least complicate model calibration and accurate load assessments.

For each of the LAR UR2 WMA General Industrial Permittees identified in SMARTS, public stormwater information including Enforcement Actions, NOI, Annual Reports, and Monitoring Reports, were reviewed. **Appendix H** provides tables summarizing key characteristics of these facilities include area and SIC codes. Each facility was then mapped, as illustrated in **Figure 4-4**, by translating from street address to Los Angeles County Assessor Identification Number (AIN) using ArcGIS. These mapped parcels represent "Non-MS4 NPDES Facilities" within each City and were modeled as non-structural BMPs through applicable load reductions.

By modeling these parcels as non-structural BMPs, the analysis took into account the compliance of independently permitted facilities, which would normally have high pollutant loadings. These pollutant concentrations, or land use based loadings, were set equivalent to the WQBELs (arithmetic summary statistics shown in **Table 4-7**), to reflect the assumption that stormwater runoff from these sites will generally comply with the water quality standards. For characterization of variability, the coefficients of variation for the industrial EMCs were preserved. In reality, pollutant concentrations would likely be lower than the WQBELs, otherwise the Non-MS4 Permittees would be in non-compliance, so this is a conservative assumption.

Two SBPAT model runs were carried out to quantify load reductions derived from this BMP. The first model run reflected the baseline scenario with land use specific EMCs presented in **Table 4-7** applied uniformly across LAR UR2 WMA. The second model run represented the land use dataset with non-MS4 parcels included (i.e., their EMCs set to WQBELs).

Table 4-7 Non-MS4 NPDES Facility Parcel's Land Use EMCs (arithmetic estimates of log means)								
Land Use	**TCu (µg/L)**	**TZn (µg/L)**	**FC/*E. coli* (# /100 mL)**	**NH3 (mg/L)**	**NO3 (mg/L)**	**NO2 (mg/L)**	**TPb (µg/L)**	**TCd (µg/L)**
Non-MS4 NPDES Facility Parcels	21.9 (23.3)	189 (172)	653 (843)	3.62 (5.79)	12.4 (13.6)	1.66 (1.82)	78.4 (220)	5.12 (5.33)

Note: SBPAT assumes lognormal distributions for its water quality input datasets. SBPAT's log mean values for the new non-MS4 NPDES Facility parcel land use were set to the log of the WQBEL concentrations (i.e., 15 µg/L for total copper, 140 µg/L for total zinc, and 400 MPN/100mL for fecal coliform); log standard deviations (in parentheses) were scaled based on the industrial EMC COVs. This table reports arithmetic estimates of the log summary statistics; i.e., the log mean and log standard deviations were converted into arithmetic space using statistical conversion equations.

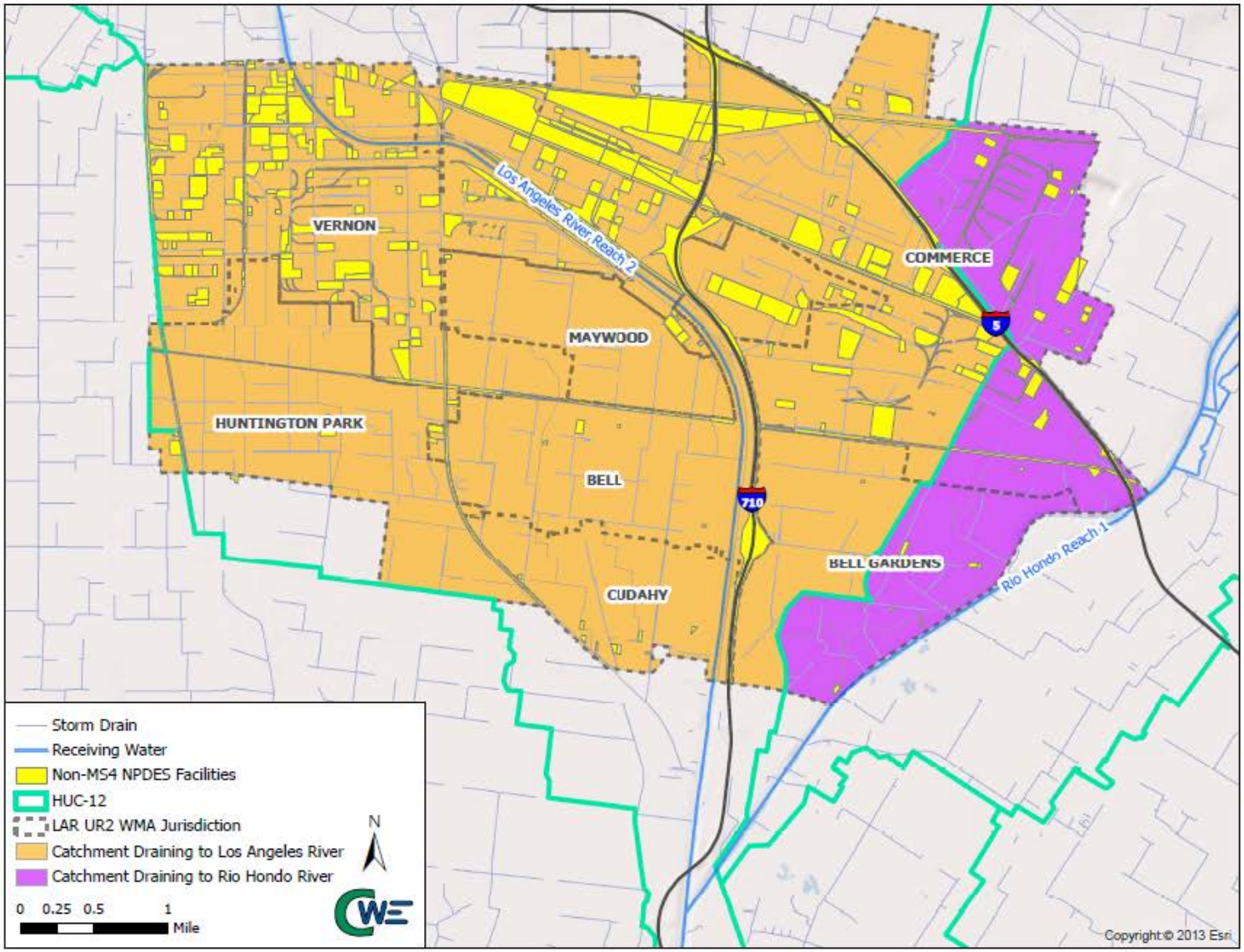


Figure 4-6 Non-MS4 NPDES Permittees in LAR UR2 WMA

4.3.2.2 SB 346 Copper Load Reductions

Car brake pad debris has been shown to be the source of approximately 60 percent of total copper loads into highly urbanized watersheds throughout California (Donigian, 2009 as cited by Moran, 2013). A study conducted by AquaTerra in 2007 attributed 15 to 50 percent of total copper loads to the San Francisco Bay to brake pad wear debris from a range of land uses. A similar study carried out by the Santa Clara Valley Urban Runoff Program attributed 42 percent of copper loading to the same water body to brake pad wear (SCVURP, 1997).

California SB 346 mandates reduction in copper composition of brake pads sold in California such that each pad must be comprised of less than 5 percent of copper by weight in 2021 and 0.5 percent of copper by weight in 2025. A CASQA funded study developed by TDC Environmental (Moran, 2013) carried out a series of mass balance assessments to estimate the percentage of copper loading that would occur as a result of SB 346 driven changes. The study assessed three scenarios accounting for uncertainty in manufacturer response and projected load reductions from baseline for years of interest for the MS4 Permit compliance in Los Angeles County. These scenarios and years of interest are presented in **Table 4-8**. For the LAR UR2 WMA RAA, a 50 percent reduction in copper loading was conservatively assumed to occur by the 2028 final metals milestone. To avoid double counting, this reduction was applied to the remaining copper load after all structural BMP load reductions were accounted for.

Table 4-8 Estimated Runoff Copper Reduction from Friction Pad Reformulation (Adapted from Moran, 2013)

Year	Scenario 1 - One Step Reduction	Scenario 2 - Step Reduction	Scenario 3 - Aftermarket Exemption from 0.5% Copper
2020	29%	17%	17%
2024	60%	45%	39%
2028	61%	60%	49%
2032	61%	61%	55%

4.3.2.3 Non-Modeled Non-Structural BMPs

There are some notable changes from the 2001 MS4 Permit to the 2012 MS4 Permit that can allow for the assumption of a 5% pollutant load reduction. Overall, the 2012 MS4 Permit expands on the regulation of discharges and the BMP implementations that was initially outlined in the 2001 MS4 Permit. For industrial and commercial facilities, the 2001 MS4 Permit requires implementation of pollutant reduction and control measures. However, it does not require that the Permittes enforce implementation from these facilities. The 2012 MS4 Permit differs in that it does require the Permittes to enforce BMPs so that the facilities can fall into compliance. Due to the difference between MS4 Permits, it can be assumed that load reductions derived from non-modeled non-structural BMPs can to be five percent of baseline loads.

Load reductions derived from non-modeled, non-structural BMPs were assumed to be 5 percent of baseline loads for all pollutants following discussions with the Regional Board. These non-structural BMPs will include the following program enhancements (i.e., beyond the Permit minimum), with an emphasis on those BMPs that most effectively target urban stormwater bacteria sources: enhanced street sweeping, enhanced catch basin and stormdrain cleaning, enhanced commercial and food outlet inspection, enhanced pet waste controls, enhanced education and outreach, enhanced homeless waste control efforts, and enhanced IDDE efforts (including microbial source tracking to identify inputs of human fecal contamination into the MS4). Additional details regarding the enhancements are presented in **Section 3.3.1**.

4.3.3 Structural BMP Modeling Assumptions

In order to take credit in the load reductions that will result from structural BMP implementation, the load reductions had to be determined. Load reductions were quantified by the model for the proposed structural BMPs, based on specified design criteria. Assumptions for the following structural BMP implementation are discussed in greater detail below:

- LID Ordinances
- LID Streets or Green Streets (Distributed BMPs)
- Regional BMPs

4.3.3.1 Low Impact Development Ordinances

Implementation of LID as a result of redevelopment was modeled uniformly throughout the LAR UR2 WMA. MS4 Permit Part VI.C.4.c.i.(1) requires Permittees to develop and implement a LID ordinance applicable to redevelopment meeting minimum criteria thresholds of disturbance. Average annual redevelopment rates released by the City of Los Angeles (City of Los Angeles Bureau of Sanitation, 2009) were used to establish what area within each land use is expected to be retrofitted consistent with the Permit's post-construction onsite retention requirements. Average annual redevelopment rates were extrapolated to final compliance dates, or 2028 for metals and 2037 for bacteria. In an April 16, 2014, memorandum to the MS4 Permittees, the LARWQCB Executive Officer asserted that the Permit required final LID ordinances to be in place by the time of WMP submittal. The area redeveloped each year was sampled without replacement; i.e., areas that had undergone redevelopment in previous years were not available to undergo redevelopment again in subsequent years. Average annual redevelopment rates for relevant land uses and cumulative redevelopment for pollutant-specific TMDL compliance dates are presented in **Table 4-9**.

Table 4-9 Redevelopment Rates by Land Use

Land Use	Average Annual Percent Area that is Redeveloped	Percent of Total Area that is Redeveloped by Milestone Year	
		Metals Compliance Date (2028)	Bacteria Compliance Date (2037)
Commercial	0.15	2.1	3.4
Education	0.16	2.2	3.6
Industrial	0.34	4.7	7.5
Residential	0.18	2.5	4.1
Transportation	2.7	31.8	46.7

Areas treated by LID as a result of the ordinances were modeled using bioretention systems sized for the 85th percentile storm depth for the region of 0.97-inch (LACDPW, 2004) with a saturated hydraulic conductivity (K_{sat}) of 0.15 inch per hour.

4.3.3.2 LID Streets

LID Streets control pollutants, especially bacteria, from residential and commercial land use areas, and they will be located near runoff collection or discharge points where there benefit is most easily accessed and quantifiable. LID Streets were applied to treat 25 percent of commercial and residential land uses in areas that were not tributary to proposed regional BMPs on the Los Angeles River side of LAR UR2 WMA. LID Streets are different from the arterial Green Streets identified in the Permit and Green Streets Policy in that LID Streets are more comparable to distributed parcel level BMPs within the public Right of Way (ROW). LID Streets will be implemented on smaller street projects which do not trigger the requirements of the Green Streets Policy. LID Streets were not necessary to meet TLRs on the Rio Hondo side of LAR UR2 WMA and they are only proposed for implementation in LAR UR2 WMA areas that drains directly to the Los Angeles River. **Table 4-10** identifies the cumulative area within each LAR UR2 WMA City that will be tributary to a LID Street based on the afore-mentioned assumptions. LID Street treatment was modeled using bioretention systems sized for the 0.4-inch storm (sizing was identified through iterative analysis) with a saturated hydraulic conductivity (K_{sat}) of 0.15 inch per hour.

Table 4-10 LID Street Required Tributary Area by LAR UR2 WMA Permittee

LAR UR2 WMA City	SF Residential (acres)	MF Residential (acres)	Commercial (acres)	Total Area[1] (acres)	Regional Project Area Reduction[2] (acres)	Required Area Tributary to LID Streets (acres)
Bell	272	513	271	1,056	181	219
Bell Gardens	91	402	146	639	0	160
Commerce	212	83	288	583	191	98
Cudahy	51	434	59	544	85	115
Huntington Park	562	481	352	1,394	557	209
Maywood	430	121	109	660	209	113
Vernon	1	0	16	17	1	4
Totals:	**1,619**	**2,033**	**1,241**	**4,893**	**1,224**	**918**

SF = Single Family, MF = Mixed Family, LAR = Los Angeles River, LID = Low Impact Development

[1] Total area includes SF Residential, MF Residential, and Commercial areas.

[2] Area reductions are determined based on the total SF Residential, MF Residential, and Commercial land uses in proposed regional BMP tributary area.

Locations of current and potential Green and LID street projects include projects from the City of Vernon and the City of Commerce. The City of Vernon has proposed the Soto Street Resurfacing Project, between the LAR and Fruitland Avenue, for construction as an LID Street. The Soto Street Resurfacing Project would include a commercial area and cover Soto Street between Bandini Boulevard and Vernon Avenue.

The City of Commerce recently completed the Telegraph Road Street Improvement Project, which covered Telegraph Road from Atlantic Boulevard to the City of Downey, including 310 linear feet of porous concrete gutter. The City has also identified the Washington Boulevard (Indiana Street – I-5 Freeway) Widening and Reconstruction Project as a potential Green Street project, assuming WMP passage and procurement of needed additional funding.

It is important to note that most of the LAR UR2 WMA Permittees do not have a Pavement Management System (PMS) or pre-approved street maintenance budget and that project implementation may vary substantially from one year to the next. Especially after the Great Recession, every street maintenance project is subject to competitive grant funding and LID and Green Street Project may make local projects appear less cost-effective to transportation supporting agencies. LID Street projects proposed within the

LAR UR2 WMA must first be specified through the CIP program for each City and the appropriation of these substantially more costly construction efforts will be facilitated by Regional Board approval of the WMP and documented through future elaborations of the AMP. WMP approval by the Board will hasten the process of incorporating LID Street projects into municipal Pavement Management System (PMS) and CIP programs.

4.3.3.3 Regional BMPs

Regional BMP opportunities were identified using the approach discussed in **Section 3.2.3**. Six regional infiltration BMPs (two infiltration trenches and four subsurface infiltration systems) were carried forward to the final RAA modeling iteration. The locations of these regional BMPs and their drainage areas are shown in **Figure 4-5**. The six regional projects include:

- Randolph Street Green Rail Trail;
- LADWP Transmission Easement;
- John Anson Ford Park;
- Rosewood Park;
- Lugo Park; and
- Salt Lake Park.

The Randolph Street Green Rail and LADWP Transmission Easement regional BMPs were sized using the maximum dimensions presently considered feasible due to size and design constraints. All other regional BMPs were iteratively sized to meet the TLRs. Regional BMP conceptual design attributes that were used for RAA modeling using SBPAT are summarized below.

Compliance with the January 11, 2024 milestone of 50 percent area compliance with the wet-weather metals TMDL with be met through the implementation of several divergent measures. The regional subsurface infiltration BMP project for John Anson Ford Park was identified for a subsurface infiltration BMP opportunity and demonstrates compliance for Rio Hondo. While the regional project composed of numerous basins within the Los Angeles Department of Water Power Transmission Line Easement in the City of Vernon will achieve the 50% objective. watershed in complianceCompliance with their own standards should allow non-MS4 Permittees to contribute along with implementation of LID, Green and LID Streets

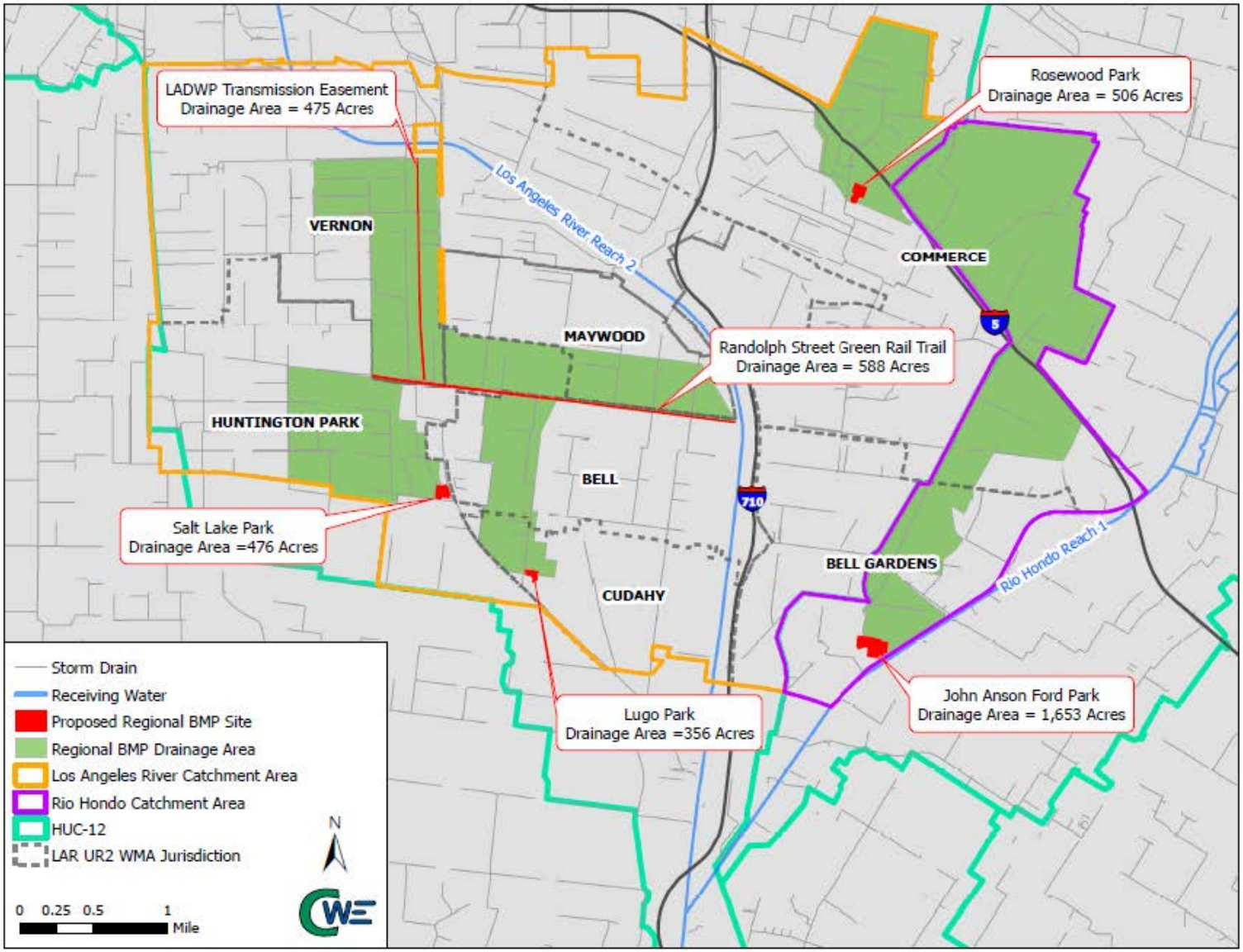


Figure 4-7 Proposed Regional Project Sites and Tributaries

Randolph Street Green Rail Trail

An infiltration trench project opportunity was identified adjacent to the Randolph Street Green Rail Trail. **Figure 4-6** illustrates the proposed project site and corresponding tributary drainage area. This BMP was modeled as an infiltration basin using the following design parameters and assumptions:

Table 4-11 John Anson Ford Park Design Parameters	
Design Parameter	**Value**
Water Quality Design Volume	8.2 acre feet/354,000 cubic feet
Infiltration Rate	0.17 inches/hour
Design Storm Treated	0.19 inches
Regional BMP Length	10,400 feet
Regional BMP Width	10 feet
Regional BMP Depth	10 feet
Area Assumed for Pretreatment and Side Slopes	15%
Assumed Void Ratio	0.4

LADWP Transmission Easement

An infiltration trench project opportunity was identified along a Los Angeles City DWP transmission line. **Figure 4-7** illustrates the proposed project site and corresponding tributary drainage area. The water quality design volume of the planned infiltration trench was modeled as an infiltration basin in SBPAT using the following design parameters and assumptions:

Table 4-12 LADWP Transmission Easement Design Parameters	
Design Parameter	**Value**
Water Quality Design Volume	15 acre feet/656,000 cubic feet
Infiltration Rate	0.17 inches/hour
Design Storm Treated	0.43 inches
Regional BMP Length	4,760 feet
Regional BMP Width	20 feet
Regional BMP Depth	10 feet
Area Assumed for Pretreatment and Side Slopes	15%
Assumed Void Ratio	0.9

Figure 4-8 Randolph Street Green Rail Trail

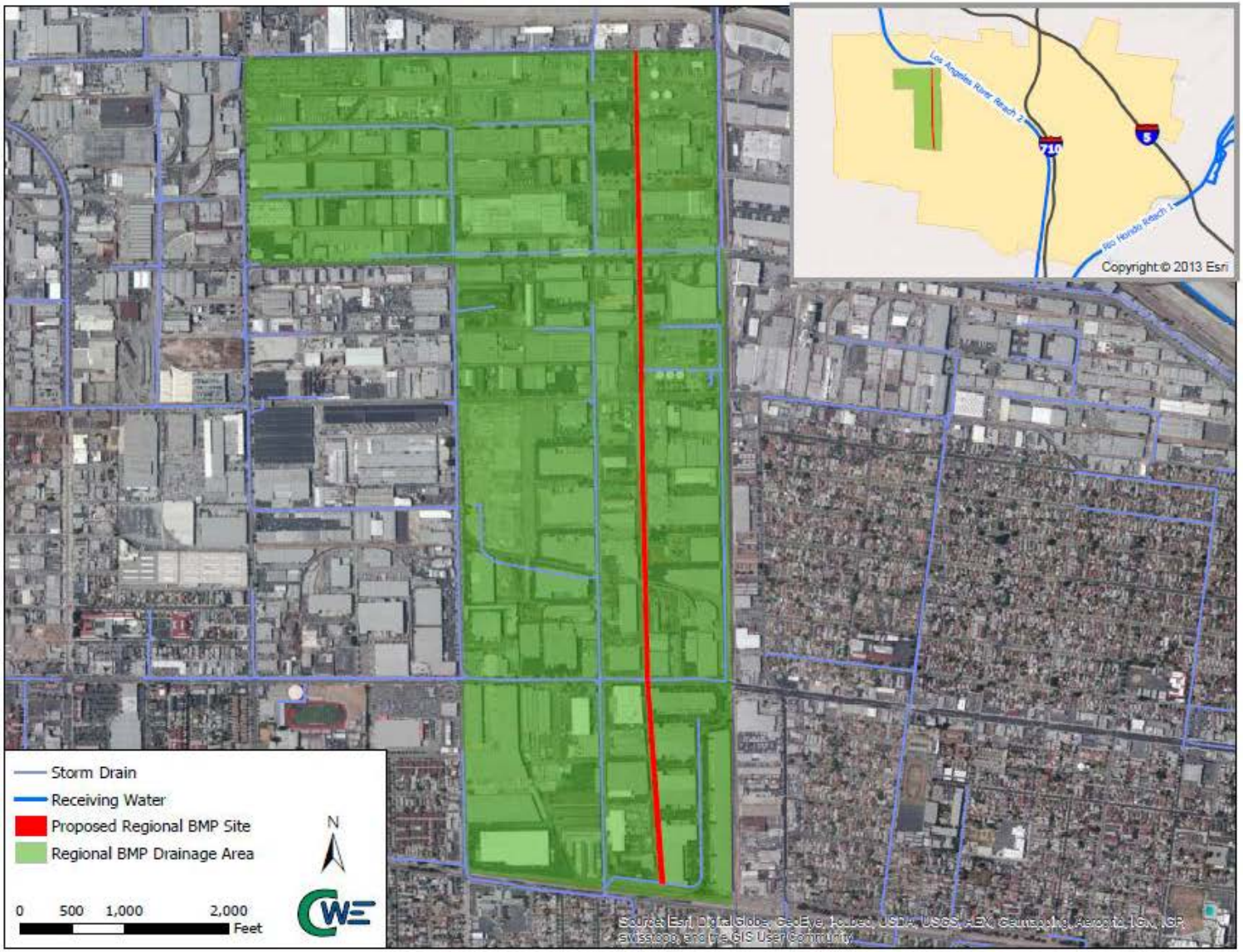


Figure 4-9 LADWP Transmission Easement

John Anson Ford Park

A subsurface infiltration project opportunity was identified at the ball fields of John Anson Ford Park. An illustration of the proposed regional BMP footprint is presented in **Figure 4-8**. The water quality design volume of this subsurface infiltration facility was modeled as an infiltration basin in SBPAT using the following design parameters and assumptions:

Table 4-13 John Anson Ford Park Design Parameters	
Design Parameter	**Value**
Water Quality Design Volume	72 acre feet/3,124,000 cubic feet
Infiltration Rate	0.36 inches/hour
Design Strom Treated	0.6 inches
Footprint Area	544,500 square feet
Assumed Void Ratio	0.9

Rosewood Park

A subsurface infiltration project opportunity was identified at the baseball field in Rosewood Park. An illustration of the proposed regional BMP footprint is presented in **Figure 4-9**. The water quality design volume of this subsurface infiltration facility was modeled as an infiltration basin in SBPAT using the following design parameters and assumptions:

Table 4-14 Rosewood Park Design Parameters	
Design Parameter	**Value**
Water Quality Design Volume	29 acre feet/1,250,000 cubic feet
Infiltration Rate	0.23 inches/hour
Design Storm Treated	0.77 inches
Footprint Area	217,800 square feet
Assumed Void Ratio	0.9

Lugo Park

A subsurface infiltration project opportunity was identified at the softball field and open space of Lugo Park. An illustration of the proposed regional BMP footprint is presented in **Figure 4-10**. The water quality design volume of this subsurface infiltration facility was modeled as an infiltration basin in SBPAT using the following design parameters and assumptions:

Table 4-15 Lugo Park Design Parameters	
Design Parameter	**Value**
Water Quality Design Volume	13.2 acre feet/575,000 cubic feet
Infiltration Rate	0.17 inches/hour
Design Storm Treated	0.71 inches
Footprint Area	100,000 square feet
Assumed Void Ratio	0.9

Figure 4-10 John Anson Ford Park

Figure 4-11 Rosewood Park

Figure 4-12 Lugo Park

Salt Lake Park

A subsurface infiltration facility project opportunity was identified at the ball fields of Salt Lake Park. An illustration of the regional BMP footprint is presented in **Figure 4-11**. The water quality design volume of this subsurface infiltration facility was modeled as an infiltration basin in SBPAT using the following design parameters and assumptions:

Table 4-16 Salt Lake Park Design Parameters

Design Parameter	Value
Water Quality Design Volume	26 acre feet/1,125,000 cubic feet
Infiltration Rate	0.17 inches/hour
Design Storm Treated	0.75 inches
Footprint Area	196,000 square feet
Assumed Void Ratio	0.9

Figure 4-13 Salt Lake Park

4.4 Modeling Output

An iterative process was employed to identify suites of structural and non-structural BMPs capable of achieving the TLRs. Bacteria was found to be the driving (or limiting) pollutant for the Los Angeles River drainage area, and zinc was the driving pollutant for the Rio Hondo drainage area. The following tables present individual and summed BMP load reductions for fecal coliform, copper, and zinc for the Los Angeles River and Rio Hondo drainage areas. The following tables will follow the units presented in Attachment O of the MS4 Permit. Bacteria loads will be presented in MPN/day, and metal loads will be presented in kg/day. Bacteria load reduction results (**Table 4-17** and **Table 4-18**) are shown for the final wet-weather bacteria TMDL compliance date of 2037, modeled using rainfall data from the 90th percentile year based on wet days (2011). Metals load reduction results (**Table 4-19** and **Table 4-20**) are shown for the final wet-weather metals TMDL compliance date of 2028, modeled using rainfall data from the 90th percentile year based on rainfall (1995). Average (mean) load reduction results are shown, as well as the interquartile ranges (25th to 75th percentiles), to reflect model output variability, which is primarily driven by land use EMC variability. Total BMP load reductions that exceed the TLRs indicate that reasonable assurance (of meeting the MS4 Permit limits) has been demonstrated for that pollutant for that drainage area.

Table 4-17 Fecal Coliform Load Reductions for Los Angeles River Drainage Area

Control Measure	Average	Low (25th Percentile)	High (75th Percentile)
Non-Structural BMPs			
Non-MS4 NPDES Parcels	77	77	77
LID Ordinance	31	23	35
Other Non-Modeled	50	50	50
Regional BMPs			
Randolph Green Rail Trail	6	4	7
LADWP Transmission Easement	3	2	4
Rosewood Park	31	18	35
Lugo Park	13	8	15
Salt Lake Park	24	16	27
Distributed BMPs			
LID Streets	72	45	82
Target Load Reduction	**289**	**289**	**289**
Total BMP Load Reduction	**307**	**243**	**332**

Table 4-18 Fecal Coliform Load Reductions for Rio Hondo Drainage Area			
Control Measure	**Average**	**Low (25th %ile)**	**High (75th %ile)**
Non-Structural BMPs			
Non-MS4 NPDES Parcels	10	10	10
LID Ordinance	6	4	6
Other Non-Modeled	9	9	9
Regional BMPs			
John Anson Ford Park	47	31	53
Distributed BMPs			
LID Streets	NA	NA	NA
Target Load Reduction	**56**	**56**	**56**
Total BMP Load Reduction	**71**	**55**	**78**

Table 4-19 Copper and Zinc Load Reductions for Los Angeles River Drainage Area						
Control Measure	**Total Copper**			**Total Zinc**		
	Average	**Low 25th %ile**	**High 75th %ile**	**Average**	**Low 25th %ile**	**High 75th %ile**
Non-Structural BMPs						
Non-MS4 NPDES Parcels	274	274	274	2,580	2,580	2,580
LID Ordinance	29	26	32	320	277	343
Other Non-Modeled	34	34	34	339	339	339
Brake Pad (SB 346)	143	146	139	-	-	-
Regional BMPs						
Randolph Green Rail Trail	3	3	3	36	31	40
LADWP Transmission Easement	5	5	6	51	52	66
Rosewood Park	14	12	15	172	151	189
Lugo Park	3	3	3	27	24	29
Salt Lake Park	7	6	7	47	43	50
Distributed BMPs						
LID Streets	18	16	19	140	124	143
Target Load Reduction (with SSO considered)	**208 (0)**	**208 (0)**	**208 (0)**	**2,442**	**2,442**	**2,442**
Total BMP Load Reduction	**529**	**526**	**533**	**3,712**	**3,622**	**3,778**

Table 4-20 Copper and Zinc Load Reductions for Rio Hondo Drainage Area						
Control Measure	**Total Copper**			**Total Zinc**		
	Average	**Low 25th %ile**	**High 75th %ile**	**Average**	**Low 25th %ile**	**High 75th %ile**
Non-Structural BMPs						
Non-MS4 NPDES Parcels	0.2	0.2	0.2	4	4	4
LID Ordinance	5	4	6	70	60	77
Other Non-Modeled	7	7	7	80	80	80
Brake Pad (SB 346)[1]	44	48	41	-	-	-
Regional BMPs						
John Anson Ford Park	46	39	52	659	566	731
Distributed BMPs						
LID Streets	NA	NA	NA	NA	NA	NA
Target Load Reduction (with SSO considered)	**59 (0)**	**59 (0)**	**59 (0)**	**781**	**781**	**781**
Total BMP Load Reduction	**103**	**99**	**106**	**813**	**709**	**893**

[1] For SB346, low load reductions are higher than average, and high load reductions are lower than average, because of the calculation methodology that is used. This methodology is described in Section 3.5, which states that the copper load reduction "was applied to the remaining copper load after all structural BMP load reductions were removed," and the remaining copper load is high for the low load reduction scenario (and low for the high load reduction scenario).

4.5 Modeling Calibration

For the RAA hydrologic series of 1986 to 2011, daily baseline concentrations and loads will be determined from the 90th percentile. The runoff values from the storm events will first be found, then any loads less than a tenth of an inch will be removed. From there, the load days from the 90th percentile will be retrieved. Once these values are found, the 90th percentile daily load reduction values can be identified for each pollutant. Also, once the loads for the pollutants are identified, a comparison of SBPAT and LSPC runoff volumes can be completed to show the difference between simulated and observed values to ensure the model can properly assess conditions and variables, as required from RAA guidelines.

5. Compliance Schedule and Cost

Interim and final compliance dates in the LAR Metals and Bacteria TMDLs are the primary drivers for the LAR UR2 WMA RAA and WMP Plan implementation schedule. The dates identified in this WMP Plan are subject to the procurement of grants or other financing support commensurate with the existing and future fiduciary responsibilities of the Permittees. They may furthermore be adjusted based on evolving information developed through the iterative adaptive management process identified in the 2012 MS4 Permit or similar Parts within future MS4 Permits..

5.1 WMP Implementation Schedule

Part VI.C.5.c of the MS4 Permit discusses the compliance schedule requirements associated with the WMP. The WMP Implementation schedule was developed based on TMDL milestones (i.e., interim and final numeric limits) identified in **Table 1-6**. The Los Angeles River Trash TMDL will be implemented by October 1, 2015, in order to meet the annual compliance assessment date on September 30, 2016. The Los Angeles River Metals TMDL requires 50 percent of the final load reductions to be achieved by 2024, while the Los Angeles River Bacteria TMDL allows agencies to set a percent of final load reductions to be achieved by the 2030 interim milestone.

Table 5-1 identifies the proposed control measure implementation schedule based on what LAR UR2 WMA deems feasible and the phasing needed to achieve compliance with interim and final compliance targets for both bacteria and metals. The resulting average load reductions, phased by milestone date, are presented in the following figures. **Figure 5-1** through **Figure 5-3** address fecal coliform, copper, and zinc, respectively, for the Los Angeles River drainage area. **Figure 5-4** through **Figure 5-6** address fecal coliform, copper, and zinc, respectively, for the Rio Hondo drainage area. The WMP, including the schedule aspect, will be updated through the adaptive management process, therefore the schedule identified is always tentative.

Table 5-1 Tentative Control Measure Implementation Schedule

Control Measure	Tentative Date to be Implemented
Non-Structural BMPs	
Non-MS4 NPDES Parcels	December 2017
LID Ordinance	March 2037[1]
Other Non-Modeled	January 2028
Brake Pad (SB 346)	January 2028
Regional BMPs	
John Anson Ford Park	January 2024
Randolph Green Rail Trail	January 2028
LADWP Transmission Easement	January 2028
Rosewood Park	January 2030
Lugo Park	March 2037
Salt Lake Park	March 2037
Distributed BMPs	
Final CPS/Catch Basin Trash TMDL Modifications	October 1, 2015
LID Streets (Los Angeles River side only)	March 2037[2]

[1] Interim milestone dates assume a percentage of final load reduction

[2] Assume 50 percent implementation by March 2030

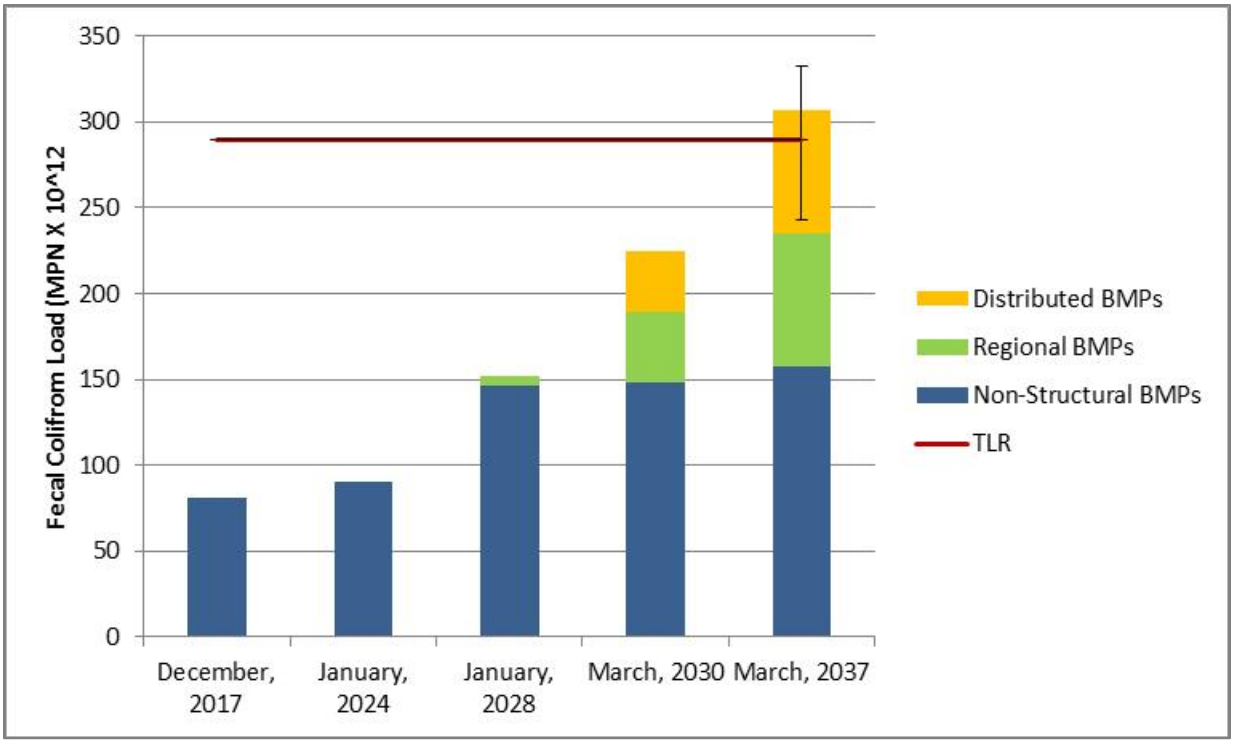


Figure 5-1 Los Angeles River *E. coli* Load Reductions at Milestone Dates by BMP Category

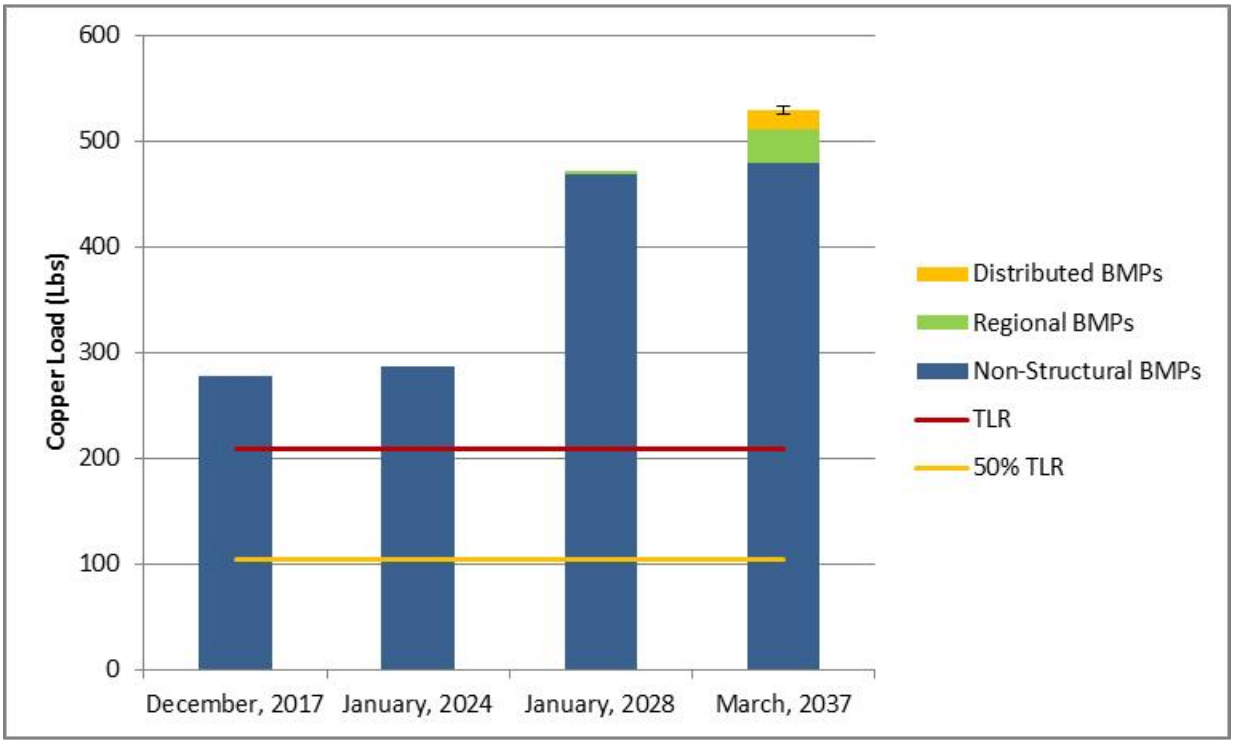


Figure 5-2 Los Angeles River Copper Load Reductions by Milestone Dates by BMP Category

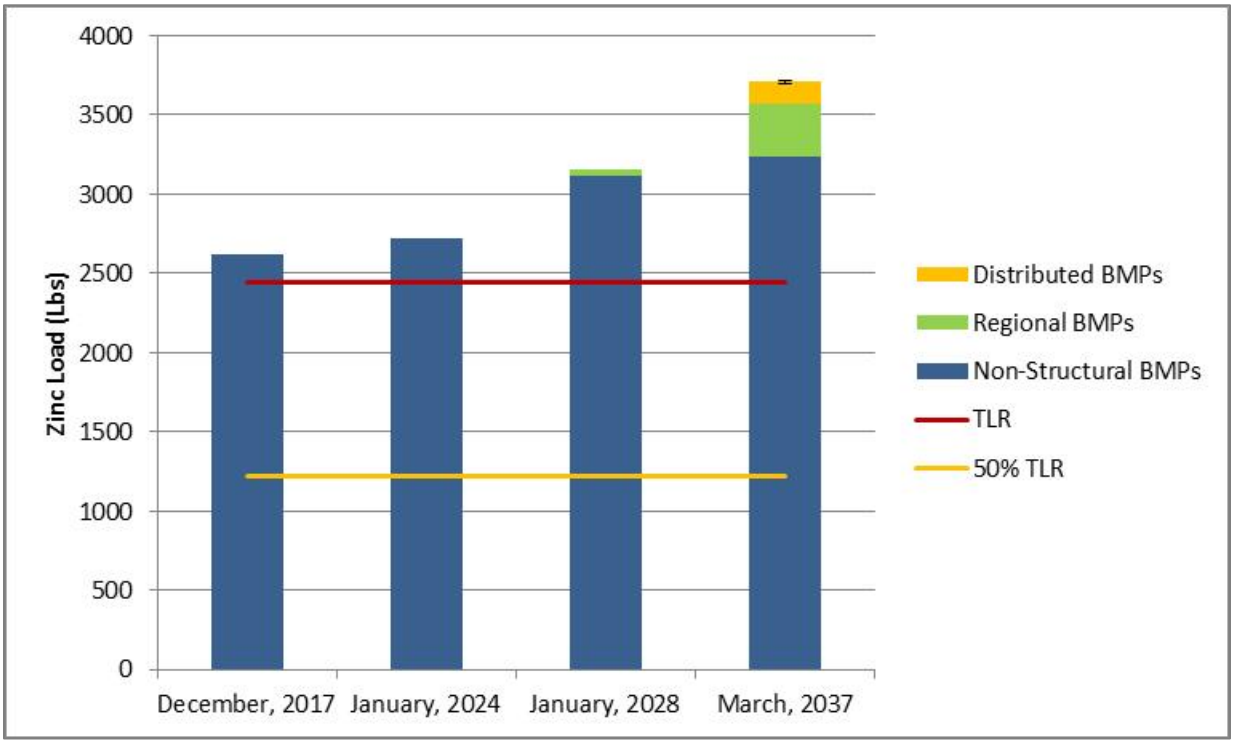


Figure 5-3 Los Angeles River Zinc Load Reductions at Milestone Dates by BMP Category

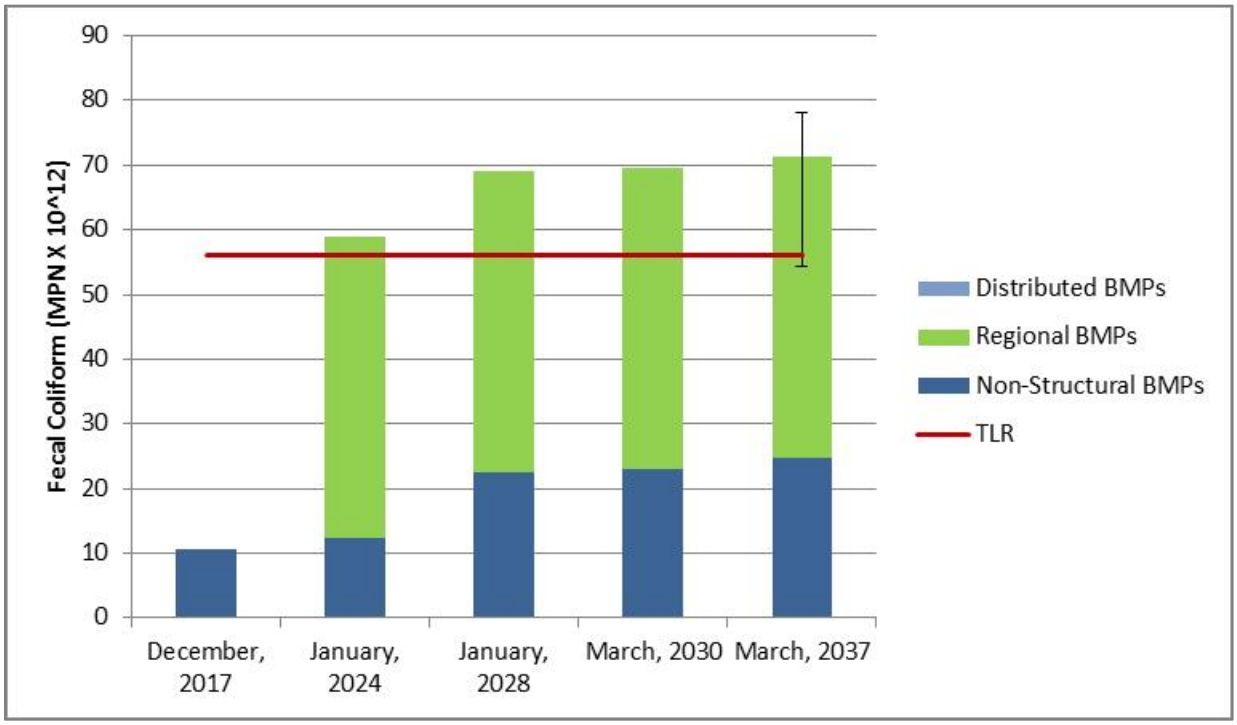


Figure 5-4 Rio Hondo *E. coli* Load Reductions at Milestone Dates by BMP Type

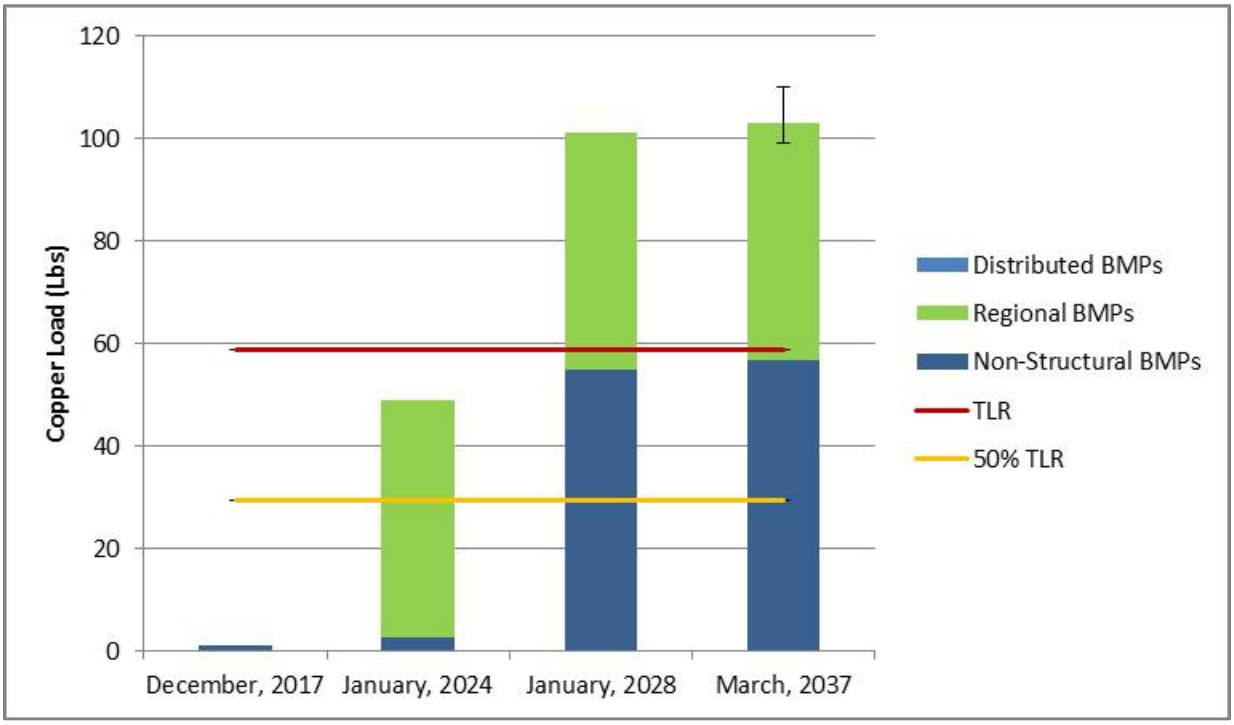


Figure 5-5 Rio Hondo Copper Load Reductions at Milestone Dates by BMP Category

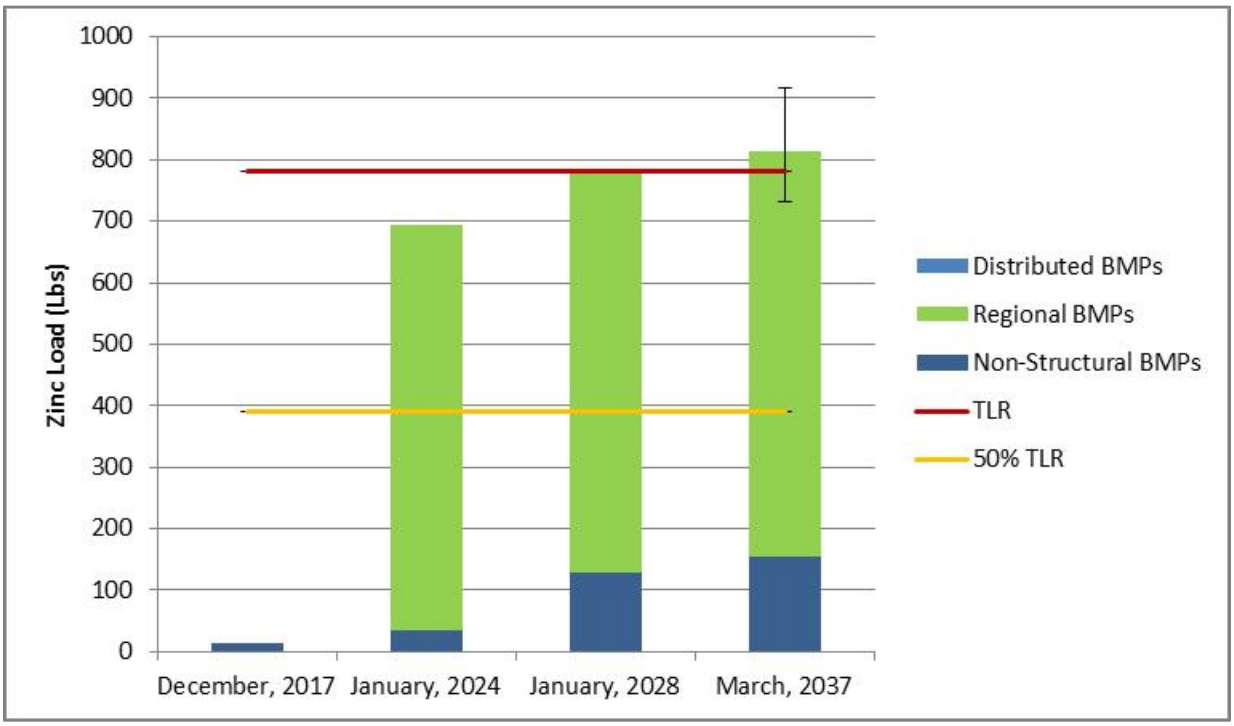


Figure 5-6 Rio Hondo Zinc Load Reductions at Milestone Dates by BMP Category

5.2 WMP Implementation Cost

In order to determine potential funding strategies, costs associated with the implementation of the control measures identified in this WMP must be considered. This section identifies the cost associated with the structural BMPs (regional and distributed) and non-structural BMPs. A Memorandum of Understanding (MOU) between LAR UR2 WMA jurisdictions determined that LACFCD would pay ten percent of the WMP development costs and each City would pay an equal one seventh share of forty-five percent of the WMP development costs. In addition, each City paid its pro-rata share of forty-five percent of the WMP developments cost at the cost sharing allocation percentage provided in **Table 5-2**.

Table 5-2 Cost Sharing Allocation of Forty-Five Percent of WMP Cost

LAR UR2 WMA Jurisdiction	Land Area (mi^2)	Cost Allocation Percentage
Bell	2.64	11.90
Bell Gardens	2.49	11.22
Commerce	6.57	29.61
Cudahy	1.12	5.05
Huntington Park	3.03	13.65
Maywood	1.18	5.32
Vernon	5.16	23.25

The cost of the regional BMPs will be shared based on future MOU(s), while the distributed BMPs (LID Streets or Green Streets) will be paid for by the jurisdiction for which they are implemented.

Planning-level cost estimates are presented for each of the six preliminary regional BMP projects and the distributed BMPs (LID Streets) for LAR UR2 WMA. During the preliminary concept phase it may be difficult to produce a precise cost estimate because the specific details pertaining to the projects have not been determined therefore the costs are presented as a range. The cost estimate employs best engineering judgment and was determined based on a per acre-feet unit rate, or for the LID Streets, a cost per acre of tributary area. The cost estimates consider the costs associated with planning, design, permits, an environmental assessment, construction, operation and maintenance, construction administration and inspections, post-construction effectiveness monitoring, contingency, and mobilization. Land acquisition costs may be of importance depending on the site, and are not considered in the cost estimates presented, as none of the preliminary project concepts require land acquisition. The following generally accepted costs were used for cost estimates presented:

- Planning - minimum between 5 percent of construction cost or $100,000
- Engineering design - 10 percent of construction cost
- Permits and specifications - 25 percent of engineering design cost
- Construction administration and inspections - 10 percent of construction (including mobilization)
- Contingency - 10 percent of construction (including mobilization)
- Mobilization - 10 percent of construction

The costs estimates associated with the six regional BMP projects will be adjusted as more information becomes available and as additional project concept details are developed. Based on the current estimates, the cost of implementing all six projects is approximately $209 million. Applying the cost allocations contained in the WMP development MOU, **Table 5-3** summarizes the cost each LAR UR2 WMA jurisdiction will contribute under current assumptions and **Table 5-4** summarizes the cost and major characteristics of each of the proposed regional BMPs.

Table 5-3 Cost Allocation for Proposed Regional BMP Projects	
LAR UR2 WMA Jurisdiction	**Cost**
Bell	$24,600,000
Bell Gardens	$24,000,000
Commerce	$41,200,000
Cudahy	$18,200,000
Huntington Park	$26,300,000
Maywood	$18,500,000
Vernon	$35,300,000
Other Agencies	$20,900,000
Total:	**$209,000,000**

Table 5-4 LAR UR2 WMA Regional BMP Cost Estimate	
Name	**Cost**
Randolph Street Green Rail Trail	$10,800,000
LADWP Transmission Easement	$19,600,000
John Anson Ford Park	$91,300,000
Rosewood Park	$36,800,000
Lugo Park	$17,200,000
Salt Lake Park	$33,200,000
Total:	**$209,000,000**

Note: Estimates are based on 2014 dollars.

Based on the LID Street assumptions outlined in **Section 4.3.3.2**, the area of commercial and residential land uses that must be tributary to a LID Street were determined for each LAR UR2 WMA jurisdiction draining to the Los Angeles River. A cost was determined for each jurisdiction, taking into account the area tributary to a proposed regional BMP. **Table 5-5** summarizes the costs anticipated due to LID Streets.

The Los Angeles County Flood Control District will also work with the LAR UR2 WMA to address source controls; assess, develop, and pursue funding for structural BMPs, and promote water reuse and infiltration. As the identified or alternative regional project scopes are further refined, the District will contribute to implementation of the WMP projects on a case-by-case basis.

Table 5-5 Los Angeles River Subwatershed LID Streets Cost Estimate by Permittee							
LAR UR2 WMA Jurisdiction	**SF Residential (acres)**	**MF Residential (acres)**	**Commercial (acres)**	**Total Area[1] (acres)**	**Area Reduction[2] (acres)**	**25% of Remaining Area (acres)**	**Total Cost**
Bell	272	513	271	1,056	181	219	$21,900,000
Bell Gardens (LAR Side)	91	402	146	639	0	160	$16,000,000
Commerce (LAR Side)	212	83	288	583	191	98	$9,800,000
Cudahy	51	434	59	544	85	115	$11,500,000
Huntington Park	562	481	352	1,394	557	209	$20,900,000
Maywood	430	121	109	660	209	113	$11,300,000
Vernon	1	0	16	17	1	4	$400,000
Totals:	**1,619**	**2,033**	**1,241**	**4,893**	**1,224**	**918**	**$91,800,000**

SF = Single Family, MF = Mixed Family, LAR = Los Angeles River, LID = Low Impact Development

[1] Total area includes SF Residential, MF Residential, and Commercial areas.

[2] Area reductions based on the total of SF Residential, MF Residential, and Commercial land uses areas within proposed regional BMP tributary areas.

5.3 WMP Funding

In order to implement the control measures identified within the LAR UR2 WMA WMP, or future WMP iterations developed through the iterative AMP, funding from a variety of sources, including the possibility of partnering with other agencies, will need to be developed and managed in such a way so as to ensure that the programs and projects are implemented on schedule. According to an article titled "Financial Strategies for Stormwater Management" (Treadway, 2000), stormwater programs are generally funded with both primary and secondary funding methods.

Primary methods generally have adequate capacity and flexibility to fund the bulk of the stormwater program and can be lumped into two categories:

- General fund revenues - property tax, franchise fees, local income tax, and/or general sales tax
- Stormwater user fees - also known as stormwater utility fees

Secondary funding methods are used to enhance equity or simplicity. These funds are generally generated by various fees (e.g. impact fees or plan review fees), debt financing, grants or government cost share programs, special assessments, improvement districts, connection charges, in lieu of fees, etc. Each of these secondary methods has conditions and limitations that restrict their use to specially targeted parts of the stormwater program (Treadway, 2000).

Table 5-6 outlines the current stormwater program funding for LAR UR2 WMA. LAR UR2 WMA will evaluate the various funding options in order to determine what works best. The funding mechanisms may vary by jurisdiction and by project. **Table 5-7** identifies potential funding strategies based on implementation actions which will be further evaluated. In addition, a summary of the identified grant and loan opportunities that will be further evaluated can be found in **Appendix I**.

The Gateway Cities Transportation Water Quality Strategic Plan, released in March 25, 2014 identifies over one hundred local and Transportation Corridor related BMP projects that could be constructed within the Gateway Cities region. Many of these projects are along the I-5 and I-710 Freeway corridors and would primarily benefit Caltrans by reducing the discharges of pollutants from that Permittee. A few are located within the LAR UR2 WMA. John Anson Ford Park and Salt Lake Park are also identified in this LAR UR2 WMA WMP. Others, such as Veterans and Little Bear Park in Bell, Bell Gardens Park in Bell Gardens, and Veteran's Memorial Park in Commerce, were considered during preparation of this study, but appeared to provide little benefit, often because of the lack of a nearby drainage system, legacy contamination issues, permitting difficulties or small tributary catchment. The report referenced the Federal USEPA and State Department of Water Resources as potential funding sources for its projects.

In a study entitled ***Stormwater Funding Options*** prepared for The League of California Cities, Los Angeles County Division and California Contract Cities Association, and dated May 29, 2014, the proponents acknowledge the enormity of the tasks that lie ahead for the LAR UR2 WMA and all Los Angeles County MS4 Permittees. They propose a multi-pronged range of existing and proposed funding mechanisms and encourage each agency to develop an appropriate mix to support its needs and expectations. Without substantial additional and adequate financial support to the LAR UR2 WMA, it will not be possible to implement the WMP or MS4 Permit to the extent intended by the Permittees.

Table 5-6 Recent Stormwater Program Costs and Budgets								
Stormwater Program	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**	**Total**
2011-2012 Program Costs[1]								
Public Information and Participation Program	$1,836	$0	$20,000	$2,500	$7,950	$2,950	$9,376	**$44,612**
Industrial/Commercial Facilities Program	$2,204	$53,300	$205,000	$3,000	$75,000	$3,600	$13,520	**$355,624**
Planning and Land Development Program	$2,160	$5,250	$50,000	$4,000	N/A	$0	$4,925	**$66,335**
Development and Construction Program	$692	$7,875	$12,000	$5,000	N/A	$0	$8,259	**$33,826**
Public Agency Activities Program	$453,576	$1,911,906	$1,495,500	$6,300	$725,000	$49,506	$615,417	**$5,257,205**
IC/ID Elimination Program	$1,620	$10,500	$5,100	$4,000	N/A	$0	$7,745	**$28,965**
Total	**$462,088**	**$1,988,831**	**$1,787,600**	**$24,800**	**$807,950**	**$56,056**	**$659,242**	**$5,786,567**
2012-2013 Program Budget[1]								
Public Information and Participation Program	$1,700	$2,250	$100,000	$3,000	$7,950	$15,500	$30,000	**$160,400**
Industrial/Commercial Facilities Program	$3,500	$50,000	$205,000	$5,000	$75,000	$10,000	$40,000	**$388,500**
Planning and Land Development Program	$3,000	$5,250	$75,000	$4,000	N/A	$2,000	$23,000	**$112,250**
Development and Construction Program	$1,500	$7,875	$25,000	$5,000	N/A	$3,000	$16,000	**$58,375**
Public Agency Activities Program	$452,000	$2,196,000	$1,935,000	$40,000	$700,000	$67,550	$1,077,000	**$6,467,550**
IC/ID Elimination Program	$1,800	$10,500	$5,100	$4,000	N/A	$0	$70,000	**$91,400**
Total	**$463,500**	**$2,271,875**	**$2,345,100**	**$61,000**	**$782,950**	**$98,050**	**$1,256,000**	**$7,278,475**

[1] Based on 2012 Annual Reports, except the 2011 Annual Reports were used for the Cities of Cudahy and Huntington Park.

Table 5-7 Funding Opportunities by WMP Implementation Effort													
Funding Opportunity	**Stormwater Program**						**Regional BMP Projects**						**Distributed BMP Projects**
	Public Information and Participation Program	**Industrial/Commercial Facilities Program**	**Planning and Land Development Program**	**Development Construction Program**	**Public Agency Activities Program**	**IC/ID Elimination Program**	**Randolph Street Green Rail Trail**	**LADWP Easement**	**John Anson Ford Park/Golf Course**	**Rosewood Park**	**Lugo Park**	**Salt Lake Park**	**LID or Green Streets**
General Funds	X	X	X	X	X	X							
Additional taxes	X	X	X	X	X	X	X	X	X	X	X	X	X
Stormwater Utility Fee	X	X	X	X	X	X	X	X	X	X	X	X	X
General Fees	X	X	X	X	X	X							X
Grant Opportunities													
Proposition 84 Stormwater Program							X	X	X	X	X	X	X
Community Action for a Renewed Environment (CARE)	X	X	X	X	X	X	P		P	P	P	P	
Pollution Prevention (P2)	X	X	X	X	X	X	P		P	P	P	P	
Urban Waters Small Grant	X	X	X	X	X	X	P		P	P	P	P	
Environmental Education Grant and SubGrant	X	X	X	X	X	X	P		P	P	P	P	
Cooperative Watershed Management Plan	X	X	X	X	X	X	X	X	X	X	X	X	X
State of California Coastal Conservancy Program	P						X	X	X	X	X	X	
Wildlife Conservation Board (WCB)													

Table 5-7 Funding Opportunities by WMP Implementation Effort													
Funding Opportunity	**Stormwater Program**						**Regional BMP Projects**						**Distributed BMP Projects**
	Public Information and Participation Program	**Industrial/Commercial Facilities Program**	**Planning and Land Development Program**	**Development Construction Program**	**Public Agency Activities Program**	**IC/ID Elimination Program**	**Randolph Street Green Rail Trail**	**LADWP Easement**	**John Anson Ford Park/Golf Course**	**Rosewood Park**	**Lugo Park**	**Salt Lake Park**	**LID or Green Streets**
Habitat Conservation Fund (HCF)													
Land and Water Conservation Fund (LWCF)													
Recreational Trails Program (RTP)							X						
TIGER Discretionary Grant							X						
Environmental Solutions for Communities	P						X	X	X	X	X	X	
Clean Water Act (CWA) §319(h) Non-Point Source													P
Potential 2014 Water Bond	P	P	P	P	P	P	P	P	P	P	P	P	
Loan Opportunities													
Clean Water State Revolving Fund (CWSRF)							X	X	X	X	X	X	
Financial Incentives for Recycled Water Projects to Provide Drought Relief							X	X	X	X	X	X	
Infrastructure State Revolving Fund (ISRF)							X	X	X	X	X	X	X

X = Eligible for opportunity (with conditions); P = Potentially eligible for opportunity

6. Legal Authority

Permit Part VI.C.5.b.iv.(6) directs that the *Permittee shall provide documentation that they have the necessary legal authority to implement the Watershed Control Measures identified in the plan, or that other legal authority exists to compel implementation of the Watershed Control Measures.* This authority appears to be more narrow than the broad legal authority addressed within Permit Part VI.A.2, which has been an annual report requirement since early in the implementation of the 2001 MS4 Permit. Statements of Legal Authority, provided by the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon, and Los Angeles County Flood Control District, are provided in Appendix J. In addition to the legal authority of each Permittee, the Regional Water Quality Control Board, Los Angeles Region and U.S. Environmental Protection Agency (USEPA) have additional legal authorities, provided under the Clean Water Act, to compel implementation of Watershed Control Measures. The majority of the Watershed Control Measures identified in the LAR UR2 WMA WMP Plan are associated with regional structural BMPs and LID streets that have been preliminarily sited on municipal public lands including parks, street right of ways. The primary exception to this practice of using municipal public lands is the Los Angeles Department of Water and Power (LADWP) Transmission Line Easement through the City of Vernon. However, as visible in aerial photographs, this easement has allowed many encroachments compatible with its primary purpose and the concept proposal includes alternatives to maintain the primary purpose of the easement. With a project implementation date over a decade in the future, we believe the design and permitting hurdle can be surpassed or the RAA and WMP modified through the adaptive management process. Permittees, or other entities, regulated under state or federal law (e.g. Railroads and other NPDES Permittees) and found to have problematic discharges, may be identified through the adaptive management process or during implementation of the CIMP and WMP plans. If these entities are found to require authorities beyond those of the Permittees, or are otherwise recalcitrant to instituting comparable Watershed Control Measures, they may be referred to other legal authorities enabled to compel implementation.

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Appendix A

June 27, 2013, Los Angeles River Upper Reach 2 WMA Notice of Intent (NOI) Letter

City of Commerce

Office of the
City Administrator

June 27, 2013

Mr. Sam Unger
Executive Officer
California Regional Water Quality Control Board
Los Angeles Region, Suite 200
320 W. Fourth St., Suite 200
Los Angeles, CA 90013

RE: Notice of Intent for a Watershed Management Program and Coordinated Integrated Monitoring Program for the Los Angeles River Upper Reach 2 Gateway Sub Watershed.

Dear Mr. Unger:

The Permittees listed in Table 1 below that are party to this Notice of Intent (NOI) hereby notify the Los Angeles Regional Water Quality Control Board (Regional Water Board) of their intent to develop a Watershed Management Program (WMP) for the Los Angeles River Upper Reach 2 Sub Watershed (LAR UR2 Sub Watershed) which includes the Cities of Bell, Bell Gardens, Cudahy, Commerce, Huntington Park, Maywood, Vernon, and the Los Angeles County Flood Control District. This NOI is hereby submitted in accordance with Part VI.C.4.b.i of Order R4-2012-0175. Permittees meet the LID and Green Streets conditions and will submit the Draft WMP within 18 months of the effective date of Order R4-2012-0175 (June 28, 2014).

In addition, the same permittees listed in Table 1 hereby notify the Regional Water Board of their intent to develop a Coordinated Integrated Monitoring Program (CIMP) as part of their WMP. The Permittees intend to follow a CIMP approach for each of the required monitoring plan elements including Receiving Water Monitoring, Storm Water Outfall Based Monitoring, Non-Storm Water Outfall Based Monitoring, New Development/Re-Development Effectiveness Tracking, and Regional Studies and will submit the CIMP within 18 months of the effective date of Order R4-2012-0175 (June 28, 2014) with the WMP.

SECTION 1. PROGRAM TYPE AND PERMITTEES

Table 1 lists the permittees who have agreed to work cooperatively and to jointly develop a WMP and CIMP under a Memorandum of Understanding (MOU) with the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority for administration and cost sharing.

Table 1. Watershed Management Program Permittees

City of Bell
City of Bell Gardens
City of Commerce
City of Cudahy
City of Huntington Park
City of Maywood
City of Vernon
Los Angeles County Flood Control District (LACFCD)

SECTION 2. TOTAL MAXIMUM DAILY LOADS ESTABLISHED WATER QUALITY BASED EFFLUENT LIMITATIONS:

Table 2 lists applicable interim and final Water Quality Based Effluent Limitations (WQBELs) and receiving water limitations established by Total Maximum Daily Loads (TMDLs) and identified by Section VI.C.4.B.ii of the Order that occur prior to the anticipated approval of the WMP.

Table 2. Applicable Interim and Final Trash WQBELs and all other Final WQBELs and Receiving Water Limitations Occurring Before Watershed Management Program Approval

TMDL Order	WQBEL	Interim or Final	Compliance Date
Los Angeles River Trash	80% reduction of baseline	Interim	09/30/2013
	90% reduction of baseline	Interim	09/30/2014
	96.7% reduction of baseline	Interim	09/30/2015
	100% reduction of baseline	Final	09/30/2016

Los Angeles River Nitrogen Compounds and Related Effects TMDL	100% of MS4 drainage area complies with waste load allocations	Final	03/23/2004
Los Angeles River Bacteria Implementation Schedule for Dry Weather – upper and middle reach 2 (Figueroa St. to Rosecrans Ave.) R4-2012-0175	Submit a Load Reduction Strategy (LRS) for Segment B (or submit an alternative compliance plan)	Interim	09/23/2014

SECTION 3. IDENTIFY TMDL CONTROL MEASURES:

Table 3 identifies the control measures being implemented by each Permittee for each TMDL that have interim and final WQBELs that occur prior to the anticipated approval of the WMP. The Permittees will continue to implement these measures during the development of the WMP.

Table 3. Control Measures that will be Implemented Concurrently with WMP Development for TMDLs

TMDL	Permittees	Implementation Plan and Control Measures	Status of Implementation
Los Angeles River Trash R4-2012-0175	Cities of: Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon	Install Full Capture Systems or other BMPs to reduce baseline by 80%	Completed
		Install Full Capture Systems or other BMPs to reduce baseline by 90%	Completed
		Install Full Capture Systems or other BMPs to reduce baseline by 96.7%	Completed
Los Angeles River Bacteria Implementation Schedule for Dry Weather – upper and middle reach 2 (Figueroa St. to Rosecrans Ave.) R4-2012-0175	Cities of: Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon	Developed a Coordinated Monitoring Plan (CMP) for the Los Angeles River Watershed.	Submitted the CMP to the LA Regional Water Quality Control Board on March 23, 2013 with the expressed intention of integrating the CMP with a future CIMP.

SECTION 4. DEMONSTRATION OF MEETING LID ORDINANCE AND GREEN STREETS POLICY REQUIREMENTS:

The Permittees that are party to this NOI developed LID Ordinances and Green Streets Policies that are in the process of being adopted by their governing board.**Table 4** summarizes the status of the Permittees' LID ordinances and Green Streets policies. More than 50% of the MS4 watershed area that will be addressed by the WMP is covered by LID Ordinances and Green Streets Policies.

Table 4. Status of LID Ordinance and Green Streets Policy Coverage of the MS4 Watershed Area Addressed by the WMP

Permittee	Land Area (mi^2)	LID Ordinance Status	Green Streets Policy Status
City of Bell	2.64	Developed	Developed
City of Bell Gardens	2.49	Adopted	Adopted
City of Commerce	6.57	Adopted	Adopted
City of Cudahy	1.12	Developed	Adopted
City of Huntington Park	3.03	Developed	Adopted
City of Maywood	1.18	Developed	Adopted
City of Vernon	5.16	Developed	Developed
LACFCD	0	N/A	N/A
Total MS4 Watershed Area	22.19		

The listed permittees are diligently working together and making progress towards compliance with Order R4-2012-0175. Please contact the individual permittees should you have questions pertaining to their jurisdiction's compliance measures. A list of contact information is enclosed. Please direct all inquiries regarding the LAR UR2 Sub Watershed's WMP/CIMP development to Ms. Claudia Arellano at carellano@ci.vernon.ca.us or (323) 583-8811, ext. 258. Thank you.

Sincerely,

The LAR UR2 Sub Watershed Permittees
(Individual signatures enclosed)

cc: Ms. Renee Purdy, California Regional Water Quality Control Board
Mr. Ivar Ridgeway, California Regional Water Quality Control Board

6330 Pine Avenue
Bell, California 90201
(323) 588-6211
(323) 771-9473 fax

CITY OF BELL

June 12, 2013

Mr. Samuel Unger, P.E., Executive Officer
California Regional Water Quality
Control Board – Los Angeles Region
320 West Fourth Street, Suite 200
Los Angeles, CA 90013

Attention: Ms. Renee Purdy

Dear Mr. Unger:

LETTER OF INTENT – LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
LOS ANGELES RIVER UPPER REACH 2 SUB WATERSHED
WATERSHED MANAGEMENT PROGRAM
AND COORDINATED INTEGRATED MONITORING PROGRAM

The City of Bell submits this Letter of Intent to participate in and share the cost of the development of a Watershed Management Program (WMP) and a Coordinated Integrated Monitoring Program (CIMP) with the Los Angeles River Upper Reach 2 Sub Watershed Group. This Letter of Intent serves to satisfy the WMP notification requirements of Section VI.C.4.b. of Order No. R4-2012-0175 (Municipal Separate Storm Sewer System Permit) and the CIMP requirements of Section IV.C.1 of Attachment E of the Municipal Separate Storm Sewer System Permit.

The Los Angeles River Upper Reach 2 Sub Watershed Group consists of the following agencies: the cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the LACFCD. The City of Bell intends to submit a final Memorandum of Understanding to the City Council for approval on July 17th, 2013.

If you have any questions, please contact Mr. Terry Rodrigue at (323)588-6211 or trodrigue@cityofbell.org.

Sincerely,

Doug Wilmore
City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6/19/13

CITY OF BELL GARDENS
Mr. Philip Wagner
City Manager
7100 Garfield Avenue
Bell Gardens, CA 90201

Philip Wagner, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 06/13/2013

CITY OF COMMERCE
Mr. Jorge Rifa
City Administrator
2535 Commerce Way
Commerce, CA 90040

Jorge Rifa, City Administrator

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6/19/13

CITY OF CUDAHY
Mr. Hector Rodriguez
City Manager
5220 Santa Ana Street
Cudahy, CA 90201

Hector Rodriguez, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6/24/13

CITY OF HUNTINGTON PARK
Mr. Rene Bobadilla, P.E.
City Manager
6550 Miles Avenue
Huntington Park, CA 90255

Rene Bobadilla, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6-25-13

CITY OF MAYWOOD
Ms. Lilian Myers
City Manager
4319 East Slauson Avenue
Maywood, CA 90270

Lilian Myers, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6-20-13

CITY OF VERNON
Mr. Samuel Kevin Wilson, P.E.
Director of Community Services & Water
4305 Santa Fe Avenue
Vernon, CA 90058

Samuel Kevin Wilson, Director of
Community Services & Water

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

GAIL FARBER, Director

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE
REFER TO FILE: WM-7

June 24, 2013

Mr. Samuel Unger, P.E.
Executive Officer
California Regional Water Quality
Control Board – Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Attention Ms. Renee Purdy

Dear Mr. Unger:

LETTER OF INTENT – LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
LOS ANGELES RIVER UPPER REACH 2 SUB WATERSHED
WATERSHED MANAGEMENT PROGRAM
AND COORDINATED INTEGRATED MONITORING PROGRAM

The Los Angeles County Flood Control District (LACFCD) submits this Letter of Intent to participate in and share the cost of the development of a Watershed Management Program (WMP) and a Coordinated Integrated Monitoring Program (CIMP) with the Los Angeles River Upper Reach 2 Sub Watershed Group. This Letter of Intent serves to satisfy the WMP notification requirements of Section VI.C.4.b. of Order No. R4-2012-0175 (Municipal Separate Storm Sewer System Permit) and the CIMP requirements of Section IV.C.1 of Attachment E of the Municipal Separate Storm Sewer System Permit.

The Los Angeles River Upper Reach 2 Sub Watershed Group consists of the following agencies: LACFCD and cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. The LACFCD intends to submit a final Memorandum of Understanding to the County of Los Angeles Board of Supervisors (which is the LACFCD's governing body) for approval prior to December 28, 2013.

If you have any questions, please contact Ms. Terri Grant at (626) 458-4309 or tgrant@dpw.lacounty.gov.

Very truly yours,

for GAIL FARBER
Chief Engineer of the Los Angeles County Flood Control District

TA:jht
P:\wmpub\Secretarial\2013 Documents\Letter\LOI LAR UR2 LACFCD.doc\C13230

cc: City of Bell
City of Bell Gardens
City of Commerce
City of Cudahy
City of Huntington Park
City of Maywood
City of Vernon

Watershed Permittee Contact List

Permittee	*Contact*	*Contact Mailing Address*	*Contact Telephone and Email Address*
City of Bell	Young Park Terry Rodrigue	6330 Pine Ave. Bell, CA 90201	(323) 588-6211 Ext 228 ypark@cityofbell.org trodrigue@cityofbell.org
City of Bell Gardens	Chau Vu	7100 Garfield Ave. Bell Gardens, CA 90201	(562) 334-1790 cvu@bellgardens.org
City of Commerce	Gina Nila Environmental Services Manager	2535 Commerce Way Commerce, CA 90040	(323) 722-4805, ext. 2839 ginan@ci.commerce.ca.us
City of Cudahy	Aaron Hernandez-Torres Assistant City Engineer	5220 Santa Ana St. Cudahy, CA 90201	(323) 773-5143 ahernandez@cityofcudayca.gov
City of Huntington Park	James A. Enriquez Director of Public Works/City Engineer	6550 Miles Ave. Huntington Park, CA 90255	(323) 584-6253 jenriquez@huntingtonpark.org
City of Maywood	Andre Dupret	4319 E. Slauson Ave. Maywood, CA 90270	(323) 562-5700 andre.dupret@cityofmaywood.org
City of Vernon	Samuel Kevin Wilson, P.E. Director of Community Services & Water Claudia Arellano Project Engineer	4305 Santa Fe Ave. Vernon, CA 90058	(323) 583-8811, ext. 245 kwilson@ci.vernon.ca.us (323) 583-8811, ext. 258 carellano@ci.vernon.ca.us
LACFCD	Gary Hildebrand	900 S. Freemont Ave. Alhambra, CA 91803	(626) 458-4300 ghildeb@dpw.lacounty.gov

Appendix B

September 25, 2013, Approval of NOIU to Develop WMP Letter

September 25, 2013

Los Angeles River Upper Reach 2 Sub-watershed Management Group
(See Distribution List)

APPROVAL OF NOTIFICATION OF INTENT (NOI) TO DEVELOP A WATERSHED MANAGEMENT PROGRAM (WMP), PURSUANT TO THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear Los Angeles River Upper Reach 2 Sub-watershed Management Group Participants:

Regional Board staff received and reviewed the NOI to prepare a WMP that the Los Angeles River Upper Reach 2 Sub-watershed Management Group submitted to the Regional Board on June 27, 2013. According to the NOI, the participants in the Los Angeles River Upper Reach 2 Sub-watershed Management Group are the Los Angeles County Flood Control District, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. Upon review, Regional Board staff determined the NOI meets the notification requirements of Part VI.C of Order No. R4-2012-0175, *Waste Discharge Requirements for MS4 Discharges within the Coastal Watersheds of Los Angeles County, except those Discharges Originating from the City of Long Beach* (hereafter, Order).

As you are aware, the Order allows permittees the option to submit to the Regional Board for approval an NOI to prepare a WMP. Preparing a WMP allows permittees to implement the requirements of the Order on a watershed scale through customized strategies, control measures, and best management practices (BMPs). Implementing a WMP allows permittees to address the highest watershed priorities, including complying with the requirements of Part V.A (Receiving Water Limitations), Part VI.E (Total Maximum Daily Load Provisions) and Attachments L through R, by customizing the control measures in Parts III.A (Prohibitions – Non-Storm Water Discharges) and VI.D (Minimum Control Measures) of the Order.

The Los Angeles River Upper Reach 2 Sub-watershed Management Group must submit to the Regional Board for review and approval a draft WMP for the Los Angeles River Upper Reach 2 Sub-watershed no later than June 28, 2014. Until Regional Board staff approves the Los Angeles River Upper Reach 2 Sub-watershed Management Group

WMP, each Los Angeles River Upper Reach 2 Sub-watershed Management Group participant must do the following:

1. Continue to implement all the watershed control measures in their corresponding storm water management programs, including actions within each of the six categories of minimum control measures consistent with Title 40 Code of Federal Regulations Section 122.26(d)(2)(iv) and Part VI.C.4.d.i of the Order.
2. Continue to implement watershed control measures to eliminate non-storm water discharges through the MS4 that are a source of pollutants to receiving waters consistent with Clean Water Act Section 402(p)(3)(B)(ii) and Part VI.C.4.d.ii of the Order.
3. Implement watershed control measures, including those identified in existing TMDL implementation plans, to ensure MS4 discharges achieve compliance with interim and final trash WQBELs and all other final WQBELs and receiving water limitations pursuant to Part VI.E and set forth in Attachments L through Q by the applicable compliance deadlines occurring prior to approval of the WMP per Part VI.C.4.d.iii of the Order.
4. Target implementation of watershed control measures listed above to address known contributions of pollutants from MS4 discharges to receiving waters.
5. Meet all interim and final deadlines for development of a WMP.

If you have any questions, please contact Ms. Pavlova Vitale of the Storm Water Permitting Unit by electronic mail at Pavlova.Vitale@waterboards.ca.gov or by phone at (213) 576-6761. Alternatively, you may also contact Mr. Ivar Ridgeway, Chief of the Storm Water Permitting Unit, by electronic mail at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

cc: Young Park, City of Bell
Chau Vu, City of Bell Gardens
Gina Nila, City of Commerce
Aaron Herandez-Torres, City of Cudahy
James Enriquez, City of Huntington Park
Andre Dupret, City of Maywood
Samuel Kevin Wilson, City of Vernon
Gary Hildebrand, Los Angeles County Flood Control District
Dave Smith, US EPA
Walt Shannon, State Water Resources Control Board – Storm Water Section
Jennifer Fordyce, State Water Resources Control Board – Office of Chief Counsel

ECM#

Distribution List for the Los Angeles River Upper Reach 2 Sub-watershed Management Group

1. Doug Wilmore, City Manager
   City of Bell
   6330 Pine Avenue
   Bell, CA 90201

2. Philip Wagner, City Manager
   City of Bell Gardens
   7100 Garfield Avenue
   Bell Gardens, CA 90201

3. Jorge Rifa, City Administrator
   City of Commerce
   2535 Commerce Way
   Commerce, CA 90040

4. Hector Rodriguez, City Manager
   City of Cudahy
   5220 Santa Ana Street
   Cudahy, CA 90201

5. Renee Bobadilla, City Manager
   City of Huntington Park
   6550 Miles Avenue
   Huntington Park, CA 90255

6. Lilian Myers, City Manager
   City of Maywood
   4319 East Slauson Avenue
   Maywood, CA 90270

7. Kevin Wilson, Director of Community Services and Water
   City of Vernon
   4305 Santa Fe Avenue
   Vernon, CA 90058

8. Gail Farber, Chief Engineer
   Los Angeles County Flood Control District
   900 South Freemont Avenue
   Alhambra, CA 91803

Appendix C

MS4 Permit LAR Watershed TMDL Water Quality Objectives

This Appendix outlines the Water Quality-Based Effluent Limitations (WQBELs) and Receiving Water Limitations (RWLs) identified in Attachment O of the MS4 Permit. The following Total Maximum Daily Loads (TMDLs) are applicable to the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA):

- Los Angeles River Trash TMDL
- Los Angeles River Nitrogen Compounds and Related Effects TMDL
- Los Angeles River and Tributaries Metals TMDL
- Los Angeles River Watershed Bacteria TMDL

LAR Watershed Trash TMDL

The litigation and implementation history of the Los Angeles River Watershed Trash TMDL is complex, however the current TMDL was adopted by the Los Angeles Regional Water Quality Control Board (LARWQCB) as Resolution 2007-012, which became effective on September 23, 2008. Simplistically, TMDL compliance is assessed based on Daily Generation Rate (DGR) studies, the remainder of the catchment not protected by Full Capture Certified Devices (FCCDs), or a combination of both metrics. **Table C-1** and **Table C-2** list (in gallons and pounds) interim and final DGR estimated residual WQBELs from Attachment O Part A.3 of the MS4 Permit, while the allowable remainder of the catchment unprotected by FCCDs is identified in parentheses within the table header rows.

Table C-1 LAR Watershed Trash TMDL Effluent Limitations per Storm Year (gal of uncompressed trash)

Permittees	Baseline	2012 (30%)	2013 (20%)	2014 (10%)	2015 (3.3%)	2016 (0%)
Bell	16026	4808	3205	1603	529	0
Bell Gardens	13500	4050	2700	1350	446	0
Commerce	58733	17620	11747	5873	1938	0
Cudahy	5935	1781	1187	594	196	0
Huntington Park	19159	5748	3832	1916	632	0
Maywood	6129	1839	1226	613	202	0
Vernon	47203	14161	9441	4720	1558	0

Table C-2 LAR Watershed Trash TMDL Effluent Limitations per Storm Year (lbs of drip dry trash)

Permittees	Baseline	2012 (30%)	2013 (20%)	2014 (10%)	2015 (3.3%)	2016 (0%)
Bell	25337	7601	5067	2534	836	0
Bell Gardens	23371	7011	4674	2337	771	0
Commerce	85481	25644	17096	8548	2821	0
Cudahy	10061	3018	2012	1006	332	0
Huntington Park	30929	9279	6186	3093	1021	0
Maywood	10549	3165	2110	1055	348	0
Vernon	66814	20044	13363	6681	2205	0

The final WQBEL of zero trash discharged, or catchment area unprotected, is to be achieved for the 2016 storm year that begins on October 1, 2015 and ends on September 30, 2016. During the current period from October 1, 2013 to September 30, 2014, 90% of the baseline study trash volume or weight must be

captured based on DGR study analysis and only 10% estimated to have been discharged. Alternatively, 90% of a Permittee catchment may be protected by FCCDs, leaving 10% unprotected.

LAR Nitrogen Compounds and Related Effects TMDL

The LAR Nitrogen TMDL was adopted by the LARWQCB as Resolution 2003-009 and became effective on March 23, 2004. Site Specific Objectives (SSOs) for ammonia were approved by the State Water Resources Control (SWRCB) Board on June 4, 2013. This TMDL has been primarily addressed by Publically Owned Treatment Works (POTWs), or Water Recovery Plants (WRPs), and MS4 Permittee discharges do not appear to cause or contribute to the exceedance of the applicable RWLs. **Table C-3** lists the currently effective TMDL WQBELs, as identified in Attachment O, Part B.2 of the MS4 Permit, which the LAR UR2 WMA Permittee discharges would be expected to comply with as assessed through the Coordinated Integrated Monitoring Program (CIMP).

Table C-3 LAR Nitrogen Compounds and Related Effects TMDL Final WQBELs

Water Body	NH_3-N (mg/L)		NO_3-N (mg/L)	NO_2-N (mg/L)	NO_3-N+NO_2-N (mg/L)
	One-hour Average	Thirty-day Average	Thirty-day Average	Thirty-day Average	Thirty-day Average
LAR below LAG	8.7	2.4	8.0	1.0	8.0
Rio Hondo Reach 1 and 2	10.1	2.3	8.0	1.0	8.0

LAG = Los Angeles-Glendale WRP

LAR and Tributaries Metals TMDL

The litigation and implementation history of the LAR and Tributaries Metals TMDL is complex, however the current TMDL was adopted by the LARWQCB as Resolution 2007-014 and became effective on October 29, 2008. The TMDL assesses compliance based on the load or concentration of several metals in comparison to the California Toxic Rule (CTR) values, during dry- and wet-weather conditions. Dry-weather is defined as days when the maximum daily flow in the Los Angeles River is less than 500 cubic feet per second (cfs) as measured at the Wardlow Street gauge station in Long Beach. Since metal toxicity is correlated to bioavailability, which is higher for dissolved metals, and decreases in the presence of competing cations, as assessed by water hardness, the permit and TMDL WQBEL values were determined using total to dissolved “translator” values, prepared by the USEPA, weather, and water body specific hardness data, which results in relatively significant variability in WQBELs among the various water body and weather combinations. Furthermore, local water characteristics, such as organic content, may result in Water Effect Ratios (WERs) and SSOs that alter the preliminary toxicity assessment used in developing a TMDL and may change the final numeric WQBELs.

Table C-4 through **Table C-7** list the "final" WQBELs that may be of importance to the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA), subject to any future basin plan amendments, established by the LAR and Tributaries Metals TMDL and identified in Attachment O Parts C.2 and C.3 of the MS4 Permit. **Table C-4** lists the grouped (shared) dry-weather final WQBELs, expressed as total recoverable metals daily loads. Dry-weather flows in Rio Hondo Reach 1, have normally been much lower than the TMDL estimate of 0.5 cfs, however TMDL watershed compliance has generally been first assessed based on concentration, rather than load.

Table C-4 LAR Metals TMDL Dry-Weather Final WQBELs Expressed as Total Recoverable Metals			
Water Body	**Effluent Limitations Daily Maximum (kg/day)**		
	Copper	**Lead**	**Zinc**
LAR Reach 2	WER[1] x 0.13	WER[1] x 0.07	--
LAR Reach 1	WER[1] x 0.14	WER[1] x 0.07	--
Rio Hondo Reach 1	WER[1] x 0.01	WER[1] x 0.006	WER[1] x 0.16

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved via the Basin Plan Amendment process

Concentration based dry-weather WQBEL that may be of importance to the RH/SGRWQG are summarized in **Table C-5**.

Table C-5 LAR Metals TMDL Concentration Based Dry-Weather Final WQBELs Expressed as Total Recoverable Metals			
Water Body	**Effluent Limitations Daily Maximum (µg)**		
	Copper	**Lead**	**Zinc**
LAR Reach 2	WER[1] x 22	WER[1] x 11	--
LAR Reach 1	WER[1] x 23	WER[1] x 12	--
Rio Hondo Reach 1	WER[1] x 13	WER[1] x 5.0	WER[1] x 131

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved via the Basin Plan Amendment process

Load and approximate concentration based wet-weather WQBELs that are applicable to the LAR UR2 WMA are summarized in **Table C-6**. Since the TMDL includes both Waste Loads (WLs) and WLAs, and multiple discharge groups, the WQBEL concentration for MS4 Permittees varies with the volume of runoff measured at Wardlow Street, but the rightmost column is a serviceable first order estimate.

Table C-6 LAR Metals TMDL Wet-Weather Final WQBEL Expressed as Total Recoverable Metals		
Constituent	**Effluent Limitations Daily Maximum (kg/day)**	**Approximate Effluent Limitation (µg/L)**
Cadmium	WER[1] x 2.8 x 10^{-9} x daily volume (L) - 1.8	WER[1] x 2.8
Copper	WER[1] x 1.5 x 10^{-8} x daily volume (L) - 9.5	WER[1] x 15
Lead	WER[1] x 5.6 x 10^{-8} x daily volume (L) - 3.85	WER[1] x 56
Zinc	WER[1] x 1.4 x 10^{-7} x daily volume (L) - 83	WER[1] x 140

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved via the Basin Plan Amendment process

Table C-7 outlines the interim and final Metals TMDL WQBELs schedule which Permittees are expected to comply with through the EWMP and RAA development process. The LAR UR2 WMA affected by this TMDL is located within Jurisdictional Group 2, thus it should be noted that the June 29, 2012 Implementation Study, funded by the Permittees, identified Watershed Control Measures to achieve the interim and final WQBELs. Among the more important measures was State Senate Bill 346, chaptered in September 2010, which called for phased elimination of copper from automotive friction (brake) pads. A

similar effort to reduce the zinc content in automotive tires has also been initiated, but is many years from being chaptered.

Table C-7 LAR Metals TMDL Schedule of Interim and Final WQBELs

Deadline	Total Drainage Area Served by the MS4 required to meet the water quality-based effluent limitations (%)	
	Dry-Weather	Wet-Weather
January 11, 2012	50	25
January 11, 2020	75	-
January 11, 2024	100	50
January 11, 2028	100	100

Along with most other LAR Watershed municipalities, the LAR UR2 WMA Permittees supported a study to develop Copper WER and Lead Recalculation SSOs that will become effective after it has been approved by the LARWQCB as Basin Plan Amendments. The draft study reports suggest that for copper, in both dry- and wet-weather, a final WER of 3.971 for LAR Reaches 1 and 2 and 9.691 for the Rio Hondo should be adopted. The lead recalculation study suggest that during dry-weather the WQBELs for LAR Reach 1 should increase from 12 to 102 µg/L for LAR Reach 1, increase from 11 to 94 µg/L for LAR Reach 2, and rise from 5 to 37 µg/L for the Rio Hondo. In wet-weather, the lead WQBEL should increase from 62 to 94 µg/L in all of these water bodies. Favorable translators between total and dissolved metal concentrations were also determined by these studies, but are not explicitly referenced in the MS4 Permit so their eventual impact is unclear at this time. As a result of these studies and legislative efforts, the LAR Metals TMDL has probably moved from a regional to specific outfall priority.

LAR Watershed Bacteria TMDL

The LAR Watershed Bacteria TMDL was adopted by the LARWQCB as Resolution 2010-007 and became effective on March 23, 2012. As expressed in Attachment O Part D4 of the MS4 Permit, this TMDL is very complex with multiple implementation phases, river segments that do not coincide with reaches, wet and dry compliance schedules, WLAs expressed as both WQBELs and RWLs, complex analytical methods, and requires the development with submission of Segment Specific Load Reduction Strategies (LRS). In addition, studies indicate that there are significant natural sources including endogenous replication of the "pollutant." **Table C-8** through **Table C-11** summarize the final WQBELs and RWLs that may be of importance to the LAR UR2 WMA.

Table C-8 LAR Bacteria TMDL WQBEL

Constituent	Effluent Limitation (MPN or cfu)	
	Daily Maximum	Geometric Mean
E. coli	235/100 mL	126/100 mL

Table C-9 summaries the "grouped interim dry-weather single sample bacteria WQBEL for the specific river segment and tributaries," that may be of importance to the LAR UR2 WMA. While the Rio Hondo watershed area is approximately half of the total Segment B catchment area and would be expected to generate comparable discharge volumes during dry- and wet-weather, the WQBEL differs by over 250 fold. This is a result of the latter being based on the flow of water, mostly discharged from wastewater treatment plants, into the reach, while the Rio Hondo is primarily a headwater catchment. The interim dry-weather WQBELs are group-based and shared among the Permittees within a drainage area; however, alternatively they may be distributed based on proportion of drainage area, upon approval of the Regional Board Executive Officer. It is currently unclear how compliance with the LAR Bacteria TMDL will be assessed.

Table C-9 LAR Bacteria TMDL Grouped Interim Dry-Weather Single Sample Bacteria WQBEL			
River Segment of Tributary	**Daily Maximum *E. coli* Load (10^9 MPN/day)**	**First Phase Compliance Date**	**Second Phase Compliance Date**
LAR Segment A (Willow to Rosecrans)	301	March 23, 2024	September 23, 2031
LAR Segment B (Rosecrans to Figueroa)	518	March 23, 2022	September 23 2028
Rio Hondo	2	September 23, 2023	March 23, 2030

In addition to WQBELs for MS4 discharges, the LAR Bacteria TMDL includes a RWL that is attributable to all MS4 Permittees, including the City of Long Beach and Caltrans. This RWL is assessed as a limit on the number of days, or weeks, per year, where the RWLs are not achieved. The final compliance dates, for the annually assessed grouped single sample bacteria RWLs, are March 23, 2022 for dry-weather and March 23, 2037 for wet-weather. These requirements can be found in **Table C-10**, while the numeric water quality objective is shown on **Table C-11**.

Table C-10 LAR Bacteria TMDL Grouped Final Single Sample Bacteria RWLs		
Time Period	**Annual Allowable Exceedance Days of the Single Sample Objective (days)**	
	Daily Sampling	**Weekly Sampling**
Dry-Weather	5	1
Non-HFS[1] Waterbodies Wet-Weather	15	2
HFS[1] Waterbodies Wet-Weather	10 (not including HFS days)	2 (not including HFS days)

[1] HFS stands for high flow suspension as defined in Chapter 2 of the Basin Plan

Table C-11 LAR Bacteria TMDL Geometric Mean RWL	
Constituent	**Geometric Mean (MPN or cfu)**
E. coli	126/100 mL

The distinction that these water quality objectives are expressed annually may be important, as MS4 Permit Part VI.A.13.g states that for some WQBELs that are expressed as annual effluent limitations, such as those for trash, violations may only be assessed annually; however Part VI.C.1.d.(i) states that EWMPs must "achieve applicable WQBELs in Part VI.E and Attachments L through R pursuant to the corresponding compliance schedules." It is unclear why an annually assessed WQBEL is substantially and inherently different than an annually assessed RWL, although this question is likely to be resolved long before the dry-weather final compliance schedule is reached.

Appendix D

Summary of Existing Water Quality Studies Relevant to LAR UR2 WMA

This Appendix summarizes the existing water quality studies relevant to the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA), including:

- Los Angeles County Annual Mass Emission and Tributary Station Monitoring Data (2002 – 2012);
- Los Angeles River Metals TMDL Coordinated Monitoring Plan (CMP) Ambient Monitoring Program (2008 – 2013);
- Council for Watershed Health (CWH) Los Angeles River Watershed Monitoring Program (LARWMP) data (2009 – 2012); and
- Cleaner Rivers through Effective Stakeholder-led TMDLs (CREST) Los Angeles River Bacteria Source Identification (BSI) Study.

Los Angeles County Annual Stormwater Monitoring Reports (2002-2012)

The Los Angeles County Department of Public Work Annual Stormwater Monitoring Report (LACDPW SMR) presents stormwater quality findings for each July to June storm season. The 2002–2003, 2003–2004, 2005–2006, 2006–2007, 2007–2008, 2008–2009, 2009–2010, 2010-2011, and 2011-2012 monitoring reports addressed the following programs and associated elements:

- Core Monitoring Program – mass emission, tributary, water column toxicity, shoreline, and trash monitoring.
- Regional Monitoring Program – estuary sampling and bioassessment.
- Special studies – New Development Impacts Study in the Santa Clara Watershed, Peak Discharge Impact Study and BMP Effectiveness Study.

Attachment 1, Figure 1 shows the LA River (S10) Core Monitoring program, mass emission station nearest the LAR UR2 WMA, while **Figure 2** shows the Rio Hondo Channel tributary monitoring station studied during the 2002-2003 and 2003-2004 storm seasons. The S10 station is located at the existing stream gauge station (i.e., Stream Gauge F319-R) between Willow Street and Wardlow Road in the City of Long Beach and was chosen to avoid tidal influences. The Rio Hondo Channel monitoring station is located on Beverly Boulevard, downstream of Whittier Narrows dam, at the USGS – U.S. Army Corps of Engineers (ACOE) Stream gage No. 1102300 or E327-R and upstream of the LAR UR2 WMA.

A minimum of three wet-weather and two dry-weather events were monitored for all sites during each annual storm season. Grab samples were collected and analyzed for conventional pollutants and bacteria during both dry- and wet-weather events. Additionally, composite samples were collected for both dry- and wet-weather events and were analyzed for general minerals, metals, semi-volatiles, chlorinated pesticides, organophosphate pesticides, herbicides, PCBs and TSS. A summary of constituents that did not meet applicable WQOs from 2002 – 2012 is as follows:

LAR (S10):

Dry-Weather – a total of 18 samples.
Cyanide – 13 exceedances with a range of values from 0.022 to 0.109 mg/L,
pH –11 exceedances, all greater than 9.0,
TKN – 3 exceedances ranging from 5.82 to 6.18 mg/L,
Nitrite-N – 6 exceedances with a range of values from 1.093 to 1.6039 mg/L, and
Total Phosphorus as P – a total of 2 exceedances.

Wet-Weather –a total of 40 samples.
Cyanide – 9 exceedances with a range of values from 0.024 to 1.2 mg/L,
Dissolved Oxygen (DO) – 1 exceedance with a value of 2.5 mg/L,
pH – 2 exceedances with measurements below 6.5,
Chemical Oxygen Demand (COD) – 1 exceedance, a values of 578 mg/L,
TKN – 13 exceedances with a range of values from 4.9 to 30.68 mg/L,
Total Phosphorus as P – 7 exceedances, and
Total Suspended Solids (TSS) – 24 exceedances ranging from 276 to 2,280 mg/L.

Rio Hondo Channel (TS06):

Dry-Weather, n = 3
Cyanide –1 exceedance with a value of 0.025 mg/L,
pH - 2 exceedances with one under 6.5 and one over 8.5, and
TKN – 1 exceedance with a value of 7 mg/L.

Wet-Weather, n = 9
Cyanide – 1 exceedance with a 0.043 mg/L,
pH – 1 exceedance under 6.5,
Chloride – 1 exceedance with a value of 759 mg/L,
TKN – 2 exceedances with a value of 7 and 12.8 mg/L, and
TSS – 5 exceedances with a range of values from 266 to 1186 mg/L.

Metals

Figure D-1 through **Figure D-5** show measured metal concentrations, and selected standards, for the 2002 to 2012 storm seasons at the Los Angeles River S10 site. **Figure D-6** through **Figure D-11** show measured metal concentrations, and selected standards for the 2002 to 2012 storm seasons at the Rio Hondo TS06 tributary monitoring site. As expected, exceedances were generally higher in wet-weather and assumption of amended WER and Lead Recalculation SSOs, reduced the prevalence of exceedances.

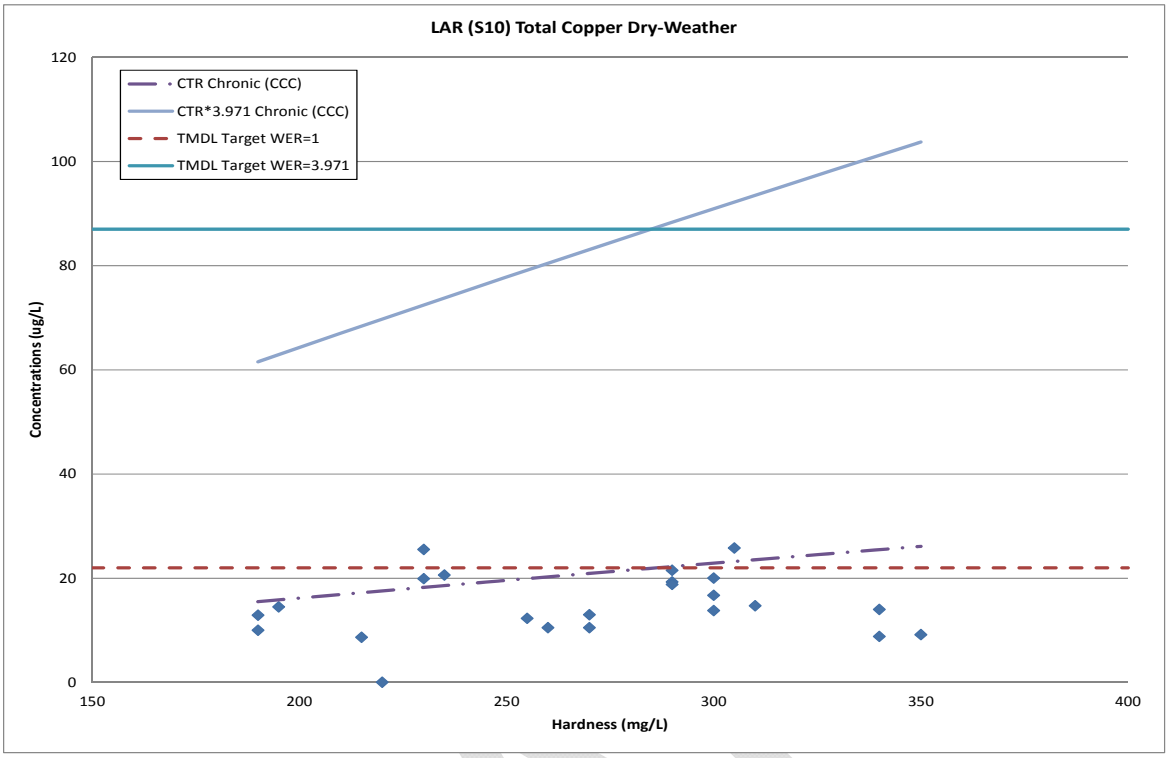

Figure D-1 LAR S10 Total Copper Concentrations Compared to Hardness Monitoring Plot from 2002-2012 storm seasons Dry-Weather

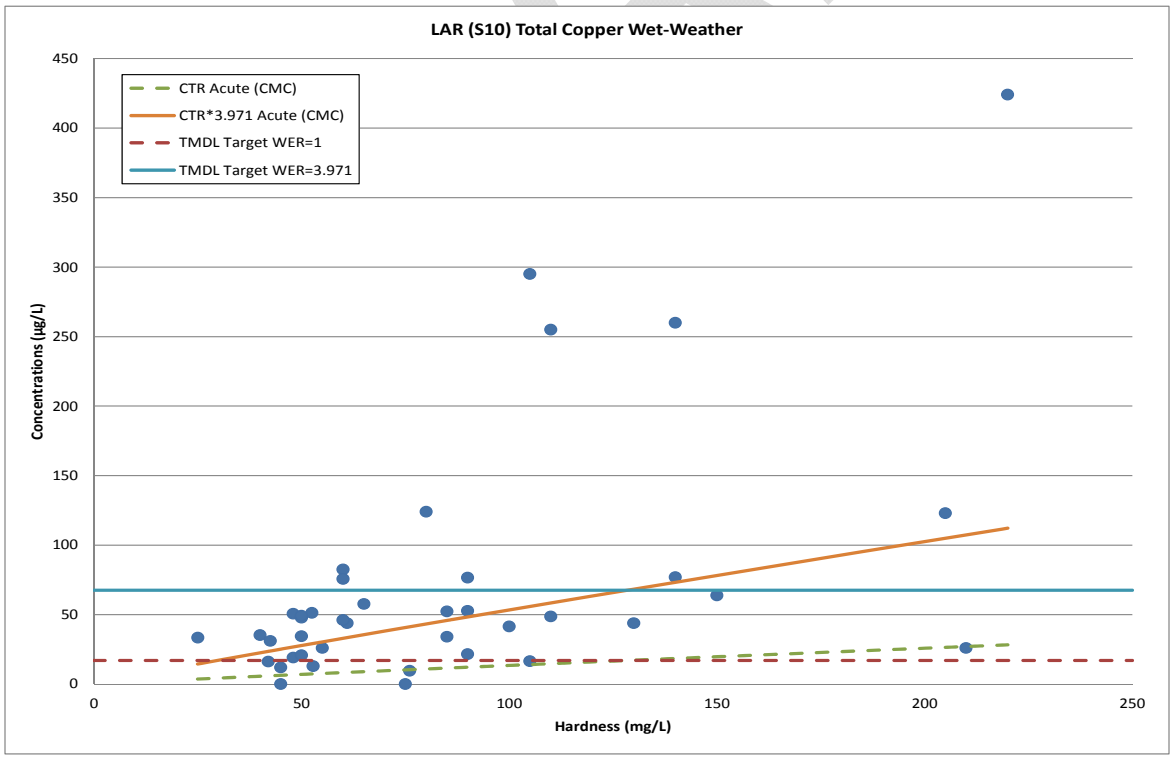

Figure D-2 LAR S10 Total Copper Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

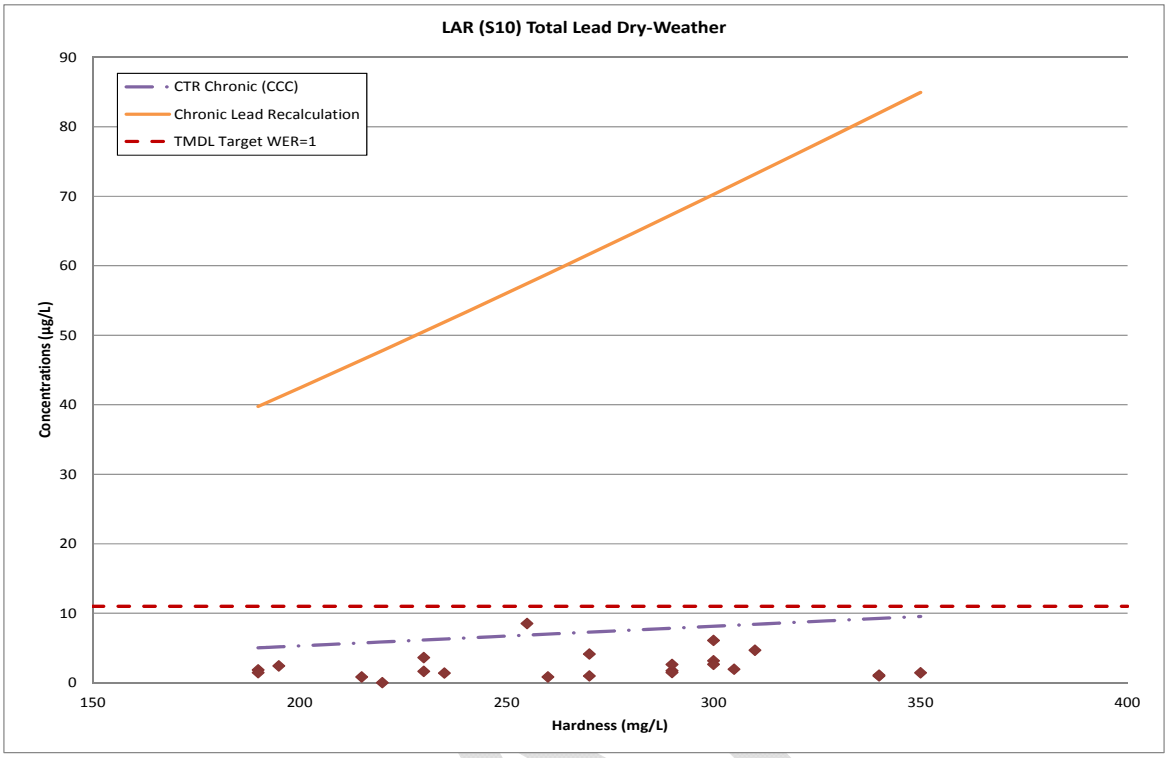

Figure D-3 LAR S10 Total Lead Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Dry-Weather

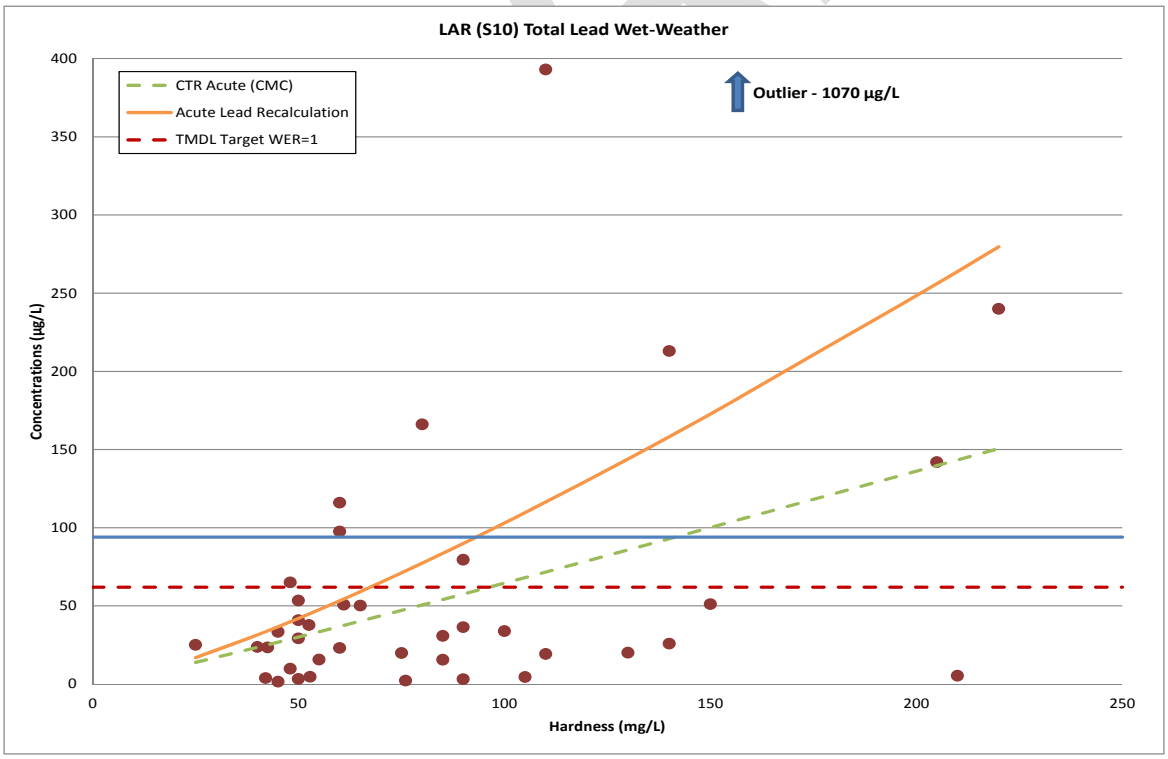

Figure D-4 LAR S10 Total Lead Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

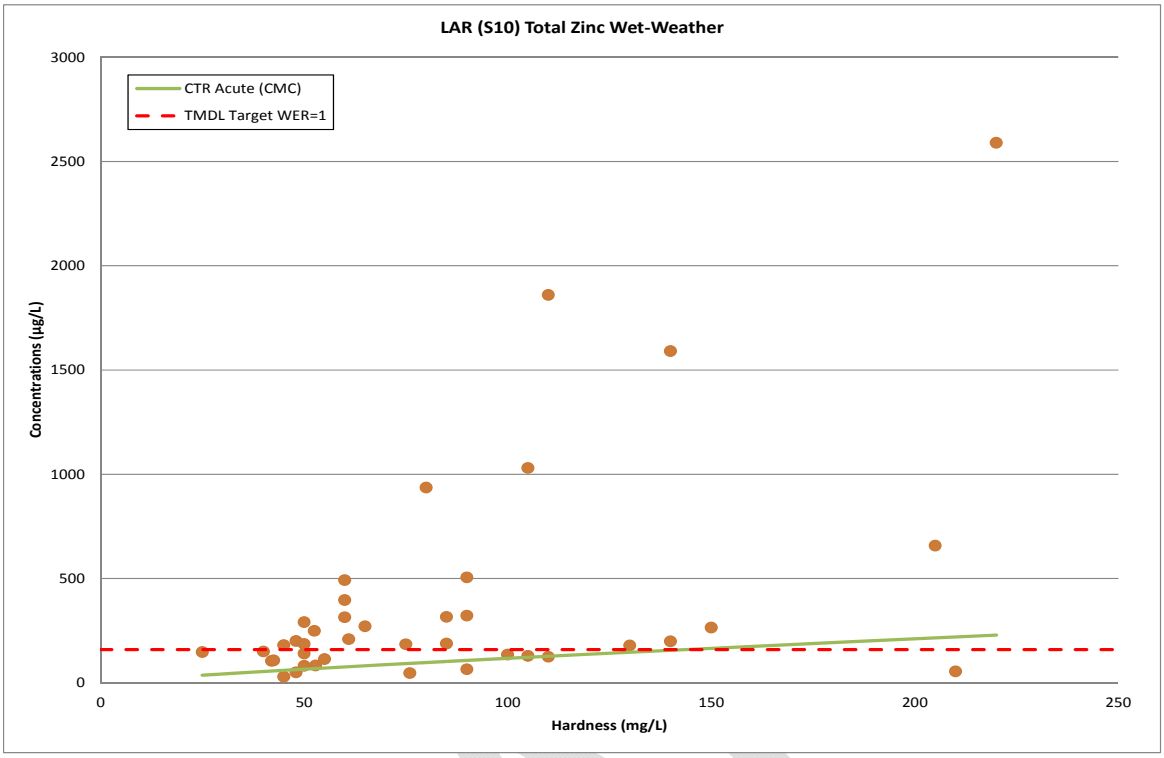

Figure D-5 LAR S10 Total Zinc Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

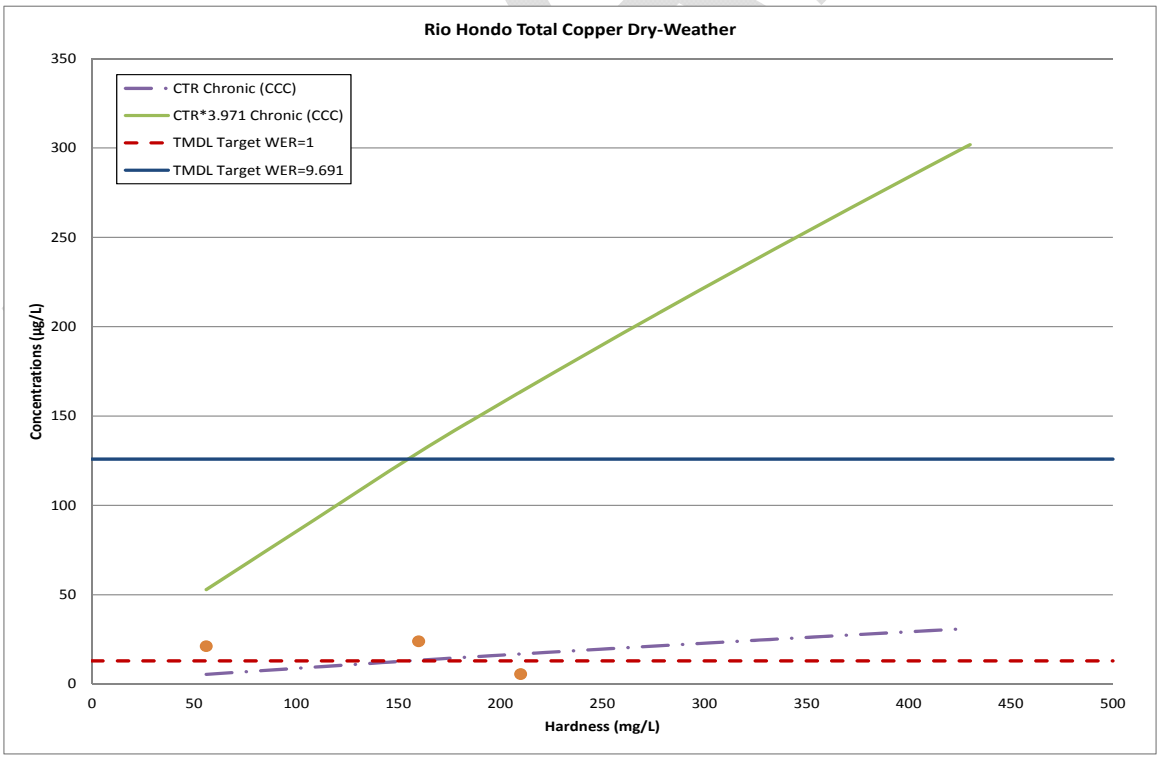

Figure D-6 Rio Hondo Total Copper Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Dry-Weather

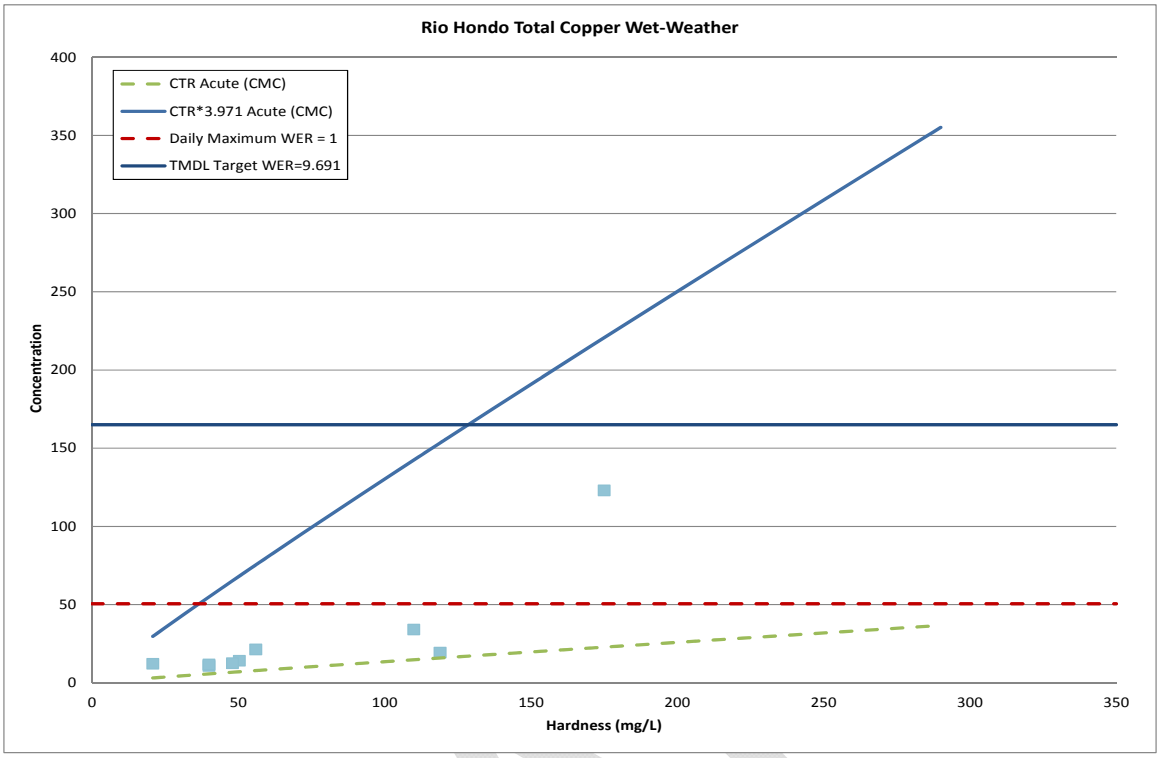

Figure D-7 Rio Hondo Total Copper Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

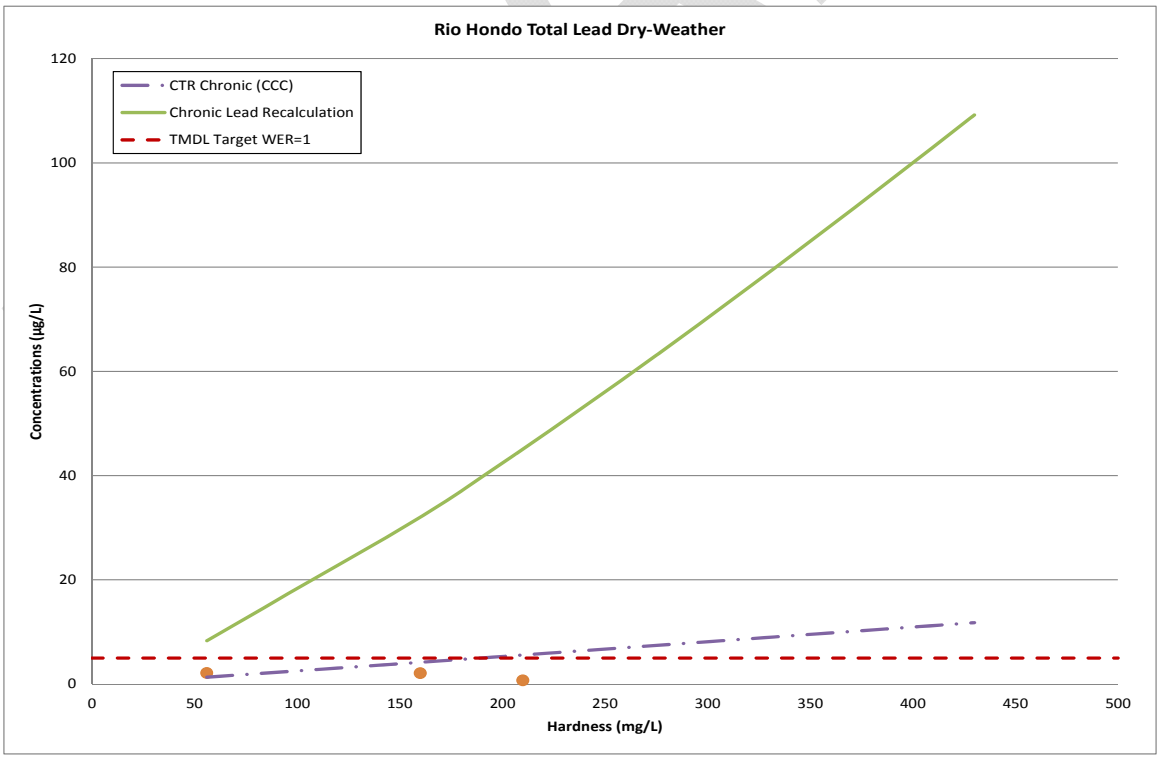

Figure D-8 Rio Hondo Total Lead Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Dry-Weather

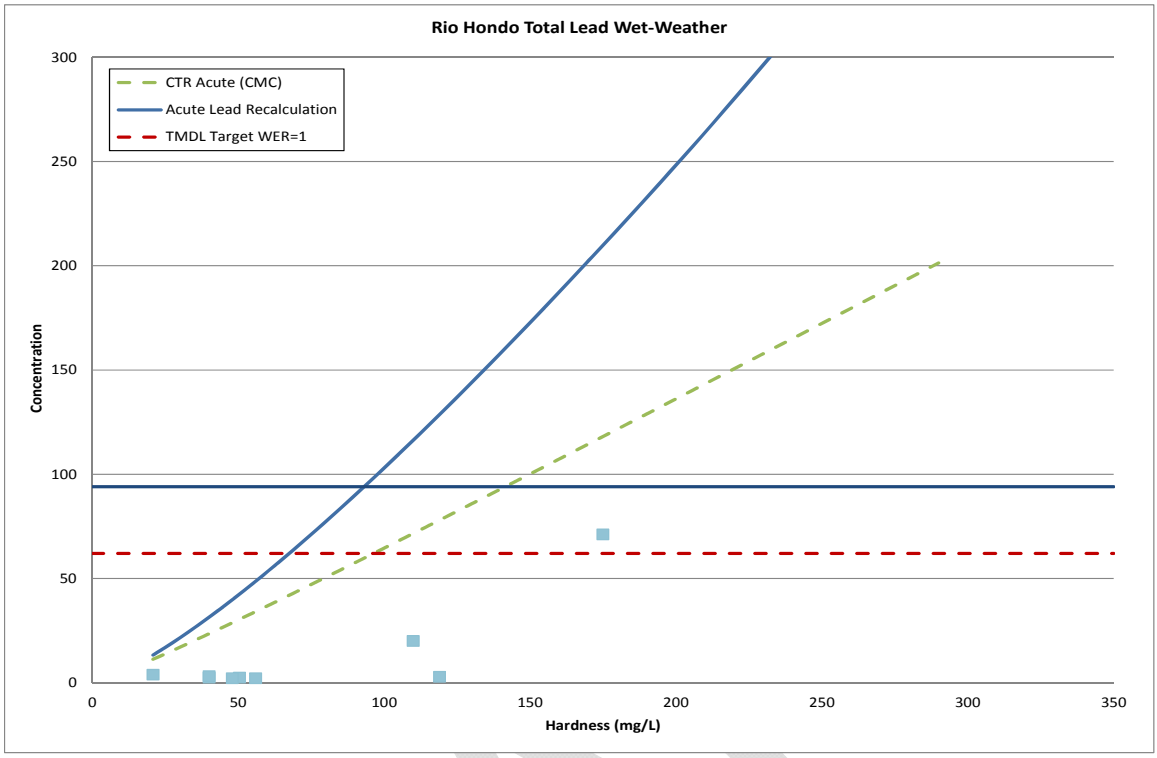

Figure D-9 Rio Hondo Total Lead Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

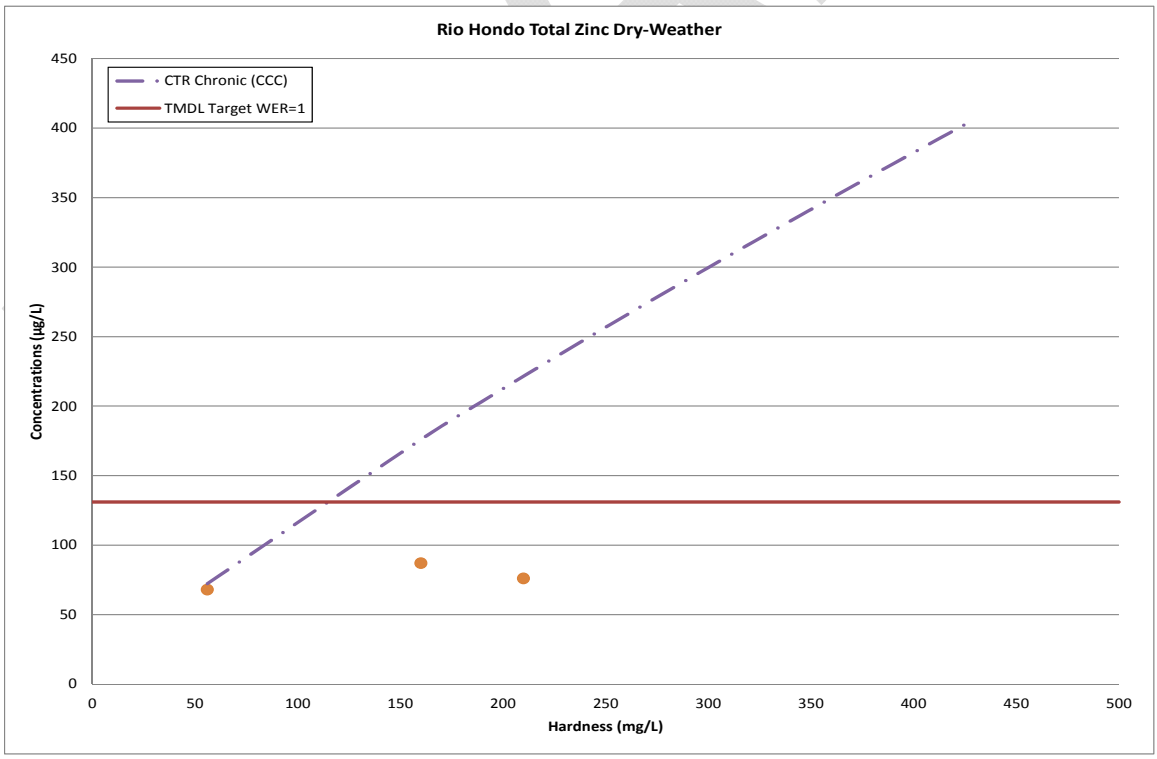

Figure D-10 Rio Hondo Total Zinc Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Dry-Weather

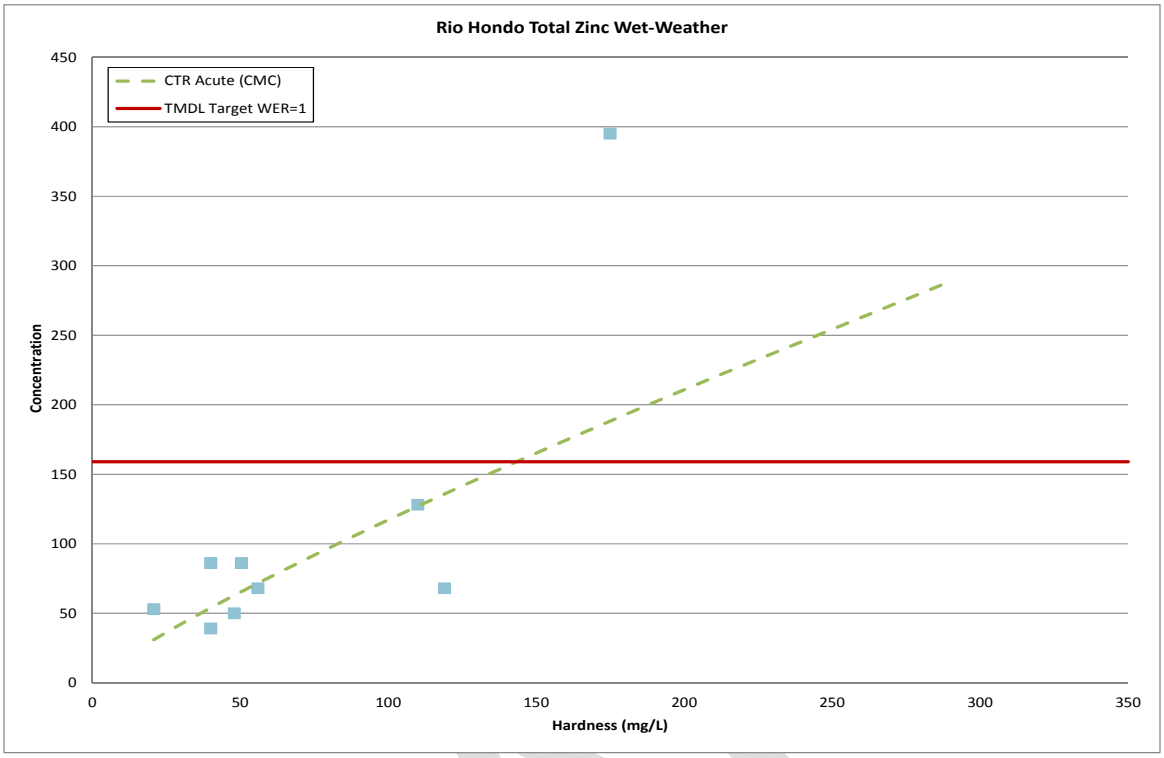

Figure D-11 Rio Hondo Total Zinc Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

Bacteria

Fecal and total coliforms concentrations, for sampling site LAR S10 and the Rio Hondo TS06, have been plotted against time in **Figure D-12** through **Figure D-15**. The Los Angeles River bacteria TMDL *E. coli* wet- and dry-weather effluent limitation daily maximum of 126 MPN/100 mL is shown on each figure. Although not directly comparable, during both dry- and wet-weather events, and for both the LAR S10 and Rio Hondo TS06, fecal and total coliform concentrations consistently did not meet the *E. coli* daily maximum.

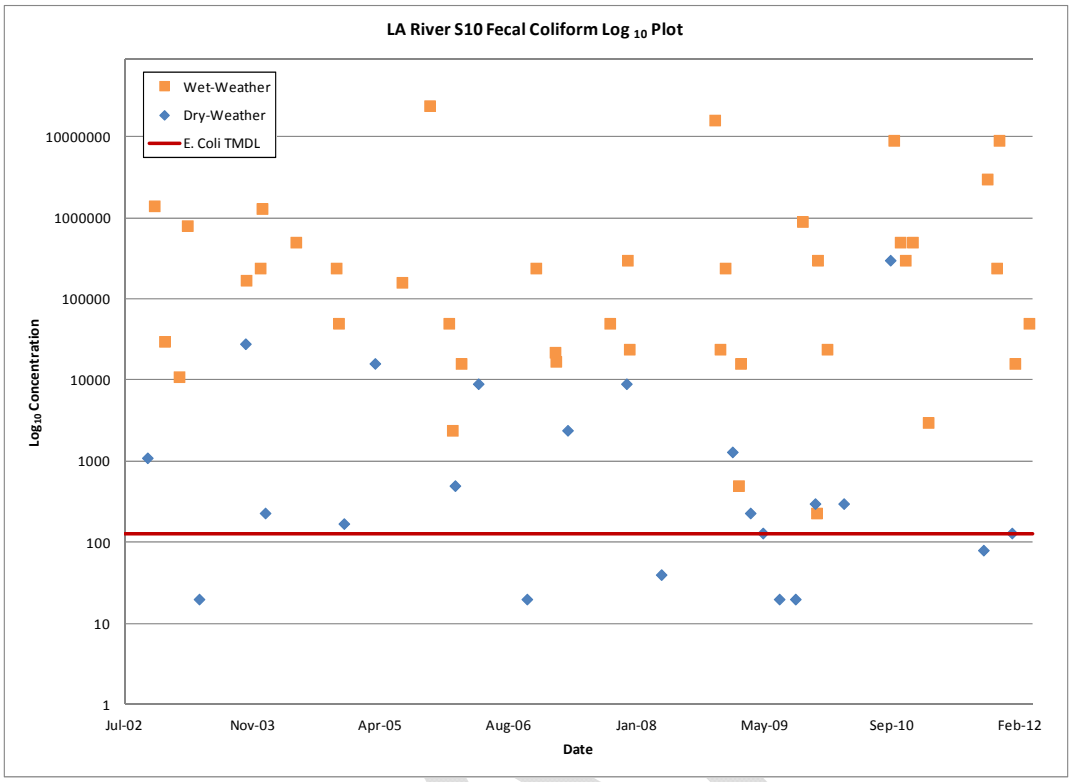

Figure D-12 LAR S10 Fecal Coliform Concentration Plot from 2002-2012 Storm Seasons

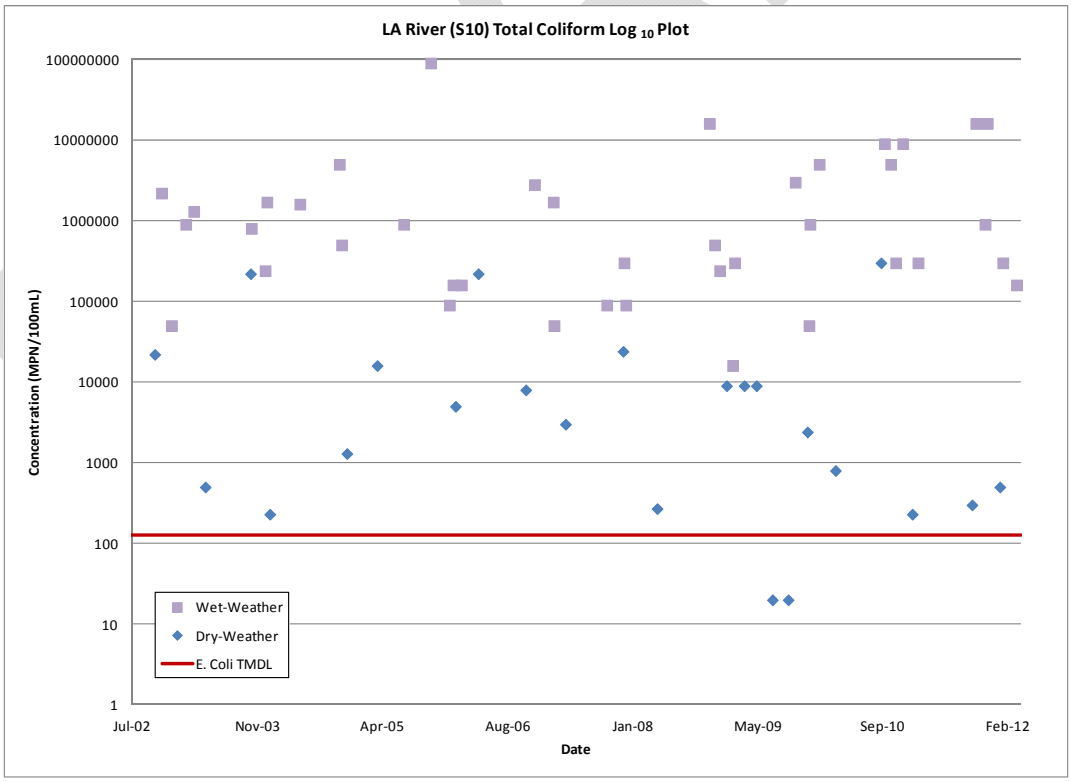

Figure D-13 Total Coliform Concentration Plot from 2002-2012 Storm Seasons

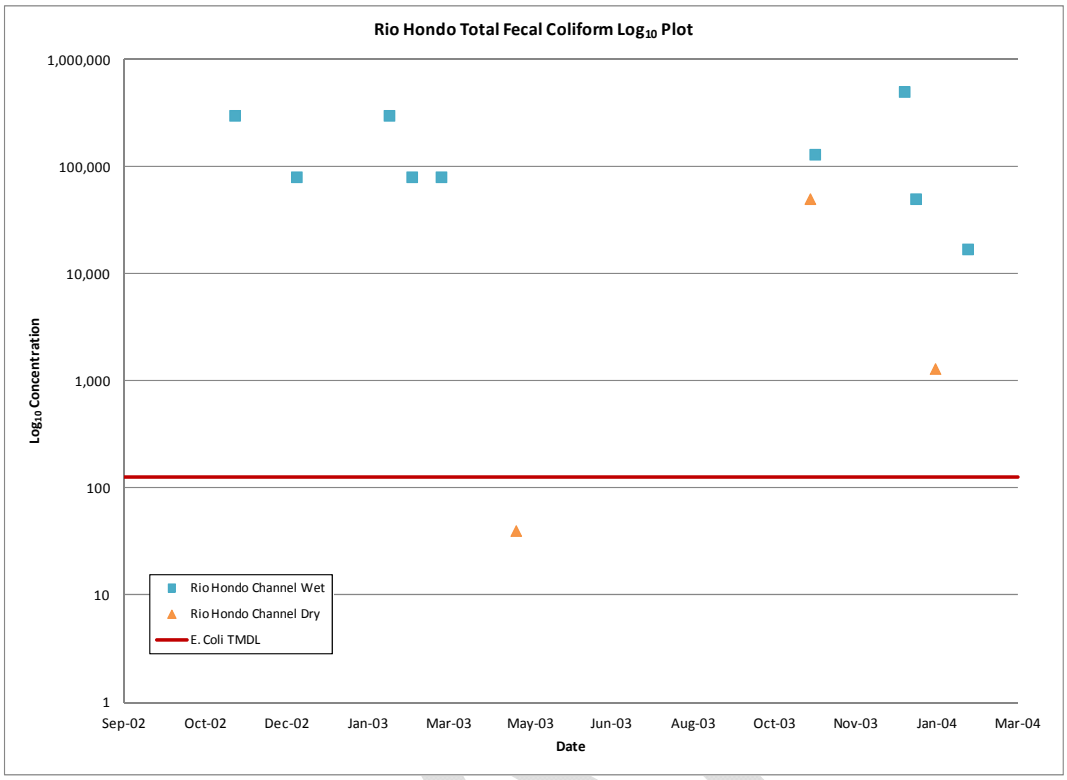

Figure D-14 Rio Hondo Fecal Coliform Concentration Plot form 2002-2012 Storm Seasons

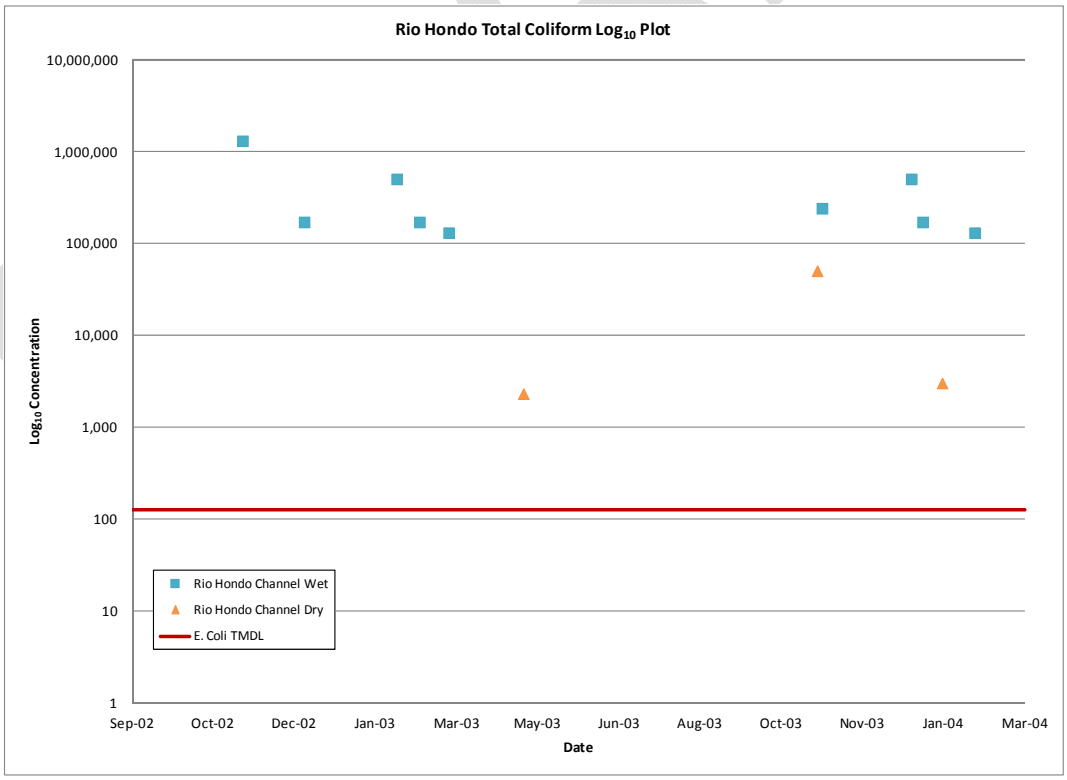

Figure D-15 Rio Hondo Total Coliform Concentration Plot from 2002-2012 Storm Seasons

Los Angeles River Metals TMDL CMP and Ambient Monitoring Submittal (2010-2011, 2011-2012)

At its July 17, 2006 meeting, the Los Angeles River Watershed Management Committee recommended formation of a Los Angeles River Metals TMDL Technical Committee (TC) and tasked the group with preparation of a Coordinated Monitoring Plan (CMP). The CMP includes both ambient (Tier I) and effectiveness monitoring (Tier II). The Tier I ambient monitoring program collects monthly samples at thirteen (13) locations shown in **Attachment 1, Figure 3**. Tier I monitoring site LAR1-8, LAR1-9, and LAR1-10 are located adjacent to the LAR UR2 WMA and the data from these sites would give the LAR UR2 WMA a better understanding of the distribution of metals concentrations in the adjacent WMAs.

Sampling results for CMP ambient monitoring for July 1, 2010 to June 30, 2011 (2010-2011) and July 1, 2011 through June 30, 2012 (2011-2012) was acquired. The 2011-2012 CMP results include submittal for both Ambient (Tier I) and Effectiveness (Tier II) Monitoring. Sampling sites LAR1-8, LAR1-9, and LAR1-10 were not sampled during wet-weather events. **Figure D-16** through **Figure D-19**, show that sampling sites LAR1-8 and LAR1-9 are in compliance of the LA Rivers metals TMDL daily maximums for Reach 2. However, sampling site LAR1-10, with a total of 10 sampling events, had a total of seven exceedances for total copper and three exceedances for total lead. LAR1-10 was compared to the metals TMDL daily maximum for the Rio Hondo.

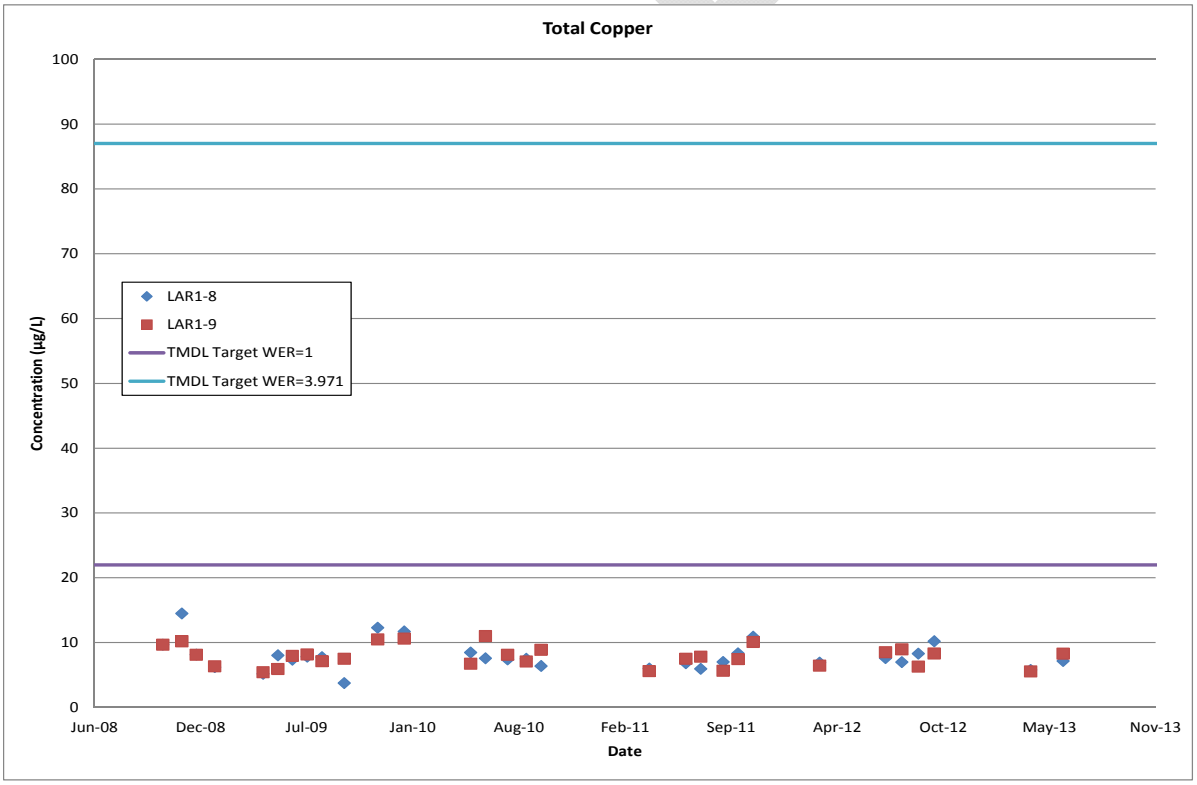

Figure D-16 Total Copper Concentration Comparison for LAR1-8 LAR1-9

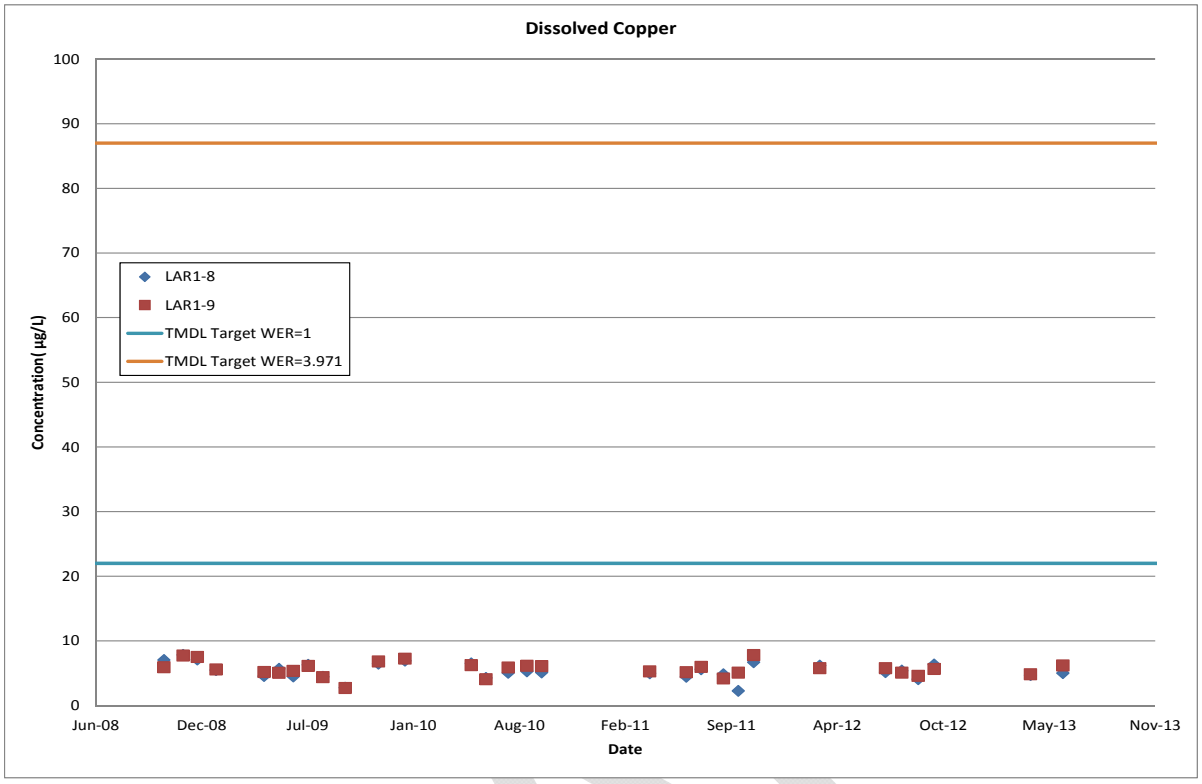

Figure D-17 Dissolved Copper Concentration Comparison for LAR1-8 LAR1-9

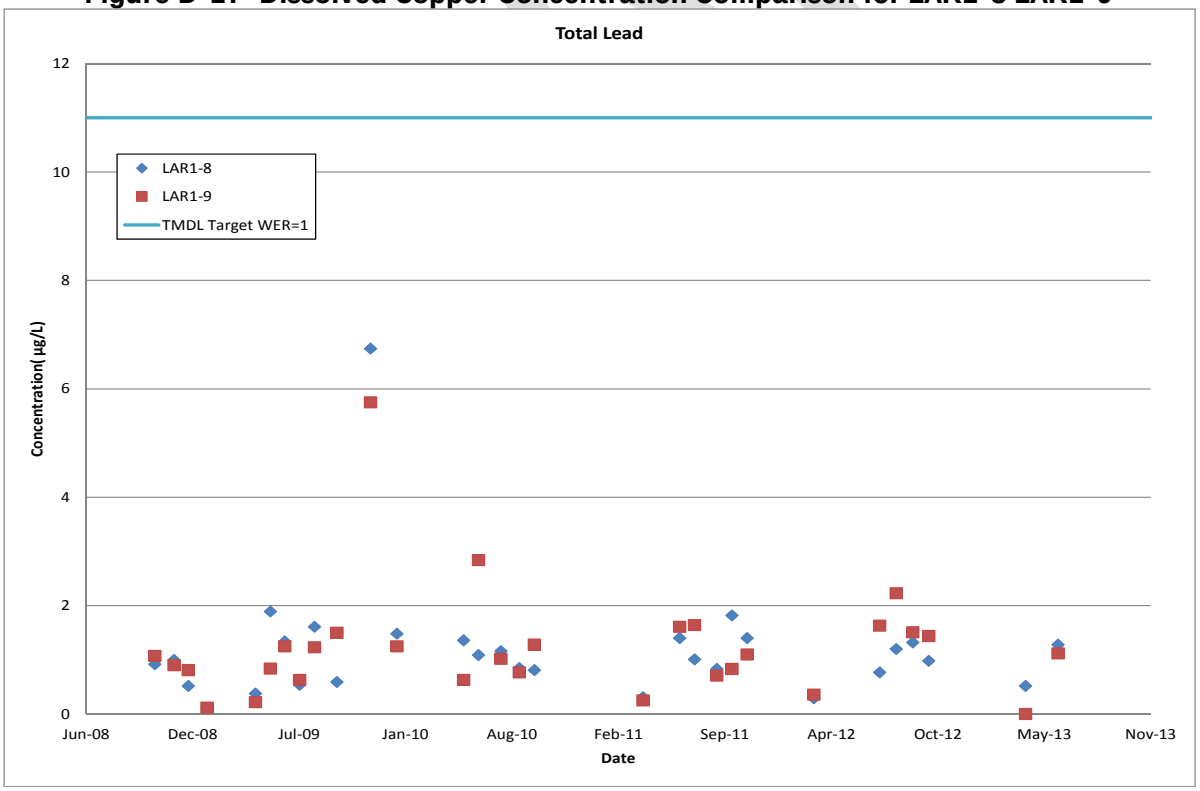

Figure D-18 Total Lead Concentration Comparison Plots for LAR1-8 and LAR1-9

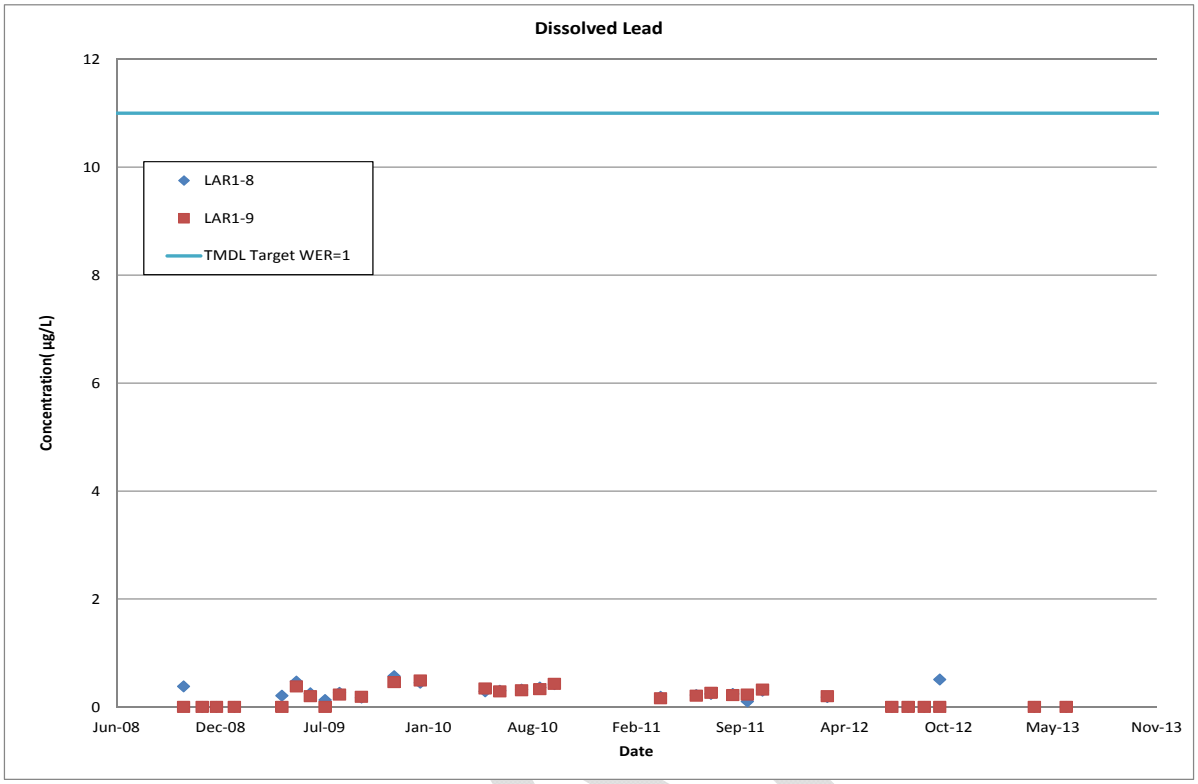

Figure D-19 Dissolved Lead Concentration Comparison Plots for LAR1-8 and LAR1-9

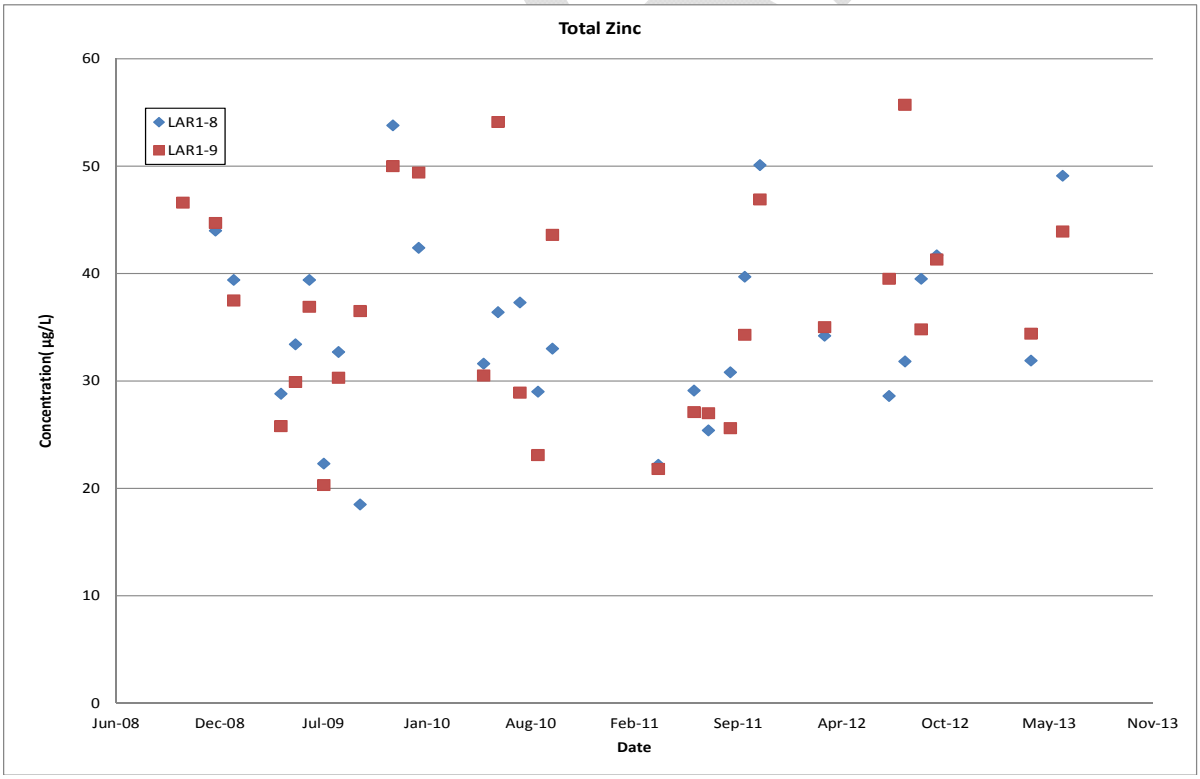

Figure D-20 Total Zinc Concentration Comparison Plots for LAR1-8 and LAR1-9

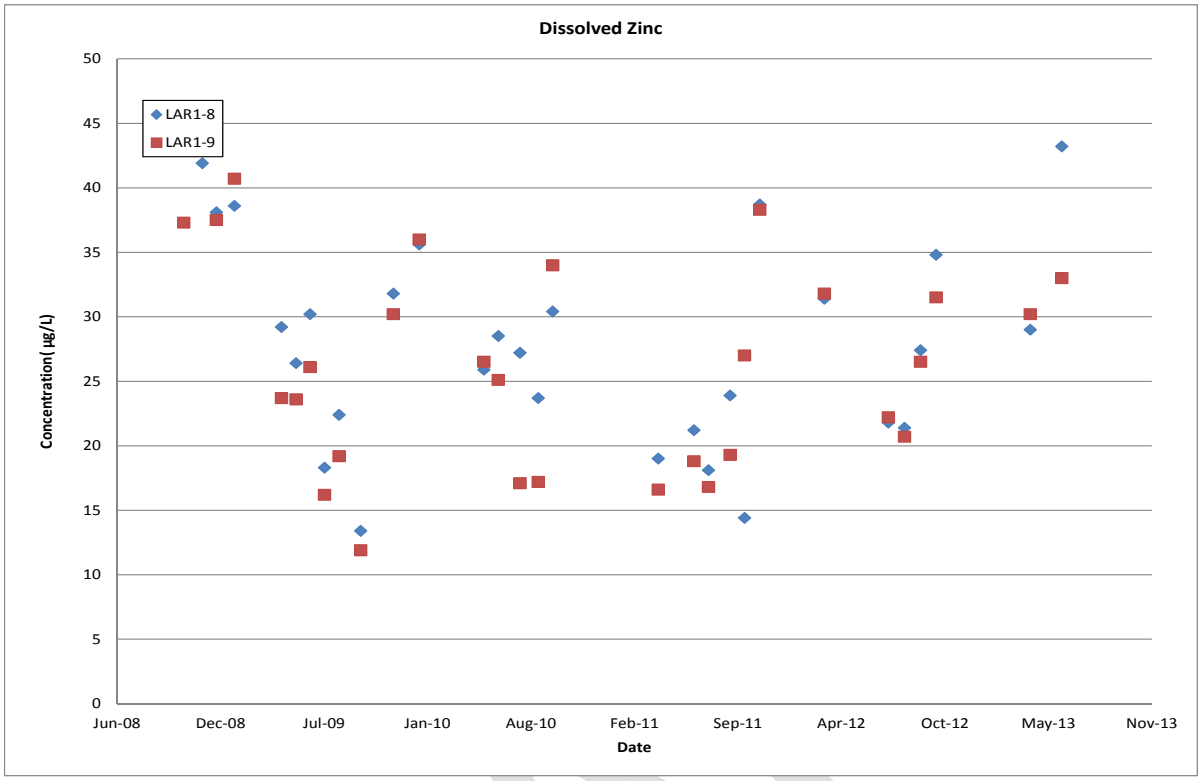

Figure D-21 Dissolved Zinc Concentration Comparison Plots for LAR1-8 and LAR1-9

Council for Watershed Health: Los Angeles River Watershed Monitoring

The Council for Watershed Health (CWH) coordinates the Los Angeles River Watershed Monitoring Program (LARWMP) to assess Watershed health based on five broad objectives: are stream conditions improving; are specific critical site conditions improving; do discharges meet WQOs; is it safe to swim; and are locally caught fish safe to eat. The CWH LARWMP collects water samples and performs bioassessments throughout the watershed using a stratified randomized sampling scheme that separates the watershed into natural, urban and mainstem portions from which random samples may be taken to facilitate comparisons. Sampling occurs annually, during the late spring or early summer, and the water is analyzed for general chemistry (nutrients), metals (total and dissolved), organophosphorus, and pyrethroid pesticides. The CWH provided for monitoring data from 2009 – 2012, which was reviewed for relevance. The most recent monitoring sites near the LAR UR2 WMA are LALT500, located at the LAR and Rio Hondo confluence, and LAR00830, which is located within Rio Hondo. As shown in **Attachment 1, Figure 4** both sites are located directly downstream of the LAR UR2 WMA. Although these sampling locations are not within the LAR UR2 WMA, the data provides perspective regarding water quality passing through the LAR UR2 WMA.

The CWH LARWMP found that one of four samples exceeded the MS4 Permit Total Kjeldahl Nitrogen (TKN) MAL of 4.59 mg/L. Based on the MS4 Permit MAL for Total Nitrate three exceedances, out of four samples, with a range of values from 2.02 to 5 mg/L were observed.

Site LALT500 observed one exceedance for total copper and two exceedances for total lead, among three samples. Sampling site LAR00830 had one exceedance for total copper from only one sample.

CREST Los Angeles River BSI Study Final Report

Consistent decreases in *E. coli* concentrations are observed where discharges of tertiary-treated, water reclamation plant (WRP) effluent overwhelm and dilute in stream flows. Generally single sample *E. coli* numbers at the base of reaches 2 and 4 are up to two orders of magnitude (100x) higher than water quality objectives (WQO). Identification of the sources responsible for these increases was a high priority of the BSI study, which was designed to characterize the bacteria inputs to the LA River, support the development of the Bacteria TMDL source assessment, and assist with prioritization of the types and locations of TMDL implementation actions. Bacteria concentrations in the LA River are typically at a minimum in reaches that are supplied with recycled water from municipal WRPs (Reach 4 - LAR @ Sepulveda Boulevard and Reach 2 - LAR @ Figueroa Street).

Monitoring for the BSI Study was conducted within LA River Reaches 2, 4, and 6, during a two-month period, when six "Snapshot" and six "WRP" events, consisting of more than 600 water samples, were collected for the BSI Study. Monitoring locations for Snapshot Events included 10 LA River sites, three tributary sites, and over 110 storm drain sites. **Attachment 1, Figure 5** shows the BSI Study WRP sampling locations while **Figure 6** and Figure 7 illustrate the storm drain sampling locations. The sampling logistics associated with the Snapshot Events were immense; each event was conducted over two days using four teams of field personnel. During WRP Events, untreated influent and tertiary-treated, disinfected effluent were collected from two WRPs: D.C. Tillman and City of LA-Glendale. All ~600 samples were analyzed for *E. coli*, *Enterococcus*, universal *Bacteroidales*, human-specific *Bacteroidales*, human adenovirus, flow rate, and seven other constituents. Along LAR R2 four receiving water sites were sampled and approximately 47 storm drain discharge sites were sampled, regularly or irregularly.

Therefore it appears that significant loads of bacteria are entering the water column in Reach 2, leading to concentration increases and WQO exceedances.

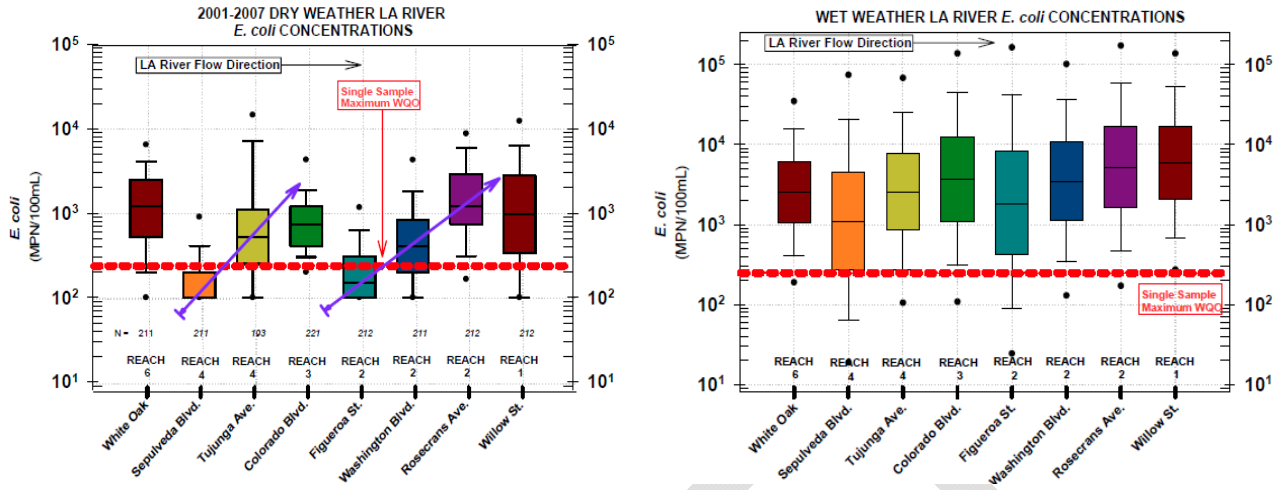

Figure D-22 Mainstem LA River E. coli Concentrations as Measured during Dry and Wet Weather by Status and Trends from 2001-2007

Status and Trends monitoring dataset collected from wet-weather shows that bacteria concentrations are about one order of magnitude higher during dry-weather, and there is less apparent spatial variation, as shown in **Figure D-23**. Median bacteria concentrations are well above the single sample maximum WQOs at all sites during wet-weather. Although the trend is not as strong as with dry-weather sampling, there is still a slight upward trend in the median concentrations in the downstream direction in both Reaches 2 and 4 during wet-weather. This may be an indication that the same source(s) may be influencing bacteria levels during both dry- and wet-weather. Overall, the relatively uniform spatial patterns suggest that strong, ubiquitous inputs of bacteria affect the LA River during wet-weather. Studies in other southern California watersheds have observed similarly strong and ubiquitous wet-weather bacteria sources, with > 99% of the annual bacteria loading from watersheds occurring during storm events.

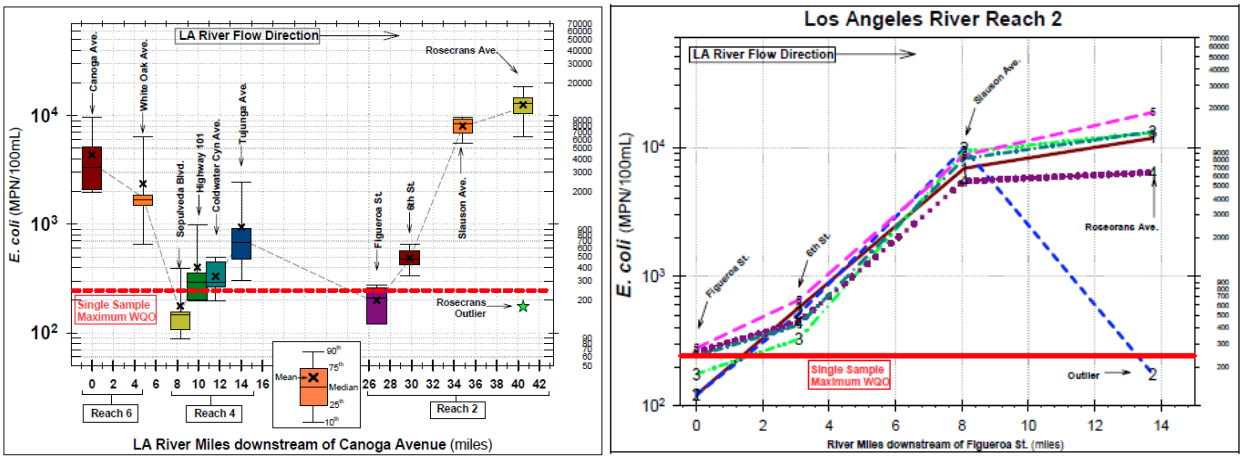

Figure D-23 Measured *E. coli* Concentration along the LA River - BSI Monitoring Study

E. coli

Along Reach 2, both *E. coli* concentrations and loading rates increased from upstream to downstream on each sampling date. The measured concentration and loading rate always increased from Figueroa Street to 6th Street to Slauson Avenue to Rosecrans Avenue. Respectively, the average concentrations

along Reach 2, from upstream to downstream, were 199, 488, 8030, and 10,522 MPN/100mL, and average loading rates were 415, 1,030, 18,642, and 27,174 x109 MPN/day. Overall, *E. coli* concentrations increased by approximately two orders of magnitude (100x) between the upstream and downstream ends of Reach 2. As such, apparently strong sources of *E. coli* are significantly affecting Reach 2, primarily along the lower section between 6th Street and Rosecrans Avenue. This large upstream-downstream increase, which was one of the motivations behind the BSI Study, was also apparent during other studies of Reach 2, including the Status and Trends monitoring.

Enterococcus

Along Reach 2, *Enterococcus* concentrations generally increased from upstream to downstream with average concentrations of 59, 299, 399, and 556 MPN/100mL at Figueroa Street, 6th Street, Slauson Avenue, and Rosecrans Avenue, respectively. However, the concentration differences among lower and upper Reach 2 sites for *Enterococcus* were not nearly as dramatic as for *E. coli*, with an approximately order of magnitude (10x) increase in *Enterococcus* concentration from Figueroa Street to Rosecrans Avenue, compared to two orders of magnitude increases (100x) for *E. coli*. Concentrations of *Enterococcus* were generally more variable when compared to *E. coli*, particularly at 6th Street (coefficient of variation [CV] of 0.24 for *E. coli* compared to 1.61 for *Enterococcus*) and Slauson Avenue (CV of 0.20 for *E. coli* compared to 0.95 for *Enterococcus*). The only statistically significant difference among Reach 2 sites was for Rosecrans Avenue versus Figueroa Street; the mean log *Enterococcus* concentrations and loading rates were significantly higher at Rosecrans Avenue (HSD test, α=0.05).

Bacteroidales

Along Reach 2, universal and human *Bacteroidales* concentrations apparently increased between Figueroa Street and 6th Street and then remained relatively constant between 6th Street and Rosecrans Avenue. All-event average concentrations slightly increased from 28 gc/mL to 32 gc/mL and the rate of detection indicate a source of human fecal inputs affecting LA River concentrations along this segment; human *Bacteroidales* was detected on 3 of 6 dates at Figueroa Street and 6 of 6 events at 6th Street. Average concentrations of universal *Bacteroidales* also increased from 2,282 to 3,973 gc/mL between Figueroa Street and 6th Street. *E. coli* concentrations increased along this segment, from generally in-compliance with WQOs at Figueroa Street to out-of-compliance at 6th Street. It is interesting to note that a majority of the homeless person activity observed along Reach 2 during the BSI Study was near the 6th Street bridge, where there were numerous encampments near storm drain outfalls. One of the most significant storm drain inputs of human *Bacteroidales* (storm drain site R2-A) was between these sites as well.

Further downstream, universal and human *Bacteroidales* concentrations remained relatively constant or decreased. Average human *Bacteroidales* concentrations at Slauson Avenue and Rosecrans Avenue were 75 gc/mL and 47 gc/mL, respectively. Average universal *Bacteroidales* concentrations at Slauson Avenue and Rosecrans Avenue were 4,668 gc/mL and 4,650 gc/mL, respectively. During 5 of 6 events and 3 of 6 events, respectively, universal and human *Bacteroidales* concentrations decreased between Slauson Avenue and Rosecrans Avenue. There were no significant differences among Reach 2 sites for universal or human *Bacteroidales*. *E. coli* concentrations increased dramatically along this segment. Thus, it appears that the apparent bacteria source(s) affecting lower Reach 2 are predominantly non-human, highly abundant in *E. coli*, and low in *Bacteroidales*.

Tributary Measurements

Three tributaries were monitored during this study; Arroyo Seco and Rio Hondo along Reach 2 and Tujunga Wash along Reach 4. Concentrations of *E. coli* in tributaries were generally above the WQO of 235 MPN/100mL. Rio Hondo was the only tributary that exhibited concentrations below the WQO 2 of 6 samples were <235 MPN/100mL, one of these was non-detect. However, the maximum tributary

E. coli (48,840 MPN/100mL) concentration was also measured at Rio Hondo, making it the tributary with the most variable *E. coli* concentrations and loading rates.

Concentrations of *Enterococcus* in tributaries ranged from 74 to 10,462 MPN/100mL and loading rates ranged from 0.09 to 584 x109 MPN/day. Compared to *E. coli*, the variability of *Enterococcus* in Arroyo Seco was greater, but lower for Rio Hondo. Median concentrations, from high to low, were Tujunga Wash > Arroyo Seco > Rio Hondo.

Concentrations of universal *Bacteroidales* ranged from 244 to 16,800 gc/mL while human *Bacteroidales* ranged from non-detect to 6150 gc/mL. The variability of universal *Bacteroidales* in tributaries was generally lower than *E. coli or Enterococcus*, and human *Bacteroidales* were detected in 10 of 18 samples. The Rio Hondo exhibited the highest median universal *Bacteroidales* and lowest median human *Bacteroidales* concentration, indicating non-human sources. Loading of human *Bacteroidales* in the Rio Hondo was two orders of magnitude lower than the Tujunga Wash and Arroyo Seco. For both 200-mL and 4-liter methodologies, human viruses were detected in 0 of 18 tributary samples.

Attachment 1

Additional Figures

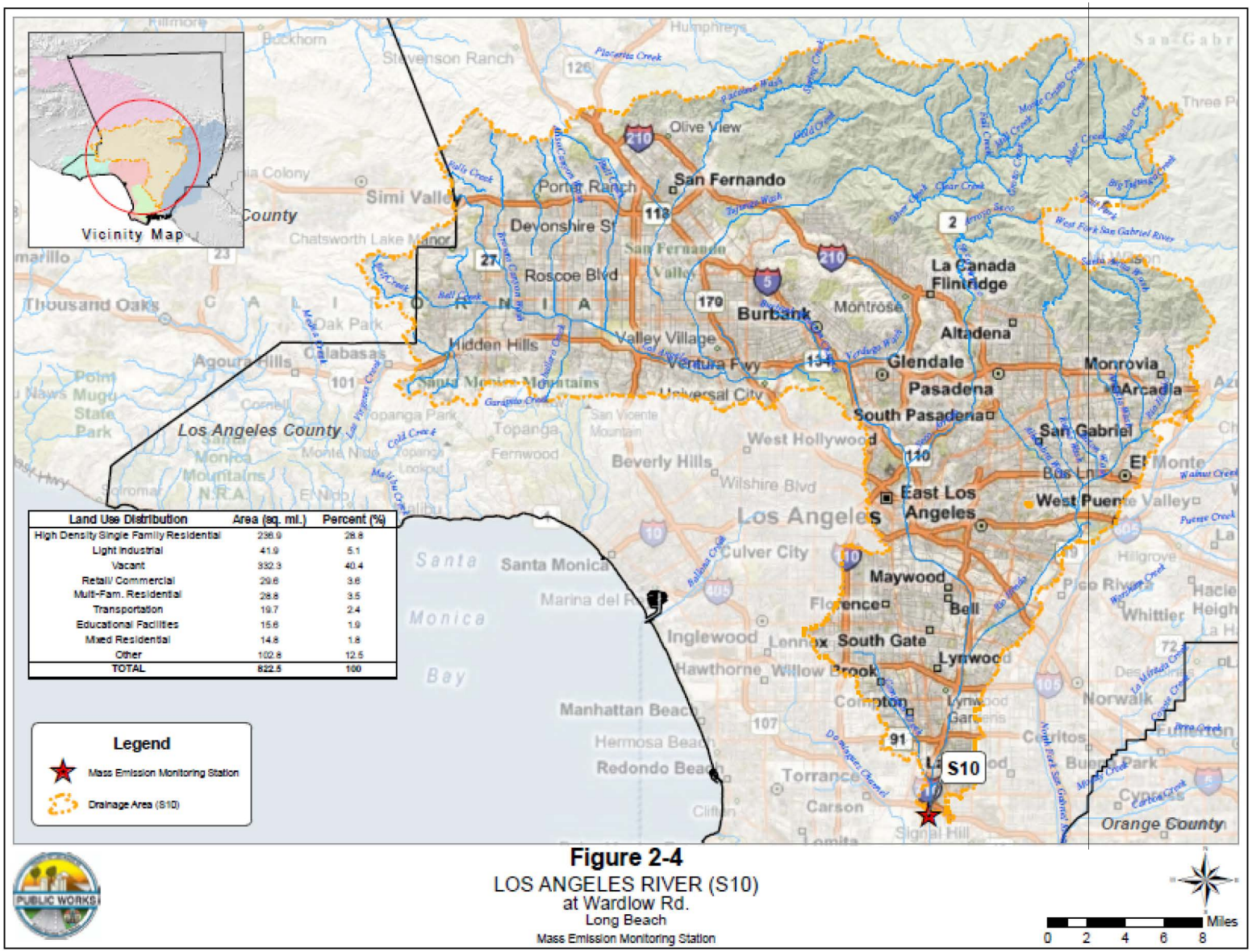

Figure 1 LA County Annual Stormwater Monitoring Reports (2002-2012) - LA River S10 Locations

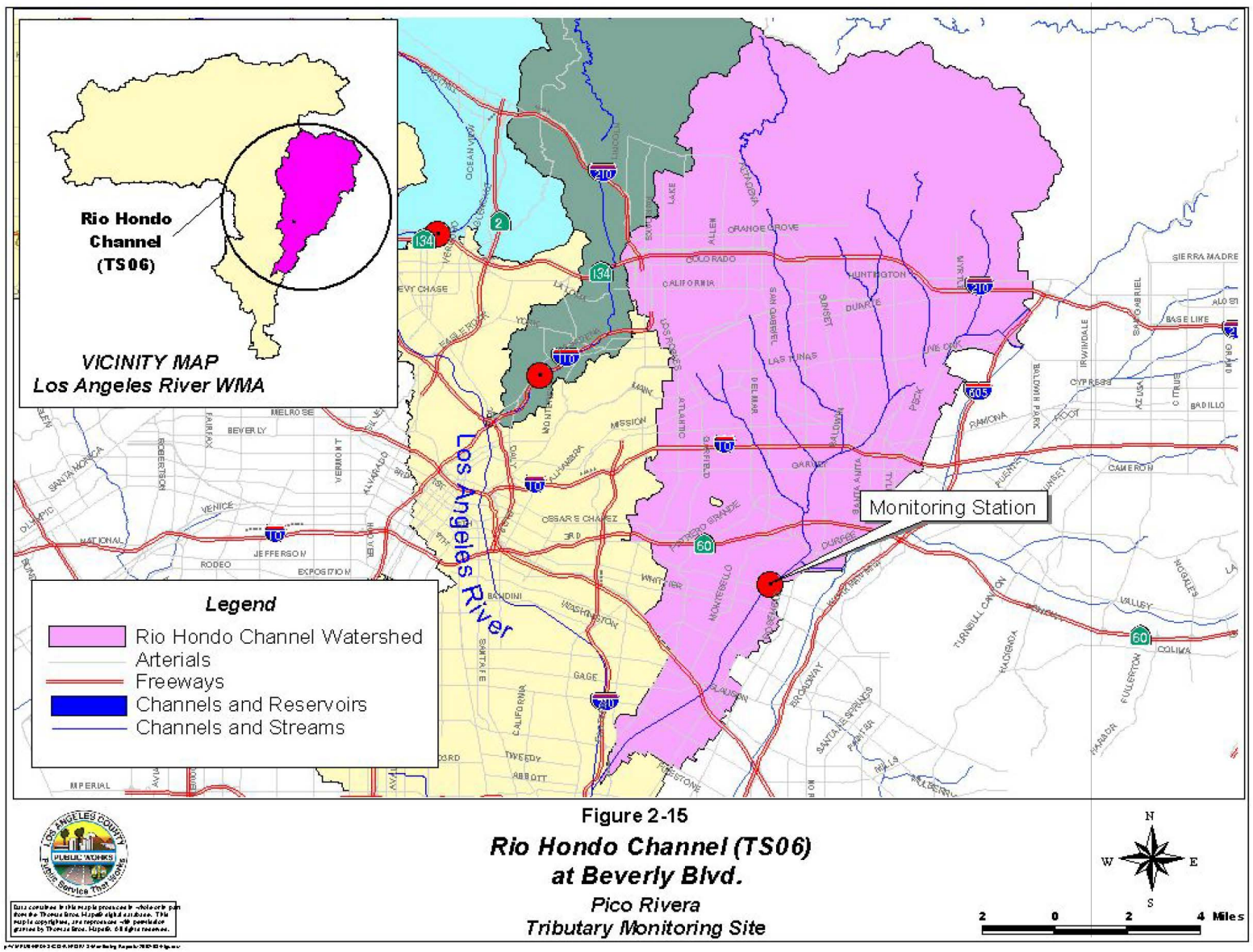

Figure 2 LA County Annual Stormwater Monitoring Reports (2002-2012) - Rio Hondo TS06 Location

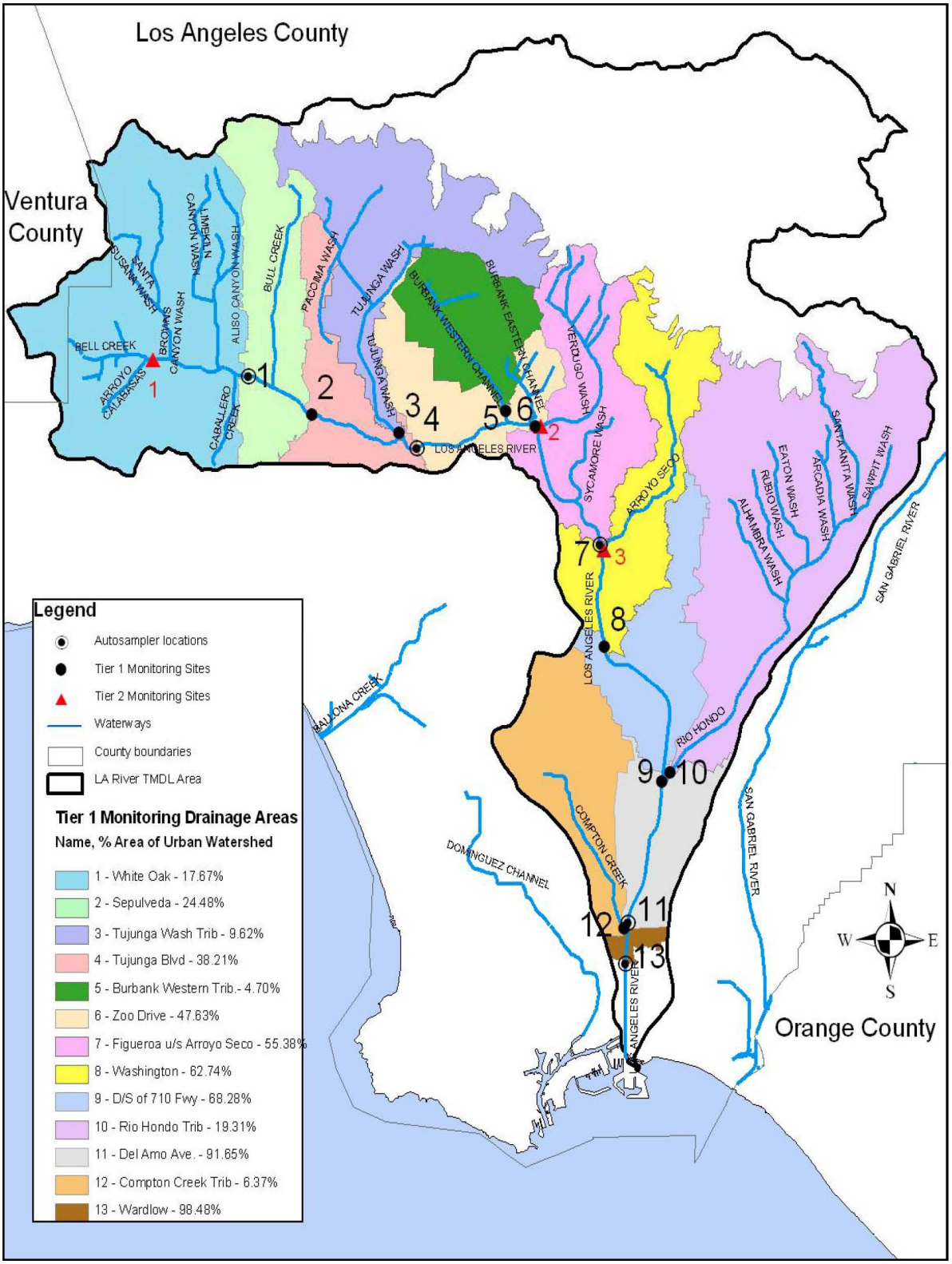

Figure 3 LA River Metals TMDL Coordinated Monitoring Plan Tier I and II Monitoring Locations

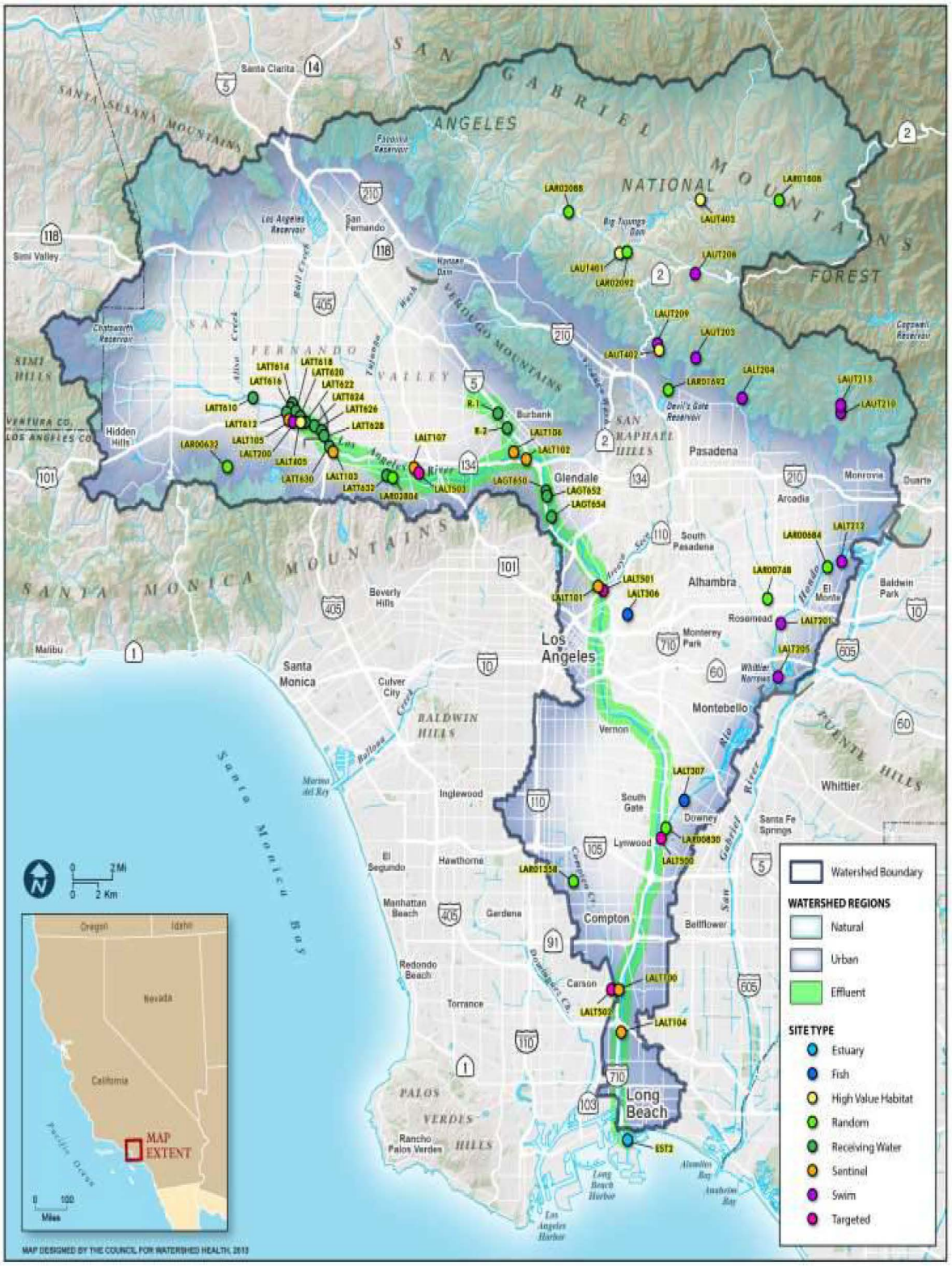

Figure 4 CWH Los Angeles River Watershed Monitoring Program (2011 Draft Report) LARWMP Sampling Locations 2011

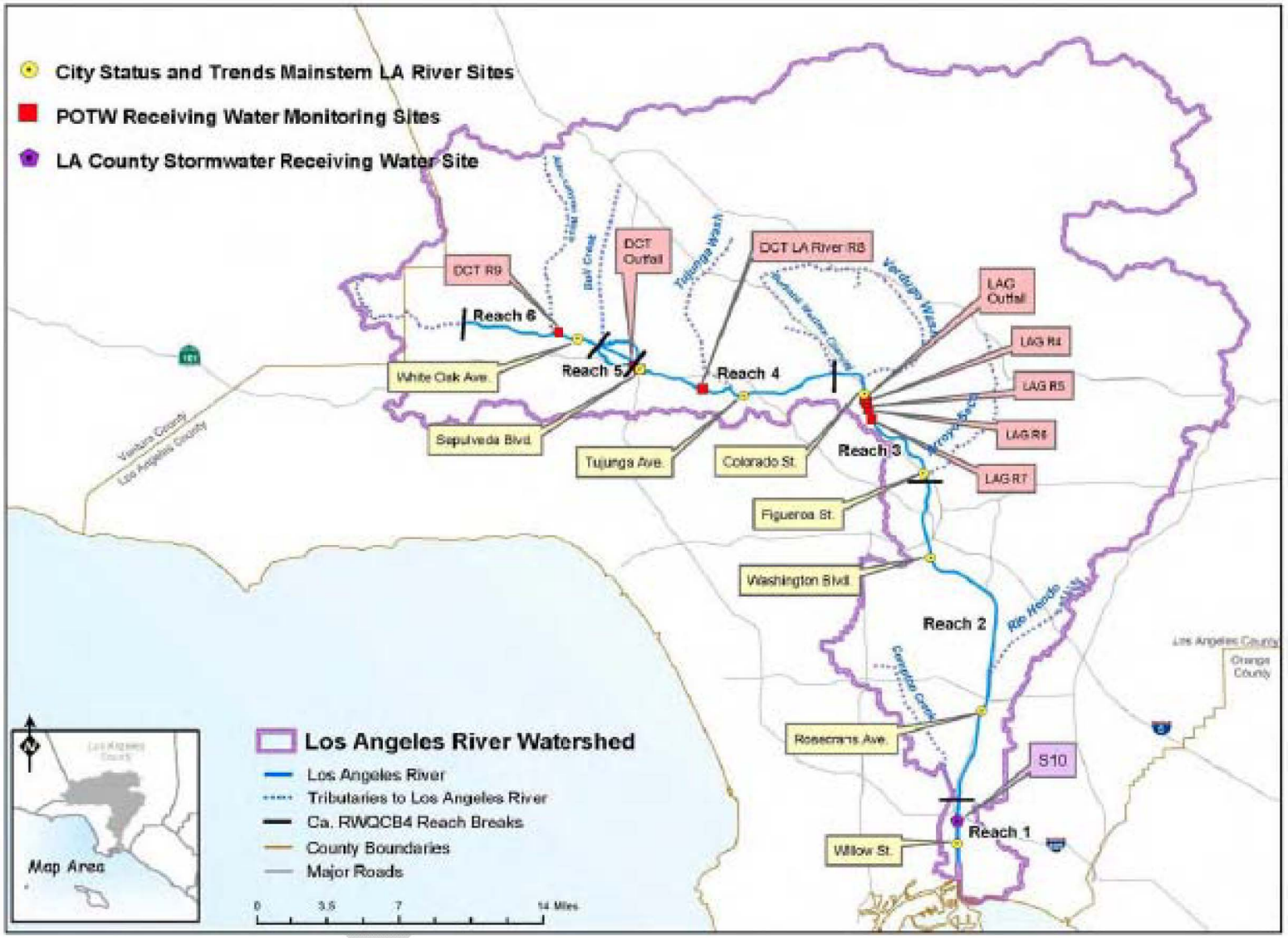

Figure 5 Crest LA River Bacteria Source Identification (BSI) Study Final Report - LA River Reaches and Long-Term Bacteria Monitoring Locations along the Mainstream LA River

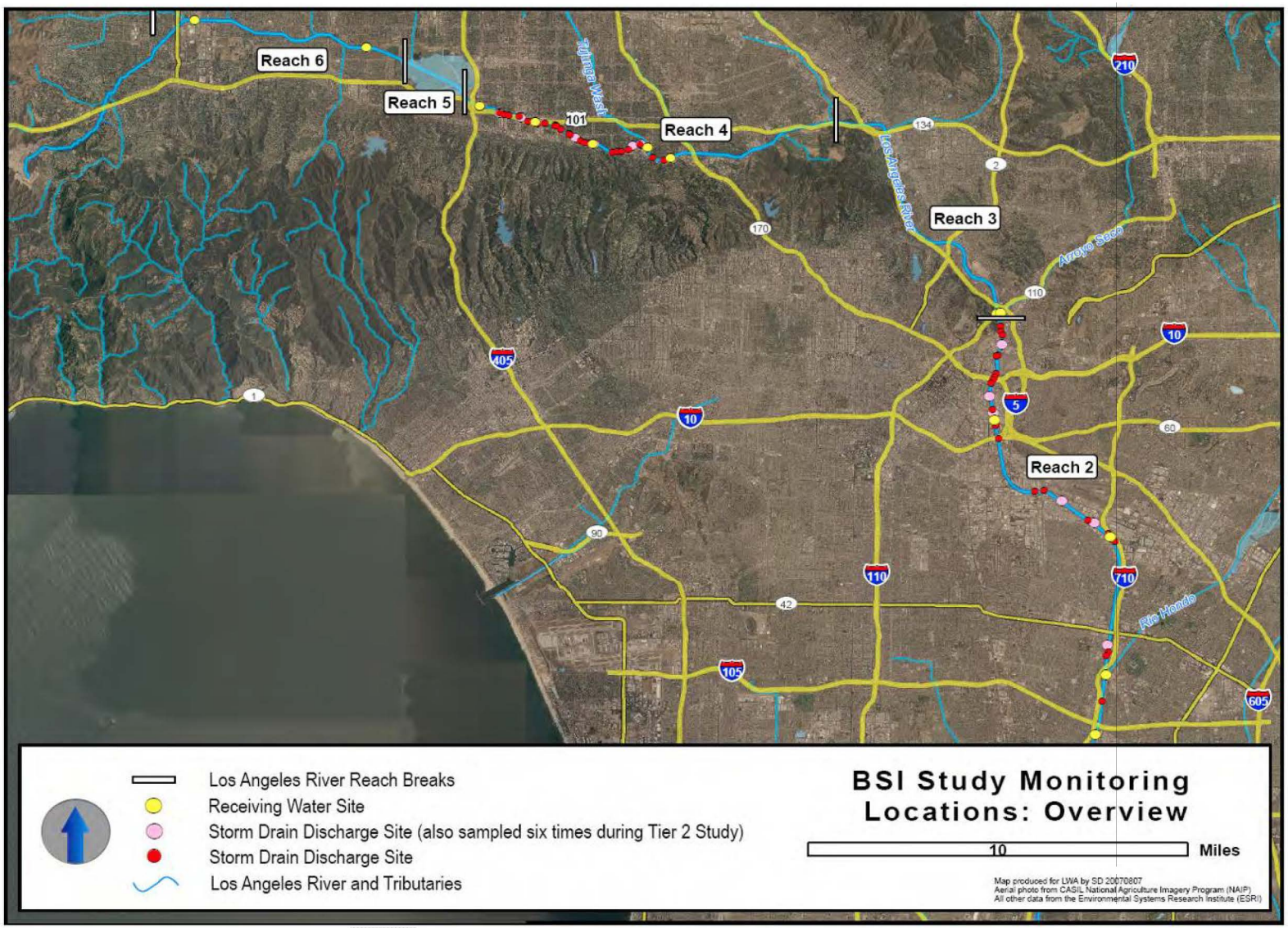

Figure 6 Crest LA River Bacteria Source Identification (BSI) Study Final Report - BSI Study Monitoring Locations

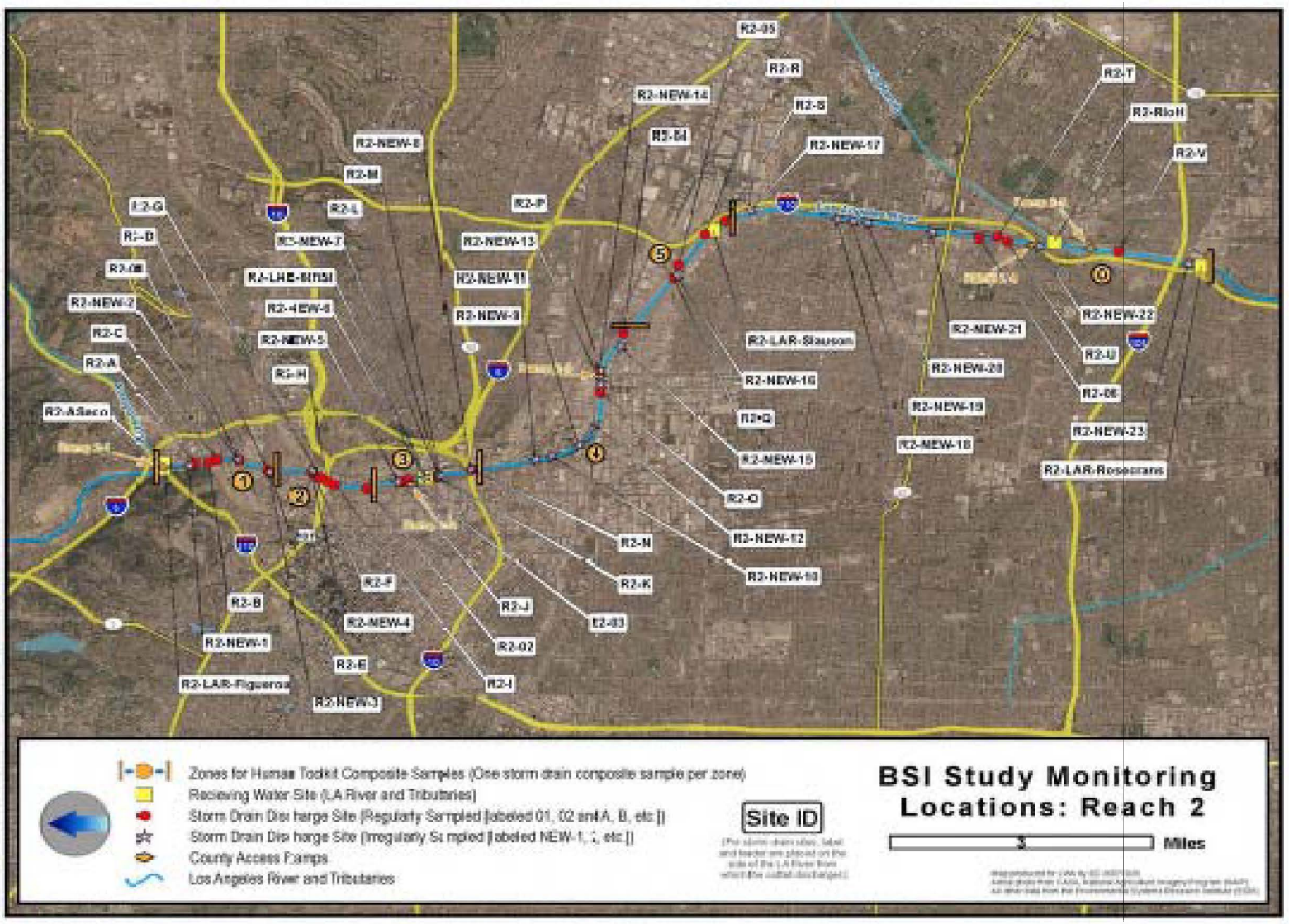

Figure 7 Crest LA River Bacteria Source Identification (BSI) Study Final Report - BSI Study Monitoring Locations: Reach 2

Appendix E

Summary of Existing MCMs/Institutional BMPs Implemented by LAR UR2 WMA

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
General Permit Requirements									
Prohibit non-stormwater discharges into the MS4 and watercourses	1	Feb-02	I	I	I		I	D	I
Comply with Receiving Water Limitations (RWL) requirements	2	Feb-02	I	I	I		I	I	I
Implement the Stormwater Quality Management Plan (SQMP)	3.A.1	Feb-02	I	I	I		I	I	I
Revise the SQMP	3.A.4	Aug-02	I	I	I		I	NA	I
Implement the most effective combination of BMPs for storm water/ urban runoff pollution	3.B	Feb-02	I	I	I		I	I	I
Prepare and submit Annual Budget Summary as part of the annual report to the RWQCB	3.E.5	Oct-02	I	I	I		I	I	I
Conduct quarterly watershed management committee meetings	3.F.3.g	Mar-02	I	NA	I		I	I	NA
Amend and adopt county ordinance to enforce all requirements of the permit, if needed	3.G.3	Nov-02	I	I	I		I	I	I
Submit to RWQCB a legal statement demonstrating the necessary legal authority	3.G.4	Dec-02	I	I	I		I	I	I
Prepare and submit to the RQWCB individual annual reports	1.B	Aug-02	I	I	I		NA	I	I
Special Provisions									
Public Information and Participation - Permit Requirements									
Implement public information and participation program	4.B	Feb-02	I	NA	I		I	I	I
Convene an Advisory Committee	4.B	ASAP	NA	NA	I		NA	NA	NA
Mark all storm drain inlets with a "no dumping" message	4.B.1.a	Feb-04	I	I	I		I	I	I
Maintain the (888) CLEAN-LA hotline	4.B.1.b	Feb-02	I	NA	I		I	NA	NA
Provide a list of reporting contacts to public through www.888CleanLA.com	4.B.1.b	Mar-02	I	NA	I		I	I	I
Media campaign for Storm Water Pollution Prevention (SPP)	4.B.1.c.1	Feb-02	I	I	I		I	I	I
Strategy to educate ethnic communities about SPP	4.B.1.c.2	Feb-03	NA	I	I		I	I	NA
Enhance outreach for proper disposal of cigarette butts	4.B.1.c.3	Feb-02	I	I	I		NA	I	NA
Conduct educational activities within jurisdiction and participate in county-wide events	4.B.1.c.4	Feb-02	I	I	I		I	I	I

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Organize Public Outreach Strategy meetings quarterly	4.B.1.c.5	May-02	I	NA	I		I	I	NA
Conduct Media Outreach to 35 million impressions per year	4.B.1.c.6	Annually	NA	NA	I		I	D	NA
Distribute SPP information to K-12 schools	4.B.1.c.7	-	I	I	I		I	I	I
Coordinate and provide contact information for public education activities	4.B.1.c.8	Apr-02	I	I	I		I	I	I
Strategy to measure effectiveness of in-school programs	4.B.c.9	May-02	NA	I	I		NA	NA	NA
Behavioral change assessment strategy towards SPP	4.B.c.10	May-02	NA	I	I		NA	NA	NA
Coordinate watershed-specific pollution prevention outreach programs	4.B.1.d	Feb-03	I	NA	I		I	I	I
Corporate Outreach Program to target retail gas outlets and restaurant chains	4.B.2.a	Feb-03	I	NA	I		I	I	NA
Coordinate an SPP program for a Business Assistance Program	4.B.2.b	Optional	NA	I	I		NA	NA	I
Industrial/Commercial Facilities Control - Permit Requirements									
Maintain a list of industrial/commercial facilities to be inspected	4.C.1	Aug-02	I	I	I		I	D	I
Inspect/visit industrial/commercial facilities appropriately	4.C.2	Aug-04	I	I	I		I	NA	I
Initiate progressive enforcement for facilities failing to implement BMP's	4.C.3	-	I	I	I		I	NA	I
Inspect restaurants twice during Permit cycle	4.C.2	Aug-04	I	I	I		I	I	I
Development Planning - Permit Requirements									
Implement development planning program that requires SUSMP	4.D	Feb-02	I	I	I		I	I	I
Develop peak flow control criteria	4.D.1	Feb-05	I	D	D		I	NA	I
Amend codes and ordinances to give legal effect to SUSMP changes in permit	4.D.2.a	Aug-02	I	I	I		I	I	I
Implement revised SUSMP	4.D.2.b	Sep-02	I	I	I		I	I	I
Submit an Environmentally Sensitive Areas (ESAs) Delineation map to RWQCB	4.D.2.d	Jun-02	NA	NA	NA		NA	NA	I
Implement SUSMP requirements for industrial/commercial projects >1 acre	4.D.5	Mar-03	I	I	I		I	I	I
Update CEQA guidelines to include specific storm water related issues	4.D.11	Feb-02	NA	I	I		NA	I	I

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Update General Plan to include specific storm water related issues	4.D.12	-	I	I	I		NA	**	I
Train targeted employees in permit requirements for Development Planning	4.D.13	Varies	I	I	I		I	NA	I
Develop and make SUSMP guidelines available to the developer	4.D.14.a	Feb-02	I	D	D		I	D	I
Develop a technical manual for the siting and design of BMPs	4.D.14.b	Feb-04	I	D	D		I	NA	I
Development Construction - Permit Requirements									
Implement a development construction program	4.E.1 &2	Feb-02	I	I	I		I	I	I
Require proof of a Waste Discharger ID (WDID) number prior to filing Notice of Intent (NOI)	4.E.2.c	Mar-03	I	I	I		I	I	I
Require proof of an NOI and a copy of SWPPP for a transfer of ownership	4.E.3	Feb-02	I	I	I		NA	D	I
Track the number of issued building and grading permits	4.E.3.c	Feb-02	I	I	I		I	I	I
Refer General Construction Activities Stormwater Permit (GCASP) violations to RWQCB	4.E.4	Feb-02	I	I	I		I	I	I
Train targeted employees in permit requirements for Development Construction	4.E.5	Varies	I	I	I		I	NA	I
Public Agency Activities - Permit Requirements									
Implement a sewer overflow prevention and response program	4.F.1	Aug-02	NA	I	I		I	I	I
Implement Development Planning Program at Permittee-owned construction projects	4.F.2.a	Aug-02	I	I	I		I	I	I
Implement Development Construction Program at Permittee-owned construction projects	4.F.2.b	Feb-02	I	I	I		I	I	I
Develop, if needed, and implement SWPPPs for field facilities	4.F.3	Feb-02	NA	I	D		NA	NA	I
Equip wash areas with a clarifier, pre-treatment device, or be connected to sewer	4.F.3.c	Feb-02	NA	I	I		NA	NA	I
Store pesticides/herbicides/fertilizers indoors and apply only in accordance	4.F.4.c&g	Feb-02	NA	I	I		NA	NA	I
Designate Catch Basins as priority A, B, or C	4.F.5.a	Feb-02	I	I	I		I	I	I
Ensure that Catch Basins (CBs) are cleaned appropriately	4.F.5.c.1	Feb-02	I	I	I		I	NA	I
Place temporary screens on CBs prior to special events or cleanout immediately afterwards	4.F.5.c.2	Feb-02	I	I	I		I	NA	I
Place and maintain trash receptacles at all transit stops with shelters	4.F.5.c.3	Feb-02	I	I	I		I	I	I

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Inspect the legibility of CB stencils and re-label within 180 days if necessary	4.F.5.d	-	I	I	I		I	I	I
Visually monitor and clean all open channels annually for debris	4.F.5.e.1	Feb-02	NA	I	I		NA	NA	NA
Designate curbed streets as priority A, B, or C based on liter accumulation	4.F.6.a.b	Feb-02	I	I	I		I	I	I
Recover saw cutting waste and dispose it offsite	4.F.6.c	Feb-02	I	I	I		I	I	I
Train targeted employees in permit requirements for Public Agency Activities	4.F.6.d	Varies	I	I	I		I	NA	I
Inspect and, if needed, clean Permittee owned parking lots twice per month, but at least once	4.F.7	Feb-02	I	I	I		I	NA	I
Conduct a dry weather diversion study and create a priority list of drains for diversion	4.F.10	Jul-03	NA	I	D		**	I	I
Illicit Connections / Illicit Discharges - Permit Requirements									
Develop an Implementation Program which specifies how revisions of the IC/ID SQMP are implemented	4.G.1.a	-	I	D	D		I	I	I
Create a database for permitted storm drain connections and map IC/ID	4.G.1.b	Feb-03	I	I	I		NA	NA	I
Perform IC/ID Trend Analysis	4.G.1.b	Feb-03	NA	I	I		**	NA	I
Train targeted employees in the permit requirements for IC/ID	4.G.1.c	Varies	I	I	I		I	NA	I
Field screen the storm drain system for illicit connections in open channels	4.G.2.a	Feb-03	NA	I	D		NA	NA	NA
Field screen the storm drain system for illicit connections in underground storm drains in priority areas	4.G.2.a	Feb-05	I	I	D		I	NA	I
Field screen the storm drain system for illicit connections in underground s/d larger than 36 inch diameter	4.G.2.a	Dec-06	I	I	D		I	NA	I
Review all permitted connections to the storm drain system for compliance	4.G.2.a	Dec-06	NA	NA	I		NA	NA	I
Investigate illicit connections 21 days after discovery	4.G.2.b	-	I	I	I		I	I	I
Terminate illicit connections 180 days after confirmation	4.G.2.b	-	I	I	I		I	I	I
Respond to illicit discharges within one business day of discovery	4.G.3.a	-	I	I	I		I	I	I
Investigate illicit discharges as soon as practicable	4.G.3.a	-	I	I	I		I	I	I

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**

NA - Not Applicable or Not Completed
D - Developed
I - Program Implemented/Completed
** - Not Scheduled

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
General Permit Requirements									
Prohibit non-stormwater discharges into the MS4 and watercourses	1	Feb-02		I	I			I	I
Comply with Receiving Water Limitations (RWL) requirements	2	Feb-02		I	I			I	I
Implement the Stormwater Quality Management Plan (SQMP)	3.A.1	Feb-02		I	I			I	I
Revise the SQMP	3.A.4	Aug-02		I	I			**	I
Implement the most effective combination of BMPs for storm water/ urban runoff pollution	3.B	Feb-02		I	I			I	I
Prepare and submit Annual Budget Summary as part of the annual report to the RWQCB	3.E.5	Oct-02		I	I			I	I
Conduct quarterly watershed management committee meetings	3.F.3.g	Mar-02		I	I			NA	I
Amend and adopt county ordinance to enforce all requirements of the permit, if needed	3.G.3	Nov-02		I	I			NA	I
Submit to RWQCB a legal statement demonstrating the necessary legal authority	3.G.4	Dec-02		I	I			I	I
Prepare and submit to the RQWCB individual annual reports	1.B	Aug-02		I	I			I	I
Special Provisions									
Public Information and Participation - Permit Requirements									
Implement public information and participation program	4.B	Feb-02		I	I			I	I
Convene an Advisory Committee	4.B	ASAP		I	I			NA	I
Mark all storm drain inlets with a "no dumping" message	4.B.1.a	Feb-04		I	I			I	I
Maintain the (888) CLEAN-LA hotline	4.B.1.b	Feb-02		I	I			NA	NA
Provide a list of reporting contacts to public through www.888CleanLA.com	4.B.1.b	Mar-02		I	I			I	I
Media campaign for Storm Water Pollution Prevention (SPP)	4.B.1.c.1	Feb-02		I	I			I	I
Strategy to educate ethnic communities about SPP	4.B.1.c.2	Feb-03		I	I			I	NA
Enhance outreach for proper disposal of cigarette butts	4.B.1.c.3	Feb-02		I	I			I	NA
Conduct educational activities within jurisdiction and participate in county-wide events	4.B.1.c.4	Feb-02		I	I			I	NA

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Organize Public Outreach Strategy meetings quarterly	4.B.1.c.5	May-02		I	I			NA	NA
Conduct Media Outreach to 35 million impressions per year	4.B.1.c.6	Annually		D	I			NA	NA
Distribute SPP information to K-12 schools	4.B.1.c.7	-		NA	I			I	I
Coordinate and provide contact information for public education activities	4.B.1.c.8	Apr-02		I	I			I	NA
Strategy to measure effectiveness of in-school programs	4.B.c.9	May-02		NA	I			NA	NA
Behavioral change assessment strategy towards SPP	4.B.c.10	May-02		NA	I			NA	NA
Coordinate watershed-specific pollution prevention outreach programs	4.B.1.d	Feb-03		I	I			I	NA
Corporate Outreach Program to target retail gas outlets and restaurant chains	4.B.2.a	Feb-03		NA	I			NA	NA
Coordinate an SPP program for a Business Assistance Program	4.B.2.b	Optional		**	I			NA	I
Industrial/Commercial Facilities Control - Permit Requirements									
Maintain a list of industrial/commercial facilities to be inspected	4.C.1	Aug-02		I	I			I	I
Inspect/visit industrial/commercial facilities appropriately	4.C.2	Aug-04		I	I			I	I
Initiate progressive enforcement for facilities failing to implement BMP's	4.C.3	-		I	I			I	I
Inspect restaurants twice during Permit cycle	4.C.2	Aug-04		D	I			I	I
Development Planning - Permit Requirements									
Implement development planning program that requires SUSMP	4.D	Feb-02		I	I			I	I
Develop peak flow control criteria	4.D.1	Feb-05		I	D			NA	NA
Amend codes and ordinances to give legal effect to SUSMP changes in permit	4.D.2.a	Aug-02		I	I			I	I
Implement revised SUSMP	4.D.2.b	Sep-02		I	I			I	I
Submit an Environmentally Sensitive Areas (ESAs) Delineation map to RWQCB	4.D.2.d	Jun-02		NA	NA			I	NA
Implement SUSMP requirements for industrial/commercial projects >1 acre	4.D.5	Mar-03		I	I			I	I
Update CEQA guidelines to include specific storm water related issues	4.D.11	Feb-02		I	I			I	I

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Update General Plan to include specific storm water related issues	4.D.12	-		I	I			**	I
Train targeted employees in permit requirements for Development Planning	4.D.13	Varies		I	I			NA	I
Develop and make SUSMP guidelines available to the developer	4.D.14.a	Feb-02		I	D			I	I
Develop a technical manual for the siting and design of BMPs	4.D.14.b	Feb-04		I	D			NA	NA
Development Construction - Permit Requirements									
Implement a development construction program	4.E.1 &2	Feb-02		I	I			I	I
Require proof of a Waste Discharger ID (WDID) number prior to filing Notice of Intent (NOI)	4.E.2.c	Mar-03		I	I			I	I
Require proof of an NOI and a copy of SWPPP for a transfer of ownership	4.E.3	Feb-02		I	I			I	I
Track the number of issued building and grading permits	4.E.3.c	Feb-02		I	I			I	D
Refer General Construction Activities Stormwater Permit (GCASP) violations to RWQCB	4.E.4	Feb-02		I	I			I	I
Train targeted employees in permit requirements for Development Construction	4.E.5	Varies		I	I			NA	I
Public Agency Activities - Permit Requirements									
Implement a sewer overflow prevention and response program	4.F.1	Aug-02		I	I			I	I
Implement Development Planning Program at Permittee-owned construction projects	4.F.2.a	Aug-02		I	I			I	I
Implement Development Construction Program at Permittee-owned construction projects	4.F.2.b	Feb-02		I	I			I	I
Develop, if needed, and implement SWPPPs for field facilities	4.F.3	Feb-02		I	D			NA	I
Equip wash areas with a clarifier, pre-treatment device, or be connected to sewer	4.F.3.c	Feb-02		I	I			NA	I
Store pesticides/herbicides/fertilizers indoors and apply only in accordance	4.F.4.c&g	Feb-02		I	I			NA	I
Designate Catch Basins as priority A, B, or C	4.F.5.a	Feb-02		I	I			I	I
Ensure that Catch Basins (CBs) are cleaned appropriately	4.F.5.c.1	Feb-02		I	I			I	I
Place temporary screens on CBs prior to special events or cleanout immediately afterwards	4.F.5.c.2	Feb-02		I	I			I	I
Place and maintain trash receptacles at all transit stops with shelters	4.F.5.c.3	Feb-02		I	I			I	I

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Inspect the legibility of CB stencils and re-label within 180 days if necessary	4.F.5.d	-		I	I			I	I
Visually monitor and clean all open channels annually for debris	4.F.5.e.1	Feb-02		I	I			NA	I
Designate curbed streets as priority A, B, or C based on liter accumulation	4.F.6.a.b	Feb-02		I	I			I	I
Recover saw cutting waste and dispose it offsite	4.F.6.c	Feb-02		I	I			I	I
Train targeted employees in permit requirements for Public Agency Activities	4.F.6.d	Varies		I	I			NA	I
Inspect and, if needed, clean Permittee owned parking lots twice per month, but at least once	4.F.7	Feb-02		I	I			I	I
Conduct a dry weather diversion study and create a priority list of drains for diversion	4.F.10	Jul-03		I	D			I	NA
Illicit Connections / Illicit Discharges - Permit Requirements									
Develop an Implementation Program which specifies how revisions of the IC/ID SQMP are implemented	4.G.1.a	-		I	D			I	I
Create a database for permitted storm drain connections and map IC/ID	4.G.1.b	Feb-03		I	I			NA	I
Perform IC/ID Trend Analysis	4.G.1.b	Feb-03		I	I			NA	I
Train targeted employees in the permit requirements for IC/ID	4.G.1.c	Varies		I	I			NA	I
Field screen the storm drain system for illicit connections in open channels	4.G.2.a	Feb-03		NA	I			NA	I
Field screen the storm drain system for illicit connections in underground storm drains in priority areas	4.G.2.a	Feb-05		I	D			I	I
Field screen the storm drain system for illicit connections in underground s/d larger than 36 inch diameter	4.G.2.a	Dec-06		I	D			I	I
Review all permitted connections to the storm drain system for compliance	4.G.2.a	Dec-06		I	I			I	I
Investigate illicit connections 21 days after discovery	4.G.2.b	-		D	I			I	I
Terminate illicit connections 180 days after confirmation	4.G.2.b	-		I	I			I	I
Respond to illicit discharges within one business day of discovery	4.G.3.a	-		D	I			I	I
Investigate illicit discharges as soon as practicable	4.G.3.a	-		I	I			I	I

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**

NA - Not Applicable or Completed
D - Developed
I - Program Implemented/Completed
** - Not Scheduled

Appendix F

Regional and Distributed BMP Comparison Matrix

Table F-1 Regional BMP Comparison Matrix

Ranking Factor	Score (1=worst, 5=best)						
	Infiltration Basins	Detention Basins	Detention with SSF Wetlands	Constructed SF Wetlands	Treatment Facility	Hydrodynamic Devices	Channel Naturalization
Cost							
Capital	4	4	2	4	1	3	4
Operations and Maintenance	1	3	2	2	2	4	3
Effectiveness							
Effluent Concentration							
Trash	5	4	5	5	5	4	2
Nutrients	5	2	5	5	5	2	5
Bacteria	5	2	4	3	5	2	1
Metals	5	3	5	5	5	3	4
Sediment	5	3	5	5	5	4	4
"Other" Pollutant	5	3	4	4	4	3	3
Volume Mitigation	5	3	3	3	2	1	2
Reliability	2	3	3	3	5	3	3
Implementation							
Implementation Issues							
Engineering Feasibility	Based on Site-Specific Evaluation						
Ownership/ROW							
Environmental Clearance	4	4	4	4	2	4	2
Permitting Water Rights	5	5	5	2	2	2	2
Public Safety	3	3	3	3	4	4	3
Environment/Other Factors							
Other Potential Benefits	5	4	4	4	1	1	5
Other Potential Impacts	3	2	3	2	3	3	3

SSF = Subsurface Flow
SF = Surface Flow

Table F-2 Distributed BMP Comparison Matrix

Ranking Factors	Score (1=worst, 5=best)							
	Cisterns	Bioretention	Vegetated Swales	Green Roofs	Porous/ Permeable Pavements	GSRDs	Media Filters	Catch Basin Inserts
Cost								
Capital	3	2	4	1	2	2	3	5
Operations and Maintenance	5	3	4	4	5	3	4	4
Effectiveness								
Effluent Concentration								
Trash	5	5	4	4	5	4	5	4
Nutrients	5	5	4	4	5	1	3	1
Bacteria	5	5	1	4	5	1	3	1
Metals	5	5	4	4	5	2	4	1
Sediment	5	5	3	4	5	3	5	2
"Other" Pollutant	4	4	4	4	4	1	4	1
Volume Mitigation	3	4	4	4	4	1	1	1
Reliability	3	4	4	3	2	3	3	3
Implementation								
Implementation Issues								
Engineering Feasibility	Based on Site-Specific Evaluation							
Ownership/ROW								
Environmental Clearance	5	5	5	5	5	5	5	5
Permitting Water Rights	5	5	5	5	5	5	5	5
Public Safety	4	3	3	4	3	4	4	4
Environment/Other Factors								
Other Potential Benefits	5	4	4	4	3	1	1	1
Other Potential Impacts	2	3	3	3	3	3	3	3

GSRDs = Gross Solid Removal Devices

Appendix G

BMP Installation Summary

Table G-1 LAR UR2 WMA BMPs Installed by Year									
BMP Type	**Year Installed**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**	**Total**
Catch Basin Screens									
Automatic Retracting Screens(ARS)	2011-2012	137	154	321	105	136	116	3	972
	2010-2011							10	10
	2009-2010					148			148
United Storm Water Clean Screens III	2010-2011			403			152		555
	Subtotal	137	154	724	105	284	268	13	1,685
BioClean Flume Filter	2011-2012							3	3
	2010-2011							7	7
	2006-2007							2	2
	Subtotal							12	12
BioClean Grate Inlet Skimmer Box	2011-2012							8	8
	2005-2006							1	1
	Subtotal							9	9
Clean Screen Catch Basin Inserts	2010-2011	163	101	288		450			1,002
	2005-2006			29					29
	2004-2005		5						5
	2003-2004		50						50
Full Capture Catch Basin Inserts	2010-2011		146						146
Connector Pipe Screens (CPS)	2011-2012	238	243	545	130	442	151		1,749
	2010-2011							631	631
	Subtotal	401	545	862	130	892		631	3,461

Table G-1 LAR UR2 WMA BMPs Installed by Year

BMP Type	Year Installed	Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon	Total
Catch Basin Inserts/Filters									
Fossil Filter Catch Basin Inserts	2011-2012						4		4
	2010-2011					2			2
	2009-2010	2				2			4
	2008-2009			1					1
	2007-2008	2							2
	2006-2007	2		3					5
	2005-2006			4	4			22	30
	2004-2005			1					1
	Subtotal	6		9	4	4	4	22	49
Kristar Flo Guard Inserts	2008-2009							3	3
	2007-2008							11	11
	2006-2007							11	11
	Subtotal							25	25
Bioclean Catch Basin Inserts	2010-2011							16	16
	2007-2008							7	7
	Subtotal							23	23
Suntree Technologies	2008-2009							2	2
	2007-2008							2	2
	Subtotal							4	4
Catch Basin Insert - Watershed Only	2004-2005							7	7
Catch Basin Inserts	2010-2011			1					1
Kristar Panel	2007-2008							6	6
Filter Insert	2011-2012			1					1
SuntrekTech Catch Basin Insert	2006-2007							2	2

Table G-1 LAR UR2 WMA BMPs Installed by Year

BMP Type	Year Installed	Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon	Total
Sediment/Oil Trap									
CDS Gross Pollutant Separators	2010-2011					1			1
	2005-2006							3	3
	Subtotal					1		3	4
Stormceptor Gross Pollutant Separators	2008-2009							1	1
	2007-2008							1	1
	2006-2007							1	1
	2005-2006							1	1
	2003-2004								2
	Subtotal					1	1	4	6
Vegetated Swale/Strip	2008-2009			3					3
Grease Interceptors	2004-2005							1	1
Grease Trap	2006-2007			1					1
Infiltration BMPs									
Flow-thru Planter	2011-2012			1					1
	2010-2011			1					1
	Subtotal			2					2
Infiltration System	2006-2007			4					4
Infiltration Trenches	2008-2009			1					1
	2006-2007							2	2
	2003-2004					1			1
	Subtotal			1		1		2	4
Landscape/infiltration	2004-2005			2					2

Table G-1 LAR UR2 WMA BMPs Installed by Year

BMP Type	Year Installed	Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon	Total
Trash Bins									
Covered Trash Bins	2010-2011					2			2
	2009-2010					3			3
	2008-2009			3					3
	2005-2006			6	5			9	20
	2004-2005			4					4
	2003-2004		30			2	2		34
	Subtotal		30	13	5	7	2	9	66
Extra Trash Cans	2010-2011					2			2
	2009-2010			10		9			19
	2003-2004	10	30			50	10		100
	Subtotal	10	30	10		61	10		121
Trash Can Lid	2010-2011		50						50
Parks									
Dog Parks	2003-2004					1			1
Other									
Enhanced Street Sweeping	2009-2010	6	46			1			53
	2008-2009	6							6
	2007-2008	6							6
	2006-2007	6							6
	2005-2006	6			1				7
	2003-2004	6			2	1	1		10
	Subtotal	36	46		3	2	1		88
Trash Enclosures	2004-2005							8	8
Catch Basin Signage	2004-2005							8	8
Diversion System with rain switch	2005-2006							1	1

Table G-1 LAR UR2 WMA BMPs Installed by Year									
BMP Type	**Year Installed**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**	**Total**
Kristar Roof Downspout	2006-2007							6	6
Restaurant Vent Traps	2006-2007			1					1
	2003-2004					2	1		3
	Subtotal			1		2	1		4
Catch Basin Clean-outs cycles	2006-2007	6							6
Safedrain (Spill Prevention Valve)	2007-2008							1	1
	City Total:	**596**	**855**	**1,634**	**247**	**1,256**	**438**	**797**	**5,823**

Appendix H

Non-MS4 NPDES Permittees

Table H-1 Active Permitted Industrial Facilities in Los Angeles County within Bell, Bell Gardens, Cudahy, Huntington Park, and Maywood

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I000777	3/20/1992	Custom Bldg Prods	6511 Salt Lake Ave	Bell	90201	7.0	2899	3272	-
4 19I002530	6/25/2013	US Army Patton Reserve	5340 Bandini Blvd Bldg 334	Bell	90201	21.0	4231	-	-
4 19I022905	6/26/2013	Bell US Army Reserve Center	5631 Rickenbacker Rd	Bell	90201	43.0	4231	9711	-
4 19I023321	9/8/2011	FedEx Home Delivery	4801 S Eastern Ave	Bell	90201	1.0	4215	-	-
4 19I009019	11/3/1992	Temple Inland Inc dba International Paper	5991 Bandini Blvd	Bell[1]	90040	15.0	2653	-	-
4 19I014288	7/1/1998	YRC Inc Los Angeles Bell	4700 S Eastern Ave	Bell[1]	90040	15.0	4231	-	-
4 19I012040	12/14/1995	David H Fell & Co	6009 Bandini Blvd	Bell[1]	90040	0.4	3341	-	-
4 19I001684	3/30/1992	Metal Surfaces	6060 Shull St	Bell Gardens	90201	1.0	3471	-	-
4 19I004413	4/6/1992	J P Turgeon & Sons	7758 Scout Ave	Bell Gardens	90201	0.5	3471	-	-
4 19I003408	4/3/1992	Day Glo Color Corp	4615 Ardine St	Cudahy	90201	1.3	2851	-	-
4 19I010996	5/18/1994	Artson Manufacturing Co	4915 Cecilia St # 4907	Cudahy	90201	3.2	3315	3496	-
4 19I012606	10/15/1996	Consolidated Foundries Inc	8333 Wilcox Ave	Cudahy	90201	3.1	3369	-	-
4 19I013803	3/13/1998	David Downs Co	4539 Cecilia St	Cudahy	90201	75.0	2992	-	-
4 19I016698	8/7/2001	Consolidated Foundaries GE Core Co	8346 Salt Lake Ave	Cudahy	90201	1.0	3369	-	-
4 19I024275	5/28/2013	HF Cox Inc	8330 S Atlantic Avenue	Cudahy	90201	3.2	7538	-	-
4 19I000122	2/21/1992	LA Brass Prod	2529 55th	Huntington Park	90255	1.0	3364	3366	-
4 19I000835	7/18/2012	Henry Co	5731 Bickett St	Huntington Park	90255	5.0	2952	-	-
4 19I001609	3/27/1992	Aircraft Foundry	5316 Pacific Blvd	Huntington Park	90255	0.5	3365	-	-
4 19I001831	3/30/1992	Acme Castings	2319 Randolph St	Huntington Park	90255	1.3	3321	3325	3369
4 19I004458	4/6/1992	LA Galvanizing	2518 E 53rd St	Huntington Park	90255	0.6	3471	-	-
4 19I010372	8/2/1993	Covert Iron Works	7821 Otis Ave	Huntington Park	90255	3.0	3321	-	-
4 19I013694	1/12/1998	Calpac Chemical Co Inc	6231 Maywood Ave	Huntington Park	90255	2.0	2842	-	-
4 19I016489	4/25/2001	Aircraft X-ray Laboratories Inc	5216 Pacific	Huntington Park	90255	1.5	3471	3479	-
4 19I018443	10/29/2003	Bodycote Thermal Processing	3370 Benedict Way	Huntington Park	90255	1.6	3398	-	-
4 19I019552	5/31/2005	H P Used Auto Parts	2461 E Slauson Ave	Huntington Park	90255	0.4	5015	-	-
4 19I020668	2/9/2007	West Coast Foundry	2450 E 53rd St	Huntington Park	90255	Unknown	Unknown	-	-
4 19I021216	10/17/2007	Crown Poly Inc	5700 Bickett St	Huntington Park	90255	5.3	3081	3089	-
4 19I022418	11/24/2009	Joseph Levin & Sons Inc	2863 E Slauson Ave	Huntington Park	90255	2.0	5093	-	-
4 19I023686	6/21/2012	I A Machinery Co	2301 Belgrave Ave	Huntington Park	90255	1.1	3545	3549	3547
4 19I023952	11/30/2012	Ace Recycling LLC	6069 Maywood Ave	Huntington Park	90255	2.9	5093	-	-
4 19I004074	4/6/1992	Alloys Cleaning Inc	1960 Gage	Huntington Park[1]	90001	0.8	3471	-	-
4 19I014184	6/18/1998	Madison Industries	1900 64th	Huntington Park[1]	90001	5.4	3441	-	-
4 19I011248	11/1/1994	LA Unified Sch Dist Alameda Ga	6901 S Alameda St	Huntington Park[1]	90001	4.4	4151	-	-
4 19I021660	7/9/2008	Windsor Foods	6711 through 6717 Alameda St	Huntington Park[1]	90001	1.1	2038	-	-
4 19I000680	3/18/1992	W S Dodge Oil Co Inc	3710 Fruitland Ave	Maywood	90270	1.0	2992	-	-
4 19I010960	3/14/1994	Cook Induction Heating	4925 Slauson Ave	Maywood	90270	0.6	3398	3679	3399
4 19I013344	8/18/1997	Keeney Truck Lines Inc	3500 Fruitland Ave	Maywood	90270	3.0	4212	-	-
4 19I013345	8/18/1997	Food Express Inc	5127 Maywood Ave	Maywood	90270	3.0	4231	-	-
4 19I014688	10/21/1998	Evans Dedicated Systems	5711 Maywood Ave	Maywood	90270	1.4	3081	-	-

Table H-1 Active Permitted Industrial Facilities in Los Angeles County within Bell, Bell Gardens, Cudahy, Huntington Park, and Maywood

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I021671	7/14/2008	Gemini Plastic Ent Inc	3574 Fruitland	Maywood	90270	0.4	5093	-	-
4 19I024365	7/22/2013	Panda International Trading Co	570 Fruitland Ave	Maywood	90270	0.8	3471	-	-

[1] Permittee listed as City of Los Angeles in Permit Documents

Table H-2 Active Permitted Industrial Facilities in Los Angeles County within Commerce

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I000163	2/26/1992	Amvac Chemical Corp	4100 E Washington Blvd	Commerce[1]	90023	3.0	2879	2869	-
4 19I000205	3/2/1992	Ashland Chemical Co	6608 26th	Commerce	90040	5.6	2821	-	-
4 19I000411	3/11/1992	Engineered Polymer Solutions	5501 E Slauson Ave	Commerce[1]	90040	4.0	2821	-	-
4 19I001142	3/25/1992	Calstrip Industries Inc	7140 Bandini Blvd	Commerce[1]	90040	7.0	3316	-	-
4 19I001502	3/27/1992	Hickory Springs	4542 East Dunham St	Commerce	90023	5.9	3086	-	-
4 19I001761	3/30/1992	Monogram Aerospace Fasteners	3423 Garfield Ave	Commerce[1]	90040	3.0	3452	-	-
4 19I002134	3/30/1992	Gallo Wine	2650 Commerce Way	Commerce[1]	90040	7.0	2084	-	-
4 19I002702	4/1/1992	Huhtamaki Inc	4209 Noakes St	Commerce[1]	90023	8.9	2656	3089	2671
4 19I002878	4/2/1992	Newark Pac Paperboard	6001 S Eastern Ave	Commerce	90040	Unknown	Unknown	-	-
4 19I003336	4/3/1992	Oldcastle BuildingEnvelope	5631 Ferguson Dr	Commerce[1]	90022	10.5	3231	-	-
4 19I003406	4/3/1992	Globe Iron Foundry	5649 Randolph St	Commerce	90040	1.6	3321	-	-
4 19I003509	4/3/1992	Vons Grocery Co Safeway	3361 Boxford Ave	Commerce[1]	90040	17.0	2024	2051	2026
4 19I004620	4/8/1992	UPS Ground Freight	2747 Vail Ave	Commerce	90040	Unknown	Unknown	-	-
4 19I004896	4/7/1992	ATK Space Systems Inc	6033 Bandini	Commerce	90040	4.0	3795	3449	-
4 19I005001	4/8/1992	Commerce East LA	4341 Washington	Commerce[1]	90023	218.0	4011	-	-
4 19I005064	4/7/1992	Mission Foods Corp Olympic	5505 E Olympic Blvd	Commerce[1]	90022	4.0	2099	-	-
4 19I006760	5/6/1992	Unified Grocers Inc	5200 Sheila St	Commerce	90040	66.0	4225	-	-
4 19I006988	5/19/1992	Interstate Consolidation	5800 Sheila St	Commerce[1]	90040	7.0	4212	-	-
4 19I007019	5/27/1992	Adelwiggins Grp	5000 Triggs St	Commerce[1]	90022	8.0	3499	-	-
4 19I009384	11/15/1992	LA Paper Box & Board	6027 S Eastern Ave	Commerce[1]	90040	5.0	2631	-	-
4 19I009618	12/22/1992	W R Grace Construction Co	7237 Gage	Commerce[1]	90040	2.0	2899	-	-
4 19I010842	1/4/1994	Ei Du Pont Sardo & Sons Whse	5468 Union Pacific Ave	Commerce	90022	3.5	4225	-	-
4 19I012397	6/24/1996	Tzeng Long Usa Inc	2801 Vail Ave	Commerce	90040	5.0	5093	4225	-
4 19I012612	10/25/1996	Strategic Materials Inc	7000 Bandini Blvd	Commerce	90040	3.0	5093	-	-
4 19I012671	11/22/1996	Fleming Metal Fabricators	2810 Tanager	Commerce	90040	2.0	3499	-	-
4 19I013540	11/20/1997	Precision Wire Products Inc	6150 Sheila	Commerce[1]	90040	10.6	3496	-	-
4 19I013577	12/23/1997	Colonial Dames	6820 Watcher St	Commerce[1]	90040	0.4	2844	-	-
4 19I014215	6/18/1998	Pac Die Casting Corp	6155 S Eastern Ave	Commerce[1]	90040	1.5	3363	-	-
4 19I015449	10/21/1999	Parsec Inc Bnsf Railroad	4000 E Sheila St	Commerce[1]	90023	2.0	4011	-	-
4 19I015576	1/12/2000	US Lubricants	4000 E Washington Blvd	Commerce	90023	2.0	2992	-	-
4 19I015663	3/10/2000	Valley Plating Works Inc	5900 Sheila St	Commerce[1]	90040	4.9	3471	-	-
4 19I016019	8/14/2000	Exide Corp	5909 Randolph	Commerce	90040	1.7	3399	-	-
4 19I016034	8/21/2000	American RENOLIT Corp	6900 Elm St	Commerce[1]	90040	2.0	3081	2821	-
4 19I016230	11/20/2000	API Kirk Containers	2131 Garfield	Commerce[1]	90040	0.2	3089	-	-
4 19I017590	11/3/2002	General Mills	5469 Ferguson	Commerce[1]	90022	3.0	2045	-	-
4 19I018180	6/13/2003	Parsec Operations at BNSF Railway	2818 Eastern Ave	Commerce[1]	90040	36.0	4011	-	-
4 19I018741	4/19/2004	American Graphic Board Inc	5880 East Slauson Ave	Commerce	90040	2.4	2655	-	-
4 19I018851	6/23/2004	Commerce Refuse to Energy Facility	5926 Sheila St	Commerce[1]	90040	6.0	4911	4953	-
4 19I018989	9/2/2004	Wiretech Inc	6440 E Canning St	Commerce	90040	1.6	3315	-	-

Table H-2 Active Permitted Industrial Facilities in Los Angeles County within Commerce

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I020422	8/22/2006	Horizon Milling LLC	5471 Ferguson Dr	Commerce	90022	5.8	2041	-	-
4 19I020783	4/10/2007	Liberty Packing & Estruding Inc	3015 Supply Ave	Commerce	90040	1.1	2673	2671	-
4 19I020805	4/12/2007	OXY USA East LA Facility	5901 Triumph	Commerce	93340	2.4	1311	-	-
4 19I020806	4/12/2007	OXY USA Bandini Facility	5141 Astor	Commerce	93340	1.0	1311	-	-
4 19I020821	4/12/2007	Signature Flexible Packaging	5519 Jillson St	Commerce	90040	0.6	2673	-	-
4 19I020881	5/14/2007	US Polymers Inc	5910 Bandini	Commerce	90040	1.5	3084	3082	3087
4 19I020887	5/16/2007	E Z Plastic Packaging Corp	2051 S Garfield Ave	Commerce	90040	1.7	3081	-	-
4 19I021220	10/19/2007	FP International	6195 E Randolph St	Commerce	90040	1.7	3086	-	-
4 19I021380	8/15/2012	Superior Printing Ink Co Inc	2121 Yates Ave	Commerce	90040	0.4	2893	-	-
4 19I021525	4/14/2008	Southern Fiber Los Angeles LLC	2748 Tanager Ave	Commerce	90040	2.0	2297	-	-
4 19I021540	4/29/2008	Kaiser Aluminum	6250 E Bandini Blvd	Commerce[1]	90040	4.5	3354	3341	-
4 19I022102	4/10/2009	Kerry Ingredients & Flavours	1916 Tubeway Ave	Commerce	90040	2.5	2087	-	-
4 19I022351	10/7/2009	SI Tourcoach	1230 S Tubeway Ave	Commerce	90040	2.0	4173	-	-
4 19I023412	11/28/2011	Smart and Final Distribution	5500 Sheila St	Commerce	90040	23.0	4225	-	-
4 19I023650	5/31/2012	Replanet LLC	5603 Randolph St	Commerce	90040	2.7	5093	-	-
4 19I023653	6/4/2012	Green Land Metals Inc	6400 Bandini Blvd	Commerce	90040	0.6	5093	-	-
4 19I023769	8/7/2012	99 Cent Only Stores	4000 Union Pacific Ave	Commerce	90023	20.7	5149	5099	-
4 19I023992	12/27/2012	Western State Industrial	5635 Sheila St	Commerce	90040	0.7	5051	-	-
4 19I024214	4/22/2013	Sun Plastics Inc	7140 East Slauson Ave	Commerce	90040	2.5	3089	-	-
4 19I024241	5/6/2013	Spirit Foodservice Inc	5951 Rickenbacker Road	Commerce	90040	0.8	3089	-	-
4 19I024336	7/2/2013	Arion Global Inc	2919 Tanager Ave	Commerce	90040	0.7	5093	-	-
4 19I000163	2/26/1992	Amvac Chemical Corp	4100 E Washington Blvd	Commerce[1]	90023	3.0	2879	2869	-

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Table H-3 Active Permitted Industrial Facilities in Los Angeles County within Vernon

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I000107	2/20/1992	Ajax Forge Co	1956 E 48th St	Vernon[1]	90058	0.9	3462	-	-
4 19I000335	3/11/1992	Punch Press Products Inc	2035 51st	Vernon	90058	2.5	3469	-	-
4 19I000341	3/11/1992	King Meat Inc	4215 Exchange	Vernon	90058	4.3	2013	-	-
4 19I000505	3/13/1992	Metro Division 34	4462 Pacific Blvd	Vernon	90058	Unknown	Unknown	-	-
4 19I000688	3/18/1992	Gasser Olds Co	2618 Fruitland Ave	Vernon	90058	0.9	3369	3499	3365
4 19I000797	3/20/1992	West Coast Rendering	4105 Bandini Blvd	Vernon[1]	90023	2.4	2077	-	-
4 19I001136	3/25/1992	Lubricating Specialties	3365 E Slauson Ave	Vernon	90058	0.3	5171	2992	-
4 19I001435	3/27/1992	Coast Packing Company	3275 Vernon	Vernon	90058	3.0	2079	-	-
4 19I001661	3/27/1992	Bodycote Thermal Proc	2900 S Sunol Dr	Vernon	90023	2.0	3398	-	-
4 19I001697	10/10/2011	Norton Packaging Inc	5800 S Boyle Ave	Vernon	90058	5.0	3089	-	-
4 19I002066	3/30/1992	L A Junction R&R	4433 Exchange Ave	Vernon[1]	90058	2.0	4011	-	-
4 19I002078	3/30/1992	United Parcel Service	4925 Boyle	Vernon	90058	2.0	4215	-	-
4 19I002083	3/30/1992	United Parcel Ser Cagvs	3333 S Downey Rd	Vernon[1]	90023	15.0	4215	-	-
4 19I002142	3/30/1992	Tremco Manufacturing	3060 E 44th St	Vernon	90058	2.1	2952	-	-
4 19I002179	3/30/1992	FedEx Freight Inc SLG	4500 Bandini Blvd	Vernon	90058	16.0	4213	-	-
4 19I002639	4/1/1992	Exxon Mobil Oil Corp Vernon Cu	2619 37th	Vernon	90058	18.0	5171	-	-
4 19I002920	4/2/1992	Dunn Edwards Corp	4885 E 52nd Pl	Vernon[1]	90040	6.4	2851	-	-
4 19I002950	4/2/1992	Air Prod & Chemicals	3305 E 26th St	Vernon[1]	90023	5.0	2899	-	-
4 19I002998	4/2/1992	City Fibers Inc	2500 S Santa Fe Ave	Vernon[1]	90058	4.0	5093	-	-
4 19I003535	4/3/1992	Alpert & Alpert Iron & Metal	1820 S Soto St	Vernon[1]	90023	7.0	5093	-	-
4 19I003834	4/3/1992	F & S Distributing Co Inc	4444 E 26th St	Vernon[1]	90023	3.4	4225	-	-
4 19I004283	4/6/1992	Neptune Foods	4510 Alameda	Vernon	90058	2.0	2092	-	-
4 19I004285	4/6/1992	Clougherty Packing Co	3049 E Vernon Ave	Vernon	90058	19.0	2013	-	-
4 19I004956	4/7/1992	Norman Fox and Co	5611 S Boyle Ave	Vernon	90058	4.9	2841	2843	-
4 19I005336	4/10/1992	Rehrig Pacific Co	4010 26th	Vernon[1]	90023	4.7	3089	2821	-
4 19I005454	4/7/1992	Sandberg Furniture	3251 E Slauson Ave	Vernon[1]	90058	11.0	2511	-	-
4 19I005929	4/17/1992	Darling Delaware Co	2626 E 25th St	Vernon[1]	90058	5.0	2077	-	-
4 19I006257	4/22/1992	Catalina Pacific Concrete Co	1862 E 27th St	Vernon[1]	90058	1.0	3273	-	-
4 19I006948	5/11/1992	Barksdale Inc	3211 Fruitland Ave	Vernon[1]	90058	5.0	3499	-	-
4 19I007214	6/18/1992	Engineered Coating Tech Inc	2838 E 54th St	Vernon	90058	0.2	2851	-	-
4 19I009526	12/2/1992	Vernon Warehouse Liquid Division	2322 37th	Vernon	90058	1.9	2099	2869	-
4 19I009847	3/18/1993	General Mills	4309 Fruitland	Vernon	90058	7.0	2041	-	-
4 19I009855	6/8/2011	FLOWSERVE	2300 VERNON	Vernon[1]	90058	13.0	3561	-	-
4 19I009927	4/22/1993	Arcadia Inc	3225 E Washington Blvd	Vernon	90023	Unknown	Unknown	-	-
4 19I009970	5/27/1993	D K Enviromental	3650 E 26th St	Vernon	90058	2.0	4953	-	-
4 19I010454	8/17/1993	Quickway Trucking Co	2929 E 50th St	Vernon[1]	90058	3.0	4214	-	-
4 19I010612	9/20/1993	Core Mark Int	2311 E 48th St	Vernon[1]	90058	6.4	4213	-	-
4 19I010685	10/20/1993	Modern Pattern & Foundry Co	5610 Alcoa Ave	Vernon	90058	1.0	3325	3365	-
4 19I011162	9/16/1994	Robertsons Ready Mix Los Angeles	3365 26th	Vernon[1]	90023	3.0	3273	-	-

Table H-3 Active Permitted Industrial Facilities in Los Angeles County within Vernon

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I011194	9/30/1994	Cargill Inc	2750 Jewel Ave	Vernon	90058	3.3	2079	-	-
4 19I011284	11/22/1994	Four Star Chemical	3137 E 26th St	Vernon[1]	90023	3.0	2869	-	-
4 19I011463	3/8/1995	P Kay Metal Supply	2448 E 25th St	Vernon[1]	90058	0.7	3369	-	-
4 19I011862	9/14/1995	Packaging Advantage Corp	4633 S Downey Rd	Vernon[1]	90058	12.0	2841	2844	2842
4 19I012393	6/24/1996	Clorox Products Manufacturing Co	4333 Bandini	Vernon	90023	7.0	2819	-	-
4 19I012450	7/31/1996	LA Fiber Co	920 S Boyle Ave	Vernon	90058	2.8	2299	-	-
4 19I012994	3/19/1997	BNSF Railway Hobart	3770 E Washington Blvd	Vernon[1]	90023	2.0	4212	-	-
4 19I013129	6/25/1997	Vest Inc	6023 Alcoa Ave	Vernon	90058	10.0	3317	-	-
4 19I013230	7/1/1997	Innovative Waste Control Inc T	4133 Bandini Blvd	Vernon	90023	2.0	4953	-	-
4 19I013457	10/8/1997	Fed Ex Ground	2600 28th	Vernon	90058	13.0	4215	-	-
4 19I014854	12/22/1998	Sweetener Products Co Trucking Division	4181 Ross St	Vernon	90058	2.8	4231	-	-
4 19I015027	3/23/1999	Heitz Trucking Inc	3575 Ross St	Vernon	90058	2.0	4212	4213	-
4 19I015100	5/7/1999	Packaging Co CA	4240 Bandini Blvd	Vernon[1]	90023	12.0	2653	-	-
4 19I015868	11/20/2012	ExxonMobil Oil Corp Vernon Terminal	2709 37th	Vernon	90058	3.0	5171	-	-
4 19I016288	12/21/2000	Cherokee Chemical Co Inc	3540 E 26th St	Vernon[1]	90023	2.0	2899	-	-
4 19I016397	3/14/2001	US Radiator Corp	4423 District Blvd	Vernon	90058	2.0	3714	-	-
4 19I016811	9/25/2001	Dependable Highway Express Inc	2626 E 26th St	Vernon	90058	4.0	4212	4213	-
4 19I017351	7/3/2002	Earthgrains Baking Company Inc	5200 S Alameda St	Vernon	90058	7.9	2051	-	-
4 19I017499	9/25/2002	J&J Snack Food	5353 Downey	Vernon	90058	8.0	2052	-	-
4 19I017741	1/8/2003	Seven Up Rc Botting Co	3220 E 26th St	Vernon	90058	22.0	2086	-	-
4 19I018427	10/24/2003	Southwest Processors Inc	4120 Bandini Blvd	Vernon[1]	90023	4.0	4952	4953	2077
4 19I018451	10/29/2003	Aerojet Rocketdyne Inc	2929 E 54th St	Vernon[1]	90058	3.0	3483	-	-
4 19I018475	11/24/2003	Aul Pipe Tube & Steel Inc	701 S Bonnie Beach Pl	Vernon[1]	90023	0.6	3317	-	-
4 19I018486	12/5/2003	Allied Feather & Down Corp	2661 E 46th St	Vernon	90058	0.9	3999	-	-
4 19I018493	12/5/2003	Hollander Home Fashion Corp	553 Seville Ave	Vernon	90058	2.8	2392	-	-
4 19I018501	12/8/2003	C S America Inc	4309 Exchange Ave	Vernon[1]	90058	1.8	2281	-	-
4 19I018503	12/8/2003	Randall Foods Inc	2905 E 50th St	Vernon	90058	2.0	2015	-	-
4 19I018508	12/10/2003	Overhill Farms	2727 E Vernon Ave	Vernon[1]	90058	3.9	2038	-	-
4 19I018509	12/10/2003	Overhill Farms No 2	3055 E 44th St	Vernon[1]	90058	1.0	2038	-	-
4 19I018514	12/15/2003	Huxtables Kitchen	2100 E 49th St	Vernon[1]	90058	1.2	2038	2099	-
4 19I018516	12/15/2003	Camino Real Foods Inc	2638 E Vernon Ave	Vernon[1]	90058	3.0	2011	2099	-
4 19I018518	12/15/2003	Fruitland Assoc	3336 Fruitland Ave	Vernon	90058	5.0	5147	4222	2038
4 19I018579	1/14/2004	Clougherty Packing Co	2750 E 37th St 2730 And2740	Vernon	90058	4.0	2013	-	-
4 19I018594	1/22/2004	F J Food Service Inc	3855 S Soto St	Vernon[1]	90058	2.0	2013	-	-
4 19I018597	1/23/2004	Dot Line Transp	4366 E 26th St	Vernon[1]	90023	4.6	4213	-	-
4 19I018625	2/6/2004	Square H Brands Inc	2731 S Soto St	Vernon[1]	90023	3.8	2013	-	-
4 19I018628	10/3/2012	Orient Fisheries Intl	5970 Alcoa Ave	Vernon[1]	90058	1.3	919	-	-
4 19I018647	2/18/2004	As Match Dyeing	522 E 37th St	Vernon[1]	90058	4.6	2261	-	-
4 19I018715	3/26/2004	A 1 Express Delivery Services	4520 S Maywood Ave	Vernon	90058	1.8	4213	-	-

Table H-3 Active Permitted Industrial Facilities in Los Angeles County within Vernon

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I018753	4/22/2004	Screamline Inv Tourcoach	2715 Bonnie Beach	Vernon	90023	Unknown	4173	-	-
4 19I018836	6/14/2004	Consolidated Fabricators Corp	4600 S Santa Fe Ave	Vernon[1]	90058	3.5	3469	-	-
4 19I018866	6/23/2004	Kal Plastics	2050 48th	Vernon[1]	90058	1.3	3089	-	-
4 19I018894	7/12/2004	Caltex Plastics Inc	2380 E 51st St	Vernon	90058	1.8	3081	-	-
4 19I018907	7/21/2004	Lifoam Industries LLC	2340 E 52nd St	Vernon[1]	90058	1.5	3086	-	-
4 19I018922	7/27/2004	Metal Improvement Co LLC	3239 E 46th St	Vernon[1]	90058	1.1	3398	-	-
4 19I018952	8/6/2004	Atlas Galvanizing LLC	2639 Leonis Blvd	Vernon[1]	90058	0.1	3479	-	-
4 19I018954	8/6/2004	Engine Trend Co	4515 S Soto St	Vernon[1]	90058	0.5	5015	-	-
4 19I018965	8/17/2004	Evergreen Scientific	2254 to 2300 E 49th St	Vernon[1]	90058	6.0	3089	-	-
4 19I018970	8/19/2004	Vernon Pallets Inc	875 E 27th St	Vernon[1]	90058	2.0	2448	-	-
4 19I018987	9/2/2004	Baker Coupling Co Inc	2929 S Santa Fe Ave	Vernon[1]	90058	2.0	3494	-	-
4 19I019033	9/8/2004	Edris Plastic Mfg Inc	4560 Pacific Blvd	Vernon	90058	1.5	3089	-	-
4 19I019039	9/14/2004	Stericycle Inc	2775 E 26th St	Vernon	90023	1.9	4953	-	-
4 19I019096	10/14/2004	Flores Design Fine Furniture Inc	4618 Pacific Blvd	Vernon	90058	2.4	2512	-	-
4 19I019122	11/5/2004	Stone Blue Inc	2501 28th	Vernon	90058	2.0	7211	-	-
4 19I019267	9/27/2011	RCH Supply Co Inc	4511 Everett	Vernon	90058	0.3	5085	2842	-
4 19I019373	3/22/2005	Commercial Sandblast Company	2678 East 26th St	Vernon	90058	3.0	3471	-	-
4 19I019379	3/23/2005	Joes Plastics Inc	5725 District Blvd	Vernon[1]	90040	2.0	3089	-	-
4 19I019422	4/15/2005	Oseguera Trucking Co Inc	2634 E 26th St	Vernon[1]	90058	2.0	4214	-	-
4 19I019433	4/20/2005	Dollar Empire LLC	4423 Bandini Blvd	Vernon	90023	3.7	4225	-	-
4 19I019450	5/4/2005	Saia Motor Freight Line Inc	2550 28th	Vernon	90058	7.8	4213	-	-
4 19I019453	5/4/2005	Simply Fresh Fruit	4383 Exchange Ave	Vernon[1]	90058	2.6	2024	-	-
4 19I020300	6/21/2006	F Gavina & Sons Inc	2700 Fruitland Ave	Vernon	90058	8.7	2095	-	-
4 19I020418	8/21/2006	Superior Electric Motor Service	4623 Hampton St	Vernon	90058	Unknown	Unknown	-	-
4 19I020625	1/4/2007	Vernon Air Separation Plant 870	5555 District Blvd	Vernon	90058	7.0	2813	-	-
4 19I020647	1/24/2007	Ameripride Uniform Services	5950 Alcoa Ave	Vernon	90058	Unknown	Unknown	-	-
4 19I020880	5/11/2007	Pacific Coast Trans Vernon	1925 E Vernon Ave	Vernon	90058	0.5	4213	-	-
4 19I021228	10/19/2007	Arcadia Inc	2301 E Vernon Ave	Vernon	90058	5.9	3499	-	-
4 19I021527	4/14/2008	Vernon City Light & Power Dept	4990 Seville Ave	Vernon	90058	0.4	4911	-	-
4 19I021537	4/23/2008	Malburg Generating Station	4963 Soto St	Vernon	90058	3.4	4911	-	-
4 19I021543	4/30/2008	Hannibal Industries INC	3851 Santa Fe Ave	Vernon[1]	90058	Unknown	Unknown	-	-
4 19I021637	7/1/2008	AFC Hydraulic Seals	4926 S Boyle Ave	Vernon	90058	0.2	3053	-	-
4 19I021752	8/21/2008	Rancho Foods Inc	2528 E 37th St	Vernon	90058	1.6	2011	-	-
4 19I022040	2/17/2009	Strategic Materials Inc	3211 E 26th St	Vernon	90058	3.7	5093	-	-
4 19I022161	5/28/2009	Progressive Fram & Fabrication	5050 Euerett Ct	Vernon	90058	0.5	3441	3452	-
4 19I022239	7/27/2009	Premier Meat Co	5030 Gifford Ave	Vernon	90058	0.5	5147	-	-
4 19I022277	8/13/2009	Sewing Collection Inc	3113 E 26th St	Vernon	90058	Unknown	3089	-	-
4 19I022281	8/18/2009	PABCO Paper	4460 Pacific Blvd	Vernon	90058	Unknown	Unknown	-	-
4 19I022592	4/13/2010	Waste Management Healthcare Solutions Inc	4280 Bandini Blvd	Vernon	90058	2.3	4953	-	-

Table H-3 Active Permitted Industrial Facilities in Los Angeles County within Vernon

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I022644	5/19/2010	Command Packaging	3840 E 26th St	Vernon	90058	4.6	3081	-	-
4 19I022704	7/7/2010	Pacific Precision Formulators	5511 District Blvd	Vernon	90058	1.0	2992	-	-
4 19I022726	7/19/2010	Geo Plastics	2200 E 52nd St	Vernon	90058	2.3	3089	-	-
4 19I022781	8/10/2010	Great American Packaging	4361 S Soto St	Vernon	90058	1.3	2673	-	-
4 19I022931	12/6/2010	V & L Prodce Inc	2550 E 25th St	Vernon	90058	0.1	4225	-	-
4 19I023091	4/5/2011	Valley Fruit and Produce Co	2043 Ross St	Vernon	90058	1.4	5148	-	-
4 19I023121	4/25/2011	Vans Natural Foods	3285 Vernon Ave	Vernon	90058	1.8	2099	-	-
4 19I023354	9/30/2011	Forever 21 Distribution Center	2800 2860 Sierra Pine Ave	Vernon	90058	4.1	4225	-	-
4 19I023474	1/20/2012	Service Oil Co Transportation Inc	5122 S Atlantic Blvd	Vernon	90058	0.3	4213	-	-
4 19I023485	1/26/2012	Yi Bao Produce Group Inc	3105 Leonis Blvd	Vernon	90040	2.5	4222	-	-
4 19I023644	5/24/2012	Pencco Inc	4921 Gifford Ave	Vernon	90058	1.5	2819	-	-
4 19I023654	6/4/2012	D and W Fine Pack	4380 Ayers Ave	Vernon	90058	2.6	2671	-	-
4 19I023667	6/19/2012	Axex Inc	4641 Hampton St	Vernon	90058	0.2	4226	-	-
4 19I023683	6/20/2012	PPP LLC	5991 Alcoa Ave	Vernon	90058	2.1	3089	5093	-
4 19I023721	7/16/2012	Ryerson	4310 E Bandini Blvd	Vernon	90058	9.2	5051	-	-
4 19I023765	8/3/2012	Primo Corporation	3301 Fruitland Ave	Vernon	90058	2.3	3089	-	-
4 19I023878	10/19/2012	Exide Technologies	2700 S Indiana Ave	Vernon	90058	15.0	3341	-	-
4 19I023880	10/19/2012	Holliday Rock Vernon 24	2822 South Soto Street	Vernon	90058	2.6	3273	-	-
4 19I023907	11/2/2012	Pactiv Packaging Inc	3751 Seville Ave	Vernon	90058	7.0	3089	-	-
4 19I023939	11/30/2012	Proportion Foods LLC	3501 E Vernon Ave	Vernon	90058	3.5	2011	-	-
4 19I023940	11/30/2012	CLW Foods LLC	3425 E Vernon Ave	Vernon	90058	4.6	2011	-	-
4 19I023950	11/30/2012	CR Laurence Co Inc	2200 E 55th Street	Vernon[1]	90058	10.8	3442	-	-
4 19I023967	12/17/2012	CR Laurence Co Inc	2100 E 38th St	Vernon[1]	90058	6.2	3442	-	-
4 19I024017	1/23/2013	Americold Vernon 3	4224 District Blvd	Vernon	90058	8.7	2092	-	-
4 19I024176	3/28/2013	Pacific Blue Wash House Inc	2713 South Bonnie Beach Place	Vernon	90058	0.3	7211	-	-
4 19I024273	5/28/2013	Siemens Water Technologies LLC	5375 S Boyle Avenue	Vernon	90058	4.5	4953	-	-

[1] Permittee listed as City of Los Angeles in Permit Documents

Table H-4 General Individual Permitted Facilities in Los Angeles County within Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon

Order No.	CI No.	Discharger	Facility Address	Facility City, State, and Zip Code	Program Type	General or Individual	Active Historical	Effective Date	Facility Area (acres)
2006-0003-DWQ	None	Bell City	6330 Pine Avenue	Bell, CA	NON15	G	Active	--	
R4-2003-0108	8385	Southern California Water Co.	6424 S. Otis Ave	Bell, CA	NPDES	G	Active	1/14/2004	
R4-2003-0108	8729	Southern California Water Co.	7026 Walker Ave	Bell, CA	NPDES	G	Active	4/23/2004	
R4-2003-0108	8666	Southern California Water	6612 Bissell St	Bell, CA 90210	NPDES	G	Active	10/4/2003	
2006-0003-DWQ	None	Bell Gardens City	7100 Garfield Avenue South	Bell Gardens, CA	NON15	G	Active	--	
R4-2003-0108	8762	Southern California Water Co.	6440 Clara St	Bell Gardens, CA 90201	NPDES	G	Active	6/24/2004	
R4-2003-0108	8184	Southern California Water Co.	6112 E. Gage Ave	Bell Gardens, CA 90201	NPDES	G	Active	12/23/2003	
R4-2003-0108	7708	Bell Gardens DPW	6607 Florence Place	Bell Gardens, CA 90201	NPDES	G	Active	10/23/2003	
R4-2007-0019	9613	6863 East Florence Place, LLC	6863/45 East Florence Place	Bell Gardens, CA 90201	NON15	G	Active	6/21/2010	
P 8163	6389C	Maravilla Transport	5936 E. Clara St	Bell Gardens, CA 90201	NON15	I	C	1/23/1978	
2006-0003-DWQ	None	Commerce City	2535 Commerce Way	Commerce, CA	NON15	G	Active	--	
P 8416	6623C	Apex Drum Co.	6226 Ferguson Dr	Commerce, CA 90022	NON15	I	C	3/22/1982	
R4-2007-0019	9875	Univar USA Inc.	4256 Noakes St	Commerce, CA 90023	NON15	G	Active	3/25/2013	
R4-2003-0108	9802	California Water Service Company	2000 S. Tubeway Ave	Commerce, CA 90040	NPDES	G	Active	3/28/2012	
P 8462	6655C	Benjamin Moore & Co.	3325 S. Garfield Ave	Commerce, CA 90040	NON15	I	C	2/28/1983	
2006-0003-DWQ	None	Cudahy City	5220 Santa Ana St	Cudahy, CA 90201	NON15	G	Active	--	
R4-2003-0108	9229	Tract 180 Water Company	4566 Florence Ave	Cudahy, CA 90201	NPDES	G	Active	2/20/2007	
2006-0003-DWQ	None	Huntington Park City	6550 Miles Avenue	Huntington Park, CA	NON15	G	Active	--	
R4-2003-0108	7942	Walnut Park Mutual Water Co.	2460 E. Florence Ave	Huntington Park, CA 90255	NPDES	G	Active	11/26/2003	
2006-0003-DWQ	None	Maywood City	4319 Slauson Avenue East	Maywood, CA	NON15	G	Active	--	
R4-2008-0032	9917	Maywood Mutual Water Company No. 3	6253 Prospecet Ave	Maywood, CA 90270	NPDES	G	Active	2/19/2013	
R4-2009-0047	9172	Maywood Mututal Water Company	4421 E. 52nd Street	Maywood, CA 90270	NPDES	G	Active	1/14/2011	
2006-0003-DWQ	None	Vernon City	4305 Santa Fe Avenue	Vernon, CA	NON15	G	Active	--	
R4-2007-0019	8676	Soco West, Inc.	3270 E. Washington Blvd	Vernon, CA 90023	NON15	G	Active	8/27/2012	
R4-2009-0047	7652	Coast Packing Co.	3275 E. Vernon Ave	Vernon, CA 90058	NPDES	G	Active	6/10/2010	
R4-2009-0068	8160	ExxonMobil Oil Corporation	2709 E. 37th St	Vernon, CA 90058	NPDES	G	Active	8/6/2009	
R4-2010-0087	6079	Owens-Illinois, Incorporated	2901 Fruitland Ave	Vernon, CA 90058	NPDES	I	Active	7/3/2010	
R4-2010-0087-R01	6079	Owens-Illinois, Incorporated	2901 Fruitland Ave	Vernon, CA 90058	NPDES	I	Active	3/2/2012	
P 8255	6505C	Millennium Tech	2438 E. 55th St	Vernon, CA 90058	NON15	I	C	3/24/1980	
R4-2003-0108	8717	California Water Service Co.			NPDES	G	Active	2/25/2004	

NON15 = New, General, Nonsubchapter 15 Program
NPDES = NPDES Permit

Appendix I

Secondary Funding Opportunities

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**Proposition 84 Stormwater Program**	**Proposition 84 (Chapter 2, §75026) Integrated Regional Water Management (IRWM)**	**Proposition 84 Urban Stream Restoration**
Department	State Water Resources Control Board (SWRCB)	SWRCB	SWRCB
Purpose	Provides funding for projects that reduce and prevent stormwater contamination of rivers, lakes, and streams.	Projects to assist local public agencies to meet long-term water management needs of the State, including the delivery of safe drinking water, flood risk reduction, and protection of water quality and the environment.	Projects that reduce urban flooding and erosion, restore environmental values, and promote stewardship of urban streams.
Eligibility Requirements	Local public agencies	Local public agencies or nonprofit representing an accepted IRWM Region	Local government agencies and citizens groups/nonprofits (together)
Eligible Uses	➢ Implement Low Impact Development (LID) and other onsite and regional practices that seek to maintain predevelopment hydrology. ➢ Comply with stormwater related TMDL requirements	Projects that implement IRWM Plans	Creek cleanups; eradication of exotic or invasive plants; revegetation efforts; bioengineering bank stabilization projects; channel reconfiguration to improve stream geomorphology and aquatic habitat functions; acquisition of parcels critical for flood management; and coordination of community involvement in projects.
Ineligible Uses	Operation and maintenance activities	Operation and maintenance activities	Exclusively educational or fish and wildlife enhancement projects; lake or reservoir enhancements; planning only projects; and mitigation for development or other projects
Funding Limits	$250,000 to $3,000,000 per project Requires 20% match (less for Disadvantaged Communities (DACs))	➢ Bond funding allocation for entire program is $1,000,000,000. ➢ Prop 84 allots grant funding to 11 funding areas. ➢ Each proposal solicitation package will have predetermined amount of funds available.	$1,000,000 per eligible project
Terms/Dates	Round 2 proposals were due February 27, 2014 with grants being awarded by June 2014, ending Round 2. Future opportunities will be presented at a future time.	➢ 25% minimum cost share with waivers for DACs ➢ Round 3 expected in Fall 2014 (approximately $130,000,000 available for Los Angeles Funding Areas)	Next grant application solicitation anticipated in Spring 2014 ($9,000,000 available)
Website	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/prop84/index.shtml	http://www.water.ca.gov/irwm/grants/	http://www.water.ca.gov/urbanstreams
Examples	➢ City of Los Angeles Broadway Neighborhood Stormwater Greenway Project ➢ City of Encinitas Cottonwood Creek Watershed LID Retrofit Project	➢ City of Carson's Trash Reduction Automatic Retracting Screen Project ➢ Dominguez Gap Spreading Grounds West Basin Percolation Improvements ➢ Oxford Retention Basin Multi-Use Enhancement Project ➢ Vermont Avenue Stormwater Capture and Green Street Project.	➢ Restoration of Berkshire Creek sponsored by Pasadena and Arroyo Seco ➢ Dry Canyon Creek Historic Meander Restoration sponsored by the City of Calabasas ➢ Upper Otay Watershed Restoration Project sponsored by the City of San Diego Water Department
Comments	All projects awarded funds through this grant program have planning and monitoring requirements or an implementation requirement. The projects funded through this program also involve LID or green streets in order to reduce and prevent stormwater contamination of rivers, lakes, and streams. This program gives agencies the opportunity to enhance water quality while also assisting in compliance.	IRWM is a collaborative effort to manage all aspects of water resources in a region. IRWM crosses jurisdictional, watershed, and political boundaries; involves multiple agencies, stakeholders, individuals, and groups; and attempts to address the issues and differing perspectives of all the entities involved through mutually beneficial solutions. Some eligible project types include: ➢ Stormwater capture, storage, clean-up, treatment, and management; ➢ Non-point source pollution reduction, management, and monitoring; ➢ Groundwater recharge and management projects; ➢ Planning and implementation of multipurpose flood management programs; and ➢ Watershed protection and management.	LAR UR2 WMA may be able to take advantage of this funding opportunity if the proposed projects are related to stream restoration. If project concepts change in the future, this opportunity may be more applicable..
LAR UR2 WMA Potential Uses	➢ Regional BMP Projects ➢ Distributed BMP Projects	➢ Regional BMP Projects ➢ Distributed BMP Projects	No projects apply at this time
Contact Information	Erik Ekdahl Division of Financial Assistance Project Development (916) 341-5877 Erik.Ekdahl@waterboards.ca.gov	(916) 651-9613 or email DWR_IRWM@water.ca.gov	Program Manager Amy Young Staff Environmental Scientist (916) 651-9626 Amy.Young@water.ca.gov

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation

Grant Program	Community Action for a Renewed Environment (CARE)	Pollution Prevention (P2)	Clean Beaches Initiative (CBI)
Department	United States Environmental Protection Agency (USEPA)	USEPA	SWRCB
Purpose	Provide support to help communities form collaborative partnerships, develop a comprehensive understanding of many sources of risk from toxics and environmental pollutants, set priorities and identify and carry out projects to reduce risks through collaborative action at the local level.	Fund projects that help reduce hazardous substances, pollutants, or contaminants entering waste streams or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, disposal or energy recovery activities.	Projects that restore and protect water quality of coastal waters, estuaries, bays, and near shore waters, with an emphasis on projects that reduce bacterial contamination on public beaches.
Eligibility Requirements	Local non-profit organizations, Native American Organizations, quasi-public non-profit organizations, inter and intrastate, local government, colleges, and universities.	State governments, colleges, and universities, federally-recognized tribes and intertribal consortia.	Local agencies, public agencies, non-profits, and Indian tribes
Eligible Uses	Community projects involving education of environmental pollutants	Projects that implement pollution prevention technical assistance services and/or training for businesses and support projects that utilize pollution prevention techniques to reduce and/or eliminate pollution from air, water, and/or land.	Planning and implementation projects meeting CBI priorities
Ineligible Uses	Not identified	Not identified	Operation and maintenance activities
Funding Limits	➢ Two funding levels: $75,000-$100,000 and $150,000-$300,000 ➢ No matching required	➢ Approximately forty grants awarded annually for $20,000-$180,000 ➢ 50 percent match required	$150,000 to $5,000,000 Requires match (variable based on project or if benefits a DAC)
Terms/Dates	Applications dates are to be determined.	Grants are usually awarded between May and August and application deadlines are currently unavailable, but will be posted online.	➢ Continuous funding cycle, with intermittent closures to review proposals, until funds are exhausted ($49,500,000 available). ➢ Applications through Financial Assistance Application Submittal Tool (FAAST)
Website	www.epa.gov/care	http://www.epa.gov/p2/pubs/grants/index.htm	http://www.waterboards.ca.gov/water_issues/programs/beaches/cbi_projects/index.shtml
Examples	➢ Environmental Justice Action Collaborative for Maywood in 2010 ➢ Environmental Health Coalition - Clean Ports in 2009 ➢ Pacoima Beautiful in 2007 and 2005	➢ Funded the Santa Ynez Band of Chumash Indians and trained over 1,700 business employees regarding pollution prevention techniques (2013) ➢ Funded the University of California San Francisco so that a database could be developed that identifies environmentally friendlier product alternatives (2012)	➢ Los Angeles Sanitation District and City of Los Angeles Ballona Creek Water Quality Improvement and Beneficial Use Project ➢ City of Santa Cruz Reduce Sources of Bacteria at Cowell Beach and Main Beach Project ➢ Low flow diversions and sewer improvements
Comments	CARE projects have been implemented and funded within the United States since 2005. LAR UR2 WMA may be able to take advantage of the CARE grant opportunity to fund community programs associated with MCM program elements involving community outreach.	P2 has funded various training and educational programs across the United States. LAR UR2 WMA may be able to benefit from this grant program in order to implement requirements associated with the M4 Permit required MCMs and other pollution prevention training programs.	The projects awarded this grant promote LID and projects designed to implement a stormwater resource plan. As mentioned above, priority is given to project that reduce bacterial contamination on public beaches. An even higher priority is given to projects addressing bacteria on beaches that have a low grade on the Heal the Bay Report Card (http://brc.healthebay.org).
LAR UR2 WMA Potential Uses	➢ Stormwater Program	➢ Stormwater Program	➢ Regional BMP Projects ➢ Distributed BMP Projects (If a link between clean beaches can be made)
Contact Information	CARE Program USEPA (8001A) 1200 Pennsylvania Avenue, NW Washington, DC 20460 (877) CARE-909	Jessica Counts-Arnold USEPA Region 9 75 Hawthorne Street (WST-7) San Francisco, CA 94105 (415) 972-3288 Counts-arnold.jessica@epa.gov	Patricia Leary Senior Water Resources Control Engineer Division of Financial Assistance (916) 341-5167 pleary@waterboards.ca.gov

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**Urban Waters Small Grant**	**Environmental Education Grant and SubGrant**	**Cooperative Watershed Management Plan**
Department	USEPA	USEPA	United States Department of the Interior Bureau of Reclamation
Purpose	Fund projects that will foster a comprehensive understanding of local urban water issues, identify and address these issues at the local level, and educate and empower the community.	Provide financial support for projects which design, demonstrate or disseminate environmental education practices, methods, or techniques.	Enhance water conservation including alternative uses, improve water quality, improve ecological resiliency of a river or stream, and reduce conflicts over water at the watershed level by supporting the formation of watershed groups.
Eligibility Requirements	Educational institutions, Indian tribes, local governments, non-profit groups, schools, governments, state/territorial agency, and Tribal agencies.	Local, Tribal, or state education agencies, colleges and universities, state environmental agencies, and non-commercial educational broadcasting agencies.	Existing or proposed watershed groups, states, and local districts.
Eligible Uses	Fund research, investigations, experiments, training, surveys, studies, and demonstrations that will advance the restoration of urban waters by improving water quality through activities that also support community revitalization and other local priorities.	Project must address one of the following educational and environmental priority issue. Educational issues: community projects; human health and environment; or career development. Environmental issues: protecting air quality; safety of chemicals; cleaning up our communities; or protecting America's waters.	Activities falling under categories Task Area A and Task Area B described below. Task Area A: establishment of a new watershed group. Task Area B: expansion of an existing watershed group.
Ineligible Uses	Not identified	Not identified	Not identified
Funding Limits	Approximately $1.6 million annually, $40,000-$60,000 each	➢ Approximately $2,778,940 available annually ➢ Each grant between $75,000-$200,000 ➢ 2-3 grants awarded to each region for an expected 22-32 grants total	Typically $22,000-$100,000 each and an annual total of about $200,000
Terms/Dates	The 2013/14 application period is closed and the 2014/15 not announced.	Applications accepted annually. Expect solicitation for 2015 funding near the end of 2014 and applications due January 2015.	Schedule for 2014 and future funding is currently under development.
Website	http://www2.epa.gov/urbanwaters/urban-waters-small-grants	http://www2.epa.gov/education/environmental-education-ee-grants	http://www.usbr.gov/WaterSMART/cwmp/index.html
Examples	➢ California Coastal Commission in Santa Cruz County (see below) ➢ Council for Watershed Health (see below)	➢ Bay institute of San Francisco for a watershed restoration educational program ➢ San Joaquin for an Adopt-a-Watershed training for teachers ➢ Santa Monica Baykeeper for a variety of stormwater pollution prevention education	➢ Western Slope Conservation Center in Colorado (see below) ➢ Friends of Teton River, Inc. in Idaho (see below)
Comments	During the 2011/12 funding cycle, the California Coastal Commission in Santa Cruz County received funding for a project that will reduce specific urban sources of water quality impacts in two target watershed areas by implementing structural and non-structural control measures. The Council for Watershed Health also received funding to develop a Los Angeles River Watershed assessment framework and then disseminate the results to the community via multi-media outlets. LAR UR2 WMA may be able to take advantage of funding through this grant depending on the requirements set forth during the application year. These funds could be used to fund various MCM programs, other institutional BMP control measures, and distributed structural BMPs.	Various environmental educational programs within California have received funding through this grant program dating back as far as 1992. LAR UR2 WMA may be able to utilize this grant opportunity for funding any stormwater pollution prevention educational programs, including various MCM program elements.	Five entities received funding in 2013 to establish or expand watershed groups in Colorado, Idaho, and Oregon. The Western Slope Conservation Center in Colorado was an established watershed group that will use the funding to address exceedances in E. coli and selenium. The Friends of Teton River, Inc. in Idaho used the grant money to expand their current watershed group to form an advisory council to prioritize and endorse various projects. The Cooperative Watershed Management Program grant is applicable to LAR UR2 WMA and could be used to expand or implement projects or programs associated with the group.
LAR UR2 WMA Potential Uses	➢ Stormwater Program	➢ Stormwater Program	➢ Stormwater Program ➢ Regional BMP Projects ➢ Distributed BMP Projects (as long as the group applies for the grant opposed to individual agencies)
Contact Information	Jared Vollmer USEPA Region 9 (WTR-3) 75 Hawthorne Street San Francisco, CA 94105 (415) 972-3447 Vollmer.jared@epa.gov	Adrienne Priselac USEPA Region 9 Environmental Education (CED-4) 75 Hawthorne Street San Francisco, CA 94105 Priselac.adrienne@epa.gov	Dean Marrone (303) 445-3577 www.usbr.gov/WaterSMART

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**State of California Coastal Conservancy Program**	**Wildlife Conservation Board (WCB)**	**Habitat Conservation Fund (HCF)**
Department	State of California Coastal Conservancy	State of California Wildlife Conservation Board	State of California Department of Parks and Recreation
Purpose	Projects that protect and improve coastal wetlands, streams, and watersheds; work with local communities to revitalize urban waterfronts; and helps to solve complex land use problems.	Projects that are applicable to the following WCB program, riparian habitat conservation, inland wetlands conservation, ecosystem restoration or agricultural lands, and habitat enhancement and restoration.	Projects that protect threatened species, address wildlife corridors, create trails, and provide nature interpretation programs.
Eligibility Requirements	Government agencies and non-profit organizations	Government agencies, state departments, federal agencies, and non-profit organizations	Cities, counties, and districts
Eligible Uses	Goals and projects that meet the objectives in the Conservancy's Strategic Plan and consistent with the purposes of the funding source (typically Proposition 84)	Projects that restore and enhance wildlife habitats	Nature interpretation programs to bring urban residents into park and wildlife areas, protection of various plant and animal species, and acquisition and development of wildlife corridors and trails.
Ineligible Uses	Not identified	Not identified	Not identified
Funding Limits	No established minimum or maximum grant amount	No established minimum or maximum grant amount	➢ $2,000,000 funded annually through 2019-2020 Fiscal Year ➢ 50 percent match required from grantees
Terms/Dates	Proposals are accepted on a continuous basis. Periodically grant rounds will be advertised and applications will be accepted for projects of a particular type or a particular location.	Proposals are accepted on a continuous basis. WCB meets four times per year, typically in February, May, August, and November.	Applications are due the first workday in October each year.
Website	http://scc.ca.gov/applying-for-grants-and-assistance/forms/	www.wcb.ca.gov/Programs.aspx	http://www.parks.ca.gov/?Page_id=21361
Examples	➢ Los Cerritos Wetlands Authority (see below) ➢ Mountains Recreation and Conservation Authority (see below) ➢ Ballona Creek Wetlands Ecological Reserve (see below)	➢ Malibu Lagoon State Park Coastal Restoration Project ➢ Moss Landing Wildlife Area Wetland Restoration Project	Projects identified on the 2013-14 HCF recommended projects list: ➢ City of Pasadena's Arroyo Seco Adventure Camp ➢ County of Los Angeles Golden Braille Trail Project ➢ County of Los Angeles Placerita Canyon Riparian Habitat Preserve/Restoration Project
Comments	Various projects within southern California have received funding through the Coastal Conservancy Grant Program. In 2011, $225,000 was provided to the Los Cerritos Wetlands Authority to prepare a comprehensive conceptual restoration plan for the Los Cerritos wetlands complex in the Cities of Long Beach and Seal Beach near the mouth of the San Gabriel River. $500,000 was awarded to the Mountains Recreation and Conservation Authority for the design and construction of the Compton Creek Nature Park and $280,000 was provided for site improvements and planning to provide for public access, community stewardship, and educational programs at the Ballona Wetlands Ecological Reserve. This grant program may be applicable to LAR UR2 WMA for different types of control measures.	Various projects within California have received funding through this grant program. Projects that may be authorized as inland wetland conservation projects incorporate elements such as the construction of swales, installation of water control structures, and the establishment of upland grasslands. LAR UR2 WMA may be able to benefit from the WCB Grant Program if the projects identified through the WMP development pertain to wetlands or habitat enhancements. It may be easy `to add elements to potential projects so that the project qualifies for funding while also incorporating water quality improvement elements.	The HCF has opportunities annually that the LAR UR2 WMA may be able to benefit from if selected projects concern a wildlife aspect. In some cases, projects can be modified to incorporate additional elements to address water quality. Multi-use projects may qualify for funding through this grant.
LAR UR2 WMA Potential Uses	No projects apply at this time	No projects apply at this time	No projects apply at this time
Contact Information	South Coast: Ventura County to San Diego County Joan Cardellino (510) 286-4093 jcard@scc.ca.gov	Dave Means Assistant Executive Director Dave.means@wildlife.ca.gov www.wcb.ca.gov/Programs.aspx	California State Parks Office of Grants & Local Services P.O. Box 942896 Sacramento, CA 94296 (916) 653-7423 localservices@parks.ca.gov

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**Land and Water Conservation Fund (LWCF)**	**Recreational Trails Program (RTP)**	**TIGER Discretionary Grant**
Department	State of California Department of Parks and Recreation	State of California Department of Parks and Recreation	Department of Transportation (DOT)
Purpose	Projects that protect threatened species, address wildlife corridors, create trails, and provide nature interpretation programs.	Provides funding for recreational trails and trails-related projects.	Provides funding for road, rail, transit, and port projects that will deliver long-term outcomes of safety, economic competitiveness, state of good repair, livability, and environmental sustainability.
Eligibility Requirements	Cities, counties, Native American tribes, joint power authorities, and non-state agency recreation and park districts	Cities, counties, districts, state agencies, federal agencies, and non-profit organizations	State, local, and tribal governments, including United States territories, transit agencies, port authorities, metropolitan planning organizations, other political subdivisions of state or local governments, and multi-state or multi-jurisdictional groups applying through a single lead applicant.
Eligible Uses	Projects that are associated with parks which promote children play, exercise, family bonding, senior socializing, connections with nature, and cultural differences.	Non-motorized and motorized projects that involve acquisitions for trails, trail rehabilitation, and construction of new trails.	Based on the Consolidated Appropriations Act, 2014 (Public Law No. 113-76)
Ineligible Uses	Not identified	See application guidelines	Not identified
Funding Limits	➢ $2,000,000 is the maximum grant request which cannot exceed 50 percent of total project cost ➢ This is a reimbursement-only program	➢ No minimum or maximum amount specified ➢ The maximum amount of funds allowed for each project is 88 percent, requiring a minimum of 12 percent match	$600 million to be awarded for National Infrastructure Investments
Terms/Dates	Applications are due February 3rd of every year	Current funding source expires September 30, 2014 and additional dates cannot be identified until new authorizations are finalized.	Grant applications must be submitted by April 28, 2014. Future opportunities are unknown at this time.
Website	http://www.parks.ca.gov/?Page_id=21360	http://www.parks.ca.gov/?Page_id=24324	http://www.dot.gov/tiger
Examples	➢ City of Covina's City Center Park ➢ Los Angeles County Cold Creek High Trail ➢ City of El Monte's Rio Hondo River Park	➢ City of Los Angeles' Peck Bandini ➢ City of Diamond Bar's Sycamore Canyon Park ➢ City of Gendale's San Rafael Hills "Mountain Do" Trail	➢ Crenshaw/Los Angeles Airport Light Rail Connection ➢ Port of Long Beach Rail Realignment ➢ Port of Los Angeles West Basin Rail Yard
Comments	Types of projects eligible: ➢ Athletic fields and courts ➢ Community gardens ➢ Non-motorized neighborhood and regional recreational trails ➢ Open space and natural areas ➢ Picnic areas ➢ Play grounds LAR UR2 WMA may be able to take advantage of this funding opportunity if the proposed projects are related to parks. It may be easy to add elements to potential projects so that the project qualifies for funding while also incorporating water quality improvement elements.	LAR UR2 WMA may be able to take advantage of this funding opportunity if the proposed projects are related to trails. It may be easy to add elements to potential projects so that the project qualifies for funding while also incorporating water quality improvement elements.	According to the March 24, 2014 CASQA bi-weekly newsletter, the notice for available funding provides guidance on selection criteria and application requirements for the National Infrastructure Investments. The legislation includes substantial language including funding for "addressing stormwater through natural means", "groundwater recharge in areas of water scarcity", and "stormwater mitigation", therefore stormwater projects may be eligible for funding. LAR UR2 WMA may be able to receive funding from this program now or in the future in order to assist in projects that incorporate both a transportation and water quality aspect.
LAR UR2 WMA Potential Uses	➢ Regional BMP Projects (with park elements)	➢ Regional BMP Projects (with trail elements)	➢ Regional BMP Projects ➢ Distributed BMP Projects (related to transportation)
Contact Information	California State Parks Office of Grants & Local Services P.O. Box 942896 Sacramento, CA 94296 (916) 653-7423 localservices@parks.ca.gov	California State Parks Office of Grants & Local Services P.O. Box 942896 Sacramento, CA 94296 (916) 653-7423 localservices@parks.ca.gov	Office of Infrastructure Finance and Innovation -Office of the Secretary of Transportation 1200 New Jersey Avenue, SE Washington, DC 20590 (202) 366-0301 TIGERgrants@dot.gov

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**Environmental Solutions for Communities**	**Clean Water Act (CWA) §319(h) Non-Point Source (NPS)**	**Potential 2014 Water Bond**
Department	Wells Fargo and the National Fish and Wildlife Foundation	CWA	State of California
Purpose	Support projects that link economic development and community well-being to the stewardship and health of the environment.	Support implementation and planning projects that address water quality problems in surface and ground water resulting from NPS. The goal of these projects is to eventually restore the impacted beneficial uses in receiving waters.	Provide funding for projects that ensure reliable water supply for future generations.
Eligibility Requirements	Community/watershed groups, cooperative associations or districts, local governments, state/territorial agencies, and non-profit groups.	The projects must be located within watersheds that has a TMDL with constituents identified in the NPS Program Preferences. The project must also be located in a watershed that has a plan or suite of plans that meet the Nine Key Elements found in Appendix A of the grant guidelines. Lastly the project cannot be located in an area subject to an NPDES Permit.	Unclear at this time.
Eligible Uses	Funding priorities include: supporting sustainable agricultural practices and private lands stewardship; conserving critical land and water resources and improving local water quality; restoring and managing natural habitat, species, and ecosystems that are important to community livelihood; facilitating investments in green infrastructure, renewable energy and energy efficiency; and encouraging broad-based citizen participation in project implementation.	Projects that address TMDLs associated with NPS.	Provide funding for projects must address water storage capacity, recycling facilities, levee improvements, flood control facilities, water treatment plants, ecosystem restoration, and habitat improvements.
Ineligible Uses	Not identified	Projects in areas that are under or affiliated with a NPDES Permit or address an issue in a land use included in a MS4 Permit	Unclear at this time.
Funding Limits	➢ Approximately $3,000,000 annually, between $25,000-$100,000 each ➢ 1:1 match required	➢ Funding allocation for entire program is $4,000,000 ➢ Provide the minimum match funding of 25 percent of the total project cost	Unclear at this time, but budget may include $4 billion for local resources development, $4 billion for ecosystem restoration, and $3 billion for public benefits associated with groundwater storage.
Terms/Dates	Applications accepted in December annually until 2016.	Annual solicitations (2014 solicitations were required by January 2014)	On the 2014 California ballot.
Website	http://www.nfwf.org/environmentalsolutions/Pages/home.aspx	http://www.waterboards.ca.gov/water_issues/programs/nps/grant_program.shtml#eligible	http://www.acwa.com/spotlight/2014-water-bond
Examples	➢ Newark Urban Tree and Urban Farm Project ➢ Removing Blight to Restore the Bay and Create Jobs Project ➢ Greening Art Alley: Pedestrian Corridor/Urban Renewal Project	➢ San Diego County Nutrient Source Reduction Program in Rainbow Creek Watershed ➢ Desert Wildlife Unlimited Alamo River Treatment Wetlands at Shank Road	Not Applicable
Comments	The Urban Tree and Urban Farm Project established tree and urban farms in Newark to reduce the carbon footprint, improve stormwater management, and provide job training opportunities for the youth. Removing Blight to Restore the Bay and Create Jobs Project that deconstructed 56 vacant homes in Baltimore Harbor Watershed and replaced them with permanent green space to treat stormwater and create jobs in the local community. The Greening Art Alley: Pedestrian Corridor/Urban Renewal Project installed rain gardens and other green infrastructure techniques in a local pedestrian facility to improve stormwater management and increase community engagement with natural habitats.	LAR UR2 WMA will not be able to benefit from this grant program because the receiving waterbodies associated with the group are not identified on the NPS Program Preferences. In addition, the projects the LAR UR2 WMA would be interested in implementing would be in areas covered by an NPDES Permit and therefore would not quality.	The 2014 Water Bond is the product of a comprehensive legislative package developed in 2009 by Governor Schwarzenegger and state lawmakers to meet California's growing water challenges. This package represented a major step toward ensuring reliable water supply for future generations as well as restoring the Sacramento-San Joaquin Delta and other ecologically sensitive areas. The progression of this bond will be tracked in the future in order to determine if funding opportunities exist for LAR UR2 WMA.
LAR UR2 WMA Potential Uses	➢ Regional BMP Projects ➢ Distributed BMP Projects	➢ XXX	Unclear at this time.
Contact Information	National Fish and Wildlife Foundation Carrie Clingan (202) 595-2471 Carrie.Clingan@nfwf.org	For CWA §319(h) Grant Program: Division of Water Quality Matthew Freese (916) 341-5485 Matthew.Freese@waterboards.ca.gov For FAAST: Patricia Leary (916) 341-5167 Patricia.Leary@waterboards.ca.gov	Timothy Quinn Association of California Water Agencies (CWA) Executive Director (916)441-4545 Timq@acwa.com

Table I-2 Potential Loan Programs to Fund LAR UR2 WMA WMP Implementation			
Loan Program	**Clean Water State Revolving Fund (CWSRF)**	**Financial Incentives for Recycled Water Projects to Provide Drought Relief**	**Infrastructure State Revolving Fund (ISRF)**
Department	SWRCB	SWRCB	California Infrastructure and Economic Development Bank
Purpose	Provide funding for publically-owned facilities	Provide funding for recycled water projects that would be completed within three years of the Governor's January 17, 2014 drought declaration.	Provide financing for public infrastructure projects.
Eligibility Requirements	Public agencies and nonprofit organizations	See CWSRF. This program is has new low interest financing terms, funded through CWSRF.	Applicant must be a local municipal entity Project must promote economic development and attract, create, and sustain long-term employment opportunities
Eligible Uses	Stormwater treatment and diversions, sediment and erosion control, stream restoration, and land acquisitions.	Construct or modify public infrastructure, purchase and install pollution control or noise abatement equipment, or acquire land. Project must meet tax-exempt financing criteria.	Construct or modify public infrastructure, purchase and install pollution control or noise abatement equipment, or acquire land. Project must meet tax-exempt financing criteria.
Ineligible Uses	Operation and maintenance activities, legal fees	Privately owned facilities or debt refinancing	Privately owned facilities or debt refinancing
Funding Limits	$50,000,000 per agency per year	$800 million total in one percent loans	➢ $2,000,000 maximum per environmental mitigation project per fiscal year ➢ $10,000,000 maximum per project for all other purposes per fiscal year ➢ $20,000,000 per jurisdiction per fiscal year
Terms/Dates	➢ Interest rate is one-half general obligation bond rate. ➢ Repayment term of twenty years ➢ Applications accepted continuously	Open application process until December 2, 2015	➢ Maximum 30 year term and open application process ➢ Preliminary application available at www.ibank.ca.gov
Website	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/index.shtml	http://www.waterboards.ca.gov/press_room/press_releases/2014/pr031914.pdf	http://ibank.ca.gov/infrastructure_loans.htm
Examples	➢ City of Anaheim Sewer Reconstruction Project ➢ Eastern Municipal Water District Recycled Water Pond Expansion and Optimization Project	Program just began therefore no example projects at this time.	➢ City of Paramount Water Well #15 Construction Project ➢ City of Monterey Park Water Main Replacement Project ➢ Lawndale Redevelopment Agency Hawthorne Boulevard Revitalization Project ➢ City of Lawndale Charles B. Hopper Park Project
Comments	Other project types that are considered under this financing program include: ➢ Construction of publicly-owned facilities: ▪ Wastewater treatment ▪ Local sewers ▪ Sewer interceptors ▪ Water reclamation facilities ▪ Stormwater treatment ➢ Expanded Use projects include, but are not limited to: ▪ Implementation of nonpoint source projects or programs ▪ Development and implementation of estuary comprehensive conservation and management plan Expanded Use project include, but are not limited to NPS projects/programs and estuary comprehensive conservation and management plan.	This program provides low-cost, long-term financing to local governments for water recycling projects. Water recycling is the use of treated municipal wastewater for beneficial purposes such as agricultural and landscape irrigation, industrial processes, and replenishment of groundwater basins. Amount the projects that will be eligible for funding are recycled water treatment, distribution, and storage facilities.	This program provides low-cost, long-term financing to local governments for a variety of public infrastructure projects. A lot of the eligible project categories are not applicable to the LAR UR2 WMA in terms of using this funding to implement stormwater compliance measures, but the following project categories would be applicable to LAR UR2 WMA: ➢ Drainage, water supply, and flood control ➢ Environmental mitigation measures ➢ Parks and recreation facilities. It may be easy to add water quality elements to potential infrastructure projects so that the project qualifies for funding while also incorporating water quality improvement elements.
LAR UR2 WMA Potential Uses	➢ Regional BMP Projects ➢ Distributed BMP Projects	➢ Regional BMP Projects ➢ Distributed BMP Projects	➢ Regional BMP Projects ➢ Distributed BMP Projects
Contact Information	(916) 327-9978 CleanWaterSRF@waterboards.ca.gov	Kathie Smith (916) 341-5263	Ruben Rojas, Deputy Executive Director 980 9th Street, 9th floor Sacramento, CA 95814 (916) 539-4408 Ruben.Rojas@ibank.ca.gov (OR) Marilyn Muñoz, General Counsel Same address (916) 324-1299 Marilyn.Munoz@ibank.ca.gov

Appendix J

Statements of Legal Authority

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December 9, 2014

Mr. Sam Unger, Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, California 90013-1105

Re: Statement of Legal Authority

Dear Mr. Unger:

We are the City Attorney for the City of Bell (the "City"). We are authorized to provide you with this Statement of Legal Authority which is being submitted with the City's Annual Report pursuant to Part VI.A.2.b. of Order No. R4-2012-0175 for NPDES Permit No. CAS004001. We are of the considered legal opinion that the City has all the necessary legal authority to implement and enforce the requirements contained in 40 CFR § 122.26(d)(2)(i)(A-F) and this Order during the reporting period of July 1, 2013 through June 30, 2014, to the extent permitted by State and Federal law, subject to the limitations on municipal action under the California and United States Constitutions.

Per the requirement in Part VI.A.2.b.i., here are citations to the City's Municipal Code for each of the following requirements found in Part VI.A.2.a:

i. *Control the contribution of pollutants to its MS4 from storm water discharges associated with industrial and construction activity and control the quality of storm water discharged from industrial and construction sites. This requirement applies both to industrial and construction sites with coverage under an NPDES permit, as well as to those sites that do not have coverage under an NPDES permit.*

   Municipal Code Sections: 13.08.070 Stormwater pollution control measures, 13.08.080 Urban runoff mitigation requirements for construction, 13.08.085 Standard Urban Stormwater Mitigation Plan (SUSMP)—Development projects, 13.08.090 Proof of coverage under state general construction permit, and 13.08.100 NPDES industrial permits

ii. *Prohibit all non-storm water discharges through the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A.*

Municipal Code Sections: 13.08.050 Illicit discharges and connections prohibited, 13.08.060 Illegal disposal of significant material, and 13.08.110 Prohibited acts and discharges

iii. *Prohibit and eliminate illicit discharges and illicit connections to the MS4.*

Municipal Code Section: 13.08.050 Illicit discharges and connections prohibited

iv. *Control the discharge of spills, dumping, or disposal of materials other than storm water to its MS4.*

Municipal Code Section: 13.08.110 Prohibited acts and discharges

v. *Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows);*

Municipal Code Sections: 13.08.010 Purpose and intent and 13.08.130 Enforcement and penalties

vi. *Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders.*

Municipal Code Section: 13.08.130 Enforcement and penalties

vii. *Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements among Co-permittees;*

Municipal Code Sections: 13.08.050 Illicit discharges and connections prohibited and 13.08.110 Prohibited acts and discharges

viii. *Control of the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other owners of the MS4 such as the State of California Department of Transportation;*

Municipal Code Sections: 13.08.050 Illicit discharges and connections prohibited and 13.08.110 Prohibited acts and discharges

ix. *Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of this Order, including the prohibition of non-storm water discharges into the MS4 and receiving waters.*

This means the Permittee must have authority to enter, monitor, inspect, take measurements, review and copy records, and require regular reports from entities discharging into its MS4;

Municipal Code Section: 13.08.120 Inspection

x. *Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations;*

Municipal Code Section: 13.08.070 Stormwater pollution control measures

xi. *Require that structural BMPs are properly operated and maintained;*

Municipal Code Sections: 13.08.080 Urban runoff mitigation requirements for construction and 13.08.085 Standard Urban Stormwater Mitigation Plan (SUSMP)—Development projects

xii. *Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4.*

Municipal Code Sections: 13.08.080 Urban runoff mitigation requirements for construction and 13.08.085 Standard Urban Stormwater Mitigation Plan (SUSMP)—Development projects

Per the requirement in Part VI.A.2.b.ii., the City's legal procedures available to mandate compliance with applicable municipal ordinances identified in the above section, and therefore with the conditions of the Order, can be found in Municipal Code Section 13.08.130 Enforcement and penalties. Here is the relevant text from that provision:

13.08.130 Enforcement and penalties.

A. The director of development services or his/her designee, is authorized to enforce this chapter as follows:

1. For the first failure to comply with any provision contained in this chapter, the department of development services shall issue to the affected person a written notice which includes the following information: (i) a statement specifying the violation committed; (ii) a specified time period within which the affected person must correct the failure or file a written notice disputing the notice of failure to comply; (iii) a statement of the penalty for continued noncompliance.

2. Each subsequent failure to comply with any provision of this chapter following written notice pursuant to subsection (A)(1) of this section, shall constitute an infraction and

shall be punishable by a penalty of up to one hundred dollars ($100.00) per day of violation for the first cited violation and five hundred dollars ($500.00) per day for subsequent violations.

3. It shall not be a defense to the assessment of any penalty or to any other civil enforcement action, provided for under this section for a person to assert that any violation of this chapter was caused by the actions of a person other than the person assessed except if the violation was caused by the criminal or negligent action of a person who was not an agent, servant, employee or family member of the person.

4. Any penalty collected hereunder shall be used as reimbursement for the city, costs and expenses of administration, inspection and enforcement of this chapter.

5. A violation of any provision of this chapter is declared to be a public nuisance. The city may abate such violation(s) by means of a civil action with all costs for such abatement to be borne by the party responsible for the nuisance.

6. The penalties and remedies established by this chapter shall be cumulative.

B. Other Penalties. Any person who violates any provision of this chapter, any provision of any permit issued pursuant to this chapter, or who discharges waste or wastewater which causes pollution, or who violates any cease and desist order, prohibition, or effluent limitation, may also be in violation of the federal Clean Water Act and/or Porter-Cologne Act and may be subject to the sanctions of those Acts including civil and criminal penalties.

[...]

Thus, enforcement actions can be completed administratively or judicially if necessary.

Please contact our firm if you have any questions.

Sincerely,

ALESHIRE & WYNDER, LLP

David J. Aleshire
City Attorney

ALVAREZ-GLASMAN & COLVIN

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December 13, 2013

Sam Unger, P.E., Executive Officer
California Regional Water Quality
Control Board -- Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013-1105

Subject: Certification of Legal Authority

Dear Mr. Unger:

Alvarez-Glasman & Colvin serves as the City Attorney's Office for the City of Bell Gardens. As the City Attorney for the City of Bell Gardens (the "City"), I am aware of the following legal authority requirements specified in *VI.A.2.b, of the MS4 Permit for Los Angeles County, Order No. R4-2012-0175, NPDES Permit No. CAS004001*:

> *Each Permittee must submit a statement certified by its chief legal counsel that the Permittee has the legal authority within its jurisdiction to implement and enforce each of the requirements contained in 40 CFR § 122.26(d)(2)(i)(A-F) and this Order. Each Permittee shall submit this certification annually as part of its Annual Report beginning with the first Annual Report required under this Order. These statements must include:*
>
> i. *Citation of applicable municipal ordinances or other appropriate legal authorities and their relationship to the requirements of 40 CFR § 122.26(d)(2)(i)(A)-(F) and of this Order; and*
>
> ii. *Identification of the local administrative and legal procedures available to mandate compliance with applicable municipal ordinances identified in subsection (i) above and therefore with the conditions of this Order, and a statement as to whether enforcement actions can be completed administratively or whether they must be commenced and completed in the judicial system.*

The City has the legal authority to require compliance with the requirements associated with 40 CFR § 122.26(d)(2)(i)(A-F) and applicable provisions of the Order[1] per ***Chapter 11.12 Urban Stormwater Management*** of the City of Bell Gardens Municipal Code. The City has had such legal authority since 1998.

The City's Municipal Code provides for both administrative enforcement and legal enforcement of violations, which may result in administrative, civil, or criminal penalties. Article V of Chapter 11.12 provides that in the event of a failure to comply with a notice of violation, the City has remedies which are not listed to be exclusive or exhaustive, including prosecuting violations as nuisance abatement resulting in liens and cost recovery, and prosecuting violations as a misdemeanor resulting in fines or imprisonment.

Should you have any questions regarding this matter, please feel free to contact Deputy City Attorney Teresa Chen at (562) 699-5500.

Sincerely,

ALVAREZ-GLASMAN & COLVIN

Arnold M. Alvarez-Glasman
City Attorney

[1]Generally applies to the six core programs that make up the City's stormwater quality management program including program management, development planning, development construction, illicit connection and discharge detection and elimination, public agency, and industrial and commerical inspections. These programs are carried-over from the previous permit. They are to be revised by permittees after the Regional Board has approved the watershed management program which is to be submitted by June 28, 2014.

CERTIFICATION STATEMENT

PLEASE BE ADVISED that the City of Commerce has, through adoption of ordinances and municipal code modifications, obtained all necessary legal authority in accordance with 40 CFR 122.26(d)(2) (i) (A-F), and to comply with Order No. R4-2012-0175 (NPDES No. CAS004001), Area Wide Urban Storm Water Runoff Management Program, Los Angeles County MS4 Permit.

Dated: December 3, 2013

Eduardo Olivo,
City Attorney
City of Commerce

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November 24, 2014

Samuel Unger, P.E., Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013-2343

Re: Annual Report Statement by Chief Legal Counsel Pursuant to the Federal National Pollutant Discharge Elimination System (NPDES) Program and State Water Board Order No. R4-2012-0175, NPDES Permit No. CAS004001

Dear Mr. Unger:

This law firm serves as City Attorney to the City of Cudahy. In accordance with 40 CFR § 122.26(d)(2)(i) and Part VI.A.2 of the above-referenced NPDES Permit, we hereby certify to the following:

> City of Cudahy has the legal authority within its jurisdiction to implement and enforce each of the requirements contained in 40 CFR § 122.26(d)(2)(i)(A-F) and the above-referenced Order.
>
> Pursuant to the compliance provisions described below, the Cudahy Municipal Code provides for enforcement actions to be completed administratively by written notice, or prosecuted judicially, or as a public nuisance by means of a civil action.

Citation of applicable municipal ordinances or other appropriate legal authorities and their relationship to the requirements of 40 CFR § 122.26(d)(2)(i)(A)-(F) and of this Order:

The primary applicable laws and ordinances are listed below. Depending on the particular facts, there may be other provisions that could potentially be applied. Undesignated section references herein are to the Cudahy Municipal Code.

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
i. Control the contribution of pollutants to its MS4 from storm water discharges associated with industrial and construction activity and control the quality of storm water discharged from industrial and construction sites. This requirement applies both to industrial and construction sites with coverage under an NPDES permit, as well as to those sites that do not have coverage under an NPDES permit.	§ 13.08.070 Elimination of pollutants in storm water. § 13.08.080 Prohibited activities. § 13.08.120 Requirements for construction projects.
ii. Prohibit all non-storm water discharges through the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A.	§ 13.08.070 Elimination of pollutants in storm water. § 13.08.080 Prohibited activities.
iii. Prohibit and eliminate illicit discharges and illicit connections to the MS4.	§ 13.08.070 Elimination of pollutants in storm water. § 13.08.080 Prohibited activities.
iv. Control the discharge of spills, dumping, or disposal of materials other than storm water to its MS4.	§ 13.08.070 Elimination of pollutants in storm water. § 13.08.080 Prohibited activities.
v. Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows).	§ 13.08.080 Prohibited activities. § 13.08.100 Enforcement.
vi. Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders.	§ 13.08.100 Enforcement. § 1.36.040 Penalties and arrests for violation.
vii. Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements among Copermittees.	§ 13.08.020 Findings. § 13.08.080 Prohibited activities. Cal. Gov. Code § 6502

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
viii. Control of the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other owners of the MS4 such as the State of California Department of Transportation.	§ 13.08.020 Findings. § 13.08.080 Prohibited activities. Cal. Gov. Code § 6502
ix. Carry out all inspections surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of this Order, including the prohibition of non-storm water discharges into the MS4 and receiving waters. This means the Permittee must have authority to enter, monitor, inspect, take measurements, review and copy records, and require regular reports from entities discharging into its MS4.	§ 13.08.100 Enforcement. § 13.08.120 Requirements for construction projects. § 13.08.140 Inspection.
x. Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations.	§ 13.08.070 Elimination of pollutants in storm water. § 13.08.080 Prohibited activities. § 13.08.110 Standard urban storm water mitigation plan for new developments. § 13.08.120 Requirements for construction projects.
xi. Require that structural BMPs are properly operated and maintained.	§ 13.08.110 Standard urban storm water mitigation plan for new developments. § 13.08.120 Requirements for construction projects.
xii. Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4.	§ 13.08.110 Standard urban storm water mitigation plan for new developments. § 13.08.120 Requirements for construction projects.

Identification of the local administrative and legal procedures available to mandate compliance with applicable municipal ordinances identified above and with the conditions of the Order:

§ 13.08.100 Enforcement.

Cudahy Municipal Code Chapter 1.36 Penalty Provisions.

Pursuant to California Penal Code section 836.5, the code enforcement officers of the city may make arrests, and may issue citations for misdemeanors pursuant to Penal Code section 853.5 et seq., and Cudahy Municipal Code Chapter 1.36, for violations of Cudahy Municipal Code Chapter 13.08 (Storm Water and Urban Runoff Pollution Control). (See § 1.36.040 Penalties and arrests for violation.)

If you have any questions, please contact me.

Very truly yours,

Isabel Birrueta

RUTAN
RUTAN & TUCKER, LLP

Todd Litfin
Direct Dial: (714) 641-5100
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December 16, 2013

VIA ELECTRONIC MAIL

Mr. Sam Unger
Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, CA 90013
sunger@waterboards.ca.gov

Re: City of Huntington Park Statement of Legal Authority in Compliance with Los Angeles Regional Water Quality Control Board Order No. R4-2012-0175

Dear Mr. Unger:

The City of Huntington Park ("City") hereby submits this Statement of Legal Authority in its capacity as co-permittee in accordance with Section VI.A.2 of the Los Angeles Regional Water Quality Control Board Order No. R4-2012-0175, National Pollution Discharge Elimination System ("NPDES)" Permit and Waste Discharge Requirements for the Municipal Separate Storm Sewer System ("MS4") Discharges Within the Coastal Watersheds of Los Angeles County Except Those Discharges Originating from the City of Long Beach ("Permit" or "Order").

As you are aware, the City and a number of other co-permittees are currently seeking review of certain portions of the Order through an administrative petition to the State Water Resources Control Board, the outcome of which may alter its terms. Consequently, this Statement of Legal Authority is not intended to be, and should not be construed as, a waiver of any rights the City has or may have to (A) bring or maintain any legal challenge to any part of the Order, or (B) to seek to recover any costs or other expenditures incurred or to be incurred to comply with programs that are or may be considered unfunded State mandates. The City hereby reserves any and all rights in this regard.

The undersigned City Attorney for the City hereby states that the City has or will have obtained all necessary legal authority to comply with the legal requirements imposed upon the City by the Order, consistent with the requirements set forth in the regulations to the Clean Water Act, 40 CFR [Code of Federal Regulations] §122.26(d)(2)(i)(A-F), to the extent permitted by State and federal law, but subject to the limitations on municipal actions under the California Constitution and United States Constitution. Subject to such limitations, the City's authority includes the following authority, within the City's jurisdictional boundaries, to:

- Control the contribution of pollutants to its MS4 from storm water discharges associated with industrial and construction activity and control the quality of storm

water discharged from industrial and construction sites. (Huntington Park Municipal Code [HPMC], § 7-9.05 (a)-(n).)

- Prohibit all non-storm water discharges through the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A. (HPMC § 7-9.05 (a)-(r).)

- Prohibit and eliminate illicit discharges and illicit connections to the MS4. (HPMC § 7-9.05 (a).)

- Control the discharge of spills, dumping, or disposal of materials other than storm water to its MS4. (HPMC §§ 7-9.05 (b)-(n); and 7-9.06 (a)-(c).)

- Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows). (HPMC §§ 7-9.05 and 7-9.06.)

- Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders. (HPMC § 7-9.07.)

- Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4, through interagency agreements among Copermittees or among other owners of the MS4, such as the California Department of Transportation. (Under the City's Charter and applicable State law, the City has adequate authority to enter into any and all necessary interagency agreements.)

- Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of the Permit, including the prohibition of non-storm water discharges into the MS4 and receiving waters. This authority includes the authority to enter, monitor, inspect, take measurements, review and copy records, and require reports from entities discharging into the MS4. (HPMC §§ 7-9.07 (a) & (b); 7-9.09 (e), and 7-9.12.)

- Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations. (HPMC §§ 7-9.07 (c) and 7-9.06.)

- Require that structural BMPs are properly operated and maintained. (HPMC §§ 7-9.04, 7-9.08, 7-9.08.02, 7-9.08.03, 7-9.08.04, 7-9.08.05, and 7-9.09.)

- Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4. (HPMC 7-9.04, 7-9.08, 7-9.08.02, 7-9.08.03, 7-9.08.04, 7-9.08.05, and 7-9.09.)

The administrative and legal procedures available to the City to mandate compliance with the applicable City ordinances include the following, among others:

- Criminal Penalties: Violations of City ordinances may constitute infractions or misdemeanors, enforceable through the judicial system. (HPMC §§ 1-2.01 and 7-9.07 (d).)

- Civil Actions: The City may pursue civil suits for various remedies, including equitable remedies such as nuisance abatement and injunctive relief. (HPMC §§ 1-2.01 and 7-9.07 (e) & (f); and Cal. Civil Code § 3490 *et. seq.*)

- Administrative Enforcement: The City may enter onto property to conduct inspections to enforce its requirements (HPMC §§ 7-9.07 and 7-9.12), to pursue nuisance abatement proceedings (HPMC §§ 7-9.07 (e) & (f), 7-9.09 (h) & (i) and 1-2.01), and to issue notices of violations and pursue violations administratively. (HPMC §§ 7-9.07 (c), (e) & (f).)

***

Please contact the undersigned should you have any questions or need additional information.

Thank you for your cooperation in this matter.

Very truly yours,

RUTAN & TUCKER, LLP

Todd O. Litfin

Todd Litfin
City Attorney, City of Huntington Park

STATEMENT OF LEGAL AUTHORITY

Pursuant to Part VI.A.2.b. of Order No. R4-2012-0175, the City of Maywood has all the necessary legal authority to implement and enforce the requirements contained in 40 CFR § 122.26(d) (2) (i) (A-F) and this Order during the reporting period of July 1, 2013 through June 30, 2014. This is made evident by municipal code citation to each of the following requirements found in Part VI.A.2.a:

1. Control the contribution of pollutants to its MS4 from storm water discharges associated with industrial and construction activity and control the quality of storm water discharged from industrial and construction sites. This requirement applies both to industrial and construction sites with coverage under an NPDES permit, as well as to those sites that do not have coverage under an NPDES permit.
   Municipal Code Section: *6-9.07 - Requirements for industrial, commercial and construction activities*
2. Prohibit all non-storm water discharges through the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A.
   Municipal Code Section: *6-9.04 - Prohibited activities*
3. Prohibit and eliminate illicit discharges and illicit connections to the MS4.
   Municipal Code Section: *6-9.04 - Prohibited activities*
4. Control the discharge of spills, dumping, or disposal of materials other than storm water to its MS4.
   Municipal Code Section: *6-9.06 - Good housekeeping provisions*
5. Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows);
   Municipal Code Section: *6-9.03 - Construction and application*; 6-9.08 *Enforcement*; 6-10.07 *Enforcement*
6. Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders.
   Municipal Code Section: *6-9.08 – Enforcement;* 6-10.07 *Enforcement*
7. Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements among Co-permittees;
   Municipal Code Section: *6-9.04 - Prohibited activities; General Law City contracting authority (During the reporting period the City entered into a memorandum of understanding with a number of neighboring cities to commence the preparation of a Watershed Management Plan and a Coordinated Integrated Monitoring Plan)*
8. Control of the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other owners of the MS4 such as the State of California Department of Transportation;
   Municipal Code Section: *6-9.04 - Prohibited activities; General Law City contracting authority*

9. Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of this Order, including the prohibition of non-storm water discharges into the MS4 and receiving waters. This means the Permittee must have authority to enter, monitor, inspect, take measurements, review and copy records, and require regular reports from entities discharging into its MS4;
   Municipal Code Section: *6-9.08 - Enforcement;* 6-9.03 - *Construction and Application;* 6-10.07 (a) & (b) - *Enforcement;* 6-10.09 (f) – *Content of Urban Storm Water Mitigation Plan;* 6-10.15 – *Inspection; City's authority to condition city issued permits and plans*
10. Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations;
    Municipal Code Section: *6-9.08 - Enforcement*
11. Require that structural BMPs are properly operated and maintained; and
    Municipal Code Section: *6-9.06 - Good housekeeping provisions*
12. Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4.
    Municipal Code Section: *6-9.08 – Enforcement*; 6-10.9 *Content of Low Impact Development (LID) Plan.*

The City of Maywood legal procedures available to mandate compliance with applicable municipal ordinances identified in the above section, and therefore with the conditions of the Order, can be found in Section *6-9.08 - Enforcement*. Under this Section Enforcement may occur through misdemeanor prosecution, suspension or revocation of permits, and through administrative penalties. Further, the City may declare any violation of the City's Stormwater and Urban Runoff Pollution Prevention ordinances a public nuisance, and the City may then file a civil or criminal action to abate or enjoin the nuisance. In addition, the section provides the City may enforce any violation of the Chapter 6-9 (Stormwater and Urban Runoff Pollution Prevention) of the City's Code through a civil action to obtain a temporary and permanent restraining order and costs for enforcement and for damage caused by the violation. Finally, the City may also issue cease and desist orders, and revoke permits via administrative processes. .

Signature: 

Richard L. Adams II, City Attorney

Date: 11/19/2014

City of Vernon
4305 Santa Fe Avenue, Vernon, California 90058
Telephone (323) 583-8811

December 16, 2013

N-1

Sam Unger, Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, California 90013-1105

RE: STATEMENT OF LEGAL AUTHORITY

Dear Mr. Unger:

This letter is provided to serve as the Statement of Legal Authority for the City of Vernon (the "City") pursuant to Part VI.A.2.b. of Order No. R4-2012-0175, for NPDES Permit No. CAS004001. As legal counsel for the City[1], I have determined that the City had the legal authority within its jurisdiction to implement and enforce the requirements contained in 40 CFR § 122.26(d)(2)(i)(A-F) and Order R4-2012-0175 during the reporting period of July 1, 2012 through June 30, 2013 to the extent permitted by State and Federal law, subject to the limitations on municipal action under the California and United States Constitutions.

Per the requirement in Part VI.A.2.b.i., pursuant to California Constitution Article XI, section 7, and Chapter 2.1 of the City's Charter that confirms the City's power over municipal affairs, and the other legal authorities cited below, the City has the legal authority to control pollutant discharges into and from its MS4 through ordinance, statute, permit, contract or similar means. Below are citations to additional authority confirming the City's power to enforce each of the following requirements found in Part VI.A.2.a:

i. Control the contribution of pollutants to its MS4 from stormwater discharges associated with industrial and construction activity and control the quality of stormwater discharged from industrial and construction sites. This requirement

[1] The City Attorney recently retired. As of the date of this letter, a replacement has not yet been appointed. As the deputy city attorney with the most years of legal experience, I write in lieu of the City Attorney.

applies both to industrial and construction sites with coverage under an NPDES permit, as well as to those sites that do not have coverage under an NPDES permit;
Municipal Code Sections: 21.1.3 Purpose and Intent; 21.5.5 Control of pollutants from industrial activities; 21.5.6 Control of pollutants from other industrial facilities; 21.5.7 Control of pollutants from state permitted construction activities, and; 21.5.8 Control of pollutants from other construction activities.

ii. Prohibit all non-storm water discharges through the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A;
Municipal Code Sections: 21.1.3 Purpose and Intent and 21.5.1 Illicit discharges, dumping, and non-stormwater discharges.

iii. Prohibit and eliminate illicit discharges and illicit connections to the MS4;
Municipal Code Sections: 21.1.3 Purpose and Intent; 21.5.1 Illicit discharges, dumping, and non-stormwater discharges, and; 21.5.2 Illicit connections.

iv. Control the discharge of spills, dumping, or disposal of materials other than stormwater to its MS4;
Municipal Code Sections: 21.1.3 Purpose and Intent, and 21.5.1 Illicit discharges, dumping, and non-stormwater discharges.

v. Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows);
Municipal Code Sections: 1.8 General penalty; continuing violations; 1.8-1 Administrative Enforcement – scope, definitions and hearing procedures; 1.8-5 Nuisances; 21.5.2 Illicit connections; 21.5.4 Control of pollutants from commercial facilities; 21.5.5 Control of pollutants from industrial activities; 21.5.6 Control of pollutants from other industrial facilities; 21.5.7 Control of pollutants from state permitted construction activities; 21.5.8 Control of pollutants from other construction activities; 21.5.9 Control of pollutants from new developments/redevelopment projects; 21.6.1 Violation of this chapter a public nuisance, and; 21.6.4 Abatement of illicit or unlawful discharges.

vi. Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders;
Municipal Code Sections: 1.8 General penalty; continuing violations; 1.8.1 Administrative Enforcement; 1.8-2 Administrative enforcement—Compliance orders; 1.8-3 Administrative enforcement—Citations.; Sec. 1.8-4 Administrative enforcement—Civil penalties.; 1.8-5 Nuisances; 21.6.1 Violation of this chapter a public nuisance; 21.6.4 Abatement of illicit or unlawful discharges, and; 26.6.3 Conditional Use Permits.

vii. Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements among Copermittees;
Municipal Code Sections: 21.1.3 Purpose and Intent; 21.5.1 Illicit discharges, dumping, and non-storm water discharges; and 21.5.2 Illicit connections; and 21.5.3 Reduction of pollutants in runoff. The City is in the process of a developing a Watershed Management Plan and Coordinated Integrated Management Plan with

seven other nearby local governmental entities to limit the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4. It is expected that the plan will be submitted to the Regional Water Quality Control Board by June 28, 2014.

viii. Control of the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other owners of the MS4 such as the State of California Department of Transportation;
Municipal Code Sections: 21.1.3 Purpose and Intent, 21.5.1 Illicit discharges, dumping, and non-storm water discharges; 21.5.2 Illicit connections; and 21.5.3 Reduction of pollutants in runoff.

ix. Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of this Order, including the prohibition of non-storm water discharges into the MS4 and receiving waters. This means the Permittee must have authority to enter, monitor, inspect, take measurements, review and copy records, and require regular reports from entities discharging into its MS4;
Municipal Code Sections: 13.23 Right of Entry of health officer; obedience to orders of health officer; 21.5.1 Illicit discharges, dumping, and non-stormwater discharges; 21.5.5 Control of pollutants from industrial activities; 21.5.7 Control of pollutants from state permitted construction activities; 21.6.2 Containment and testing; 24.11 Building Code amendments, additions, deletions; California Building Code 104.4 Inspections, and; California Building Code 104.6 Right of Entry.

x. Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations;
Municipal Code Sections: 21.5.4 Control of pollutants from commercial facilities; 21.5.5 Control of pollutants from industrial activities; 21.5.6 Control of pollutants from other industrial facilities; 21.5.7 Control of pollutants from state permitted construction activities; 21.5.8 Control of pollutants from other construction activities, and; 21.5.9 Control of pollutants from new developments/redevelopment projects.

xi. Require that structural BMPs are properly operated and maintained; and
Municipal Code Sections: 21.5.4 Control of pollutants from commercial facilities; 21.5.5 Control of pollutants from industrial activities; 21.5.6 Control of pollutants from other industrial facilities; 21.5.7 Control of pollutants from state permitted construction activities; 21.5.8 Control of pollutants from other construction activities; 21.5.9 Control of pollutants from new developments/redevelopment projects, and; 24.11 Building Code amendments, additions, deletions (See especially Section J101 General).

xii. Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4.
Municipal Code Sections: 21.5.4 Control of pollutants from commercial facilities; 21.5.5 Control of pollutants from industrial activities; 21.5.6 Control of pollutants

from other industrial facilities; 21.5.7 Control of pollutants from state permitted construction activities; 21.5.8 Control of pollutants from other construction activities, and; 21.5.9 Control of pollutants from new developments/redevelopment projects (See especially Section J101 General).

The City's legal procedures available to mandate compliance with applicable municipal ordinances identified in the above section, and therefore with the conditions of the Order, can be found in Section 21.3.1 Local Authority. Violations of this section are deemed a "Public Nuisance" in section 21.6.1, where every violation of this chapter is a misdemeanor and a public nuisance. The City may enforce violations of its code either administratively or via the judicial system.

If you have any questions please contact me at 323-583-8811 extension 162 or Claudia Arellano of the Community Services Department staff at 323-583-8811 extension 258.

Sincerely,

Scott E. Porter
Deputy City Attorney

SEP/SKW/ca

COUNTY OF LOS ANGELES
OFFICE OF THE COUNTY COUNSEL
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JOHN F. KRATTLI
County Counsel

December 16, 2013

Mr. Samuel Unger, P.E., Executive Officer
California Regional Water Quality Control Board – Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013-2343

Attention: Mr. Ivar Ridgeway

Re: Certification By Legal Counsel For Los Angeles County Flood Control District's Annual Report

Dear Mr. Unger:

Pursuant to the requirements of Part VI(A)(2)(b) of Order No. R4-2012-0175 (the "Order"), the Office of the County Counsel of the County of Los Angeles makes the following certification in support of the Annual Report of the Los Angeles County Flood Control District ("LACFCD"):

Certification Pursuant To Order Part VI(A)(2)(b)

"*Each Permittee must submit a statement certified by its chief legal counsel that the Permittee has the legal authority within its jurisdiction to implement and enforce the requirements contained in 40 CFR §122.26(d)(2)(i)(A-F) and this Order.*"

LACFCD has the legal authority within its jurisdiction to implement and enforce each of the requirements contained in 40 CFR §122.26(d)(2)(i)(A-F) and the Order.

Order Part VI(A)(2)(b)(i)

"*Citation of applicable municipal ordinances or other appropriate legal authorities and their relationship to the requirements of 40 CFR §122.26(d)(2)(i)(A-F) and this Order*"

Citations Of Applicable Ordinances Or Other Legal Authorities

Although many portions of State law, the Charter of the County of Los Angeles, the Los Angeles County Code and LACFCD's Flood Control District Code ("Code") are potentially applicable to the implementation and enforcement of these requirements, the primary applicable laws and ordinances are as follows:

Los Angeles County Code, Title 12, Chapter 12.80 STORMWATER AND RUNOFF POLLUTION CONTROL, including:

§12.80.010 - §12.80.360 Definitions

§12.80.370 Short title.

§12.80.380 Purpose and intent.

§12.80.390 Applicability of this chapter.

§12.80.400 Standards, guidelines and criteria.

§12.80.410 Illicit discharges prohibited.

§12.80.420 Installation or use of illicit connections prohibited.

§12.80.430 Removal of illicit connection from the storm drain system.

§12.80.440 Littering and other discharge of polluting or damaging substances prohibited.

§12.80.450 Stormwater and runoff pollution mitigation for construction activity.

§12.80.460 Prohibited discharges from industrial or commercial activity.

§12.80.470 Industrial/commercial facility sources required to obtain a NPDES permit.

§12.80.480 Public facility sources required to obtain a NPDES permit.

§12.80.490 Notification of uncontrolled discharges required.

§12.80.500 Good housekeeping provisions.

§12.80.510 Best management practices for construction activity.

§12.80.520 Best management practices for industrial and commercial facilities.

§12.80.530 Installation of structural BMPs.

§12.80.540 BMPs to be consistent with environmental goals.

§12.80.550 Enforcement—Director's powers and duties.

§12.80.560 Identification for inspectors and maintenance personnel.

§12.80.570 Obstructing access to facilities prohibited.

§12.80.580 Inspection to ascertain compliance—Access required.

§12.80.590 Interference with inspector prohibited.

§12.80.600 Notice to correct violations—Director may take action.

§12.80.610 Violation a public nuisance.

§12.80.620 Nuisance abatement—Director to perform work when—Costs.

§12.80.630 Violation—Penalty.

§12.80.635 Administrative fines.

§12.80.640 Penalties not exclusive.

§12.80.650 Conflicts with other code sections.

§12.80.660 Severability.

§12.80.700 Purpose.

§12.80.710 Applicability.

§12.80.720 Registration required.

§12.80.730 Exempt facilities.

§12.80.740 Certificate of inspection—Issuance by the director.

§12.80.750 Certificate of inspection—Suspension or revocation.

§12.80.760 Certificate of inspection—Termination.

§12.80.770 Service fees.

§12.80.780 Fee schedule.

§12.80.790 Credit for overlapping inspection programs.

§12.80.800 Annual review of fees.

Los Angeles County Code, Title 12, Chapter 12.84 LOW IMPACT DEVELOPMENT STANDARDS, including:

§12.84.410 Purpose.

§12.84.420 Definitions.

§12.84.430 Applicability.

§12.84.440 Low Impact Development Standards.

§12.84.445 Hydromodification Control.

§12.84.450 LID Plan Review.

§12.84.460 Additional Requirements.

Los Angeles County Code, Title 22 PLANNING AND ZONING, Part 6 ENFORCEMENT PROCEDURES, including:

§22.60.330 General prohibitions.

§22.60.340 Violations.

§22.60.350 Public nuisance.

§22.60.360 Infractions.

§22.60.370 Injunction.

§22.60.380 Enforcement.

§22.60.390 Zoning enforcement order and noncompliance fee.

Los Angeles County Code, Title 26 BUILDING CODE, including:

§26.103 Violations And Penalties

§26.104 Organization And Enforcement

§26.105 Appeals Boards

§26.106 Permits

§26.107 Fees

§26.108 Inspections

LACFCD Code Chapter 21 - STORMWATER AND RUNOFF POLLUTION CONTROL including:

§21.01 Purpose and Intent

§21.03 Definitions

§21.05 Standards, Guidelines, and Criteria

§21.07 Prohibited Discharges

§21.09 Installation or Use of Illicit Connections Prohibited

§21.11 Littering Prohibited

§21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity

§21.15 Notification of Uncontrolled Discharges Required

§21.17 Requirement to Monitor and Analyze

§21.19 Conflicts With Other Code Sections

§21.21 Severability

§21.23 Violation a Public Nuisance

California Government Code §6502

California Government Code §23004

California Water Code §8100 *et. seq.*

Relationship Of Applicable Ordinances Or Other Legal Authorities To The Requirements of 40 CFR §122.26(d)(2)(i)(A-F) And The Order

Although, depending upon the particular issue, there may be multiple ways in which particular sections of the County of Los Angeles' ordinances, LACFCD's ordinances, and statutes relate to the requirements contained in 40 CFR §122.26(d)(2)(i)(A-F) and the Order, the table below indicates the basic relationship with Part VI(A)(2)(a) of the Order:

Order Part VI(A)(2)(a) Items	**Primary Applicable Ordinance/Statute**
i. Control the contribution of pollutants to its MS4 from storm water discharges associated with industrial and construction activity and control the quality of storm water discharged from industrial and construction sites. This requirement applies both to industrial and construction sites with coverage under an NPDES permit, as well as to those sites that do not have coverage under an NPDES permit.	Los Angeles County Code: §12.80.410 [illicit discharge prohibited]; §12.80.450 [construction] §12.80.460 [industrial and commercial] §12.80.470 and .480 [industrial and commercial NPDES requirements] §12.84.440 [LID standards] §12.84.445 [hydromodification control] §12.84.450 [LID Plan Review] §22.60.330 [general prohibitions] §22.60.340 [violations] §22.60.350 [public nuisance] §22.60.360 [infractions] §22.60.370 [injunction] §22.60.380 [enforcement.] §22.60.390 [zoning enforcement order] §26.103 [violations and penalties]

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
	§26.104 [enforcement] §26.106 [permits] §26.108 [inspections] LACFCD Code: §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze §21.23 Violation a Public Nuisance
ii. Prohibit all non-storm water discharges through the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A.	Los Angeles County Code: §12.80.410 [illicit discharge prohibited] LACFCD Code: §21.07 Prohibited Discharges
iii. Prohibit and eliminate illicit discharges and illicit connections to the MS4.	Los Angeles County Code: §12.80.410 [illicit discharge prohibited]; §12.80.420 [illicit connections prohibited] LACFCD Code: §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.23 Violation a Public Nuisance

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
iv. Control the discharge of spills, dumping, or disposal of materials other than storm water to its MS4.	Los Angeles County Code: §12.80.410 [illicit discharge prohibited]; §12.80.440 [littering and other polluting prohibited] LACFCD Code: §19.07 Interference With or Placing Obstructions, Refuse, Contaminating Substances, or Invasive Species in Facilities Prohibited §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.11 Littering Prohibited §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze §21.23 Violation a Public Nuisance
v. Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows).	Los Angeles County Code: §12.80.490 [notification of uncontrolled discharge] §12.80.570 [obstructing access to facilities] §12.80.580 [compliance inspection] §12.80.610 [violation a nuisance] §12.620 [nuisance abatement] §12.80.635 [violation penalty]

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
	§12.80.640 [penalties not exclusive] §12.84.440 [LID standards] §12.84.445 [hydromodification control] §12.84.450 [LID Plan Review] §22.60.330 [general prohibitions] §22.60.340 [violations] §22.60.350 [public nuisance] §22.60.360 [infractions] §22.60.370 [injunction] §22.60.380 [enforcement.] §22.60.390 [zoning enforcement order] §26.103 [violations and penalties] §26.104 [enforcement] §26.106 [permits] §26.108 [inspections] LACFCD Code: §19.11 Violation a Public Nuisance §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.11 Littering Prohibited §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
	§21.19 Conflicts With Other Code Sections §21.23 Violation a Public Nuisance
vi. Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders.	Same as item v., above
vii. Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements among Copermittees.	California Government Code §6502 California Government Code §23004
viii. Control of the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other owners of the MS4 such as the State of California Department of Transportation.	California Government Code §6502 California Government Code §23004
ix. Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of this Order, including the prohibition of non-storm water discharges into the MS4 and receiving waters. This means the Permittee must have authority to enter, monitor, inspect, take measurements, review and copy records, and require regular reports from entities discharging into its MS4.	Los Angeles County Code: §12.80.490 [notification of uncontrolled discharge] §12.80.570 [obstructing access to facilities] §12.80.580 [compliance inspection] §12.80.610 [violation a nuisance] §12.80.620 [nuisance abatement] §12.80.635 [violation penalty] §12.80.640 [penalties not exclusive] §22.60.380 [enforcement.] §26.106 [permits] §26.108 [inspections]

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
	LACFCD Code: §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.11 Littering Prohibited §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze §21.23 Violation a Public Nuisance
x. Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations.	Los Angeles County Code: §12.80.450 [construction mitigation] §12.80.500 [good housekeeping practices] §12.80.510 [construction BMPs] §12.80.520 [industrial/commercial BMPs] §12.84.440 [LID standards] §12.84.450 [LID Plan Review] §22.60.330 [general prohibitions] §22.60.380 [enforcement.] §22.60.390 [zoning enforcement order] §26.106 [permits] §26.108 [inspections] LACFCD Code: §21.05 Standards, Guidelines, and Criteria

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
	§21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.11 Littering Prohibited §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze §21.23 Violation a Public Nuisance
xi. Require that structural BMPs are properly operated and maintained.	Los Angeles County Code: §12.80.530 [installation of structural BMPs] §22.60.380 [enforcement.] §22.60.390 [zoning enforcement order] §26.106 [permits] §26.108 [inspections] LACFCD Code: §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.11 Littering Prohibited §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
	§21.23 Violation a Public Nuisance
xii. Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4.	Los Angeles County Code: §12.80.530 [installation of structural BMPs] §22.60.380 [enforcement.] §22.60.390 [zoning enforcement order] §26.106 [permits] §26.108 [inspections] LACFCD Code: §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.11 Littering Prohibited §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze §21.23 Violation a Public Nuisance

Order Part VI(A)(2)(b)(ii)

"*Identification of the local administrative and legal procedures available to mandate compliance with applicable municipal ordinances identified in subsection (i) above and therefore with the conditions of this Order, and a statement as to whether enforcement actions can be completed administratively or whether they must be commenced and completed in the judicial system.*"

The local administrative and legal procedures available to mandate compliance with the above ordinances are specified in those ordinances, particularly in:

Los Angeles County Code:

§12.80.550 Enforcement—Director's powers and duties.

§12.80.600 Notice to correct violations—Director may take action.

§12.80.610 Violation a public nuisance.

§12.80.620 Nuisance abatement—Director to perform work when—Costs.

§12.80.630 Violation—Penalty.

§12.80.635 Administrative fines.

§12.80.640 Penalties not exclusive.

§12.84.450 LID Plan Review.

§12.84.460 Additional Requirements.

Title 26, §103 Violations And Penalties

Title 26, §104 Organization And Enforcement

Title 26, §105 Appeals Boards

Title 26, §106 Permits

§22.60.330 General prohibitions.

§22.60.340 Violations.

§22.60.350 Public nuisance.

§22.60.360 Infractions.

§22.60.370 Injunction.

§22.60.380 Enforcement.

§22.60.390 Zoning enforcement order and noncompliance fee.

LACFCD Code:

§21.05 Standards, Guidelines, and Criteria

§21.07 Prohibited Discharges

§21.09 Installation or Use of Illicit Connections Prohibited

§21.11 Littering Prohibited

§21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity

§21.15 Notification of Uncontrolled Discharges Required

§21.17 Requirement to Monitor and Analyze

§21.23 Violation a Public Nuisance

LACFCD attempts to first resolve each enforcement action administratively. However, the above cited ordinances also provide LACFCD with the authority to pursue such actions in the judicial system as necessary.

Very truly yours,

JOHN F. KRATTLI
County Counsel

By
JUDITH A. FRIES
Principal Deputy County Counsel
Public Works Division

JAF:jyj

Los Angeles River Upper Reach 2 Watershed Management Area

Revised Coordinated Integrated Monitoring Program (CIMP) Plan

Submittal Date: June 26, 2014
Revision Submittal Date: February 19, 2015

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RB-AR6182

Los Angeles River Upper Reach 2 Watershed Management Area

Revised Coordinated Integrated Monitoring Program (CIMP)

Prepared for:

Los Angeles Gateway Region
Integrated Regional Water Management Authority
16401 Paramount Boulevard
Paramount, California 90641
TEL (626) 485-0338

On Behalf of the Cities of Bell (WDID 4B190153001), Bell Gardens (WDID 4B190139002), Commerce (WDID 4B190161001), Cudahy (WDID 4B190164001), Huntington Park (WDID 4B190177001), Maywood (WDID 4B190192001), Vernon (WDID 4B190216001), and the Los Angeles County Flood Control District (WDID4B190107101)

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June 26, 2014
Revision Submittal Date February 19, 2015

RB-AR6183

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Appendices

Acronyms

ACOE	(United States) Army Corps of Engineers
AED	Allowable Exceedance Days
AGR	Agricultural (land use)
AIN	(Los Angeles County) Assessor's Identification Number
AMP	Adaptive Management Process
BMP	Best Management Practice
CEDEN	California Environmental Data Exchange Network
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFS	Cubic Feet per Second
CFU	Colony Forming Unit
CIMP	Coordinated Integrated Monitoring Program
CMP	Coordinated Monitoring Program
COM	Commercial (land Use)
CPS	Connector Pipe Screen
CTR	California Toxics Rule
CWA	Clean Water Act
CWC	California Water Code
CWH	Council for Watershed Health
DGR	Daily Generation Rate (trash)
DO	Dissolved Oxygen
E. coli	*Escherichia coli*
EDTA	Ethylene Diamine-Tetra Acetic acid
EDU	Educational (Land Use)
EIA	Effective Impervious Area
EWMP	Enhanced Watershed Management Program
FCCD	Full Capture Certified Device (FCCD)
GIS	Geographic Information System
GWMA	Gateway Water Management Authority
HFS	High Flow Suspension
HUC	Hydrologic Unit Code
IC/ID	Illicit Connection/Illicit Discharge
IMCR	Integrated Monitoring Compliance Report
IND	Industrial (land use)
LA	Load Allocation (TMDL)
LACDPW SMR	Los Angeles County Department of Public Works Stormwater Monitoring Report
LACFCD	Los Angeles County Flood Control District
LAR	Los Angeles River
LAR MTMDL CMP	Los Angeles River Metals TMDL Coordinated Monitoring Program
LAR UR2 WMA	Los Angeles River Upper Reach 2 Watershed Management Area
LARWMP	Los Angeles River Watershed Monitoring Program
LARWQCB	Los Angeles Regional Water Quality Control Board
LID	Low Impact Development
LLARWMG	Lower Los Angels River Watershed Management Group
LRS	Load Reduction Strategy
MAL	Municipal Action Limit
MCM	Minimum Control Measure
MDL	Method Detection Limit
MEP	Maximum Extent Practicable
MES	Mass Emission Station
MF RES	Multifamily Residential (land use)

MGD	Million Gallons per Day
ML	Minimum Level
MPN	Most Probably Number
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
NOI	Notice Of Intent
NPDES	National Pollutant Discharge Elimination System
NSW	Non-Stormwater
NSWD	Non-Stormwater Discharge
PBO	Piperonyl Butyl-Oxide
PCBs	Poly-Chlorinated Biphenyls
PCIS	Plan Check and Inspection System
POTW	Publically Owned Treatment Works
QAPP	Quality Assurance Project Program
RAA	Reasonable Assurance Analysis
RL	Reporting Limit
RWL	Receiving Water Limitation
SCCWRP	Southern California Coastal Water Research Project
SDTF	Standardized Data Transfer Format
SF RES	Single Family Residential (land use)
SMC	Stormwater Monitoring Coalition
SPE	Solid Phase Extraction
SSO	Site Specific Objectives
STS	Sodium ThioSulfate
SW	Stormwater
SWAMP	State Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TC	Technical Committee
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TRANS	Transportation (land use)
TRE	Toxicity Reduction Evaluation
TSS	Total Suspended Solids
ULARWMG	Upper Los Angeles River Watershed Management Group
UR2	Upper Reach 2
USEPA	United States Environmental Protection Agency
USGS	United State Geologic Survey
VAC	Vacant or Open Space (land use)
WBPC	Water Body- Pollutant Combination
WDID	Waste Discharges Identification
WER	Water Effects Ratio
WLA	Waste Load Allocation (TMDL)
WMA	Watershed Management Area
WMP	Watershed Management Program
WRP	Water Recovery Plant
WQO	Water Quality Objectives
WQBEL	Water Quality-Based Effluent Limitation

Executive Summary

The California Regional Water Quality Control Board, Los Angeles Region, adopted the fourth term Coastal Los Angeles County Municipal Separate Storm Sewer System (MS4) NPDES Permit as Order No. R4-2012-0175, on November 8, 2012, which then became effective on December 28, 2012. This Permit encourages Permittees to join together into Watershed Management Groups and develop Watershed Management Program (WMP) or Enhanced WMP (EWMP) Plan. This plan is intended to guide the iterative adaptive management process for the individual group as they prioritize the implementation of watershed control measures to reduce the discharge of runoff, and the pollutants it may convey, to local receiving waters, thereby contributing to the attainment and protection of water body beneficial uses.

In a June 27, 2013, Notice of Intent (NOI) letter, which was acknowledged in a September 25, 2013, NOI Approval letter from the Regional Board Executive Officer, the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon, along with the Los Angeles County Flood Control District (LACFCD), announced the formation of the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA). Furthermore these Permittees agreed to prepare a Reasonable Assurance Analysis (RAA), to guide development of the WMP Plan, and a Coordinated Integrated Monitoring Program (CIMP) Plan to track progress in attaining the Permit goals and objectives, through the iterative adaptive management process identified within MS4 Permit Part VI.C.8.a.

The LAR UR2 WMA Cities lie exclusively within the Los Angeles River Watershed and each Permittee discharges to Reach 2 of the Los Angeles River, which flows during dry-weather primarily with treated wastewater. The Cities of Bell Garden and Commerce also drain southeast to the normally dry concrete-lined Rio Hondo tributary channel. To the north and west, the LAR UR2 WMA is bordered by, and receives discharges from, the Upper Los Angeles River EWMP Group, while the Lower Los Angeles River WMP Group aligns with the east and south LAR UR2 WMA borders.

Based on discussions with Board staff and meetings with other watershed management groups, this document constitutes a Coordinated Integrated Monitoring Program (CIMP) Plan that will allow implementation of integrated approach to support the Adaptive Management Process (AMP) as intended in 2012 MS4 Permit Attachment E (MRP), Part II.C. The LAR UR2 WMA proposes to implement a dry and wet-weather receiving water monitoring location, along the Los Angeles River at Tweedy Avenue in the City of South Gate, just downstream of the largest storm drains from the area.

Seven stormwater outfall based monitoring sites are proposed, that would allow water quality to be collected annually, from over 70% of the LAR UR2 WMA, based on Los Angeles County subwatershed delineations. Since the Rio Hondo is normally dry, the Ford Park outfall site would be sampled during three storm events per year to develop WMA trend data and compliment data that might be needed to support regional wet-weather receiving water assessments. The remaining six outfall sites would be split into two groups, with similar land use characteristics, of three each and monitored annually. This strategy is proposed to facilitate annual characterization of most discharges from the LAR UR2 WMA.

The LAR UR2 WMA CIMP also proposes a non-stormwater outfall based monitoring approach that will complement the Illegal Discharge Illicit Connection (IC/ID) Elimination Minimum Control Measure (MCM) watershed control measure component of the WMP and Permit. Similarly, the New and Redevelopment Effectiveness Tracking MCM, should support the anticipated demonstration of steady progress in reducing pollutant loads and concentrations observed at the group outfalls and in adjacent receiving waters. Regional studies, through the (Southern California) Stormwater Monitoring Coalition (SMC), or more locally focused special studies, such as contemplated zinc Water Effects Ratio (WER) Site Specific Objective (SSO) study could also be coordinated through the AMP and implemented through modifications of the CIMP, to prioritize evolving water quality challenges and priorities that develop. Effective CIMP implementation will present difficult hurdles for all of the involved stakeholder groups.

1. Introduction

On November 8, 2012, the Regional Water Quality Control Board, Los Angeles Region (Regional Board or LARWQCB) adopted Order No. R4-2012-0175, *Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except those Discharges Originating from the City of Long Beach MS4*, herein the MS4 Permit or Permit which became effective on December 28, 2012. The Permit encourages Permittees to join together as Watershed Management Areas (WMAs) and propose individualized stormwater programs through the development and implementation of Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) Plans to demonstrate attainment of certain numeric limits expressed as Receiving Water Limitations (RWLs) and Water Quality-Based Effluent Limits (WQBELs). This document is the proposed CIMP for the Los Angeles River Upper Reach 2 (LAR UR2) WMA.

Permit Attachment E sets forth the requirements for the Monitoring and Reporting Program (MRP). The primary objectives for the MRP are listed in Part II.A of the MRP and are summarized as follows:

- Assess the chemical, physical, and biological impacts of MS4 discharges on receiving waters;
- Assess compliance with Total Maximum Daily Load (TMDL) wet-weather and dry-weather numeric limit waste load allocations (WLAs);
- Characterize pollutant loads in MS4 discharges;
- Identify sources of pollutants in MS4 discharges; and
- Measure and improve the effectiveness of pollutant controls implemented under the Permit.

Extensive default monitoring requirements are specified in the MRP, however the MRP allows Permittees, such as the LAR UR2 WMA, the option of proposing a CIMP that utilizes alternative approaches to meet the primary objectives of the MS4 Permit MRP. The CIMP should also identify TMDL monitoring requirements which are designed to unify the Permittees' efforts and provide consistent and comparable assessments of watershed water quality conditions and source control priorities.

1.1 Los Angeles River Upper Reach 2 Watershed Management Area Overview

Located in the south central Los Angeles River watershed, as shown in **Figure 1-1**, the LAR UR2 WMA includes the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD), as shown in **Figure 1-2**. The most prevalent land uses are industrial, residential, commercial, and transportation as shown in **Table 1-1** and **Figure 1-3**.

Table 1-1 Land Use Summaries by UR2 City

City	Agr	Com	Edu	Ind	MF Res	SF Res	Trans	Vac	Total
Bell	0%	16.15%	2.34%	17.67%	30.60%	16.24%	7.80%	9.20%	100%
Bell Gardens	1.68%	14.55%	6.17%	10.40%	46.65%	11.10%	0.52%	8.93%	100%
Commerce	0.46%	9.13%	0.58%	60.15%	3.09%	6.97%	15.51%	4.11%	100%
Cudahy	0%	7.44%	4.82%	13.28%	55.18%	6.47%	3.10%	9.71%	100%
Huntington Park	0%	18.24%	4.64%	17.27%	24.89%	29.14%	2.76%	3.06%	100%
Maywood	0%	14.45%	2.69%	6.85%	16.01%	57.05%	1.16%	1.79%	100%
Vernon	0%	0.50%	0.08%	77.52%	0.01%	0.03%	14.98%	6.88%	100%
LACFCD	NA	NA	NA	NA	NA	NA	NA	NA	NA
LAR UR2 Total	0.32%	9.98%	2.19%	42.41%	16.98%	12.55%	9.64%	5.93%	100%

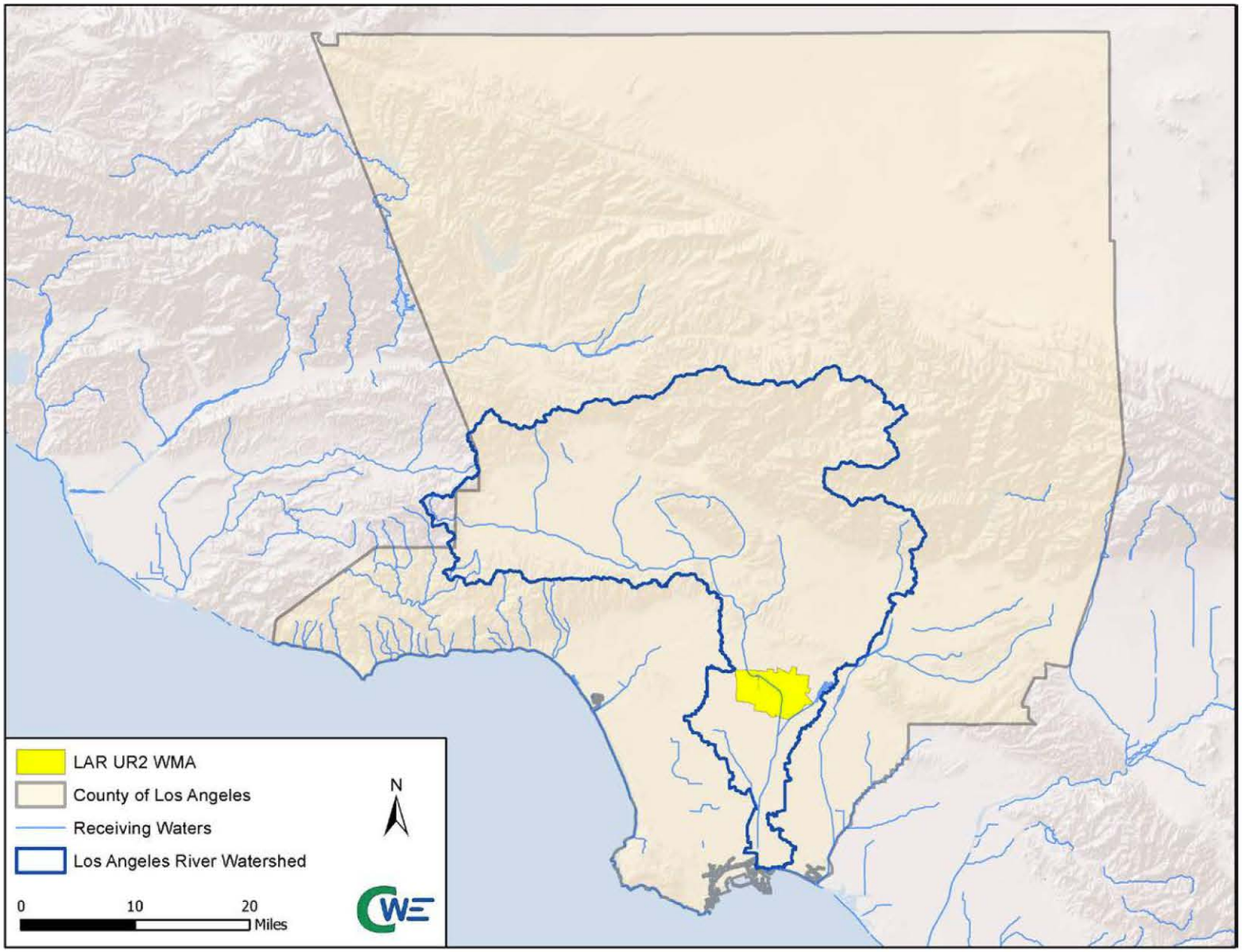

Figure 1-1 Los Angeles River Upper Reach 2 Watershed Management Area within Los Angeles Basin

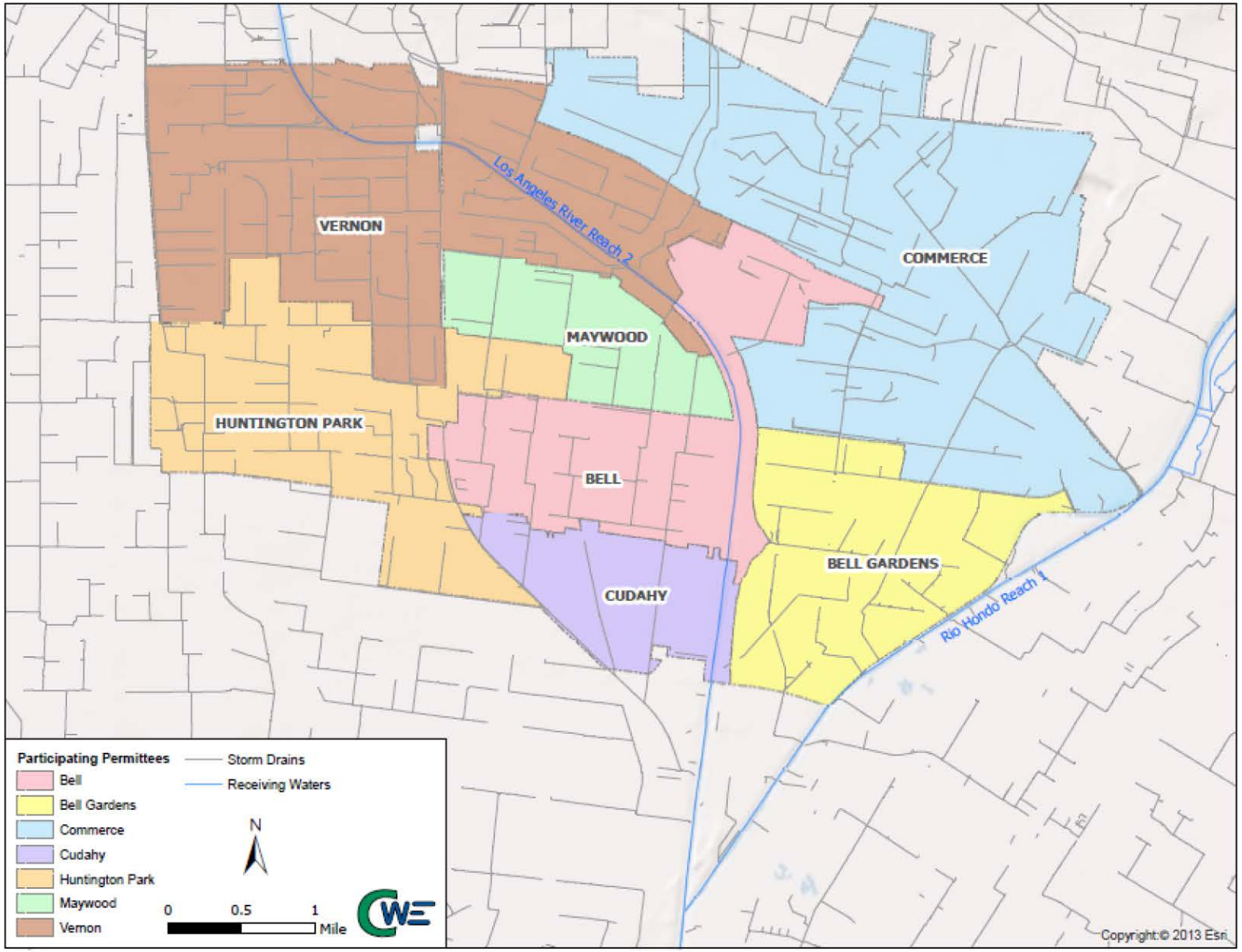

Figure 1-2 Participating Permittees

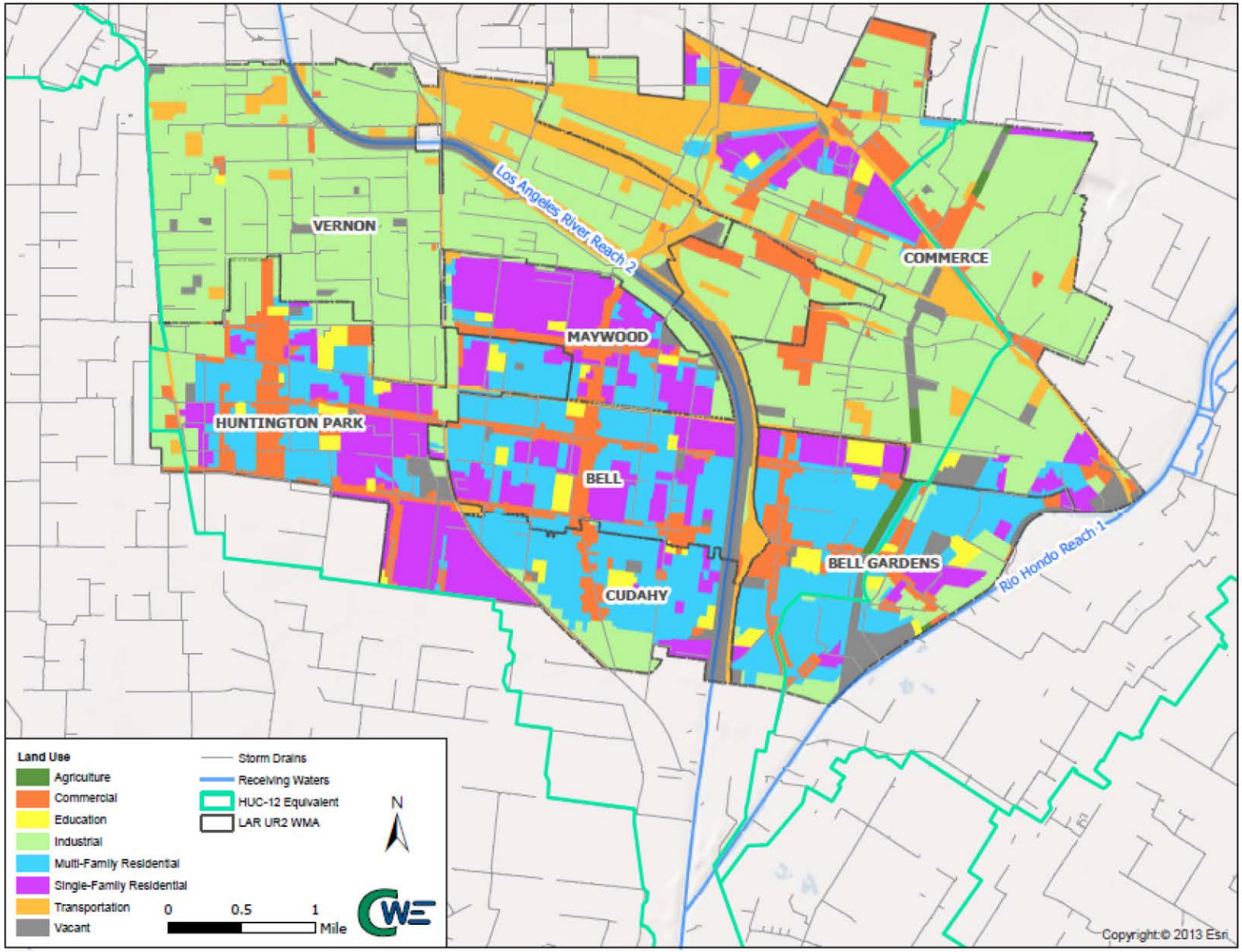

Figure 1-3 Land Use

The Los Angeles River flows 51 miles from the Santa Monica Mountains, in the west San Fernando Valley, to Long Beach Harbor, San Pedro Bay, and the Pacific Ocean. Including tributaries, the 824 square mile watershed has a total stream length of about 837 miles with about 4.6 square miles of lake area. The watershed includes steep, easily eroded, undeveloped mountainous areas in the Angeles National Forest and large urban areas in the midsection and south. Los Angeles River Reach 2 begins at the Arroyo Seco confluence and ends at the Compton Creek confluence. The primary Reach 2 tributary is the Rio Hondo.

The 120 square mile Rio Hondo subwatershed drains a large portion of the eastern Los Angeles River Watershed. Reach 2 of the Rio Hondo is located north of the Santa Ana Freeway, while Reach 1 stretches from the Freeway south to its confluence with the LAR. During storm events, flows in Rio Hondo Reach 2 are diverted to the adjacent Rio Hondo Spreading Grounds and used to recharge the central basin groundwater aquifer. When the Spreading Grounds are not operating, the Rio Hondo flows into Rio Hondo Reach 1 and the Los Angeles River.

The total area of the LAR UR2 WMA is approximately 14,215 acres, or 22.21 square miles and it is located the lower half of the Los Angeles River Watershed, beginning at about East 26th Street, in the City of Vernon, and ending at Patata Street, in the City of Cudahy. The Cities of Bell Gardens and Commerce are along the western bank of the Rio Hondo. As shown in **Figure 1-4**, a the receiving or surface waters defined by the Basin Plan within the LAR UR2 WMA include:

- Los Angeles River, Reach 2
- Rio Hondo, Reach 1

Watershed boundaries and other features, developed by the United States Geological Survey as Hydrologic Units Codes (HUC-12), are mapped in MS4 Permit Attachment B. In-lieu of these Permit specified boundaries, the March 26, 2014 Regional Board Reasonable Assurance Analysis (RAA) Guidelines allows WMP or EWMP groups to use equivalent HUC-12 boundaries, prepared by the LACFCD. Following the LACFCD equivalent HUC-12 boundaries and nomenclature conventions, **Figure 1-4** identifies the relevant LAR UR2 WMA receiving water tributary areas as follows:

- Compton Creek – Los Angeles River (180701050402)
- Chavez Ravine – Los Angeles River (180701050401)
- Alhambra Wash – Rio Hondo (180701050303)

The LAR UR2 WMA municipal and LACFCD equivalent HUC-12 boundaries, are shown in **Figure 1-5**, overlain on the Los Angeles County Geospatial Library layer of the LACFCD MS4 and City of Vernon drainage system elements, along with the LACFCD major outfalls, both within and adjacent to the WMA**.** The other LAR UR2 WMA Permittees did not identify any additional drainage infrastructure elements to supplement the available County GIS data.

The LAR UR2 WMA drainage element specific to each Permittee are also identified in **Appendix A**

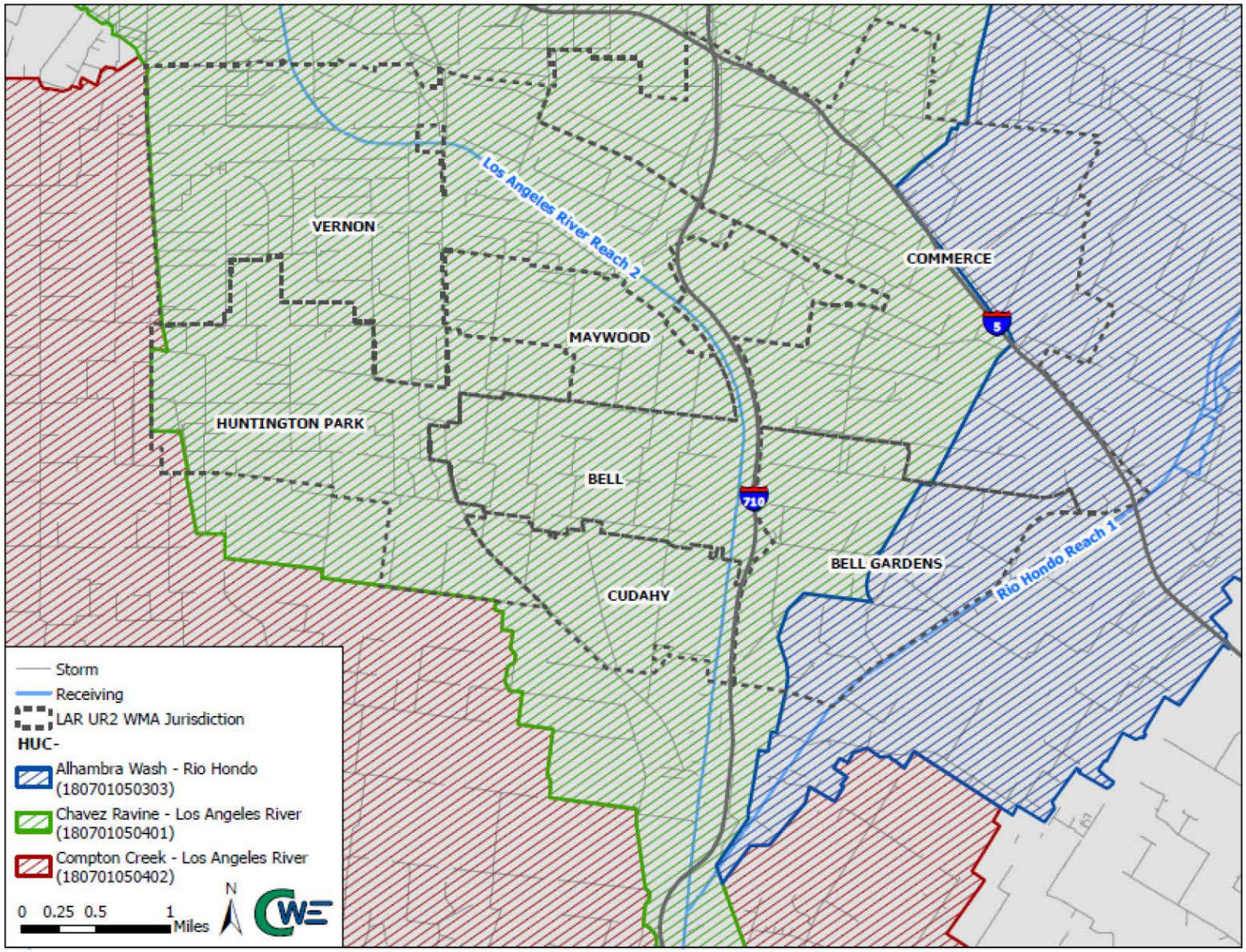

Figure 1-4 County Equivalent HUC-12 Subwatersheds

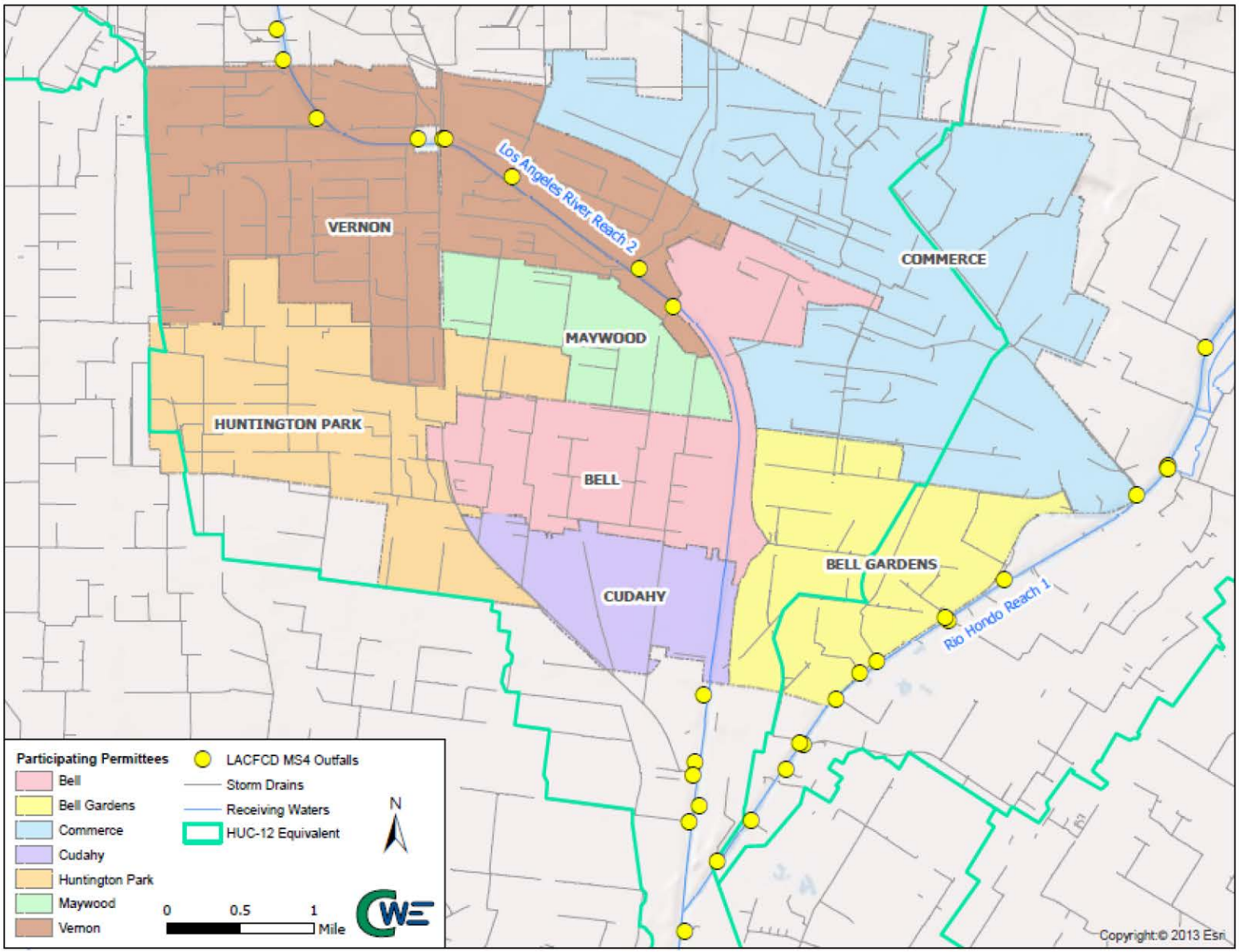

Figure 1-5 Participating Permittees with HUC-12, MS4 Drainage System and County Outfalls

1.2 Water Quality Priorities

In accordance with Permit Part IV.C.5(a)ii, water body–pollutant combinations (WBPCs) were classified into the following three categories:

- Category 1: WBPC subject to TMDL
- Category 2: WBPC on 2010 Clean Water Act (CWA) 303(d) List
- Category 3: WBPC with RWL exceedances

In accordance with Permit Part VI.C.5 water quality priorities were identified based on the WBPC compliance deadlines as follows:

- Priority 1(a) – TMDLs controlling pollutants for which there are numeric limits with interim or final compliance deadlines within the permit term or TMDL compliance deadlines that have already passed and the limitations have not been achieved.
- Priority 1(b) – TMDLs controlling pollutants for which the numeric limits with interim or final compliance deadlines between September 6, 2012 and October 25, 2017 have not been achieved.
- Priority 2 – All other controlling pollutants for which data indicate impairment or exceedances of RWLs in the receiving water and the findings from the source assessment implicates discharges from the MS4 shall be considered the second highest priority.

This process is intended to prioritize WBPCs to guide implementation of structural and institutional best management practices (BMPs) and monitoring activities in the CIMP. **Table 1-2** lists the identified water quality priorities, WBPCs categories, and compliance deadlines for the LAR UR2 WMA where nutrients and trash were identified as Priority 1 WBPCs. As part of the adaptive management process (AMP), categorization of WBPCs may be adjusted based on data obtained from monitoring, source evaluations, and BMP implementation. Approved CIMP derived data may result in future Category 3 designations in instances where MS4 discharges are identified as contributing to RWLs exceedances. Under these conditions, the appropriate LAR UR2 WMA Permittees will follow the guidance in Permit Part VI.C.2.a.iii.

1.3 Total Maximum Daily Load Monitoring Requirements

One of the regulatory mechanisms for addressing water quality impairments is the development and implementation of a TMDL, which may be established by the State Water Resources Control Board (State Board), or the United States Environmental Protection Agency (USEPA), or proposed by Permittees and approved by the regulatory agencies. MS4 Permit Attachment O identifies four TMDLs that impact Los Angeles River Reach 2 and the LAR UR2 WMA. These TMDLs, along with their Board resolution number and most recent amendment effective or significant revision dates, are as follows:

- Los Angeles River Bacteria TMDL – Resolution 2010-007 and became effective on March 23, 2012
- Los Angeles River and Tributary Metals TMDL – Resolution 2007-014 and became effective on October 29, 2008, and Resolution 2010-003 effective on November 3, 2011
- Los Angeles River Nitrogen Compounds and Related Effects TMDL – Resolution 2003-009 and became effective on March 23, 2004. Site Specific Objectives (SSOs) for Ammonia were approved by the State Water Resources Control Board (SWRCB) June 4, 2013
- Los Angeles River Trash TMDL – adopted Resolution 2007-012 and became effective on September 23, 2008.

The TMDL numeric limits are summarized in the following subsections and MS4 Permit Attachment O.

Table 1-2 Identified Water Quality Priorities

Priority	Category	Pollutant	Water Body		Compliance Deadline
			Los Angeles River Reach 2	Rio Hondo Reach 1	
1a	1	Ammonia (NH_3-N)	x	x	23-Mar-04
	1	Nitrate (NO_3-N)	x	x	23-Mar-04
	1	Nitrite (NO_2-N)	x	x	23-Mar-04
	1	NO_3-N+NO_2-N	x	x	23-Mar-04
1b	1	Trash	x	x	September 30, 2016 (effectively 10/1/15)
2	1	*E.coli* Dry-Weather	x	x	March 23, 2022 (Group Interim Single sample/Final WQBEL)
	1	Copper Dry-Weather	x	x	11-Jan-24
	1	Lead Dry-Weather	x	x	11-Jan-24
	1	Zinc Dry-Weather		x	11-Jan-24
	1	Copper Wet-Weather	x	x	11-Jan-28
	1	Lead Wet-Weather	x	x	11-Jan-28
	1	Zinc Wet-Weather	x	x	11-Jan-28
	1	Cadmium Wet-Weather	x	x	11-Jan-28
	1	*E.coli* Wet-Weather	x	x	23-Mar-37
	2	Oil	x		N/A
	2	Coliform Bacteria*		x	N/A
	2	Toxicity		x	N/A
	3	To Be Determined based on results of future CIMP monitoring			

* Addressed by a TMDL

1.3.1 Los Angeles River Bacteria TMDL

The Los Angeles River Bacteria TMDL was adopted by the LARWQCB as Resolution 2010-007 and became effective on March 23, 2012, after approval by the State Board and USEPA. Ambient monitoring, monitoring to assess attainment with WLAs, monitoring to support Load Reduction Strategies (LRS) or alternative compliance strategies, and monitoring to support wet-weather implementation plans are identified in the TMDL. A CMP was submitted to the Regional Board by the Los Angeles River Watershed Bacteria TMDL Technical Committee, on behalf of the LAR Watershed Permittees, however, monitoring was pre-empted in anticipation of CIMP development. The TMDL has multiple implementation phases, wet and dry compliance schedules, numeric WLAs, and allows Permittees to developing Load Reduction Strategies (LRS) to gain an extended compliance schedule. Permit Attachment O Part D.4, summarizes TMDL monitoring requirements, while **Table 1-3** summarizes applicable effluent limits for LAR UR2 WMA.

Table 1-3 Los Angeles River Bacteria TMDL Numeric Limits

Constituent	Effluent Limitation (MPN or CFU)		Final Compliance Date	
	Daily Maximum	Geometric Mean	Wet-Weather	Dry-Weather
E. coli	235/100 mL	126/100 mL	March 23, 2037	March 23, 2022

The interim dry-weather limits are group-based and shared among the Permittees within a drainage area. However, they may be distributed based on proportion of drainage area, upon approval of the Regional Board. **Table 1-4** presents the group interim dry-weather limits for the LAR UR2 WMA.

Table 1-4 Grouped Interim Dry-Weather Single Sample Bacteria Numeric Limits

River Segment of Tributary	Daily Maximum E. coli Load (10^9 MPN/day)	First Phase Compliance Date	Second Phase Compliance Date
Los Angeles River Segment B (Rosecrans to Figueroa)	518	March 23, 2022	September 23 2028
Rio Hondo	2	September 23, 2023	March 23, 2030

In addition to the numeric limits for MS4 discharges, the Los Angeles River Bacteria TMDL includes allowable exceedance limits, based on the number of days, or weeks, per year, where the allowable bacteria limits are not achieved. The final compliance dates, for the annually assessed grouped single sample bacteria limits are stated to be March 23, 2022 for dry- and March 23, 2037 for wet-weather. These requirements are on **Table 1-5**, while the numeric water quality objectives are on **Table 1-6**.

Table 1-5 Grouped Final Single Sample Bacteria Allowable Exceedances

Time Period	Annual Allowable Exceedance Days (AEDs) of the Single Sample Objective (days)	
	Daily Sampling	Weekly Sampling
Dry-Weather	5	1
Non-High Flow Suspension (HFS[1]) Waterbodies Wet-Weather	15	2
HFS[1] Waterbodies Wet-Weather	10 (not including HFS days)	2 (not including HFS days)

[1] HFS stands for high flow suspension as defined in Chapter 2 of the Basin Plan shall apply to water contact recreational activities associated with the swimmable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use, non-contact water recreation involving incidental water contact regulated under the REC-2 use, and the associated bacteriological objectives set to protect those activities. WQO set to protect (1) other recreational uses associated with the fishable goal as expressed in the federal Clean Water Act section 101(a)(2) and regulated under the REC-1 use and (2) other REC-2 uses (e.g., uses involving the aesthetic aspects of water) shall remain in effect at all times for waters where the (ad) footnote appears in Table 2-1a. The High Flow Suspension shall apply on days with rainfall greater than or equal to ½ inch and the 24 hours following the end of the ½-inch or greater rain event, as measured at the nearest local rain gauge, using local Doppler radar, or using widely accepted rainfall estimation methods. The High Flow Suspension only applies to engineered channels, defined as inland, flowing surface water bodies with a box, V-shaped or trapezoidal configuration that have been lined on the sides and/or bottom with concrete. The water bodies to which the High Flow Suspension applies are identified in Table 2-1a in the column labeled "High Flow Suspension".

Table 1-6 Los Angeles River Bacteria TMDL Geometric Mean Allowable Limit

Constituent	Geometric Mean (MPN or CFU)
E. coli	126/100 mL

1.3.2 Los Angeles River and Tributaries Metal TMDL

The Los Angeles River and Tributaries Metals TMDL was adopted by the Regional Board as Resolution 2007-014 and became effective on October 29, 2008, after approval by the State Board and USEPA. The TMDL assesses the load or concentration of several metals in comparison to California Toxic Rule values, during dry- and wet-weather conditions. Dry-weather is defined as days when the maximum daily flow in the river is less than 500 cubic feet per second (CFS) as measured at the Wardlow Street gauge station.

Since metal toxicity is correlated to bioavailability, as assessed by water hardness, the permit and TMDL WQBELs values were determined using total to dissolved "translator" values, prepared by the USEPA. Weather and water body specific hardness data result in a relatively significant variability in the limit among the various water body and weather combinations. Local water characteristics, such as organic content, may result in Water Effect Ratios (WERs) and Site Specific Objectives (SSOs) that alter the preliminary toxicity assessment used in developing a TMDL and may change the final numeric WQBELs.

Table 1-7 through **Table 1-10** lists the applicable LAR UR2 WMA final numeric limits, subject to any future basin plan amendments, established by the Los Angeles River and Tributaries Metals TMDL and identified in Attachment O, Section C.2 and C.3 of the MS4 Permit. **Table 1-7** lists the grouped (shared) dry-weather final numeric limits, expressed as total recoverable metals daily loads. Dry-weather flows in Rio Hondo Reach 1, have normally been much lower than the TMDL estimate of 0.5 cfs, however TMDL watershed compliance has generally been first assessed based on concentration, rather than load.

Table 1-7 Dry-Weather Final WQBELs Expressed as Total Recoverable Metals

Waterbody	Effluent Limitations Daily Maximum (kg/day)		
	Copper	Lead	Zinc
LA River Reach 2	WER[1] x 0.53	WER[1] x 0.33	--
Rio Hondo Reach 1	WER[1] x 0.01	WER[1] x 0.006	WER[1] x 0.16

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved through a Basin Plan Amendment

Concentration based dry-weather numeric limits applicable to the LAR UR2 WMA are summarized in **Table 1-8**. Ambient water quality monitoring is implemented through the Los Angeles River Metals TMDL Coordinated Monitoring Program (LAR MTMDL CMP).

Table 1-8 Concentration Based Dry-Weather Metals TMDL Final WQBELs Metals (Expressed as Total Recoverable Metal Loads)

Waterbody	Effluent Limitations Daily Maximum (µg/L)		
	Copper	Lead	Zinc
LA River Reach 2	WER[1] x 22	WER[1] x 11	--
Rio Hondo Reach 1	WER[1] x 13	WER[1] x 5.0	WER[1] x 131

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved through a Basin Plan Amendment

Load and approximate concentration based wet-weather numeric limits applicable to the LAR UR2 WMA are summarized in **Table 1-9**. Since the TMDL includes both LAs and WLAs, and multiple discharge groups, the numeric limit concentration for MS4 Permittees varies with the volume of runoff measured at Wardlow Street, but the rightmost column is a serviceable first order estimate.

Table 1-9 Wet-Weather Final WQBEL Expressed as Total Recoverable Metals

Constituent	Effluent Limitations Daily Maximum (kg/day)	Approximate Effluent Limitation (µg/L)
Cadmium	WER[1] x 2.8 x 10^{-9} x daily volume (L) - 1.8	WER[1] x 2.8
Copper	WER[1] x 1.5 x 10^{-8} x daily volume (L) - 9.5	WER[1] x 15
Lead	WER[1] x 5.6 x 10^{-8} x daily volume (L) - 3.85	WER[1] x 56
Zinc	WER[1] x 1.4 x 10^{-7} x daily volume (L) - 83	WER[1] x 140

Table 1-10 outlines the interim and final Metals TMDL numeric limits schedule which Permittees may comply with through compliance with the WMP and RAA development process. Since the LAR UR2 WMA is located within Reach 2, it should be noted that the June 29, 2012 Implementation Study, funded by the Permittees, identifies Watershed Control Measures to achieve the interim and final WLAs. Among the more important measures was State Senate Bill 346, chaptered in September 2010, which called for phased elimination of copper from automotive brake pads. A similar effort to reduce the zinc content in automotive tires has also been initiated.

Table 1-10 Interim and Final WQBELs for Los Angeles River Metals TMDL

Deadline	Total Drainage Area Served by the MS4 required to meet the water quality-based effluent limitations (%)	
	Dry-Weather	Wet-Weather
January 11, 2012	50	25
January 11, 2020	75	-
January 11, 2024	100	50
January 11, 2028	100	100

Along with most other Los Angeles River Watershed municipalities, the LAR UR2 WMA Permittees supported a study to develop Copper WER and Lead Recalculation SSOs that is currently pending before the Regional Board for approval as a Basin Plan Amendment. If the Basin Plan Amendment is approved, the study suggests for copper, in both dry- and wet-weather, a final WER of 3.971 and 9.691 should be adopted for LAR Reach 2 and the Rio Hondo, respectively. The lead recalculation study suggest an increase in the dry-weather WQBEL from 11 to 94 µg/L for LAR Reach 2, while the dry-weather WQBEL would rise from 5 to 37 µg/L for the Rio Hondo. In wet-weather, the allowable lead numeric limit should increase from 62 to 94 µg/L in both of these water bodies. Favorable translators between total and dissolved metal concentrations were also determined by these studies, but are not explicitly referenced in the MS4 Permit so their eventual impact is unclear at this time. As a result of these studies and legislative efforts, the LAR Metals TMDL appears to have moved from a regional to specific outfall priority.

1.3.3 Los Angeles River Nitrogen Compounds and Related Effects TMDL

The LAR Nutrients TMDL was adopted by the LARWQCB as Resolution 2003-009 and became effective on March 23, 2004, after State Board and USEPA approval. SSOs for Ammonia were approved by the State Board on June 4, 2013. This TMDL targets Publically Owned Treatment Works (POTW), or Water Recovery Plants (WRP); MS4 Permittee discharges do not appear to cause or contribute to the exceedance of the applicable loads. **Table 1-11** lists the currently effective TMDL numeric limit, as identified in Attachment O, Section B.2 of the MS4 Permit.

Table 1-11 LAR Nitrogen Compounds and Related Effects TMDL Final WLAs

Water Body	NH_3-N (mg/L)		NO_3-N (mg/L)	NO_2-N (mg/L)	NO_3-N+NO_2-N (mg/L)
	One-hour Average	Thirty-day Average	Thirty-day Average	Thirty-day Average	Thirty-day Average
Los Angeles River below Los Angeles-Glendale WRP	8.7	2.4	8.0	1.0	8.0
Rio Hondo Reach 1 and 2	10.1	2.3	8.0	1.0	8.0

1.3.4 Los Angeles River Watershed Trash TMDL

The Los Angeles River Trash TMDL was adopted by the Los Angeles Regional Water Quality Control Board as Resolution 2007-012, which became effective on September 23, 2008, after State Board and USEPA approval. Simplistically, TMDL compliance is assessed based on Daily Generation Rate (DGR) studies, the remainder of the catchment not protected by Full Capture Certified Devices (FCCDs), or a combination of both metrics. The LAR UR2 WMA Permittees have generally chosen to track the installation of FCCDs, such as Connector Pipe Screens (CPS). **Table 1-12** and **Table 1-13** lists (in gallons and pounds) interim and final DGR estimated residual limits from Permit Attachment O Part A.3, while the allowable remainder of the catchment unprotected by FCCDs is identified in parentheses within the table header.

Table 1-12 LAR Watershed Trash TMDL Effluent Limitations per Storm Year (gallons of uncompressed trash)

Permittees	Baseline	2012 (30%)	2013 (20%)	2014 (10%)	2015 (3.3%)	2016 (0%)
Bell	16026	4808	3205	1603	529	0
Bell Gardens	13500	4050	2700	1350	446	0
Commerce	58733	17620	11747	5873	1938	0
Cudahy	5935	1781	1187	594	196	0
Huntington Park	19159	5748	3832	1916	632	0
Maywood	6129	1839	1226	613	202	0
Vernon	47203	14161	9441	4720	1558	0

Table 1-13 LAR Watershed Trash TMDL Effluent Limitations per Storm Year (pounds of drip dry trash)

Permittees	Baseline	2012 (30%)	2013 (20%)	2014 (10%)	2015 (3.3%)	2016 (0%)
Bell	25337	7601	5067	2534	836	0
Bell Gardens	23371	7011	4674	2337	771	0
Commerce	85481	25644	17096	8548	2821	0
Cudahy	10061	3018	2012	1006	332	0
Huntington Park	30929	9279	6186	3093	1021	0
Maywood	10549	3165	2110	1055	348	0
Vernon	66814	20044	13363	6681	2205	0

The final WLA of zero trash discharged, or catchment area unprotected, is to be achieved for the 2016 storm year that begins on October 1, 2015 and ends on September 30, 2016. During the current period from, October 1, 2013 to September 30, 2014, 90% of the baseline study trash volume or weight must be captured based on DGR study analysis and only 10% estimated to have been discharged. Alternatively, 90% of a Permittee catchment may be protected by FCCDs, leaving 10% unprotected.

With the assistance of a grant to the Gateway Water Management Authority (GWMA), over 2,700 FCCDs were installed throughout the LAR UR2 WMA catchment area by December 31, 2011, as summarized in **Table 1-14**. Completion of the installation of FCCDs will be subject to significantly more difficult design, permitting, funding, and construction related challenges, but remains an LAR UR2 WMA priority.

Table 1-14 Installation of FCCDs Within the LAR UR2 WMA by December 31, 2011			
Permittees	**Number of LAR Catch Basins**	**Number of FCCDs Installed**	**Percent of Catch Basins Protected**
Bell	259	238	92%
Bell Gardens	271	248	92%
Commerce	659	545	83%
Cudahy	147	130	88%
Huntington Park	522	442	85%
Maywood	178	151	85%
Vernon	902	847	94%

1.4 Existing and Past Monitoring Programs

A review of existing monitoring programs within the LAR UR2 WMA was conducted to establish and assess the magnitude of water quality challenges. **Figure 1-6** presents the location of the existing or past monitoring locations near LAR UR2 WMA. The following summaries characterize specific water quality data, pollutant priorities and study findings relevant to the LAR UR2 WMA.

1.4.1 LA County Annual Stormwater Monitoring (2002-2012)

Annual Los Angeles County Department of Public Works Stormwater Monitoring Report (LACDPW SMR) presents stormwater quality findings for each July to June storm season. The 2002–2003, 2003–2004, 2005–2006, 2006–2007, 2007–2008, 2008–2009, 2009–2010, 2010-2011, and 2011-2012 monitoring reports addressed the following programs and associated elements:

- Core Monitoring Program – mass emission, tributary, water column toxicity, and trash monitoring.
- Regional Monitoring Program – estuary sampling and bioassessment.
- Special studies – New Development Impacts Study in the Santa Clara Watershed, Peak Discharge Impact Study and BMP Effectiveness Study.

Figure 1-6 shows the Core Monitoring Program for the LA River mass emission station (S10) nearest the LAR UR2 WMA, and the Rio Hondo Channel tributary monitoring station (TS06) studied during the 2002-2003 and 2003-2004 storm seasons. The S10 station is located at the existing stream gauge station (i.e., Stream Gauge F319-R) between Willow Street and Wardlow Road in the City of Long Beach and was chosen to avoid tidal influences. The Rio Hondo Channel monitoring station TS06 is located on Beverly Boulevard, downstream of Whittier Narrows dam, at the United States Geologic Survey (USGS) – U.S. Army Corps of Engineers (ACOE) Stream gage No. 1102300 or E327-R and upstream of the LAR UR2 WMA.

A minimum of three wet-weather and two dry-weather events were monitored for all sites during each annual storm season. Grab samples were collected and analyzed for conventional pollutants and bacteria during both dry and wet-weather events. Additionally, composite samples were collected for both dry- and wet-weather events and were analyzed for general minerals, metals, semi-volatiles, chlorinated pesticides, organophosphate pesticides, herbicides, Polychlorinated Biphenyls (PCBs) and Total Suspended Solids (TSS).

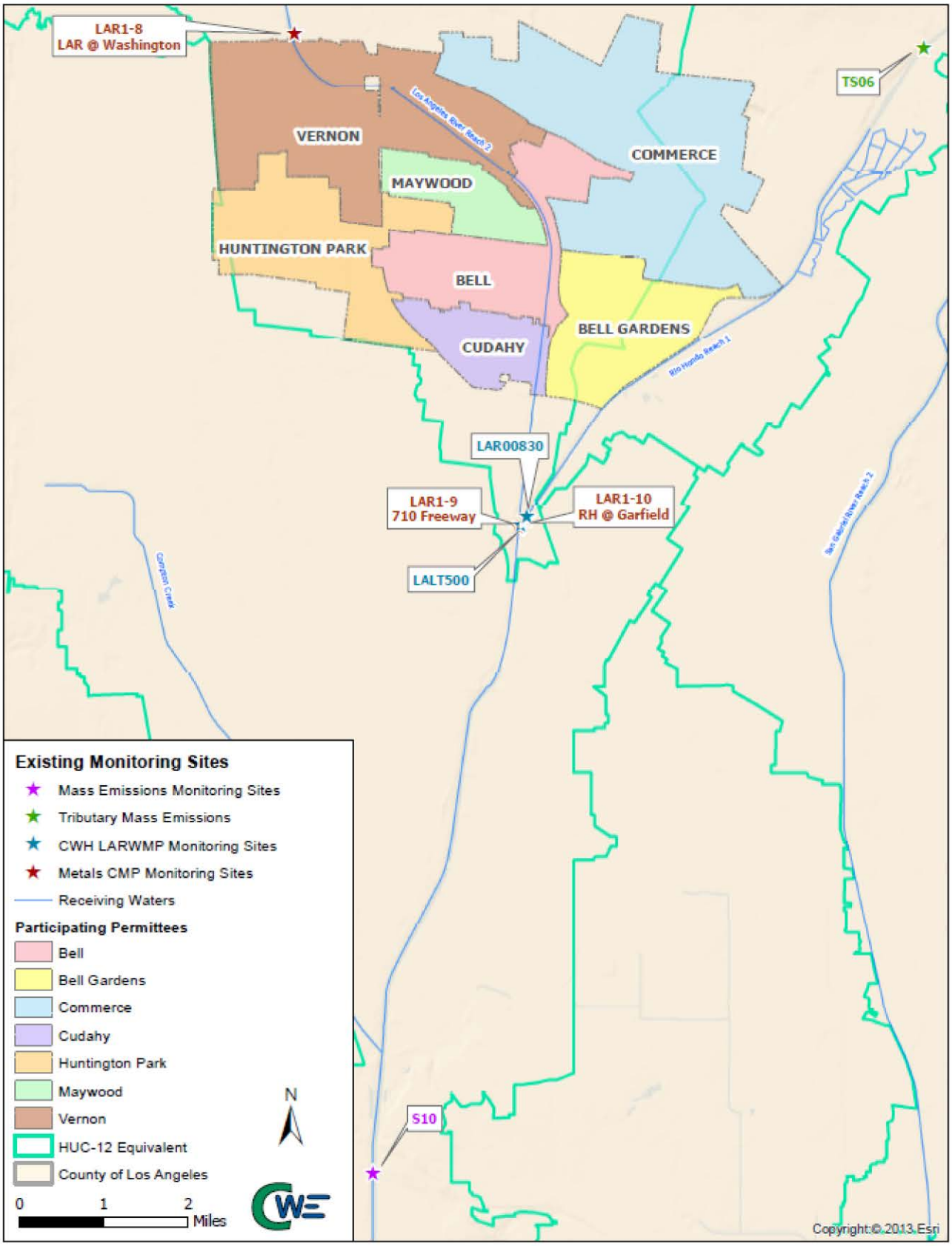

Figure 1-6 Existing Monitoring Sites

1.4.2 Council for Watershed Health: Los Angeles River Watershed Monitoring

The Council for Watershed Health (CWH) coordinates the Los Angeles River Watershed Monitoring Program (LARWMP) to assess Watershed health based on five broad objectives: 1) Are stream conditions improving; 2) Are specific critical site conditions improving; 3) Do discharges meet WQOs; 4) Is it safe to swim; and 5) Are locally caught fish safe to eat. The CWH LARWMP collects water samples and performs bioassessments following a stratified randomized sampling scheme that separates the watershed into natural, urban and mainstem portions to facilitate comparisons. Sampling occurs annually, during the late spring or early summer, and the water is analyzed for general chemistry (nutrients), metals (total and dissolved), organophosphorus, and pyrethroid pesticides. The CWH responded to our request for monitoring data from 2009 – 2012, which was reviewed. The nearest monitoring sites to the LAR UR2 WMA are LALT500, located at the LAR and Rio Hondo confluence, and LAR00830, which is located within Rio Hondo. As shown in **Figure 1-6**, both sites are located downstream of the LAR UR2 WMA.

1.4.3 LA River Metals TMDL Coordinated Monitoring Plan (CMP)

At its July 17, 2006 meeting, the Los Angeles River Watershed Management Committee recommended formation of a Los Angeles River Metals TMDL Technical Committee (TC) and tasked the group with preparation of a Coordinated Monitoring Plan (CMP). The CMP includes both ambient (Tier I) and effectiveness monitoring (Tier II). The Tier I ambient monitoring program collects monthly samples at thirteen locations. Tier I monitoring site LAR1-8, LAR1-9, and LAR1-10, shown in **Figure 1-6**, are located adjacent to the LAR UR2 WMA and the data from these sites have given the LAR UR2 WMA a better understanding of the distribution of metals concentrations in the adjacent WMAs.

1.4.4 LA River Copper and Lead Site Specific Objectives (SSO) Study

The California Toxic Rule (CTR) and MS4 Permit allows WER SSO, that reflect local water column conditions, to be developed so long as they provide equivalent aquatic life protection to that intended in the "Guidelines for deriving numerical national Water Quality Criteria" (USEPA 1985). If the WER value for a pollutant exceeds 1, site water reduces the toxic effect of that pollutant, while a WER of less than 1, signals that the toxic effect of site water is greater than laboratory water. Once a WER is approved, ambient acute and chronic CTR criteria are multiplied by the locally developed WER value. Similarly, CTR values may be recalculated based on new laboratory toxicity studies, as occurred for lead. The primary purpose of the subject study was to determine one or more copper WER value for the Los Angeles River and some tributaries, along with a recalculation of criteria for lead. The results suggest that appropriate wet- and dry-weather copper WERs, for the Rio Hondo and Los Angeles River, would be about 9.691 and 3.971 respectively, resulting in substantially higher, but equally protective, water quality objectives.

1.5 CIMP Overview

The CIMP has been designed to provide the information necessary to guide management decisions in addition to providing a means to measure compliance with the Permit and is composed of six elements:

1. Receiving Water Monitoring;
2. Stormwater (SW) Outfall Monitoring;
3. Non-Stormwater (NSW) Outfall Monitoring;
4. New Development/Redevelopment Effectiveness Tracking;
5. Special Studies; and
6. Regional Studies.

1.5.1 Receiving Water Monitoring

Receiving water monitoring is intended to assess whether water quality objectives are being achieved, whether beneficial uses are supported, and to track trends in constituent concentrations over time. **Section 2** discusses the proposed LAR UR2 WMA receiving water monitoring site and program.

1.5.2 Stormwater Outfall Monitoring

Stormwater outfall monitoring assesses compliance with municipal action limits (MALs), WQBELs derived from TMDL WLAs, as well as the potential of the LAR UR2 WMA to have caused or contributed to exceedances of RWLs derived from TMDL WLAs or receiving water quality objectives. The majority of storm drains within the LAR URS2 WMA initially drain south and seven potential stormwater outfall monitoring sites were found to comprise about 79% of the LAR UR2 WMA catchment area. The selected sites are representative of a combination of the HUC-12 equivalents, jurisdictions, and/or land uses within each catchment area which they have been chosen to represent. A synopsis of each potential outfall's catchment area, along with an analysis of its land use/zoning characteristics is summarized in **Section 4**.

1.5.3 Non-Stormwater Outfall Program

To further fulfill the Permit requirements, the MRP requires Permittees to implement a non-stormwater outfall based screening and monitoring program. The Non-Stormwater Outfall Screening and Monitoring Program (Non-Stormwater Program) is focused on non-stormwater discharges to receiving waters from MS4 outfalls. The Non-Stormwater Program will collect information necessary to identify significant non-stormwater discharges and conduct the screening and prioritization process to non-stormwater outfall monitoring. Additional details of the Non-Stormwater Program are presented in **Section 5**.

1.5.4 New Development and Redevelopment Effectiveness Tracking

The New Development/Re-Development Effectiveness Tracking is required to identify the information necessary for data management and annual compliance reporting. Each jurisdiction will be individually responsible for tracking Permit requirements, based on their specific operational procedures and internal processes. The LAR UR2 WMA permittees will maintain an informational database record for each new development/re-development project subject to the minimum control measure (MCM) and their adopted Low Impact Development (LID) Ordinance. In addition, LAR UR2 WMA Permittees will implement a tracking system for new development/re-development projects that have been conditioned for post-construction BMPs. **Section 7** presents the new development and redevelopment effectiveness tracking system for the LAR UR2 WMA.

1.5.5 Regional Studies

One Regional Study is identified in the MRP: Southern California Stormwater Monitoring Coalition (SMC), which is overseen by the Southern California Coastal Water Research Project (SCCWRP). The LAR UR2 WMA will participate and support the most recent SMC study, the bioassessment monitoring program. The LAR UR2 WMA will coordinate with SCCWRP and participate in the Bioassessment Program **Section 8**.

1.5.6 Special Studies

The MRP requires each Permittee to be responsible for conducting special studies required in an effective TMDL or an approved TMDL Monitoring Plan. Special studies options are further discussed in **Section 9**.

1.6 2012 MS4 Permit Review Process and Planned Implementation

On December 10, 2012 the cities of Commerce, Huntington Park and Vernon (hereinafter "the Cities") submitted Administrative Petitions (Petitions) to the California State Water Resources Control Board (SWRCB) pursuant to section 13320(a) of the California Water Code requesting that the SWRCB review various terms and requirements set forth in the 2012 MS4 Permit, Order No. R4-2012-0175 (Permit) adopted by the California Regional Water Quality Control Board, Los Angeles Region (Regional Board). The Petitions were subsequently referred to as SWRCB/OCC File Nos. A-2236(a) through (kk). In particular, and among other terms/requirements contained in the Permit, the Cities have sought review of all numeric limits, both interim and final, and whether derived from a TMDL or provided from the application of an adopted water quality standard, or through a discharge prohibition set forth in the Permit. The challenges to the various numeric limits set forth in the Permit include a challenge to all such numeric limits that may be complied with through the implementation of an approved Watershed Management Plan (WMP) and/or an Enhanced Watershed Management Plan (EWMP). In essence, the Petitions are challenging the fundamental premise for the various WMPs and the EWMPs requirements in the Permit, on various grounds, including, but not limited to, on the grounds that such Permit terms exceed the maximum extent practicable (MEP) standard, and were not adopted in accordance with the requirements of California Water Code (CWC) sections 13000, 13263 and 13241 The Cities are reserving all of their rights to subsequently assert that the identified BMPs need not be implemented, on the grounds that they are not technically or economically feasible. In other words, that the BMPs are impracticable and contrary to the MEP standard, and that it is not possible to provide the reasonable assurances required under the Permit in a manner that is consistent with the MEP standard, if at all. The Cities agree that it is not possible to provide the reasonable assurances required under the Permit in a manner that is consistent with the MEP standard. On July 8, 2013 the SWRCB advised the Cities that the respective Petitions were complete and all such Petitions remain pending at this time. On November 23, 2014, the SWRCB Transmitted a Proposed Order to address the Petitions adn held a Workshop on December 16, 2014 regarding both the Petitions and Draft Order. Written comments on the Draft Order were received until January 21, 2015, and posted on the SWRCB website the following day. The SWRCB notified all Petitioners that on February 17, 2015, the non-Permittee petitioner would continue to be held in abeyance until April 30, 2015.

In spite of the pending Petitions, the Cities are acting in good faith and moving forward to attempt to comply with all of the applicable terms of the Permit, and look forward to working with the Regional Board to assess and implement the strategies and requirements necessary for compliance, including the development of an acceptable WMP. Nevertheless, because, through their Petitions, the Cities believe that many of the terms of the Permit are invalid, including the terms involving compliance with numeric limits which the Cities are seeking to comply with through the development and implementation of this WMP. the Cities hereby expressly reserve and are not waiving, with this submission or otherwise, any of their rights to challenge the need for any WMP, including their rights to seek to void or otherwise compel modifications to the Permit terms involving the WMP, or to void or compel revisions to any other part or portion of the Permit. In addition, the Cities are not waving, and hereby expressly reserve, any and all rights they have or may have to seek to recover the costs from the State to develop and implement this WMP, on the grounds that the WMP is being developed and will be implemented in order to comply with various mandates involving TMDLs, water quality standards and other similar Permit requirements, which requirements in the Permit are not mandated by the Clean Water Act, and with the Cities being unable to impose fees in order to recover their costs for developing and implementing this WMP.

2. Receiving Water Monitoring Approach

As outlined in the MRP, receiving water monitoring is intended to assess whether water quality objectives are being achieved, whether beneficial uses are supported, and to track trends in constituent concentrations over time. The requirements in the MRP include receiving water monitoring sites at previously designated County of Los Angeles Department of Public Works (LACDPW) mass emission stations (MES), TMDL receiving water compliance points, and additional receiving water locations representative of the impacts from MS4 discharges.

Through the evaluation of previously-utilized and existing receiving water monitoring sites, as summarized in **Section 1**, no existing MES were located within the LAR UR2 WMA. Additionally, there are no other existing receiving water monitoring sites located in relation to the LAR UR2 WMA. The existing downstream MES and other surrounding monitoring sites were not considered because they would be ineffective for characterizing local discharges, as they are located further downstream of the LAR UR2 WMA and receive significant tributary flows that are unrepresentative of the group. New receiving water monitoring locations were selected and are summarized in the following sections.

2.1 Receiving Water Monitoring Objectives

The objectives of the receiving water monitoring include the following (Part II.E.1 of the MRP):

- Determine whether the receiving water limitations are being achieved;
- Assess trends in pollutant concentrations over time, or during specified conditions; and
- Determine whether the designated beneficial uses are fully supported as determined by water chemistry, as well as aquatic toxicity and bioassessment monitoring.

2.2 Receiving Water Monitoring Sites

The primary objective of receiving water monitoring is to assess trends in pollutant concentrations over time, or during specified conditions. To address the receiving water monitoring objectives and WBPCs, one receiving water monitoring site was selected, LARUR2-RW, to represent the Los Angeles River, Reach 2. A receiving water monitoring site in the Rio Hondo, Reach 1 was not selected. In lieu of a receiving water monitoring site, for the Rio Hondo, an outfall site was selected. Additional information is summarized below. **Figure 2-1** presents the approximate location of the receiving water monitoring site for LAR UR2 WMA. A fact sheet summary for the receiving water monitoring site is presented in **Appendix D**.

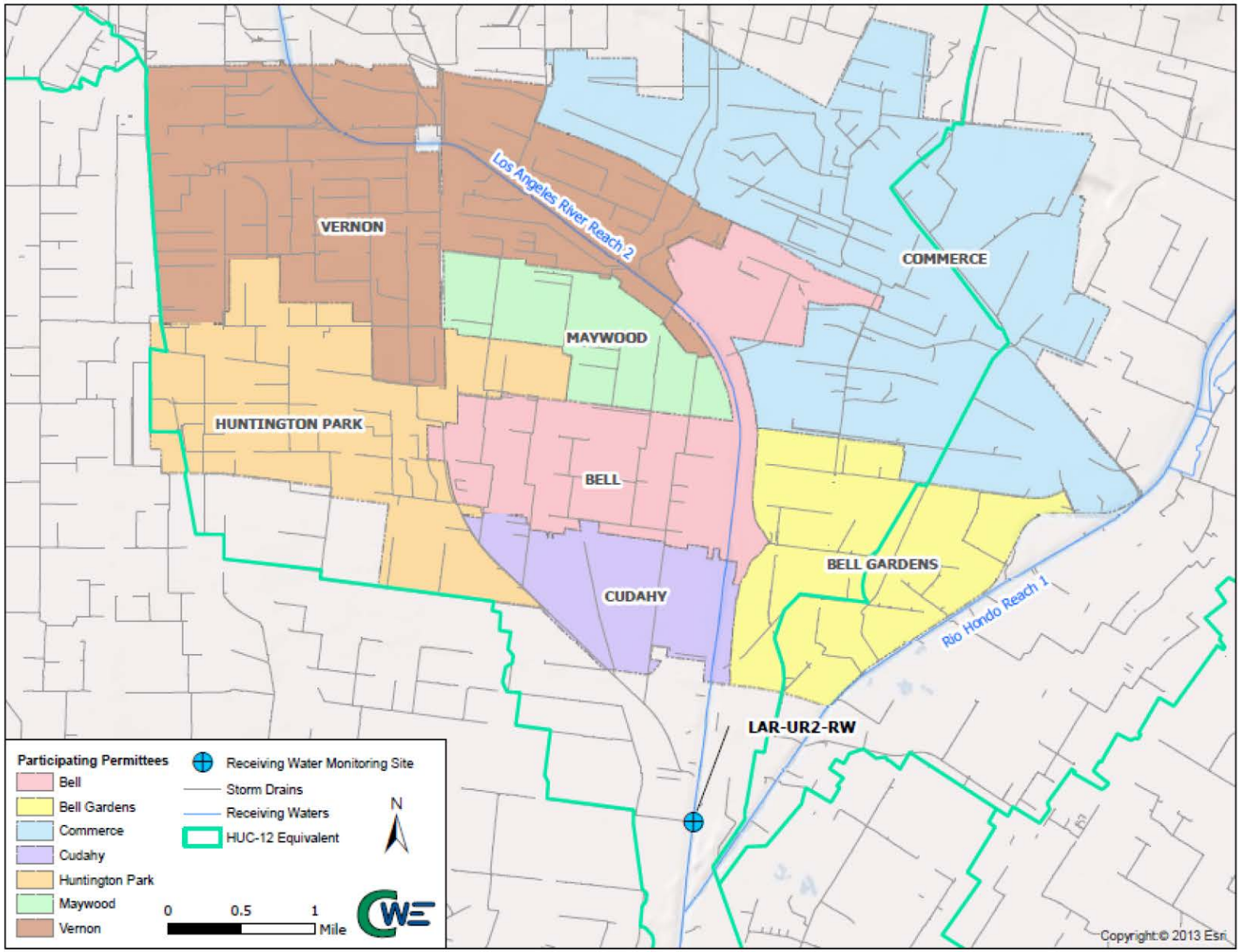

Figure 2-1 Receiving Water Monitoring Site Location

2.2.1 Los Angeles River (LARUR2-RW)

LARUR2-RW will be located in the City of South Gate, near the railroad trestle, or extension of Tweedy Boulevard. Sampling data from this location will assess the impact of LAR UR2 WMA MS4 discharges on the receiving water. The LARUR2-RW monitoring site is slightly downstream of the LAR UR2 WMA and receives discharges from the City of South Gate, which is not a LAR UR2 WMA member. The site is immediately downstream of major outfalls on both the east and west sides of the Los Angeles River that drain over 60% of the LAR UR2 WMA. Collection of samples will be done utilizing a fixed continuous autosampler.

Upstream receiving water monitoring will be coordinated with the Upper Los Angeles River Watershed Management Group (ULARWMG). The ULARWMG has identified a monitoring site that is located in the City of Los Angeles at Washington Boulevard, just upstream of LAR UR2 WMA. Water quality data at this location would be valuable for assessing the true impact of LAR UR2 WMA discharges on the receiving water. **Table 2-1** provides a summary of information for the LARUR2-RW site.

Table 2-1 LARUR2-RW Receiving Water Monitoring Site Summary

Site ID	Water Body/Location	Coordinates		Monitoring Type	
		Latitude	Longitude	RW	TMDL
LARUR2-RW	Los Angeles River/ near the railroad trestle, or extension of Tweedy Boulevard	33.940550	-118.174528	X	X

2.2.2 Rio Hondo

A receiving water monitoring site in the Rio Hondo in Reach 1 was not selected for the LAR UR2 WMA. Within the LAR UR2 WMA, the Rio Hondo is located on the entire eastern jurisdictional boundary. Adjacent to the LAR UR2 WMA, flows in the Rio Hondo are completely comingled with runoff from the Lower Los Angeles River (LLAR) group's cities of Pico Rivera and Downey. The discharge from these cities would confound the assessment of receiving water quality for the LAR UR2 WMA. The Los Angeles River Metals TMDL CMP has demonstrated that during dry-weather there is normally no dry-weather flow present in the Rio Hondo. During wet-weather, flows in this area are primarily derived from upstream areas which will be assessing their own receiving water quality. In lieu of selecting a receiving water monitoring site, the group has selected an outfall to monitor the discharges to the Rio Hondo. The stormwater outfall monitoring site, LARUR2-RHO, is representative of the LAR UR2 WMA Rio Hondo catchment, allowing direct water quality and pollutant load assessments. LARUR2-RHO encompasses about 74% of the total LAR UR2 WMA Rio Hondo catchment area. LARUR2-RHO is discussed further in **Section 4.2.1**

Table 4-1 Stormwater Outfall Monitoring Site Summary						
Outfall ID	**Tributary HUC-12 Area**	**Jurisdiction Where Site is Located**	**Jurisdictions Draining to the Site**	**Facility**	**Latitude**	**Longitude**
Fixed Site						
LARUR2-RHO	Alhambra Wash - Rio Hondo	Bell Gardens	Bell Gardens, Commerce	Manhole	33.959003	-118.154614
Rotating Sites						
LARUR2-DRO	Chavez Ravine - Los Angeles River	Vernon	Vernon	Manhole	34.008539	-118.205166
LARUR2-EO	Chavez Ravine - Los Angeles River	Bell Gardens	Bell, Bell Gardens, Commerce, Vernon	Outfall	33.956663	-118.169102
LARUR2-NO	Chavez Ravine - Los Angeles River	Vernon	Bell, Commerce, Vernon	Manhole	33.996050	-118.180775
LARUR2-WO	Chavez Ravine - Los Angeles River	Cudahy	Bell, Cudahy, Huntington Park, Maywood, Vernon	Manhole	33.955146	-118.179975
LARUR2-NVO	Chavez Ravine - Los Angeles River	Vernon	Commerce, Vernon	Manhole	34.007733	-118.194464
LARUR2-FWO	Chavez Ravine - Los Angeles River	Cudahy	Bell, Cudahy, Huntington Park, Maywood, Vernon	Manhole	33.956591	-118.186050

2.3 TMDL Monitoring

TMDL monitoring requirements, as discussed in **Section** 1. Introduction, within the LAR UR2 WMA are as follows:

- Los Angeles River Bacteria TMDL – Resolution 2010-007 and became effective on March 23, 2012
- Los Angeles River and Tributary Metals TMDL – Resolution 2007-014 and became effective on October 29, 2008, and Resolution 2010-003 effective on November 3, 2011
- Los Angeles River Nitrogen Compounds and Related Effects TMDL – Resolution 2003-009 and became effective on March 23, 2004. Site Specific Objectives (SSOs) for Ammonia were approved by the State Water Resources Control Board (SWRCB) June 4, 2013
- Los Angeles River Trash TMDL – adopted Resolution 2007-012 and became effective on September 23, 2008

To satisfy TMDL monitoring requirements, LAR UR2 WMA will monitor each specific TMDL constituent at all proposed receiving water, stormwater outfall-based and non-stormwater outfall-based monitoring sites. Additional monitoring requirements are summarized in the sections below.

2.3.1 Los Angeles River Bacteria TMDL

The LAR UR2 WMA is in the process of developing and submitting a Load Reduction Strategy (LRS) plan. Submittal of this plan will be separate from the CIMP. Until the LRS has been developed and approved by the Regional Board, LAR UR2 WMA will commence monitoring for *E. coli* at the proposed monitoring sites and frequency for each CIMP monitoring program (Receiving Water, Stormwater Outfall and Non-stormwater outfall). The LAR UR2 WMA is proposing this frequency schedule since monitoring for bacteria has not been conducted within the LAR UR2 WMA.

2.3.2 Los Angeles River and Tributary Metals TMDL

The existing Los Angeles River Metals TMDL Coordinated Monitoring Plan (CMP) is expected to be replaced by the incoming proposed CIMPs and IMPs, pending Regional Board Approval. Currently, the Metals CMP includes a three-tiered assessment of jurisdictional progress towards attainment of wet- and dry-weather water quality objectives. Three Tier I monitoring sites, near but not within the LAR UR2 WMA, are monitored monthly as grab samples. One site is located directly north of the City of Vernon. Two other Tier I monitoring sites are located immediately north of the confluence of the Rio Hondo and Los Angeles River. These sites receive runoff from, and are about one and a half miles downstream of, the LAR UR2 WMA.

The LAR UR2 WMA will continue to participate and cooperate in the CMP. Prior to the end of the CMP, LAR UR2 WMA will initiate Los Angeles River and Tributary Metals TMDL monitoring at the monitoring locations and frequency proposed in this CIMP. The LAR UR2 WMA is proposing this frequency schedule since monitoring for bacteria has not been conducted within the LAR UR2 WMA.

2.3.3 Los Angeles River Nitrogen Compounds and Related Effects TMDL

Outside of POTW or WRP, monitoring requirements for the Los Angeles River Nitrogen Compounds and Related Effects TMDL were not identified. To meet the TMDL monitoring requirements, the LAR UR2 WMA will monitor for these listed TMDL constituents at the CIMP monitoring sites and frequencies.

2.3.4 Los Angeles River Trash TMDL

Los Angeles River Trash TMDL does not require monitoring, and the LAR UR2 WMA is not required to conduct any type of monitoring if it is complying with the WLAs through the implementation of BMPs. Each of the individual LAR UR2 WMA Permittees have submitted a compliance strategy through the development of BMP installation schedules, based on the DGR studies. To show compliance, a progress report based on installation of structural BMPs, such as full capture or partial capture systems, institutional controls, or any BMPs, is to be included in each individual LAR UR2 WMA Permittees Annual Report.

2.3.5 Harbor Toxics TMDL

Table K-5, in Attachment K of the 2012 MS4 Permit indicates that none of the LAR UR2 Permittees are responsible for implementation of the Dominguez Channel and Greater Los Angeles and Long Beach Harbor Water Toxics Pollutants TMDL, commonly known as the Harbor Toxics TMDL; however the LAR

UR2 WMA is a minor indirect discharger, through the Los Angeles River, to that receiving water. On January 8, 2015, the Lower Los Angeles River Watershed Group (LLAR WMG) proposed development of a cost sharing agreement, among Los Angeles River Watershed Groups including the LAR UR2 MWA, to implement and coordinate Harbor Toxics TMDL and MS4 Permit required monitoring. Pending Regional Board approval of both the LLAR and LAR UR2 CIMPs, the LAR UR2 Permittees would authorize the GWMA, which is the fiduciary agent for both groups, to transfer agreed funding to support implementation of proposed Harbor Toxics TMDL monitoring. The LLAR WMG invitation letter is contained within **Appendix F**.

2.4 Monitored Parameters and Frequency

Each constituent required for monitoring by the MRP is addressed by the receiving water monitoring site LARUR2-RW. Parameters to be collected and sampling frequency to meet to the receiving water monitoring requirements of the MPR are summarized in **Table 2-2**. Wet- and dry-weather monitoring frequency and duration will be addressed in the following sections. Parameters for monitoring were based on the water quality priorities, as discussed in **Section Water** Quality Priorities. Additional analytical and monitoring procedures, including those associated with testing for aquatic toxicity, are presented in the Quality Assurance Project Program (QAPP) Plan in **Appendix E**.

Table 2-2 Schedule and Constituent Summary for Receiving Water Monitoring Sites and Annual Frequency (wet/dry)[1]

Constituents	Site ID LARUR2-RW
Flow and field parameters[2]	3/2
Pollutants only identified in Table E-2 of the MRP	1[4]/1[4]
Aquatic Toxicity	2/1
Toxicity Identification Evaluation (TIE)	
E. coli	3/2
Cadmium[5]	3/2
Copper[5]	
Lead[5]	
Zinc[5]	
Ammonia	
Nitrate - N	
Nitrite - N	
Nitrate-N + Nitrite-N	
Oil	

1. Annual frequency listed as number of wet-/dry-weather events per year, respectively .
2. Field parameters are defined as DO, pH, temperature, and specific conductivity.
4. Monitoring frequency only applies during the first year of monitoring. For pollutants identified in Table E-2 of the MRP that are not detected at the Method Detection Limit (MDL) or the result is below the lowest applicable water quality objective, additional monitoring will not be conducted (i.e., the monitoring frequency will become 0/0). For pollutants detected above the lowest applicable water quality objective, future monitoring will be conducted at the frequency specified in the MRP (i.e., the monitoring frequency will become 3/2).
5. TSS and Hardness will be monitored when metals are monitored.

For the purposes of Receiving Water Monitoring, Parts VI.C.1.b.ii and VI.D.1.b.ii, of Attachment E to the 2012 MS4 Permit, defines wet-weather as those days with 120 percent, or more, of base flow volume, and dry-weather as those days with less than this value. Available flow data, for river gauging stations F34D (Los Angeles River at Firestone), F45B-R (Rio Hondo at Stuart & Gray), and F319 (Los Angeles River at Wardlow Avenue), were extracted from Los Angeles County Annual Hydrologic Reports[1] for the period October 1996 to September 2013 and a summary of mean daily flow, daily and monthly volumes developed as presented in **Table 2-3**. Mean flows at both the Los Angeles River stations, vary by less than 3% for the months of June, July, August and September, suggesting that the base flow is about 133 CFS and the wet-weather trigger flow is about 160 CFS for the Los Angeles River at Firestone Boulevard. Flows are only slightly higher for the watershed based on the Wardlow data and validate this assertion.

In contrast, Rio Hondo base flows have evaporated over the analysis period and while the mean monthly volume of runoff at Steward and Grey is lowest for September, at over 89 acre-feet, for the last seven years, the months of June to September (n=27) have produced only one month (September 2013) where accumulated volumes exceeded 14 acre-feet. Clearly, Reach 2 the Los Angeles River is primarily an effluent dependent stream, while the Rio Hondo is often observed to have no flow, contorting the intent behind applying these permit definitions to traditional receiving waters.

2.4.1 Wet-weather

Critical wet-weather receiving water monitoring targets the first significant rain event of the October to April storm season within each July 1 to June 30 reporting period. A qualifying significant storm forecast predicts at least 0.25 inch of cumulative rainfall, at probabilities exceeding sixty nine percent, at 32 to 8 hours prior to the event start time. Documentation of the qualifying forecast will be retained. Since mobilization is based on predicted rainfall, monitoring may occur without 0.25 inches of actual accumulated rainfall; however if flows exceed the 120 percent of receiving water base flow, for a portion of thethe event, or if sufficient sample volume is collected to perform the required laboratory analyses, than the event will be considered to have qualified. LAR UR2 WMA will also target two subsequent qualifying significant wet-weather events, based on forecasts. Wet-weather monitoring will be preceded by a minimum of three days with less than 0.1 inch of rain per day. Wet-weather receiving water samples will be collected using a fixed continuous autosampler and sampled three times a year for relevant parameters except for aquatic toxicity which will be performed twice per year, per Part VI.C.1.a of the MRP. Wet-weather receiving water monitoring will be conducted for the duration of the MS4 permit.

2.4.2 Dry-weather

Dry-weather, for LAR UR2 WMA receiving water monitoring, will be defined as when the flow is less than 20 percent greater than base flow. Dry-weather receiving water monitoring will be conducted two times per year for all required parameters, except that aquatic toxicity will only be monitored once per year, as outlined in Part VI.D.1.a of the MRP. A critical dry-weather receiving water monitoring will be conducted during the month with the historically lowest flow (driest) month. Based on the analysis in **Table 2-3**, the month with the historically lowest flows and volumes, over the period 1997 to 2013, is September; however flows from June to September are statistically indistinguishable and sampling during these four months may be coordinated with adjacent watershed groups to provide complimentary water quality data. Dry-weather receiving water monitoring will continue for the duration of this MS4 permit cycle.

[1] http://ladpw.org/wrd/report/

Table 2-3 Determination of Critical Month by River Flows (from 1997 to 2013)
(Flows in Cubic Feet Per Second or CFS, Volumes in Acre Feet or acft)

Month	Los Angeles River @ Firestone Blvd.			Los Angeles River @ Wardlow Rd			Rio Hondo @ Stewart & Gray Rd		
	Mean Daily Flow (CFS)	Mean Volume (acft)		Mean Daily Flow (CFS	Mean Volume (acft)		Mean Daily Flow (CFS)	Mean Volume (acft)	
		Daily	Monthly		Daily	Monthly		Daily	Monthly
October	171	340	10,530	237	469	14,554	22.4	44.45	1,378
November	211	418	12,541	248	493	14,776	8.7	17.35	520
December	301	596	18,485	616	1222	37,874	90.2	179.02	5,550
January	293	582	18,051	947	1879	58,259	238.6	473.15	14,668
February	615	1216	34,358	1,297	2556	72,209	306.1	602.55	17,022
March	281	558	17,301	452	897	27,806	51.6	102.34	3,173
April	222	440	13,203	267	530	15,895	6.8	13.55	407
May	193	383	11,881	178	353	10,934	17.4	34.56	1,071
June	138	274	8,214	148	293	8,783	5.7	11.24	337
July	130	258	**7,985**	142	282	8,734	3.0	5.89	183
August	132	262	8,114	143	283	8,767	1.9	3.74	116
September	134	266	**7,992**	143	285	**8,537**	1.5	2.97	**89.2**

3. GIS Database

To meet the requirements of Part VII of the MRP, a map(s) and/or database of the MS4 storm drains, channels, and outfalls must be submitted with the CIMP and include the following information (Part VII.A of the MRP):

1. Surface water bodies within the Permittee(s) jurisdiction
2. Sub-watershed (HUC-12) boundaries
3. Land use overlay
4. Effective Impervious Area (EIA) overlay (if available)
5. Jurisdictional boundaries
6. The location and length of all open channel and underground pipes 18 inches in diameter or greater (with the exception of catch basin connector pipes)
7. The location of all dry-weather diversions
8. The location of all major MS4 outfalls within the Permittee's jurisdictional boundary. Each major outfall shall be assigned an alphanumeric identifier, which must be noted on the map
9. Notation of outfalls with significant NSW discharges (to be updated annually)
10. Storm drain outfall catchment areas for each major outfall within the Permittee(s) jurisdiction
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    a. Ownership
    b. Coordinates
    c. Physical description
    d. Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time
    e. Determination of whether the outfall conveys significant NSW discharges
    f. Stormwater and NSW monitoring data

Attachment A of the MS4 Permit defines major MS4 outfall (or "major outfall") as a municipal separate storm sewer outfall that discharges from a single pipe with an inside diameter of 36 inches or more or its equivalent (discharge from a single conveyance other than circular pipe which is associated with a drainage area of more than 50 acres); or for municipal separate storm sewers that receive stormwater from lands zoned for industrial activity (based on comprehensive zoning plans or the equivalent), an outfall that discharges from a single pipe with an inside diameter of 12 inches or more or from its equivalent (discharge from other than a circular pipe associated with a drainage area of 2 acres or more) (40 CFR § 122.26(b)(5)).

Available Geographic Information System (GIS) data were reviewed to determine whether components 1 through 11.f from the list specified in the MRP were available for submittal. Based on the review of the GIS data, components 1 through 11.f from the list specified in the MRP were divided into available information or pending information and schedule for completion, **Section 3.2** and **3.3**, respectively.

3.1 Program Objectives

Each year, storm drains, channels, outfalls map and associated database for the LAR UR2 WMA are required to be updated to incorporate the most recent characterization data for outfalls with significant non-stormwater discharge.

3.2 Available Information

The LAR UR2 WMA reviewed Part VII.A of the MRP and gathered the available information for the group. The following data are readily available for submittal as a map and/or in a database (note, the numbering corresponds to the item number in the Permit list):

1. Surface water bodies within the Permittee(s) jurisdiction
2. Sub-watershed (HUC-12) boundaries
3. Land use overlay
5. Jurisdictional boundaries
6. The location and length of all open channel and underground pipes 18 inches in diameter or greater (with the exception of catch basin connector pipes)
7. The location of all dry-weather diversions
8. The location of all major MS4 outfalls within the Permittee's jurisdictional boundary
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    b. Coordinates
    c. Physical description
    d. Photographs of the outfall, where possible, to provide baseline information to track operation and maintenance needs over time
    f. Stormwater and NSW monitoring data

In addition, some of the following data are readily available but have data gaps that will be addressed through review of existing information or will be generated based on additional data processing (i.e., Non-Stormwater Outfall Screening and Inventory) by the LAR UR2 WMA Permittees:

10. Storm drain outfall catchment areas for each major outfall within the Permittee(s) jurisdiction
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    a. Ownership

Figure 1-2 through **Figure 1-5** contain available information, listed above, for the LAR UR2 WMA, while **Appendix B** contains an map of the approximately 100 outfalls observed adjacent to the Permittees, some of which may be associated with individual or general Permittee, other than the LAR UR2 WMA members. **Appendix C** contains an initial database for tracking Stormwater Outfall based monitoring, but no analytical data has yet been collected so that portion of the work sheet was not inserted.

3.3 Pending Information and Schedule for Completion

From the review, the following data are not currently available for submittal as a map and/or in a database, but are scheduled for completion:

4. Effective Impervious Area (EIA) overlay
9. Notation of outfalls with significant NSW discharges (to be updated annually)
11. Each mapped MS4 outfall shall be linked to a database containing descriptive and monitoring data associated with the outfall. The data shall include:
    e. Determination of whether the outfall conveys significant NSW discharges

Completion of the data, listed above, is in progress and will be collected through the implementation of the CIMP, specifically the Non-Stormwater Outfall Monitoring Program.

4. Stormwater Outfall Monitoring Approach

Stormwater outfall monitoring assesses compliance with municipal action limits (MALs), WQBELs derived from TMDL WLAs, as well as the potential to have caused or contributed exceedances of RWLs derived from TMDL WLAs or receiving water quality objectives. The majority of LAR UR2 WMA storm drains generally drain south through multiple jurisdictions. An analysis of land use per HUC-12, drainage area and LAR UR2 WMA was conducted for each monitoring site.

4.1 Program Objectives

As outlined in the MRP (Part VIII.A of the MRP), stormwater discharges from the MS4 shall be monitored at outfalls and/or alternative access points such as manholes, or in channels representative of the land uses within the Permittee's jurisdiction to support meeting the three objectives of the stormwater outfall based monitoring program:

1. Determine the quality of a Permittee's discharge relative to municipal action levels, as described in Attachment G of the MS4 Permit;
2. Determine whether a Permittee's discharge is in compliance with applicable stormwater WQBELs derived from TMDL WLAs; and
3. Determine whether a Permittee's discharge causes or contributes to an exceedance of receiving water limitations.

Each stormwater outfall monitoring site was evaluated and assessed on how representative they are of the surrounding land use of the LAR UR2 WMA, jurisdictions, and the HUC-12. Each zoning category provided by the RAA guidance manual was fit into one of the following eight land use categories:

- Agricultural;
- Industrial;
- Single Family Residential;
- Open Space
- Commercial;
- Education;
- Multi-Family Residential; and
- Transportation

4.2 Stormwater Outfall Monitoring Sites

The Permit provides monitoring site "default" requirements, one site per HUC-12 per jurisdiction, for achieving stormwater outfall monitoring objectives. The MS4 Permit also allows for an alternative approach to increase the cost efficiency and effectiveness of the monitoring program. The LAR UR2 WMA has chosen an alternative to the default Permit approach. Seven stormwater outfall monitoring sites, as shown in **Figure 4-1**, were selected as part of the alternative approach. The seven monitoring sites comprise about 79% of the catchment area of the LAR UR2 WMA. The selected sites are representative of a combination of the HUC-12 equivalents, jurisdictions, and/or land uses within each drainage area which they have been chosen to represent. LAR UR2 WMA Stormwater outfall samples will be collected upstream of the outfalls at manholes, utilizing a portable autosampler. One stormwater outfall monitoring site (LARUR2-RHO) will be monitored at every wet-weather event and the remaining six stormwater outfall monitoring sites will be monitored on a rotation basis, where one site to the north and one site to the south will be monitored per storm event. A synopsis of each potential outfall catchment area, along with an analysis of its land use/zoning characteristics are summarized below. **Table 4-1** provides a summary for the seven stormwater outfall monitoring sites and **Appendix D** provides a summary of fact sheet summary for the stormwater outfall monitoring sites.

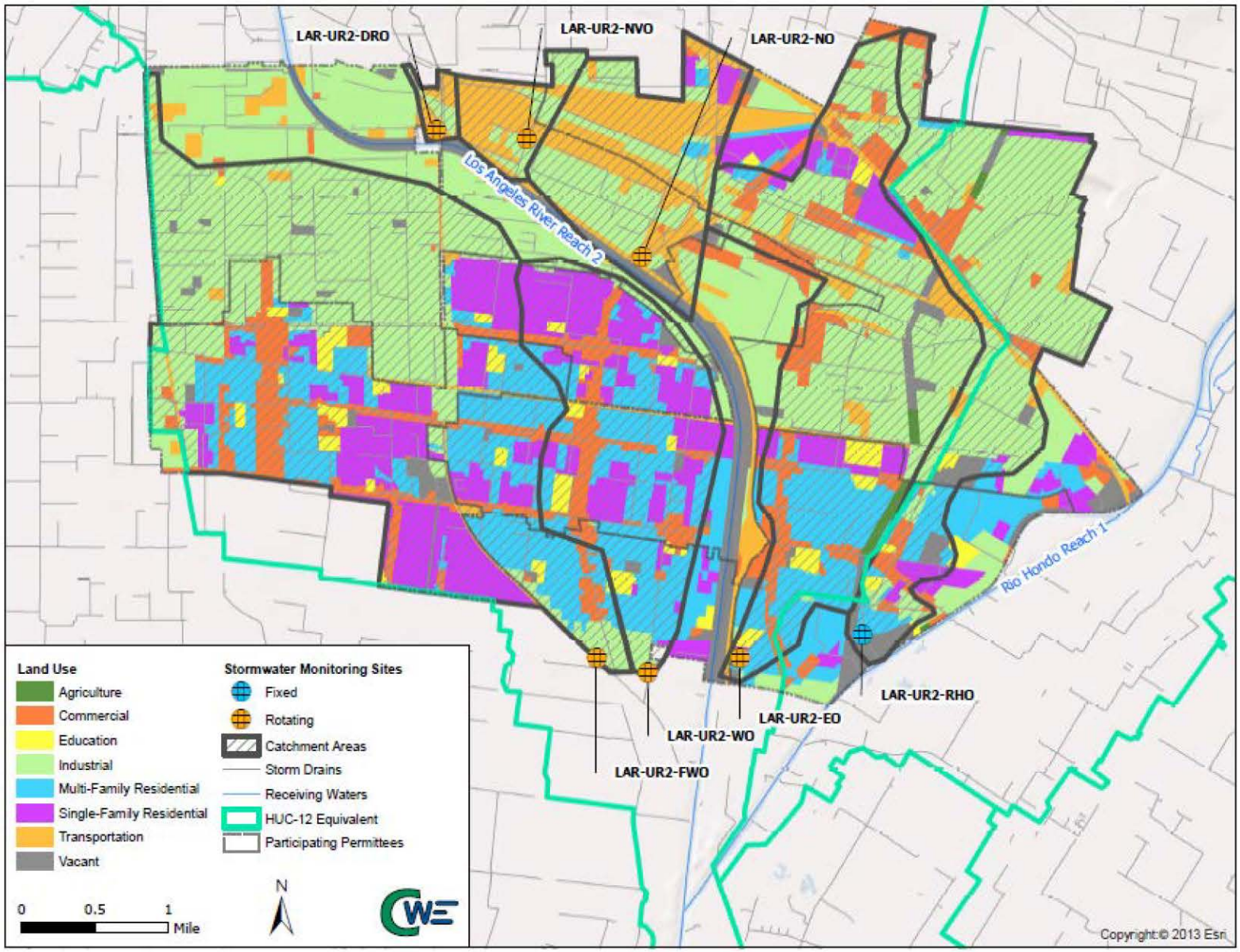

Figure 4-1 Stormwater Outfall Monitoring Sites Location

Table 4-1 Stormwater Outfall Monitoring Site Summary						
Outfall ID	**Tributary HUC-12 Area**	**Jurisdiction Where Site is Located**	**Jurisdictions Draining to the Site**	**Facility**	**Latitude**	**Longitude**
Fixed Site						
LARUR2-RHO	Alhambra Wash - Rio Hondo	Bell Gardens	Bell Gardens, Commerce	Manhole	33.959003	-118.154614
Rotating Sites						
LARUR2-DRO	Chavez Ravine - Los Angeles River	Vernon	Vernon	Manhole	34.008539	-118.205166
LARUR2-EO	Chavez Ravine - Los Angeles River	Bell Gardens	Bell, Bell Gardens, Commerce, Vernon	Outfall	33.956663	-118.169102
LARUR2-NO	Chavez Ravine - Los Angeles River	Vernon	Bell, Commerce, Vernon	Manhole	33.996050	-118.180775
LARUR2-WO	Chavez Ravine - Los Angeles River	Cudahy	Bell, Cudahy, Huntington Park, Maywood, Vernon	Manhole	33.955146	-118.179975
LARUR2-NVO	Chavez Ravine - Los Angeles River	Vernon	Commerce, Vernon	Manhole	34.007733	-118.194464
LARUR2-FWO	Chavez Ravine - Los Angeles River	Cudahy	Bell, Cudahy, Huntington Park, Maywood, Vernon	Manhole	33.956591	-118.186050

4.2.1 LARUR2-RHO

As discussed in **Section 2.2.2**, Rio Hondo receiving water monitoring in not being proposed as the WMA makes up only about four percent of the subwatershed. Stormwater outfall site LARUR2-RHO, shown in **Figure 4-2**, receives runoff from about 71% of the total LAR UR2 WMA Rio Hondo tributary area. This location is proposed as a "fixed outfall site" meaning that it will be sampled for three wet-weather events annually and can contribute data towards other receiving water monitoring efforts. The LARUR2-RHO location is the BI0539 – Line A –storm drain manhole located in the John Anson Ford Park parking lot near the intersection of Park Lane and Gillard Avenue in the City of Bell Gardens. It receives runoff from the Cities of Bell Gardens and Commerce and is representative of MS4 discharge to the Rio Hondo, within the Alhambra Wash HUC-12 areas. A comparative analysis, presented in **Table 4-2**, demonstrates that the land use composition of the catchment tributary to site LARUR2-RHO should be representative of the total LAR UR2 WMA draining to the Rio Hondo.

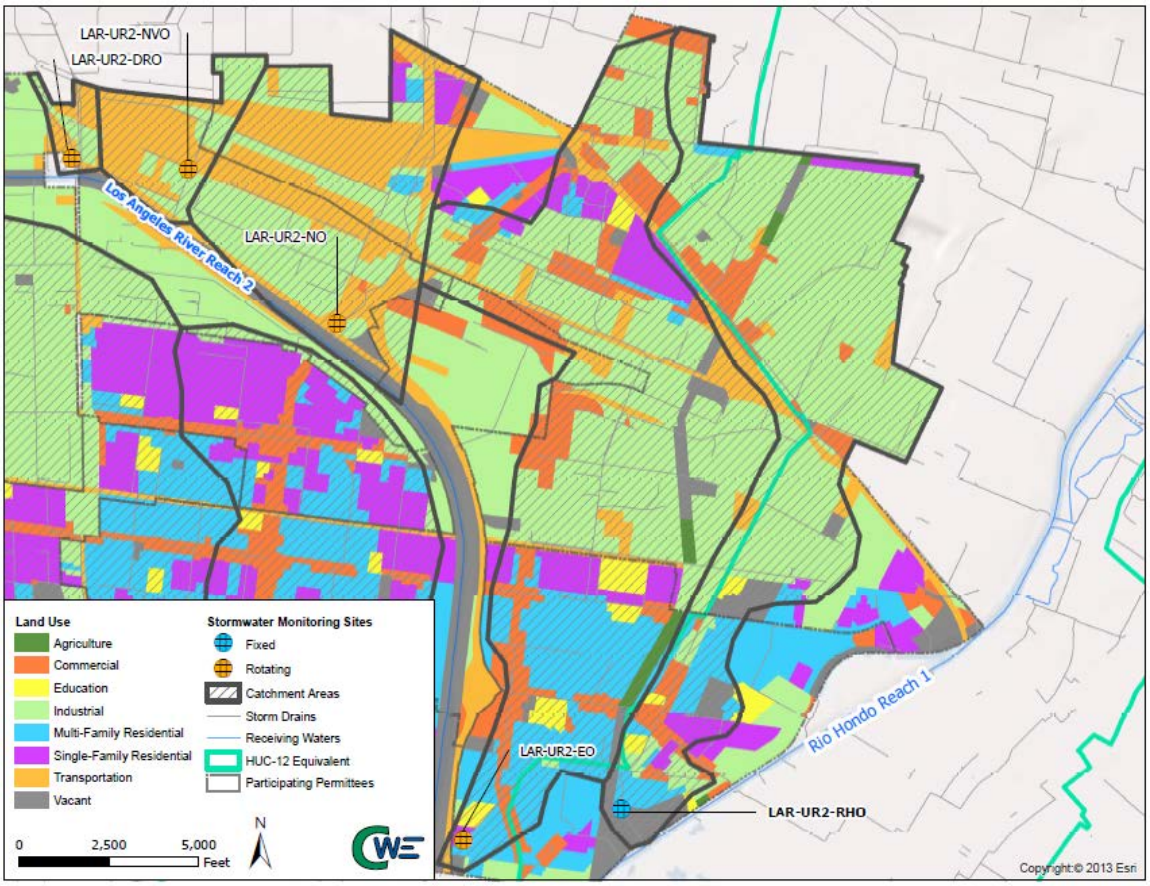

Figure 4-2 LARUR2-RHO Stormwater Outfall Monitoring Site

Table 4-2 LARUR2-RHO Tributary Area

Land Use Category	Catchment		LAR UR2 WMA Portion of Rio Hondo HUC-12 area		LAR UR2 WMA Total	
	Acres	Percentage	Acres	Percentage	Acres	Percentage
Agriculture	9.30	0.52%	11.02	0.48%	46.00	0.32%
Commercial	162.49	9.09%	179.17	7.88%	1418.94	9.98%
Education	23.31	1.30%	41.10	1.81%	311.42	2.19%
Industrial	1195.52	66.88%	1232.08	54.16%	6028.97	42.41%
MF Residential	123.20	6.89%	380.11	16.71%	2412.98	16.98%
SF Residential	65.85	3.68%	164.16	7.22%	1783.77	12.55%
Transportation	85.50	4.78%	66.34	2.92%	1369.82	9.64%
Vacant	122.38	6.85%	200.88	8.83%	843.43	5.93%
Total	1787.55	100%	2274.86	100%	14215.34	100%

Based on the findings from the comparative analysis of the watershed drainage to the Rio Hondo, there is no necessity or value in conducting receiving water monitoring in the Rio Hondo for the LAR UR2 WMA. Under these circumstances, the most definitive source of LAR UR2 WMA water quality data to the Rio Hondo receiving water would be the data provided by the LARUR2-RHO stormwater outfall monitoring site. A summary of the LARUR2-RHO stormwater monitoring site information is presented in **Table 4-3**.

Table 4-3 LARUR2-RHO Stormwater Outfall Monitoring Site Summary						
Outfall ID	**Tributary HUC-12 Area**	**Jurisdiction Where Site is Located**	**Jurisdictions Draining to the Site**	**Facility**	**Latitude**	**Longitude**
LARUR2-RHO	Alhambra Wash - Rio Hondo	Bell Gardens	Bell Gardens, Commerce	Manhole	33.959003	-118.154614

4.2.2 Rotating Stormwater Outfall Monitoring Sites

LAR UR2 WMA has decided to rotate monitoring between the six stormwater outfall sites that are representative of the entire watershed. The six rotating stormwater outfall sites will be sampled in conjunction with the receiving water site and the "fixed" LARUR2-RHO stormwater outfall monitoring site. Two stormwater outfall monitoring sites will be monitored during each storm event, where one site in the north and one site in the south will be monitored. Each group of monitoring sites will be monitored once per year and will rotate between the first, second and third storm event. **Table 4-4** presents the preliminary rotation schedule for the six stormwater outfall monitoring sites.

Table 4-4 Storm Event Monitoring Rotation Schedule by Outfall						
Outfall ID	**Storm Year**					
	2014-2015	**2015-2016**	**2016-2017**	**2017-2018**	**2018-2019**	**2019-2020**
Group 1						
LARUR2-DRO	1	2	3	1	2	3
LARUR2-EO						
Group 2						
LARUR2-NO	2	3	1	2	3	1
LARUR2-WO						
Group 3						
LARUR2-NVO	3	1	2	3	1	2
LARUR2-FWO						

1 First storm event, 2 Second storm event, 3 Third storm event

4.2.2.1 LARUR2-DRO (Downey Road)

Stormwater outfall monitoring site LARUR2-DRO is in the Chavez Ravine - Los Angeles River HUC-12 area and receives runoff from storm drain BI5206, which receives runoff from the City of Los Angeles and the City of Vernon. Samples for LARUR2-DRO will be collected, utilizing portable autosamplers, in a manhole located on the sidewalk on the southwest corner of Bandini Boulvard and South Downey Road.

An analysis comparing the land use composition within the LAR UR2 WMA portion of the LARUR2-DRO catchment area, to that of the greater LAR UR2 WMA, indicates the LARUR2-DRO area is not representative of the LAR UR2 WMA or the City of Vernon. However, from the comparative analysis, stormwater outfall monitoring site LARUR2-DRO is entirely representative of the industrial land use category. Based on these findings, water quality data from LARUR2-DRO will be used to represent the findings for the industrial land use category in the LAR UR2 WMA. **Table 4-5** presents the land use comparative analysis of the LARUR2-DRO tributary area, while a summary of stormwater outfall monitoring site LARUR2-DRO is found in **Table 4-6**. **Figure 4-3** illustrates the catchment area of LARUR2-DRO.

Table 4-5 LARUR2-DRO Tributary Area

Land Use Category	Catchment		Vernon		LAR UR2 WMA Portion of Los Angeles River HUC-12 area	
	Acres	Percentage	Acres	Percentage	Acres	Percentage
Agriculture	0	0%	0	0%	34.98	0.29%
Commercial	0	0%	16.37	0.50%	1239.48	10.38%
Education	0	0%	2.67	0.08%	270.08	2.26%
Industrial	25.57	35.91%	2556.40	77.52%	4796.90	40.18%
MF Residential	0	0%	0.23	0.01%	2032.77	17.03%
SF Residential	0	0%	0.93	0.03%	1618.17	13.55%
Transportation	37.75	53.00%	494.04	14.98%	1303.48	10.92%
Vacant	0.29	0.40%	226.95	6.88%	642.48	5.38%
Unincorporated	7.61	10.68%	0	0%	0	0%
Total	71.22	100%	3297.60	100%	11938.34	100%

Table 4-6 LARUR2-DRO Stormwater Outfall Monitoring Site Summary

Outfall ID	Tributary HUC-12 Area	Jurisdiction Where Site is Located	Jurisdictions Draining to the Site	Facility	Latitude	Longitude
LARUR2-DRO	Chavez Ravine - Los Angeles River	Vernon	Vernon	Manhole	34.008539	-118.205166

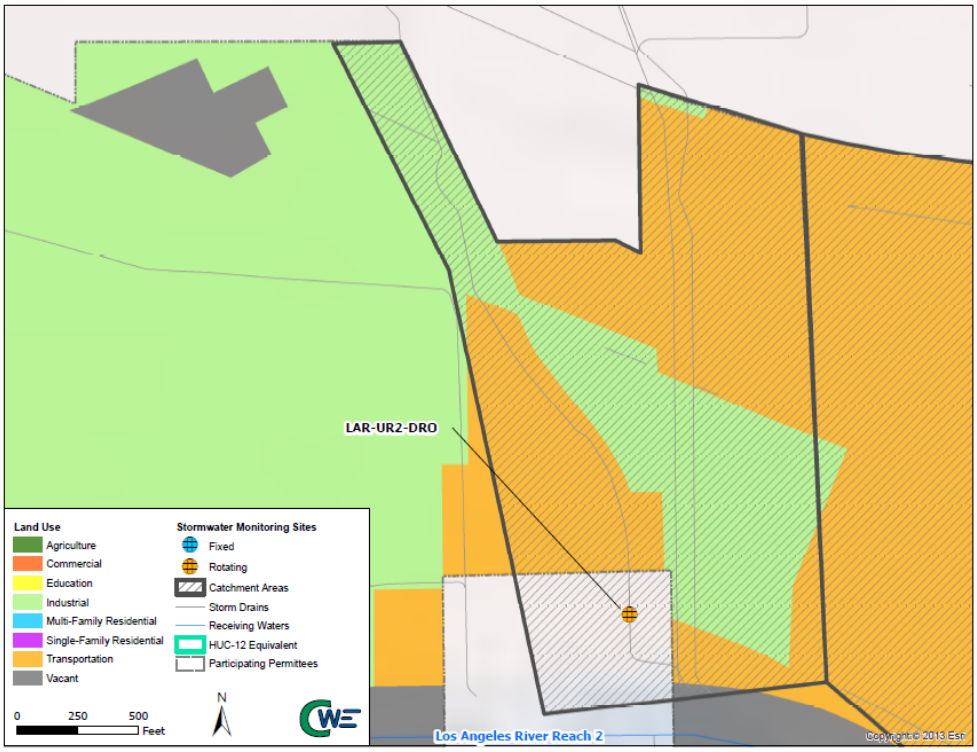

Figure 4-3 LARUR2-DRO Stormwater Outfall Monitoring Site

4.2.2.2 LARUR2-EO (East Los Angeles River)

Stormwater outfall monitoring site LARUR2-EO, presented in **Figure 4-4**, receives runoff from the DDI 23 storm drain, which receives drainage from the Cities of Bell, Bell Gardens, Commerce and a small portion of Vernon. Samples for LARUR2-EO will be collected over the outfall, which can be accessed in the channel near 8287 Jaboneria Road in the City of Bell Gardens. LAR UR2 WMA will install portable autosamples over the outfall prior to the storm event to collect the samples for LARUR2-EO. Monitoring site LARUR2-EO is located in the Chavez Ravine - Los Angeles River HUC-12 area.

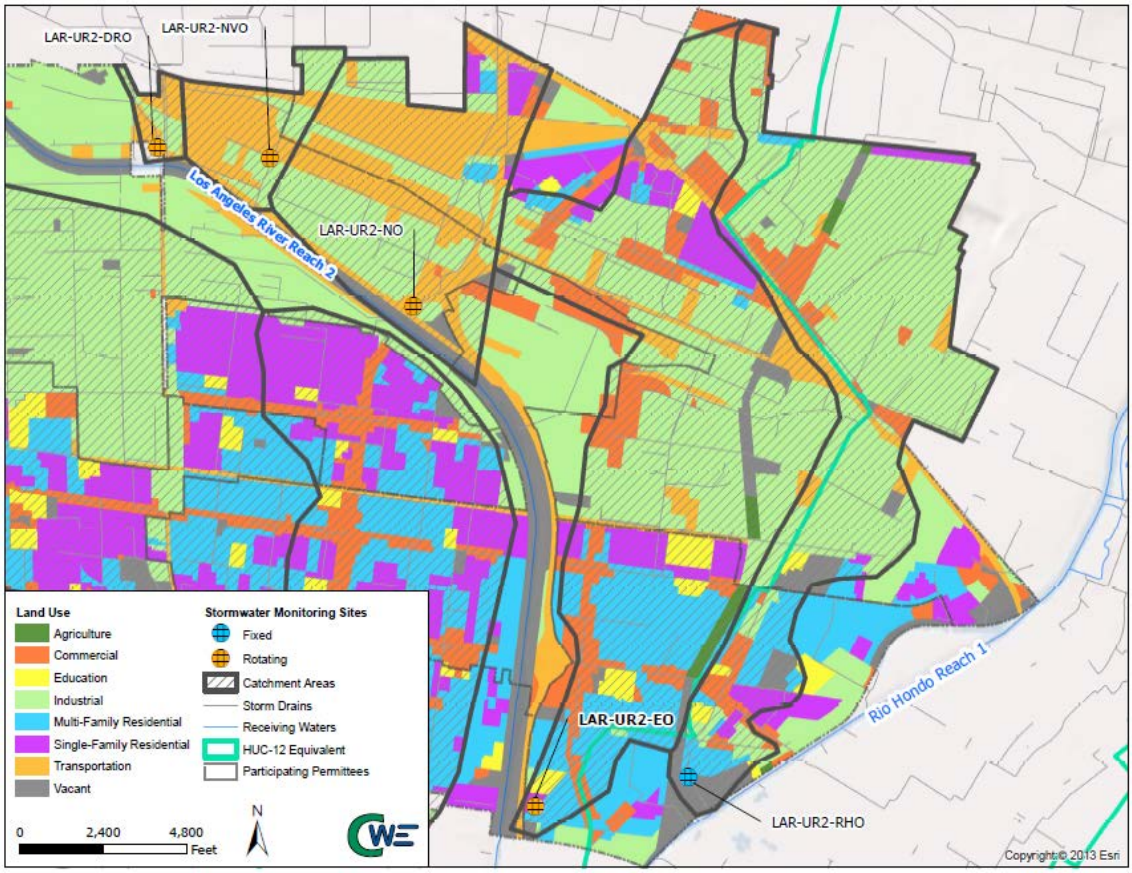

Figure 4-4 LARUR2-EO Stormwater Outfall Monitoring Site

A summary of stormwater outfall monitoring site LARUR2-EO is found in **Table 4-7**, while **Table 4-8** presents an analysis comparing the land use composition within the LARUR2-EO catchment area, to that of the whole LAR UR2 WMA. From the analysis, drainage from LARUR2-EO is representative of the LAR UR2 WMA as a whole. Land use categories commercial, industrial, high density single family residential as well as open space are well represented in the LARUR2-EO catchment area.

Table 4-7 LARUR2-EO Stormwater Outfall Monitoring Site Summary

Outfall ID	Tributary HUC-12 Area	Jurisdiction Where Site is Located	Jurisdictions Draining to the Site	Facility	Latitude	Longitude
LARUR2-EO	Chavez Ravine - Los Angeles River	Bell Gardens	Bell, Bell Gardens, Commerce, Vernon	Outfall	33.956663	-118.169102

Table 4-8 LARUR2-EO Tributary Area						
Land Use Category	**Catchment**		**LAR UR2 WMA Portion of Los Angeles River HUC-12 area**		**LAR UR2 WMA Total**	
	Acres	**Percentage**	**Acres**	**Percentage**	**Acres**	**Percentage**
Agriculture	34.96	1.44%	34.98	0.30%	46.00	0.32%
Commercial	364.37	15.07%	1239.48	10.38%	1418.94	9.98%
Education	75.08	3.11%	270.08	2.26%	311.42	2.19%
Industrial	1036.52	42.88%	4796.90	40.18%	6028.97	42.41%
MF Residential	443.02	18.33%	2032.77	17.03%	2412.98	16.98%
SF Residential	187.43	7.75%	1618.17	13.55%	1783.77	12.55%
Transportation	188.99	7.82%	1303.48	10.92%	1369.82	9.64%
Vacant	87.00	3.60%	642.48	5.38%	843.43	5.93%
Total	2417.35	100%	11938.34	100%	14215.34	100%

4.2.2.3 LARUR2-NO (North Los Angeles River)

Stormwater Outfall Monitoring Site LARUR2-NO, presented in **Figure 4-5**, is in the Chavez Ravine - Los Angeles River HUC-12 area. LARUR2-NO receives runoff from the BI 0014 – U3 – DDI 22 storm drain line. The Cities of Commerce, Vernon and a small portion of Bell within LAR UR2 WMA as well as the non WMA group member, City of Los Angeles drains to LARUR2-NO. Samples for LARUR2-NO will be collected by a portable autosampler, installed in a manhole located in lane number 3 on South Atlantic Boulevard in the City of Vernon.

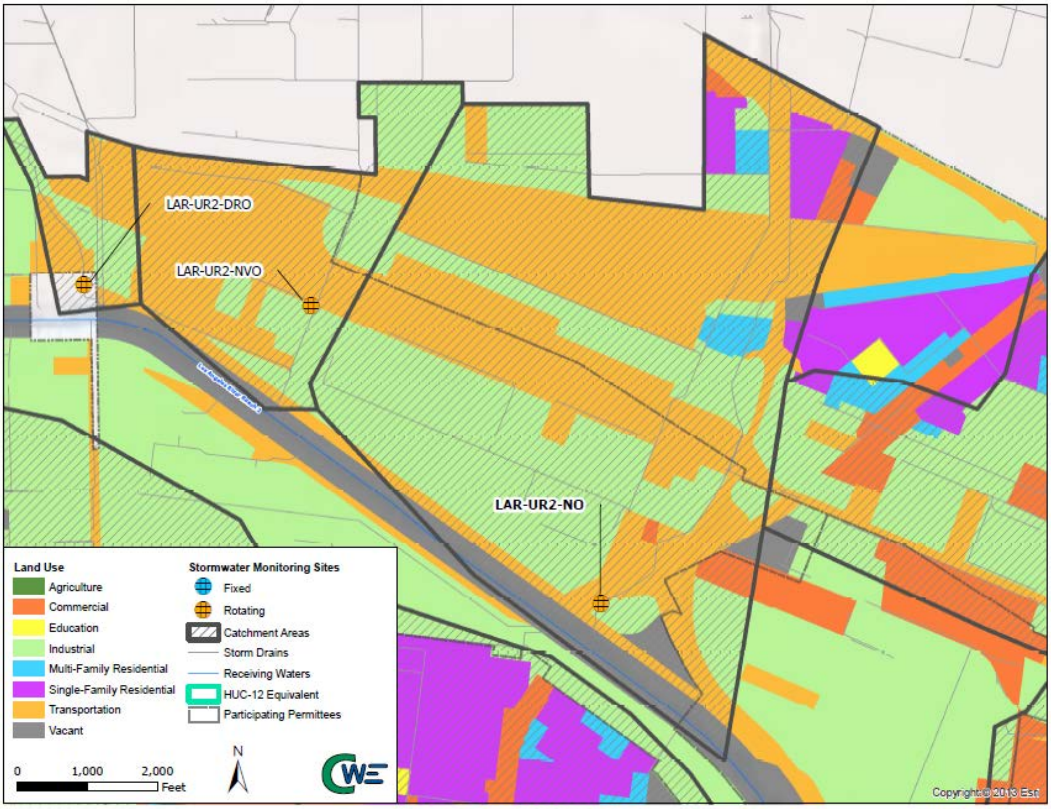

Figure 4-5 LARUR2-NO Stormwater Outfall Monitoring Site

Land use composition within the LARUR2-NO catchment area was compared to the total land use composition of all the LAR UR2 WMA. **Table 4-9** presents the findings from the land use analysis. From the analysis, LARUR2-NO area is not representative of the LAR UR2 WMA. However, LARUR2-NO is more comparable to the Cities of Commerce and Vernon, which is relatively dense in industrial land use and makes up approximately 86% of the catchment area. Based on these comparisons, samples collected at LARUR2-NO will be representative of the industrial land uses for the Cities of Commerce and Vernon.

Table 4-9 LARUR2-NO Tributary Area

Land Use Category	Catchment		Commerce		Vernon		LAR UR2 WMA Total	
	Acres	%	Acres	%	Acres	%	Acres	%
Agriculture	0	0%	19.46	0.46%	0	0%	46.00	0.32%
Commercial	19.83	1.95%	383.03	9.13%	16.37	0.50%	1418.94	9.98%
Education	0	0%	24.46	0.58%	2.67	0.08%	311.42	2.19%
Industrial	406.41	39.91%	2523.00	60.15%	2556.40	77.52%	6028.97	42.41%
MF Residential	18.94	1.86%	129.28	3.09%	0.23	0.01%	2412.98	16.98%
SF Residential	34.44	3.38%	292.25	6.97%	0.93	0.03%	1783.77	12.55%
Transportation	473.28	46.48%	650.51	15.51%	494.04	14.98%	1369.82	9.64%
Vacant	65.39	6.42%	172.50	4.11%	226.95	6.88%	843.43	5.93%
Total	1018.29	100%	4194.48	100%	3297.60	100%	14215.34	100%

A summary of stormwater outfall monitoring site LARUR2-NO is presented in **Table 4-10**.

Table 4-10 LARUR2-NO Stormwater Outfall Monitoring Site Summary

Outfall ID	Tributary HUC-12 Area	Jurisdiction Where Site is Located	Jurisdictions Draining to the Site	Facility	Latitude	Longitude
LARUR2-NO	Chavez Ravine - Los Angeles River	Vernon	Bell, Commerce, Vernon	Manhole	33.996050	-118.180775

4.2.2.4 LARUR2-WO (West Los Angeles River)

Stormwater outfall monitoring site LARUR2-WO, **Figure 4-6**, receives runoff from BI 001 – U1 Line A – East Compton Creek, which primarily drains the Cities of Bell, Cudahy, Maywood and a small portion of Huntington Park. Stormwater outfall monitoring site LARUR2-WO is located in the Chavez Ravine - Los Angeles River HUC-12 area. Samples for LARUR2-WO will be collected in a manhole, via portable autosampler, at the T-intersection of Wilcox Avenue and Patata Street.

An analysis comparing land use composition within the LARUR2-WO catchment area, to that of the greater LAR UR2 WMA, **Table 4-11**, indicates the LARUR2-WO area is not representative of the LAR UR2 WMA as a whole, but has a high percentage of high density single family and multi-family/mixed residential land uses making up approximately 72% of the area. From these comparisons, LARUR2-WO will be used to represent the high density single family and multi-family/mixed residential land uses within LAR UR2 WMA. A summary of stormwater outfall monitoring site LARUR2-WO attributes are presented in **Table 4-12.**

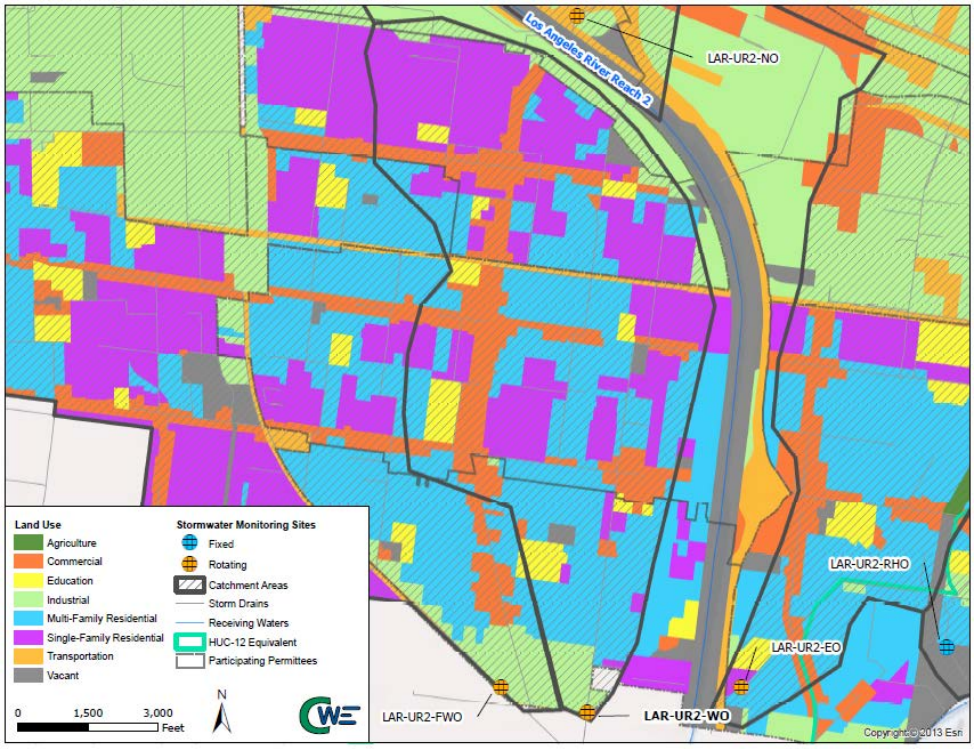

Figure 4-6 LARUR2-WO Stormwater Outfall Monitoring Site

Table 4-11 LARUR2-WO Tributary Area

Land Use Category	Catchment		LAR UR2 WMA Portion of Los Angeles River HUC-12 area		LAR UR2 WMA Total	
	Acres	Percentage	Acres	Percentage	Acres	Percentage
Agriculture	0	0%	34.98	0.30%	46.00	0.32%
Commercial	244.09	15.97%	1239.48	10.38%	1418.94	9.98%
Education	66.85	4.37%	270.08	2.26%	311.42	2.19%
Industrial	91.61	6.00%	4796.90	40.18%	6028.97	42.41%
MF Residential	565.52	37.01%	2032.77	17.03%	2412.98	16.98%
SF Residential	515.64	33.74%	1618.17	13.55%	1783.77	12.55%
Transportation	16.66	1.09%	1303.48	10.92%	1369.82	9.64%
Vacant	19.87	1.30%	642.48	5.38%	843.43	5.93%
South Gate	7.87	0.52%	0	0%	0	0%
Total	1528.12	100%	11938.34	100%	14215.34	100%

Table 4-12 LARUR2-WO Stormwater Outfall Monitoring Site Summary

Outfall ID	HUC-12 Area	Jurisdiction Where Site is Located	Jurisdictions Draining to the Site	Facility	Latitude	Longitude
LARUR2-WO	Chavez Ravine - Los Angeles River	Cudahy	Bell, Cudahy, Huntington Park, Maywood, Vernon	Manhole	33.955146	-118.179975

4.2.2.5 LARUR2-NVO (North Vernon)

The LARUR2-NVO stormwater outfall monitoring site, **Figure 4-7**, receives runoff from the DDI 26 storm drain, which receives discharge from the Cities of Vernon and a small portion of Commerce as well as non WMA group member, City of Los Angeles. Stormwater outfall monitoring site LARUR2-NVO is located in the Chavez Ravine - Los Angeles River HUC-12 area. Samples for LARUR2-NVO will be collected, utilizing portable autosamplers, in a manhole located in the center median near 3890 East 26th Street in the City of Vernon.

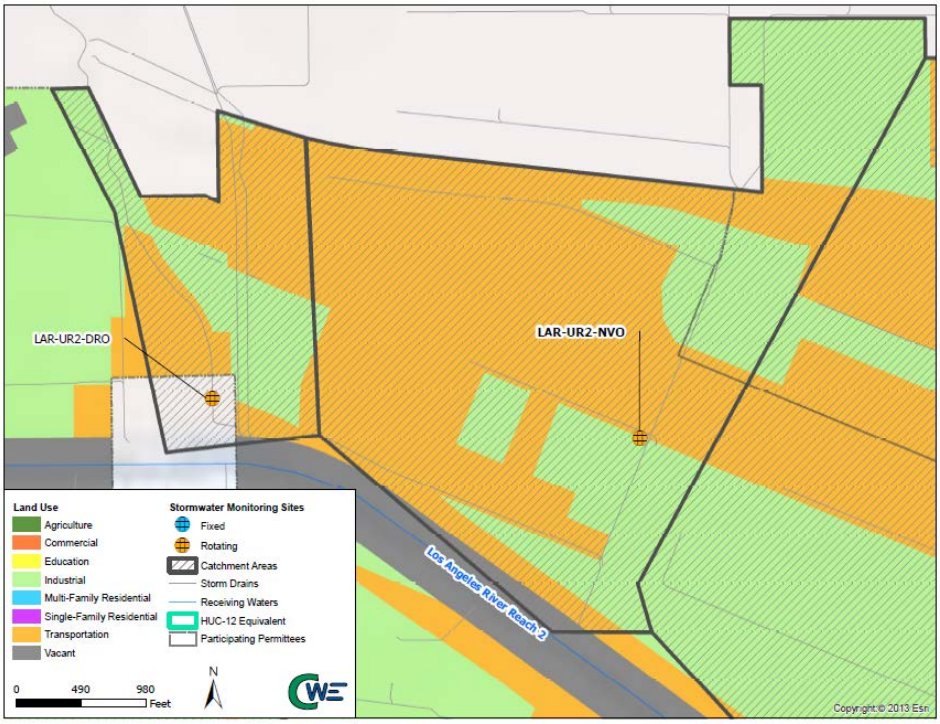

Figure 4-7 LARUR2-NVO Stormwater Outfall Monitoring Site

An analysis comparing the land use composition within the LARUR2-NVO catchment area within LAR UR2 WMA, **Table 4-14**, to that of the greater LAR UR2 WMA, indicates the LARUR2-NVO area is not representative of the LAR UR2 WMA. However, further analysis indicates the LARUR2-NVOarea is like the Cities of Commerce and Vernon, relatively dense in industrial land use categories which make up approximately 98% of the area. Based on these findings, water quality data from LARUR2-NVO will be used to represent the industrial land use category in the LAR UR2 WMA. A summary of attributes for stormwater outfall monitoring site LARUR2-NO is presented in **Table 4-13**.

Table 4-13 LARUR2-NVO Stormwater Outfall Monitoring Site Summary

Outfall ID	Tributary HUC-12 Area	Jurisdiction Where Site is Located	Jurisdictions Draining to the Site	Facility	Latitude	Longitude
LARUR2-NVO	Chavez Ravine - Los Angeles River	Vernon	Commerce, Vernon	Manhole	34.007733	-118.194464

Table 4-14 LARUR2-NVO Tributary Area

Land Use Category	Catchment		Commerce		Vernon		LAR UR2 WMA Total	
	Acres	%	Acres	%	Acres	%	Acres	%
Agriculture	0	0%	19.46	0.46%	0	0%	46.00	0.32%
Commercial	0	0%	383.03	9.13%	16.37	0.50%	1418.94	9.98%
Education	0	0%	24.46	0.58%	2.67	0.08%	311.42	2.19%
Industrial	91.70	35.09 %	2523.0 0	60.15 %	2556.4 0	77.52%	6028.97	42.41%
MF Residential	0	0%	129.28	3.09%	0.23	0.01%	2412.98	16.98%
SF Residential	0	0%	292.25	6.97%	0.93	0.03%	1783.77	12.55%
Transportation	165.5 8	63.36 %	650.51	15.51 %	494.04	14.98%	1369.82	9.64%
Vacant	4.07	1.56%	172.50	4.11%	226.95	6.88%	843.43	5.93%
Total	261.3 5	100%	4194.4 8	100%	3297.6 0	100%	14215.34	100%

4.2.2.6 LARUR2-FWO (Far West Los Angeles River)

As shown in **Figure 4-8**, the LARUR2-FWO stormwater outfall monitoring site is located in the Chavez Ravine - Los Angeles River HUC-12 area and receives runoff from the Cities of Cudahy, Huntington Park, Maywood, Vernon and a small portion of Bell. Samples will be collected using a portable autosampler in a manhole located on Salt Lake Avenue in the City of Cudahy, between Ardine Street and Atlantic Avenue. Stormwater outfall monitoring site LARUR2-FWO. Land use composition within the LARUR2-FWO catchment area was compared to the total land use composition of all the LAR UR2 WMA. **Table 4-15** presents the findings from the land use analysis. From the analysis, LARUR2-FWO catchment area to that of the greater LAR UR2 WMA, indicates the LARUR2-FWO area is representative of the area as a whole. Land use categories commercial, industrial, high density single family residential as well as open space are well represented in the LARUR2-FWO catchment area. A summary of attributes for stormwater outfall monitoring site LARUR2-FWO is presented in **Table 4-16**.

Table 4-15 LARUR2-FWO Tributary Area

Land Use Category	Catchment		LAR UR2 WMA Portion of Los Angeles River HUC-12 area		LAR UR2 WMA Total	
	Acres	Percentage	Acres	Percentage	Acres	Percentage
Agriculture	0	0%	34.98	0.29%	46.00	0.32%
Commercial	454.93	10.87%	1239.48	10.38%	1418.94	9.98%
Education	114.25	2.73%	270.08	2.26%	311.42	2.19%
Industrial	1763.25	42.14%	4796.90	40.18%	6028.97	42.41%
MF Residential	879.38	21.02%	2032.77	17.03%	2412.98	16.98%
SF Residential	749.79	17.92%	1618.17	13.55%	1783.77	12.55%
Transportation	111.22	2.66%	1303.48	10.92%	1369.82	9.64%
Vacant	100.63	2.40%	642.48	5.38%	843.43	5.93%
Unincorporated	10.86	0.26%	0	0%	0	0%
Total	4184.31	100%	11938.34	100%	14215.34	100%

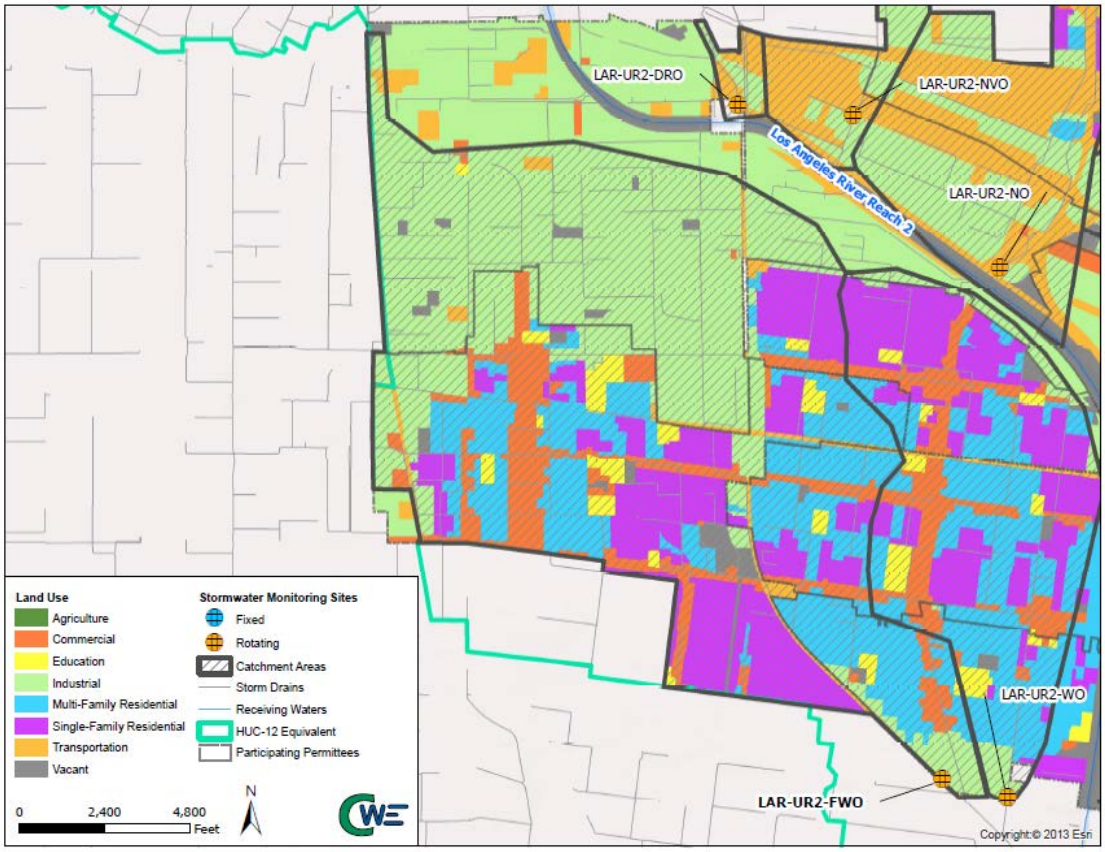

Figure 4-8 LARUR2-FWO Stormwater Outfall Monitoring Site

Table 4-16 LARUR2-FWO Stormwater Outfall Monitoring Site Summary

Outfall ID	Tributary HUC-12 Area	Jurisdiction Where Site is Located	Jurisdictions Draining to the Site	Facility	Latitude	Longitude
LARUR2-FWO	Chavez Ravine - Los Angeles River	Cudahy	Bell, Cudahy, Huntington Park, Maywood, Vernon	Manhole	33.956591	-118.186050

4.3 Stormwater Outfall Monitoring Frequency and Parameters

As with Receiving Water, Stormwater Outfall monitoring will target the first significant rain event of the October to April storm season within each July 1 to June 30 reporting period. A qualifying significant storm forecast predicts at least 0.25 inch of cumulative rainfall, at probabilities exceeding sixty nine percent, at 32 to 8 hours prior to the event start time. Documentation of the qualifying forecast will be retained. Since mobilization is based on predicted rainfall, monitoring may occur without 0.25 inches of actual accumulated rainfall; however if flows in downstream receiving waters exceed 120 percent of their base flow, for a portion of the event, or if sufficient sample volume is collected to perform the required laboratory analyses, than the event will be qualified. For each storm event and outfall site, sampling will be initiated by rising flows, that reach approximately 6 inches in depth and are suitable for collection with an autosampler. Sampling will continue for 24 hours or, if the storm duration is less than 24 hours, the event duration. LAR UR2 WMA will target two subsequent qualifying significant wet-weather events, based on forecasts. Wet-weather monitoring will be preceded by a minimum of three days with less than

0.1 inch of rain per day. Stormwater Outfall water quality samples will be collected using a portable continuous autosampler and sampled three times a year for relevant parameters. Since most drains convey little or no Non-Stormwater discharges, the 120% of Receiving Water base flow criteria, would only be applicable to locations with other NPDES permitted flows and may be modified if flows are found to be variable due to discharge characteristics.

The requirements for identification of the constituents to be monitored at each outfall are outlined in the MRP Section VIII.B.1.c and presented in **Table 4-17**. Parameters in Table E-2 of the MRP, will not be identified as exceeding applicable water quality objectives until after the first year of receiving water monitoring. Monitoring for the selected sites would occur for at least the duration of the Permit term, unless an alternative site is warranted, per the adaptive management process, as presented in **Section 11.** Reporting. Additional analytical and monitoring procedures, including those associated with testing for aquatic toxicity, are discussed in **Appendix E**.

Table 4-17 List of Constituents for Stormwater Outfall Monitoring

Constituent	Site ID						
	LARUR2-RHO	LARUR2-EO	LARUR2-FWO	LARUR2-WO	LARUR2-NO	LARUR2-NVO	LARUR2-DRO
Flow, pH, temperature, specific conductivity, dissolved oxygen	X	X1	X1	X	X	X	X
Table E-2 pollutants detected above relevant objectives	X	X	X	X	X	X	X
Aquatic Toxicity Aquatic Toxicity Identification Evaluation (TIE)(1)							
E. coli	X	X	X	X	X	X	X
Total Suspended Solids (TSS)	X	X	X	X	X	X	X
Hardness	X	X	X	X	X	X	X
Cadmium	X	X	X	X	X	X	X
Copper	X	X	X	X	X	X	X
Lead	X	X	X	X	X	X	X
Zinc	X	X	X	X	X	X	X
Ammonia		X	X	X	X	X	X
Nitrate - N		X	X	X	X	X	X
Nitrite - N		X	X	X	X	X	X
Nitrate-N + Nitrite-N		X	X	X	X	X	X
Oil		X	X	X	X	X	X

1. Toxicity is only monitored from outfalls when triggered by recent receiving water toxicity monitoring where a TIE on the observed receiving water toxicity test was inconclusive. If toxicity is observed at the outfall a TIE must be conducted.

5. Non-stormwater Outfall Monitoring Approach

The Non-Stormwater Outfall Screening and Monitoring Program is focused on dry-weather discharges to receiving waters from major outfalls. The program fills two roles: (1) to provide assessment of whether the non-stormwater discharges are potentially impacting the receiving water, and (2) to determine whether significant non-stormwater discharges are allowable. The non-stormwater outfall program is complimentary to the IC/ID program minimum control measure. Non-stormwater outfall monitoring sites will be determined after outfall screening, determination of discharge significance, and source identification. The outfall screening and monitoring process is intended to prioritize outfalls for assessment and, where appropriate, scheduling of BMPs to address the non-stormwater flows.

5.1 Program Objectives

The objectives of the non-stormwater outfall program include the following (Part II.E.3 of the MRP):

a. Determine whether discharge is in compliance with applicable non-stormwater WQBELs derived from TMDL WLAs;
b. Determine whether discharge exceeds non-stormwater action levels, as described in Attachment G of the MS4 Permit;
c. Determine whether discharge contributes to or causes an exceedance of receiving water limitations; and
d. Assist in identifying illicit discharges as described in Part VI.D.10 of the MS4 Permit.

Additionally, the outfall screening and monitoring process is intended to meet the following objectives (Part IX.A of the MRP):

1. Develop criteria or other means to ensure that all outfalls with significant non-stormwater discharges are identified and assessed during the term of this MS4 Permit.
2. For outfalls determined to have significant non-stormwater flow, determine whether flows are the result of illicit connection/illicit discharge (IC/IDs), authorized or conditionally exempt non-stormwater flows, natural flows, or from unknown sources.
3. Refer information related to identified IC/IDs to the IC/ID Elimination Program (Part VI.D.10 of the MS4 Permit) for appropriate action.
4. Based on existing screening or monitoring data or other institutional knowledge, assess the impact of non-stormwater discharges (other than identified IC/IDs) on the receiving water.
5. Prioritize monitoring of outfalls considering the potential threat to the receiving water and applicable TMDL compliance schedules.
6. Conduct monitoring or assess existing monitoring data to determine the impact of non-stormwater discharges on the receiving water.
7. Conduct monitoring or other investigations to identify the source of pollutants in non-stormwater discharges.
8. Use results of the screening process to evaluate the conditionally exempt non-stormwater discharges identified in Parts III.A.2 and III.A.3 of the MS4 Permit and take appropriate actions pursuant to Part III.A.4.d of the MS4 Permit for those discharges that have been found to be a source of pollutants. Any future reclassification shall occur per the conditions in Parts III.A.2 or III.A.6 of the MS4 Permit.
9. Maximize the use of Permittee resources by integrating the screening and monitoring process into existing or planned Integrated Monitoring Program (IMP) and/or CIMP efforts.

The outfall screening and investigations must be completed prior to initiating monitoring at an individual outfall. A flowchart of the program is presented as **Figure 5-1**. Detailed discussion of each element is provided in the following subsections.

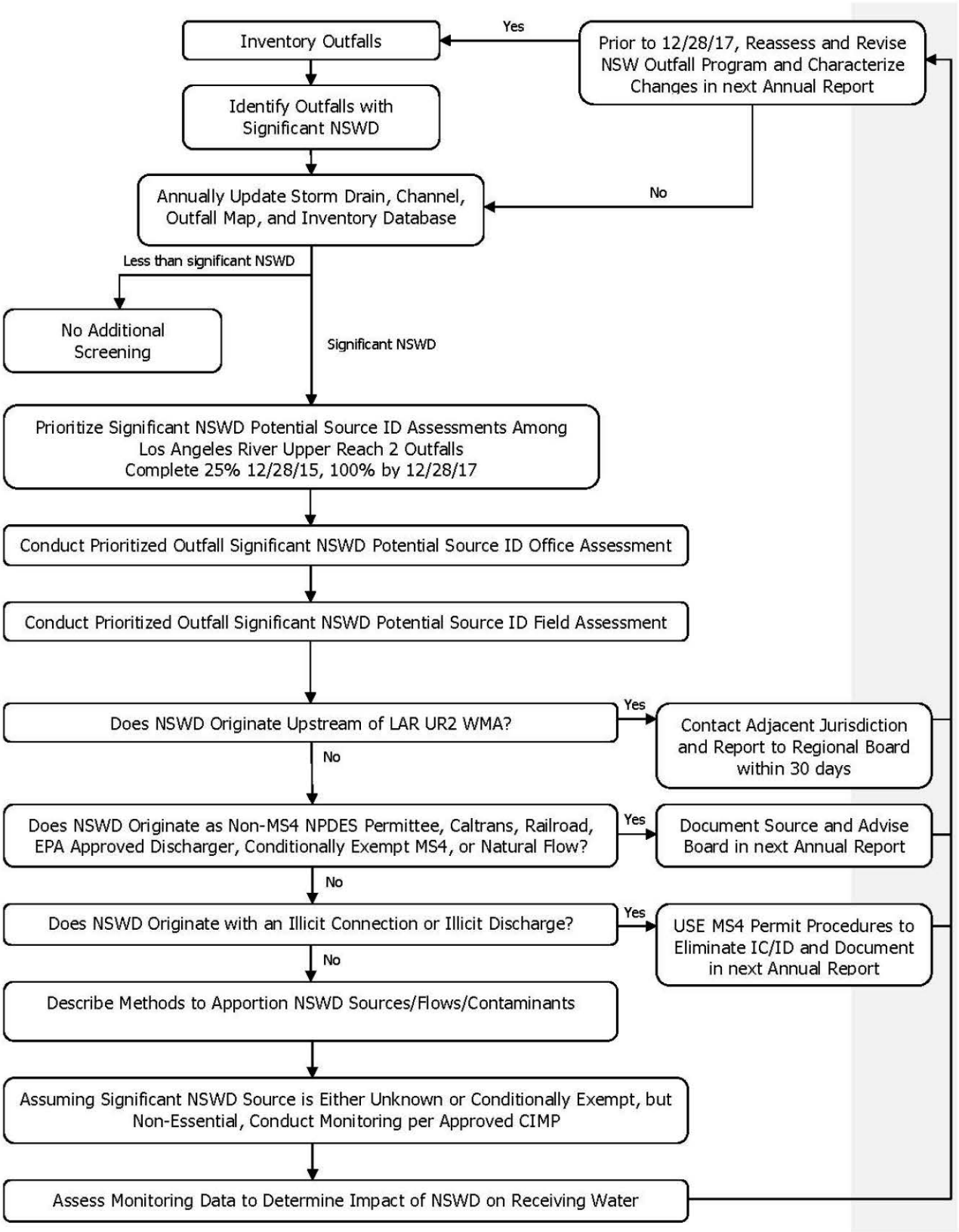

Figure 5-1 Non-stormwater Outfall Monitoring Program Flow Chart

5.2 Screen / Identify Significant Non-Stormwater Discharge Outfalls

In December 2013, a field survey of outfalls from the LAR UR2 WMA to the Los Angeles River and Rio Hondo was undertaken; however a single observation is insufficient for the determination of non-stormwater discharge (NSWD) significance. The LAR UR2 WMA will undertake an additional outfall screening to evaluate major outfalls within its jurisdiction. Major outfalls are defined as:

- 36-inch or larger outlets, and
- 12-inch or larger outlets with tributary areas including 2 acres or more of industrial land use.

In order to collect data to determine significant non-stormwater outfalls, the LAR UR2 WMA will perform one outfall screening during the year following CIMP approval. The outfall screening is necessary to collect the information to identify outfalls exhibiting significant non-stormwater discharges and to develop the information needed for the inventory of outfalls with significant non-stormwater discharges. The LAR UR2 WMA will screen outfalls for Non Storm Water Discharges and, when flows are sufficient for collection, conduct analytical monitoring for parameters that are proposed to include *E. coli*, metals, and nutrients.

During the outfall screening process, all outfalls within the LAR UR2 WMA area will be visited. A standard field data collection form will be used, consisting of visual observations for:

- Flow rate
- Discharge flows sufficient to reach the receiving water main channel
- NSWD clarity
- Presence of odors and foam in the NSWD

Additionally information, needed for the GIS database, and geographically referenced photographs, will be collected as discussed in **Section 3.** GIS Database. **Table 5-1** outlines the proposed LAR UR2 WMA screening process. Based on estimated flow, tributary area, and the preponderance of analytical results, a prioritized and paced schedule will be developed to perform sources assessments and, if NSWDs continue after source assessment, monitor those outfalls during the current permit cycle, currently anticipated to conclude on December 28, 2017.

Table 5-1 Non-Stormwater Outfall Screening Process Utilizing Flow and WQOs

Component	Description
Characteristics for Defining Significant Non-Stormwater Discharges	Outfalls with significant NSWDs will be ranked to prioritize source identification and monitoring. The ranking score is the sum of the following criteria:
	1. Does the non-stormwater discharge reach the the normal receiving water conveyance channel during dry-weather? If yes, give a score of 1 and continue through the ranking criteria.
	2. WQO Exceedances: for each outfall monitored during the non-stormwater outfall screening process, a score will be given to the outfall depending on whether an exceedance of WQO was observed during monitoring. A score of 1 will be given for each exceedance of WQO, and 0 for meeting criteria.
Data Collection	Data that would need to be collected include accurate flow measurements and ND Constituents (To be determined). Additionally, information needed to complete the inventory would be collected.
Timeline	The screening process will occur within 90 day of approval of the CIMP, assuming an adequate duration of dry-weather conditions.

5.3 Inventory MS4 Outfalls

An inventory of MS4 Outfalls will be developed and maintained by the LAR UR2 WMA after outfall screening. The LAR UR2 WMA inventory database will include available existing data from past outfall screening efforts, monitoring, and initiated data collection efforts. The data within the database will include the physical attributes MS4 outfalls determined to have significant non-stormwater discharges as well as those requiring no further assessment. If the MS4 outfall requires no further assessment, the inventory will include the rationale for the determination of no further action required based on the following:

- The outfall does not have flow;
- The outfall does not have a known significant non-stormwater discharge; or
- Discharges observed were determined to be exempt during the source identification.

The inventory will be recorded in the database as required in Part VII.A of the MRP. Each year, the inventory will be updated to incorporate the most recent characterization data for outfalls with significant non-stormwater discharges. The following physical attributes of outfalls with significant non-stormwater discharges will be included in the inventory and should be collected as part of the screening process:

- Date and time of last visual observation or inspection;
- Outfall alpha-numeric identifier;
- Description of outfall structure including size (e.g., diameter and shape);
- Description of receiving water at the point of discharge (e.g., concrete channel);
- Latitude/longitude coordinates;
- Nearest street address;
- Parking, access, and safety considerations;
- Photographs of outfall condition;
- Photographs of significant non-stormwater discharge (or indicators of discharge) unless safety considerations preclude obtaining photographs;
- Estimation of discharge rate;
- All diversions either upstream or downstream of the outfall;
- Observations regarding discharge characteristics such as turbidity, odor, color, presence of debris, floatables, or monitoring characteristics that could aid in pollutant source identification; and
- Monitoring data.

5.4 Prioritized Source Identification

Once the significant non-stormwater outfalls have been identified through the screening process and incorporated into the inventory, Part IX.E of the MRP requires Permittees to prioritize outfalls for further source investigations. The LAR UR2 WMA proposes the following alternative prioritization criteria to be utilized:

Outfalls in the top 20% with the highest ranking score based on **Table 5-2**, and

1. Outfalls for which monitoring data exist and indicate recurring exceedances of one or more of the Action Levels identified in Attachment G of the Permit.

Once the prioritization is completed, a source identification of designated significant non-stormwater outfall will be achieved. The LAR UR2 WMA proposes the following schedule:

- Complete 25% of significant outfalls – within 3 years of the effective date of the MS4 NPDES Permit (December 28, 2015); and
- Complete 100% of significant outfalls – within 5 years of the effective date of the MS4 NPDES Permit (December 28, 2017)

5.5 Source Identification of Significant Non-Stormwater Discharge

Based on the prioritized list of major outfalls with significant non-stormwater discharge, source identification will be conducted to identify the source(s) or potential source(s) of non-stormwater discharge.

Part IX.A.2 of the MRP requires Permittees to classify the source identification results into the following types and summarized in **Table 5-2**:

A. IC/IDs: If the source is determined to be an illicit discharge, the Permittee must implement procedures to eliminate the discharge consistent with IC/ID requirements (Permit Part VI.D.10) and document actions.
B. Authorized or conditionally exempt non-stormwater discharges: If the source is determined to be an NPDES permitted discharge, a discharge subject to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), or a conditionally exempt essential discharge, the group member must document the source. For non-essential conditionally exempt discharges, the group member must conduct monitoring consistent with Part IX.G of the MRP.
C. Natural flows: If the source is determined to be natural flows, the Permittee must document the source.
D. Unknown sources: If the source is unknown, the Permittee must conduct monitoring consistent with Part IX.G of the MRP.

Table 5-2 Summary of Source Identification Types

Type	Follow-up	Action Required by Permit
A. Illicit Discharge or Connection	Refer to IC/ID program	Implement control measures and report in annual report. Monitor if it cannot be eliminated.
B. Authorized or Conditionally Exempt Discharges[1]	Document and identify if essential or non-essential	Monitor non-essential discharges
C. Natural Flows	End investigation	Document and report in annual report
D. Unknown	Refer to IC/ID program	Monitor
E. Upstream of LAR UR2 WMA	End investigation	Inform upstream WMA and the Regional Board in writing within 30 days of identifying discharge.

1 Discharges authorized by a separate NPDES permit, a discharge subject to a Record of Decision approved by USEPA pursuant to section 121 of CERCLA, or is a conditionally exempt NSW discharge addressed by other requirements. Conditionally exempt NSW discharges addressed by other requirements are described in detail in Part III.A. Prohibitions – NSW Discharges of the Permit.

Source identification will be conducted using site-specific procedures based on the characteristics of the non-stormwater discharge. Investigations could include:

- Performing field measurements to characterize the discharge;
- Following dry-weather flows from the location where they are first observed in an upstream direction along the conveyance system; and
- Compiling and reviewing available resources, including past monitoring and investigation data, land use/MS4 maps, aerial photography, and property ownership information.

Where the source identification has determined the non-stormwater source to be authorized, natural, or essential conditionally-exempt flows, the outfall will require no further assessment, and source identification will continue to the next highest priority outfall. However, if the source identification determines that the source of the discharge is non-essential conditionally exempt, an ID, or is unknown, then further investigation will be conducted to eliminate the discharge or to demonstrate that it is not causing or contributing to receiving water impairments, and will be added to the monitoring list until the non-stormwater discharge is eliminated.

In some cases, source investigations may ultimately lead to prioritized programmatic or structural BMPs. Where the LAR UR2 WMA has determined that they will address the non-stormwater discharge through modifications to programs or by structural BMP implementation, the LAR UR2 WMA will incorporate the approach into the implementation schedule developed in the WMP, and the outfall can be eliminated from the monitoring list.

5.6 Monitoring of Non-Stormwater Outfalls Exceeding Criteria

As outlined in the MRP (Part II.E.3), outfalls with significant non-stormwater discharges that remain unaddressed after the initial source investigation shall be monitored to meet the following objectives:

a. Determine whether discharge is in compliance with applicable dry-weather WQBELs derived from TMDL WLAs;
b. Determine whether the quality of discharge exceeds non-stormwater action levels, as described in Attachment G of the Permit; and
c. Determine whether discharge causes or contributes to an exceedance of receiving water limitations.

Outfalls that have been determined to convey significant non-stormwater discharges where the source identification concludes the presence of an ongoing ID/IC (Type A on **Table 5-2**), non-essential conditionally exempt (Type B from **Table 5-2**), or unknown (Type D from **Table 5-2**) must be monitored. Monitoring will begin within 90 days of completing the source identification.

5.6.1 Non-Stormwater Outfall Monitoring Sites

After completion of the outfall inventory, prioritization of outfalls with significant NSWDs, completion of source assessment and identification, water, from those remaining candidates for NSWD Outfall monitoring, will be collected as grab samples, unless the site is among the seven outfalls identified for Stormwater Outfall monitoring, where autosampler collection would occur. The majority of outfalls within the LAR UR2 WMA have not been modified to accommodate autosampler installation, are unsafe for twenty four hour flow assessment/sample collection, and have too little flow to allow automated sample collection. Grab sample collection would be employed, until a determination is made through the AMP, that the NSWD flows warrant extensive monitoring and can't be controlled by other means.

5.6.2 Monitored Frequency and Parameters

After the outfall screening and NSW source identification, non-stormwater monitoring sites will be sampled twice per year to coincide with receiving water dry-weather monitoring. Coordination with receiving water monitoring will allow for an evaluation of whether the non-stormwater discharges are causing or contributing to any observed exceedances of water quality objectives in the receiving water. Dry-weather receiving waters conditions are characterized by flows of less than 120 percent of base flow, with one event taking place during September which is historically the month with the lowest flow volume in this area. Significant NSWDs will be monitored for all required constituents, based on the receiving water, as outlined in Part IX.G.1.a-e of the MRP, except for aquatic toxicity. Toxicity monitoring is only required when triggered by recent receiving water toxicity monitoring where a TIE on the observed receiving water toxicity test was inconclusive. Like dry-weather receiving water monitoring, NSWD monitoring shall only occur after 72 hours with no more than 0.1 inches of rain per day and must be completed before rainfall greater than 0.1 inch occurs. An overview of the constituents to be monitored and the corresponding frequency is listed in **Table 5-3**. Outfalls on the monitoring list will be monitored for at least the duration of the Permit term, or until the non-stormwater discharge is eliminated. Additional analytical and monitoring procedures are discussed in **Appendix D**.

Table 5-3 List of Constituents for Non-stormwater Outfall Monitoring

Constituent	Receiving Water Bodies of Outfalls	
	Los Angeles River	Rio Hondo
Flow, pH, temperature, specific conductivity, and dissolved oxygen	X	X
Table E-2 pollutants detected above relevant objectives	X	X
Aquatic Toxicity and Toxicity Identification Evaluation (TIE)(1)		
E. coli	X	X
Total Suspended Solids	X	X
Hardness	X	X
Copper	X	X
Lead	X	X
Zinc	X	X
Ammonia	X	
Nitrate - N	X	
Nitrite - N	X	
Nitrate-N + Nitrite-N	X	
Oil	X	

1. Toxicity is only monitored from outfalls when triggered by recent receiving water toxicity monitoring where a TIE on the observed receiving water toxicity test was inconclusive. If toxicity is observed at the outfall a TIE must be conducted.

6 Aquatic Toxicity Testing / Identification Evaluation (TIE)

Aquatic toxicity testing may identify biologic impacts, potentially as a result of MS4 discharges, on receiving water beneficial uses. Monitoring for aquatic toxicity in the Los Angeles River watershed begins with receiving water aquatic toxicity testing by the watershed management groups, which may lead to a Toxicity Identification Evaluation (TIE), potentially followed by a Toxicity Reduction Evaluation (TRE), or outfall aquatic toxicity monitoring to narrow the potential discharges source of the problematic constituents and hopefully result in the toxicants elimination or control.

During dry-weather, the Los Angeles River is significantly dependent on Water Replenishment Plant effluents, with a significant contribution due to rising groundwater in the unlined Glendale Narrows reach, which is above Reach 2 and the LAR UR2 WMA. As demonstrated by the essentially dry Rio Hondo, the contribution from LAR UR2 WMA and other storm drain discharging NPDES Permittees, is greatly diluted by effluent and groundwater flows and comparable with that from the watershed as a whole. Based on urban watershed area, the modest four percent wet-weather runoff contribution from the LAR UR2 WMA should be comparable with that of the greater regional urban watershed community. Potential urban runoff toxicants, that might be found at higher concentrations during storm events, includes metals, industrial organics, and commercially available pesticides. Based on the potential presence of these toxicants in the watershed, the sensitivities of the three MS4 Permit designated species were considered to evaluate which might be most sensitive to the likely watershed toxicants.

The following sub-sections detail sensitive species selection, technical approach to implementing aquatic toxicity based water quality monitoring, and the logistical rationale for interpreting and evaluating aquatic toxicity results for the LAR UR2 WMA portion of the Rio Hondo and Los Angeles Rivers. Management actions, taken in response to confirmed toxicity results, would be implemented as extensions or reprioritizations of previously planned watershed control measures, when appropriate for the control of the identified toxicant, or through the identification and adoption of previously unidentified measures, but presumably effective measures through the iterative WMP AMP.

6.1 Sensitive Species Selection

For water samples collected from receiving waters with salinity less than 1 part per thousand (ppt), or for outfalls to such receiving waters, the permit indicates that toxicity tests should be conducted in accordance with *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA/821/R-02/013, 2002; Table IA, 40 CFR Part 136). Part XII.G.1, of Attachment E to the 2012 MS4 Permit, recommends use of the most sensitive of the following organisms, without substitution accept by written authorization of the LARWQCB Executive Officer:

- A static renewal toxicity test with the Fathead Minnow, *Pimephales promelas* (Larval Survival and Growth Test EPA Method 1000.0).
- A static renewal toxicity test with the daphnid, *Ceriodaphnia dubia* (Survival and Reproduction Test EPA Method 1002.0).
- A static non-renewal toxicity test with the green alga, *Selenastrum capricornutum* (*Raphidocelis subcapitata*) (Growth Test EPA Method 1003.0).

Part XII.G.3 of Attachment E to the 2012 MS4 Permit suggests that a species sensitivity screening test be undertaken unless "a sensitive test species has already been determined, or if there is prior knowledge of potential toxicant(s) and a test species is sensitive to such toxicant(s), then monitoring shall be conducted using only that test species." These three permit specified species, which are each suitable for laboratory culture, test preparation, and results interpretation, were evaluated to determine if whether a sensitive test species had already been determined, or if there exists prior knowledge of potential toxicant(s) and identify the test species most sensitivity to that toxicant(s).

The algae *S. capricornutum* is primarily sensitive to herbicides, which can be associated with agricultural and suburban watersheds, but not the highly urbanized Los Angeles River Watershed. As compared to the arthropod *C. dubia*, *S. capricornutum* is insensitive to pyrethroid and organophosphate pesticides and no more sensitive to metals; which appear to be decreasing in concentration and can be cost-effectively quantified using analytical chemistry. The *S. capricornutum* growth test can be affected by non-toxic water quality characteristics, including high suspended and dissolved solids, color, and pH extremes, which complicate the determination of toxicity and may necessitate physical sample manipulations, such as centrifugation and filtration, that can affect actual toxicity. In a study of urban highway runoff (Kayhanian et. al, 2008), the response of *S. capricornutum* was more variable than that of *C. dubia* or *P. promelas* and may have actually been stimulated by nutrients present in the runoff.

As compared to *S. capricornutum*, the Fathead Minnow, *P. promelas,* is moderately sensitive to a broad range of toxicants including metals, organics, and pesticides. The dose response endpoint is relatively obvious, making them the standard for aquatic toxicity testing for decades. As compared to *C. dubia,* Fathead Minnows are more sensitive to ammonia, however this pollutant will normally be quantified analytically. The USEPA (2007) reports mean acute copper toxicity for *P. promelas*, to be almost 70 µg/l, as compared to 5.9 µg/l for *C. dubia*, a relationship observed for most metals, making it less useful for assessing the impacts of urban runoff on receiving waters.

C. dubia is sensitive to metals, industrial organics, legacy, and recently relevant, pesticides such as diazinon and bifenthrin (Palumbo et al., 2010). In a City of Stockton study, acute and chronic urban storm runoff toxicity was observed for *C. dubia*, while no toxicity response was apparent for *S. capricornutum* or *P. promelas* (Lee and Lee, 2001). The smaller water sample volume needed during the test, is also an attribute of daphnid organisms. While rarely a concern for storm runoff monitoring, *C. dubia* cultured in moderately hard water (80-100 mg/L CaCO3), may be sensitive to hardness above 400 mg/L, which has been observed in the Rio Hondo and may be a problem for most aquatic toxicity test organisms. Where water hardness exceeds 400 mg/L, the closely related alternative test species *Daphnia magna* may be a suitable substitute (Cowgill and Milazzo, 1990). *C. dubia* is the ambient toxicity test organism for City of Los Angeles, Los Angeles River Watershed Monitoring Program and the most-sensitive species for the Donald C. Tillman/Los Angeles-Glendale Water Reclamation Plant effluent and receiving water tests. A review of recent Los Angeles County Department of Public Works Annual Stormwater Monitoring Reports[2], demonstrates a variety of responses ranging from acute, to sublethal and no observed effect, which varied among dry- and wet-weather samples, and by watersheds.

Based on organism sensitivity to known receiving water toxicants, laboratory culture-ability, related substitute in the likely case of hard water (dry-weather Rio Hondo) samples, local receiving water experience in the presence of treated wastewater, stormwater and dry-weather runoff and effluents, *C. dubia* is the most appropriate and broadly sensitive test species for the LAR UR2 WMA CIMP.

6.2 Aquatic Toxicity Testing Period

Although the duration of watershed storms better conforms to acute toxicity testing methodologies, the LAR UR2 WMA acquiesces to the LARWQCB recommendation to assess undiluted grab sample aquatic toxicity, using survival and reproductive endpoints, based on a *C. dubia* seven (7) day testing period in accordance with Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA, 2002a,b). It is unclear that applying chronic testing methods, to grab or 24 our composite samples, will suitable simulate the chronic conditions which would actually be found in the receiving water that is intended to be simulated through by toxicity testing.

[2] http://dpw.lacounty.gov/wmd/NPDES/report_directory.cfm

6.3 Toxicity Endpoint Assessment and TIE Triggers

Part XII.G.4, of Attachment E to the 2012 MS4 Permit directs that toxicity test endpoint data be analyzed using the Test of Significant Toxicity (TST) t-test approach specified by the USEPA (USEPA, 2010), with the chronic In-stream Waste Concentration (IWC) set at 100% receiving water, for receiving water samples, and 100% effluent, for Stormwater and NSW Outfall samples. Based on Attachment E, Part XII.I, a follow-up Toxicity Identification Evaluation (TIE) will be triggered, for chronic *C. dubia* aquatic toxicity testing, if a statistically significant, greater than, or equal to, fifty percent reduction in survival or reproduction is observed between the undiluted runoff water sample and laboratory control. The TIE procedure will be initiated as soon as possible after the toxicity trigger threshold is observed, to reduce the potential loss of toxicity associated with sample storage. If Pathogen Related Mortality (PRM), epibiont interference, or other alternative cause of morbidity or mortality is readily apparent, the test results will be rejected and if necessary, a modified procedure developed for future testing.

In cases where significant toxic endpoint effects are observed in the sample, triggering the TIE, but the TIE sample baseline does not produce a statistically significant outcome in comparison to the TIE control, the toxicity cause will be considered non-persistent and no additional testing of the original sample is required. If this pattern is repeated thrice consecutively for a specific location and condition, future toxicity test results should be evaluated to determine if parallel TIE treatments are warranted to provide an improved opportunity to identify the toxicity cause.

6.4 Toxicity Identification Evaluation Approach

The 2012 MS4 Permit intends that laboratory toxicity testing guide field investigations to determine the apparent toxicity cause and that the TIE support the identification of management actions which are likely to result in the removal of these toxicants from receiving waters. Successful TIEs may direct additional receiving water, outfall, or storm drain monitoring and inform future management actions.

As described in *Methods for Aquatic Toxicity Identification Evaluations – Phase I Toxicity Characterization Procedures* – Second Edition (EPA/600/6-9/003) (1991) the TIE approach consists of three phases:

- Phase I utilizes methods to characterize the physical/chemical nature of the toxicants, such as solubility, volatility and filterability, without specifically identifying the toxicants. Phase I results are a first step in specifically identifying the toxicants but the data generated can also be used to develop treatment methods to remove toxicity without specific identification of the toxicants.
- Phase II utilizes methods to specifically identify toxicants.
- Phase III utilizes methods to confirm the suspected toxicants.

For aquatic toxicity samples, that exceed the trigger described in section 6.3, the LAR UR2 WMA will attempt to identify the toxicant by conducting an iterative TIE Phase I assessment. This includes a review of water quality analytical chemistry results, that might identify potential toxicants, and common sample manipulations, such as those summarized in **Table 6-1**. TIE testing is adaptive and information learned during prior tests should be applied during future investigations, to identify alternative sample manipulations and targeted treatments, which may eventually provide information for narrowing or identifying primary toxicants, or clarify observation of toxicity as exceptional or repeated. TIEs should generally adhere to USEPA procedures documented in conducting TIEs (USEPA, 1991, 1992, 1993a-b). A Phase I TIE alone, may be sufficient to characterize a toxicant within a pollutant class and guide future outfall monitoring or watershed pollutant source control actions, without the need to further narrow the potential list of toxicants using Phase II or III TIEs. In other cases, a Phase II, or follow up Phase III, TIE may be utilized to identify the specific sample toxicant, if Phase I TIE testing and a review of available chemistry data fails to guide the identification of constituents that warrant additional monitoring or management actions to identify the likely toxicant and eliminate its source.

Table 6-1 Aquatic Toxicity Identification Evaluation (TIE) Sample Manipulations	
TIE Sample Manipulation	**Expected Response**
pH Adjustment (pH 7 and 8.5)	Alters toxicity of pH sensitive compounds (i.e., ammonia and metals)
Filtration or centrifugation*	Removes particulates and associated toxicants
Ethylenediamine-Tetraacetic Acid (EDTA)/Cation Exchange Column*	Chelates trace metals, particularly divalent cationic metals
Sodium thiosulfate (STS) addition	Reduces oxidant toxicants (i.e., chlorine) and some metals
Piperonyl Butoxide (PBO)*	Reduces toxicity of organophosphate pesticides (e.g diazinon, chlorpyrifos, and malathion), enhances pyrethroid toxicity
Carboxylesterase addition	Hydrolyzes pyrethroids
Temperature adjustments	Pyrethroids are more toxic when test temperatures are decreased
Solid Phase Extraction (SPE) with C18 column*	Removes non-polar organics (including pesticides) and some relatively non-polar metal chelates
Sequential Solvent Extraction of SPE C18 column	Further resolution of SPE-extracted compounds for chemical analyses
No Manipulation*	Baseline for comparison with other manipulations

* Recommended Stormwater Testing Treatments. **Appendix E**, State Water Resources Control Board June 2012 Public Review Draft "Policy for Toxicity Assessment and Control".

A TIE assessment will be considered inconclusive when the toxicity is persistent (i.e., continued observed in the baseline), but cannot be attributed to a constituent class (e.g., insecticides, metals, etc.) that can be targeted for additional monitoring. In cases where significant toxic endpoint effects are observed in the sample, triggering TIE testing, but the TIE sample baseline does not produce a statistically significant outcome in comparison to the control, the toxicity will be considered non-persistent and no additional testing of the sample is required. If this pattern is repeated thrice consecutively, for a specific location and condition, future TIE treatments should be undertaken in parallel with toxicity tests to improve the opportunity to identify the toxicant.

If chemical analyses of water quality samples, collected during the same event, identify a pollutant, or analytical class of pollutants, the result of a TIE is considered conclusive. A combination of toxicants, within one or more pollutant classes, may act additively or synergistically, but this effect may be reduced or eliminated by using a combination of TIE treatments and verified using analytical chemistry data.

While Part XII.I.4, of Attachment E to the 2012 MS4 Permit allows use of a TIE Prioritization Metric, as proposed in the SMC Model Monitoring Program, the extent to which TIEs will be conducted is unclear and any attempts at prioritization will be proposed and further characterized through the CIMP AMP.

6.5 Follow Up on Toxicity Testing Results

Part VIII.B.1.c.vi and IX.G.1.d of Attachment E to the Permit indicate that following a conclusive TIE, chemical analyses for the toxicants will undertaken at upstream outfalls, during the next similar condition sampling event. The list of constituents to be monitored at LAR UR2 WMA outfalls, will be modified as soon as feasible following the completion of a successful TIE, to include conclusively identified toxicants.

If the results of a receiving water TIE are inconclusive, an aquatic toxicity test of the discharges from upstream outfalls will be conducted, during the same conditions (i.e., wet or dry weather) and using the same test species, as soon as feasible. Due to the significant potential for inconclusive TIEs, the LAR UR2 WMA group proposes that two consecutive inconclusive receiving water TIEs, during the same condition (i.e., wet or dry weather), be used to lead to a toxicity test of upstream outfalls, during the same condition (i.e., wet or dry weather), using the same test species, as soon as feasible.

If conclusively identified TIE toxicants are determined to be present, based on analytical chemistry methods, in outfall discharges at levels above the applicable receiving water limitation, a Toxicity Reduction Evaluation (TRE) will be performed for that toxicant. The TRE requirement and methods will be developed as part of the LAR UR2 WMA WMP AMP, while the CIMP may be modified to support that effort. The identification and implementation of watershed toxicant control measures are tied to stormwater program management, rather than monitoring. TREs will only be developed for toxicants not already addressed by an existing Permit requirement (i.e., TMDLs) or planned management action.

6.6 Summary of Aquatic Toxicity Monitoring

The aquatic toxicity monitoring approach described in this section is summarized in **Figure** 6-1. The intent of this approach is to identify the cause of toxicity observed in receiving water and to the extent possible, using available methods, direct outfall monitoring for the pollutants causing toxicity with the goal of supporting the development and implementation of management actions. To be effective, the LAR UR2 WMA aquatic toxicity, TIE, and TRE approach must be proactive, adaptive, and iterative, while the conforming to the Permit Attachment E objectivea of effectively leveraging monitoring resources. Significant changes in approach will be characterized with board staff and documented in Annual Reports.

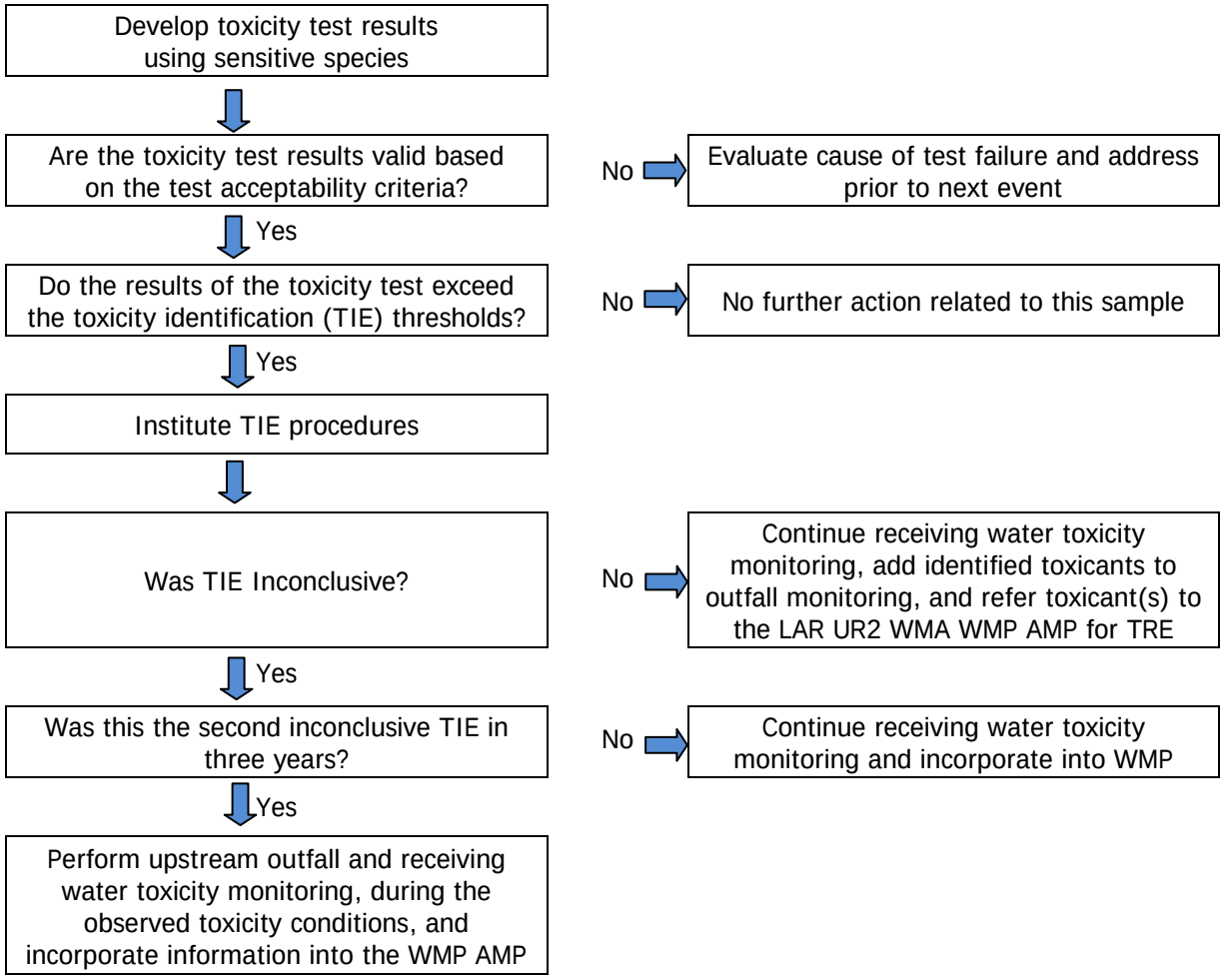

Figure 6-1 Toxicity, TIE, TRE Approach Flow Chart

7. New Development/Re-Development Effectiveness

New Development/Re-Development Effectiveness Tracking is used for tracking information data about new and re-development activities. To meet the MRP requirements of Permit Attachment E, Part X.A, the LAR UR2 WMA members will maintain an informational database record for each new development/re-development project subject to the minimum control measure (MCM) requirements in Part VI.D.7 of the Permit and their adopted Low Impact Development (LID) Ordinance. The database should track the following information:

1. Name of the Project and Developer,
2. Mapped project location (preferably linked to the Geographic Information System (GIS) storm drain map),
3. Issuance date of the project Certificate of Occupancy,
4. 85th percentile 24-hour storm event for project design (inches),
5. 95th percentile 24-hour storm event for projects draining to natural water bodies (inches),
6. Other design criteria required to meet hydromodification requirements for drainages to natural water bodies,
7. Project design storm (inches per 24 hours),
8. Project design storm volume (gallons or MGD),
9. Percent of design storm volume to be retained onsite,
10. Design volume for water quality mitigation treatment BMPs (if any),
11. If flow through, water quality treatment BMPs are approved, provide the one-year, one-hour storm intensity as depicted on the most recently issued isohyetal map published by the Los Angeles County Hydrologist,
12. Percent of design storm volume to be infiltrated at an off-site mitigation or groundwater replenishment project site,
13. Percent of design storm volume to be retained or treated with biofiltration at an off-site retrofit project,
14. Location and maps (preferably linked to the GIS storm drain map) of off-site mitigation, groundwater replenishment, or retrofit sites, and
15. Documentation of issuance of requirements to the developer.

Upon approval of the WMP by the Regional Board or the Executive Officer, the LAR UR2 WMA members will begin implementing the new development and re-development effectiveness tracking requirements. In addition to the requirements in Part X.A of the MRP, Part VI.D.7.d.iv of the Permit requires that the LAR UR2 WMA implement a tracking system for new development/re-development projects that have been conditioned for post-construction BMPs. The following information is to be tracked using GIS or another electronic system:

1. Municipal Project ID
2. State Waste Discharge Identification (WDID) Number
3. Project Acreage
4. BMP Type and Description
5. BMP Location (coordinates)
6. Date of Acceptance
7. Date of Maintenance Agreement
8. Maintenance Records
9. Inspection Date and Summary
10. Corrective Action
11. Date Certificate of Occupancy Issued
12. Replacement or Repair Date

The procedures for reviewing projects, tracking data, and reporting are different for each jurisdiction and may even be different across departments within the same jurisdiction. Due to the complexity of land development processes across jurisdictions, data management and tracking procedures will vary by jurisdiction. The LAR UR2 WMA members will develop a complete tracking system that works for their individual needs and internal processes.

7.1 Program Objectives

The objective of the New Development/Re-Development Effectiveness Tracking is to assess whether post-construction Best Management Practice (BMP), as outlined in permits issued by the Permittees, are implemented and to ensure the volume of stormwater associated with the design storm is retained onsite, as required by Part VI.D.7.c.i. of the Permit. The New Development/Re-Development Effectiveness Tracking will gather necessary data to assess whether construction MCM, LID ordinances', and BMPs are effective and being implemented.

7.2 Existing New Development/Re-Development Tracking Procedures

Within the LAR UR2 WMA, each jurisdiction has a unique approach to tracking some or the entire 27 required development program tracking elements (15 elements identified in Attachment E.X.A and 12 elements in Part VI.D.7.d.iv.). For private development projects, a Building Department, or a variation of, is typically the entity responsible for collecting and recording the program tracking elements. In contrast, public improvement projects are normally the responsibility of a Public Works Department.

Based on a review of the existing new development/re-development tracking procedure for the different jurisdictions within the LAR UR2 WMA, additional effort will be needed to track the 27 program tracking elements required by the Permit. Information has currently been recorded and stored differently across jurisdictions, with some using commonly available software packages, such as Microsoft Office products and GIS, and others using proprietary software programs, such as Plan Check and Inspection System (PCIS), or in some instances paper files. LAR UR2 WMA members will need to develop or modify their current tracking systems to setting up a centrally located spreadsheet template that includes the required information fields for each project that can be tracked separately by the individual jurisdiction's proprietary software system if integrated accordingly. Each jurisdiction will dedicate resources to develop a complete tracking system that works for their individual needs and internal processes.

7.3 Data Management

Each jurisdiction will conduct tracking that will meet the Permit requirements and facilitate reporting. The data management protocols will include:

- Designing and testing data entry sheets for the required information fields identified in **Section 7.1**;
- Describing the procedures and identifying the departments/divisions responsible for inputting data, assessing accuracy and consistency, and coordinating follow up actions when questions arise;
- Strategy for checking and validating data entry, including identifying departments/divisions responsible for managing and safeguarding data, performing data entry, supervising the data entry, and ensuring quality control of the data; and
- Specifying procedures for routinely and safely archiving data files.

Data collection for development review processes generally consist of the following similar steps:

- **Planning** – Project proponents submit an application to agency planning department to determine whether or not the project meets jurisdictional requirements. When required, the project may require a public hearing for conditions and entitlements. Project conditions may include water quality related requirements.
- **Building** – Projects may be conditioned subject to engineering, community services, or building department review and approval of plans or technical reports. During review, required water quality BMP designs are reviewed and accepted. When a building and/or grading permit is issued, project construction usually proceeds without further discretionary approvals.
- **Construction** – During construction, approved BMPs are implemented then verified by the jurisdiction's inspector prior to issuance of a Certificate of Occupancy.
- **Post-Construction Inspections** – Once constructed, inspection and verification of maintenance is transferred to the jurisdiction's water quality program manager.

Relevant project data is collected during each phase of the development review process described above.

7.3.1 Additional Data

To facilitate annual assessment and reporting and future Reasonable Assurance Analyses (RAA) input data compilation, the LAR UR2 WMA may also track the following information:

- Do any modified MCMs apply to this project?
- Assessor's Identification Number (AIN)
- Street address
- Revised land use (based on City/County Land Use Categories)
- BMP maintenance funding source
- Tributary area to each BMP

7.3.2 Reporting

Annual Assessment and Reporting requirements to be included in an Annual Report are outlined in Part XVIII.A.1 through A.7 of the MRP. Relevant to New Development/Re-Development Effectiveness Tracking, each Permittee within LAR UR2 WMA is required to annually track, analyze, and report on the following stormwater control measures in Part XVIII.A.1:

- Estimate the cumulative change in percent effective impervious area (EIA) since the effective date of the Permit and, if possible, the estimated change in the stormwater runoff volume during the 85th percentile storm event.
- Summarize new development/re-development projects constructed within the Permittee's jurisdictional area during the reporting year.
- Summarize retrofit projects that reduced or disconnected impervious area from the MS4 during the reporting year.
- Summarize other projects designed to intercept stormwater runoff prior to discharge to the MS4 during the reporting year.
- For the projects summarized above, estimate the total runoff volume retained onsite by the implemented projects.
- Summarize actions taken in compliance with Total Maximum Daily Load (TMDL) implementation plans or approved Watershed Management Programs to implement TMDL provisions in Part VI.E and Attachments L-R of the Permit.

- Summarize riparian buffer/wetland restoration projects completed during the reporting year. For riparian buffers include width, length and vegetation type; for wetland include acres restored, enhanced or created.
- Summarize other MCMs implemented during the reporting year, as deemed relevant.
- Provide status of all multi-year efforts that were not completed in the current year and will therefore continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, the Permittee shall provide a discussion of the factor(s) limiting its acquisition and steps that will be taken to improve future data collection efforts.

The LAR UR2 WMA is also required to track, evaluate, and provide an effectiveness assessment of stormwater control measures per Attachment E, Part XVIII.A.2:

- Summarize rainfall for the reporting year. Summarize the number of storm events, highest volume event (inches/24 hours), highest number of consecutive days with measureable rainfall, total rainfall during the reporting year compared to average annual rainfall for the subwatershed. Precipitation data may be obtained from the Los Angeles County Department of Public Works rain gauge stations available at http://www.ladpw.org/wrd/precip/.
- Provide a summary table describing rainfall during stormwater outfall and wet-weather receiving water monitoring events. The summary description shall include the date, time that the storm commenced and the storm duration in hours, the highest 15-minute recorded storm intensity (converted to inches/hour), the total storm volume (inches), and the time between the storm event sampled and the end of the previous storm event.
- Where control measures were designed to reduce impervious cover or stormwater peak flow and flow duration, provide hydrographs or flow data of pre- and post-control activity for the 85th percentile, 24-hour rain event, if available.
- For natural drainage systems, develop a reference watershed flow duration curve and compare it to a flow duration curve for the subwatershed under current conditions.
- Provide an assessment as to whether the quality of stormwater discharges as measured at designed outfalls is improving, staying the same or declining. The Permittee may compare water quality data from the reporting year to previous years with similar rainfall patterns, conduct trends analysis, or use other means to develop and support its conclusions (e.g., use of non-stormwater action levels or municipal action levels as provided in Attachment G of the Permit).
- Provide an assessment as to whether wet-weather receiving water quality within the jurisdiction of the Permittee is improving, staying the same or declining, when normalized for variations in rainfall patterns. The Permittee may compare water quality data from the reporting year to previous years with similar rainfall patterns, conduct trends analysis, draw from regional bioassessment studies, or use other means to develop and support its conclusions.
- Provide status of all multi-year efforts, including TMDL implementation, that were not completed in the current year and will continue into the subsequent year(s). Additionally, if any of the requested information cannot be obtained, the Permittee shall provide a discussion of the factor(s) limiting its acquisition and steps that will be taken to improve future data collection efforts.

Additional reporting elements required are identified in Part VI.D.7 of the Permit and include:

- A summary of total offsite project funds raised to date and a description (including location, general design concept, volume of water expected to be retained, and total estimated budget) of all pending public offsite projects.
- A list of mitigation project descriptions and estimated pollutant and flow reduction analyses.
- A comparison of the expected aggregate results of alternative compliance projects to the results that would otherwise have been achieved by retaining onsite the stormwater quality design volume.

Part XV.A of the MRP requires each Permittee or group to submit an Annual Report to the Regional Board by December 15th of each year. The annual reporting period is from July 1st through June 30th and information reported will cover approved and constructed projects that have been issued occupancy permits.

7.4 Summary of New Development/Re-development Effectiveness Tracking

New Development/Re-Development Effectiveness Tracking is used for tracking information data in regards to new and re-development activities and their associated post-construction BMPs. The information is stored and will be submitted in an annual compliance report. Each jurisdiction will be individually responsible for tracking Permit requirements, based on their specific operational procedures and internal processes.

8. Regional Studies

The MRP identifies one regional study: the SMC Regional Watershed Monitoring Program. The SMC is a collaborative effort between SCCWRP, State Water Board's Surface Water Ambient Monitoring Program (SWAMP), three Southern California Regional Water Quality Control Boards, and several county stormwater agencies. SCCWRP acts as a facilitator to organize the monitoring program, conducts the data analysis, and prepares monitoring results reports. The goal of the SMC is to develop a monitoring program on a regional level for Southern California's coastal streams and rivers.

8.1 Regional Study Participation

The MRP states that each Permittee shall be responsible for supporting the monitoring described at the sites within the watershed management area(s) that overlap with the Permittee's jurisdictional area. One program initiated under the SMC is the Regionally Consistent and Integrated Freshwater Stream Bioassessment Monitoring Program (Bioassessment Program), which included six monitoring sites that were monitored annually within the WMP Group area.

The LAR UR2 WMA will continue to participate in the Biosassessment Program being managed by the SMC, through the LACFCD. The LACFCD will contribute necessary resources to implement the bioassement monitoring requrement of the MS4 permit on behalf of all permitees in Los Angeles County during the current permit cycle. Initiated in 2008, the SMC's Regional Bioassement Program is designed to run over a five-year cycle. Monitoring under the first cycle concluded in 2013, with reporting of findings and additional special studies planned to occur in 2014. SMC, including LACFCD, is currently working on designing the bioassessment monitoring program for the next five-year cycle, which is scheduled to run from 2015 to 2019.

9. Special Studies

LAR UR2 WMA is responsible for conducting special studies that are required in an effective TMDL or an approved TMDL Monitoring Plan applicable to a watershed that is within the LAR UR2 WMA's jurisdictional boundary. At this time there are no special studies required by any of the TMDLs within the LAR UR2 WMA. LAR UR2 WMA will take into consideration the optional special studies. One such study the LAR UR2 WMA is currently interested in pursuing, is the Site Specific Objective (SSO) for zinc in the Los Angeles River and Tributary waters.

The LARWQCB provided comments on the draft LAR UR2 WMA CIMP on November 21, 2014. These comments included the suggestion to conduct an aquatic toxicity sensitive species selection study and a CASQA study suggesting the use of *Hyalella azteca* as sensitive species for Pyrethroid pesticides. While the CIMP has been revised to include a section dedicated to toxicity testing, the CASQA study highlights the potential risk for hop scotching among sensitive species based on ever changing pollutant combinations. A rarely observed herbicide could guide toxicity monitoring for the remainder of this permit cycle based on the sensitivity of one species to it. This would be further complicated by the many groups within each watershed, which might easily identify different most sensitive species resulting in conflicting results across group borders. The elimination of toxicants would not be supported if one group is focused on metals, another pyrethroids, a third herbicides, while a headwater group is using a different species due to water hardness, and the final group focuses on marine species.

Either the Stormwater Monitoring Coalition, or the MS4 Permit TAC, should coordinate this task, so that a fair and comparable study is developed and implemented among the MS4 Permittees, or a process for switching among species and coordinating among watershed groups is developed so that toxicants might be identified and controlled soon after they appear within a watershed management area.

10. Adaptive Management

An adaptive management approach provides a structured process that allows for taking action under uncertain conditions based on the best available science, closely monitoring and evaluating outcomes, and re-evaluating and adjusting decisions as more information is collected.

The CIMP, as with the WMP, is to be implemented as an adaptive process. As new program elements are implemented and data are gathered over time, the WMP and CIMP will undergo revision to reflect the most current understanding of the watershed and present a sound approach to addressing changing conditions. As such, the WMP and CIMP will employ an adaptive management process utilizing BMPs that meet the maximum extent practicable standard and that will allow the two programs to evolve over time.

10.1 Annual Assessment and Reporting

MRP Part XVIII.A details the annual assessment and reporting that is required as part of the annual report. The annual assessment and reporting is composed of seven parts, which are the following:

1. Stormwater Control Measures
2. Effectiveness Assessment of Stormwater Control Measures
3. Non-stormwater Control Measures (including the MAL Assessment Report per Attachment G, see page G-17)
4. Effectiveness Assessment of Non-stormwater Control Measures
5. Integrated Monitoring Compliance Report
6. Adaptive Management Strategies
7. Supporting Data and Information

Based on the findings of the annual assessment, revisions to the CIMP will be included as part of the Adaptive Management Strategies.

10.2 CIMP Revision Process

CIMP implementation used to develop data on receiving water conditions and stormwater/non-stormwater quality to assess the effectiveness of the WMP. As part of the adaptive management process, re-evaluation of the CIMP will need to be conducted to better inform the LAR UR2 WMA of ever changing conditions of the watershed. Each program of the CIMP will be re-evaluated for the following:

- **Monitored site locations:** as water quality priorities change and certain WBPCs are being addressed or identified, monitoring site locations may need to be added or modified. Outfall monitoring locations determined not to be representative of MS4 discharges may also be relocated.
- **Monitoring constituents**: eliminate or reduced monitoring of certain constituents. If constituents were initially detected during the initiation of CIMP monitoring and are eventually addressed through the implementation of a watershed control measure which results in non-detect in future monitoring results, elimination or reduction in monitoring will be submitted for approval to the Regional Board.
- **Monitoring frequency**: increased or decreased in monitoring frequency will be based on the evaluation of RWL, WQBELs, non-stormwater action levels.
- **Monitoring methods**: Analytical methods or analytical labs may need to be modified.

Based on the re-evaluation, CIMP revisions will be made and submitted to the Regional Board for approval in conjunction with the WMPs every two years.

11. Reporting

Analysis and reporting of data is an integral part of communicating to the Regional Board of whether the CIMP is meeting MRP objectives. The MRP, establishes NPDES permit monitoring, reporting, and recordkeeping requirements, including those for large MS4s, based on federal Clean Water Act (CWA) section 308(a) and Code of Federal Regulations (40 CFR) sections 122.26(d)(2)(i)(F), (iii)(D), 122.41(h)-(l), 122.42(c), and 122.48. In addition, California Water Code (CWC) section 13383 authorizes the Regional Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The sections below will outline the CIMP reporting process for the LAR UR2 WMA.

11.1 Documents and Records

Consistent with the Part XIV.A of the MRP requirements, LAR UR2 WMA will retain records of all monitoring information, including: all calibration, major maintenance records, all original lab and field data sheets, all original strip chart recordings for continuous monitoring instrumentations, copies of all reports required by the permit, and records of data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report, or application. Monitoroing records will include:

1. The sampling date, time of measurements, exact place, weather conditions, and rain fall amount;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used;
6. The results of such analyses; and
7. The data sheets showing toxicity test results.

11.1.1 Event Summary Reports

At the conclusion of each monitoring event for receiving water (wet- and dry-weather), stormwater outfall, and non-stormwater outfall monitoring, or all of the above, an event summary report for the LAR UR2 WMA will be produced and submitted annually as an attachment with the Integrated Monitoring Compliance Report. The event summary report will give an overview of what was conducted during the monitoring event, the result findings from the monitoring events, summary exceedances, and the monitoring records as mentioned above.

11.1.2 Semi-Annual Analytical Data Submittal

Monitoring results data will be submitted semi-annually, as stated in Part XIV.L of the MRP, with suggested reporting dates of April and October first. The transmitted data will be in the most recent update of the Southern California Municipal Storm Water Monitoring Coalition's (SMC) Standardized Data Transfer Formats (SDTFs) and sent electronically to either the LARWQCB Stormwater site to MS4stormwaterRB4@waterboards.ca.gov, the California Environmental Data Exchange Network (CEDEN) http://www.ceden.org/about_us.shtml website. The SMC and CEDEN SDTFs are hosted by Southern California Coastal Water Research Project (SCCWRP) http://www.sccwrp.org/data/DataSubmission.aspx. The submitted monitoring data should highlight the following:

1. Exceedances of applicable WQBELs,
2. Receiving water limitations,
3. Action levels, and/or
4. Aquatic toxicity thresholds for all test results, with corresponding sampling dates per receiving water monitoring station.

11.2 Monitoring Reports

Part XVIII.A.5, of the MPR presents the requirements of the Integrated Monitoring Compliance Report (IMCR) that will be included and submitted on an annual basis as part of the Annual Report. As discussed in **Section** 10. Adaptive Management, the IMCR is one of seven parts of the Annual Assessment and Reporting.

The IMCR will include the following information as required by the MRP:

- Summary of exceedances against all applicable RWL, WQBELs, non-stormwater action levels, and aquatic toxicity thresholds for:
    1. Receiving water monitoring – wet- and dry-weather;
    2. Stormwater outfall monitoring; and
    3. Non-stormwater outfall monitoring.
- Summary of actions taken:
    1. To address exceedances for WQBELs, non-stormwater action levels, or aquatic toxicity for stormwater and non-stormwater outfall monitoring.
    2. To determine whether MS4 discharges contributed to RWL exceedances and efforts taken to control the discharge causing the exceedances to the receiving water.
- If aquatic toxicity was confirmed and a TIE was conducted, identify the toxic chemicals determined by the TIE, and include all relevant data to allow the Regional Board to review the adequacy and findings of the TIE.

The IMCR will be submitted as part of the Annual Assessment Report to the Regional Board by December 15th of each year, for at least the duration of the Permit term. As indicated above, event summary reports will be attached to the IMCR.

11.3 Signatory and Certification Requirements

Part V.B of Attachment D of the Permit presents the Signatory and Certification Requirements and states:

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below [40 CFR section 122.41(k)(1)].
2. All applications submitted to the Regional Water Board shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer includes: (i) the chief executive officer of the agency (e.g., Mayor), or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., City Manager, Director of Public Works, City Engineer, etc.).[40 CFR section 122.22(a)(3)].
3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
    a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above [40 CFR section 122.22(b)(1)];
    b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named

individual or any individual occupying a named position.) [40 CFR section 122.22(b)(2)]; and

c. The written authorization is submitted to the Regional Water Board [40 CFR section 122.22(b)(3)].

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative [40 CFR section 122.22(c)].
5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." [40 CFR section 122.22(d)].

All required signatures and statements will be included as an attachment of the Annual Report, which will cover the MS4 Permit period from July 1 to June 30, of each year and be submitted to the Regional Board by December 15th of each year, for at least the duration of the Permit term.

12. Schedule for CIMP Implementation

As stated in Part IV.C.6 of the MRP, implementation of the LAR UR2 WMA's CIMP will commence within 90 days following approval by the Executive Officer of the Regional Board, or by the beginning of the MS4 Permit Annual Reporting period on July 1, 2015, whichever is later. By the February 17, 2015 revised CIMP submittal date, the LAR UR2 WMA anticipates having advertised for professional assistance, selected a consulting firm, authorized final contract negotiations, and will be ready to issue a Notice to Proceed immediately following final Board Executive Officer approval of the CIMP. For seven of the sites, portable equipment will be used allowing for the monitoring to begin, on a rotational basis as described in **Section** 4. Implementation of the CIMP for the one monitoring site in Los Angeles River is subject to the availability and approval of construction permits from LACFCD and Army Corps of Engineers. If the availability and approval of permits are not obtained before the 90 day deadline, the LAR UR2 WMA will inform the Regional Board on the progress of obtaining the permits. Monthly updates will be provided to the Regional Board until the permits are obtained. Monitoring at the one monitoring site in Los Angeles River will commence within 30 days after the approval of required permits.

13. Quality Assurance Project Program Plan

A final Quality Assurance Project Program (QAPP) Plan will be prepared once a monitoring program contract is issued. This is necessary as the QAPP should identify specific individuals, contact points, Analytical Method Detection and Reporting Limits that are Sampling Consultant and Analytical Laboratory specific. A generic QAPP is attached to the CIMP as **Appendix E**.

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Appendix A

Drainage Facilities Maps by LAR UR2 WMA Permittee

BELL
2.6 sq. miles
14.8 miles of storm drain
263 catch basins

N
W E
S

0 1,300 2,600 5,200 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- MaintenanceHole_Clip
- PumpStation_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip

RB-AR6263

LAR UR2 WMA		
GIS SPATIAL LIBRARY **DRAINAGE FACILITIES** **CITY OF BELL**	C.R.	08/28/2013
	13039	**1**

BELL GARDENS
2.5 sq. miles
14.3 miles of storm drain
315 catch basins

N
W E
S

0 1,000 2,000 4,000 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- MaintenanceHole_Clip
- PumpStation_Clip
- Culvert_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip

RB-AR6264

LAR UR2 WMA		
GIS SPATIAL LIBRARY **DRAINAGE FACILITIES** **CITY OF BELL GARDENS**	C.R.	08/28/2013
	13039	**1**

COMMERCE
6.6 sq. miles
32.5 miles of storm drain
663 catch basins

N
W E
S

0 1,625 3,250 6,500 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- MaintenanceHole_Clip
- PumpStation_Clip
- AbandonedLine_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip

RB-AR6265

LAR UR2 WMA		
GIS SPATIAL LIBRARY **DRAINAGE FACILITIES** **CITY OF COMMERCE**	C.R.	08/28/2013
	13039	**1**

CUDAHY
1.2 sq. miles
8.8 miles of storm drain
146 catch basins

N
W E
S

0 650 1,300 2,600 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- MaintenanceHole_Clip
- PumpStation_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip

RB-AR6266

LAR UR2 WMA		
GIS SPATIAL LIBRARY **DRAINAGE FACILITIES** **CITY OF CUDAHY**	C.R.	08/28/2013
	13039	**1**

HUNTINGTON PARK
3.0 sq. miles
19.1 miles of storm drain
586 catch basins

N
W E
S

0 1,125 2,250 4,500 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- MaintenanceHole_Clip
- PumpStation_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip

RB-AR6267

LAR UR2 WMA		
GIS SPATIAL LIBRARY **DRAINAGE FACILITIES** **CITY OF HUNTINGTON PARK**	C.R.	08/28/2013
	13039	**1**

MAYWOOD
1.2 sq. miles
5.8 miles of storm drain
183 catch basins

N
W E
S

0 650 1,300 2,600 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- MaintenanceHole_Clip
- PumpStation_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip
- City Boundary

RB-AR6268

LAR UR2 WMA	
GIS SPATIAL LIBRARY **DRAINAGE FACILITIES** **CITY OF MAYWOOD**	C.R. 08/28/2013 13039 **1**

VERNON
5.2 sq. miles
47.5 miles of storm drain
1,166 catch basins

N
W E
S

0 1,150 2,300 4,600 Feet

Legend

- CatchBasin_Clip
- CulvertPoint_Clip
- Gate_Clip
- PumpStation_Clip
- MaintenanceHole_Clip
- AbandonedLine_Clip
- GravityMain_Clip
- LateralLine_Clip
- OpenChannel_Clip

City Facilities

- Catch Basin
- Manhole
- Lateral
- Gravity Main

RB-AR6269

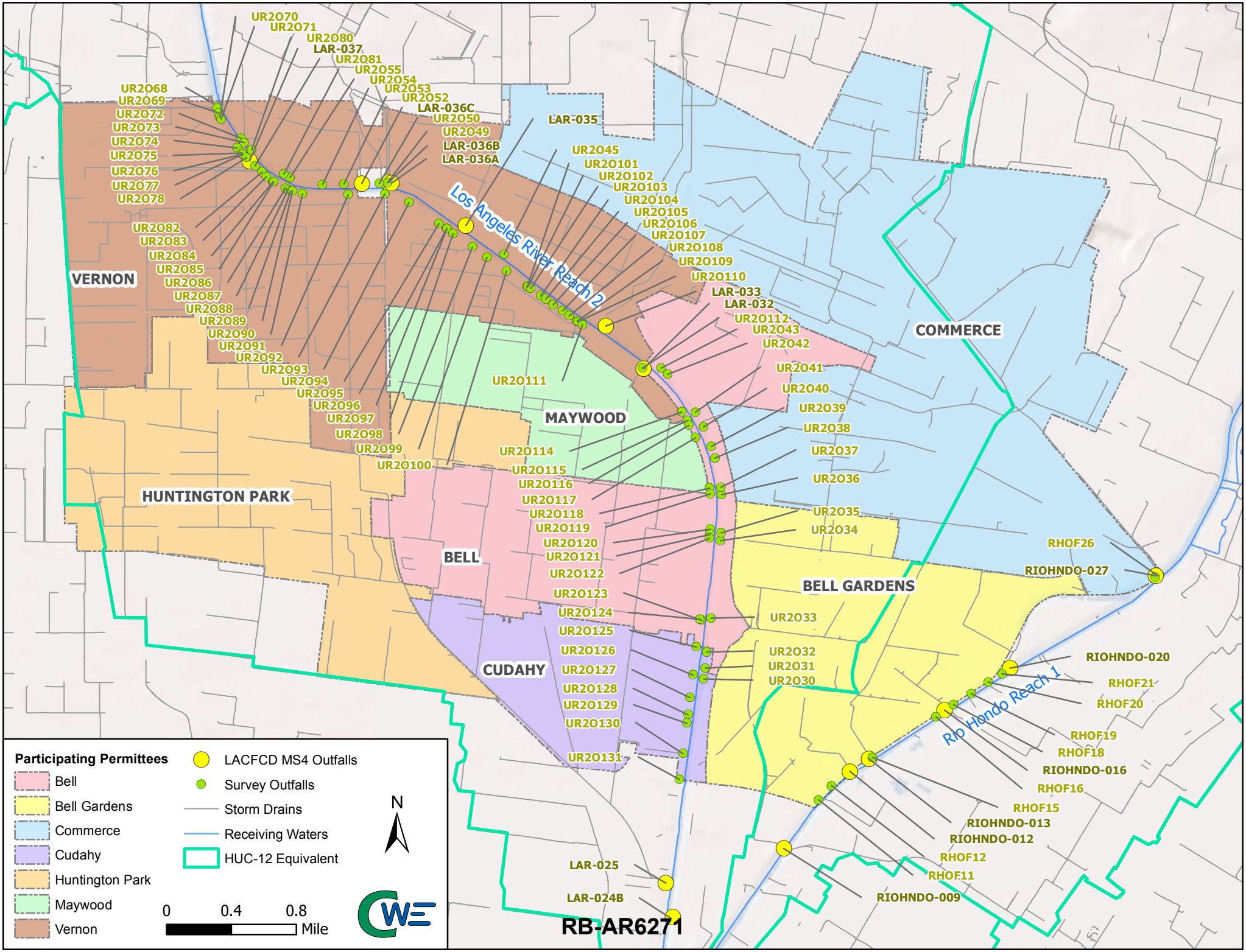
LAR UR2 WMA

GIS SPATIAL LIBRARY
DRAINAGE FACILITIES
CITY OF VERNON

C.R.	08/28/2013
13039	**1**

Appendix B

Outfall Locations Survey Map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UR2130
UR2131
Los Angeles River Reach 2
VERNON
MAYWOOD
COMMERCE
HUNTINGTON PARK
BELL
CUDAHY
BELL GARDENS
RHOF26
RIOHNDO-027
RIOHNDO-020
RHOF21
RHOF20
Rio Hondo Reach 1
RHOF19
RHOF18
RIOHNDO-016
RHOF16
RHOF15
RIOHNDO-013
RIOHNDO-012
RHOF12
RHOF11
RIOHNDO-009
LAR-025
LAR-024B
RB-AR6271
Participating Permittees
Bell
Bell Gardens
Commerce
Cudahy
Huntington Park
Maywood
Vernon
LACFCD MS4 Outfalls
Survey Outfalls
Storm Drains
Receiving Waters
HUC-12 Equivalent
N
0
0.4
0.8
Mile

Appendix C

Preliminary Outfall Database

Outfall Inventory Values		
Column Header	**Permit Parts/Exemplar values**	**Definition**
Outfall ID	E.VII.A.8	Alphanumeric identifier
NSW/RW Outfalls	LAR-##X RIOHNDO-### UR2O### RHOF##	LACFCD ID for Los Angeles River, where # is a number and when present X is letter LACFCD ID for the Rio Hondo, where # is a number UR2 LAR Outfall, where ### is a number UR2 Rio Hondo Outfall, where ## is a number
Owner	E.VII.A.11.a LACFCD ACOE Private Unknown	Agency Name (e.g. Vernon, Bell) Los Angeles County Flood Control District Army Corps of Engineers Name of Company or Undocumented
Latitude	E.VII.A.11.b	Decimal degrees with up to 6 decimals
Longitude	E.VII.A.11.b	Decimal degrees with up to 6 decimals
City	E.VII.A.11.c BL, BG, CM, CU, HP, MW, SG, VR	Jurisdiction where outfall/facility is located (mostly UR2, but also South Gate, City/County of LA) Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, South Gate (not UR2), Vernon
Type	E.VII.A.11.c FG, FGP, G, LFD VCP, CMP, CMA, STLP RCP, 2RCP, 3RCP RCB, 2RCB, 3RCB Manhole	Outfall Type/Shape Flap Gate, Flap Gated (Unknown Material) Pipe, Grated, Low Flow Ditch to LFC (Vitrified) Clay Pipe, Corrugated Metal Pipe, Corrugated Metal Arch, Steel Pipe Reinforced Concrete Pipe (single, double, triple, etc.) Reinforced Concrete Box (single, double, triple, etc.) Utility Access Way
D/H"	E.VII.A.11.c	Diameter/Height (inches)
W"	E.VII.A.11.c	Width (inches)
Wall H"	E.VII.A.11.c	Estimated Wall Height from floor of main channel (inches)
Photo Link	E.VII.A.11.d	Hyperlink to Photo (Needs editing if spreadsheet or photos copied to other sources)
Date	E.VII.A.11.e	Date of Observation (also date of last observation)
Time	E.VII.A.11.e	Time of Observation (also time of last observation)
Q(GPM)	E.VII.A.11.e	Estimated Non-Stormwater Discharge Flow Rate in Gallons Per Minute
Flow Observations	E.VII.A.11.e T, S/G, Veg, HV, PW	Discharge Characteristics Trash, Sediment/Gravel, Vegetation, Heavy Vegetation, Ponded Water
Determination	Significant, Not Significant, None, Not Determined	Use characteristics to clarify why significant

LAR UR2 Outfall Inventory

Identification		Coordinates		Physical Description					Photos	Non-Stormwater Significance Screening				
Outfall Identifier	Owner	Latitude	Longitude	City	Type	D/H "	W "	Wall H"	Photo Link	Date	Time	Q (GPM)	Flow Observations	Significance
RIOHNDO-009	LACFCD	33.948215	-118.161866	SG	RCP	66"		0"	RIOHNDO-009	12/23/2013	10:02	Trickle	T, S/G, PW	ND
RHOF11	LACFCD	33.952646	-118.158152	BG	RCP	36	NA	60	RHOF11	12/23/2013	10:22	0		ND
RHOF12	LACFCD	33.953884	-118.156790	BG	RCP	24	NA	180	RHOF12	12/23/2013	10:26	0	T, S/G	ND
RIOHNDO-012	LACFCD	33.955080	-118.154845	LACFCD	RCB	45	72	60	RIOHNDO-012	12/23/2013	10:30	0	T, S/G	ND
RIOHNDO-013	LACFCD	33.956118	-118.152857	LACFCD	2RCB	132	114	0	RIOHNDO-013	12/23/2013	10:35	0	T, S/G, Veg, PW	ND
RHOF15	LACFCD	33.956420	-118.152374	LACFCD	RCP	24	NA	48	RHOF15	12/23/2013	10:40	0	T, S	ND
RHOF16	LACFCD	33.960056	-118.145573	LACFCD	RCP	24	NA	0	RHOF16	12/23/2013	10:45	0	S/G, Veg	ND
RIOHNDO-016	LACFCD	33.960492	-118.144764	LACFCD	RCP	84	NA	0	RIOHNDO-016	12/23/2013	10:50	0	T, S/G, PW	ND
RHOF18	LACFCD	33.961140	-118.143722	LACFCD	RCP	21	NA	120	RHOF18	12/23/2013	10:52	0	T	ND
RHOF19	LACFCD	33.962101	-118.141793	LACFCD	RCP	18	NA	120	RHOF19	12/23/2013	10:55	0	S/G	ND
RHOF20	Unknown	33.963161	-118.139996	LACFCD	RCP	18	NA	180	RHOF20	12/23/2013	10:58	0	T	ND
RHOF21	Unknown	33.963895	-118.138475	LACFCD	2RCP	54	NA	12	RHOF21	12/23/2013	11:02	0	T, S/G	ND
RIOHNDO-020	LACFCD	33.964332	-118.137716	LACFCD	RCP	96	NA	0	RIOHNDO-020	12/23/2013	11:06	0.5	T, S/G	ND
RHOF26	LACFCD	33.972528	-118.122099	CM	GRCP	66	NA	0	RHOF26	12/23/2013	11:22	0	Musty, T	ND
RIOHNDO-027	LACFCD	33.972690	-118.121862	LACFCD	RCP	72	NA	0	RIOHNDO-027	12/23/2013	11:25	0	S/G, oily	ND
LAR-024B	Unknown	33.942006	-118.173898	SG	3RCP	90	NA	24	LAR-024B	12/23/2013	12:50	1.7	S/G	ND
UR2O30	Unknown	33.963409	-118.170493	CU	RCP	24	NA	36	UR2O30	12/23/2013	13:10	0		ND
UR2O31	Unknown	33.964368	-118.170323	CU	RCP	24	NA	12	UR2O31	12/23/2013	13:16	0	T, S/G	ND
UR2O32	LACFCD	33.965817	-118.170164	CU	RCP	30	NA	36	UR2O32	12/23/2013	13:20	0	PW	ND
UR2O33	Unknown	33.968846	-118.169692	BL	RCP	24	NA	36	UR2O33	12/23/2013	13:24	0	T, S/G, Veg, PW, Black Water	ND
UR2O34	Unknown	33.975765	-118.168712	BL	RCP	24	NA	60	UR2O34	12/23/2013	13:32	0		ND
UR2O35	Unknown	33.976465	-118.168621	BL	RCP	24	NA	120	UR2O35	12/23/2013	13:37	0		ND
UR2O36	Unknown	33.979864	-118.168606	BL	2RCP	30	NA	60	UR2O36	12/23/2013	13:39	0	T	ND
UR2O37	LACFCD	33.980534	-118.168673	BL	RCP	30	NA	60	UR2O37	12/23/2013	13:43	0		ND
UR2O38	Unknown	33.983126	-118.169302	BL	RCP	42	NA	60	UR2O38	12/23/2013	13:46	0	Oily	ND
UR2O39	LACFCD	33.984193	-118.169673	BL	RCP	18	NA	60	UR2O39	12/23/2013	13:49	0	S/G	ND

LAR UR2 Outfall Inventory

Identification		Coordinates		Physical Description					Photos	Non-Stormwater Significance Screening				
Outfall Identifier	Owner	Latitude	Longitude	City	Type	D/H "	W "	Wall H"	Photo Link	Date	Time	Q (GPM)	Flow Observations	Significance
UR2O40	LACFCD	33.985911	-118.170513	BL	RCP	24	NA	96	UR2O40	12/23/2013	13:54	T	T, S/G, PW	ND
UR2O41	LACFCD	33.987231	-118.171399	BL	RCB	39	72	36	UR2O41	12/23/2013	13:59	0.05	S/G, Veg	ND
UR2O42	LACFCD	33.990594	-118.174405	BL	2RCB	78	144	144	UR2O42	12/23/2013	14:05	0.17	T, S/G	ND
UR2O43	LACFCD	33.991176	-118.175116	BL	FGP	24	NA	120	UR2O43	12/23/2013	14:10	0		ND
LAR-033	LACFCD	33.994726	-118.180943	VR	RCB	126	174	0	UR2O44	12/23/2013	14:14	0.8	Veg	ND
UR2O45	Unknown	34.001302	-118.191964	VR	STLP	6	NA	60	UR2O45	12/23/2013	14:20	0		ND
LAR-035	LACFCD	34.003732	-118.196125	VR	3RCB	102	168	72	LAR-035	12/23/2013	14:25	T	Veg	ND
LAR-036A	LACFCD	34.007580	-118.203954	LACFCD	RCB	48	96	36	LAR-036A	12/23/2013	14:30	0.08	S/G,	ND
LAR-036B	LACFCD	34.007590	-118.204154	LACFCD	RCB	120	144	0	LAR-036B	12/23/2013	14:35	0.3	S/G	ND
UR2O49	LACFCD	34.007691	-118.204464	VR	RCB	84	168	144	UR2O49	12/23/2013	14:38	0.3	S/G, oily, Veg	ND
UR2O50	LACFCD	34.007619	-118.205344	UNK	RCP	24	NA	96	UR2O50	12/23/2013	14:43	0	T, S/G	ND
LAR-036C	LACFCD	34.007500	-118.207139	LACFCD	GRCP	96	NA	48	LAR-036C	12/23/2013	14:46	T		ND
UR2O52	LACFCD	34.007532	-118.209129	VR	Pipe	18	NA	120	UR2O52	12/23/2013	14:50	0		ND
UR2O53	LACFCD	34.007483	-118.211436	VR	Pipe	18	NA	60	UR2O53	12/23/2013	14:55	0		ND
UR2O54	Unknown	34.008126	-118.214918	VR	VCP	18	NA	180	UR2O54	12/23/2013	14:58	0		ND
UR2O55	Unknown	34.008418	-118.215586	VR	CMP	16	NA	180	UR2O55	12/23/2013	15:02	0	T	ND
UR2O68	VR	34.014351	-118.222761	VR	RCP	45	NA	240	UR2O68	12/31/2013	9:31	0		ND
UR2O69	Unknown	34.013897	-118.222619	VR	4STLP	8	NA	360	UR2O69	12/31/2013	9:36	0		ND
UR2O70	Unknown	34.013494	-118.222444	VR	RCB	12	12	288	UR2O70	12/31/2013	9:37	0		ND
UR2O71	Unknown	34.013313	-118.222340	VR	RCP	18	NA	240	UR2O71	12/31/2013	9:39	0		ND
UR2O72	Unknown	34.011614	-118.220184	VR	RCP	18	NA	300	UR2O72	12/31/2013	9:44	0		ND
UR2O73	LACFCD	34.011255	-118.219835	VR	RCP	30	NA	240	UR2O73	12/31/2013	9:47	0		ND
UR2O74	Unknown	34.010755	-118.220614	VR	RCP	18	NA	168	UR2O74	12/31/2013	9:48	0		ND
UR2O75	Unknown	34.010295	-118.220051	VR	RCP	8	NA	168	UR2O75	12/31/2013	9:52	0		ND
UR2O76	Unknown	34.010202	-118.219975	VR	RCP	8	NA	240	UR2O76	12/31/2013	9:55	0		ND
UR2O77	Unknown	34.010202	-118.219975	VR	RCP	8	NA	168	UR2O77	12/31/2013	9:55	0		ND
UR2O78	Unknown	34.009890	-118.219581	VR	STLP	36	NA	192	UR2O78	12/31/2013	9:57	0		ND
LAR-037	Unknown	34.009506	-118.219101	VR	RCP	75	NA	12	UR2O79	12/31/2013	9:59	0	PW	ND

LAR UR2 Outfall Inventory

Identification		Coordinates		Physical Description					Photos	Non-Stormwater Significance Screening				
Outfall Identifier	Owner	Latitude	Longitude	City	Type	D/H "	W "	Wall H"	Photo Link	Date	Time	Q (GPM)	Flow Observations	Significance
UR2O80	Unknown	34.010577	-118.219058	VR	STLP	36	NA	192	UR2O80	12/31/2013	9:58	0		ND
UR2O81	VR	34.009167	-118.218674	VR	RCP	45	NA	72	UR2O81	12/31/2013	10:03	T	PW	ND
UR2O82	LACFCD	34.008589	-118.217931	VR	RCP	48	NA	72	UR2O82	12/31/2013	10:06	0		ND
UR2O83	Unknown	34.008184	-118.217457	VR	CMP	10	NA	120	UR2O83	12/31/2013	10:11	0		ND
UR2O84	LACFCD	34.007746	-118.216753	VR	STLP	14	NA	120	UR2O84	12/31/2013	10:16	T	Algae	ND
UR2O85	LACFCD	34.007741	-118.216661	VR	CMP	12	NA	120	UR2O85	12/31/2013	10:16	0		ND
UR2O86	Unknown	34.007139	-118.215420	VR	VCP	10	NA	120	UR2O86	12/31/2013	10:21	0		ND
UR2O87	LACFCD	34.007029	-118.215140	VR	VCP	10	NA	120	UR2O87	12/31/2013	10:24	0		ND
UR2O88	LACFCD	34.006954	-118.214845	VR	VCP	12	NA	120	UR2O88	12/31/2013	10:27	0		ND
UR2O89	LACFCD	34.006891	-118.214660	VR	VCP	12	NA	120	UR2O89	12/31/2013	10:28	0		ND
UR2O90	LACFCD	34.006660	-118.213570	VR	VCP	18	NA	120	UR2O90	12/31/2013	10:30	0		ND
UR2O91	LACFCD	34.006585	-118.208677	VR	RCP	36	NA	120	UR2O91	12/31/2013	10:33	0		ND
UR2O92	VR	34.006667	-118.204775	VR	RCB	45	45	0	UR2O92	12/31/2013	10:38	UNK	Invert below WL.	ND
UR2O93	LACFCD	34.005929	-118.202161	VR	VCP	12	NA	120	UR2O93	12/31/2013	10:42	0		ND
UR2O94	LACFCD	34.004057	-118.198962	VR	VCP	12	NA	120	UR2O94	12/31/2013	10:47	0		ND
UR2O95	LACFCD	34.003585	-118.198112	VR	VCP	16	NA	120	UR2O95	12/31/2013	10:50	22	Odor, cantaloupe seeds	ND
UR2O96	LACFCD	34.003563	-118.198095	VR	VCP	16	NA	240	UR2O96	12/31/2013	10:53	0		ND
UR2O97	LACFCD	34.003146	-118.197417	VR	VCP	12	NA	240	UR2O97	12/31/2013	10:54	0		ND
UR2O98	LACFCD	34.001946	-118.195324	VR	RCB	51	NA	72	UR2O98	12/31/2013	10:56	T	Odor	ND
UR2O99	LACFCD	34.001023	-118.193785	VR	FG RCP	24	NA	120	UR2O99	12/31/2013	11:00	0		ND
UR2O100	LACFCD	33.999795	-118.191687	VR	FG CMP	24	NA	120	UR2O100	12/31/2013	11:03	0		ND
UR2O101	LACFCD	33.998459	-118.189427	VR	FGP	48	NA	96	UR2O101	12/31/2013	11:08	0	Orange residue	ND
UR2O102	LACFCD	33.998398	-118.189390	VR	FGP	18	NA	120	UR2O102	12/31/2013	11:10	0	T	ND
UR2O103	LACFCD	33.998232	-118.189112	VR	FGP	12	NA	120	UR2O103	12/31/2013	11:11	0	T	ND
UR2O104	LACFCD	33.997592	-118.188034	VR	FGP	12	NA	240	UR2O104	12/31/2013	11:13	0		ND
UR2O105	LACFCD	33.997312	-118.187477	VR	FGP	24	NA	120	UR2O105	12/31/2013	11:14	0		ND
UR2O106	LACFCD	33.996795	-118.186691	VR	FGP	12	NA	240	UR2O106	12/31/2013	11:16	0		ND
UR2O107	LACFCD	33.996254	-118.185682	VR	FGP	24	NA	120	UR2O107	12/31/2013	11:18	0		ND
UR2O108	LACFCD	33.995822	-118.184960	VR	FGP	24	NA	120	UR2O108	12/31/2013	11:19	0		ND
UR2O109	LACFCD	33.995345	-118.184136	VR	RCP	51	NA	48	UR2O109	12/31/2013	11:21	T	Grey, turbid, T	ND

LAR UR2 Outfall Inventory

Identification		Coordinates		Physical Description					Photos	Non-Stormwater Significance Screening				
Outfall Identifier	Owner	Latitude	Longitude	City	Type	D/H "	W "	Wall H"	Photo Link	Date	Time	Q (GPM)	Flow Observations	Significance
UR2O110	LACFCD	33.995294	-118.184012	VR	FGP	24	NA	48	UR2O110	12/31/2013	11:23	0		ND
UR2O111	LACFCD	33.995020	-118.183544	VR	FGP	36	NA	48	UR2O111	12/31/2013	11:25	T	Algae	ND
UR2O112	LACFCD	33.991179	-118.177106	BL	FGP	24	NA	96	UR2O112	12/31/2013	11:29	0		ND
LAR-032	LACFCD	33.991148	-118.177012	LACFCD	FGP	36	NA	48	LAR-032	12/31/2013	11:31	T	T	ND
UR2O114	LACFCD	33.987248	-118.172871	BL	FGP	30	NA	48	UR2O114	12/31/2013	11:32	0	PW	ND
UR2O115	LACFCD	33.986462	-118.172274	BL	FGP	30	NA	48	UR2O115	12/31/2013	11:36	0	Veg	ND
UR2O116	LACFCD	33.986055	-118.172110	BL	FG CMP	18	NA	240	UR2O116	12/31/2013	11:37	0		ND
UR2O117	LACFCD	33.984939	-118.171397	BL	FGP	30	NA	96	UR2O117	12/31/2013	11:40	T	T	ND
UR2O118	LACFCD	33.980469	-118.169901	BL	FGP	30	NA	48	UR2O118	12/31/2013	11:43	20	HV, T	ND
UR2O119	Unknown	33.979930	-118.169824	BL	FGP	48	NA	72	UR2O119	12/31/2013	11:46	0		ND
UR2O120	BL	33.976753	-118.169809	BL	FGP	10	NA	120	UR2O120	12/31/2013	11:47	0		ND
UR2O121	Unknown	33.976325	-118.169845	BL	FGP	30	NA	96	UR2O121	12/31/2013	11:48	T	T	ND
UR2O122	Unknown	33.975975	-118.169901	BL	FGP	30	NA	120	UR2O122	12/31/2013	11:52	0		ND
UR2O123	BL	33.968669	-118.170764	BL	FGP	42	NA	24	UR2O123	12/31/2013	11:58	T	T, PW	ND
UR2O124	BL	33.968712	-118.170926	BL	FGP	42	NA	48	UR2O124	12/31/2013	12:01	0		ND
UR2O125	LACFCD	33.966243	-118.171266	CU	FG CMP	36	NA	72	UR2O125	12/31/2013	12:02	T		ND
UR2O126	Unknown	33.963755	-118.171621	CU	2FGP	30	NA	72	UR2O126	12/31/2013	12:05	0		ND
UR2O127	LACFCD	33.961713	-118.171947	CU	FGP	24	NA	48	UR2O127	12/31/2013	12:07	T	Veg	ND
UR2O128	LACFCD	33.960210	-118.172156	CU	FGP	16	NA	12	UR2O128	12/31/2013	12:10	0	Dead Hveg	ND
UR2O129	LACFCD	33.959439	-118.172286	CU	FGP	24	NA	24	UR2O129	12/31/2013	12:12	0		ND
UR2O130	LACFCD	33.956731	-118.172699	CU	FGP	24	NA	24	UR2O130	12/31/2013	12:13	T	Veg	ND
UR2O131	Unknown	33.954406	-118.173061	CU	FGP	24	NA	120	UR2O131	12/31/2013	12:15	0		ND
LAR-025	LACFCD	33.945129	-118.174509	SG	5RCB	96	96	0	UR2O135	12/31/2013	12:26	320	T	ND

Appendix D

Monitoring Site Fact Sheets

Summary Sheet for LARUR2-RW

Watershed: Los Angeles River	**Monitoring Type:** Receiving Water
Latitude: 33.940550	**Longitude:** -118.174528
Thomas Guide Grid: pg.705 F5	**Nearest Street Address:** 5437 Tweedy Boulevard, South Gate, CA 90280
Site Description: LARUR2-RW is a receiving water monitoring location in the City of South Gate, near the railroad trestle, or extension of Tweedy Boulevard. It is immediately downstream of major outfalls on both the east and west sides of the river that drains from over 60% of the LAR UR2 WMA.	
Site Location: Please see **Figure 7**	
Site View: 	

Summary Sheet for LARUR2-RHO

Watershed: Los Angeles River			**Monitoring Type:** Fixed Stormwater Outfall			
Latitude: 33.959003			**Longitude:** -118.154614			
Represented Area: Cities of Bell Gardens and Commerce						
Thomas Guide Grid: pg. 705 H2			**Drainage System:** BI0539 – Line A – Bell Gardens			
Outfall Shape: Round			**HUC-12:** Alhambra Wash – Rio Hondo			
Outfall Type: Manhole			**Nearest Street Address:** 7854 Gilliland Avenue, Bell Gardens, CA 90201			
	Catchment Area		**LAR UR2 WMA HUC-12 Portion**		**LAR UR2 WMA Total**	
Land Use Category	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	9.30	0.52%	11.02	0.48%	46.00	0.32%
Commercial	162.49	9.09%	179.17	7.88%	1418.94	9.98%
Education	23.31	1.30%	41.10	1.81%	311.42	2.19%
Industrial	1195.52	66.88%	1232.08	54.16%	6028.97	42.41%
Multi-Family Residential	123.20	6.89%	380.11	16.71%	2412.98	16.97%
Single Family Residential	65.85	3.68%	164.16	7.22%	1783.77	12.55%
Transportation	85.50	4.78%	66.34	2.92%	1369.82	9.64%
Vacant	122.38	6.85%	200.88	8.83%	843.43	5.93%
Total	1787.55	100%	2274.86	100%	14215.34	100%

Site Description: LARUR2-RHO encompasses about 70% of the total LAR UR2 WMA Rio Hondo tributary area. It is located in the parking lot of the John Anson Ford Park in the City of Bell Gardens, across from the intersection of Gilliland Avenue and Park Lane. Minimal traffic controls will be utilized to alert drivers of the samplers' location and prevent parking in a few parking spots.

Site Location: Please See **Figure 9**

Site View:

Summary Sheet for LARUR2-DRO

Watershed: Los Angeles River		**Monitoring Type:** Rotating Stormwater Outfall				
Latitude: 34.008539		**Longitude:** -118.205166				
Represented Area: Cities of Commerce, Vernon, and Bell						
Thomas Guide Grid: pg.675 B3		**Drainage System:** BI5206 – Los Angeles				
Outfall Shape: Round		**HUC-12:** Chavez Ravine – Los Angeles River				
Outfall Type: Manhole		**Nearest Street Address:** 3344 Bandini Boulevard, Vernon, CA 90058				
	Catchment		**Vernon**		**LAR UR2 WMA Total**	
Land Use	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	0	0%	0	0%	34.98	0.29%
Commercial	0	0%	16.37	0.50%	1239.48	10.38%
Education	0	0%	2.67	0.08%	270.08	2.26%
Industrial	25.57	35.91%	2556.40	77.52%	4796.90	40.18%
Multi-Family Residential	0	0%	0.23	0.01%	2032.77	17.03%
Single Family Residential	0	0%	0.93	0.03%	1618.17	13.55%
Transportation	37.75	53.00%	494.04	14.98%	1303.48	10.92%
Vacant	0.29	0.40%	226.95	6.88%	642.48	5.38%
Unincorporated	7.61	10.68%	0	0%	0	0%
Total	71.22	100%	3297.60	100%	11938.34	100%

Site Description: LARUR2-DRO is located on the sidewalk at the intersection of Bandini Boulevard and South Downey Road. Due to its location and access to parking, traffic controls would not be required to collect samples.

Site Location: Please See **Figure 10**

Site View:

Summary Sheet for LARUR2-EO

Watershed: Los Angeles River	**Monitoring Type:** Rotating Stormwater Outfall
Latitude: 33.956663	**Longitude:** -118.169102
Represented Area: Cities of Bell Gardens, Commerce, and Vernon	
Thomas Guide Grid: pg.705 F3	**Drainage System:** DD123
Outfall Shape: Rectangle	**HUC-12:** Chaves Ravine – Los Angeles River
Outfall Type: Concrete Channel	**Nearest Street Address:** 8287 Jaboneria Rd., Bell Gardens, CA 90201

	Catchment		LAR UR2 WMA HUC-12 Portion		LAR UR2 WMA Total	
Land Use	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	34.96	1.44%	34.98	0.30%	46.00	0.32%
Commercial	364.37	15.07%	1239.48	10.38%	1418.94	9.98%
Education	75.08	3.11%	270.08	2.26%	311.42	2.19%
Industrial	1036.52	42.88%	4796.90	40.18%	6028.97	42.41%
Multi-Family Residential	443.02	18.33%	2032.77	17.03%	2412.98	16.98%
Single Family Residential	187.43	7.75%	1618.17	13.55%	1783.77	12.55%
Transportation	188.99	7.82%	1303.48	10.92%	1369.82	9.64%
Vacant	87.00	3.60%	642.48	5.38%	843.43	5.93%
Total	2417.35	100%	11938.34	100%	14215.34	100%

Site Description: Stormwater outfall monitoring site LARUR2-EO is located in a residential area in Bell Gardens. Samples will be collected from the concrete channel that is located on Jaboneria Road just north of the Jaboneria Road and Fostoria Street intersection. Access to the channel may require a permit from the Los Angeles County Flood Control District (LACFCD).

Site Location: Please See **Figure 11**

Site View:

Summary Sheet for LARUR2-NO

Watershed: Los Angeles River	**Monitoring Type:** Rotating Stormwater Outfall
Latitude: 33.996050	**Longitude:** -118.180775
Represented Area: Cities of Commerce, Vernon, and Bell	
Thomas Guide Grid: pg.675 E4	**Drainage System:** BI0014 – U3 – DD122
Outfall Shape: Round	**HUC-12:** Chavez Ravine – Los Angeles River
Outfall Type: Manhole	**Nearest Street Address:** 3077 S. Atlantic Blvd, Vernon, CA 90058

	Catchment		Commerce		Vernon		LAR UR2 WMA Total	
Land Use	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	0	0%	19.46	0.46%	0	0%	46.00	0.32%
Commercial	19.83	1.95%	383.03	9.13%	16.37	0.50%	1418.94	9.98%
Education	0	0%	24.46	0.58%	2.67	0.08%	311.42	2.19%
Industrial	406.41	39.91%	2523.00	60.15%	2556.40	77.52%	6028.97	42.41%
Multi-Family Residential	18.94	1.86%	129.28	3.09%	0.23	0.01%	2412.98	16.98%
Single Family Residential	34.44	3.38%	292.25	6.97%	0.93	0.03%	1783.77	12.55%
Transportation	473.28	46.48%	650.51	15.51%	494.04	14.98%	1369.82	9.64%
Vacant	65.39	6.42%	172.50	4.11%	226.95	6.88%	843.43	5.93%
Total	1018.29	100%	4194.48	100%	3297.60	100%	14215.34	100%

Site Description: LARUR2-NO is located on South Atlantic Boulevard west of Highway 710, in the number 3 southbound lane. It is two feet above the crosswalk. Traffic controls would be needed to obtain the samples.

Site Location: Please See **Figure 12**

Site View:

Summary Sheet for LARUR2-WO

Watershed: Los Angeles River		**Monitoring Type:** Rotating Stormwater Outfall				
Latitude: 33.955146	**Longitude:** -118.179975					
Represented Area: Cities of Bell, Cudahy, and Maywood						
Thomas Guide Grid: pg.705 E3	**Drainage System:** BI001 – Line A – East Compton Creek					
Outfall Shape: Round	**HUC-12:** Chavez Ravine – Los Angeles River					
Outfall Type: Manhole	**Nearest Street Address:** 8497 Wilcox Ave, Cudahy, CA 90201					
	Catchment		**LAR UR2 WMA HUC-12 Portion**		**LAR UR2 WMA Total**	
Land Use	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	0	0%	34.98	0.30%	46.00	0.32%
Commercial	244.09	16.06%	1239.48	10.38%	1418.94	9.98%
Education	66.85	4.40%	270.08	2.26%	311.42	2.19%
Industrial	91.61	6.03%	4796.90	40.18%	6028.97	42.41%
Multi-Family Residential	565.52	37.20%	2032.77	17.03%	2412.98	16.98%
Single Family Residential	515.64	33.92%	1618.17	13.55%	1783.77	12.55%
Transportation	16.66	1.10%	1303.48	10.92%	1369.82	9.64%
Vacant	19.87	1.31%	642.48	5.38%	843.43	5.93%
Total	1520.24	100%	11938.34	100%	14215.34	100%

Site Description: LARUR2-WO is located at the intersection of Wilcox Avenue and Patata Street in the City of Cudahy. The manhole in the westbound lane of Patata Street and is just beyond the turn line in the intersection. There is semi-trailer truck traffic in the area that will require the use of traffic controls to collect the samples.

Site Location: Please See **Figure 13**

Site View:

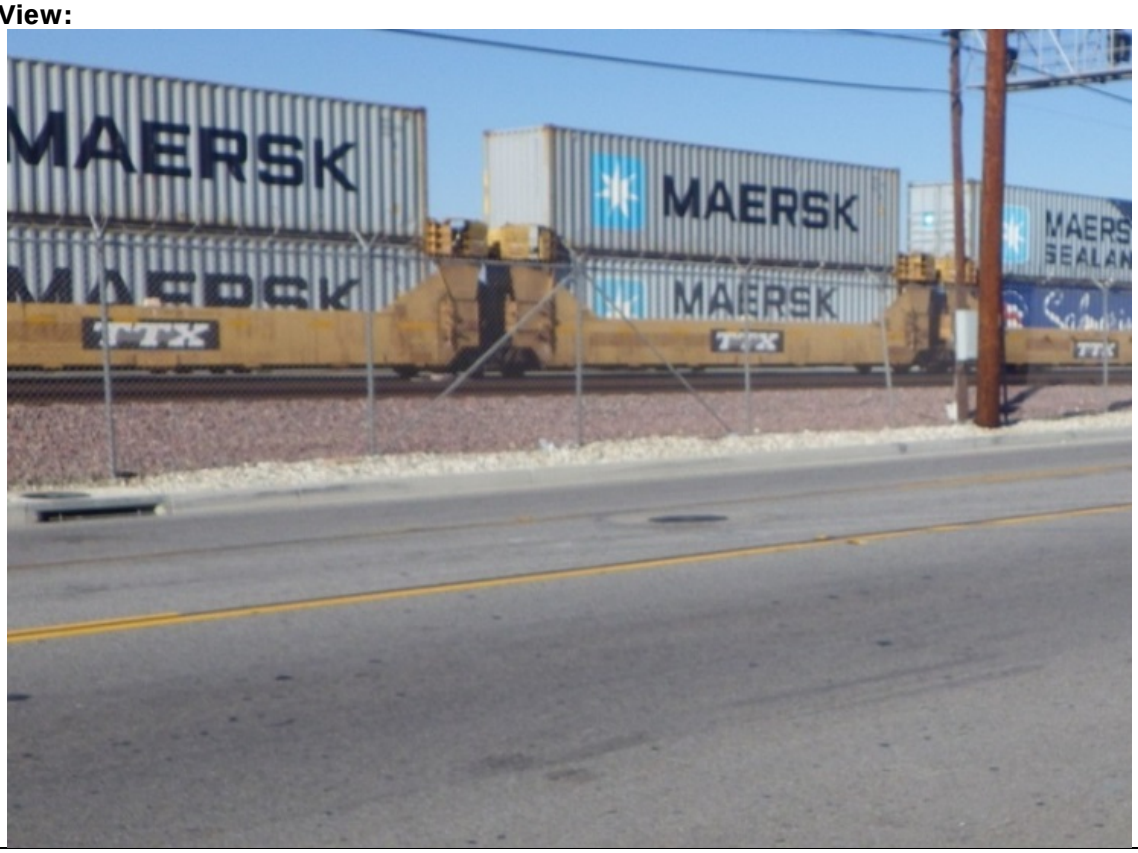
Summary Sheet for LARUR2-NVO

Watershed: Los Angeles River			**Monitoring Type:** Rotating Stormwater Outfall					
Latitude: 34.007733			**Longitude:** -118.194464					
Represented Area: Cities of Vernon and Commerce								
Thomas Guide Grid: pg.675 C3			**Drainage System:** DD126					
Outfall Shape: Round			**HUC-12:** Chavez Ravine – Los Angeles River					
Outfall Type: Manhole			**Nearest Street Address:** 3890 E. 26th Street, Vernon, CA 90058					
	Catchment		**Commerce**		**Vernon**		**LAR UR2 WMA Total**	
Land Use	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	0	0%	19.46	0.46%	0	0%	46.00	0.32%
Commercial	0	0%	383.03	9.13%	16.37	0.50%	1418.94	9.98%
Education	0	0%	24.46	0.58%	2.67	0.08%	311.42	2.19%
Industrial	91.70	35.09%	2523.00	60.15%	2556.40	77.52%	6028.97	42.41%
Multi-Family Residential	0	0%	129.28	3.09%	0.23	0.01%	2412.98	16.98%
Single Family Residential	0	0%	292.25	6.97%	0.93	0.03%	1783.77	12.55%
Transportation	165.58	63.36%	650.51	15.51%	494.04	14.98%	1369.82	9.64%
Vacant	4.07	1.56%	172.50	4.11%	226.95	6.88%	843.43	5.93%
Total	261.35	100%	4194.48	100%	3297.60	100%	14215.34	100%

Site Description: LARUR2-NVO is located on East 26th Street, east of South Downey Road, in the median. The sampling team could park in the median and utilize minimal traffic controls to obtain samples.

Site Location: Please See **Figure 14**

Site View:



Summary Sheet for LARUR2-FWO

Watershed: Los Angeles River		**Monitoring Type:** Rotating Stormwater Outfall				
Latitude: 33.956591		**Longitude:** -118.186050				
Represented Area: Cities of Cudahy, Huntington Park, Maywood, Vernon, and Bell						
Thomas Guide Grid: pg.705 D3		**Drainage System:** East Compton Creek No. 1				
Outfall Shape: Round		**HUC-12:** Chavez Ravine – Los Angeles River				
Outfall Type: Manhole		**Nearest Street Address:** Salt Lake Avenue				
	Catchment		**LAR UR2 WMA HUC-12 Portion**		**LAR UR2 WMA Total**	
Land Use	**Acres**	**%**	**Acres**	**%**	**Acres**	**%**
Agricultural	0	0%	34.98	0.29%	46.00	0.32%
Commercial	454.93	10.90%	1239.48	10.38%	1418.94	9.98%
Education	114.25	2.74%	270.08	2.26%	311.42	2.19%
Industrial	1763.25	42.25%	4796.90	40.18%	6028.97	42.41%
Multi-Family Residential	879.38	21.07%	2032.77	17.03%	2412.98	16.98%
Single Family Residential	749.79	17.97%	1618.17	13.55%	1783.77	12.55%
Transportation	111.22	2.66%	1303.48	10.92%	1369.82	9.64%
Vacant	100.63	2.41%	642.48	5.38%	843.43	5.93%
Total	4173.45	100%	11938.34	100%	14215.34	100%

Site Description: Outfall monitoring location LARUR2-FWO is located in the City of Cudahy. The manhole is in the southbound, number 1 lane, south of the Ardine Street and Salt Lake Avenue intersection. Traffic controls will be required to partially block the lane to obtain samples.

Site Location: Please See **Figure 15**

Site View:

Appendix E

Quality Assurance Project Program (QAPP) Plan

Los Angeles River Upper Reach 2 Watershed Management Area

Generic

Quality Assurance Project Plan (QAPP)

Prepared for:

Los Angeles Gateway Region
Integrated Regional Water Management Authority
16401 Paramount Boulevard
Paramount California 90641
TEL (626) 485-0338

On Behalf of the Cities of Bell (WDID 4B190153001), Bell Gardens (WDID 4B190139002), Commerce (WDID 4B190161001), Cudahy (WDID 4B190164001), Huntington Park (WDID 4B190177001), Maywood (WDID 4B190192001), Vernon (WDID 4B190216001), and the Los Angeles County Flood Control District (WDID4B190107101)

Prepared by:

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June 26, 2014
Revision Submittal Date February 19, 2015

RB-AR6288

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Acronyms

CIMP	Coordinated Integrated Monitoring Program
DBM	Data Base Manager
DQO	Data Quality Objectives
GIS	Geographic Information System
LAR UR2 WMA	Los Angeles River Upper Reach 2 Watershed Management Area
LARWQCB	Los Angeles Regional Water Quality Control Board
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
PM	Project Manager
QA	Quality Assurance
QAM	Quality Assurance Manual
QAPP	Quality Assurance Project Program
RWL	Receiving Water Limitation
QC	Quality Control
SMC	Stormwater Monitoring Coalition
SSCs	Site Safety Coordinators
TSS	Total Suspended Solids
UR2	Upper Reach 2
USEPA	United States Environmental Protection Agency
WLA	Waste Load Allocation
WMA	Watershed Management Area
WMP	Watershed Management Program
WQBEL	Water Quality-Based Effluent Limitation

1. Introduction

The California Regional Water Quality Control Board, Los Angeles Region (LARWQCB), adopted the fourth term Coastal Los Angeles County Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit as Order No. R4-2012-0175, on November 8, 2012, which then became effective on December 28, 2012. The Permit encourages Permittees to join together into Watershed Management Groups and develop a Coordinated Integrated Monitoring Program (CIMP) Plan as further characterized in Attachment E to that Permit. This generic Quality Assurance Project Plan (QAPP) is intended to serve as a guide to Los Angeles River Upper Reach 2 Watershed Management Area (LAR UP2 WMA), its contractors, and analytical laboratories for sample analysis and laboratory performance evaluations for the Coordinated Integrated Monitoring Plan (CIMP).

2. Purpose

The intended purpose of this QAPP is to provide program Quality Assurance/Quality Control (QA/QC) consistency for all CIMP monitoring and reporting program activities. Additional information on the data quality review process is described in the USEPA document *Guidance for Data Quality Assessment: Practical Methods for Data Analysis* (USEPA 2000). This document provides the guidance to perform the scientific and statistical evaluation of the data to ensure the project data objectives of quality and quantity are met to support project needs and their intended use.

This QAPP presents the guidelines for monitoring the performance of the analytical laboratory and is not intended to supersede the laboratory's Quality Assurance Manual (QAM). All project personnel will be required to read the QAPP. A copy of the QAPP will be brought to the field during sampling events. Although this QAPP details specific QA/QC requirements applicable to the CIMP, it is a placeholder document for reference until a specific sampling consultants and/or analytical laboratory are contractually retained. These QA/QC requirements are designed to assist in achieving the project data quality objectives (DQOs) and analytical DQOs for all sampling activities that will be performed in the field.

3. Background

Pursuant to the requirements set forth in the Permit, LAR UR2 WMA has agreed to complete CIMP monitoring and reporting. This QAPP has been prepared to ensure that the appropriate levels of QA/QC are maintained throughout monitoring work. The QAPP serves as the controlling mechanism during monitoring and identifies the QA/QC techniques needed for sampling, sample handling, sample storage, Chain-of-Custody procedures, laboratory analytical protocols, data interpretation, reporting, and documentation requirements. The QAPP further provides a summary of the project, its organizational hierarchy, and objectives. QA/QC procedures will be in accordance with applicable professional technical standards, USEPA requirements, RWQCB requirements, specific project goals, and client requirements. This QAPP was prepared utilizing: the 2012 Coastal Los Angeles County MS4 Permit, *Guidance on Systematic Planning Using the Data Quality Objectives Process* (USEPA 2006), *Requirements for Quality Assurance Project Plans* (USEPA 2001), and *Guidance for Quality Assurance Project Plans* (USEPA 2002).

4. Document Organization

The guidelines for preparing this QAPP are presented in USEPA document *Requirements for Quality Assurance Project Plans* (USEPA 2001) and conforms to the following format:

Project Management This section of the QAPP covers the basic areas of project management, including project history, objectives, and the roles or responsibilities of the project participants. The objectives of this QAPP section are to define and ensure that the participants understand the project

goals and approaches to be used. This section also includes management of project documents and records.

Data Generation and Acquisition This section describes the technical design and implementation of the QAPP. Effective implementation of these elements ensures that appropriate methods for sampling, measurement, analysis, data collection, data handling, utilization of field and laboratory QA/QC samples are employed during sample collection and analysis. It also directs proper documentation of QC activities.

Assessment and Oversight This section describes the data quality activities for assessing that the QAPP is being implemented as prescribed and measures the effectiveness of project implementation and associated QA/QC activities.

Data Review, Verification, and Validation This section describes the data quality assessment methods to be used to evaluate field sample results against the established project and analytical DQOs.

5. Project Management

This section describes the overall project organization, schedule, quality objectives, and documentation.

5.1 Roles and Responsibilities

The LARWQCB will conduct oversight of the monitoring and reporting program as the regulatory lead and has external oversight responsibilities for all phases of monitoring, reporting, and should be informed of investigation findings and activities.

LAR UR2 WMA Project Manager The Project Manager (PM) will be the primary point of contact for the LAR UR2 WMA and will be responsible for the coordination of the activities described in the CIMP. All project-related activities will be addressed with the LAR UR2 WMA PM. In addition, any updates or revisions recommended for future versions of the QAPP should be presented to the LAR UR2 WMA PM. At this time, the LAR UR2 WMA has not designated a PM.

Consultant A consultant, or consultant team, will be contracted by LAR UR2 WMA to provide clear lines of authority and communication that will expedite and enhance the flow of information vital to effective technical controls, cost, and schedule performance. The functional roles of personnel within the organizational structure will also be clearly defined. Individuals are given the authority to accomplish their respective project assignments. Since the individuals listed below may change from time to time, this QAPP uses "designee" to include an alternate to the proposed or normal project organization. The following paragraphs define functional titles, positions, and responsibilities.

Consultant Program Manager The Consultant PM designee, will report directly to the LAR UR2 WMA PM. The Consultant PM is the direct line of communication between Consultant and LAR UR2 WMA, and is responsible for ensuring the availability of resources and overall quality of the activities completed under the Monitoring and Reporting Program (MRP). The Consultant PM will provide programmatic guidance to support staff and ensure that documents, procedures, and project activities meet the respective standards and quality requirements. The Consultant PM will also be responsible for resolving project concerns related to technical matters.

The Consultant PM is the focal point for control of project activities, continuity, quality, accountability, and leadership responsibility throughout all phases of the project. The Consultant PM will be supported by QA personnel, who provide reviews, guidance, and technical advice on project execution and issues resolution. The project team, consisting of supervisory, health and safety, and technical personnel, will

support the Consultant PM to ensure that the project meets professional standards, is safely executed, and in compliance with applicable laws, regulations, statutes, and industry codes. Individuals on the project team are responsible for fulfilling appropriate portions of the project QA program, in accordance with assignments made by the Consultant PM. The Consultant PM is responsible for satisfactory completion of the project QA program, may assign specific responsibilities to other members of the project staff, and will notify LAR UR2 WMA of any long-term changes in personnel.

Consultant Storm Water Event Manager The Consultant Storm Water Event Manager designee reports directly to the Consultant PM and will oversee all phases of technical work related to monitoring, reporting data and document generation. Additionally, he is responsible for field activity preparations and execution of sampling activities. This includes overseeing sampling in accordance with approved procedures and methodologies, collection of QA/QC samples, completion of sampling forms, labels, chain-of-custody forms, applying custody seals, and packaging or shipping samples to the approved laboratory.

Consultant Quality Assurance/Quality Control Manager The Consultant QA/QC Manager (QA/QCM), designee, will be available to ensure that management activities are consistent with project objectives. The Consultant QA/QCM will be responsible for monitoring the project analytical QA/QC program. Additional responsibilities include laboratory coordination, project tracking, data validation, data quality assessment, data reporting procedures, calculations, and QC. The Consultant QA/QCM or designee will assume primary responsibility for maintaining and reviewing the QAPP.

Consultant Health and Safety Officer The Consultant Program Health and Safety Manager or designee, reports to the Consultant PM and will be responsible for final approval of the Site Health and Safety Plan (HASP) to ensure that health and safety procedures for the project are conducted in accordance with the Occupational Safety and Health Association (OSHA) regulations and guidelines. The designee will also be responsible for updating the HASP as needed, ensuring that proper health and safety procedures are followed, directing periodic field audits, and assigning Site Safety Coordinators (SSCs).

Consultant Database Manager The designee, will act as the Data Base Manager (DBM) who will report to the Consultant PM and be responsible for maintenance of the LAR UR2 WMA GIS database and the Geographic Information Systems (GIS) component of the database. The DBM is responsible for providing routine data reporting deliverables as well as non-routine and special-circumstance data requests. All non-routine and special-circumstance data requests are routed through both the DBM and Consultant PM and will be prioritized by the latter if scheduling conflicts arise.

Consultant GIS Specialist The Consultant GIS Specialist designee will report to the Consultant PM and is responsible for creating, editing, and manipulating georeferenced spatial data to efficiently display the LAR UR2 WMA information in a visual form. The Consultant GIS Specialist is responsible for producing high quality maps using appropriate software.

Consultant Field Scientist, Geologists, Engineers, and Technicians Consultant field scientist, geologists, engineers, and technicians report to the Consultant PM, and are responsible for field activities, including sampling, and are responsible for following the QA/QC elements of the QAPP.

Consultant Project Administrators Project Administrators, designated by each Consultant business unit, report to the Consultant PM, other Consultant project personnel, and will be responsible for project subcontractor procurement, purchasing, and project file maintenance. In addition, the Consultant Contracting and Procurement Group will be involved in major subcontractor procurement and will be responsible for enforcement on subcontracted terms, including imposing liquidated damages and other legal remedies.

Laboratory Project Manager The Laboratory Project Manager, designated by each primary laboratory, will be the laboratory's primary project contact and will coordinate with the Consultant QA/QCM. Analytical services may be subcontracted with the prior approval of the QA/QCM team; however, the Laboratory PM holds primary responsibility for delivery of all subcontracted services. The laboratory will be an USEPA and California or Oregon Department of Health Services (DHS) approved laboratory. The lab is designated as the primary analytical subcontractor and will perform the analyses for the standard analytical methods. Key positions and quality related responsibilities for laboratory personnel are discussed in the laboratory QAM.

Laboratory Quality Assurance Manager The Laboratory Quality Assurance Manager, designated by each primary laboratory, is the QA Manager for all laboratory services and deliverables. The QA Manager will be responsible for implementing the laboratory's QA/QC programs, as described in the laboratory QAM and implementing any additional and project-specific QA/QC procedures included in this QAPP.

5.2 Problem Statement

On November 8, 2012, the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) reissued the National Pollutant Discharge Elimination System (NPDES) Permit No. CAS004001, by adopting Order No. R4-2012-0175, *Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating From The City of Long Beach MS4* (MS4 Permit). The primary purpose of the Permit is to assess whether MS4 discharges are causing or contributing to the impairment of receiving water beneficial uses in Los Angeles County. The LAR UR2 WMG will assess progress towards these objectives through the CIMP. The CIMP is intended to contribute to the assessment of compliance with Order No. R4-2012-0175. The MRP, outlined in Permit Attachment E, establishes requirements for appropriate monitoring, reporting, and recordkeeping of MS4 discharge and receiving water quality data.

5.3 Project/Task Description

The monitoring of water constituents and pollutants will allow the LAR UR2 WMG to assess compliance with MS4 permit requirements within its watershed management area (WMA). Data collected will also be utilized to assess progress towards complying with Total Maximum Daily Load (TMDL) Waste Load Allocation (WLAs) numeric limits expressed as Water Quality Based Effluent Limits (WQBELs) and/or Receiving Water Limits (RWLs). Water quality monitoring data can be utilized to identify and characterize the effectiveness of instituted watershed control measures and refine their future implementation to reduce the discharge of pollutants into receiving waters. Ultimately, this will improve water quality and enhance beneficial use of the relevant receiving waters.

The CIMP is intended to guide the monitoring of receiving waters and MS4 outfalls to assess whether discharges from the LAR UR2 WMA Permittees are in compliance with the MS4 permit. These monitoring results will be used to assess proper control measures or best management practices (BMPs) to be implemented to maximize pollutant load reductions in the most effective manner.

Mobilization for wet-weather monitoring will occur when the National Weather Service predicted rainfall exceeds 0.25 inch with a 70% occurrence probability, at least 24 hours prior to the event start time, within the WMA. Local flows should also be at least 20% above base flow, or other value as defined by applicable TMDL Monitoring Plans; however, the Rio Hondo is often dry along with many of the MS4 outfalls. As indicated by the Permit, the LAR UR2 WMG will target the first storm event of the storm year, and two subsequent storm events, that are forecast to generate sufficient rainfall and runoff to meet program objectives and allow the collection of the necessary water quality sample volume. Sampling events will be separated by a minimum of 72 hours of dry conditions (less than 0.1 inch of rain

on each day). Monitoring samples collected as grab samples will first be collected at outfall monitoring sites, followed by the receiving water monitoring site, as directed by the Permit.

Dry-weather receiving water monitoring will occur when receiving water flows are less than 20% above base flow. Monitoring is expected to occur during the critical dry-weather event, which is defined as the month with the historically lowest flows or driest weather. It is proposed that July and August are essentially equally dry and that water quality monitoring should be coordinated among adjacent WMP groups to facilitate data comparability, compliance assessment, and runoff or pollutant source assessment.

5.3.1 Geographical Setting

The Los Angeles River begins in the Santa Monica Mountains at the western end of the San Fernando Valley. It flows 51 miles through the Los Angeles Basin, exiting into the Pacific Ocean at Long Beach Harbor and San Pedro Bay. Including tributaries, the 824 square mile watershed has a total stream length of about 837 miles and 4.6 square miles of lake area. The LAR UR2 WMA is located near central Los Angeles County and consists of the cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon, along with the Los Angeles County Flood Control District. Los Angeles River Reach 2 begins at the Arroyo Seco confluence flows through the LAR UR2 WMG cities of Vernon and Bell and adjacent to the Cities of Maywood, Cudahy, and Bell Gardens before terminating at the Compton Creek confluence. The boundaries for the LAR UR2 WMA specifically start at East 26th Street in the City of Vernon and ends at Patata Street in City of Cudahy. The LAR UR2 WMG Cities of Bell Gardens and Commerce line the western bank of Rio Hondo Reach 1, a 120 square mile Los Angeles River tributary from the eastern side of the LAR watershed. **Figure 1** illustrates the LAR UR2 WMA municipal and jurisdictional boundaries in relation to Los Angeles River Reach 2 and Rio Hondo Reach 1.

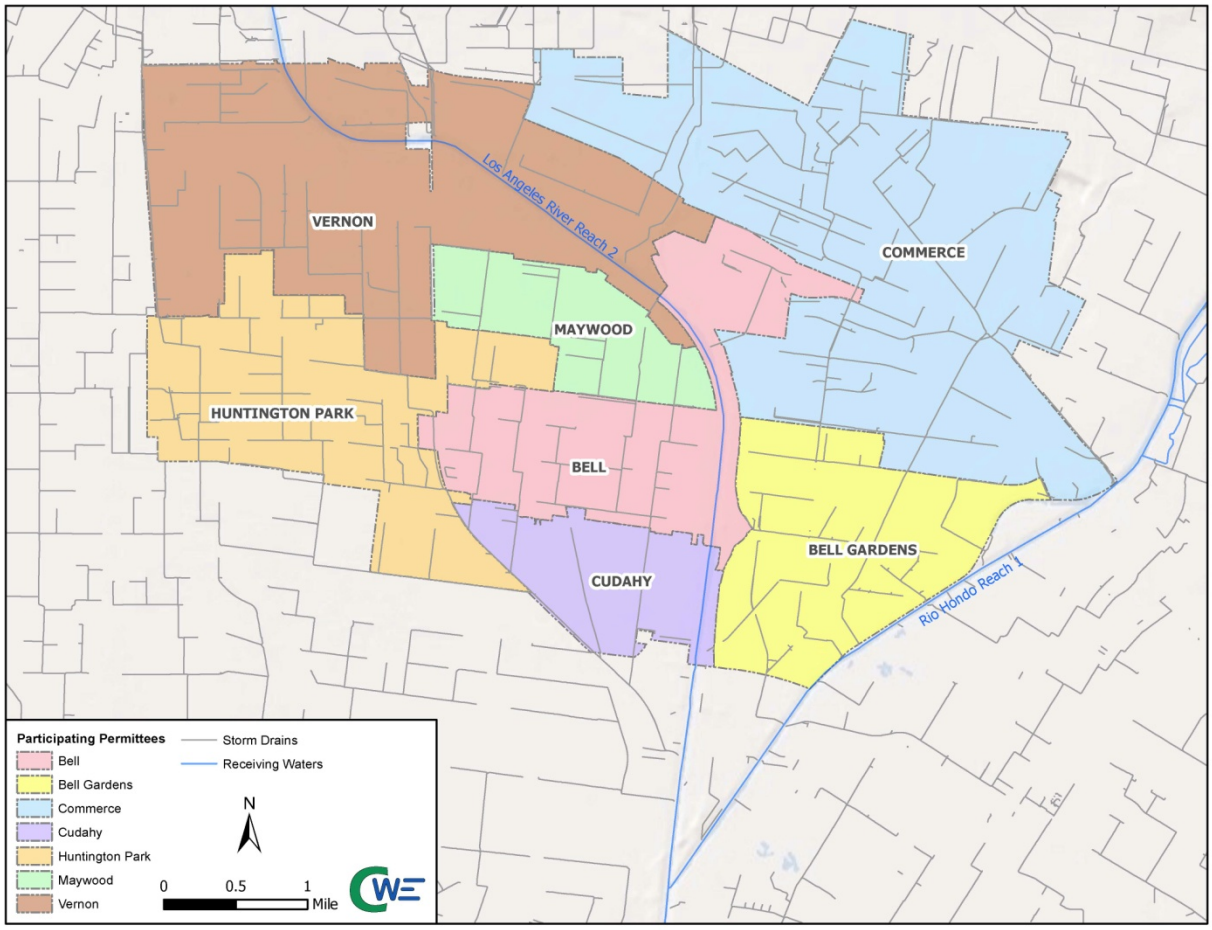

Figure 1 Los Angeles River Upper Reach 2 Watershed Management Area General Location

5.3.2 Programs and Agencies

Agency oversight of the CIMP rests with the Regional Board. The Regional Board will have the opportunity to review and provide comment on all CIMP related work.

5.3.3 Project Schedule

As stated in Permit Attachment E, Part IV.C.6 of the MRP, the LAR UR2 WMA's CIMP implementation will commence within 90 days following CIMP approval by the Executive Officer of the Regional Board, or coordinated with other regional agencies to begin simultaneously for the benefit of comparability of data among adjacent agencies. Implementation of the CIMP for the Los Angeles River receiving water monitoring site is subject to the availability and approval of construction permits from the LACFCD and Army Corps of Engineers (ACOE). If permit approval is not completed within the 90 day schedule, the LAR UR2 WMA will provide quarterly updates to inform the Regional Board of progress in obtaining the permits and constructing the monitoring site facilities. It is anticipated that the permitting and installation of the receiving water monitoring site may take a minimum of 18 months.

CIMP monitoring will start on July 1, 2015, to coincide with the Annual Report period of the Permit as well as to coordinate monitoring with other WMA. Wet-weather monitoring will target the first significant rain event of the wet season (October to April) of the storm year (July 1 to June 30) with a predicted

rainfall of at least 0.25 inch at a seventy percent probability of rain fall, within the LAR UR2 WMA, at least 24 hours prior to the event start time. Dry-weather, for LAR UR2 WMA receiving water monitoring, will be characterized by an estimated flow of less than 20 percent greater than the base flow. The dry season will be from May to September.

5.3.4 Constraints

Stormwater outfall monitoring sites may require encroachment permits and coordination with adjacent agencies and the Los Angeles County Flood Control District (LACFCD). The LAR UR2 WMA Project Manager and Consultant Program Manager will contact, coordinate, and complete the necessary documentation to obtain the necessary permits.

Traffic control plans and/or permits may be required to access the outfall sample locations within the public right-of-way or on public properties. Traffic Control Permits take an estimated five days to process and are generally valid for a limited duration. Traffic controls are necessary for the safety of the field crew and to minimize the overall impact to the flow of traffic on city streets, especially during inclement weather. Safety of the field staff is an overriding concern and sample collection will not be initiated until the location is deemed sufficiently safe to initiate the sampling effort. Depending on storm characteristics, collection of samples may be deemed unsafe during wet-weather conditions.

5.4 Analytical Procedures

The sections below discuss the analytical procedures for data generated in the field and in the laboratory.

5.4.1 Field Parameters

Temperature, pH, dissolved oxygen, turbidity and conductivity will be measured on-site in the same period as grab sampling. The instrument will be calibrated before use and used according to the manufacturer's instructions. After use, the instrument will be cleaned in preparation for the next sampling event. Maintenance will also be performed per the manufacturer's instructions, and the instrument will be stored to prevent fouling of the probes.

This section will contain information on the field equipment specifications once the equipment has been selected.

5.4.2 Analytical Methods and Method Detection and Reporting Limits

Table 1 lists the constituents to be initially analyzed based on Table E-2 of Permit Attachment E and the proposed method of analysis will be determined by the LAR UR2 WMA's members, through the selection of the contracted laboratories, upon CIMP approved.

Table 1 MS4 Permit Table E-2 Analytes and Analysis Methods		
Constituent	**Matrix**	**Method**
Conventional		
Oil and Grease	Surface Water	EPA 1664A
Total Phenols	Surface Water	EPA 420.1
Cyanide	Surface Water	SM 4500-CN- E
pH	Surface Water	EPA 150.1
Temperature	Surface Water	SM 2550
Dissolved Oxygen	Surface Water	SOP-3.1.1.3
Bacteria (single sample limits)		
Total coliform (marine waters)	Surface Water	SM 9221B
Enterococcus (marine waters)	Surface Water	SM 9230B
Fecal coliform (marine & fresh waters)	Surface Water	SM 9221C,E
E. coli (fresh waters)	Surface Water	SM 9223
General		
Dissolved Phosphorus	Surface Water	SM 4500-P E
Total Phosphorus	Surface Water	SM 4500-P E
Turbidity	Surface Water	SM 2130 B
Suspended Sediment Concentration	Surface Water	ASTM D3977-97
Total Suspended Solids	Surface Water	SM 2540D
Total Dissolved Solids	Surface Water	SM 2540C
Volatile Suspended Solids	Surface Water	SM 2540E
Total Organic Carbon	Surface Water	SM 5310B
Total Petroleum Hydrocarbon	Surface Water	EPA 418.1
Biochemical Oxygen Demand	Surface Water	SM 5210 B
Chemical Oxygen Demand	Surface Water	SM 5220 C
Total Ammonia-Nitrogen	Surface Water	SM 4500-NH3 C
Total Kjeldahl Nitrogen	Surface Water	EPA 351.2
Nitrate-Nitrite	Surface Water	SM 4500-NO3 F
Alkalinity	Surface Water	SM 2320B
Specific Conductance	Surface Water	SM 2510B
Total Hardness	Surface Water	SM 2340C
MBAS	Surface Water	SM 5540C
Chloride	Surface Water	EPA 300.0
Fluoride	Surface Water	EPA 300.0
Methyl tertiary butyl ether (MTBE)	Surface Water	EPA 524.2
Perchlorate	Surface Water	EPA 331.0 (M)
Metals (Total & Dissolved)		
Aluminum	Surface Water	EPA 200.8
Antimony	Surface Water	EPA 200.8
Arsenic	Surface Water	EPA 200.8
Beryllium	Surface Water	EPA 200.8
Cadmium	Surface Water	EPA 200.8

Table 1 MS4 Permit Table E-2 Analytes and Analysis Methods		
Constituent	**Matrix**	**Method**
Chromium (total)	Surface Water	EPA 200.8
Chromium (Hexavalent)	Surface Water	EPA 7199
Copper	Surface Water	EPA 200.8
Iron	Surface Water	EPA 200.8
Lead	Surface Water	EPA 200.8
Mercury	Surface Water	EPA 245.1
Nickel	Surface Water	EPA 200.8
Selenium	Surface Water	EPA 200.8
Silver	Surface Water	EPA 200.8
Thallium	Surface Water	EPA 200.8
Zinc	Surface Water	EPA 200.8
Semivolatile Organic Compounds		
ACIDS		
2-Chlorophenol	Surface Water	EPA 625
4-Chloro-3-methylphenol	Surface Water	EPA 625
2,4-Dichlorophenol	Surface Water	EPA 625
2,4-Dimethylphenol	Surface Water	EPA 625
2,4-Dinitrophenol	Surface Water	EPA 625
2-Nitrophenol	Surface Water	EPA 625
4-Nitrophenol	Surface Water	EPA 625
Pentachlorophenol	Surface Water	EPA 625
Phenol	Surface Water	EPA 625
2,4,6-Trichlorophenol	Surface Water	EPA 625
Base/Neutral		
Acenaphthene	Surface Water	EPA 8270C SIM
Acenaphthylene	Surface Water	EPA 625
Anthracene	Surface Water	EPA 625
Benzidine	Surface Water	EPA 625
1,2 Benzanthracene	Surface Water	EPA 625
Benzo(a)pyrene	Surface Water	EPA 625
Benzo(g,h,i)perylene	Surface Water	EPA 625
3,4 Benzoflouranthene	Surface Water	EPA 625
Benzo(k)flouranthene	Surface Water	EPA 625
Bis(2-Chloroethoxy) methane	Surface Water	EPA 625
Bis(2-Chloroisopropyl) ether	Surface Water	EPA 625
Bis(2-Chloroethyl) ether	Surface Water	EPA 625
Bis(2-Ethylhexl) phthalate	Surface Water	EPA 625
4-Bromophenyl phenyl ether	Surface Water	EPA 625
Butyl benzyl phthalate	Surface Water	EPA 625
2-Chloroethyl vinyl ether	Surface Water	EPA 524.2
2-Chloronaphthalene	Surface Water	EPA 625

Table 1 MS4 Permit Table E-2 Analytes and Analysis Methods		
Constituent	**Matrix**	**Method**
4-Chlorophenyl phenyl ether	Surface Water	EPA 625
Chrysene	Surface Water	EPA 625
Dibenzo(a,h)anthracene	Surface Water	EPA 8270C SIM
1,3-Dichlorobenzene	Surface Water	EPA 625
1,4-Dichlorobenzene	Surface Water	EPA 625
1,2-Dichlorobenzene	Surface Water	EPA 625
3,3-Dichlorobenzidine	Surface Water	EPA 625
Diethyl phthalate	Surface Water	EPA 625
Dimethyl phthalate	Surface Water	EPA 625
di-n-Butyl phthalate	Surface Water	EPA 625
2,4-Dinitrotoluene	Surface Water	EPA 625
2,6-Dinitrotoluene	Surface Water	EPA 625
4,6 Dinitro-2-methylphenol	Surface Water	EPA 625
1,2-Diphenylhydrazine	Surface Water	EPA 625
di-n-Octyl phthalate	Surface Water	EPA 625
Fluoranthene	Surface Water	EPA 8270C SIM
Fluorene	Surface Water	EPA 625
Hexachlorobenzene	Surface Water	EPA 625
Hexachlorobutadiene	Surface Water	EPA 625
Hexachloro-cyclopentadiene	Surface Water	EPA 625
Hexachloroethane	Surface Water	EPA 625
Indeno(1,2,3-cd)pyrene	Surface Water	EPA 8270C SIM
Isophorone	Surface Water	EPA 625
Naphthalene	Surface Water	EPA 8270C SIM
Nitrobenzene	Surface Water	EPA 625
N-Nitroso-dimethyl amine	Surface Water	EPA 625
N-Nitroso-diphenyl amine	Surface Water	EPA 625
N-Nitroso-di-n-propyl amine	Surface Water	EPA 625
Phenanthrene	Surface Water	EPA 8270C SIM
Pyrene	Surface Water	EPA 8270C SIM
1,2,4-Trichlorobenzene	Surface Water	EPA 524.2
Polychlorinated Biphenyls and Pesticides		
Aldrin	Surface Water	EPA 608
alpha-BHC	Surface Water	EPA 608
beta-BHC	Surface Water	EPA 608
delta-BHC	Surface Water	EPA 608
gamma-BHC (lindane)	Surface Water	EPA 608
alpha-chlordane	Surface Water	EPA 608
gamma-chlordane	Surface Water	EPA 608
4,4'-DDD	Surface Water	EPA 608
4,4'-DDE	Surface Water	EPA 608

Table 1 MS4 Permit Table E-2 Analytes and Analysis Methods		
Constituent	**Matrix**	**Method**
4,4'-DDT	Surface Water	EPA 608
Dieldrin	Surface Water	EPA 608
alpha-Endosulfan	Surface Water	EPA 608
beta-Endosulfan	Surface Water	EPA 608
Endosulfan sulfate	Surface Water	EPA 608
Endrin	Surface Water	EPA 608
Endrin aldehyde	Surface Water	EPA 608
Heptachlor	Surface Water	EPA 608
Heptachlor Epoxide	Surface Water	EPA 608
Toxaphene	Surface Water	EPA 608
Aroclor-1016	Surface Water	EPA 608
Aroclor-1221	Surface Water	EPA 608
Aroclor-1232	Surface Water	EPA 608
Aroclor-1242	Surface Water	EPA 608
Aroclor-1248	Surface Water	EPA 608
Aroclor-1254	Surface Water	EPA 608
Aroclor-1260	Surface Water	EPA 608
Organophosphate Pesticides		
Atrazine	Surface Water	EPA 8141B
Chlorpyrifos	Surface Water	EPA 8141B
Cyanazine	Surface Water	EPA 8141B
Diazinon	Surface Water	EPA 8141B
Malathion	Surface Water	EPA 8141B
Prometryn	Surface Water	EPA 8141B
Simazine	Surface Water	EPA 8141B
Herbicides		
2,4-D	Surface Water	EPA 8151A
Glyphosate	Surface Water	EPA 547
2,4,5-TP-SILVEX	Surface Water	EPA 8151A

Multiple ELAP-accredited laboratories were surveyed in order to assess their capabilities to achieve the Permit identified analyte Minimum Levels. Proposed laboratory analytical methods, to be used in the water quality analysis, along with laboratory identified Method Detection Limit (MDL) and Reporting Limit (RL) were gathered. Several laboratories reported difficulties in achieving the Permit identified MDLs for standard pollutants which are usually quantified at higher concentrations in runoff water, an observation which should be conveyed to the Regional Board for consideration. This is often the result of applying a potable or ground water derived assessment standard to runoff water analysis, where the detection limit is rarely approached. **Table 2** summarizes the analytical procedures reported for use in this project by Eurofins Calscience. Footnoted cells represent limits which exceed the Minimum Levels (MLs) stated in Table E-2 of the MS4 permit. For Minimum Levels that meet the MDL, but not by the RL, laboratories typically report the results flagged with a "J" qualifier to signify that it is an estimate. Of the Analytical Methods proposed by each laboratory, a number have not been approved under the stipulations placed in Attachment E, XIV.A.1.d of the MS4 permit.

Table 2 Eurofins Calscience Analytical Method Detection and Reporting Limits

Analyte	Table E-2 ML	Laboratory	Analytical Method		Laboratory Limits		
			Number or SOP	Modified Method	MDL	RL	Unit
Conventional Pollutants							
Oil and Grease	5	Calscience	EPA 1664A	No	0.80	1.0	mg/L
Total Phenols	0.1	Calscience	EPA 420.1	No	0.046	0.10	mg/L
Cyanide	5	Calscience	SM4500-CN- E	No	0.69	1	µg/L
pH	0-14	Field Test	150.1	No	0	14	pH unit
Temperature	N/A	Field Test	SM 2550	No	0	99	°C
Dissolved Oxygen	<5	Field Test	SOP-3.1.1.3	No	1	1	mg/L
BACTERIA (single sample limits)							
Total coliform (marine: N/A to LAR UR2 WMA)	10000	Silliker	SM 9221B	No	2	2	MPN/ 100ml
Enterococcus (marine water: N/A to LAR UR2 WMA)	104	Silliker	SM 9230B	No	2	2	MPN/ 100ml
Fecal coliform (marine: N/A to LAR UR2 WMA)	400	Silliker	SM 9221C,E	No	2	2	MPN/ 100ml
E. coli (fresh waters)	235	Silliker	SM 9223	No	2	2	MPN/ 100ml
General							
Dissolved Phosphorus	0.05	Calscience	SM 4500-P E	No	0.026	0.1	mg/L
Total Phosphorus	0.05	Calscience	SM 4500-P E	No	0.022	0.1	mg/L
Turbidity	0.1	Field Test	SM 2130B	No	0.1	0.1	NTU
Suspended Sediment Conc.	N/A	Calscience	ASTM D3977	No	1	1	mg/L
Total Suspended Solids	2	Calscience	SM 2540D	No	0.95	1	mg/L
Total Dissolved Solids	2	Calscience	SM 2540C	No	0.82	1	mg/L
Volatile Suspended Solids	2	Calscience	SM 2540E	No	1	1	mg/L
Total Organic Carbon	1	Calscience	SM 5310B	No	0.24	0.5	mg/L
Total Petrol. Hydrocarbon	5	Calscience	EPA 418.1	No	0.95	1	mg/L
Biochemical Oxygen Demand	2	Calscience	SM 5210 B	No	0.58	1	mg/L
Chemical Oxygen Demand	20-900	Calscience	SM 5220 C	No	4.8	5	mg/L
Total Ammonia-Nitrogen	0.1	Calscience	SM4500-NH3C	No	0.067	0.1	mg/L
Total Kjeldahl Nitrogen	0.1	Calscience	EPA 351.2	No	0.047	0.2[1]	mg/L
Nitrate-Nitrite	0.1	Calscience	SM4500-NO3F	No	0.029	0.1	mg/L
Alkalinity	2	Calscience	SM 2320B	No	0.85	1	mg/L
Specific Conductance	1	Field Test	SM 2510B	No	1	1	µmho/cm
Total Hardness	2	Calscience	SM 2340C	No	0.99	2	mg/L
MBAS	0.5	Calscience	SM 5540C	No	0.064	0.1	mg/L
Chloride	2	Calscience	EPA 300.0	No	0.12	1	mg/L
Fluoride	0.1	Calscience	EPA 300.0	No	0.025	0.1	mg/L
Methyl Tertiary Butyl Ether	1	Calscience	EPA 524.2	No	0.059	0.5	µg/L
Perchlorate	4	Calscience	EPA 331.0 (M)	No	0.021	0.1	µg/L

Table 2 Eurofins Calscience Analytical Method Detection and Reporting Limits							
Analyte	Table E-2 ML	Laboratory	Analytical Method		Laboratory Limits		
			Number or SOP	Modified Method	MDL	RL	Unit
METALS (Dissolved & Total)							
Aluminum	100	Calscience	EPA 200.8	No	3.31	50	µg/L
Antimony	0.5	Calscience	EPA 200.8	No	0.100	1	µg/L
Arsenic	1	Calscience	EPA 200.8	No	0.386	1	µg/L
Beryllium	0.5	Calscience	EPA 200.8	No	0.29	1	µg/L
Cadmium	0.25	Calscience	EPA 200.8	No	0.128	1	µg/L
Chromium (total)	0.5	Calscience	EPA 200.8	No	0.164	0.5	µg/L
Chromium (Hexavalent)	5	Calscience	EPA 7199	No	0.067	1	µg/L
Copper	0.5	Calscience	EPA 200.8	No	0.14	1	µg/L
Iron	100	Calscience	EPA 200.8	No	0.090	1	µg/L
Lead	0.5	Calscience	EPA 200.8	No	0.090	1	µg/L
Mercury	0.5	Calscience	EPA 245.1	No	0.046	0.2	µg/L
Nickel	1	Calscience	EPA 200.8	No	0.132	1	µg/L
Selenium	1	Calscience	EPA 200.8	No	0.168	1	µg/L
Silver	0.25	Calscience	EPA 200.8	No	0.111	1	µg/L
Thallium	1	Calscience	EPA 200.8	No	0.101	1	µg/L
Zinc	1	Calscience	EPA 200.8	No	0.479	5	µg/L
SEMIVOLATILE ORGANIC COMPOUNDS							
ACIDS							
2-Chlorophenol	2	Calscience	EPA 625	Yes	0.13	0.5	µg/L
4-Chloro-3-methylphenol	1	Calscience	EPA 625	Yes	0.12	0.5	µg/L
2,4-Dichlorophenol	1	Calscience	EPA 625	Yes	0.12	0.5	µg/L
2,4-Dimethylphenol	2	Calscience	EPA 625	Yes	0.22	1	µg/L
2,4-Dinitrophenol	5	Calscience	EPA 625	Yes	1.3	5	µg/L
2-Nitrophenol	10	Calscience	EPA 625	No	2.6	10	µg/L
4-Nitrophenol	5	Calscience	EPA 625	No	1.6	10	µg/L
Pentachlorophenol	2	Calscience	EPA 625	Yes	0.13	0.5	µg/L
Phenol	1	Calscience	EPA 625	Yes	0.06	0.5	µg/L
2,4,6-Trichlorophenol	10	Calscience	EPA 625	No	2.5	10	µg/L
BASE/NEUTRAL							
Acenaphthene	1	Calscience	EPA 8270CSIM	No	0.021	0.2	µg/L
Acenaphthylene	2	Calscience	EPA 625	Yes	0.092	0.5	µg/L
Anthracene	2	Calscience	EPA 625	Yes	0.091	0.5	µg/L
Benzidine	5	Calscience	EPA 625	Yes	2.2	5	µg/L
1,2 Benzanthracene	5	Calscience	EPA 625	No	2.5	10	µg/L
Benzo(a)pyrene	2	Calscience	EPA 625	Yes	0.17	0.5	µg/L
Benzo(g,h,i)perylene	5	Calscience	EPA 625	No	2.5	10	µg/L
3,4 Benzoflouranthene	10	Calscience	EPA 625	No	2.3	10	µg/L
Benzo(k)flouranthene	2	Calscience	EPA 625	Yes	0.33	1	µg/L
Bis(2-Chloroethoxy) methane	5	Calscience	EPA 625	No	2.5	10	µg/L

Table 2 Eurofins Calscience Analytical Method Detection and Reporting Limits

Analyte	Table E-2 ML	Laboratory	Analytical Method		Laboratory Limits		
			Number or SOP	Modified Method	MDL	RL	Unit
Bis(2-Chloroisopropyl) ether	2	Calscience	EPA 625	Yes	0.068	0.5	µg/L
Bis(2-Chloroethyl) ether	1	Calscience	EPA 625	Yes	0.096	0.5	µg/L
Bis(2-Ethylhexl) phthalate	5	Calscience	EPA 625	No	3.2	10	µg/L
4-Bromophenyl phenyl ether	5	Calscience	EPA 625	No	2.7	10	µg/L
Butyl benzyl phthalate	10	Calscience	EPA 625	No	2.5	10	µg/L
2-Chloroethyl vinyl ether	1	Calscience	EPA 524.2	Yes	0.2	1	µg/L
2-Chloronaphthalene	10	Calscience	EPA 625	No	2.8	10	µg/L
4-Chlorophenyl phenyl ether	5	Calscience	EPA 625	No	2.7	10	µg/L
Chrysene	5	Calscience	EPA 625	No	2.8	10	µg/L
Dibenzo(a,h)anthracene	0.1	Calscience	EPA 8270CSIM	No	0.027	0.2	µg/L
1,2-Dichlorobenzene	1	Calscience	EPA 625	Yes	0.23	1	µg/L
1,3-Dichlorobenzene	1	Calscience	EPA 625	Yes	0.27	1	µg/L
1,4-Dichlorobenzene	1	Calscience	EPA 625	Yes	0.29	1	µg/L
3,3-Dichlorobenzidine	5	Calscience	EPA 625	No	2.6	25	µg/L
Diethyl phthalate	2	Calscience	EPA 625	Yes	0.1	0.5	µg/L
Dimethyl phthalate	2	Calscience	EPA 625	Yes	0.11	0.5	µg/L
di-n-Butyl phthalate	10	Calscience	EPA 625	No	2.9	10	µg/L
2,4-Dinitrotoluene	55	Calscience	EPA 625	No	2.3	10	µg/L
2,6-Dinitrotoluene	5	Calscience	EPA 625	No	2.4	10	µg/L
4,6 Dinitro-2-methylphenol	5	Calscience	EPA 625	Yes	1.1	5	µg/L
1,2-Diphenylhydrazine	1	Calscience	EPA 625	No	0.85	10	µg/L
di-n-Octyl phthalate	10	Calscience	EPA 625	No	2.5	10	µg/L
Fluoranthene	0.05	Calscience	EPA 8270CSIM	No	0.027	0.2	µg/L
Fluorene	0.1	Calscience	EPA 625	Yes	0.064	0.5	µg/L
Hexachlorobenzene	1	Calscience	EPA 625	Yes	0.19	0.5	µg/L
Hexachlorobutadiene	1	Calscience	EPA 625	Yes	0.33	1	µg/L
Hexachlorocyclopentadiene	5	Calscience	EPA 625	Yes	0.15	0.5	µg/L
Hexachloroethane	1	Calscience	EPA 625	Yes	0.3	1	µg/L
Indeno(1,2,3-cd)pyrene	0.05	Calscience	EPA 8270CSIM	No	0.022	0.2	µg/L
Isophorone	1	Calscience	EPA 625	Yes	0.14	0.5	µg/L
Naphthalene	0.2	Calscience	EPA 8270CSIM	No	0.023	0.2	µg/L
Nitrobenzene	1	Calscience	EPA 625	Yes	0.24	1	µg/L
N-Nitroso-dimethyl amine	5	Calscience	EPA 625	No	3.2	10	µg/L
N-Nitroso-diphenyl amine	1	Calscience	EPA 625	Yes	0.14	0.5	µg/L
N-Nitroso-di-n-propyl amine	1	Calscience	EPA 625	Yes	0.92	5	µg/L
Phenanthrene	0.05	Calscience	EPA 8270CSIM	No	0.031	0.2	µg/L
Pyrene	0.05	Calscience	EPA 8270CSIM	No	0.025	0.2	µg/L
1,2,4-Trichlorobenzene	1	Calscience	EPA 524.2	No	0.2	0.5	µg/L

Table 2 Eurofins Calscience Analytical Method Detection and Reporting Limits							
Analyte	**Table E-2 ML**	**Laboratory**	**Analytical Method**		**Laboratory Limits**		
			Number or SOP	**Modified Method**	**MDL**	**RL**	**Unit**
POLYCHLORINATED BIPHENYLS and PESTICIDES							
Aldrin	5	Calscience	EPA 608	Yes	0.65	4	ng/L
alpha-BHC	10	Calscience	EPA 608	Yes	0.67	4	ng/L
beta-BHC	5	Calscience	EPA 608	Yes	1.5	4	ng/L
delta-BHC	5	Calscience	EPA 608	Yes	0.66	4	ng/L
gamma-BHC (lindane)	20	Calscience	EPA 608	Yes	0.93	4	ng/L
alpha-chlordane	100	Calscience	EPA 608	No	27	100	ng/L
gamma-chlordane	100	Calscience	EPA 608	No	27	100	ng/L
4,4'-DDD	50	Calscience	EPA 608	No	27	100	ng/L
4,4'-DDE	50	Calscience	EPA 608	No	27	100	ng/L
4,4'-DDT	10	Calscience	EPA 608	Yes	0.59	4	ng/L
Dieldrin	10	Calscience	EPA 608	Yes	0.65	4	ng/L
alpha-Endosulfan	20	Calscience	EPA 608	Yes	0.59	4	ng/L
beta-Endosulfan	10	Calscience	EPA 608	Yes	0.65	4	ng/L
Endosulfan sulfate	50	Calscience	EPA 608	No	29	100	ng/L
Endrin	10	Calscience	EPA 608	No	0.62	4	ng/L
Endrin aldehyde	10	Calscience	EPA 608	No	0.64	4	ng/L
Heptachlor	10	Calscience	EPA 608	No	0.72	4	ng/L
Heptachlor Epoxide	10	Calscience	EPA 608	No	0.68	4	ng/L
Toxaphene	500	Calscience	EPA 608	Yes	9.2	50	ng/L
Aroclor-1016	0.5	Calscience	EPA 608	Yes	0.059	0.2	µg/L
Aroclor-1221	0.5	Calscience	EPA 608	Yes	0.057	0.2	µg/L
Aroclor-1232	0.5	Calscience	EPA 608	Yes	0.05	0.2	µg/L
Aroclor-1242	0.5	Calscience	EPA 608	Yes	0.025	0.2	µg/L
Aroclor-1248	0.5	Calscience	EPA 608	Yes	0.04	0.2	µg/L
Aroclor-1254	0.5	Calscience	EPA 608	Yes	0.045	0.2	µg/L
Aroclor-1260	0.5	Calscience	EPA 608	Yes	0.053	0.2	µg/L
ORGANOPHOSPHATE PESTICIDES							
Atrazine	2,000	Calscience	EPA 8141B	No	4.4	20	ng/L
Chlorpyrifos	50	Calscience	EPA 8141B	No	2.6	10	ng/L
Cyanazine	2,000	Calscience	EPA 8141B	N/A	3.5	20	ng/L
Diazinon	10	Calscience	EPA 8141B	No	2.6	10	ng/L
Malathion	1,000	Calscience	EPA 8141B	No	5.5	20	ng/L
Prometryn	2,000	Calscience	EPA 8141B	No	3.9	20	ng/L
Simazine	2,000	Calscience	EPA 8141B	No	4.5	20	ng/L
HERBICIDES							
2,4-D	10	Calscience	EPA 8151A	No	1.8	5	µg/L
Glyphosate	5	Calscience	EPA 547	No	1.8	5	µg/L
2,4,5-TP-SILVEX	0.5	Calscience	EPA 8151A	No	0.22	0.5	µg/L

The November 21, 2014 draft CIMP comment letter provided by the LARWQCB, suggested that between 40 and 50 PCB congeners be monitored using High Resolution Mass Spectrometry. This suggestion is in conflict with Table E-2 of the Permit, which lists Aroclors typically analyzed using US EPA Method 608. Instead the LAR UR2 WMA would propose to use the Method 608 Detection Limits supported by Eurofins Calscience, which are approximately an order of magnitude lower than the Permit required Minimum Levels identified on Table E-2. In support of this compromise recommendation, we are unaware of any congener specific treatment or source control methods and therefore cannot identify a derived value from monitoring the specific congeners. The comment letter also indicates that laboratory results would "be reported as the summation of Aroclors and a minimum of 40 congeners", which, in addition to double counting those congeners that make up the Aroclors, indicates that any value from the specific and expensive high resolution congener analysis would be lost in the summary report. Alternatively, analyzing for PCBs congeners should be limited to only one receiving water site (LARUR2-RW) and sample event, until the value and limitations of the analysis and its usefulness to pollutant source control and watershed control measures, become more apparent.

The sample-specific MDL and RL will be reported by the laboratory and will take into account any factors relating to the sample analysis that might decrease or increase the reporting limit (e.g. dilution factor, percent moisture, sample volume, sparge volume or matrix interferences). The contracted laboratory should be directed to report all analytical results to the MDL. In the event that the MDL and reporting limit are elevated due to a matrix limitation and subsequent dilution or reduction in the sample aliquot, the data will be evaluated by Consultant Program Manager and Laboratory Project Manager to determine if an alternative course of action is warranted. Should elevated reporting limits and MDLs continue to occur, the Consultant Program Manager shall consult with the LARWQCB prior to initiating significant corrective actions.

5.5 Data Quality Objectives and Criteria

DQOs describe the anticipated data quality needs necessary to support the analysis and characterization of the CIMP study questions. A seven-step process to identify the required data quality is described in *Guidance on Systematic Planning Using the Data Quality Objectives Process* (USEPA 2006). The MS4 Permit MRP and CIMP-specific DQO process steps are as follows:

1. Assess the chemical, physical, and biological impacts of MS4 discharges on receiving waters.
2. Assess compliance with RWLs and WQBELs numeric limits established to implement Total Maximum Daily Load (TMDL) wet weather and dry weather Waste Load Allocations (WLAs).
3. Characterize pollutant loads in MS4 discharges.
4. Identify sources of pollutants in MS4 discharges.
5. Measure and improve the effectiveness of pollutant controls implemented under the Order.

In order to accomplish these specific DQO, the QAPP process steps will include:

1. State the Problem
2. Identify the Decision
3. Identify Inputs to the Decision
4. Define the Study Area Boundaries
5. Develop a Decision Rule
6. Specify Limits on the Decision Errors
7. Optimize the Design for Obtaining Data

Typical field and laboratory analytical measurement quality objectives, as evaluated based on precision, accuracy, completeness, sensitivity, representativeness, and comparability, are summarized in the following paragraphs and presented in **Table 3**.

5.5.1 Precision

Precision refers to the agreement or reproducibility of a set of duplicate or replicate results obtained from independent analyses completed under identical conditions. Both sampling and laboratory precision will be evaluated by the performance of field duplicates (if collected), laboratory duplicates, and Laboratory Control Samples/Laboratory Control Sample Duplicates (LCS/LCSDs).

Precision is expressed as the relative percent difference (RPD) in concentration between the original and duplicate analyses, as determined in the formula:

$$\mathbf{RPD} = \frac{|\mathbf{S} - \mathbf{D}|}{\frac{\mathbf{1}}{\mathbf{2}} \times (\mathbf{S} + \mathbf{D})} \times \mathbf{100}$$

Where:
RPD = Relative percent difference
S = Concentration of analyte in the original sample
D = Concentration of analyte in duplicate sample

Table 3 Data Analysis Quality Control Objectives

Parameter	Accuracy	Precision	Recovery	Completeness
Field Measurements				
Water Velocity (for Flow calc.)	20%	NA	NA	90%
pH	+ 0.2 pH units	+ 0.5 pH units	NA	90%
Temperature	+ 0.5° C	+ 5%	NA	90%
Dissolved Oxygen	+ 0.5 mg/L	+ 10%	NA	90%
Turbidity	10%	10%	NA	90%
Conductivity	5%	5%	NA	90%
Laboratory Analyses – Water				
Conventional/Solid Characteristics	80 – 120%	0 – 25%	80 – 120%	90%
Aquatic Toxicity	(1)	(2)	NA	90%
Nutrients(3)	80 – 120%	0 – 25%	90 – 110%	90%
Metals(3)	75 – 125%	0 – 25%	75 – 125%	90%
Semi-Volatile Organics(3)	50 – 150%	0 – 25%	50 – 150%	90%
Volatile Organics(3)	50 – 150%	0 – 25%	50 – 150%	90%
Herbicides(3)	50 – 150%	0 – 25%	50 – 150%	90%
OC Pesticides, PCB, or Aroclors (3)	50 – 150%	0 – 25%	50 – 150%	90%
OP Pesticides(3)	50 – 150%	0 – 25%	50 – 150%	90%

1. Must meet all method performance criteria relative to the reference toxicant test.
2. Must meet all method performance criteria relative to the sample replicates.
3. See **Table 2** for a list of individual constituents in each suite for water.

5.5.2 Accuracy

Accuracy, or measurement bias, is an assessment of the agreement between an experimental or observed value and the true value of the parameter being measured. A measurement is evaluated for accuracy by comparing a given observed value to a true value and against an established range specifying a lower limit and an upper limit of acceptability. Laboratory Control Standards (LCS), their duplicates (LCSD), and surrogate spikes will be used to evaluate the accuracy and bias for the project samples. Accuracy is expressed as percent recovery '%R', as determined from the formula:

$$\%\mathbf{R} = \frac{\mathbf{SSR} - \mathbf{SR}}{\mathbf{SA}} \times \mathbf{100}$$

Where:
%R = Percent recovery (percent)
SSR = Spike sample result (concentration units)
SR = Original sample result (concentration units)
SA = Spike added (concentration units)

Method-specific recovery criteria will be reported in the final QAPP for the selected laboratory. For data validation, the more stringent of either the laboratory-specific criteria or the method-specific criteria will be used.

5.5.3 Completeness

Completeness is an assessment of the adequacy of the available data resulting from the sampling and analysis program. It is evaluated for each method, matrix, and analyte combination in order to prevent misinterpretation of the data and to meet the needs of the sampling program. Another aspect of completeness involves the adequacy of the data package in documenting the associated QC data for the project samples. The validated data will provide a measure of completeness, but the usability of the validated data will be determined by the selected Consultants, the LAR UR2 WMA Project Manager, and reviewed by the LARWQCB. The completeness goal for this project is 90 percent; however, for critical samples, the completeness goal will be 95 percent. Percent completeness is expressed as '%PC', as determined from the formula:

$$\%\mathbf{PC} = \frac{\mathbf{N_A}}{\mathbf{N_1}} \times \mathbf{100}$$

N_A = actual number of valid analytical results obtained
N_1 = theoretical number of results obtainable under ideal conditions

5.5.4 Sensitivity

The MDL is defined as the minimum concentration at which a given target analyte can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. Laboratory practical quantification limits (PQLs), contract required quantification limits (CRQLs) or RLs are defined as the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. Laboratory MDLs and RLs will be used to evaluate the method sensitivity and/or applicability. MLs are for use in reporting and compliance determination. To assess the respective method capability, the project criteria listed in Table E-2 of Attachment E of the MS4 Permit for each contaminant of concern have been screened against exemplar laboratory MDLs, RLs, and MLs.

5.6 Special Training Needs/Certification

Field personnel will be properly trained in the use of monitoring equipment and clean/dirty hand sample collection and handling techniques along with all appropriate health and safety protocols prior to conducting monitoring activities. The following elements will be included in the training of field personnel:

- Review of Health and Safety Plan
- Field training

Personnel will have had prior experience performing field sampling and laboratory analyses for the type of water quality monitoring required. All Standard Operating Procedures for collection, records, handling, and analysis will be monitored by the Project and Laboratory QA/QC officers.

5.7 Documents and Records

All field observations will be recorded in standard Field Conditions Data Log sheets. The sheets will be reviewed for errors prior to leaving the sample site. Chain-of-custody (COC) forms will be completed for all water samples before the samples are delivered to the laboratory. Field sheets and COCs will be scanned and stored as an electronic PDF by the Project Manager for a minimum of five years from the time the MRP is completed. Additionally, the records saved shall include the following information:

- Site identification and location
- Date and time that sampling or measurements were taken
- Individual(s) who performed the sampling or measurements
- Analytical methods used
- Results of analyses
- Data sheets showing toxicity test results

The Laboratory Manager reviews the laboratory analytical results, verifies completeness, and logs the date of sample receipt, analysis, internal QA/QC and final reporting to the client. The reports and data are then transferred to the Project Manager and filed with all other original project documentation in order to maintain complete project records. The laboratory will provide analytical data in electronic format for maintenance and management in Microsoft® Excel® Access®. The Project Manager will semi-annually submitted to the LARWQCB as directed in MS4 Permit Attachment E Part XIV.L.

Table 4 summarizes the record retention, archival, and disposition guidelines for each type of document.

Table 4 Document and Record Retention, Archival, and Disposition Information

Records	Identify Type Needed	Retention	Archival	Disposition
Project Plan	Monitoring and Reporting Program	Paper/Electronic	Document	Minimum 5 years
	QAPP	Paper/Electronic	Document	Minimum 5 years
Field Data	Field Conditions Data Log Sheets	Paper/Electronic	Project File/PDFs	Minimum 5 years
	Photographs	Electronic	Project File	Minimum 5 years
Sample Collection Records	Chain-of-Custody	Paper/Electronic	Project File	Minimum 5 years
	Calibration and Maintenance	Paper	Project File	Minimum 3 years
	Original strip charts	Paper/Electronic	Project File	Minimum 3 years
Analytical Records	Lab Notebooks	Paper	Notebook	Minimum 5 years
	Lab Reports (include COCs)	Electronic	Notebook/Excel	Minimum 5 years
	Electronic Data File	Electronic	Database	Minimum 5 years
Assessment Records	QA/QC Assessment	Paper/Electronic	Document	Minimum5 years
	Final Report	Paper/Electronic	Document	Minimum 5 years

6. Sampling Methods and Sample Handling

The sections below discuss the steps to be taken to properly prepare for and initiate water quality sampling for the CIMP.

6.1 Sampling Process Design and Method

The monitoring plan schedule, rationale behind sampling design, and sampling design assumptions for locating and selecting environmental samples (sampling locations, frequencies, rationale for selection) are detailed in the Sections 2, 4, and 5 of the CIMP to comply with the requirements of the MS4 Permit. Additional sampling may be requested during field operations. The exact sample locations and the total number of samples may change from those established upon approval from the RWQCB.

6.2 Sample Handling

The laboratory will provide appropriate sample containers according to **Table 5**. All samples will be pre-labeled with the project name, site ID, sample type, bottle number, sampler name, preservative, and analysis. All sample bottles will also be pre-labeled with a unique Sample ID to track the sample throughout its analyses. At the time of sample collection, the sample labels will be completed in the field with the date and time. The Sample IDs will also be entered directly onto the Field Conditions Data Log Sheets and the COC Forms. The COC forms will accompany the collection of all samples.

The following sample handling protocols will be followed when collecting samples to minimize the possibility of contamination:

- New unused sample bottles will be employed. Sample bottles and bottle caps will be protected from contact with solvents, dust, or other contaminants during storage and handling.
- Samplers will make a reasonable effort to prevent large gravel and uncharacteristic floating debris from entering the sample containers. The sampler will avoid sediments disturbance from storm drain invert.
- The inside of the sampling container will not be touched to the maximum extent practicable during preparation and sampling activities.
- Vehicle engines will be turned off during sampling activities to minimize exposure of samples to exhaust fumes.
- All samples will be collected in accordance with clean sampling techniques.
- Manual water grab samples will be collected by inserting the transfer container under or down current of the direction of flow, with the container opening facing upstream.
- Once sample containers are filled, they will be promptly placed on ice, in a clean cooler (target temperature 6 degrees Celsius), in the dark and transported to the laboratory for processing to meet holding times. All necessary pre-processing for analysis, such as filtration and acidification, will take place in the laboratory by certified personnel.
- After the field crew collects and delivers the samples to the laboratory, the laboratory will conduct the analysis within appropriate holding times. These field and laboratory activities will be coordinated to make sure all samples are handled within the proper holding time.

When the laboratory receives composited water samples, laboratory technicians will dispense the sample into containers that contain the required analytical volume specified in **Table 5**. The laboratory will preserve the water samples using the appropriate preservative and the laboratory will conduct the analysis within the maximum holding time limits. Following completion of analyses, the laboratory will dispose of expired samples in a manner appropriate to local discharge laws.

Table 5 Sample Handling, Preservation and Analysis Hold Time				
Constituent	**Container Type**	**Sample Volume**	**Preservation**	**Hold Time**
Conventional Pollutants				
Oil and Grease	1L Amber Glass	1 Liter	H_2SO_4 & 4°C	28 days
Total Phenols	1L Amber Glass	200 ml	H_2SO_4 & 4°C	28 days
Cyanide	1L HDPE	500 ml	NaOH & 4°C	14 days
Bacteria				
E. coli	Steri-bottle	100 ml	$Na_2S_2O_3$ & 4°C	8 hours
General				
Dissolved Phosphorous	125 ml HDPE	100 ml	4°C	28 days
Total Phosphorous	125 ml HDPE	100 ml	H_2SO_4 & 4°C	28 days
TSS/Suspended Sed. Con.	1L HDPE	1 Liter	4°C	7 days
Total Dissolved Solids	1L HDPE	1 Liter	4°C	7 days
Volatile Suspended Solids	1L HDPE	1 Liter	4°C	7 days
Total Organic Carbon	250 ml Glass	150 ml	H_2SO_4 & 4°C	28 days
Total Petroleum Hydroc.	1 L Amber Glass	500 ml	H_2SO_4 & 4°C	28 days
Biochemical Oxygen Dem.	1 L HDPE	300 ml	4°C	2 days
Chemical Oxygen Demand	250 ml Glass	20 ml	H_2SO_4 & 4°C	2 days
Total Ammonia-Nitrogen	1 L Amber Glass	500 ml	H_2SO_4 & 4°C	28 days
Total Kjeldahl Nitrogen	1 L Amber Glass	500 ml	H_2SO_4 & 4°C	28 days
Nitrate-Nitrite (as N)	125 ml HDPE	50 ml	H_2SO_4 & 4°C	28 days
Alkalinity	250 ml HDPE	100 ml	4°C	14
Total Hardness	250 ml HDPE	100 ml	HNO_3 & 4°C	180 days
MBAS	500 ml HDPE	200 ml	4°C	2 days
Chloride	125 ml HDPE	50 ml	4°C	28 days
Fluoride	250 ml HDPE	100 ml	4°C	28 days
Methyl Tert. Butyl Ether	3 x 40 ml VOA	3 x 40 ml	HCl & 4°C	14 days
Perchlorate	125 ml HDPE	50 ml	4°C	28 days
Metals				
Total 200.8 ICP Metals	250 ml HDPE	100 ml	HNO_3 & 4°C	180 days
Dissolved 200.8 ICP Mets.	250 ml HDPE	100 ml	4°C (Lab filter)	180 days
Hexavalent Chromium	250 ml HDPE	200 ml	4°C	1 day
Mercury	250 ml HDPE	100 ml	HNO_3 & 4°C	28 days
Semi-Volatile Organic Compounds (Base, Neutral, Acid)				
EPA 625	1L Amber Glass	1 Liter	4°C	7 Ex/40 Anly
EPA 625 Low Level	1L Amber Glass	1 Liter	4°C	7 Ex/40 Anly
EPA 8270C SIM	1L Amber Glass	1 Liter	4°C	7 Ex/40 Anly
EPA 524.2	3 x 40 ml VOA	3 x 40 ml	HCl & 4°C	14 days
Pesticides				
EPA 608 (OrganoCl/PCBs)	1L Amber Glass	1 Liter	4°C	7 Ex/40 Anly
EPA 8141B (OrganoPO_3)	1L Amber Glass	1 Liter	4°C	7 Ex/40 Anly
EPA 8151A (Herbicides)	1L Amber Glass	1 Liter	4°C	7 Ex/40 Anly

Temperature, pH, Specific Conductance, Dissolved Oxygen, Turbidity are field measurements.

6.3 Sampling Techniques for the Collection of Water

The following subsections provide details on the various techniques that can be utilized to collect water quality samples. Should field crews feel that it is unsafe to collect samples for any reason, the field crews **SHOULD NOT COLLECT** a sample and note on the field log that the sample was not collected, why the sample was not collected, and provide photo documentation, if feasible.

6.3.1 Direct Submersion: Hand Technique

Where practical, all grab samples will be collected by direct submersion at mid-stream, mid-depth using the following procedures:

1. Remove the lid, submerge the container to mid-stream/mid-depth, let the container fill and secure the lid. In the case of mercury samples, remove the lid underwater to reduce the potential for contamination from the air.
2. Place the sample on ice.
3. Collect the remaining samples including quality control samples, if required, using the same protocols described above.

6.3.2 Autosamplers

Automatic sample compositors (autosamplers) are used to characterize the entire flow of a storm in one analysis. They can be programmed to take aliquots at either time- or flow-based specified intervals. Before beginning setup in the field, it is recommended to read the manufacturer's instructions. The general steps to set up the autosampler are described below:

1. Install pre-cleaned tubing into the pump. Clean tubing will be used at each site and for each event, in order to minimize contamination.
2. Attach strainer to intake end of the tubing and install in sampling channel.
3. If running flow based composite samples; install flow sensor in sampling channel and connect it to the automatic compositor.
4. Label and install composite bottle(s). If sampler is not refrigerated, then add enough ice to the composite bottle chamber to keep sample cold for the duration of sampling or until such time as ice can be refreshed. Make sure not to contaminate the inside of the composite bottle with ice.
5. Program the autosampler as per the manufacturer's instructions and make sure the autosampler is powered and running before leaving the site.

After the sample collection is completed the following steps must be taken to ensure proper sample handling:

1. Upon returning to the site, check the status of the autosampler and record any errors or missed samples. Note the last sample time on the field log, as this will be used on COCs.
2. Remove the composite bottle and store on ice. If dissolved metals are required, then begin the sample filtration process outlined in the following subsection, within 15 minutes of the last composite sample, unless compositing must occur at another location, in which case the filtration process should occur as soon as possible upon sample compositing.
3. Power down the autosampler and secure sampling site.
4. The composite sample will need to be split into the separate analysis bottles either before being shipped to the laboratory or at the laboratory. This is best done in a clean and weatherproof environment, using clean sampling technique.

6.4 Chain of Custody

The laboratory will supply the Chain-of-Custody (COC) forms that will be utilized by the sampling team. COC procedures will be used for all samples throughout the collection, transport, and analytical process to ensure the most accurate results. COCs will be pre-printed along with the bottle labels and will contain the same data as the labels. The COCs will be completed in the field with dates, times, and sample team names, and will be cross-checked with the bottles to make sure proper samples have been collected. Documentation of sample handling and custody will include the following:

- Sample identification;
- Type of sample;
- Sample collection date and time;
- Any special notations on sample characteristics or analysis;
- Analyses to be performed;
- Initials of the sampling team member that collected the sample; and
- Date the sample was delivered to/sent to the laboratory.

The COC forms for the samples will be transported with the samples to the analytical laboratory. Sampled water will be kept properly chilled and transferred to an analytical laboratory within specified holding times. When custody of the samples is transferred to the laboratory, the COC will be signed and dated, and a PDF copy will be sent from the laboratory. An example COC form is included in **Figure 2**. The COCs will be reviewed by personnel at the receiving laboratory to make sure no samples have been lost in transport. The laboratory will also verify that each sample has been received within the appropriate holding times. COC records will be included in the final reports prepared by the analytical laboratory and are considered an integral part of the report. Analytical methods and detection limits for this project are listed in **Table 2**.

6.5 Laboratory Custody Procedures

Laboratories will follow sample custody procedures as outlined in the laboratory's Quality Assurance (QA) Manual. A copy of each contract laboratory's QA Manual should be available at the laboratory upon request. Laboratories shall maintain custody logs sufficient to track each sample submitted and to analyze or preserve each sample within specified holding times. The following sample control activities must be conducted at the laboratory:

- Initial sample login and verification of samples received with the COC form;
- Document any discrepancies noted during login on the COC;
- Initiate internal laboratory custody procedures;
- Verify sample preservation (e.g., temperature);
- Notify the SMB EWMP Group if any problems or discrepancies are identified; and
- Perform proper sample storage protocols, including daily refrigerator temperature monitoring and sample security.

Laboratories shall maintain records to document that the above procedures are followed. Once samples have been analyzed, remaining water samples will be stored at the laboratory for at least 60 days. After this period, samples may be disposed of properly.

CHAIN OF CUSTODY RECORD

Company:				Phone:			Job No.														Page _____ of _____		
Project Manager:				Email:			Analysis Requested														Test Instruction & Comments		
Project Name:				Project #																			
Site Name: & Address:																							
	Sample ID	**Lab ID**	**Date**	**Time**	**Matrix**	**Container Number/Size**	**Pres.**																
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							
13																							
14																							
15																							

Sample Receipt: To Be Filled By Lab	**Turn Around Time**	Relinquished By: 1	Relinquished By: 2	Relinquished By: 3
Total Number of Containers	Normal	Signature	Signature	Signature
Custody Seals Yes No N/A	Rush	Printed Name		Printed Name
Received in Good Condition Yes No	Same Day	Date Time	Date Time	Date Time
Properly Cooled Yes No N/A	24 Hrs	Received By 1	Received By 2	Received By 3
Samples Intact Yes No N/A	48 Hrs	Signature	Signature	Signature
Samples Accepted Yes No	72 Hrs	Printed Name	Printed Name	Printed Name
		Date Time	Date Time	Date Time

Figure 2 Example Chain-of-Custody Form

7. Quality Assurance/Quality Control

This section describes the quality assurance and quality control requirements and processes. Quality control samples will be collected in conjunction with environmental samples to verify data quality. Quality control samples collected in the field will generally be collected in the same manner as environmental samples. There are no requirements for quality control for field analysis of general parameters (e.g., temperature, pH, conductivity, dissolved oxygen, and pH) outlined in the SWAMP. However, field crews will be required to calibrate equipment as outlined in this Attachment. **Table 6** presents the quality assurance parameter addressed by each quality assurance requirement as well as the appropriate corrective action if the acceptance limit is exceeded.

7.1 QA/QC Requirements and Objectives

Quality assurance/quality control requirements include comparability, representativeness, and completeness. Each of these requirements is summarized in the subsections below.

7.1.1 Comparability

Comparability of the data can be defined as the similarity of data generated by different monitoring programs. For this monitoring program, this objective will be ensured mainly through use of standardized procedures for field measurements, sample collection, sample preparation, laboratory analysis, and site selection; adherence to quality assurance protocols and holding times; and reporting in standard units. Additionally, comparability of analytical data will be addressed through the use of standard operating procedures and extensive analyst training at the analyzing laboratory.

7.1.2 Representativeness

Representativeness can be defined as the degree to which the environmental data generated by the monitoring program accurately and precisely represent actual environmental conditions. For the CIMP, this objective will be addressed by the overall design of the program. Representativeness is attained through the selection of sampling locations, methods, and frequencies for each parameter of interest, and by maintaining the integrity of each sample after collection. Sampling locations were chosen that are representative of various areas within the watershed and discharges from the MS4, which will allow for the characterization of the watershed and impacts MS4 discharges may have on water quality.

7.1.3 Completeness

Data completeness is an assessment of the cumulative number of successfully collected and validated data relative to the amount of data planned for collection during the project. It is usually expressed as a percentage value. A project objective for percent completeness is typically based on the percentage of the data needed for the program or study to reach valid conclusions.

Because the LAR UR2 WMA CIMP is intended to be a long term monitoring program, data that are not successfully collected during a specific sample event will not be recollected at a later date. Rather subsequent events conducted over the course of the monitoring will provide robust data sets to appropriately characterize conditions at individual sampling sites and the watershed in general. For this reason, most of the data planned for collection cannot be considered absolutely critical, and it is difficult to set a meaningful objective for data completeness.

Reasonable data objectives are desirable to measure the effectiveness of the program when conditions allow for the collection of samples (i.e., flow is present). The program goals for data completeness, shown in **Table 3**, are based on the planned sampling frequency, SWAMP recommendations, and a subjective determination of the relative importance of the monitoring element within the CIMP.

Table 6 Quality Control Requirements				
QC Sample Type	**QA Parameter**	**Frequency(1)**	**Acceptance Limits**	**Corrective Action**
Quality Control Requirements – Field				
Equipment Blanks	Contam-ination	5% of all samples(2)	< MDL	Identify equipment contamination source. Qualify data as needed.
Field Blank	Contam-ination	1 per Sampling Event	< MDL	Examine field log. Identify contamination source. Qualify data as needed.
Field Duplicate	Precision	5% of all samples	RPD < 25% if |Difference| > RL	Reanalyze both samples if possible. Identify variability source. Qualify data as needed.
Quality Control Requirements – Laboratory				
Method Blank	Contam-ination	1 per analytical batch	< MDL	Identify contamination source. Reanalyze method blank and all samples in batch. Qualify data as needed.
Lab Duplicate	Precision	1 per analytical batch	RPD < 25% if |Difference| > RL	Recalibrate and reanalyze.
Matrix Spike	Accuracy	1 per analytical batch	80-120% Recovery for GWQC 75-125% for Metals 50-150% Recovery for Pesticides (3)	Check LCS/CRM recovery. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Matrix Spike Duplicate	Precision	1 per analytical batch	RPD < 30% if |Difference| > RL	Check lab duplicate RPD. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Laboratory Control Sample (or CRM or Blank Spike)	Accuracy	1 per analytical batch	80-120% Recovery for GWQC 75-125% for Metals 50-150% for Pesticides (3)	Recalibrate and reanalyze LCS/ CRM and samples.
Blank Spike Duplicate	Precision	1 per analytical batch	RPD < 25% if |Difference| > RL	Check lab duplicate RPD. Attempt to correct matrix problem and reanalyze samples. Qualify data as needed.
Surrogate Spike (Organics)	Accuracy	Each environ. and lab QC sample	30-150% Recovery3	Check surrogate recovery in LCS. Correct matrix problem and reanalyze sample. Qualify data as needed.

MDL = Method Detection Limit, RL = Reporting Limit, LCS = Laboratory Control Standard, RPD = Relative Percent Difference
CRM = Certified/ Standard Reference Material, GWQC = General Water Quality Constituents

1. "Analytical batch" refers to a number of samples (not to exceed 20 environmental samples plus the associated quality control samples) that are similar in matrix type and processed/prepared together under the same conditions and same reagents (equivalent to preparation batch).
2. Equipment blanks will be collected by the field crew before using the equipment to collect sample.
3. Or control limits set at + 3 standard deviations based on actual laboratory data.

If, however, sampling sites do not allow for the collection of enough samples to provide representative data due to conditions (i.e., no flow) alternate sites will be considered. Data completeness will be evaluated on a yearly basis.

7.2 QA/QC Field Procedures

Quality control samples to be prepared in the field will consist of equipment blanks, field blanks, and field duplicates as described below.

7.2.1 Equipment Blanks

The purpose of equipment blanks is to demonstrate that sampling equipment is free from contamination. Equipment blanks will be collected by the analytical laboratory responsible for cleaning equipment and analyzed for relevant pollutants before sending the equipment to the field crew. Equipment blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment that will be used to collect environmental samples.

The equipment blanks will be analyzed using the same analytical methods specified for environmental samples. If any analytes of interest are detected, at levels greater than the MDL, the source(s) of contamination will be identified and eliminated (if possible), the affected batch of equipment will be re-cleaned, and new equipment blanks will be prepared and analyzed before the equipment is returned to the field crew for use.

7.2.2 Field Blanks

The purpose of analyzing field blanks is to demonstrate that sampling procedures do not result in contamination of the environmental samples. Per the Quality Assurance Management Plan for SWAMP (SWRCB, 2008) field blanks are to be collected as follows:

- At a frequency of one per sampling event for: trace metals in water (including mercury), VOC samples in water and sediment, DOC samples in water, and bacteria samples.
- Field blanks for other media and analytes should be conducted upon initiation of sampling, and if field blank performance is acceptable (as described in **Table 6**), further collection and analysis of field blanks for other media and analytes need only be performed on an as-needed basis, or during annual performance audits.

Field blanks will consist of laboratory-prepared blank water (certified to be contaminant-free by the laboratory) processed through the sampling equipment using the same procedures used for environmental samples. If analytes of interest are detected at levels greater than the MDL, the source(s) of contamination should be identified and eliminated, if possible. The sampling crew should be notified so that the source of contamination can be identified (if possible) and corrective measures taken prior to the next sampling event.

7.2.3 Field Duplicates

The purpose of analyzing field duplicates is to demonstrate the precision of sampling and analytical processes. Field duplicates will be prepared at the rate of 5% of all samples, and analyzed along with the associated environmental samples. Field duplicates will consist of two samples collected simultaneously, to the extent practicable. If the Relative Percent Difference (RPD) of field duplicate results is greater than the percentage stated in **Table 6** and the absolute difference is greater than the RL, both samples should be reanalyzed, if possible. The sampling crew should be notified so that the source of sampling variability can be identified (if possible) and corrective measures taken prior to the next sampling event.

7.3 QA/QC Laboratory Analyses

Laboratory prepared quality control samples will consist of method blanks, laboratory duplicates, matrix spikes/duplicates, laboratory control samples (standard reference materials), and toxicity quality controls.

7.3.1 Method Blanks

The purpose of analyzing method blanks is to demonstrate that sample preparation and analytical procedures do not result in sample contamination. Method blanks will be prepared and analyzed by the contract laboratory at a rate of at least one for each analytical batch. Method blanks will consist of laboratory-prepared blank water processed along with the batch of environmental samples. If the result for a single method blank is greater than the MDL, or if the average blank concentration plus two standard deviations of three or more blanks is greater than the RL, the source(s) of contamination should be corrected, and the associated samples should be reanalyzed.

7.3.2 Laboratory Duplicates

The purpose of analyzing laboratory duplicates is to demonstrate the precision of the sample preparation and analytical methods. Laboratory duplicates will be analyzed at the rate of one pair per sample batch. Laboratory duplicates will consist of duplicate laboratory fortified method blanks. If the RPD for any analyte is greater than the percentage stated in **Table 6** and the absolute difference between duplicates is greater than the RL, the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared again, and laboratory duplicates should be reanalyzed.

7.3.3 Matrix Spikes and Matrix Spike Duplicates

The purpose of analyzing matrix spikes and matrix spike duplicates is to demonstrate the performance of the sample preparation and analytical methods in a particular sample matrix. Matrix spikes and matrix spike duplicates will be analyzed at the rate of one pair per sample batch. Each matrix spike and matrix spike duplicate will consist of an aliquot of laboratory-fortified environmental sample. Spike concentrations should be added at five to ten times the reporting limit for the analyte of interest.

If the matrix spike recovery of any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. If recovery of laboratory control samples is acceptable, the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix. An attempt will be made to correct the problem (e.g., by dilution, concentration, etc.), and the samples and matrix spikes will be re-analyzed.

If the matrix spike duplicate RPD for any analyte is outside the acceptable range, the results for that analyte have failed to meet acceptance criteria. If the RPD for laboratory duplicates is acceptable, the analytical process is being performed adequately for that analyte, and the problem is attributable to the sample matrix. An attempt will be made to correct the problem (e.g., by dilution, concentration, etc.), and the samples and matrix spikes will be re-analyzed.

7.3.4 Laboratory Control Samples

The purpose of analyzing laboratory control samples (or a standard reference material) is to demonstrate the accuracy of the sample preparation and analytical methods. Laboratory control samples will be analyzed at the rate of one per sample batch. Laboratory control samples will consist of laboratory fortified method blanks or a standard reference material. If recovery of any analyte is outside the acceptable range, the analytical process is not being performed adequately for that analyte. In this case, the sample batch should be prepared again, and the laboratory control sample should be reanalyzed.

7.3.5 Surrogate Spikes

Surrogate recovery results are used to evaluate the accuracy of analytical measurements for organics analyses on a sample-specific basis. A surrogate is a compound (or compounds) added by the laboratory to method blanks, samples, matrix spikes, and matrix spike duplicates prior to sample preparation, as specified in the analytical methodology. Surrogates are generally brominated, fluorinated or isotopically labeled compounds that would rarely be present in environmental media. Results are expressed as percent recovery of the surrogate spike.

7.4 Review of Procedures

Data collected from the aforementioned processes will be regularly reviewed against the Data Quality Objectives in Section 5.5. In the event of suspect data or failed checks, corrective action will be taken. Corrective actions will verify the procedures done and review analytical techniques. If any issues are found, errors will be corrected, when possible. The sample will also be re-analyzed, when possible.

8. Instrument/Equipment Testing, Inspection, and Maintenance

All field testing equipment used in monitoring and sampling will be tested, operated, and maintained according to the manufacturer's specifications and associated SOPs. Probes will be inspected for any deficiencies and corrective action will be taken for any problems that arise. All equipment will also be cleaned and inspected before and after each sampling event. Field personnel will be trained in the operation and maintenance of instruments and equipment.

Laboratories will test, inspect, and maintain equipment in accordance with laboratory SOPs and QA procedures, which include those specified by the manufacturer. The laboratory will document and resolve any issues that arise. The Laboratory Manager will oversee testing, inspection, and maintenance of laboratory equipment. The Project QA Officer will review all laboratory procedures to ensure compliance with project requirements.

9. Instrument/Equipment Calibration and Frequency

All instruments and equipment will be calibrated daily or prior to each usage event according to the manufacturer's specifications and/or associated SOPs. Calibration will be done by trained personnel. If the calibration is unsuccessful, the instrument will be cleaned and parts will be replaced until calibration is successful. If calibration cannot be completed successfully, the Project Director will be notified and any sampling or analysis will be postponed until the problem is resolved. Any affected data will be flagged. Documentation of all calibration will be maintained in a log book appropriate to the equipment.

10. Inspection/Acceptance of Supplies and Consumables

All glassware, sample bottles, and collection equipment will be inspected upon receipt and prior to use. Supplies will be sourced from the accredited laboratory. The Sampling Manager and Laboratory Manager will oversee the inventory of sampling supplies and reorder when necessary. Logs will be maintained for all supplies used and any deficiencies will be recorded.

Upon receipt, buffer solutions, standards, reagents, and field test kits used will be inspected for leaks or broken seals. Reagents will be replaced before they exceed the manufacturer's recommended shelf life. Sample bottles will be inspected for sterility and structural integrity prior to use. All inspections will occur according to individual SOPs. Test organisms will be maintained and inspected for health prior to testing.

11. Non-Direct Measurements

Section 1 of the CIMP details existing and past monitoring programs relevant to the region. Based on the review of past monitoring programs, monitoring data for the LAR UR2 WMA is limited. Due to the limitations, compliance evaluation cannot be achieved. LAR UR2 WMA will analyze all constituents listed in Table E-2 of the MS4 Permit. Photo documentation, topographical maps, land use, and hydrological maps from Los Angeles County and individual cities within LAR UR2 WMA will be requested for use when appropriate.

All of the study data will be generated directly by the CIMP. However, any new data involving water quality and flow from other sources will be reviewed against the data quality objectives listed in Section A5 of this document and only data which meet all of the criteria will be used when appropriate. The SOP and QAPP involved for the external sources will also be reviewed to ensure that the data is valid. Questionable data will be rejected. Data obtained from this method will be integrated with study data to evaluate compliance with the MS4 permit.

12. Data Management

The Sampling Manager will be responsible for the proper management of field measurement and observation data. The Sampling Manager will review all Field Conditions Data Log Sheets for completeness and maintain the original hardcopies in the project file. All data sheets will be signed by the Sampling Manager after review. The Field Conditions Data Log Sheet responses will also be manually entered into an electronic version of the Field Conditions Data Log Sheet and these fields will be saved into a database. The data will be checked for accuracy before being saved in the database. Photographs of the monitoring sites taken by field personnel will be uploaded into the project file. Field team members will name the photographs using the photograph naming convention developed specifically for this project.

The Laboratory Manager will be responsible for the proper management of laboratory data. The laboratory will conduct quality control checks on the data per laboratory QA/QC procedures, and record the data electronically. The results of the analysis will be sent to Project Manager in the form of a hard copy and electronic copy. The Project Manager will review the data for completeness and errors. The results will then be filed with the project data and recorded in the database. All original documentation such as lab notes will be kept with project files in a secure location.

13. Assessment and Response Actions

The Project Manager will oversee day-to-day activities within the project. The QA Officer will oversee all QA/QC activities within the project and ensure that procedures are being followed. The Sampling Manager will regularly review procedures in reference to the QAPP to ensure that all elements of it are being implemented correctly. The use of approved equipment and methods when obtaining water samples and conducting field measurements will be verified for proper techniques following SOPs in cleaning, inspection, maintenance, calibration, and sampling. Equipment quality and record keeping techniques will also be reviewed. All documentation will be reviewed before leaving the sample sites to ensure that the data is complete and accurate. If there are any issues presented, the Sampling Manager will review the necessary procedures with the field technician(s) and take any necessary corrective action. The sample will be re-collected and noted, if possible. If not, the error will be noted in the sample documents. In the event of a situation that may affect the integrity of the data, the field technician(s) will contact the Project Manager or QA Officer to determine the corrective actions necessary. The issue and actions taken will be documented in the project file.

The Laboratory QA Specialist will periodically review procedures in the analysis of samples and verify proper techniques following SOPs in cleaning, inspection, maintenance, calibration, and analysis. Equipment and record keeping will also be reviewed. The QA Specialist will also review QA/QC of all data generated from analysis in the lab. If in any case the data is deemed erroneous, the samples will be re-analyzed when possible, and the error will be noted with the analysis results. The QA Specialist will review procedures and take corrective action for issues that lead to the error. The Project Manager will be notified of any issues that occur in the laboratory. All actions taken will be documented and submitted to the QA officer for filing. The QA officer will manage all activities and has the authority to halt all sampling and analytical work if deviations are detrimental to the quality of the data. The QA Officer may follow up and inspect results when deemed necessary.

14. Reports to Management

The field monitoring data, calibration records, and other quality assurance/quality control forms will be reviewed for completeness, correctness and other errors by the Project Manager on a regular basis. The laboratory results will be reviewed by the Laboratory Manager prior to the release of results to the Project Manager and consultant team. The laboratory submission will be signed as a confirmation of completeness and correctness of the procedures and results of the analysis.

Results of monitoring from each receiving water or outfall based monitoring station conducted in accordance with the Standard Operating Procedures under Standard Provision 14 of Attachment E will be submitted semi-annually to the Regional Water Board's Storm Water website. Results in excess of limitations, action levels, and aquatic toxicity thresholds will be highlighted. The data will be in the Southern California Municipal Storm Water Monitoring Coalition's Standardized Data Transfer Format. Additionally, the results will be included in an annual monitoring report to be submitted to the Regional Water Board Executive Officer as outlined in **Table 7**.

Table 7 Reports to Program Management

Type of Report	Frequency	Projected Delivery Date (s)	Person(s) Responsible for Preparation	Report Recipients
Data Analysis Summary	Quarterly	45 days following quarter conclusion	Gerald Greene (CWE)	LAR UR2 WMA Permittee Chair

15. Data Review, Verification and Validation

Data generated by project activities will be reviewed against the DQO listed in Section 5.5 and the quality assurance/quality control practices cited in Section 7.0. The field and laboratory personnel, as well as the QA Officers will be responsible for verifying that the sample collection, handling, and analysis were done in accordance with the approved QAPP. Field and laboratory personnel will review any calculation, transcription, recording, and transformation of the data for correctness and completeness. In addition, the QA officer will be primarily responsible for reviewing the data for completeness and compliance with necessary requirements such as method or contractual specifications.

If the data meets all quality and QA/QC objectives, the data will be qualified as acceptable for the project. If the results fail to meet any DQO, the results will be flagged by the Laboratory QA Specialist and/or the Project QA Officer for further review. Batch QA samples will be reviewed to determine the potential cause of failure to meet the DQO. If the cause cannot be readily ascertained, reserve samples will be reanalyzed, provided they are within the appropriate sample holding time. If samples fail to meet the DQOs a second time, or the cause of failure cannot be identified and rectified, the data will be excluded from the study results. All rejected data will be retained in the project database, qualified as rejected data. Data that is only accepted after further review will be flagged as such.

15.1 Verification and Validation Methods

Data verification is the process of evaluating the completeness, correctness, and conformance of the dataset against the method, procedural, or contractual requirements. Data quality indicators will be continuously monitored by the analyst producing the data (field and lab personnel), as well as the Reporting and Laboratory Manager and Sampling Manager, with assistance from the QA Officer, throughout the project to make sure corrective actions are taken in a timely manner. Laboratory and field personnel responsible for conducting QA analysis will be responsible for documenting when data does not meet measurement quality objectives as determined by data quality indicators.

In coordination with the QA Officer, the Sampling Manager will validate and verify field measurements and activities (sample collection and handling) and the Laboratory QA Specialist will validate and verify laboratory analysis (sample analysis and handling). Following sample delivery, the laboratory will maintain COCs and sample manifests. Laboratory validation and verification of the data generated is the responsibility of the laboratory. The Laboratory Manager maintains analytical reports in a database format as well as all QA/QC documentation for the laboratory. The Laboratory QA Specialist will perform checks of all of its records.

The Laboratory and Sampling Managers are responsible for oversight of data collection and the analysis of the raw data obtained from the field and the laboratory. Reconciliation and correction of data that fails to meet the DQOs will be done by the responsible manager in consultation with the project QA Officer and the Project Manager. Corrections require a unanimous agreement that the correction is appropriate.

Data verification and validation of field sample collection and handling consists of the following tasks:

- Verification that the sampling activities, sample locations, number of samples collected, and type of analysis performed is in accordance with QAPP requirements.
- Documentation of any field changes or discrepancies.
- Verification that the field activities (including sample location, sample type, sample date and time, name of field personnel. etc) were properly documented.
- Verification of sample labels, COCs forms, and secure storage of samples.

Data verification and validation for the laboratory sample analysis and handling activities will include the following tasks:

- Verification that all samples recorded on COCs forms were received by the laboratory.
- Verification that the appropriate analytical methodology has been followed.
- Verification that QC samples meet performance criteria.
- Verification that analytical results and documentation are complete.

Verification and validation of data entry includes:

- Sorting data to identify missing or mistyped (too large or too small) values.
- Double-checking all typed values.
- Data is entered in the proper format for each database fields (i.e., text for text, integers for integers, number for numbers, dates for dates, times for times, etc.).

15.2 Reconciliation with User Requirements

The data quality will be evaluated according to this document with respect to the sampling design, sampling methods, field and laboratory analyses, quality control, and maintenance. By properly following the guidelines in this document and references, the data quality will be validated. If samples or

procedures used in this study fail to meet the guidelines listed in this document, the data will be flagged and reported to the Project Manager. The limitations and assumptions of the data will be provided to the end-user to allow the user to determine the data's usefulness.

The end-user will use this data to determine the compliance of the MS4 discharges within the management area. This data will help to characterize pollutant loads and identify the sources responsible for pollutants. The results will identify areas where the permittees must refine and improve pollutant control measures. Any pollutants found in excess of maximum levels will require continuous monitoring for the remainder of the life of the permit. A summary of this will be published in an annual report, to be submitted to the Regional Water Board.

16. References

California Regional Water Quality Control Board, Los Angeles Region. "Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges Within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City of Long Beach MS4." California Environmental Protection Agency. 2012 November 8.

California Regional Water Quality Control Board, Los Angeles Region. November 21, 2014 Comment Letter to the LAR UR2 WMA. "Review of the Los Angeles River Upper Reach 2 Watershed Management Group's Draft Coordinated Integrated Monitoring Program, Pursuant to Part VI.B and Attachment E Part IV.B of the Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit (NPDES Permit No. CAS 004001; Order No. R4-2012-0175).

California Watershed Engineering (CWE). "Quality Assurance Project Plan for City of Carson Machado Lake Nutrient TMDL Monitoring and Reporting Plan." 2011 October 27.

Nagoda, C. and L. Busse. "Quality Assurance Project Plan for Screening of cyanotoxins in lakes/reservoirs and coastal wetlands in the San Diego Region." San Diego Regional Water Quality Control Board. 2013 June 11.

Nichol, G. and E. Reyes. "Electronic Template for SWAMP-Compatible Quality Assurance Project Plans." California Environmental Protection Agency. 24 March 2004.

State Water Resources Control Board. "Quality Assurance/Quality Control." California Environmental Protection Agency. 31 January 2014. http://www.swrcb.ca.gov/water_issues/programs/quality_assurance/index.shtml

Thermo Scientific. "Applications Tip of the Week: Laboratory Duplicates and Matrix Spike Duplicates." http://static.fishersci.com/cmsassets/downloads/segment/Scientific/pdf/WaterAnalysis/Log113TipLaboratoryDuplicatesMatrixSpikeDuplicates.pdf. 21 December 2011.

United States Environmental Protection Agency, Office of Water Engineering and Analysis Division (4303). Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels. July 1996

United States Environmental Protection Agency, Region 6. Tribal Water Quality Monitoring QAPP Template Table of Contents. http://www.epa.gov/region6/qa/qatools.htm. June 2014

Appendix F

Invitation to participate in a joint DC/Harbor Toxics TMDL Monitoring Program

PICO RIVERA • DOWNEY • SOUTH GATE • LYNWOOD • PARAMOUNT • SIGNAL HILL • LONG BEACH • LAKEWOOD • FLOOD CONTROL DISTRICT • CAL TRANS

LOWER LOS ANGELES RIVER
WATERSHED COMMITTEE

January 8, 2015

Attention all Watershed Chairs/Stormwater Coordinators for:

Upper Los Angeles River Enhanced Watershed Management Program Group,
Rio Hondo/San Gabriel River Water Quality Group, and the Cities of
Compton
Carson
El Monte
Irwindale
South El Monte

Subject: Invitation to participate in a joint DC/Harbor Toxics TMDL Monitoring Program

As you know, the Dominguez Channel and Greater Harbors Toxic TMDL requires cities tributary to the Los Angeles River to monitor for toxic pollutants as defined by that TMDL. These pollutants and the associated testing method require the installation of specialized monitoring equipment. As part of the Coordinated Integrated Monitoring Program, the Lower Los Angeles River Watershed Group (LLAR) is planning to install this equipment at the existing mass emission station near the confluence of the Los Angeles River. The LLAR is inviting interested groups to participate on a shared cost basis.

Attached is the estimated cost share matrix, Invoices are anticipated to go out on or about July 1, 2015 to coincide with the start of the CIMP and IMP programs. The costs were developed using baseline and area factors and should be regarded as preliminary until the number of participants is established and cost estimates are confirmed by the LLAR's subcontractors. Rather than developing separate MOUs with each entity, the LLAR's preference will be to invoice each watershed group or individual WMP city. How each groups/city decides to allocate funds within the group is left to that group to decide.

So that we may move forward, if you are interested in participating, please respond within the next 30-days to me at smyrter@cityofsignalhill.org with an e-copy to Jhunter@jlha.net. In their CIMP comments, Regional Board has asked for additional information regarding this issue and they are being copied on this invitation.

Thank you,

Steve Myrter, P.E.
Chair, Lower Los Angeles River Watershed Group

cc: Regional Board
Storm water coordinators, all cities tributary to the Los Angeles River.

Harbor Toxics TMDL Monitoring

Los Angeles River Watersheds

1/5/2015

					(50% equal share, 50% by area) 1st Year Cost Per $84,000			(50% equal share, 50% by area) 2nd Year $42,000		
	Group Name	**Cities/ Permittees Involved**	**Approximate Land Area (acres)**	**Land Area Percentage**	**50% equal share**	**+ 50% by area**	**= total share**	**50% equal share**	**+ 50% by area**	**= total share**
1	Upper Los Angeles River Watershed Group	Alhambra	4,884	81%	$7,560	$34,078	$41,638	$3,780	$17,039	$20,819
	306,151	Burbank	11,095							
		Calabasas	4,006							
		Glendale	19,588							
		Hidden Hills	961							
		La Canada Flintridge	5,534							
		Los Angeles	181,288							
		Montebello	5,356							
		Monterey Park	4,952							
		Pasadena	14,805							
		Rosemead	3,311							
		San Gabriel	2,645							
		San Marino	2,410							
		South Pasadena	2,186							
		Temple City	2,577							
		County	40,553							
2	Lower Los Angeles River Watershed	Downey	3,546	7%	$7,560	$3,115	$10,675	$3,780	$1,557	$5,337
	27,981	Lakewood	51							
		Long Beach	12,301							
		Lynwood	3,098							
		Paramount	1,997							
		Pico Rivera	1,510							
		Signal Hill	774							
		South Gate	4,704							
3	Rio Hondo/San Gabriel River Water Quality Group	Arcadia	6,912	4%	$7,560	$1,881	$9,441	$3,780	$940	$4,720
	16,896	Azusa	0							
		Bradbury	512							
		Duarte	832							
		Monrovia	5,056							
		Sierra Madre	1,792							
		County	1,792							
4	Upper Reach 2 Group	agencies not listed	14,215	4%	$7,560	$1,582	$9,142	$3,780	$791	$4,571
5	El Monte		4,482	1%	$1,913	$499	$2,411	$945	$249	$1,194
6	Compton		5,829	2%	$1,913	$649	$2,561	$945	$324	$1,269
7	Carson		195	0%	$1,913	$22	$1,934	$945	$11	$956
8	South El Monte		1,577	0%	$1,913	$176	$2,088	$945	$88	$1,033
9	Flood Control	5%					$4,200			$2,100
		Approximate Totals	**377,326**	**100%**	**$37,890**	**$42,000**	**$84,090**	**$21,000**	**$21,000**	**$42,000**

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April 28, 2015

Permittees of the Los Angeles River Upper Reach 2 Watershed Management Group[1]

APPROVAL, WITH CONDITIONS, OF THE LOS ANGELES RIVER UPPER REACH 2 WATERSHED MANAGEMENT GROUP'S WATERSHED MANAGEMENT PROGRAM (WMP), PURSUANT TO THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear Permittees of the Los Angeles River Upper Reach 2 Watershed Management Group:

On November 8, 2012, the California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board or Board) adopted Order No. R4-2012-0175, *Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, except those Discharges Originating from the City of Long Beach* (hereafter, LA County MS4 Permit). Part VI.C of the LA County MS4 Permit allows Permittees the option to develop either a Watershed Management Program (WMP) or an Enhanced Watershed Management Program (EWMP) to implement permit requirements on a watershed scale through customized strategies, control measures, and best management practices (BMPs). Development of a WMP or EWMP is voluntary and allows a Permittee to address the highest watershed priorities, including complying with the requirements of Part V.A (Receiving Water Limitations), Part VI.E and Attachments L through R (Total Maximum Daily Load Provisions), and by customizing the control measures in Parts III.A (Prohibitions – Non-Storm Water Discharges) and VI.D (Minimum Control Measures), except the Planning and Land Development Program. Pursuant to Part VI.C.4.c of the LA County MS4 Permit, the Permittees of the Los Angeles River Upper Reach 2 Watershed Management Group (LAR UR2 WMG) jointly submitted a draft WMP dated June 26, 2014, to the Los Angeles Water Board for review.

Public Review and Comment

On July 3, 2014, the Board provided public notice and a 46-day period to allow for public review and comment on the ULAR2 WMG's draft WMP. A separate notice of availability regarding the

[1] Permittees of the Los Angeles River Upper Reach 2 Watershed Management Group include the cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon, and the Los Angeles County Flood Control District. See attached distribution list.

draft WMPs, including the ULAR2 WMP, was directed to State Senators and Assembly Members within the Coastal Watersheds of Los Angeles County. The Board received three comment letters, including a joint letter from Heal the Bay, Los Angeles Waterkeeper, and the Natural Resources Defense Council; a letter from the Construction Industry Coalition on Water Quality; and a letter from Joyce Dillard, a private citizen, which were in part applicable to the LAR UR2 WMG draft WMP. On October 9, 2014, the Board held a workshop at its regularly scheduled Board meeting on the draft WMPs. The Board also held a public meeting on April 13, 2015 for permittees and interested persons to discuss the revised draft WMPs with the Executive Officer and staff. During its initial review and its review of the revised draft WMP, the Los Angeles Water Board considered those comments applicable to the LAR UR2 WMG's proposed WMP.

Los Angeles Water Board Review

Concurrently with the public review, the Los Angeles Water Board, along with U.S. EPA Region IX staff, reviewed the draft WMP. On October 27, 2014, the Los Angeles Water Board sent a letter to the LAR UR2 WMG detailing the Board's comments on the draft WMP and identifying the revisions that needed to be addressed prior to the Board's approval of the LAR UR2 WMG's WMP. The letter directed the LAR UR2 WMG to submit a revised draft WMP addressing the Los Angeles Water Board's comments. Prior to the LAR UR2 WMG's submittal of the revised draft WMP, Board staff had a meeting on December 3, 2014 with LAR UR2 WMG representatives and consultants and subsequent e-mail exchanges to discuss the Board's comments and the revisions to the draft WMP, including the supporting reasonable assurance analysis (RAA), which would address the Board's comments. The LAR UR2 WMG submitted its revised draft WMP on January 27, 2015, for Los Angeles Water Board review and approval.

Approval of WMP, with Conditions

The Los Angeles Water Board hereby approves, subject to the following conditions, the LAR UR2 WMG's January 27, 2015 revised draft WMP. The Board may rescind this approval if all of the following conditions are not met to the satisfaction of the Board within the timeframe provided below.

1. Remove the following language in Section 1.3.1.1. of the revised draft WMP (p. 15): "The Cities are reserving all of their rights to subsequently assert that the identified BMPs need not be implemented, on the grounds that they are not technically or economically feasible. In other words, that the BMPs are impracticable and contrary to the MEP standard, and that it is not possible to provide the reasonable assurances required under the Permit in a manner that is consistent with the MEP standard, if at all. The Cities agree that it is not possible to provide the reasonable assurances required under the Permit in a manner that is consistent with the MEP standard." It is unclear to the Los Angeles Water Board what the LAR UR2 WMG's intention is of including this language. The Board finds this language confusing and inconsistent with the provisions

of the permit. Development and implementation of WMPs are voluntary. Permittees may reserve their rights to challenge the permit, but Permittees must still comply with permit provisions either through the baseline requirements of the permit or through an approved WMP. To the extent the LAR UR2 WMG determines that any BMPs identified in its approved WMP should not be implemented due to infeasibility or impracticability, the LAR UR2 WMG must propose modifications to its approved WMP as part of the adaptive management process for Los Angeles Water Board review and approval. If you prefer, you can replace the stricken language above with the following language: "Nothing in this WMP shall affect the Cities' administrative petitions, nor shall anything in this WMP constitute a waiver of any positions or rights therein."[2] In Table 1-6 of the revised draft WMP, include First Phase deadlines for full implementation of the LAR UR2 WMG's Load Reduction Strategy (LRS) of March 23, 2019 for Segment B and September 23, 2020 for Segment B Tributaries, respectively, per the LA County MS4 Permit, Attachment O, Table O-1. Include implementation actions and milestones associated with full implementation of the Segment B LRS by March 23, 2019, including interim milestones within this permit term.

2. Reference the Los Angeles River Bacteria TMDL LRS, which was submitted by the LAR UR2 WMG in December 2014, in Section 3.1.5 of the revised draft WMP and include specific steps and dates for their achievement to be taken to investigate outlier outfalls consistent with the general approach of the LRS.
3. Section 3.1.5 of the revised draft WMP notes that the remaining catch basins that are not retrofitted with full capture devices are incompatible with the devices and will probably require significant and costly reconstruction prior to October 1, 2015. Revise the revised draft WMP to include a strategy to comply with the Los Angeles River Trash TMDL. When drafting a strategy, the LAR UR2 WMG should consider the language in the Tentative Basin Plan Amendment for the Reconsideration of the Los Angeles River Watershed Trash TMDL, which was publicly noticed on April 3, 2015.
4. Delete the reference to "Potential" and "Proposed" in Table 3-8 and revise table to only include specific commitments to non-structural BMP enhanced implementation actions. Indicate each Permittee's specific commitment(s) to each action in Table 3-8 "Potential Non-Structural BMP Enhanced Implementation Efforts," since these actions are the basis for the 5% load reduction from baseline.
5. Revise the revised draft WMP to present all model results of pollutant loads, allowable loads, target load reductions, and load reductions associated with control measures in units consistent with the respective TMDL (e.g., Los Angeles River Metals TMDL allowable loads should be given as daily loads not annual loads in Table 4-3). Each table in Section 4.0 must include units per time step (e.g., lbs/day) for the numeric values for clarity.

[2] This alternative language is included in two other revised draft WMPs and is acceptable to the Los Angeles Water Board. See footnote 23 of the Lower Los Angeles River revised draft WMP and footnote 17 of the Lower San Gabriel River revised draft WMP.

6. Section 4.5, Modeling Calibration, of the revised draft WMP discusses a comparison of SBPAT and LSPC runoff volumes "to show the difference between simulated and observed values to ensure the model properly assess conditions and variables." Provide this comparison of SBPAT and LSPC runoff volumes as an appendix or subsection to the model calibration section.
7. In Table 5-1 of the revised draft WMP, "Tentative Control Measure Implementation Schedule," delete all instances of the word "tentative." If you prefer, you can replace the word "tentative" with "approved" or "current." In the last sentence of the second paragraph of Section 5.1, change the sentence "The WMP, including the schedule aspect, will be updated through the adaptive management process, therefore the schedule identified is always tentative." to "The WMP, including the schedule aspect, will be updated through the adaptive management process; to that extent, the schedule identified is tentative unless the schedule is associated with TMDL provisions. However, any extensions of the dates in this schedule must be approved by the Los Angeles Water Board's Executive Officer pursuant to Part VI.C.6.a or Part VI.C.8.a.ii-iii of the LA County MS4 Permit." Where there is a failure to meet scheduled milestones without obtaining Executive Officer approval (or non-objection in the case of Part VI.C.8.a.iii of the LA County MS4 Permit), then the Permittees in the LAR UR2 WMG shall be subject to the baseline requirements of the LA County MS4 Permit, including demonstrating compliance with applicable receiving water limitations and TMDL-based WQBELs/WLAs through outfall and receiving water monitoring. See Parts VI.C.2.c and VI.E.2.d.i.(4)(c) of the LA County MS4 Permit.
8. Include interim milestones for LID Street implementation for each Permittee, associated with the LID Street Required Tributary Area by LAR UR2 WMG WMA Permittee in Table 5-1 and Figures 5-1 to 5-4 of the revised draft WMP that demonstrate progress toward achieving the final deadline of 2037.
9. In addition to conducting inspections and follow-up enforcement as required under the 2012 LA County MS4 Permit Industrial/Commercial Facilities Program, include specific actions and interim dates to *enhance* industrial facility inspections and follow-up enforcement, if necessary, particularly in those jurisdictions where industrial land use comprises a significant portion of the land area (e.g., Commerce and Vernon) to achieve the "Non-MS4 NPDES Parcels" control measure by December 2017 as indicated in Table 5-1 of the revised draft MS4. Indicate each Permittee's responsibilities for these actions. Indicate how efforts will be focused on achieving progress toward reducing discharges of zinc and bacteria. Related to this, correct discussion in Section 4.3.2.3 of the revised draft WMP, which states that the 2001 LA County MS4 Permit did not require that Permittees enforce BMPs at industrial and commercial facilities. The 2001 LA County MS4 Permit did require Permittees to conduct progressive enforcement, per Part 4.C.3.c) and d) of the 2001 LA County MS4 Permit. Therefore, enforcement is not a change from the 2001 permit.

The LAR UR2 WMG shall submit a final WMP to the Los Angeles Water Board that satisfies all of the above conditions no later than June 12, 2015.

Determination of Compliance with WMP

Pursuant to Part VI.C.6 of the LA County MS4 Permit, the Permittees of the LAR UR2 WMG shall begin implementation of the approved WMP immediately. To continue to be afforded the opportunity to implement permit provisions within the framework of the WMP, Permittees must fully and timely implement all actions per associated schedules set forth in the approved WMP regardless of any contingencies indicated in the approved WMP (e.g., funding and purported reservation of rights) unless a modification to the approved WMP, including any extension of deadlines where allowed, is approved by the Los Angeles Water Board pursuant to Part VI.C.6.a or Part VI.C.8.a.ii-iii. The Los Angeles Water Board will determine the LAR UR2 WMG Permittees' compliance with the WMP on the basis of the compliance actions and milestones included in the WMP, including, but not limited to, the following:

- Section 3 "Watershed Control Measures," including Section 3.3 "Proposed Control Measures;"
- Table 3-1 "LAR Metals TMDL Jurisdictional Group 2 Non-Structural BMPs Phased Implementation Plan;"
- Table 3-8 "~~Potential~~ Non-Structural BMP Enhanced Implementation Efforts;"
- Table 4-10 "LID Street Required Tributary area by LAR UR2 WMA Permittee;"
- Tables 4-17 to 4-20, which present load reductions associated with non-structural BMPs, regional BMPs, and distributed BMPs;
- Table 5-1 "~~Tentative~~ Control Measure Implementation Schedule" which establishes the implementation dates for non-structural BMPs, regional BMPs, and distributed BMPs; and
- Additional compliance actions and milestones established in response to Conditions 1, 2, 8 and 9, above.

Pursuant to Parts VI.C.3 and VI.E.2.d.i.(4)(a) of the LA County MS4 Permit, the LAR UR2 WMG Permittees' full and timely compliance with all actions and dates for their achievement in their approved WMP shall constitute compliance with permit provisions pertaining to applicable WQBELs/WLAs in Part VI.E and Attachment O of the LA County MS4 Permit. Further, per Part VI.C.2.b of the LA County MS4 Permit, the LAR UR2 WMG Permittees' full compliance with all requirements and dates for their achievement in their approved WMP constitutes compliance with the receiving water limitations provisions of Part V.A of the LA County MS4 Permit for the specific waterbody-pollutant combinations addressed by their approved WMP.

If the Permittees in the LAR UR2 WMG fail to meet any requirement or date for its achievement in the approved WMP, which will be demonstrated through the LAR UR2 WMG's Annual Reports and program audits (when conducted), the Permittees in the LAR UR2 WMG shall be subject to the baseline requirements of the LA County MS4 Permit, including demonstrating compliance with applicable receiving water limitations and TMDL-based WQBELs/WLAs through outfall and receiving water monitoring. See Parts VI.C.2.c and VI.E.2.d.i.(4)(c).

Annual Reporting

The LAR UR2 WMG shall report on achievement of actions and milestones within the reporting year, as well as progress towards future milestones related to multi-year projects, through its Annual Report per Attachment E, Part XVIII of the LA County MS4 Permit. For multi-year efforts, the LAR UR2 WMG shall include the status of the project, which includes the status with regard to standard project implementation steps. These steps include, but are not limited to, adopted or potential future changes to municipal ordinances to implement the project, site selection, environmental review and permitting, project design, acquisition of grant or loan funding and/or municipal approval of project funding, contractor selection, construction schedule, start-up, and effectiveness evaluation (once operational), where applicable. For all stormwater retention projects, including but not limited to LID due to new/redevelopment, green streets, and regional BMPs, the Permittees in the LAR UR2 WMG shall report annually on the volume of stormwater retained in each jurisdictional subwatershed area.

The LAR UR2 WMG shall also include in its Annual Report the source(s) of funds used during the reporting year, and those funds proposed for the coming year, to meet necessary expenditures related to implementation of the actions identified in its WMP per Part VI.A.3 of the LA County MS4 Permit. Further, as part of the annual certification concerning a permittee's legal authority required by Part VI.A.2.b of the LA County MS4 Permit, each Permittee in the LAR UR2 WMG shall also certify in the Annual Report that it has the necessary legal authority to implement each of the actions and milestones in the approved WMP as required by Part VI.C.5.b.iv.(6). If a Permittee does not have legal authority to implement an action or milestone at the time the LAR UR2 WMG submits its Annual Report, the Permittee shall propose a schedule to establish and maintain such legal authority.

Adaptive Management

The LAR UR2 WMG shall conduct a comprehensive evaluation of its WMP no later than April 28, 2017, and subsequently, every two years thereafter pursuant to the adaptive management process set forth in Part VI.C.8 of the Los Angeles County MS4 Permit. As part of this process, the LAR UR2 WMG must evaluate progress toward achieving:

- Applicable WQBELs/WLAs in Attachment O of the LA County MS4 Permit according to the milestones set forth in its WMP;
- Improved water quality in MS4 discharges and receiving waters;
- Stormwater retention milestones; and
- Multi-year efforts that were not completed in the current year and will continue into the subsequent year(s), among other requirements.

The LAR UR2 WMG's evaluation of the above shall be based on both progress implementing actions in the WMP and an evaluation of outfall-based monitoring data and receiving water data. Per Attachment E, Part XVIII.6 of the LA County MS4 Permit, the LAR UR2 WMG shall implement adaptive management strategies, including but not limited to:

- Refinement and recalibration of the Reasonable Assurance Analysis (RAA) based on data specific to the LAR UR2 WMG WMP area that are collected through the LAR UR2 WMG's Coordinated Integrated Monitoring Program and other data as appropriate;
- Identifying the most effective control measures, why they are the most effective, and how other control measures can be optimized based on this understanding;
- Identify the least effective control measures, why they are ineffective, and how the control measures can be modified or replaced to be more effective;
- Identify significant changes to control measures during the prior year(s) and the rationale for the changes; and
- Describe all significant changes to control measures anticipated to be made in the next year(s) and the rationale for each change.

As part of the adaptive management process, any modifications to the WMP, including any requests for extension of deadlines not associated with TMDL provisions, must be submitted to the Los Angeles Water Board for review and approval. The Permittees of the LAR UR2 WMG must implement any modifications to the WMP upon approval by the Los Angeles Water Board or its Executive Officer, or within 60 days of submittal of modifications if the Los Angeles Water Board or its Executive Officer expresses no objections. Note that the Permittees' Report(s) of Waste Discharge (ROWD) is due no later than July 1, 2017. To align any modifications to the WMP proposed through the adaptive management process with permit reissuance, results of the first adaptive management cycle should be submitted in conjunction with the Permittees' ROWD.

The Los Angeles Water Board appreciates the participation and cooperation of the LAR UR2 WMG in the implementation of the LA County MS4 Permit. If you have any questions, please contact Ivar Ridgeway, Storm Water Permitting, at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

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Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA)

Watershed Management Program (WMP) Plan

Submittal Date: June 26, 2014
Revision Submittal Date: January 27, 2015
Conditional Approval Date: April 28, 2015
Revision Submittal Date: June 12, 2015

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RB-AR6337

Los Angeles River Upper Reach 2 Watershed Management Area

Watershed Management Program (WMP) Plan

Prepared for the:

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Integrated Regional Water Management Authority
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On Behalf of the Cities of Bell (WDID 4B190153001), Bell Gardens (WDID 4B190139002), Commerce (WDID 4B190161001), Cudahy (WDID 4B190164001), Huntington Park (WDID 4B190177001), Maywood (WDID 4B190192001), Vernon (WDID 4B190216001), and the Los Angeles County Flood Control District (WDID4B190107101)

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June 26, 2014
January 27, 2015 Revision Submittal
April 28, 2015 Conditional Approval
June 12, 2015 Revision Submittal

RB-AR6338

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Appendices

Acronyms

AIN	Assessor Identification Number
AMP	Adaptive Management Process
ARS	Automatic Retracting Screen
BMP	Best Management Practice
BSI	Bacteria Source Identification
CARE	Community Action for a Renewed Environment
CBE	Communities for a Better Environment
CDS	Continuous Deflective Separation
CEEIN	California Environmental Education Interagency Network
CIMP	Coordinated Integrated Monitoring Program
CMP	Coordinated Monitoring Plan
COG	Council of Governments
CPI	Catchment Priority Index
CPS	Connector Pipe Screen
CREST	Cleaner Rivers through Effective Stakeholder-led TMDLs
CTR	California Toxics Rule
CWA	Clean Water Act
CWH	Council for Watershed Health
CWSRF	Clean Water State Revolving Fund
DTSC	Department of Toxic Substances Control
EWMP	Enhanced Watershed Management Program
GIS	Geographic Information System
GWMA	Gateway Water Management Authority
HCF	Habitat Conservation Fund
HFS	High Flow Suspension
HHWC	Household Hazardous Waste Collection
HSPF	Hydrologic Simulation Program - FORTRAN
IC/ID	Illicit Connection and Illicit Discharges
IDDE	Illicit Discharge Detection Elimination
IRWM	Integrated Regional Water Management
ISRF	Infrastructure State Revolving Fund
LACFCD	Los Angeles County Flood Control District
LAR	Los Angeles River
LAR UR2 WMA	Los Angeles River Upper Reach 2 Watershed Management Area
LARWMP	Los Angeles River Watershed Monitoring Program
LARWQCB	Los Angeles Regional Water Quality Control Board
LID	Low Impact Development
LRS	Load Reduction Strategy
LSPC	Loading Simulation Program in C++
LWCF	Land and Water Conservation Fund
MAL	Municipal Action Limit

MCM	Minimum Control Measure
MEP	Maximum Extent Practicable
MOU	Memorandum of Understanding
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm and Sewer System
NCPI	Nodal Catchment Priority Index
NGO	Non-Governmental Organization
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OAL	Office of Administrative Law
P2	Pollution Prevention
PIPP	Public Information and Participation Program
POTW	Publically Owned Treatment Works
PMP	Pavement Management Plan
PMS	Pavement Management System
QA/QC	Quality Assurance/Quality Control
RAA	Reasonable Assurance Analysis
RTP	Recreational Trails Program
RWL	Receiving Water Limitation
SB	Senate Bill
SBPAT	Structural BMP Prioritization and Analysis Tool
SRP	Spill Response Plan
SSO	Site Specific Objective
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
TLR	Target Load Reduction
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
WBPC	Water Body-Pollutant Combination
WCB	Wildlife Conservation Board
WCM	Watershed Control Measure
WDR	Waste Discharge Requirement
WLA	Waste Load Allocation
WMA	Watershed Management Area
WMP	Watershed Management Program
WRP	Water Recovery Plant
WQBEL	Water Quality-Based Effluent Limitation
WQO	Water Quality Objective

Executive Summary

The California Regional Water Quality Control Board, Los Angeles Region (LARWQCB), adopted the fourth term Coastal Los Angeles County Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit as Order No. R4-2012-0175, on November 8, 2012, which then became effective on December 28, 2012. This Permit encourages Permittees to join together into Watershed Management Groups and develop Watershed Management Program (WMP), or Enhanced WMP (EWMP), Plans. These plans are intended to guide the iterative Adaptive Management Process (AMP) for the individual groups as they prioritize the implementation of Watershed Control Measures (WCMs) to reduce the discharge of runoff, and the pollutants it may convey, to local receiving waters, thereby contributing to the attainment and protection of water body beneficial uses.

In a June 27, 2013, Notice of Intent (NOI) letter, which was acknowledged in a September 25, 2013, NOI Approval letter from the Regional Board Executive Officer, the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon, along with the Los Angeles County Flood Control District (LACFCD), hereinafter referred to as the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA) Permittees, announced formation of the LAR UR2 WMA Group. Furthermore these Permittees agreed to prepare a Reasonable Assurance Analysis (RAA), to guide development of the WMP Plan, and a Coordinated Integrated Monitoring Program (CIMP) Plan to track progress in attaining the Permit objectives, through the AMP identified within MS4 Permit Part VI.C.8.a.

The LAR UR2 WMA Cities lie exclusively within the Los Angeles River Watershed and each Permittee discharges to Reach 2 of the Los Angeles River, a concrete-lined river channel with year-round flows comprised primarily of treated wastewater. The Cities of Bell Gardens and Commerce also drain southeast to the normally dry concrete-lined Rio Hondo tributary channel. To the north and west, the LAR UR2 WMA is bordered by, and receives discharges from, the Upper Los Angeles River EWMP Group, while the Lower Los Angeles River WMP Group aligns with the east and south LAR UR2 WMA borders.

Many of the watershed water quality impairments were previously identified as Total Maximum Daily Loads (TMDLs) and are being successfully addressed by the LAR UR2 WMA Permittees. The Trash TMDL was primarily implemented through a grant to the Gateway Water Management Authority (GWMA) and remaining capital projects should be completed within two years. The nutrient TMDL was primarily directed at wastewater recovery plants and has been implemented. The Metals TMDL listings for copper and lead were addressed through a $2,100,000 Site Specific Objective (SSO) Study that should be adopted as a Regional Board Basin Plan Amendment. Permittees also instigated legislation to reformulate automotive friction (brake) pads as a copper source control and phase out lead wheel weights.

The RAA identified zinc and *E. coli* as the pollutants driving implementation of costly new pollutant source and watershed control measures, including Minimum Control Measures (MCMs), Low Impact Development (LID), LID and Green Street projects, Low Flow Diversions (LFDs), scientific studies, increased inspections and enforcement, and structural Best Management Practices (BMPs).

The LAR UR2 RAA and WMP identified six regional BMP projects, estimated to cost a total of $210 million, and an additional $90 million in residential and commercial LID street renovations that may need to be implemented, over the next two decades, to achieve Permit numeric limits. The six conceptual regional projects were located under public lands, such as parks and easements, to avoid land acquisition costs; however, the WMP costs are beyond the budgets of our Cities and will require outside funding support to implement. While the LAR UR2 WMA will begin applying for support to construct these facilities, City and regional management should also consider undertaking studies or efforts to more accurately characterize jurisdictional Event Mean Concentration (EMC) pollutant loads, a zinc water effects ratio (WER) SSO study, and identify land acquisition opportunities near subwatershed outfalls, where the effectiveness of regional structural BMPs to control the discharge of bacterial-laden runoff is maximized.

1. Introduction

This Watershed Management Program (WMP) Plan introduces the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA), characterizes water quality challenges faced by its Permittees, and describes implementation actions and activities to demonstrate that Municipal Separate Storm Sewer System (MS4) discharges achieve applicable Water Quality-Based Effluent Limitations (WQBELs) and do not cause or contribute to exceedances of Receiving Water Limitations (RWLs) as required by the fourth term 2012 Los Angeles County MS4 National Pollutant Discharge Elimination System (NPDES) Permit (Order No. R4-2012-0175). This WMP plan is a critical component of the iterative Adaptive Management Process (AMP) strategy and will be updated every two years as described in the MS4 Permit, or amended with minor corrections as warranted by changing regional precedents and the development of new scientific and technical data. The WMP is a comprehensive stormwater management plan intended to allow optimization of the extremely limited stormwater and financial resources of the participating Permittees. The development of this program required the determination of current water quality priorities in the LAR UR2 WMA and the identification of structural and non-structural Watershed Control Measures (WCMs) that would address those priorities. In addition, the LAR UR2 WMA Reasonable Assurance Analysis (RAA) demonstrates, through a calibrated model, that Water Quality Objectives (WQOs) will be met through implementation of the actions in this Plan.

1.1 Applicability for WMP Development

Permittees participating in the LAR UR2 WMA WMP include the Los Angeles County Flood Control District (LACFCD) and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. The LAR UR2 WMA is within the Los Angeles River (LAR) Watershed and based on Geographical Information System (GIS) subwatershed data available from Los Angeles County[1], directly drains to LAR Reach 2, Rio Hondo Reach 1, and potentially to Compton Creek, as illustrated in **Figure 1-1**. The reported tributary area to each of these receiving waters, on a jurisdictional basis, is summarized in **Table 1-1**. The LAR UR2 WMA Permittees prepared and submitted a Notice of Intent (NOI) on June 27, 2013, as found in **Appendix A,** which was acknowledged in a September 25, 2013, NOI Approval letter from the Regional Board Executive Officer, as found in **Appendix B**.

Table 1-1 Jurisdictions within LAR UR2 WMA

LAR UR2 WMA Member	Alhambra Wash Rio Hondo		Chavez Ravine Los Angeles River		Compton Creek Los Angeles River	
	Area (acres)	% LAR UR2 WMA	Area (acres)	% LAR UR2 WMA	Area (acres)	% LAR UR2 WMA
Bell	0	0%	1,676	14%	0	0%
Bell Gardens	797	35%	780	6%	0	0%
Commerce	1,478	65%	2,717	22%	0	0%
Cudahy	0	0%	786	6%	0	0%
Huntington Park	0	0%	1,885	15%	45	100%
Maywood	0	0%	754	6%	0	0%
Vernon	0	0%	3,298	31%	0	0%
LACFCD	N/A		N/A		N/A	
Total	**2,275**	**100%**	**11,896**	**100%**	**45**	**100%**

[1] http://dpw.lacounty.gov/general/spatiallibrary/

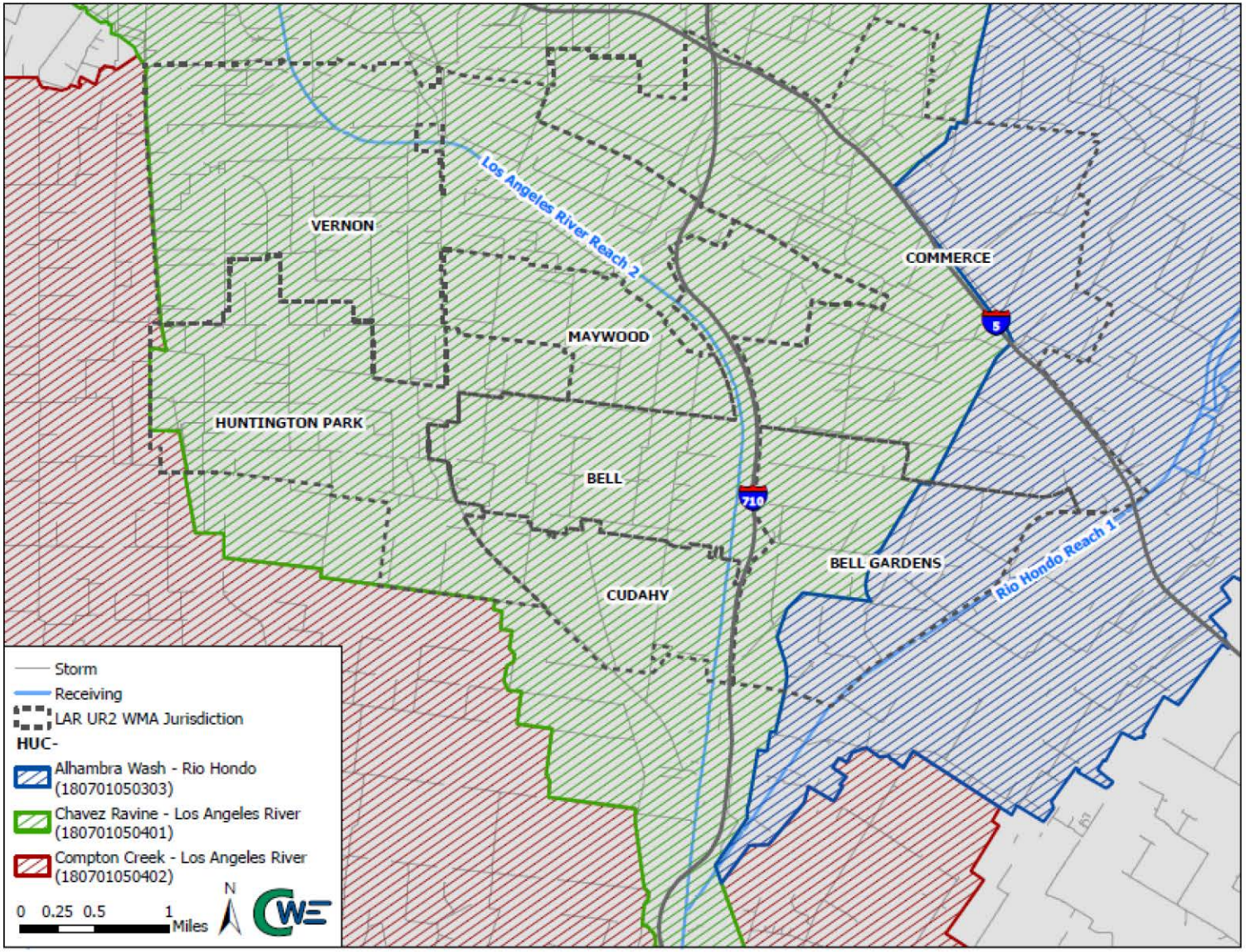


Figure 1-1 LAR UR2 WMA HUC-12s and Jurisdictions

1.2 Geographic Scope and Characteristics

The LAR UR2 WMA encompasses approximately 14,215 acres, or 22.21 square miles, and is located in the south central portion of the LAR Watershed as illustrated in **Figure 1-2**. Pertinent characteristics of the LAR UR2 WMA, including land use, soil type, hydrologic parameters, receiving waters, and their LARWQCB Basin Plan identified beneficial uses, are briefly summarized in the following subsections. Both the Cities of Bell and Vernon cross the LAR, while the City of Huntington Park is located a significant distance from it.

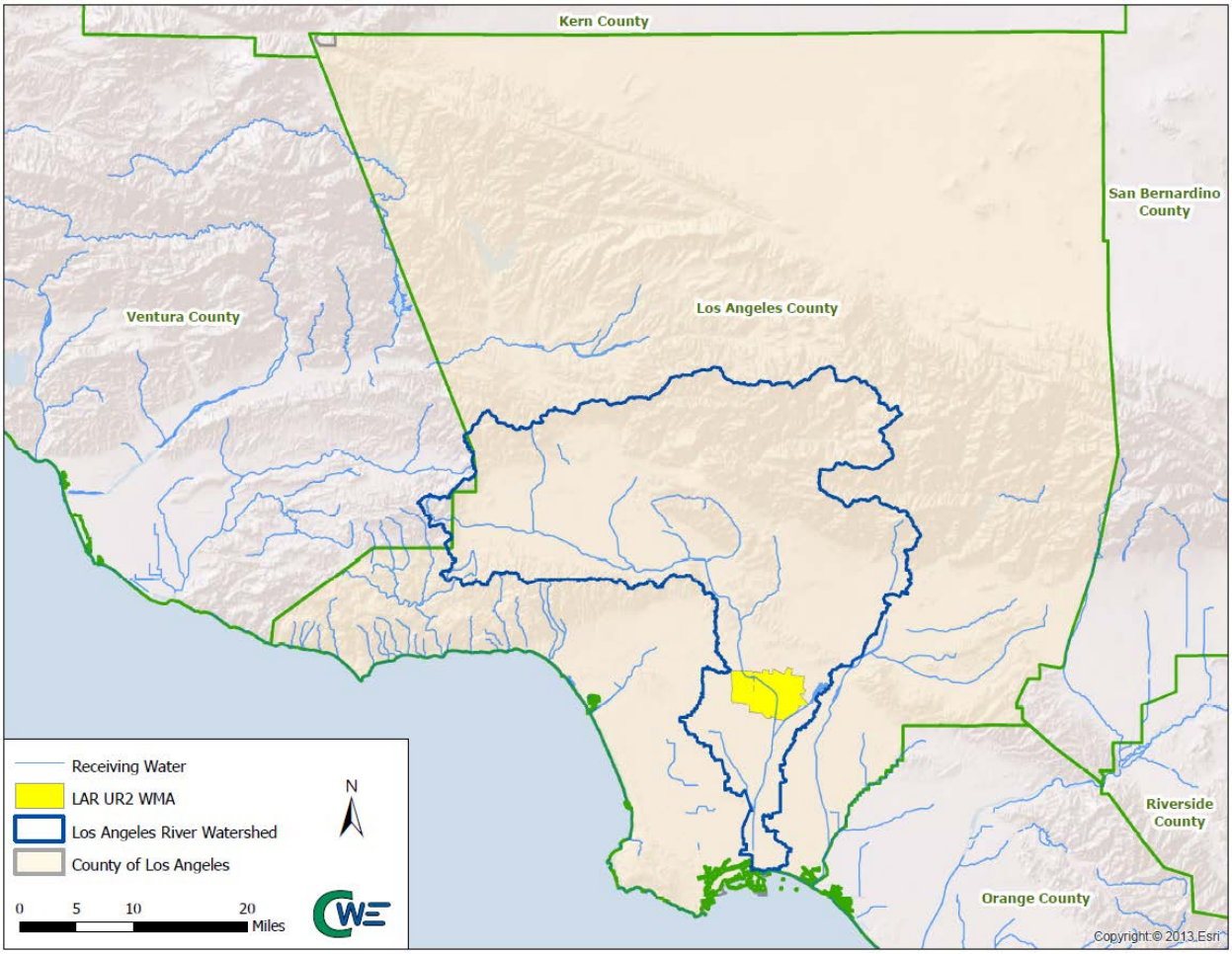


Figure 1-2 LAR UR2 WMA within the Los Angeles River Watershed

1.2.1 Watershed Management Area Hydrologic Characteristics

While each City has unique land use and zoning characteristics that may differentially impact pollutant generation, for the initial WMP and RAA development purposes, land use characteristics were initially identified based on the Los Angeles County Department of Public Works (LACDPW) GIS data as summarized in **Table 1-2** for the WMA and illustrated in **Figure 1-3**. The most prevalent land use in the Cities of Commerce, Vernon and the northern portions of Bell and Huntington Park is industrial, while the remaining areas are dominated by residential and commercial land use categories. **Table 1-3** provides a detailed description of WMA land use characteristics on a jurisdictional level.

Table 1-2 Land Use Designation within LAR UR2 WMA

Land Use Category	Area (acres)	Percent of LAR UR2 WMA
Agriculture	46	0%
Commercial	1,419	10%
Education	311	2%
Industrial	6,029	42%
Multi-Family Residential	2,413	17%
Single Family Residential	1,784	13%
Transportation	1,370	10%
Vacant	843	6%
Total	14,215	100%

Table 1-3 Land Use Designation within LAR UR2 WMA by Jurisdiction

LAR UR2 WMA Member	Bell		Bell Gardens		Commerce		Cudahy		Huntington Park		Maywood		Vernon	
	Area (acre)	%	Area (acre)	%	Area (acre)	%	Area (acre)	%	Area (acre)	%	Area (acre)	%	Area (acre)	%
Agriculture	0	0	27	2	19	0	0	0	0	0	0	0	0	0
Commercial	271	16	230	15	383	9	58	7	352	18	109	14	16	0
Education	39	2	97	6	24	1	38	5	90	5	20	3	3	0
Industrial	296	18	164	10	2,523	60	104	13	333	17	52	7	2,556	78
MF Residential	513	31	736	47	129	3	434	55	480	25	121	16	0	0
SF Residential	272	16	175	11	292	7	51	6	562	29	430	57	1	0
Transportation	131	8	8	1	651	16	24	3	53	3	9	1	494	15
Vacant	154	9	141	9	173	4	76	10	59	3	13	2	227	7
Total:	**1,676**	**100**	**1,578**	**100**	**4,194**	**100**	**786**	**100**	**1,930**	**100**	**754**	**100**	**3,298**	**100**

MF = Multi-Family; SF = Single Family

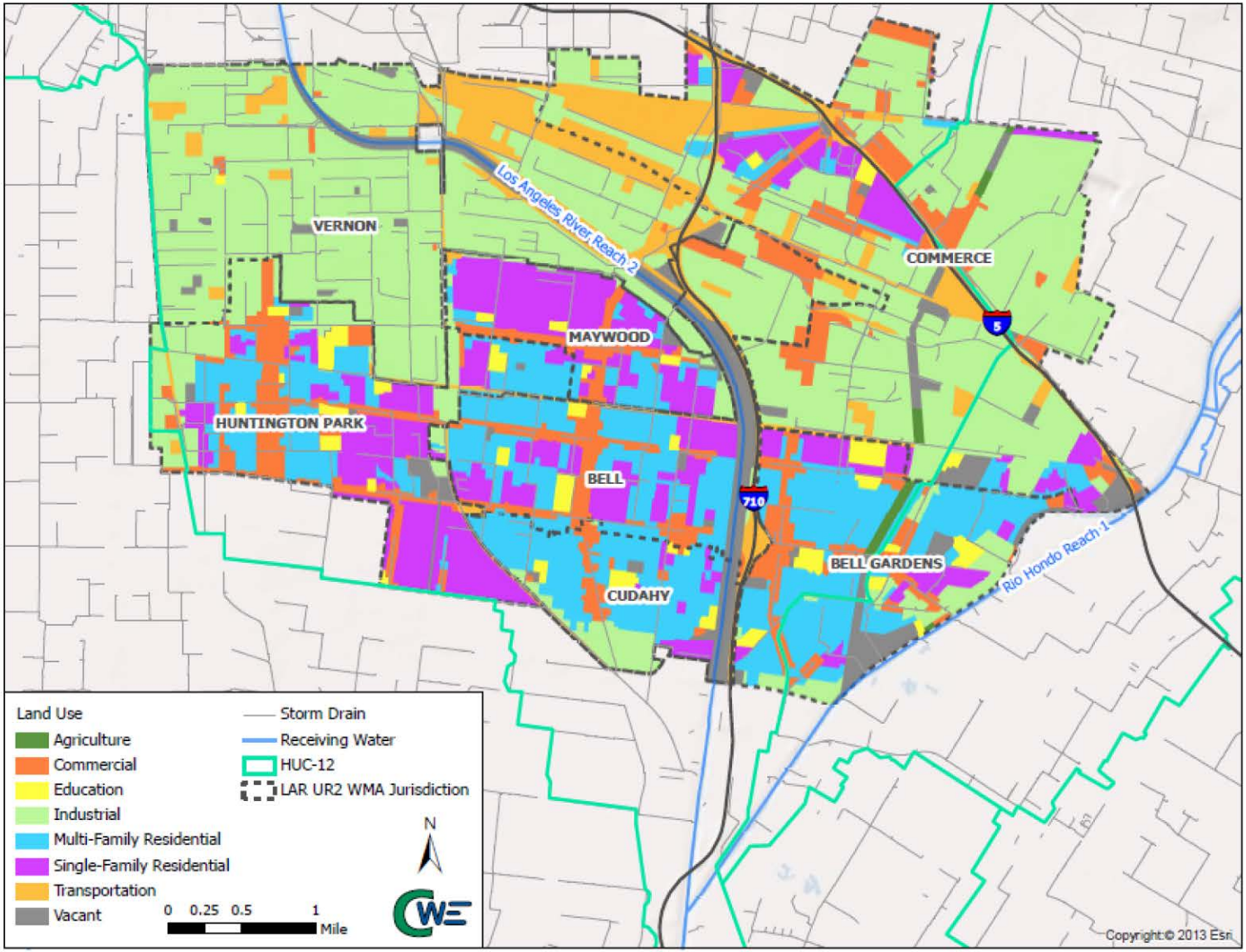


Figure 1-3 LAR UR2 WMA Land Use

The 2006 Los Angeles County Hydrology Manual[2] Appendices B and C, identifies soil types in the LAR UR2 WMA as being dominated by Hanford Fine Sandy Loam and other loam mixes as shown in **Figure 1-4**. Infiltration rates through these soils are generally unremarkable, but allowing percolation over extended periods, when vector access and egress can be prevented or controlled. While clay lenses are present, they are generally discontinuous and may sometimes be breached by utilizing moderate increase or variances in excavation depth, or through wick drains that maintain a wider than deep facility design configuration.

The 2004 LACFCD Analysis of 85th Percentile, 24-hour Rainfall Depth Analysis within the County of Los Angeles[3] reports that the lowest rainfall depth isohyetal of 0.88 inches is found in the northeastern corner of the WMA and that depths rise as you move to either the west or south of that location. The largest rainfall depth isohyetal of 0.98 is located in the northwest WMA, while the mean value is approximately 0.92 inches as shown by the isohyetal distribution map in **Figure 1-5**.

The 2006 Los Angeles County Hydrology Manual[2] Appendix B identifies the twenty four-hour, fifty-year design storm isohyetals within the LAR UR2 WMA as varying from 5.6 inches on the western side to 5.9 inches in the eastern portion of the WMA, as shown in **Figure 1-6**.

[2] http://ladpw.org/wrd/Publication/engineering/2006_Hydrology_Manual/2006%20Hydrology%20Manual-Divided.pdf
[3] http://ladpw.org/wrd/Publication/engineering/Final_Report-Probability_Analysis_of_85th_Percentile_24-hr_Rainfall1.pdf

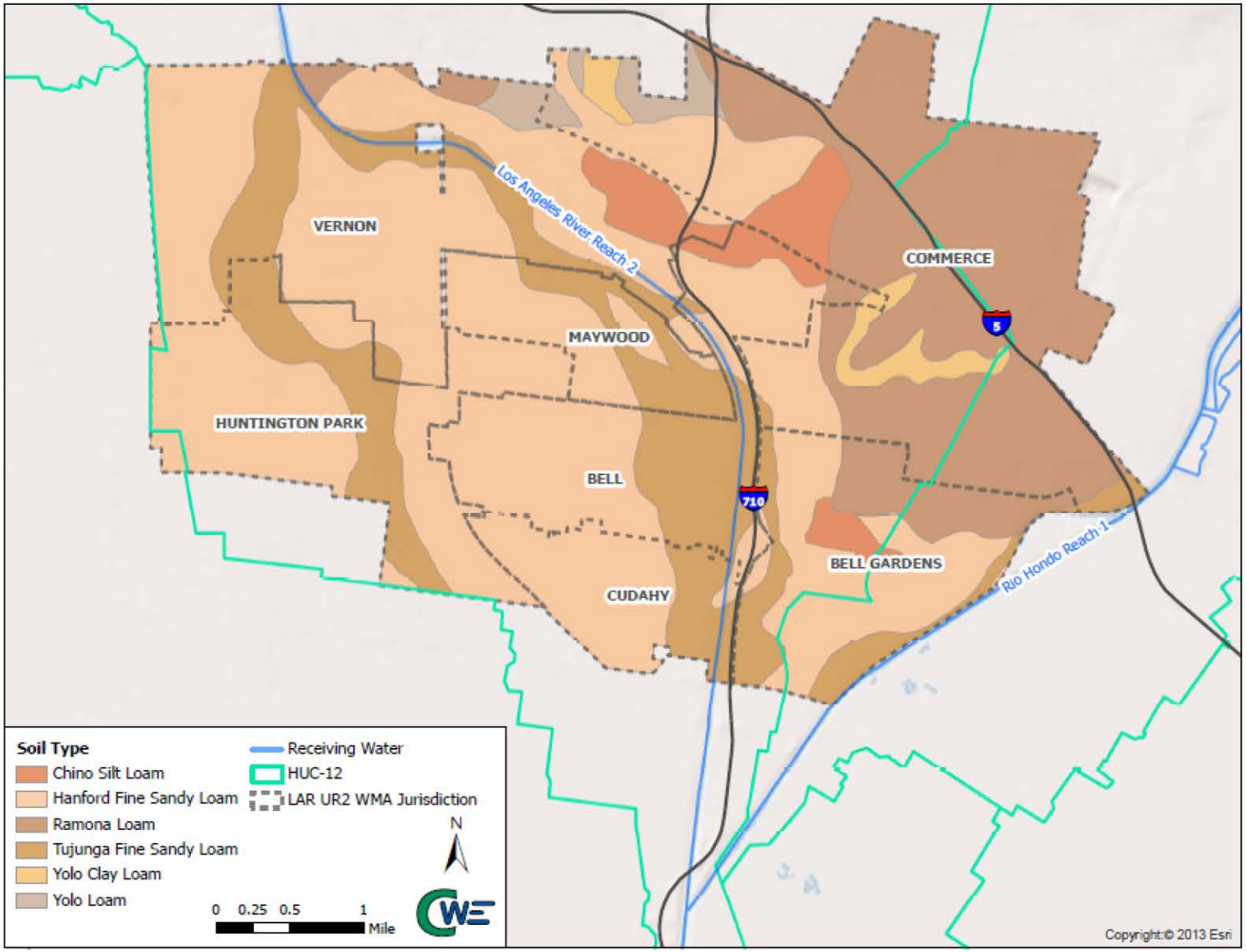


Figure 1-4 LAR UR2 WMA Soil Types

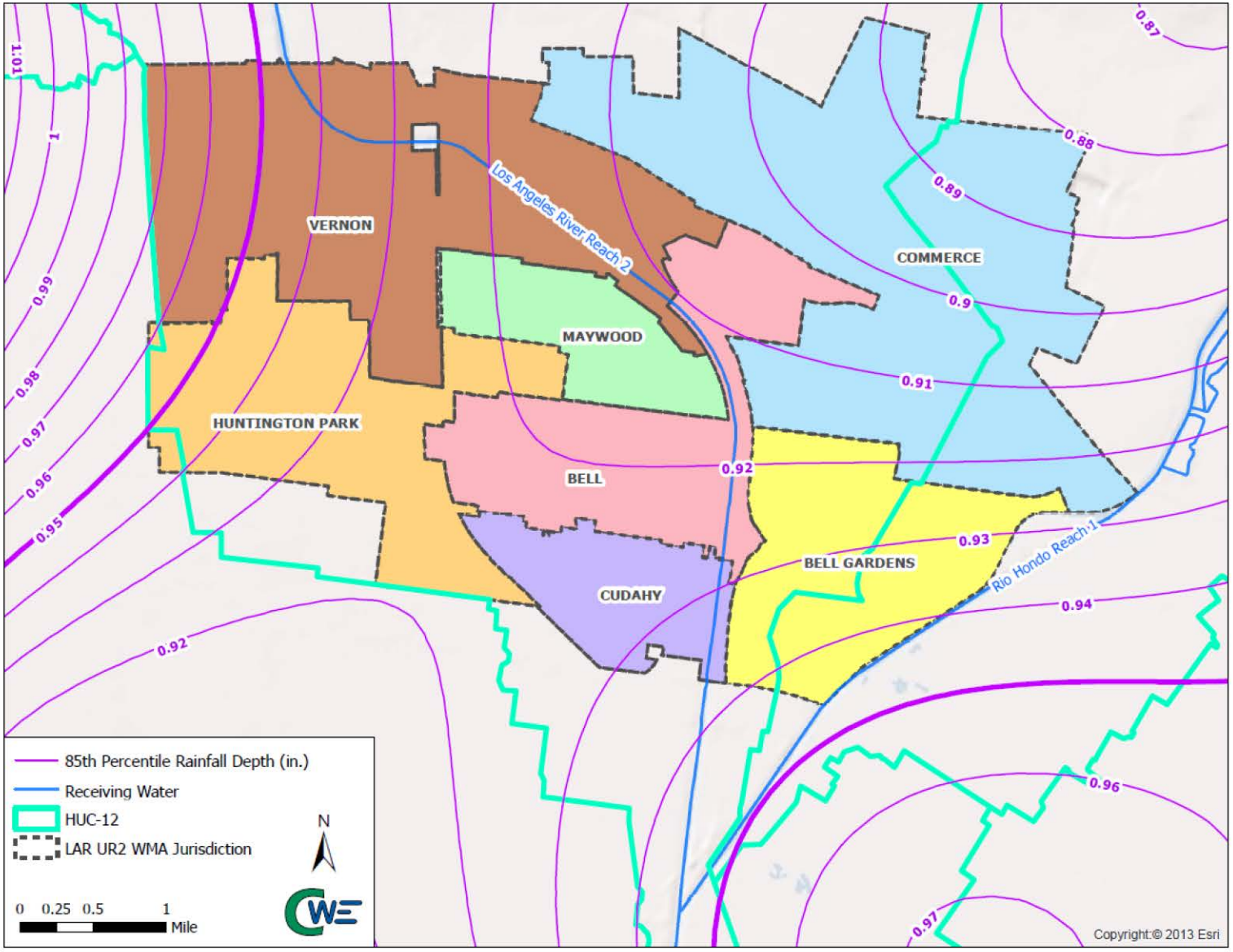


Figure 1-5 LAR UR2 WMA 85th Percentile, 24-Hour Rainfall Depths

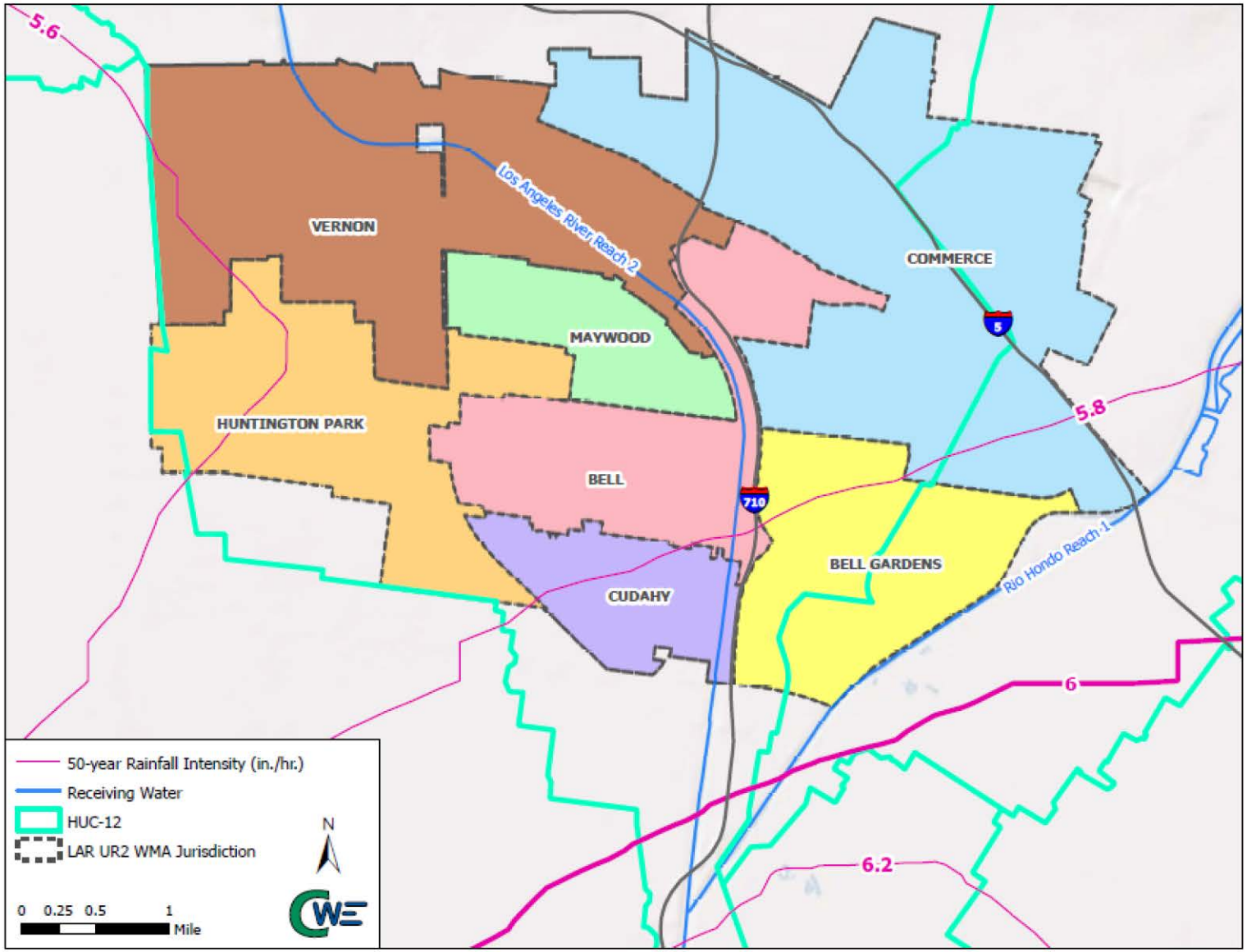


Figure 1-6 LAR UR2 WMA 50-Year, 24-Hour Rainfall Intensity

1.2.2 Water Body Characteristics

The LAR flows 51 miles from the Santa Monica Mountains, at the western end of the San Fernando Valley, to the Long Beach Harbor, San Pedro Bay, and Pacific Ocean. Including tributaries, such as the Rio Hondo and Compton Creek, the 824 square mile LAR watershed includes a total stream length of about 837 miles and about 4.6 square miles of lake area. No lakes are located within the LAR UR2 WMA. The watershed includes steep, easily eroded, undeveloped mountainous areas in the Angeles National Forest in the north and extensive urban areas in the midsection and south. Los Angeles River Reach 2 stretches from the Arroyo Seco confluence to the Compton Creek confluence. During dry-weather, the LAR conveys mostly treated wastewater effluent from upstream Public Owned Treatment Works (POTWs) and Water Recovery Plants (WRPs). Following exceptionally productive storm seasons, rising groundwater in Glendale Narrows may supplement these LAR flows, along with other Board-permitted industrial and individual dischargers, and dry-weather urban runoff discharges. The volume of these dry-weather discharges are expected to decline over time as more water is recycled.

The largest tributary to Reach 2 of the LAR is the Rio Hondo. The Rio Hondo drains approximately 120 square miles of the eastern LAR watershed. Below the Whittier Narrows, flows in Reach 2 of the Rio Hondo may be diverted to the adjacent Rio Hondo Spreading Grounds and used to recharge the Central Basin groundwater aquifer. These spreading grounds extend to the northeast corner of the WMA adjacent to the City of Commerce. Highly turbid "first flush" storm flows are not diverted into the spreading grounds, but drain into Rio Hondo Reach 1 which runs along the eastern boundary of the LAR UR2 WMA before flowing into the LAR below the LAR UR2 WMA. In conclusion, during dry-weather, flows in Reach 1 of the Rio Hondo are essentially absent, while during wet-weather, runoff volume and water quality my change abruptly due to upstream conditions that are beyond the control of the LAR UR2 WMA Permittees.

The LAR UR2 WMA is located within Reach 2 of the Los Angeles River, in the lower half of LAR Watershed, starting at East 26th Street in the City of Vernon and ending at Patata Street in City of Cudahy. The LAR UR2 WMA Cities of Bell Gardens and Commerce line the western bank of Rio Hondo Reach 1, while all WMA Permittees, except the City of Huntington Park, line the LAR, as illustrated in **Figure 1-7**. Throughout these reaches, both the LAR and Rio Hondo are conveyed within concrete-lined trapezoidal channels that have successfully contained regional flooding risks for decades. Dry-weather flows in some channel sections are further confined to narrow low-flow channels and the varying channel configurations in this area may impede water contact recreational beneficial uses. Given the large number and tributary area occupied by dischargers not regulated under the MS4 Permit, it may be challenging to separate their impact on dry-weather outfall and receiving water quality characteristics in the WMA. During dry- and wet-weather, it is likely that the LAR UR2 WMA's impact on receiving water conditions may be difficult to assess, given analytical limitations and the modest approximately 4% runoff contribution to the total flow in those receiving waters.

Waterfowl and other avian wildlife are commonly observed in the LAR within, and adjacent to, the WMA. Large congregations of gulls, are often observed near the proposed receiving water site at the extension of Tweedy Avenue in City of South Gate. However, this location is immediately downstream of the largest outfalls from the WMA and shifting the monitoring location northward would obfuscate the already modest contribution of the WMA on receiving water quality. Future water quality monitoring data collection, will guide the LAR UR2 WMA in resolving this monitoring challenge, or necessitate a special study to quantify the potential impact of this condition, further characterize the source of any Permit non-compliance, or guide the relocation of the monitoring site. Any study or monitoring changes would be proposed and coordinated in writing with Board staff.

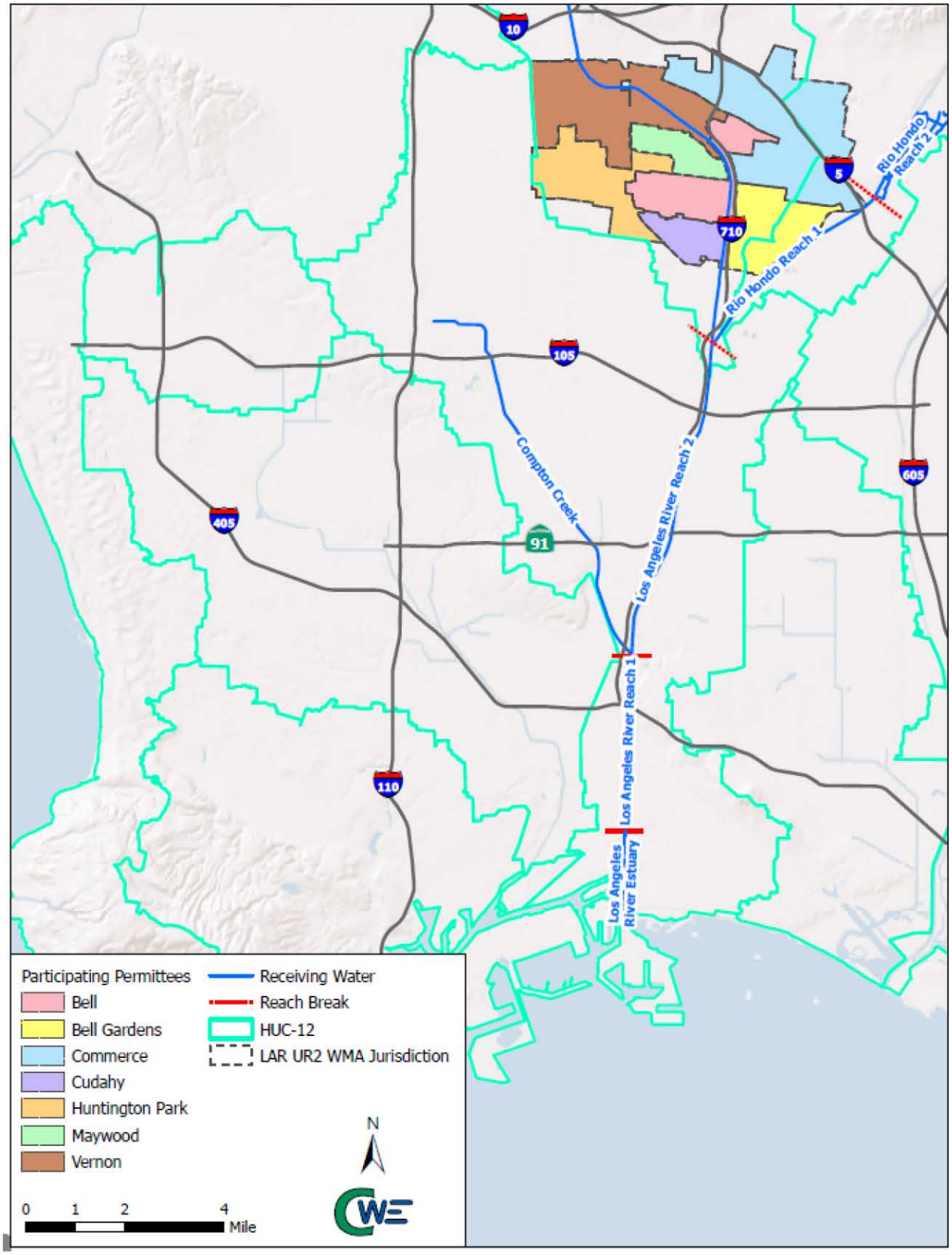


Figure 1-7 LAR UR2 WMA Water Bodies

1.3 Regulatory Framework

In 1972, provisions of the Federal Water Pollution Control Act, also known as the Clean Water Act (CWA), were amended so that the discharge of pollutants to waters of the United States from any point source is effectively prohibited, unless the discharge is in compliance with an NPDES permit. The CWA was amended, as the Water Quality Act of 1987, to require the United States Environmental Protection Agency (USEPA) to establish a program to address stormwater discharges. In response, USEPA promulgated NPDES stormwater permit application regulations. These regulations required that facilities with stormwater discharges "...from a large or medium municipal storm sewer system; or (3) a discharge which USEPA or the state/tribe determines to contribute to a violation of a water quality standard..." apply for an NPDES permit. On November 16, 1990, the USEPA published final regulations that established application requirements for stormwater permits for MS4s serving a population of over 100,000 (Phase I communities) and certain industrial facilities, including construction sites greater than five acres. On December 8, 1999, the USEPA published the final regulations for communities under 100,000 (Phase II MS4s) and construction sites between one and five acres.

The Porter-Cologne Act (Water Code 13000, et seq.) is the principal water quality management legislation for California, requiring that the State Water Resources Control Board (SWRCB) and Regional Boards develop plans to serve as guides for protecting water quality within the state.

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board or LARWQCB), Water Quality Control Plan (Basin Plan), identifies receiving waters, their beneficial uses, water quality objectives, and more specific discharge controls that may be applied to categories of discharges. The beneficial use designations for the LAR and the Rio Hondo include:

- **Municipal and Domestic Supply (MUN)** – Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
- **Industrial Service Supply (IND)** – Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
- **Ground Water Recharge (GWR)** – Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
- **Water Contact Recreation (REC-1)** – Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.
- **Non-contact Water Recreation (REC-2)** – Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
- **Warm Freshwater Habitat (WARM) –** Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
- **Wildlife Habitat (WILD) –** Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

Table 1-4 summarizes the beneficial uses for the receiving water bodies located within the LAR UR2 WMA, as designated in the Basin Plan.

Table 1-4 Basin Plan Beneficial Use Designations Within the LAR UR2 WMA							
Receiving Water Bodies	**MUN**	**IND**	**GWR**	**REC-1**	**REC-2**	**WARM**	**WILD**
Los Angeles River	P*	P	E	Es	E	E	P
Rio Hondo below Spreading Grounds	P*		I	Pm	E	P	I

E: Existing beneficial Use
P: Potential beneficial Use
I: Intermittent beneficial Use
E, P, and I shall be protected as required.
Es: Access prohibited by Los Angeles County DPW
Pm: Access prohibited by Los Angeles County Department in the concrete-channelized areas.
* Asterisked MUN designations addressed by Senate Bill (SB) 88-63 and Regional Board (RB) Order 89-03.

Under Porter-Cologne, specific Waste Discharge Requirements (WDRs) are issued by the nine Regional Water Quality Control Boards and may serve as NPDES permits for discharges to surface waters.

1.3.1 MS4 Permit Requirements

The Regional Board adopted Order No. R4-2012-0175, WDRs for MS4 discharges within the Coastal Watersheds of Los Angeles County, except those discharges originating from the City of Long Beach MS4 (NPDES Permit No. CAS004001) on November 8, 2012, and it became effective on December 28, 2012. The MS4 Permit identifies Minimum Control Measures (MCMs), Total Maximum Daily Load (TMDL) provisions, the WMP Plan development process, and TMDL Waste Load Allocations (WLAs) as dry- and wet-weather numeric limits. Pursuant to Permit Part VI.C.1.d, WMPs must ensure that MS4 discharges:

(i) Achieve applicable WQBELs in Part VI.E and Attachment O based on the corresponding compliance schedules;
(ii) Do not cause or contribute to exceedances of the RWLs in Parts V.A and VI.E, and Attachment O of the MS4 Permit; and
(iii) Do not include non-stormwater discharges that are effectively prohibited based on Part III.A.

The WMP must also ensure that the controls are implemented to reduce the discharge of pollutants to the Maximum Extent Practicable (MEP), pursuant to Part IV.A.1, and as proposed in the LAR UR2 WMP Plan. Part VI.C.1.f of the Permit states that the WMP must be consistent with Parts VI.C.5-C.8 and shall:

i. Prioritize water quality issues resulting from stormwater and non-stormwater discharges from the MS4 to receiving waters within their WMA.
ii. Identify and implement strategies, control measures, and Best Management Practices (BMPs) to achieve the outcomes specified in Part VI.C.1.d and discussed above.
iii. Execute an integrated monitoring program and assessment program pursuant to Attachment E - Monitoring and Reporting Program (MRP), Part VI to determine progress towards achieving applicable limitation and/or action levels in Attachment G.
iv. Modify strategies, control measures, and BMPs as necessary based on analysis of monitoring data collected pursuant to the MRP to ensure that applicable numeric limits and other milestones set forth in the WMP are achieved in the required timeframes.
v. Provide appropriate opportunity for meaningful stakeholder input, including but not limited to, a permit-wide WMP Technical Advisory Committee (TAC) that will advise and participate in the development of the WMP from month six through the date of the program approval. The TAC may include at least one Permittee representative from each WMA for which a WMP will be developed, and must include a minimum of one public representative from a non-governmental organization (NGO) with public membership, staff from the Regional Board and USEPA Region IX.

Part VI.C.4.c.i of the MS4 Permit states that Permittees may elect to collaborate on the development and submission of a draft WMP by June 28, 2014, if the following conditions are met in greater than fifty percent of the land area covered by the WMP.

(1) Demonstrate that there are Low Impact Development (LID) ordinances in place and/or commence development of a LID ordinance(s) meeting the requirements of the MS4 Permit's Planning and Land Development Program by February 26, 2013, 60 days after the effective date of the MS4 Permit.
(2) Demonstrate that there are green streets policies in place and/or commence development of a policy(ies) that specifies the use of green street strategies for transportation corridors by February 26, 2013, 60 day after the effective date of the MS4 Permit.
(3) Demonstrate in the Notice of Intent (NOI) to develop a WMP that Parts VI.C.4.c.i. (1) and (2) have been met in greater than fifty percent of the watershed area.

The LAR UR2 WMA received Regional Board RAA and WMP comments on October 27, 2014 and, following meetings and correspondence through January 9, 2015, addressed the Board comments in a Revised WMP submitted on January 27, 2015. The LAR UR2-WMA received Regional Board Executive Officer conditional approval of the Revised WMP on April 28, 2015, and submitted the Final WMP on June 12, 2015. As directed by that letter, implementation of the WMP began immediately upon WMP approval.

The requirements associated with the WMP are identified in Part VI.C.5 of the MS4 Permit, Program Development, and focuses on the:

a. Identification of water quality priorities;
b. Selection of watershed control measures; and
c. Compliance schedules.

The 2012 Los Angeles County MS4 Permit and LAR UR2 WMP Plan do not require implementation to the exclusion of other municipal priorities and the prioritization of its recommendations, or planning elements, may be iteratively modified based on the permit identified AMP, changing technical consideration, fiscal limitations, and societal priorities of the individual Permittees, as they may change from time to time. Furthermore, the proposals within the WMP Plan, are subject to revision or reversal, following consideration of the Own-Motion order, regarding the Permit Appeal and contents, before the SWRCB.

1.3.1.1 2012 MS4 Permit Review Process and WMP Implementation

On December 10, 2012, the LAR UR2 WMA cities of Commerce, Huntington Park and Vernon, along with other Permittees, submitted Administrative Petitions (Petitions) to the California State Water Resources Control Board (SWRCB) pursuant to section 13320(a) of the California Water Code requesting that the SWRCB review various terms and requirements set forth in the 2012 MS4 Permit, Order No. R4-2012-0175 (Permit) adopted by the California Regional Water Quality Control Board, Los Angeles Region (Regional Board). The Petitions were subsequently referred to as SWRCB/OCC File Nos. A-2236(a) through (kk). On July 8, 2013 the SWRCB advised Petitioning Cities of the Petitions completion and all such Petitions remain pending at this time. In particular, and among other terms/requirements contained in the Permit, the Cities have sought review of all numeric limits, both interim and final, and whether derived from a TMDL or provided from the application of an adopted water quality standard, or through a discharge prohibition set forth in the Permit. The challenges to the various numeric limits set forth in the Permit include a challenge to all such numeric limits that may be complied with through the implementation of an approved Watershed Management Plan (WMP) and/or an Enhanced Watershed Management Plan (EWMP). In essence, the Petitions are challenging the fundamental premise for the various WMPs and the EWMPs requirements in the Permit, on various grounds, including, but not limited to, on the grounds that such Permit terms exceed the maximum extent practicable (MEP) standard, and

were not adopted in accordance with the requirements of California Water Code (CWC) sections 13000, 13263 and 13241. Nothing in this WMP shall affect the administrative petitions of those Cities, nor shall anything in this WMP constitute a waiver of any Permittee positions or rights therein. .

On November 21, 2014, the SWRCB Chief Counsel released a Draft Order substantially supporting the Permit and rejecting the primary challenges identified within the Petitions. On December 16, 2014, the SWRCB convened a Workshop and accepted comments regarding the Petitions and Draft Order. Written comments, regarding the proposed Draft Order, were due to the Clerk of the Board on January 21, 2015.

In spite of the still pending Petitions and ongoing Final Order development, the Cities are acting in good faith and moving forward to attempt to comply with all of the applicable terms of the Permit, and look forward to working with the Regional Board to assess and implement the strategies and requirements necessary for compliance, including the development of an acceptable WMP. Nevertheless, because, through their Petitions, the Cities believe that many of the terms of the Permit are invalid, including the terms involving compliance with numeric limits which the Cities are seeking to comply with through the development and implementation of this WMP. The Cities hereby expressly reserve and are not waiving, with this submission or otherwise, any of their rights to challenge the need for any WMP, including their rights to seek to void or otherwise compel modifications to the Permit terms involving the WMP, or to void or compel revisions to any other part or portion of the Permit. In addition, the Cities are not waving, and hereby expressly reserve, any and all rights they have or may have to seek to recover the costs from the State to develop and implement this WMP, on the grounds that the WMP is being developed and will be implemented in order to comply with various mandates involving TMDLs, water quality standards and other similar Permit requirements, which requirements in the Permit are not mandated by the Clean Water Act, and with the Cities being unable to impose fees in order to recover their costs for developing and implementing this WMP.

1.3.2 Relevant TMDLs

TMDLs applicable to the LAR UR2 WMA are listed in **Table 1-5** and are further characterized in Section 2 regarding the WMP Plan water quality priorities. The resolutions numbers and effective dates reflect the most recent amendments to the Los Angeles River nitrogen and metals TMDLs. TMDL impacted reaches are highlighted in **Figure 1-8** and a detailed summary of the numeric WLAs specified in the MS4 Permit can be found in **Appendix C**.

Table 1-5 TMDLs Applicable to the LAR UR2 WMA

TMDL	LARWQCB Resolution Number	Effective Date
Los Angeles River Nitrogen Compounds and Related Effects TMDL	2003-009	March 23, 2004
	2012-010[1]	August 7, 2104
Los Angeles River Trash	2007-012	September 23, 2008
Los Angeles River Metals TMDL	2007-014	October 29, 2008
	2010-003	November 3, 2011
Los Angeles River Bacteria TMDL	2010-007	March 23, 2012

[1] Site Specific Objectives (SSOs) for Ammonia were approved on June 4, 2013.

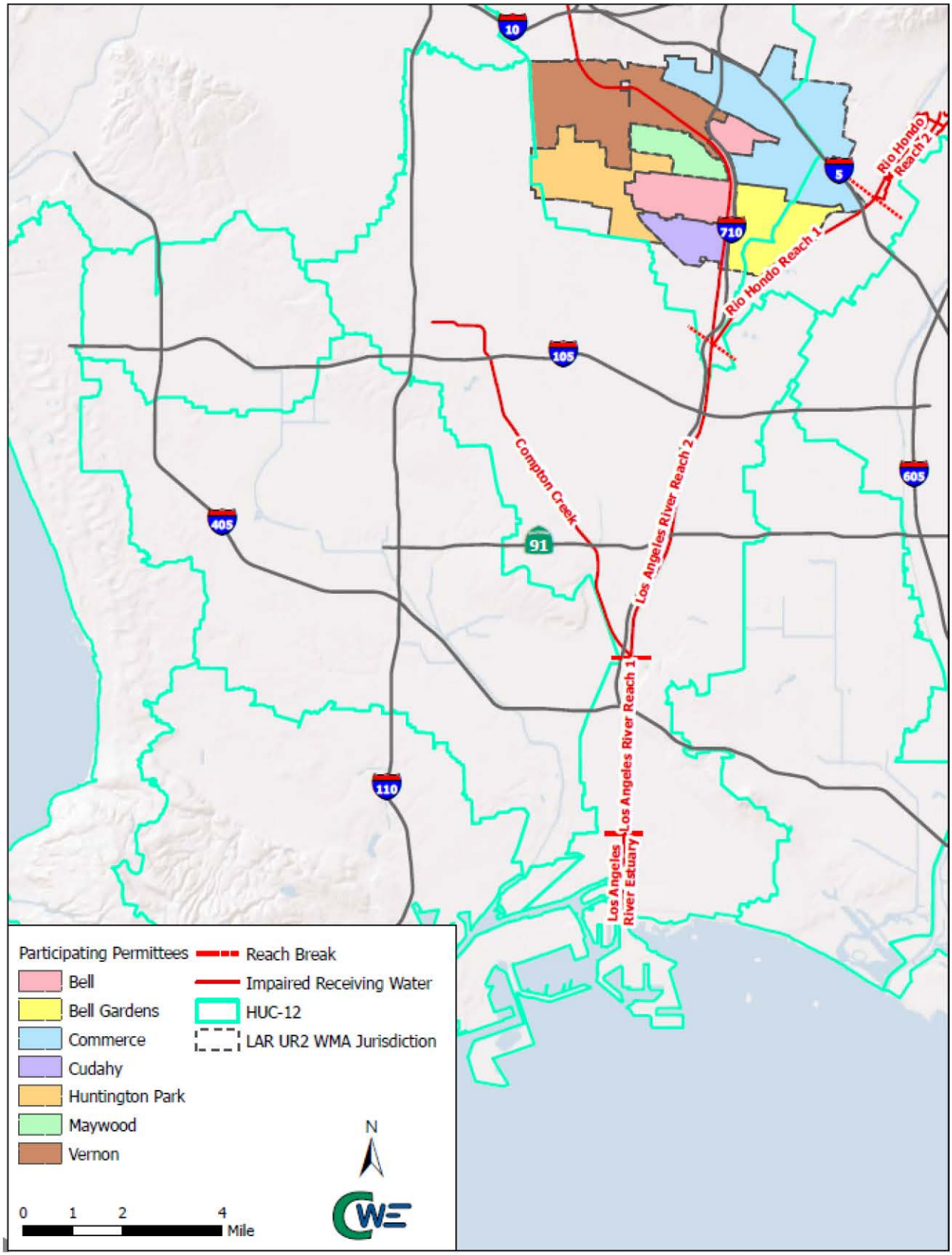


Figure 1-8 LAR UR2 WMA and Downstream Impaired Water Bodies

Regional Board adopted TMDLs include requirements to develop implementation plans, providing interim and final compliance dates. **Table 1-6** lists LAR UR2 WMA relevant interim and final compliance dates.

Two dry-weather compliance paths are applicable to the LAR bacteria TMDL, based on whether or not jurisdictions develop and implement a Load Reduction Strategy (LRS), which must quantitatively demonstrate that outfall specific actions result in attainment of the final WLAs. The LRS is based on six dry-weather "snapshot" monitoring events, and confirmed by three similar post-implementation events to assess effectiveness. Completing the LRS process provides regulatory relief by providing seven additional years before final effluent limitations become effective. The LAR UR2 WMA submitted a LRS, for its portion of Los Angeles River Segment B, on December 15, 2014. The LRS did not identify any priority drains, but identified four outlier drains to be investigated as part of the groups non-stormwater monitoring program, which is included in the CIMP. The Rio Hondo Channel LRS submittal date, along with corresponding interim and final compliance milestones for the Los Angeles River Bacteria TMDL, are included in **Table 1-6**.

Revised numeric limits were incorporated into the MS4 Permit by the Regional Board after adoption and Office of Administrative Law (OAL) approval of the TMDL amendment. Site Specific Objectives for Copper and Lead were developed (LWA 2013), at considerable Permittee expense, and have been presented to the LARWQCB for future consideration as a Basin Plan Amendment of the LAR Metals TMDL.

1.3.3 Relevant 303(d) Listings

Receiving water impairments on the CWA 303(d) List, otherwise known as the State Integrated Report, but not currently addressed by a TMDL, include the following for the LAR UR2 WMA:

- **Los Angeles River Reach 2**
  - **Oil** – This constituent has an estimated TMDL completion date of 2019. Impairments for oil are based on a qualitative assessment of sheen and may result from natural constituents associated with algal growth. It is anticipated that remaining anthropogenic oil and grease will continue to be controlled through the enhanced weekly street vacuuming/sweeping program utilized by each of the LAR UR2 WMA Permittees and the installation of the Full Capture Certified (FCC) trash control devices which should be completed before the TMDL completion date. Furthermore, this condition may have originated in upstream areas where the interval between sweeping events is months, rather than a single week. Finally, the LAR UR2 WMA CIMP includes analytical monitoring during the first year to numerically assess the presence of this contaminant.
- **Rio Hondo Reach 1**
  - **Coliform Bacteria** – This constituent has an estimated completion date of 2019; however, with the adoption of the Los Angeles River Bacteria TMDL this impairment is actually currently being addressed.
  - **Toxicity** – This impairment condition has an estimated TMDL completion date of 2021; however, other toxicity listings have been addressed as a specific toxicant, such as a metal, for which a TMDL has already been developed. It is unclear that a source assessment can be developed, or a pollutant reduction strategy implemented for a condition or unknown constituent. The impairment listing is based on a single line of evidence consisting of only two positive toxicity tests using Fathead Minnows and *Ceriodaphnia dubia*. The LAR UR2 WMA CIMP proposes required annual toxicity tests, to assess whether this impairment remains or was a result of TMDL addressed metals concentrations or other conditions associated with the extremely low dry weather flows that were previously present in the Rio Hondo.

Table 1-6 Schedule of TMDL Compliance Milestones Applicable to the LAR UR2 WMA

TMDL	Water Bodies	Constituents	Compliance Goal	Weather Condition	Compliance Dates and Milestones (Bolded **numbers** indicate milestone deadlines within the current MS4 Permit term)[1]												
					2012	2013	2014	2015	2016	2019	2020	2022	2023	2024	2028	2030	2037
LAR Nitrogen	All	Ammonia, Nitrate, Nitrite, Nitrate+Nitrite	Meet WQBELs	All	**Pre 2012**												
					Final												
LAR Trash	All	Trash	% Reduction	All	**9/30**	**9/30**	**9/30**	**9/30**	**9/30**								
					70%	**80%**	**90%**	**96.7%**	**100%**								
LAR Metals	All	Copper, Lead, Zinc	% of MS4 area Meets WQBELs	Dry	**1/11**						1/11			1/11			
					50%						75%			100%			
	All	Copper, Lead, Zinc, Cadmium		Wet	**1/11**									1/11	1/11		
					25%									50%	100%		
LAR Bacteria	All	*E. Coli*	Meet WQBELs	Dry w/o LRS									Final				
				Rio Hondo Segment B Dry w/ LRS					**3/23 LAR UR2 LRS Due[2]**		3/23 complete LRS tasks		3/23 Interim WQBEL	3/23 Second LRS		3/23 Final WQBEL	
				LAR Segment B Dry w/ LRS			**LAR UR2 LRS Due[2]**	Begin outlier studies 9/23[2]		3/23 complete LRS tasks		3/23 Interim WQBEL	3/23 Second LRS		3/23 Final WQBEL		
				Wet													3/23 Final

Notes: LAR = Los Angeles River

[1] The MS4 Permit term is five years from the MS4 Permit effective date of December 28, 2012, or December 28, 2017.

[2] The LRS requires coordinated effort by all MS4 Permittees within a segment or tributary. An LRS must quantitatively demonstrate that the actions for specific outfalls are sufficient to result in attainment of the final WLAs. Requires six snapshot sampling events prior to LRS and three post-LRS snapshot sampling events. For LAR Segment B the LRS identified four outlier outfalls (R2-06, R2-T, R2-NEW-18, and R2-NEW-20) warranting further investigation. Each will be sequentially investigated over a six month interval beginning on September 23, 2015 and ending on September 23, 2017.

1.4 WMP Stakeholder Process

Permit Part VI.C.1.f.v, states that each WMP must provide an appropriate opportunity for meaningful stakeholder input, including, but not limited to, a permit-wide watershed management program TAC that will advise and participate in the development of the WMP from month six through the date of approval. The MS4 Permit requires that the TAC include at least one Permittee representative from each WMA for which a WMP is being developed and one public representative from an NGO with public membership, staff from the Regional Board and USEPA Region IX. The City of Huntington Park regularly participated on the TAC, with the assistance of the City of Commerce as an alternate.

Rather than reaching out to distant NGO stakeholders with priorities beyond the central LAR watershed, the LAR UR2 WMA reached out to a local advocacy group Communities for A Better Environment[4] (CBE) in the City of Huntington Park. On February 26, 2014, representatives for the Permittees and CBE met and discussed the MS4 Permit and development of the WMP, RAA, and CIMP Plans. After discussing WCM and BMP alternatives, CBE asserted a preference for a distributed rain barrel retrofit program to support residential agricultural projects. Since this recommendation would need to be compatible with the RAA, additional discussions were deferred until after the Regional Board RAA Guidelines were released on March 25, 2014, and modeling scenarios could be analyzed. With bacteria as a dominant or driving pollutant, the SB-PAT model favored infiltration BMPs near subwatershed outfalls, which accept runoff from smaller events and allow larger events to be addressed as allowable exceedance days, over large numbers of distributed BMPs sized to rare larger events. Furthermore, since agricultural areas are generally modeled as a greater sources of nearly all pollutants than residential areas (Table 3.3 of the Regional Board RAA Guidelines), it is unlikely that any benefit would accrue.

1.5 WMP Overview

The WMP documents the programs development process by detailing the water quality priorities within the LAR UR2 WMA, identifying existing, potential, and proposed control measures, and demonstrating through a model that WQOs will be satisfied in order to ensure compliance with the MS4 Permit. The WMP includes the following sections:

- **Section 2 - Water Quality Priorities**
  Receiving water bodies are identified and characterized based on available water quality data records. Water Body-Pollutant Classifications are developed so that categories can be assigned to each water body-pollutant combination. A source assessment was used to establish water quality priorities. The water quality priorities are the primary "driver" of the WMP.

- **Section 3 - Watershed Control Measures**
  This section outlines the existing, potential, and proposed control measures in LAR UR2 WMA. The current MCMs are described and an approach to modifying the programs, as well as potential modifications, is presented. Existing structural BMPs are identified as an approach to identifying and selecting additional regional BMPs is included. The proposed watershed control measures will be implemented to address the water quality priorities.

[4] http://www.cbecal.org/

- **Section 4 - Reasonable Assurance Analysis**
  The modeling system being used by the LAR UR2 WMA is described. The modeling approach and process are discussed which involve Target Load Reductions and reductions associated with both structural and non-structural BMPs. The BMP assumptions and proposed BMPs are detailed along with the model output. The RAA modeled combinations of watershed control measures and BMPs to demonstrate their effectiveness in addressing the water quality priorities. The RAA demonstrates Target Load Reductions will be met, using the Site Specific Objectives for metals as presented in the Draft Los Angeles River Copper and Lead Special Study Implementation Report (Larry Walker and Associates, 2013).

- **Section 5 - Compliance Schedules and Costs**
  The LAR UR2 WMA identified interim milestones and dates to compliment TMDL final Waste Load Allocation (WLA) and compliance dates. These milestone dates were chosen at intervals to reflect key Permit and TMDL dates, while allowing sufficient time for monitoring data permit and implementation to progress in a meaningful fashion that might guide the iterative adaptive management process.

- **Section 6 - Legal Authority**
  As summarized in their 2012-13 Annual Reports, the LAR UR2 WMA Permittees have established the Legal Authorities required in Permit Part VI.A.2 and provided individual Statements of Legal Authority, which can be found in **Appendix J**.

2. Water Quality Priorities

Identification of the water quality priorities in the LAR UR2 WMA is a key component of the WMP process. Part VI.C.5.a of the MS4 Permit outlines the pertinent elements of the prioritization process as follows:

1. Water quality characterization (VI.C.5.a.i) based on available monitoring data, TMDLs, 303(d) lists, storm water annual reports, etc.;
2. Water body-pollutant classification (VI.C.5.a.ii) to identify water body-pollutant combinations that fall into three MS4 Permit-defined categories;
3. Source assessment (VI.C.5.a.iii) for the water body-pollutant combinations in the three categories; and
4. Prioritization of the water body-pollutant combinations (VI.C.5.a.iv).

The three MS4 Permit defined categories are:

- Category 1 (Highest Priority): Water body-pollutant combinations for which numeric limits are established in Part VI.E and Attachments L through R of the MS4 Permit. Attachment O is the most applicable attachment for LAR UR2 WMA.

- Category 2 (High Priority): Pollutants for which data indicate water quality impairment in the receiving water according to the State's Water Quality Control Policy for Developing California's CWA Section 303(d) List (State Listing Policy) and for which MS4 discharges may be causing or contributing to the impairment.

- Category 3 (Medium Priority): Pollutants for which there are insufficient data to indicate water quality impairment in the receiving water according to the State's Listing Policy, but which exceed applicable receiving water limitations contained in the MS4 Permit and for which MS4 discharges may be causing or contributing to the exceedance.

The following sections presented below describe the characterization and prioritization of those water body-pollutant combinations (WBPCs) found to be issues in the LAR UR2 WMA.

2.1 Water Quality Characterization

Water quality monitoring data for the Los Angeles River Upper Reach 2 water body segments were gathered, assessed for quality and compiled into a database by wet-weather and dry-weather conditions and locations. Permittee specific discharge sampling has not been required under past permits; therefore, no information was identified. Water quality monitoring data was solicited from numerous sources, but the most useful and highest quality data relevant to the LAR UR2 WMA were obtained from the following sources:

- Los Angeles County Annual Mass Emission and Tributary Station Monitoring Data (2002 – 2012);
- Los Angeles River Metals TMDL Coordinated Monitoring Plan (CMP) Ambient Monitoring Program (2008 – 2013);
- Council for Watershed Health (CWH) Los Angeles River Watershed Monitoring Program (LARWMP) data (2009 – 2012); and
- Cleaner Rivers through Effective Stakeholder-led TMDLs (CREST) Los Angeles River Bacteria Source Identification (BSI) Study.

A review of these sources found that no monitoring locations were located within the LAR UR2 WMA. In order to conduct the MS4 Permit required data analysis, monitoring locations upstream or downstream of

the LAR UR2 WMA was assessed. Details of each data source are summarized below and a more detailed summary can be found in **Appendix D**.

All data were screened to identify potential water quality objective exceedances. The monitoring sites with relevant available data are illustrated in **Figure 2-1**. Monitoring data that met Quality Assurance and Quality Control (QA/QC) criteria were analyzed to determine constituents exceeding water quality objectives. The number of available analytical data values, detected data values, and total number of constituents analyzed in the primary LAR UR2 WMA receiving water bodies are summarized in **Table 2-1**.

Table 2-1 Summary of Water Quality Data Reviewed for LAR UR2 WMA

Receiving Water Body	10 Year (2002 – 2012)			5 Year (2007 – 2012)		
	Total Sample	Number Detect	Number of Constituents	Total Sample	Number Detect	Number of Constituents
Los Angeles River	10,524	3,529	169	6,700	2,425	165
Rio Hondo	2,006	715	157	70	70	7
Wet-Weather	7,761	2,413	169	3,891	1,226	165
Dry-Weather	4,769	1,831	170	2,879	1,269	167
Totals	**12,530**	**4,244**	**171**	**6,770**	**2,495**	**167**

Los Angeles County Annual Mass Emission and Tributary Station Monitoring Data

The Los Angeles County Department of Public Works Annual Stormwater Monitoring Report presents stormwater quality findings for each July to June storm season. The 2002–2003, 2003–2004, 2005–2006, 2006–2007, 2007–2008, 2008–2009, 2009–2010, 2010-2011 and 2011-2012 monitoring reports addressed the following programs and associated elements:

- Core Monitoring Program – mass emission, tributary, water column toxicity, shoreline, and trash monitoring.
- Regional Monitoring Program – estuary sampling and bioassessment.
- Special studies – New Development Impacts Study in the Santa Clara Watershed, Peak Discharge Impact Study and BMP Effectiveness Study.

Monitoring data from the Los Angeles County Annual Mass Emission and Tributary Station Monitoring were analyzed for mass emission station S10 (Los Angeles River at Wardlow) and TS06 (Rio Hondo at Whittier Narrows).

Los Angeles River Metals TMDL CMP Ambient Monitoring Program

The CMP includes Tier I ambient monitoring program which collects monthly samples at thirteen locations. Tier I monitoring sites LAR1-8, LAR1-9, and LAR1-10 are located adjacent to the LAR UR2 WMA and the data from these sites help LAR UR2 WMA have a better understanding of the distribution of metals concentrations in the adjacent WMAs. Data for monitoring location LAR1-8, LAR1-9, and LAR1-10 were analyzed from the Los Angeles River Metals TMDL CMP. LAR1-8 is located upstream of the LAR UR2 WMA at Arroyo Seco, LAR1-9 is located downstream of the LAR UR2 WMA just above the Rio Hondo confluence, and LAR1-10 is located on the Rio Hondo just above the Los Angeles River confluence.

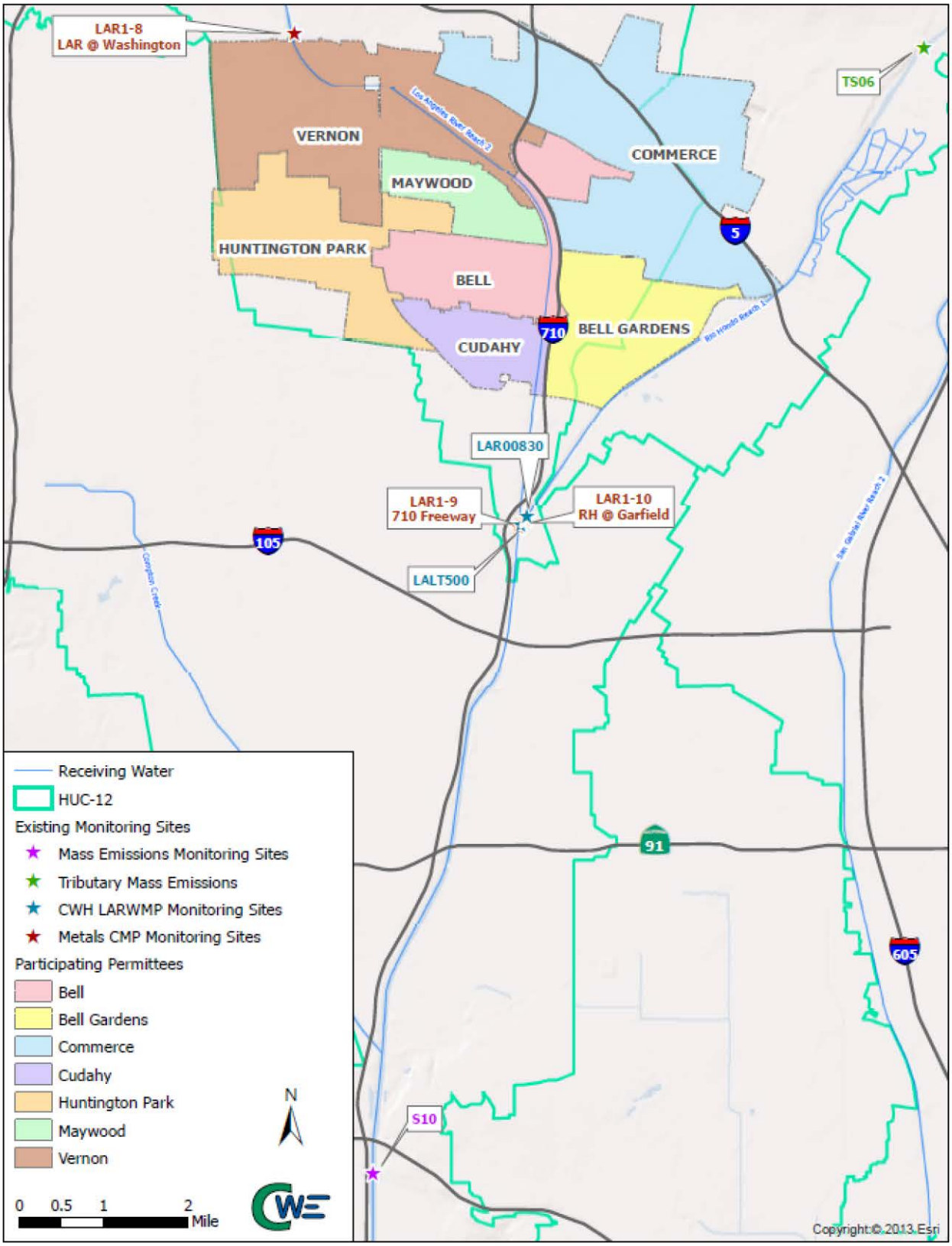


Figure 2-1 Existing Monitoring Sites Relevant to LAR UR2 WMA

CWH LARWMP

CWH coordinates the LARWMP to assess watershed health based on five broad objectives: are stream conditions improving; are specific critical site conditions improving; do discharges meet WQOs; is it safe to swim; and are locally caught fish safe to eat. CWH water quality monitoring data was collected under a stratified randomized strategy so that most sites were not revisited, and only a limited number of constituents were tested at each site. CWH monitoring data for locations LALT500 and LAR00830 were included in the analysis.

CREST Los Angeles River BSI Study

The CREST Los Angeles River BSI Study was designed to characterize the bacteria inputs to the LA River, support the development of the Bacteria TMDL source assessment, and assist with prioritization of the types and locations of TMDL implementation actions. Since bacteria are already categorized as a Category 1 pollutant, findings of the study were not included in the monitoring data analysis, as the study focuses solely on bacteria, which is a Category 1 pollutant because of existing Los Angeles River Bacteria TMDL. Additional details regarding this study and its findings can be found in **Appendix D**.

2.1.1 Characterization of Receiving Water Quality

Receiving water bodies and constituents, or WBPCs, identified during the data review were individually evaluated based on number of analyses reported, number of detects, and number of exceedances. Constituents subject to a TMDL underwent a data review to determine the status of compliance, as opposed to determining the appropriate Category of pollutant. Constituents on the CWA 303(d) list were analyzed based on the listing and current exceedance status. Constituents not TMDL or CWA 303(d) listed, but subject to basin plan, California Toxics Rule (CTR) or MS4 Permit water quality objectives were identified.

Analytes with exceedances in the past 10 years are presented in **Table 2-2** and subcategorized into TMDL, 303(d), and other source derivations. A comparison of the five and ten year data in **Table 2-2**, suggests a subtle decrease in the frequency with which exceedances are observed for most constituents. Cyanide, dissolved oxygen, chemical oxygen demand, chloride, and nitrite-N appeared to no longer demonstrate exceedances during the most recent 5 year period.

To further evaluate the data, comparisons of the Los Angeles River Reach 2 to Rio Hondo and wet- to dry-weather were also conducted. The comparison will help evaluate the constituents for each receiving water body during wet- and dry-weather conditions for five and ten year data sets. These comparisons are presented in **Table 2-3** to **Table 2-5**.

Table 2-3 demonstrates that, for the 10 year data set, wet-weather exceedances were more prevalent than dry-weather, for most constituents with the exception of cyanide, pH, nitrite-N, and mercury. The five year data set, presented in **Table 2-4**, shows an even greater percentage of exceedances in wet-weather. **Table 2-5** suggest that there were a higher percentage of exceedances in the Rio Hondo as compared to the Los Angeles River, with the exception of dissolved oxygen, pH, chemical oxygen demand, nitrite-N, total phosphorus, cadmium, chromium, mercury, nickel, and zinc. The higher percentages of exceedances may attribute to the limited number of samples collected for the Rio Hondo, as well as to the low or limited flow of the river.

This data has been presented to show a general characterization of the receiving water quality. However, as this data was obtained from sites outside of the LAR UR2 WMA, it does not reflect the water quality conditions caused by the LAR UR2 WMA.

Table 2-2 Summary of Exceedances for All Five Year and Ten Year Data Set

Constituent	10 Year (2002-2012)					5 Year (2007 - 2012)				
	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed
TMDL										
E. coli	0	0	0	0%	0%	0	0	0	0%	0%
Copper	149	146	51	98%	34%	112	109	33	97%	29%
Lead	149	148	16	99%	11%	112	111	12	99%	11%
Zinc	149	149	25	100%	17%	112	112	19	100%	17%
Ammonia	50	42	0	84%	0%	42	35	0	83%	0%
CWA 303(d) List										
Total Coliform	75	75	56	100%	75%	38	38	26	100%	68%
Fecal Coliform	75	74	59	99%	79%	38	37	27	97%	71%
Oil and Grease	75	39	39	52%	52%	38	22	22	58%	58%
Basin Plan, CTR, MS4 Permit Water Quality Objective Exceedance										
Fecal Enterococcus	75	73	65	97%	87%	38	36	31	95%	82%
Cyanide	75	57	4	76%	5%	38	29	0	76%	0%
Dissolved Oxygen	74	74	1	100%	1%	38	38	0	100%	0%
pH	75	75	14	100%	19%	38	38	9	100%	24%
Chemical Oxygen Demand	75	74	1	99%	1%	38	37	0	97%	0%
Chloride	79	79	1	100%	1%	42	42	0	100%	0%
Kjeldahl-N	79	79	18	100%	23%	42	42	9	100%	21%
Nitrite-N	79	50	6	63%	8%	42	25	0	60%	0%
Nitrogen - Total	4	4	3	100%	75%	4	4	3	100%	75%
Phosphorus - Total (as P)	78	77	10	99%	13%	42	41	4	98%	10%
Total Suspended Solids	82	82	30	100%	37%	45	45	16	100%	36%
Cadmium	79	45	5	57%	6%	42	34	3	81%	7%
Chromium	79	77	9	97%	11%	42	40	6	95%	14%
Mercury	79	6	2	8%	3%	42	5	1	12%	2%
Nickel	79	77	6	97%	8%	42	40	3	95%	7%

Table 2-3 Ten Year (2002 – 2012) Comparison of Exceedances during Wet- and Dry-Weather

Constituent	10-Year Wet-Weather					10-Year Dry-Weather				
	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed
TMDL										
E. coli	0	0	0	0%	0%	0	0	0	0%	0%
Copper	49	47	37	96%	76%	100	99	14	99%	14%
Lead	49	49	11	100%	22%	100	99	5	99%	5%
Zinc	49	49	25	100%	51%	100	100	0	100%	0%
Ammonia	29	25	0	86%	0%	21	17	0	81%	0%
CWA 303(d) List										
Total Coliform	49	49	49	100%	100%	26	26	7	100%	27%
Fecal Coliform	49	49	48	100%	98%	26	25	11	96%	42%
Oil and Grease	49	37	37	76%	76%	26	2	2	8%	8%
Other										
Fecal Enterococcus	49	49	49	100%	100%	26	24	16	92%	62%
Cyanide	49	34	2	69%	4%	26	23	2	88%	8%
Dissolved Oxygen	48	48	1	100%	2%	26	26	0	100%	0%
pH	49	49	2	100%	4%	26	26	12	100%	46%
Chemical Oxygen Demand	49	48	1	98%	2%	26	26	0	100%	0%
Chloride	49	49	1	100%	2%	30	30	0	100%	0%
Kjeldahl-N	49	49	15	100%	31%	30	30	3	100%	10%
Nitrite-N	49	26	0	53%	0%	30	24	6	80%	20%
Nitrogen - Total	0	0	0	0%	0%	4	4	3	100%	75%
Phosphorus - Total (as P)	48	48	8	100%	17%	30	29	2	97%	7%
Total Suspended Solids	56	56	29	100%	52%	26	26	1	100%	4%
Cadmium	49	31	5	63%	10%	30	14	0	47%	0%
Chromium	49	48	8	98%	16%	30	29	1	97%	3%
Mercury	49	1	1	2%	2%	30	5	1	17%	3%
Nickel	49	48	5	98%	10%	30	29	1	97%	3%

Table 2-4 Five Year (2007 – 2012) Comparison of Exceedances during Wet- and Dry-Weather

Constituent	5 year Wet-Weather					5 year Dry-Weather				
	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed
TMDL										
E. coli	0	0	0	0%	0%	0	0	0	0%	0%
Copper	24	22	22	92%	92%	88	87	11	99%	13%
Lead	24	24	7	100%	29%	88	87	5	99%	6%
Zinc	24	24	19	100%	79%	88	88	0	100%	0%
Ammonia	24	21	0	88%	0%	18	14	0	78%	0%
CWA 303(d) List										
Total Coliform	24	24	24	100%	100%	14	14	2	100%	14%
Fecal Coliform	24	24	23	100%	96%	14	13	4	93%	29%
Oil and Grease	24	20	20	83%	83%	14	2	2	14%	14%
Other										
Fecal Enterococcus	24	24	24	100%	100%	14	12	7	86%	50%
Cyanide	24	17	0	71%	0%	14	12	0	86%	0%
Dissolved Oxygen	24	24	0	100%	0%	14	14	0	100%	0%
pH	24	24	0	100%	0%	14	14	9	100%	64%
Chemical Oxygen Demand	24	23	0	96%	0%	14	14	0	100%	0%
Chloride	24	24	0	100%	0%	18	18	0	100%	0%
Kjeldahl-N	24	24	7	100%	29%	18	18	2	100%	11%
Nitrite-N	24	13	0	54%	0%	18	12	0	67%	0%
Nitrogen - Total	0	0	0	0%	0%	4	4	3	100%	75%
Phosphorus - Total (as P)	24	24	4	100%	17%	18	17	0	94%	0%
Total Suspended Solids	31	31	16	100%	52%	14	14	0	100%	0%
Cadmium	24	20	3	83%	13%	18	14	0	78%	0%
Chromium	24	23	6	96%	25%	18	17	0	94%	0%
Mercury	24	0	0	0%	0%	18	5	1	28%	6%
Nickel	24	23	3	96%	13%	18	17	0	94%	0%

Table 2-5 Summary of Exceedances for Los Angeles River and Rio Hondo (2002 – 2012)

Constituent	Los Angeles River					Rio Hondo				
	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed	Total Samples	Number Detects	Number Exceed	% Detect	% Exceed
TMDL										
E. coli	0	0	0	0%	0%	0	0	0	0%	0%
Copper	123	120	35	98%	28%	26	26	16	100%	62%
Lead	123	122	10	99%	8%	26	26	6	100%	23%
Zinc	123	123	24	100%	20%	26	26	1	100%	4%
CWA 303(d) List										
Total Coliform	63	63	46	100%	73%	12	12	10	100%	83%
Fecal Coliform	63	62	48	98%	76%	12	12	11	100%	92%
Oil and Grease	63	34	34	54%	54%	12	5	5	42%	42%
Other										
Fecal Enterococcus	63	61	54	97%	86%	12	12	11	100%	92%
Cyanide	63	50	1	79%	2%	12	7	3	58%	25%
Dissolved Oxygen	62	62	1	100%	2%	12	12	0	100%	0%
pH	63	63	12	100%	19%	12	12	2	100%	17%
Chemical Oxygen Demand	63	62	1	98%	2%	12	12	0	100%	0%
Chloride	63	63	0	100%	0%	16	16	1	100%	6%
Kjeldahl-N	63	63	13	100%	21%	16	16	5	100%	31%
Nitrite-N	63	43	6	68%	10%	16	7	0	44%	0%
Nitrogen - Total	0	0	0	0%	0%	4	4	3	100%	75%
Phosphorus - Total (as P)	63	62	9	98%	14%	15	15	1	100%	7%
Total Suspended Solids	70	70	24	100%	34%	12	12	6	100%	50%
Cadmium	63	39	5	62%	8%	16	6	0	38%	0%
Chromium	63	61	9	97%	14%	16	16	0	100%	0%
Mercury	63	3	2	5%	3%	16	3	0	19%	0%
Nickel	63	61	6	97%	10%	16	16	0	100%	0%

2.1.2 Characterization of Discharge Quality

Stormwater and non-stormwater discharges would be characterized if sufficient existing data were available. The necessary data is limited due to the typical lack of data for MS4 discharges within the LAR UR2 WMA and other Los Angeles County WMAs. Regional studies, modeling data, and/or land use data will be further evaluated in the future in order to characterize discharge quality. In addition, data will become available through the future Coordinate Integrated Monitoring Program (CIMP) Outfall Monitoring which will be utilized to characterize discharges from the LAR UR2 WMA.

2.2 Water Body Pollutant Classification

Based on the findings from the water quality characterization, the WBPCs can be classified into one of three categories, in accordance with the MS4 Permit Part VI.5.a.ii. Those WBPCs with a TMDL were classified as Category 1, those WBPCs listed on the State's 303(d) list as impairing a particular waterbody segment were classified as Category 2, and those remaining WBPCs without an associated TMDL or on the State's 303(d) list, but showing exceedances of water quality criteria were classified as Category 3. This categorization is intended to prioritize WBPCs in order to guide the implementation of structural and non-structural control measures in this WMP as well as the CIMP development. A classification of the constituents into each category was prepared and is summarized in **Table 2-6**. Category 3 pollutants were not identified for LAR UR2 WMA because all available water quality data was obtained downstream of LAR UR2 WMA, therefore its applicability is unknown. Through CIMP monitoring efforts, applicable data will be obtained and WBPCs will be revised through the adaptive management process.

Table 2-6 Categorized Water Body-Pollutant Combinations

Category 1 (TMDL)	Category 2 (303(d) List)	Category 3 (Insufficient Data
Ammonia-Nitrogen Nitrate-Nitrogen Nitrite-Nitrogen Nitrate-Nitrogen Plus Nitrite-Nitrogen *E. coli* Bacteria Cadmium Copper Lead Zinc Trash	Oil Coliform Bacteria Toxicity	Fecal Enterococcus pH Kjeldahl-Nitrogen Total Nitrogen Total Phosphorus Total Suspended Solids Chromium Nickel

2.3 Source Assessment

After the WBPC classification analysis, a source assessment, as outlined in MS4 Permit Part VI.C.5.a.iii, for LAR UR2 WMA Category 1 through 3 pollutants is warranted to identify whether MS4 discharges are likely to be causing or contributing to the impairments or exceedances. The assessment criteria may be based on the following facts or findings:

- Findings from LAR UR2 WMA Illicit Connections and Illicit Discharge Elimination Programs;
- Findings from LAR UR2 WMA Industrial/Commercial Facilities Programs;
- Findings from LAR UR2 WMA Development Construction Programs;
- Findings from LAR UR2 WMA Public Agency Activities Programs;
- TMDL source investigations;
- Watershed model results;

- Findings from LAR UR2 WMA monitoring programs, including but not limited to TMDL compliance monitoring and receiving water monitoring; and
- Any other pertinent data, information, or studies related to pollutant sources and conditions that contribute to the highest water quality priorities.

During WMP development, the LAR UR2 WMA Permittees were asked to provide summary data resulting from past industrial and commercial inspections, to identify whether pollutant sources or trends were apparent. During the last six years of the 2001 Permit, inspections were not required, so the available data was limited, dated, and rudimentary in content. As the primary emphasis of this program is implementing good housekeeping measures and protective measures, the reports emphasized the correction of obvious potential sources of pollutants, rather than actual pollutants or monitoring results. The report review did not provide useful information that could guide the source assessment and had been collected so far in the past as to border on hearsay. Future inspection initiated under 2012 MS4 Permit Part VI.D.6, will produce more focused and specific source assessment information.

Monitoring data, from non-MS4 Permittees in the LAR UR2 WMA, were also reviewed, however of 161 General Industrial Permittees within the WMA, only 35 were found to have submitted data to the State Storm Water Multiple Application and Report Tracking System (SMARTS) website. Initially, this data was briefly reviewed and appeared to have little diagnostic value in predicting pollutant sources or loads. Following receipt of the Board WMP comment letter, the analysis was repeated and again the data was found to be of limited value in guiding either current pollutant sources assessments or developing credible industrial land use pollutant EMCs. In the majority of cases, the monitoring data appeared variable and inconsistent, reported with mistaken concentration units, and the analytical parameters tracked were unrelated to likely facility pollutants or observed watershed impairments. A determination was made that this data did not meet the RAA Guideline criteria for being sustentative and defensible. In addition, the current versions of Permit approved RAA models are limited to less than 20 land use categories, preventing the application of SMARTS Monitoring Data to individual Industrial Permittees.

As apparent from the following subsections, TMDL pollutant source assessments and models reviewed during preparation of the WMP were inconclusive and overly broad upon which to take actionable source determinations or source control efforts. This follows past Regional Board studies, and the majority of environmental data, which suggest that a few "bad actors" are responsible for a significant share of environmental problems. At this time, models are not specific enough to accommodate a few specific sources, let alone the impact of a major source such as copper in brake pads. Current models are inadequate for distinguishing copper loads from a residential area adjacent to a freeway with those from a rural area. Such sources will likely be identified through implementation of the CIMP and the AMP.

Bacteria

The Los Angeles River Watershed Bacteria TMDL made the following assertions regarding the identification of indicator bacteria sources to the Los Angeles River:

> *Dry-weather urban runoff and stormwater conveyed by storm drains are the primary sources of elevated bacterial indicator densities to the Los Angeles River Watershed during dry- and wet-weather. The linkage between the numeric targets and the allocations is supported by the following scientific findings:*
>
> 1. *In Southern California, in dry-weather, local sources of bacteria principally drive exceedances (LARWQCB, 2002b; 2003b; 2004a).*
> 2. *Tiefenthaler et al. found that in natural streams bacteria levels were generally higher during lower flow condition (Tiefenthaler et al., 2008).*

3. *Ackerman et al. found that storm drains contribute roughly 13 percent of the flow in the Los Angeles River in dry-weather, while Water Reclamation Plants (WRPs) account for roughly 72 percent of the flow in the river during dry-weather. With this flow, storm drains were contributing almost 90 percent of the E. coli loading (Ackerman et al., 2003). E. coli concentrations were found to be as much as four orders of magnitude higher from storm drains than from the WRP discharges.*
4. *In the BSI study, the CREST team found that approximately 85 percent of the storm drain samples collected exceeded the E. coli objective. In the reaches investigated, E. coli loading from storm drains and tributaries greatly exceeded the allowable instream loading. The study also found that some of the loading in Reach 2 could not be attributed to the measured storm drain inputs.*
5. *In Southern California, in wet-weather, upstream or watershed sources principally cause the bacteria exceedances (LARWQCB, 2002b; 2003c; 2004a).*
6. *During wet-weather, WRP discharges may account for as little as 1 percent of the total flow in the river (CREST, 2009a).*
7. *Based on three experiments conducted by Noble et al. (1999) to mimic natural conditions in or near Santa Monica Bay (SMB), two in marine water and one in fresh water, bacteria degradation was shown to range from hours to days (Noble et al., 1999). Based on the results of the marine water experiments, the model assumes a first-order decay rate for bacteria of 0.8 d-1 (or 0.45 per day). Degradation rates were shown to be as high as 1.0 d-1 (Noble et al., 1999). These studies show that bacterial degradation and dilution during transport through the watershed do not significantly affect bacterial indicator densities in receiving waters.*

Based on this finding, further source assessment of the MS4 discharges will need to be conducted to determine the primary source of bacteria within MS4 of the LAR UR2 WMA.

Metals

The Los Angeles River Metals TMDL Coordinated Monitoring Program (CMP) Plan stated the following regarding sources of metals to MS4 discharges:

> *There are significant differences in the sources of metals loadings during dry-weather and wet-weather. During dry-weather, most of the metals loadings are in the dissolved form. The three major publicly owned treatment works (POTWs) that discharge to the river (Tillman WRP, LA-Glendale WRP, and Burbank WRP) constitute the majority of the flow and metals loadings during dry-weather. The storm drains also contribute a large percentage of the loadings during dry-weather because although their flows are typically low, concentrations of metals in urban runoff may be quite high. The remaining portion of the dry-weather flow and metals loadings represents a combination of tributary flows, groundwater discharge, and flows from other permitted NPDES discharges within the watershed.*
>
> *During wet-weather, most of the metals loadings are in the particulate form and are associated with wet-weather stormwater flow. On an annual basis, stormwater contributes about 40 percent of the cadmium loading, 80 percent of the copper loading, 95 percent of the lead loading and 90 percent of the zinc loading. This stormwater flow is permitted through two MS4 permits, a separate Caltrans MS4 permit, a general construction stormwater permit and a general industrial stormwater permit.*

> *Nonpoint sources of metals may include tributaries that drain the open space areas of the watershed. Direct atmospheric deposition of metals on the river is also a small source. Indirect atmospheric deposition on the land surface that is washed off during storms is a larger source, which is accounted for in the estimates of stormwater loadings.*

As summarized in the Los Angeles River Metals TMDL CMP Annual Reports, dry-weather monitoring data from stations adjacent to the LAR UR2 WMA were rarely in exceedance for metals. Of the three stations, the exceedances associated with the Rio Hondo were generally associated with very low flows and the observation of very high hardness. Either of these observations alone might suggest the Permit identified concentrations are not relevant to impairments or daily loads. The LAR UR2 WMA will continue to monitor for dry weather metal concentrations, as proposed in the CIMP, and implement the watershed control measures identified in WMP Section 5 to further identify and control the sources of metals in runoff and LAR UR2 WMA receiving waters.

Nitrogen Compounds, pH, and Phosphorous

The Los Angeles River Nitrogen Compounds and Related Effects TMDL asserted that the principal sources of nitrogen compounds to the Los Angeles River were:

> *The principal source of nitrogen compounds to the Los Angeles River is discharges from the Donald C. Tillman WRP, the Los Angeles-Glendale WRP, and the Burbank WRP. During dry-weather period, the major POTWs contribute 84.1 percent of the total dry-weather nitrogen load. Urban runoff, stormwater, and groundwater discharge may also contribute nitrate loads. Further evaluation of these sources is set forth in the Implementation Plan.*

Trash, Oil, Grease, and Sediments

The Trash TMDL for the Los Angeles River Watershed asserted the following in the source analysis section of the technical TMDL:

> *The major source of trash in the river results from litter, which is intentionally or accidentally discarded in watershed drainage areas. Transport mechanisms include the following:*
>
> 1. *Storm drains: trash is deposited throughout the watershed and is carried to the various reaches of the river and its tributaries during and after significant rainstorms through storm drains.*
> 2. *Wind action: trash can also blow into the waterways directly.*
> 3. *Direct disposal: direct dumping also occurs.*
>
> *Extensive research has not been done on trash generation or the precise relationship between rainfall and its deposition in waterways. However, it has been found that the amount of gross pollutants entering the stormwater system is rainfall dependent but does not necessarily depend on the source (Walker and Wong, December 1999). The amount of trash which enters the stormwater system depends on the energy available to re-mobilize and transport deposited gross pollutants on street surfaces rather than on the amount of available gross pollutants deposited on street surfaces. The exception to this finding of course would be in the event that there is zero gross pollutants deposited on the street surfaces or other drainages tributary to the storm drain.*

> *Where gross pollutants exist, a clear relationship between the gross pollutant load in the stormwater system and the magnitude of the storm event has been established. The limiting mechanism affecting the transport of gross pollutants, in the majority of cases, appears to be remobilization and transport processes (i.e., stormwater rates and velocities).*
>
> *Several studies conclude that urban runoff is the dominant source of trash. The large amount of trash conveyed by urban stormwater to the Los Angeles River is evidenced by the amount of as trash that accumulates at the base of storm drains. The amount and type of trash that is washed into the storm drain system appears to be a function of the surrounding land use.*

While this assessment may have been correct several years ago, the LAR UR2 WMA were recipients of a grant that resulted in full capture certified devices being placed where ever possible within the jurisdictions. Most of the cities are 90 percent or more compliant with the trash TMDL and are investigating opportunities to complete this implementation effort.

2.4 Prioritization

MS4 Permit Part VI.C.5.a.iv, directs Permittees to identify the water quality priorities within each WMA. At a minimum, these priorities shall include: 1) Achieving applicable WQBELs and/or RWLs established pursuant to TMDLs, as set for in the MS4 Permit Part VI.E and Attachment O for the LAR UR2 WMA. The MS4 Permit listed water quality priorities are as follows:

- **Priority 1(a)** – TMDLs controlling pollutants for which there are WQBELs and/or RWL with interim or final compliance deadlines within the permit term or TMDL compliance deadlines that have already passed and limitations have not been achieved.
- **Priority 1(b)** – TMDLs controlling pollutants for which the WQBELs and/or RWL with interim or final compliance deadlines between September 6, 2012 and October 25, 2017.
- **Priority 2** – All other controlling pollutants for which data indicate impairment or exceedances of RWL in the receiving water and the findings from the source assessment implicates discharges from the MS4 shall be considered the second highest priority.

Table 2-7 lists the identified water quality priorities and the WBPCs categories based on compliance deadlines. It should be noted that the Category 3 pollutants overlap significantly with Category 1 or 2 pollutants and in some cases, such as fecal coliform and *E. coli*, or total nitrogen and nitrate, they are essentially the same pollutant. Carrying out separate analyses for these overlapping WBPCs risks producing an RAA with conflicting implementation priorities, based on inaccurate assumptions regarding the independence of the variables and a misapplied implementation effort on duplicative parameters.

Table 2-7 LAR UR2 WMA Water Quality Priorities

Priority	Pollutant	Category	Water Body		Compliance Deadline
			Los Angeles River Reach 2	Rio Hondo Reach 1	
1a	Ammonia (NH_3-N)	1	x	x	March 23, 2004
	Nitrate (NO_3-N)	1	x	x	March 23, 2004
	Nitrite (NO_2-N)	1	x	x	March 23, 2004
	NO_3-N+NO_2-N	1	x	x	March 23, 2004
1b	Trash	1	x	x	September 30, 2016 (effectively 10/1/15)
2	*E.coli* Dry-Weather	1	x	x	March 23, 2022 (Group Interim Single sample Final WQBEL)
	Copper Dry-Weather	1	x	x	January 11, 2024
	Lead Dry-Weather	1	x	x	January 11, 2024
	Zinc Dry-Weather	1		x	January 11, 2024
	Copper Wet-Weather	1	X	x	January 11, 2028
	Lead Wet-Weather	1	X	x	January 11, 2028
	Zinc Wet-Weather	1	X	x	January 11, 2028
	Cadmium Wet-Weather	1	X	x	January 11, 2028
	E.coli Wet-Weather	1	X	x	March 23, 2037
	Oil	2	X		N/A
	Coliform Bacteria	2		x	N/A
	Toxicity	2		x	N/A
	Fecal Enterococcus	3	x	x	N/A
	pH	3	x	x	N/A
	Kjeldahl-N	3	x	x	N/A
	Total Nitrogen	3		x	N/A
	Total Phosphorus - P	3	x		N/A
	Total Suspended Solids	3	x		N/A
	Cadmium	3	x		N/A
	Chromium	3	x		N/A
	Nickel	3	x		N/A

Note that Priority 1a pollutants are primarily associated with Water Reclamation Facilities Rather than MS4 discharges and additional emphasis on MS4 BMP implementation as a source control would divert resources from pollutants more likely to be associated with MS4 discharges.

3. Watershed Control Measures

Permit Part VI.C.5.b is titled *Selection of Watershed Control Measures* and directs Permittees to *identify strategies, control measures and BMPs ... with the goal of creating an efficient program to focus individual and collective resources on watershed priorities*. This section further identifies retrofitting of existing development and modification of Permit identified MCMs. The permit apparently introduces this verbiage as catch all for the many ways in which runoff and pollutants from a watershed can be reduced.

3.1 MCMs and Institutional BMPs

Permit Part VI.C.5.b.iv.(1).(a) directs that the MCMs, identified in Parts VI.D.4 to VI.D.10, be assessed for potential effectiveness and pollution control prioritization within WMP Plan, while Part VI.C.5.b.iv.(1).(c) allows some MCMs to be deleted, and wholly replaced, when accompanied by appropriate justification.

3.1.1 MCM Programs and Potential Modifications

MCMs Programs are identified beginning with Permit Part VI.D.5 include:

5. Public Information and Participation Program (PIPP)
6. Industrial/Commercial Facilities Program
7. Planning and Land Development Program
8. Development Construction Program
9. Public Agency Activities Program
10. Illicit Connection and Illicit Discharges (IC/ID) Detection and Elimination Program

As compared to the 30 pages of Special Provisions in the 2001 MS4 Permit, these six programs comprise 55 pages and impose many new and greatly expanded duties, tracking and reporting responsibilities on the Permittees and their staff, which will reduce the sources of runoff and the pollutants it conveys, by more than five percent. As an example, if we assume that the additional non-structural maintenance, resulting from the installation of over 3,500 full capture certified structural Connector Pipe Screens (CPS) and 1,700 Automatic Retracting Screens (ARS), collects ten pounds of trash, debris and sediments, per device-year, that would result in twenty five tons less pollution, much of it sediments to which other pollutants bind. While significant portions of the Los Angeles River Watershed have yet to commit to weekly street sweeping in residential areas, the LAR UR2 WMA Permittees have committee to upgrade from street sweeping to an enhanced weekly street vacuuming program, for most cities with parking enforcement, and contractual speed limitations when the vacuum is in use. This should result in additional tons of particulates, along with the attached metals, bacteria, and organic pollutants being collected in comparison to prior years. The Industrial and Commercial Facilities Inspection programs will significantly benefit from the greater emphasis on annual progress reporting and also the tables identified in the Permit and specifying specific BMPs, source controls, MCMs, and watershed control measures that should be apparent during commercial and industrial inspections. Additional details regarding specific enhancements that will be implemented by the LAR UR2 WMA are presented in Section **3.3.1**.

The following subsections provide an overview of the MS4 Permit requirements associated with each of the MCMs Programs.

3.1.1.1 Public Information and Participation Program

Since adoption of the first Los Angeles County MS4 Permit in 1990, PIPPs have been the most visible and important component of the stormwater quality protection program for the average Los Angeles County resident. The PIPP is introduced in Part VI.D.5 of the MS4 Permit with the following objectives:

1) Measurably increase target audience knowledge about the MS4, stormwater pollution, the impact of stormwater pollution on receiving waters, and solutions to mitigate the impact of stormwater;
2) Measurably change the waste disposal and pollution generating behavior of target audiences by encouraging implementation of alternatives by distributing educational material; and
3) Involve and engage socio-economic groups and ethnic communities in mitigating stormwater impacts.

The PIPP MCM objectives must be achieved by participating in a County, WMP, or Permittee-led program. Permittees may maintain the existing 888-CLEANLA hotline for reporting spills, clogged catch basins, faded PIPP markers, and identify staff/department responsible for receiving such reports, or establish similar new Watershed Management Area or Permittee specific hotlines and reporting websites. The LACFCD has committed to maintain the existing hotline as a resource for the foreseeable future. Permittees must also individually or collectively participate in public outreach events to raise community awareness regarding stormwater and urban runoff. Example events include Beach and River Clean-Up Days coordinated with Heal the Bay and the Los Angeles County Waterkeeper, the Los Angeles County Fairs, Electronic Recycling and community Household Hazardous Waste Collection (HHWC) events.

There must also be a residential outreach program to develop public service announcements and advise the public about appropriate handling and disposal of hazardous materials and animal wastes. During prior permit cycles, Permittees contributed to developing and purchasing print advertisements, movie trailers, mobile billboards, and advertisement spots during Dodger Baseball games. A "Point of Purchase" education or brochure distribution program must also be developed for display at automotive part, home improvement and gardening, pet, and feed stores. Permittees are also directed to have, or share; websites with educational materials along with educational programs based on the State's Erase the Waste and California Environmental Education Interagency Network (CEEIN) program.

Together these ongoing PIPP MCM efforts can be expected to continue to contribute to reducing the discharge of pollutants, educating the public about how to better implement LID opportunities during their home improvement projects, and generally improving the local and regional environment. For the LAR UR2 WMA, this is especially true as it relates to pet wastes which are likely to remain a predominant watershed source of indicator bacteria such as *E. coli*, which are likely to remain the most significant long term watershed pollutant priority. As in past permit cycles, a well-supported and thoughtfully directed PIPP program, focused on bacteria and fecal wastes as a priority within the LAR UR2 WMA, should reach over 50% of the community with multiple impact opportunities per year, which can then be easily and substantially quantified as part of the annual report process. This program could focus on the proper disposal of dog and cat excrement, with linkages back to human and wildlife (e.g., Sea Otter) diseases such as toxoplasmosis with reputable supporting information provide by aquariums (Science Daily, 2002) and Health Departments (Los Angeles County, 2012). The potential modifications to this MCM are presented so that they may be referenced in the future during the adaptive management process. The program modifications incorporated through the WMP are documented in Section **3.3.1**.

3.1.1.2 Industrial/Commercial Facilities Program

As required by Part VI.D.6 of the MS4 Permit, each Permittee must implement an industrial and commercial facilities program designed to prevent illicit discharges into the MS4, reduce runoff from these facilities to the MEP standard, and prevent their discharges from contributing to violations of receiving water limitations. At a minimum this program must:

1) Track critical industrial and commercial sources using a GIS based inventory and database;
2) Implement a Business Assistance Program to educate them about reducing pollutants in runoff;
3) Conduct inspections of Critical Commercial Sources to ensure effective BMP implementation;

4) Inspect and progressively enforce Critical Source and General Industrial Permit compliance; and
5) Verify the implementation of the Commercial and Industrial Source Control BMPs identified on Table 10 (page 93 and 94) of the MS4 Permit.

This MCM program has the potential to significantly reduce stormwater conveyed pollutant loadings, especially within the more industrialized areas of the LAR UR2 WMA. The potential modifications to this MCM are documented in Section **3.3.1** presented so that they may be referenced during future adaptive management process cycles. This program may provide the clearest example of a cost effective MCM modification. One example would be a State-led effort to educate General Industrial Permittees about their responsibilities to comply with TMDL WLAs under the State Board General Industrial Permit, which becomes effective on July 1, 2015. As detailed in Section **4.4.1** , when industrial land use loadings are reduced to comply with general permit requirements, the LAR UR2 WMA RAA demonstrates significant reductions in key land use based pollutant loadings, such as trash, metals and bacteria (*E. coli*). Furthermore, as these facilities expand their monitoring effort to address these problematic pollutants, it should become easier to share the information with the MS4 Permittees and focus the education and Business Assistance Program on the more problematic facilities that have a true contribution to observed receiving water and (public or private) outfall exceedances. While enforcement should not be an immediate priority, more recalcitrant or negligent facilities could also be targeted for limited cost-effective (e.g. bacteria and metal) monitoring that can contribute to permit required coordination with State enforcement efforts. The impact of this program could be uneven across the LAR UR2 WMA, as most of the industrial sites are in the Cities of Commerce, Vernon, and, to a lesser degree, Bell, but each LAR UR2 Permittee has significant areas of critical commercial source facilities such as retail gasoline outlets, restaurants, nurseries, and automotive repair shops. The City of Commerce, has already implemented this process, by educating newly targeted industrial Permittees of the upcoming Permit effective date, the need to file a NOI, and the need to immediately cover and reduce discharges of critical sources of pollution including metals, trash, and bacteria, and putting these requirements into the form of letters to the industrial Permittees. Prior to the adoption of the December 2012 permit the City of Vernon implemented an enhanced Industrial/Commercial Facilities Program including an informational Business Assistance Program.

3.1.1.3 Planning and Land Development Program

The Planning and Land Development Program in MS4 Permit Part VI.D.7 is probably the most complicated section of the current Permit. In the 2012 MS4 Permit this part continues to implement, expand, and quantify the SUSMP program. It also defines hydromodification controls that are expected to have little impact on the LAR UR2 WMA Permittees, as it is only applicable to projects located within natural drainage systems. The section contains specific BMP design criteria, as well as implementation priorities that may be subject to interpretation at the planning level and annually documented. The stated purposes or objectives of this permit section include:

1) Encourage Smart Growth and urban redevelopment to protect environmentally sensitive areas;
2) Protect natural drainage systems (limited applicability to the LAR UR2 WMA);
3) Minimize imperviousness through LID and runoff retention or use;
4) Maintain and enhance riparian buffer areas (limited applicability to the LAR UR2 WMA);
5) Minimize pollutant loads, from impervious surfaces, through appropriate BMP/LID technologies;
6) Properly design and maintain LID and BMP control pollutants and reduce changes in hydrology;
7) Prioritize BMP selection to remove pollutants, reduce runoff, and support integrated water management by first using on-site infiltration, bioretention, and rainfall harvesting, then secondarily utilizing on-site biofiltration, off-site replenishment and retrofit opportunities.

Typical redevelopment rates released by the City of Los Angeles (City of Los Angeles Bureau of Sanitation, 2009) assume complete or substantial building replacement at an annual rate of between two

and five percent, meaning that a particular parcel is likely to be redeveloped every twenty to fifty years on average. Assuming typical interpretations of permit requirements, which would exclude residential redevelopments of less than an acre in area from the significant program requirements, this program is most likely to produce water quality improvements in industrial or commercial land use areas, rather than cities with more residential characteristics. Extrapolating current redevelopment rates will help quantify the impact of this program over time.

3.1.1.4 Development and Construction Program

Implementation of a Development Construction Program is required as a an MCM identified in MS4 Permit Part VI.D.8, with subparts directed at projects both less than, and greater than, one acre in extent. Permittees are required to implement a construction program with the following objectives:

1) Prevent the discharge of illicit construction-related pollutants into the MS4 and receiving waters;
2) Implement and maintain structural and non-structural BMPs to reduce pollutants in site runoff;
3) Prevent construction site discharges from causing or contributing to receiving water limitations;
4) Reduce construction site discharges of pollutants to the MS4 to the MEP standard; and
5) Establish an enforceable erosion/sediment control ordinance for soil disturbing construction sites.

MS4 Permit Part VI.D.8.d and Table 12 from the MS4 Permit apply exclusively to construction projects of less than one acre in extent and generally require the use of tracking and good housekeeping practices that are suitably implemented through typical municipal building and safety inspection programs. With the exception of concluding MS4 Permit Parts regarding enforcement and staff training, the remainder of this Part applies to construction sites of greater than, or equal to, one acre. Therefore, it significantly complements and documents implementation and competent tracking of the State General Construction Permit requirements, with Tables 13 through 17 of the MS4 Permit identifying specific BMP implementation and inspection requirements. Since this MS4 Permit Part addresses the construction phase of development/redevelopment, estimates of pollution reduction can be expected to vary annually and are only applicable in the year of occurrence. However, the reduction in pollution generation, especially for suspended solids and trash, can be significant and far greater than generation rates found on adjacent similarly sized occupied parcels. Potential modifications to this program are not identified, as they are unpredictable and vary over time.

3.1.1.5 Public Agency Activities Program

MS4 Permit Part VI.D.9 identifies the Public Agency Activities Program, which is directed at Permittees, their facilities, and maintenance operations. In previous MS4 Permits, the objectives of this program element were sometimes referred to as municipal "good housekeeping" practices, but they continue to evolve and have become significant municipal implementation efforts on their own. They include:

1) Public Construction Activities Management;
2) Public Facility Inventory;
3) Inventory of Existing Development for Retrofitting Opportunities;
4) Public Facility and Activity Management;
5) Vehicle and Equipment Wash Areas;
6) Landscape, Park, and Recreational Facilities Management;
7) Storm Drain Operation and Maintenance;
8) Streets, Roads and Parking Facilities Maintenance;
9) Emergency Procedures; and
10) Municipal Employee and Contractor Training.

The potential modifications to this MCM are presented so that they may be referenced in the future during the adaptive management process. The program modifications incorporated through the WMP are documented in Section **3.3.1**. More frequent street cleaning, will enhance compliance with the Los Angeles River Trash TMDL, while street vacuuming in land use areas that generate high metals loads can also have significant positive results. Enhanced maintenance of catch basins, especially those containing connector pipe screens, may result in reduced bacteria loadings that are likely to be significant priority in this region. The cost and pollution reduction effectiveness of this MCM program would likely be linked to the measures necessary to achieve RAA water quality objectives in the most cost effective and implementable WMP plan manner.

3.1.1.6 Illicit Connections and Illicit Discharges Elimination Program

Permit Part VI.D.10 expands the IC/ID program by substantially formalizing elements of the extant Permittee effort. Program formalization steps include the following:

1) Develop written procedures for conducting source investigations;
2) Develop written procedures for eliminating the source of illicit connections and illicit discharges;
3) Develop written procedures for public reporting of illicit discharges;
4) Develop written Spill Response Plans (SRPs); and
5) Educate employees, businesses, and the public about the hazards of illegal discharges and improper waste disposal.

The potential modifications to this MCM are presented so that they may be referenced in the future during the adaptive management process. The program modifications incorporated through the WMP are documented in Section **3.3.1**. Ordinances with consistent enforcement actions, which include accelerated follow up timeframes may be beneficial. Reducing the amount of days for the follow up inspection will ensure prompt clean up.

3.1.2 Summary of Existing MCMs/Institutional BMPs

The existing MCMs/institutional BMPs within the LAR UR2 WMA were evaluated and summarized based on the Los Angeles County Unified Annual Stormwater Reports for the Fiscal Years 2010-2011 and 2011-2012. Tables summarizing the existing MCMs/institutional BMPs by LAR UR2 WMA are presented in **Appendix E**.

3.1.3 Non-Stormwater Discharge Control Measures

Part VI.C.5.b.iv.(2) of the MS4 Permit states that where Permittees identify non-stormwater discharges from the MS4 as a source of pollutants that cause or contribute to exceedance of RWLs, the proposed watershed control measures must include strategies, control measures, and/or BMPs that must be implemented to effectively eliminate the source of pollutants consistent with Parts III.A and VI.D.10 of the MS4 Permit. These may include measures to prohibit the non-stormwater discharge to the MS4, additional BMPs to reduce pollutants in the non-stormwater discharge or conveyed by the non-stormwater discharge, diversion to a sanitary sewer for treatment, or strategies to require the non-stormwater discharge to be separately regulated under a general NPDES Permit.

Among others, the Rio Hondo has been successful in controlling non-stormwater discharges and the channel is often either dry or lacks runoff flows. It is likely that efforts to control irrigation overspray and reduce outdoor water use will continue to benefit the LAR UR2 WMA Permittees. This combined with the non-stormwater outfall based inventory; screening and source assessment will be the group's initial focus for the next round of source control measures.

3.1.4 TMDL Control Measures

Part VI.C.5.b.iv.(3) of the MS4 Permit states that Permittees must compile control measures that have been identified in TMDLs and corresponding implementation plans. In addition, Permittees must identify those control measures to be modified, if any, to most effectively address TMDL requirements within the watershed. If TMDL implementation plans have not been developed, Permittees must include control measures (baseline or modified) that will address both stormwater and non-stormwater discharges from the MS4s to ensure compliance with applicable TMDLs. This section identifies and summarizes TMDL implementation plans that have been developed by the LAR UR2 WMA members in response to applicable TMDLs. Proposed modifications to these control measures are presented in Section **3.3.1**.

3.1.5 TMDL Implementation Plans

An MS4 Permittee implementation plan has not been developed for the Los Angeles River Nitrogen Compounds and Related Effects TMDL, as Publically Owned Treatment Works (POTWs) or Water Recovery Plants (WRPs) were identified in the TMDL as the primary discharge source of these constituents. Implementation plans for the Los Angeles River Metals TMDL, Trash TMDL, and Bacterial TMDL are summarized below.

3.1.5.1 Los Angeles River Metals TMDL Implementation Plans

In compliance with the implementation schedule set forth in the Los Angeles River Metals TMDL, Permittees and groups of Permittees completed an implementation plan. The Final Implementation Plan for Reach 2 Participating Jurisdictions was accepted on December 14, 2010 and among the submitting jurisdictions were the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. As summarized in Tables ES-5 to 7 of that plan, the study identifies a four phased implementation for non-structural BMPs that starts in 2010 and ends in 2028 combined with the implementation of structural measures based on the priority of an area as determined through modeling of the reach 2 watershed area. Under that implementation plan, participating jurisdictions will initially implement non-structural BMPs to meet compliance for TMDL and complete an analysis to identify locations to place structural BMPs for later phases. The schedule for the phased implementation for non-structural BMPs is provided in **Table 3-1**. Since the plan is mostly summary in content, no conflicts with the proposed WMP Plan were apparent and the LAR UR2 WMA Permittees reported to be implementing its recommendations within the context of the 2012 MS4 Permit requirements. The success of the final outcome of this study will be assessed through the monitoring data from the CIMP and the need for implementation adjustments through the AMP.

3.1.5.2 Los Angeles River Trash TMDL Implementation Plans

For the Los Angeles River Trash TMDL, LAR UR2 WMA implementation occurred primarily through a grant to the GWMA, which succeeded in placing full captured certified CPSs, often with ARSs, in approximately 90% of WMA catch basins. The remaining basins, generally identified by the LACFCD and Department of Public Works as being structurally deficient to accommodate such devices without expensive reconstruction, are still subject to weekly street sweeping or vacuuming. As part of ongoing WMP implementation assessment efforts, some inlets, previously identified as unprotected catch basins, were recently determined to be culverts, which do not discharge to receiving waters, or require trash controls. Permittees with mischaracterized culverts plan to provide revised compliance reports in December 2015.

A Tentative Basin Plan Amendment, regarding Reconsideration of the Los Angeles River Watershed Trash TMDL, which partially addresses the issue of structurally deficient catch basins and TMDL compliance, was publicly noticed on April 3, 2015 and will be considered for LARWQCB adoption on June 11, 2015. Following amendment adoption, MS4 Permittees and LAR UR2 WMA members, plan to contact LACFCD to

inquire if alternative structural criteria have been developed to allow the installation of additional CPSs or ARS systems in currently un-retrofitted catch basins. After the second round of full capture device installation, remaining catch basins will be identified for reconstruction; however, until funding for such reconstruction can be identified, partial capture and institutional controls, such as street sweeping in the tributary areas of unprotected catch basins, would continue and be used to annually assess TMDL compliance.

3.1.5.3 Los Angeles River Bacteria TMDL Implementation Plans

One of the primary objectives of the LAR UR2 WMA WMP Plan is identifying BMPs, and other watershed control measures, for implementing the Los Angeles River Bacteria TMDL, which has a final compliance date of March 23, 2037. In December, 2014, the LAR UR2 WMA submitted to the LARWQCB, *Bacteria TMDL Load Reduction Strategy for Segment B of the Los Angeles River*. This study did not identify the need to implement immediate structural control measures within the WMA to achieve dry-weather bacterial effluent limitations, but did report that four "outlier" outfalls; R2-06, R2-T, R2-NEW-18, and R2-NEW-20, warranted additional investigation. As milestone measures during the current 2012 MS4 Permit cycle, which concludes on December 28, 2017, the LAR UR2 WMA will sequentially investigate each of these outlier outfalls, at six month increments beginning on September 23, 2015 and concluding on the same date in the year 2017. The result of these investigations would be incorporated through the 2017 MS4 Permit and could be completed within the March 23, 2019 first phase LRS milestone objectives. A similar LAR study has been proposed for the Rio Hondo and was contractually obligated on April 9, 2015, the first sample event undertaken on May 22, 2015, and work product delivery to the LARWQCB is set for March 23, 2016. The recommendations from that study are to be implemented by March 23, 2020 as indicated in **Table 1-6**, along with other TMDL milestone dates.

Table 3-1 LAR Metals TMDL Jurisdictional Group 2 Non-Structural BMPs Phased Implementation Plan

BMP	Phase 1 (2010-2011)	Phase 2 (2012-2019)	Phase 3 (2020-2023)	Phase 4 (2024-2028)
Vehicle Brake Pad Replacement	Senate Bill 346 into law September 27, 2010	Support Implementation activities		
Tire Wheel Weight Replacement	Support legislative efforts for passage of Senate Bill 757	No new activity (assumes legislative success by 2012)		
Pesticide Use	No activity	Evaluate potential for action and implement as needed by end of Phase 3		No new activity
Vehicle Tire Wear Reduction	No activity	Evaluate potential for action and implement as needed by end of Phase 3		No new activity
Roof Materials Control	Implement building and planning agency coordination activities; evaluate need for ordinance/revised specifications	Establish and implement as needed ordinance and/or revised specifications; implement downspout disconnect program	No new activity	
Street Sweeping	No new activity - continue to implement at current level	Evaluate existing program to identify opportunities to increase efficiency		No new activity
Catch Basin Cleaning	No new activity - continue to implement at current level	Evaluate existing program to identify opportunities to increase efficiency		No new activity
Public Education and Outreach	Evaluate and revise public education and outreach materials/programs as needed to focus on metals	Continue to review and revise as needed		
Water Conservation	Develop water conservation model ordinance	Establish ordinance by end of Phase 3		No new activity
Development Practices	Establish model requirements that reduce offsite runoff consistent with future MS4 Permit expectations	Revise MS4 program as needed and implement new practices; update as needed over long term to incorporate new concepts or methods		
Downspout Disconnect Program[1]	Establish program for implementation	Implement downspout disconnects at rate determined by Phase 1 structural BMP selection	Implement downspout disconnects at rate determined by Phase 1 structural BMP selection	Implement downspout disconnects at rate determined by Phase 1 structural BMP selection
General Plan Update	Identify areas for revision and establish schedule for implementation	Revise General Plan by end of Phase 3		No new activity
Watershed Coordination	Review existing coordination; identify improved mechanisms and implement	Continue high level of coordination		

[1] The number of downspout disconnections implemented in Reach 2 watershed is dependent on the number of structural BMPs implemented. The rate of implementation needed will be determined during Phase 1.

Note: Each jurisdiction will select from the phased non-structural BMP programs as outlined in Table ES-4 of the Final Implementation Plan for Reach 2 Participating Jurisdictions.

3.2 Structural BMPs

As part of the WMP development process, BMPs that will be considered sufficient in addressing water quality priorities and achieving compliance with MS4 Permit requirements were identified. Structural BMPs vary in function and type, with each BMP providing unique design characteristics and benefits from implementation. The overarching goal of BMP implementation as part of the WMP is to reduce the impact of stormwater and non-stormwater flows on receiving water quality. This section identifies structural BMPs that are currently implemented, as well as potential BMPs that may be used in the future. The structural BMPs proposed in accordance to this WMP are identified in Section **4.5**.

3.2.1 Categories of Structural BMPs

Structural BMPs include both regional and distributed BMPs categorized as illustrated in **Table 3-2**. This section provides detailed descriptions of various regional and distributed BMPs that were considered for use by the LAR UR2 WMA and may be considered in the future through the adaptive management process. The structural BMPs proposed through this WMP are identified in Section **4.5**. Additionally, **Appendix F** provides a comparison matrix which ranks different BMP types for different ranking factors that include cost, effectiveness, implementation, and environmental/other factors.

Table 3-2 Summary of Structural BMP Categories and Major Functions

Category	Subcategory	Example BMP Types
Regional	Infiltration	Surface infiltration basin, subsurface infiltration gallery
	Detention	Surface detention basin, subsurface detention gallery
	Constructed Wetland	Constructed wetland, flow-through/linear wetland
	Treatment Facility	Facilities designed to treat runoff from and return it to the receiving water
	Low Flow Diversion	Facilities designed to divert dry-weather flows to the sanitary sewer
Distributed	Site-Scale Detention	Dry detention basin, wet detention pond, detention chambers, etc.
	Green Infrastructure	**Bioretention** and **biofiltration** (vegetated practices with a soil filter media, and the latter with an underdrain)
		Permeable pavement
		Green streets (often an aggregate of bioretention/biofiltration and/or permeable pavement)
		Infiltration BMPs (non-vegetated infiltration trenches, dry wells, rock wells, etc.)
		Bioswales (vegetative filter strips or vegetated swales)
		Rainfall harvest (green roofs, cisterns, rain barrels)
	Flow-Through Treatment BMP	Media/cartridge filters, high-flow biotreatment filters, etc.
	Source Control Treatment BMPs	Catch basin inserts, screens, hydrodynamic separators, trash enclosures, etc.

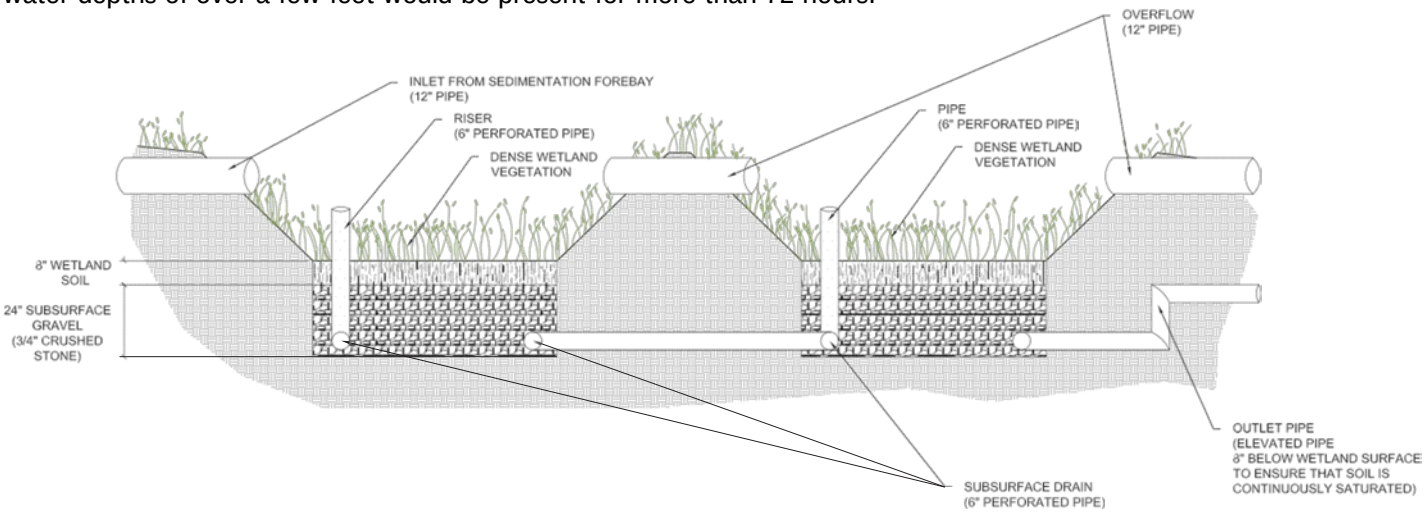
Regional BMPs

Regional BMPs are large scale runoff treatment and retention systems that accept runoff from tens to hundreds of acres of development. They generally support multiple beneficial uses such as groundwater recharge and recreation to achieve Integrated Regional Water Management Program objectives.

Typically the first flush of runoff, which carries the pollutants of concern and debris at high concentrations, receives solids removal pretreatment. In most areas, after the runoff is captured and stored it can be treated and discharged, used for non-potable purposes, infiltrated into the soil, or a combination of the three.

Subsurface Flow (SF) Wetlands

Unless extensive land area and substrate is available, subsurface flow wetlands are generally reserved as a tertiary treatment or polish for the effluent from wastewater treatment facilities, but can be utilized in relatively small catchments where nutrients are a significant issue. The design is generally based on either a relatively dependable and consistent inflow or the ability to primarily function in detention rather than extended retention. They may also be practical for remediation of dry-weather and very low first flush runoff drainage systems, so long as higher flows may be diverted away. They are impractical where water depths of over a few feet would be present for more than 72 hours.



Adapted from:
Subsurface Gravel Wetland
University of New Hampshire Stormwater Center. 2007 Annual Report.

Extended Retention Wetlands

Extended retention wetlands are favored where rainfall or runoff is present year round so that replenishment water is available to maintain the wetland and aquatic life. They must also discharge when large storm events or storm event series are encountered. While water depths are greater for subsurface flow wetland, and therefore the area requirements are lessened, there is a significant risk of the water becoming stagnant and overgrown with algae mats. In this case, where the wetland is expected to function for retention, the seasonal volume of water that must be accommodated, and the wetland, becomes excessively large, since the rainfall depth would grow from 0.75 inch to perhaps 2 feet. This BMP would be modeled as a constructed surface flow wetlands in the RAA.

Seasonal Dry Detention Pond

Seasonal detention ponds are an effective method for detaining runoff so that it can be metered out through a secondary treatment, such as a bioswale, sand filter, or media filter. They are also effective in avoiding damage associated with hydromodification or flooding due to limited downstream conveyance capacity. However, as with the prior wetland examples, they must either drain completely within a few days or be excessively large to accommodate the seasonal runoff from a large catchment.

Surface Infiltration Basins

Surface infiltration basins and spreading grounds can be found locally in the San Fernando Valley, below Whittier Narrows and in the Chino Basin, where they make an important contribution towards regional groundwater management. A key characteristic of these basins is placement over alluvial soils that allow rapid drawdown following the storm event. The area between the lower Rio Hondo and Los Angeles River has limited areas suitable for very rapid infiltration, but there may be opportunities on the east side of the Cities of Bell Gardens and Commerce or there are horizontal basins that parallel the rivers and can allow both settling and infiltration or horizontal wells. Spreading grounds owned by LACFCD may require storage and pre-treatment before being allowed for infiltration through the spreading grounds.

Underground Cisterns

For those WMP areas where infiltration is deemed infeasible, the MS4 Permit directs the implementation of water use projects, which can be supported using underground cisterns that temporarily store the runoff until needed for reuse such as for irrigation. These systems can take many forms such as below grade water tanks, mediums sized modular precast concrete units, or very large precast bridge or arch structures. Modular units are installed over a water proof geotextile to retain the water within the cistern. A recently constructed example of this technology is Garvanza Park in the City of Los Angeles. Here modular units were installed under an existing park to accept storm or urban runoff. Flows beyond the cistern capacity are bypassed down the pre-existing storm drain. The stored water is used for park irrigation, during the early morning hours when the park is closed and there is the least risk of bodily contact.

Subsurface Infiltration Basins

In areas where infiltration is favorable, a similar cistern design can be used, except the geotextile is omitted so that the runoff may infiltrate into the ground below the cistern and be naturally filtered before recharging the regional groundwater table. In the case of the City of Downey Discovery Park, the cistern provides 3.3 acre feet of infiltration storage and an additional 4.8 acre feet of peak flow detention to avoid regional flooding. Systems for this size warrant multiple entry points and a vent system to allow air to escape during periods of peak runoff inflow, which has been estimated at 100 cubic feet per second.

Low Flow Diversion Pump Station

Low flow diversion pump stations are operationally straight forward, but connection to the sanitary sewer system can be problematic due to capacity issues, connection limitations, treatment costs and unexpected prohibitions due to changes in the water quality. The Permittees within the LAR UR2 WMA are situated in an upper watershed that generates little or no summer flows, suggesting that seasonally, the only flows currently present may be urban runoff. This might provide a rationale for allowing a few diversion stations to be constructed to eliminate the flows and any contribution to downstream

impairments. Typically, they are constructed as a manhole adjacent to, and slightly deeper than, adjacent drainage channels so that flows can be easily diverted and then pumped to the sanitary sewer. This BMP would be modeled as a treatment facility in the RAA.

Sand and Media Filter

Surface, or Austin sand filters, are at ground-level and typically earthen. They are usually easier to maintain, but have a large footprint. Perimeter, or Delaware, sand filters consist of two parallel trench chambers located in concrete vaults below an impervious surface, such as a parking lot. Sand filters are estimated to remove 80 percent of total suspended solids, 50 percent of total phosphorus, 25 percent of total nitrogen, 40 percent of fecal coliform, and 50 percent of heavy metals from typical stormwater runoff. Media filters detain and treat stormwater via filtration and adsorption of pollutants to the filter media (San Francisco, 2010). Media filters containing both organic and mineral filtration materials generally have greater ion exchange capacity than sand filters, and therefore can more effectively remove soluble metals and other dissolved pollutants. This renders media filters particularly effective for roadways and highly industrial sites that contribute higher concentrations of metals to stormwater runoff, particularly zinc and copper. These filters have been shown to consistently remove over 85 percent of oil and grease, 82 percent of heavy metals, and around 40 percent of total phosphorus. While media filters are generally better at removing metals and organics, new media types may have the capabilities to reduce nutrients and sulfate in the future (Water Remediation Media, SWS).

Membrane Filtration

Membrane Filtration water treatment systems use semi-permeable membranes under high pressure to exude a clean water product, leaving behind a brine with the pollutants. The higher pressure membrane types such as reverse osmosis or ultra filtration are highly effective at removing dissolved contaminants, while lower pressure systems filter bacteria and viruses. These systems usually require pre-treatment as particulate matter can foul the ion selective membrane and reduce performance.

Ion Exchange

Ion exchange is a polishing step that specifically targets polar dissolved constituents, such as sulfate. Pretreatment is required prior to ion exchange as suspended solids will clog the exchange columns. Ion exchange systems can be used to treat stormwater from pollution generating impervious surfaces at end-of-pipe using a pump system; they are also commonly used to treat contaminated groundwater.

Distributed BMPs

The MS4 Permit encourages the use of LID BMPs, during planning, development and redevelopment, to manage runoff, and the pollutants it contains, at the source by encouraging infiltration. LID employs landscape and structural features to minimize imperviousness and manage stormwater as a resource. Broadly applied, LID can contribute to restoring a watershed's hydrologic functions by promoting infiltration and the natural movement of water (LID, USEPA). Since LID based BMPs encourage infiltration of runoff, and the pollutants it conveys, it has the potential to address most anthropogenic impairments and achieve WQOs for bacteria. The following paragraphs characterize several broad categories of applicable LID BMPs.

Bioretention Planters and Rain Gardens

With bacteria and nutrients being concerns for the LAR UR2 WMA, bioretention is a promising solution that relies on inundation tolerant vegetation and native or engineered soils with high organic content, to capture, infiltrate, and transpire runoff, while retaining pollutants. If designed properly, especially where native soils are sufficiently permeable and without other constraints to infiltration, rain gardens and larger bioretention facilities can be aesthetic amenities in addition to being cost effective and scalable stormwater retention sites that are easily integrated into highly urbanized retrofit projects. The planters should be flat and require maintenance such as weeding, trimming, and the replacement of dead plants (San Francisco, 2010).

Rain Barrels

Rain barrels hold roof runoff, usually delivered by rain gutters and downspouts, and store the water for later use. Screen installations at the downspout inlets prevent sediment, leaves, debris and mosquitoes from entering the rain barrel. Rain barrels are easily constructed for aesthetic purposes to compliment adjacent structures. Overall, maintenance requirements are minimal and include frequent visual inspections during the storm season and removal of accumulated sediment or debris. When effectively designed to capture and contain the runoff from a rooftop structure, a rain barrel can prevent runoff from small frequency storm events from ever leaving the property. This will reduce onsite water usage and the amount of pollutants that may potentially be carried offsite. This LID BMP can be implemented throughout residential areas.

Cisterns

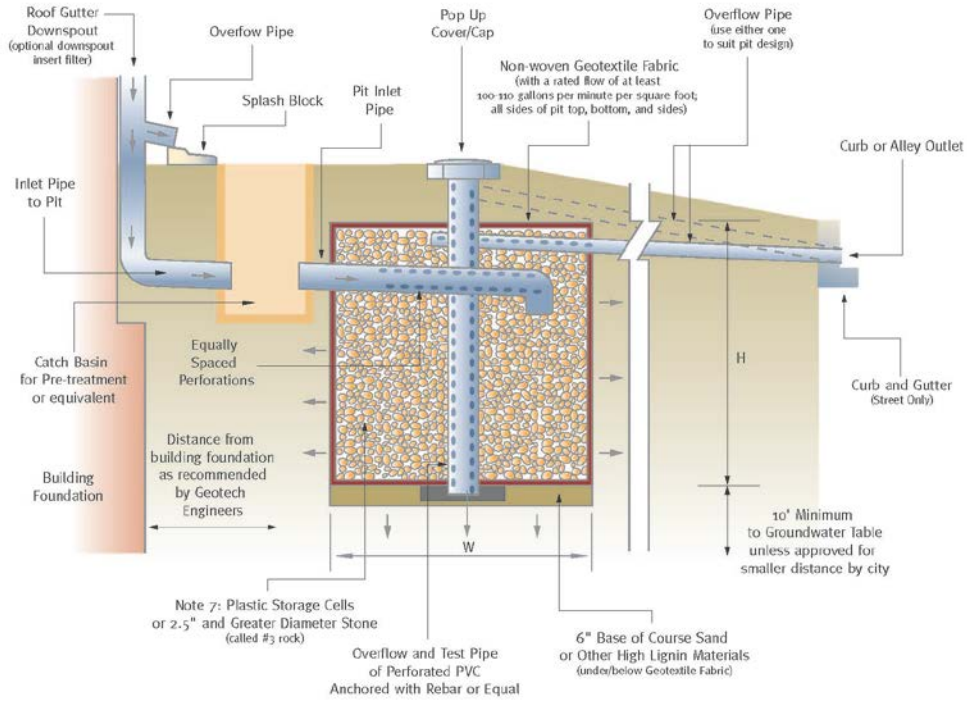
Cisterns provide retention storage in above or below ground storage tanks that accept divert roof runoff and distribute it for later use, usually by pump to adjacent landscaped areas. Runoff collected in the cistern tank is often used for onsite landscape irrigation since outdoor irrigation can account for 40 percent of water consumption during spring and summer. Cisterns can be constructed of nearly any impervious, water retaining material and are distinguishable from rain barrels only by their larger sizes and different shapes. Cisterns are an effective onsite retrofit option for treating rooftop runoff from selected residential, commercial, industrial, institutional, and municipal sites. By using cisterns, a quantifiable amount of stormwater runoff from impervious surfaces such as rooftops, parking structures, and elevated walkways can be captured and stored onsite to reduce the runoff volume and peak runoff flow rates. For smaller storm events, this captured runoff will reduce pollutant loads to the MS4 by preventing the first flush of contaminants from leaving the source site. Stored rainwater may also be used to conserve potable water supplies and reduce water utility bills.

Infiltration Pits and Drywells

Infiltration pits are among the first BMPs used in the Los Angeles region and are typically constructed by digging pits sized to accommodate the runoff source and design storm, lined with geotextile filter fabric, and filled with gravel or aggregate. The retention volume can be increased using various open retention systems or large diameter plastic half pipes in addition to the aggregate. The surface can be either open to accept incoming runoff or receive the downspout from a rain gutter and then covered with vegetation.

A dry well is operationally similar to an infiltration pit, but larger and more formally constructed. Pretreatment techniques, such as grass filter strips, a sand layer, clean aggregates, or a small settling chamber, are recommended to prevent clogging and maintain infiltration. It is recommended that dry wells maintain a minimum clearance of 10 feet from the surface of the seasonal high water table and any foundations. Dry wells are lined with geotextile filter fabric to prevent soil intrusion and filled with clean graded aggregate or volume enhancing structures, such as open plastic half pipes (San Francisco, 2010).

When designed properly, a dry well can serve small impervious areas such as residential rooftops, however if they are bored, drilled, or driven shaft, or a dug hole that is deeper than its widest surface dimension, it may be classified as a Class V injection well and requires permitting through the USEPA. This LID BMP has high pollutant removal efficiencies for sediments, nutrients, trash, metals, bacteria, oil, grease, and organics.

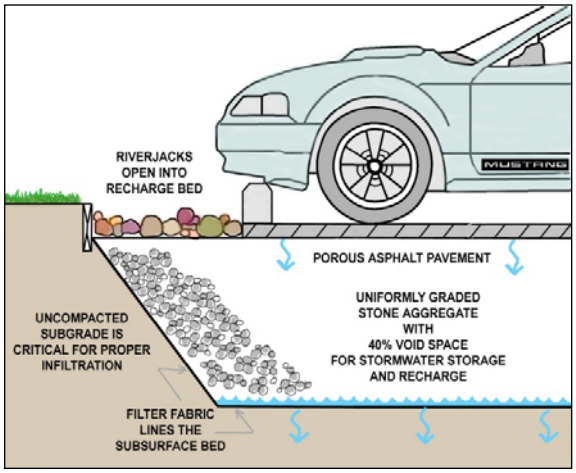


Infiltration Basins, Swales, and Trenches

An infiltration basin or trench is a shallow impoundment over permeable soil that holds and stores runoff until infiltration can occur, using the natural filtering ability of the soil to filter out pollutants. This LID BMP is effective at retaining sediments associated with pollutants, but can become clogged requiring removal of the upper soil. Use of a vegetated swale, or settling forebay, will extend the basin's longevity and reduce maintenance costs. Infiltration basins are best constructed over soils with infiltration rates of 0.5 inches/hour or greater and they should have at least a four foot separation from basin bottom to groundwater (San Francisco, 2010).

If adequate space is available, infiltration basins are cost-effective measures even for regional scale projects, because little infrastructure is needed for their construction. However, site-specific conditions can cause significant variations in cost. CASQA (2003) cites costs ranging from approximately $3 to $18 per cubic foot of storage. Annual maintenance costs are estimated to be approximately five to ten percent of the construction costs (Class V Wells, USEPA).

Porous/Pervious Pavements



Pervious pavement allows rainfall to drain into an aggregate bed or structural retention unit where it is stored until infiltration can occur. There are many pervious pavements including porous concrete, plastic grid system, interlocking paving stones, brick, grass pavers, gravel pavers, and crushed stones. These materials allow for onsite infiltration that efficiently filters out pollutants such as bacteria, nutrients, and metals. Infiltration rates of the native soil are a key element to the overall design. Pervious pavements can be designed with a perforated underdrain system to redirect stormwater to a storm drain in areas where infiltration is infeasible. Using an underdrain system still results in improved water quality since stormwater will have passed through the BMP and undergone natural filtration and treatment processes. This type of BMP can also be used to disconnect directly connected impervious areas such as rooftops and parking lots. Vegetated runoff should not drain onto the pervious pavement as it may clog the system and require more frequent maintenance. Permeable pavements may be used in many locations where conventional pavements are used, such as parking lots, driveways, and walkways. Areas with the potential for spills, such as gas stations, should be avoided. Using proper maintenance techniques, pervious pavement can remove a significant portion of pollutants in stormwater runoff and reduce pavement ponding.

Green Roofs

Green Roofs are commonly recommended LIDs that are appropriate in some climates, but may be challenging to maintain or support in areas with a risk of brush fires and little annual rainfall. Intensive systems have large depths and cover much of the roof while extensive systems features minimal plantings that require little maintenance. Green roofs enhance water quality, reduce runoff and are visually appealing as a rest area above office buildings. The amount of stormwater that a green roof can contain is proportional to the area of coverage, types of plants, slope, and many other factors. Green roofs can be constructed during the building's construction phase or included as a retrofit. When retrofitting, it must be noted that the building needs to support the weight of the green roof under fully saturated conditions. A waterproof membrane should be laid over the building to protect it from structural damage and overflow should be addressed through a drainage layer. Green roofs also provide insulation, help reduce building temperatures during summer months, and counter the heat island effect.

Green Streets

Like LID, Green Street design is strongly encouraged by the MS4 Permit and all of the Permittees within the LAR UR2 WMA have developed or adopted green streets policies. They can take many forms such as an inverted street cross section with a vegetated low center median, vegetated curb extensions, parkways that trap and hold gutter flows, planter boxes connected to the gutter and filled with highly porous soil and appropriate vegetation. In areas where sediment generation is limited or can be accommodated by pretreatment through a bioswale, porous concrete may be used to construct gutters so that flows may infiltrate. The City of Santa Monica is currently investigating the construction of large infiltration systems within the parkway that may be designed to accept dry weather or design storm flows for small residential catchments. When properly designed, these structural BMPs can alleviate many of the types of pollutant that are of particular concern to the City.

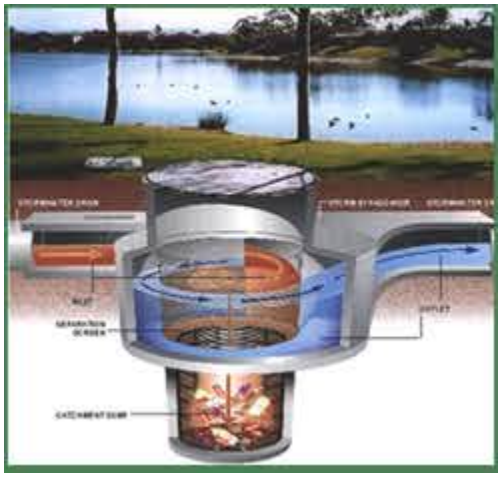
Connector Pipe Screens

While several devices have been certified as meeting the LARWQCB definition of full capture (Full Capture, LARWQCB) the most commonly installed device in Los Angeles County is a Connector Pipe Screen (CPS). Generically, CPS are made from stainless steel mesh, with 5 mm openings, that stretch in front of the lateral or outlet from a catch basin and are secured to the walls and floor of the catch basin, with an opening above the screen that is greater in area than the outlet. During most events runoff will flow through the screen leaving the trash upstream of, or on, the screen. However, during high intensity storms or if the mesh becomes occluded, runoff can still flow over the screen and out of the catch basin to prevent flooding. Based on experience in other jurisdictions, 75-90 percent or more of the catch basins can be retrofitted with this device. While regular maintenance, to remove debris trapped on and on the upstream side of the screen, is required, the intensity of maintenance is correlated with the amount of trash and debris collected. The Regional Board is familiar with the device and assessing compliance through their use, so it is expected that implementation should be relatively straight forward. In locations were the trash load results in excessive maintenance costs, many communities also install Automatic Retracting Screens (ARSs).

Automatic Retracting Screens

An ARS extends across the opening or "mouth" of the catch basin and traps trash and debris at street level where street sweepers or hand crews may remove the trash before it can enter into the catch basin or drain. However, in order to avoid flooding, they will open or retract and allow the trash to enter the catch basin and be trapped on the CPS, where maintenance costs are higher. Areas that generate sufficient trash and debris to warrant the use of ARS in combination with a CPS are usually also subject to enhanced street sweeping, on a weekly or even more frequently, basis.

Hydrodynamic Separation Devices (CDS systems)



Hydrodynamic Separation Devices such as continuous deflective separation (CDS) systems are often used to ensure compliance with trash TMDLs. A CDS system effectively screens, separates and traps debris, sediment, and oil and grease from stormwater and urban runoff. The indirect screening capability of the system allows for 100 percent removal of floatables and neutrally buoyant materials, without binding. The system utilizes the natural motion of water to separate and trap sediments by indirect filtration. As the storm water flows through the system, a very fine screen deflects the pollutants, which are captured in a litter sump in the center of the system. CDS system screens are self-cleaning. The water velocities within the swirl chamber continually shear debris off the screen to keep it clean. CDS systems are ineffective in removing soluble pollutants and smaller, less-settleable solids. They can provide effective pretreatment when paired with filtration devices, such as media filters or bioretention area, covered in sections below, to achieve higher removals of nutrient, metals, and organics. Between storms, the CDS system can have standing water that could raise mosquito breeding concerns, which increase the concerns of vector control (San Francisco, 2010).

The processing capacities of a CDS unit vary from 3 to 300 cubic feet per second, depending on the application. Precast modules are available for flows up to 62 cubic feet per second, while higher flow processing requires cast-in-place construction. Every unit requires a detailed hydraulic analysis before it is installed to ensure that it achieves optimum solids separation. The cost per unit (including installation) ranges from $2,300 to $7,200 per cubic feet per second capacity, depending on site specific conditions and does not include any required maintenance (Hydrodynamic Separators, USEPA).

Maintenance of the CDS system is site-specific but manufacturer recommends that the unit be checked after every runoff event for the first 30 days after installation. During this initial installation period the unit should be visually inspected and the amount of deposition should be measured, to give the operator an idea of the expected rate of sediment deposition. After initial operational period, it is recommended that the CDS system be inspected at least once every thirty days after the wet season. During these inspections, the floatables should be removed and the sump cleaned out. It is also recommended that the CDS systems be pumped out and the screen inspected for damage at least once per year.

3.2.2 Summary of Existing Structural BMPs

The Los Angeles County Unified Annual Stormwater Reports identify the numbers and types of BMPs installed and maintained by jurisdiction. LAR UR2 WMA members identified the following stormwater pollutant watershed control measures as particularly effective:

- Street Sweeping
- Catch Basin Cleaning
- Catch Basin Inserts
- Trash Bins
- End-of-Pipe Controls such as Low-flow Sanitary Sewer Diversions
- Infiltration Controls
- Erosion Controls
- Public Education and Outreach

Based on Appendices B and C of the Los Angeles County MS4 Permittees 2010-2011 annual reports, the most frequently cumulatively installed and prevalent BMPs are summarized within **Table 3-3** and **Table 3-4**, respectively. Three of the four most frequently installed BMPs, were primarily implemented through a grant received by the Gateway Council of Governments (COG), suggesting that the most efficient means of achieving water quality objectives and implementing the BMPs desired by the Regional Board, would be by providing grants for them to be installed, so that local design engineers, developers, government, and contractors could become familiar with use of the devices.

Los Angeles County Unified Annual Stormwater Reports, Appendices B and C submitted from 2004 through 2012, were used to develop a BMP installation summary table specific to the LAR UR2 WMA Permittees, and is provided as a reference in **Appendix G**.

Table 3-3 Cumulatively Most Frequently Installed BMPs Countywide

BMP Type	Total Number Installed
Catch Basin CPS	6,377
Fossil Filter Catch Basin Insert	5,968
ARS	3,870
Clean Screen Catch Basin Insert	3,767
Extra Trash Can	3,681
Covered Trash Bin	3,119
Signage and Stenciling	1,884
Drain Pac Catch Basin Insert	1,625
Cultec Infiltration Systems	1,296
Infiltration Trenches	963
Infiltration Pit	958
Abtech Ultra Urban Catch Basin Insert	748
CDS Gross Pollutant Separator	438
United Stormwater Catch Basin Screen Inserts	403
Restaurants Vent Traps	258
Stormceptor Gross Pollutant Separators	211

Table 3-4 Most Prevalent BMPs Installed During 2010-11			
Types of Non-Proprietary BMPs Used By Most Permittees		**Types of Proprietary BMPs Used By Most Permittees**	
BMP Type	**Number of Cities**	**BMP Type**	**Number of Cities**
Infiltration Trenches	40	Fossil Filter Catch Basin Insert	46
Covered Trash Bins	32	CDS Gross Pollutant Separator	36
Extra Trash Bins	31	Drain Pac Catch Basin Insert	21
Enhanced Street Sweeping	26	Clean Screen Catch Basin Insert	21
Dog Parks	23	Stormceptor Gross Pollutant Separator	19

3.2.3 Approach to Screening for Potential Regional BMP Sites

In order to ensure compliance with the MS4 Permit specified numeric limits, regional projects can be used to enhance water quality. This approach was developed and used to identify a broader list of regional projects to include in this WMP, which could be initially short-listed through the RAA, but remain potentially viable if RAA projects became untenable. The approach may also be used in the future during the adaptive management process, therefore potential projects identified and not incorporated into the WMP are still identified. In order to identify and prioritize potential regional project sites, Structural BMP Prioritization and Analysis Tool (SBPAT) was used. SBPAT was also used to conduct the LAR UR2 WMA RAA, therefore additional details regarding this program can be found in Section 4. In addition to this approach, existing planning documents were referenced in order to determine if any regional BMPs are planned. Accessible planning documents show no indications that regional BMPs have already been planned in this area.

3.2.3.1 SBPAT Process for Identifying Potential Regional BMP Sites

SBPAT is able to prioritize among catchments and subcatchments based on water quality needs (i.e., pollutant load) and identify parcels that provide opportunities for implementation of structural BMPs. In order to reflect the anticipated relative challenge of achieving compliance with TMDL-based effluent limits, bacteria were assigned a relative weight of 20, while metals (copper, lead, and zinc) were collectively assigned a weight of 15 and all other pollutants set to zero.

After first evaluating and prioritizing watershed subcatchments, based on water quality needs, SBPAT identifies potential BMP opportunities by calculating regional BMP scores for each subcatchment within a watershed. Parcel scores are determined for each subcatchment based on parcel size, ownership, land use, and distance from major storm drains, then the parcel scores are integrated to determine a BMP score. BMP scores are compared with regional BMP scoring, resulting in a list of potential structural BMP opportunities based on parcel characteristics and water quality considerations. A comprehensive overview of the modeling framework can be found in the SBPAT User's Guide (Geosyntec, 2008). This SBPAT process will generally follow the steps established in the Los Angeles County-wide Structural BMP Prioritization Methodology (Geosyntec, 2006), as implemented within SBPAT.

Figure 3-1 ranks Catchment Prioritization Index (CPI) scores from 2 to 5, with the highest rankings (4 or 5) attributable to large subcatchments with primarily industrial, manufacturing, and commercial land use parcels, whose model attributes would be generally expected to generate data with high runoff rates and pollutant loads. The only low (2) priority subcatchments were in southeastern portion of Bell Gardens and are dominated by land use features that include a large park, electric transmission lines, and single family residential homes, which together would be expected to model as having low pollution loading and runoff volume potentials.

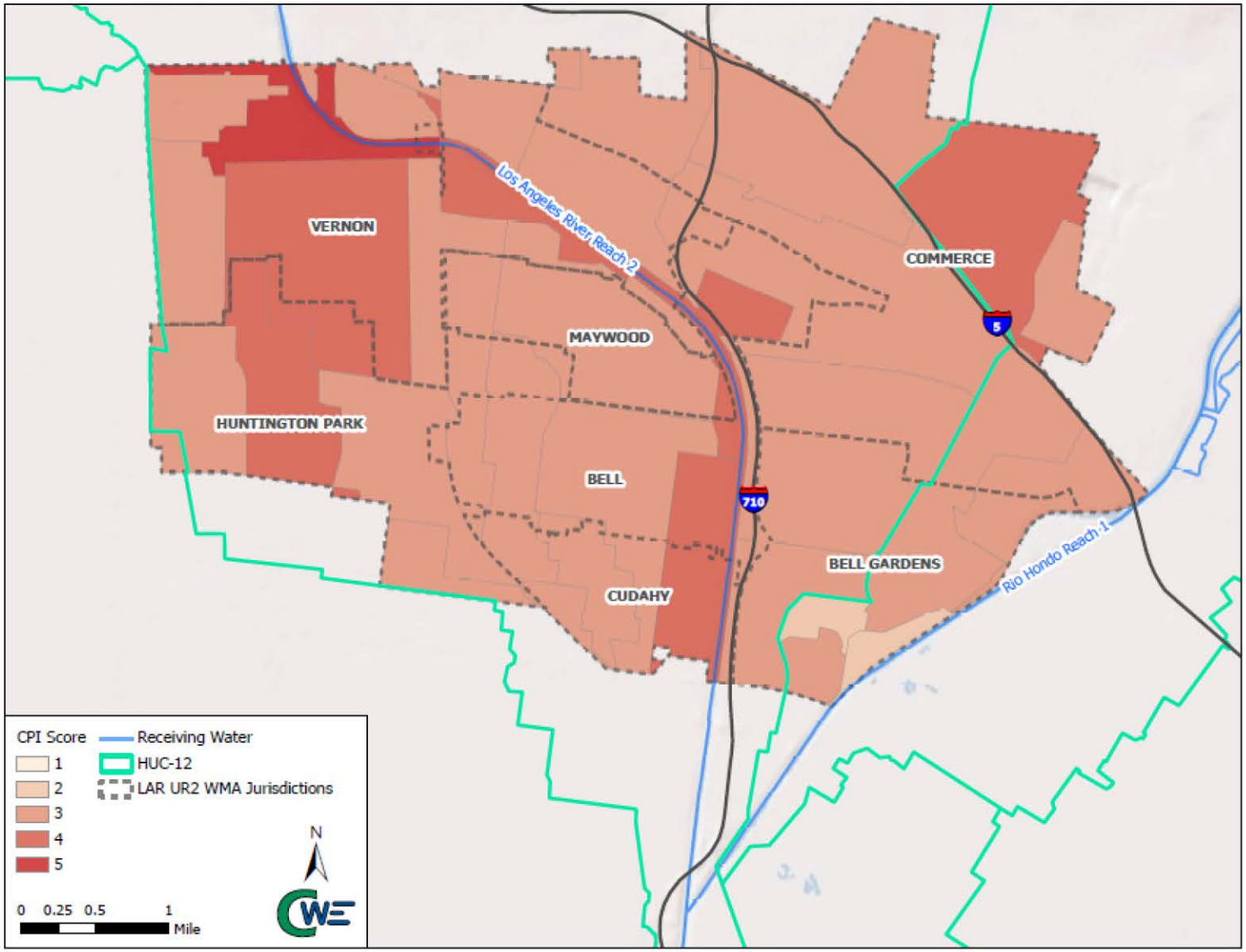


Figure 3-1 SBPAT CPI Scores

Figure 3-2 ranks Nodal Catchment Prioritization Index (NCPI) scores, from 2 to 4. This analysis cumulatively considers the discharge from tributary catchment so that one of the previously low ranking catchments in southeastern Bell Gardens, which receives flows from a more typical and large catchment to the north, no longer has a low ranking. Likewise, several previously high ranking headwater catchments now have reduced scores and rankings in comparison to catchments that received cumulative discharges from other tributary catchments, located outside of the LAR UR2 WMA, elsewhere in the Los Angeles River watershed. For the immediate purpose of locating potential regional BMP facilities for consideration during the RAA effort, NCPI scores, rather CPI scores were used in subsequent analyses; however, there is potential for distant tributary areas with high CPI scores to the primary source of runoff and contaminants, rather than downstream areas that receive the discharge and may have attributes that meet the preferred regional BMP location selection criteria. Subwatersheds with high CPI scores may represent good sites, as they would capture the primary source of contaminants, but were not the focus of this analysis.

Figure 3-3 illustrates the results of the GIS based SBPAT automated Potential Regional BMP Opportunity screening analysis. Although the selection criteria are flexible and subject to modification, for this analysis the criteria included a minimum acceptable parcel size of 0.5 acres and maximum parcel to storm drain distance of 100 feet. City or County-owned undeveloped parcels were assigned a score of five while other publicly-owned parcels were assigned a score of four, which drives the resultant analysis scoring. Parcels not meeting these criteria were not considered viable regional BMP locations and assigned a zero score. Fourteen subcatchments, or less than half of the LAR UR2 WMA subcatchments, were found to have one or more potential regional BMP opportunity sites that were identified as tributary to areas of high water quality improvement need. Normally, after potential regional BMP sites are identified, recommended BMP types are matched based on the water quality targets, runoff volumes, and site attributes. The pairing of a BMP type with a BMP site represents a potential regional BMP project. With bacteria being a main driver for the LAR UR2 WMP RAA, the initial selection of suitable regional BMP types was constrained to those capable of achieving recreational beneficial use objectives, which include infiltration basins and subsurface flow wetlands.

Figure 3-4 identifies the surficial soil types, which are primarily slowly infiltrating loams, the important regional groundwater basin, and SBPAT analysis identified potential regional BMP opportunities, illustrated in red as Potential Regional BMP Sites. The areas of Tujunga Fine Sandy Loam, located immediately adjacent to the lower Rio Hondo, Los Angeles River, and further west as a strip leading south through the middle of the Cities of Vernon and Huntington Park, may signify the presence of old deep river channels with relatively sandy soils that could potentially accommodate high infiltration rates. If present and protected from sediment induced blockage, these could horizontally distribute infiltrated runoff to other intermingled sandy layers that might otherwise seem inaccessible due to scattered clay lens of low permeability soils.

Figure 3-5 illustrates the RAA Guideline standard model land use classifications within the LAR UR2 WMA, particularly around the SBPAT identified potential regional BMP sites. As might be expected, the Cities of Vernon, Commerce and northeastern Bell contain a relatively high proportion of industrial or manufacturing and commercial land use areas and few vacant or agricultural areas. Most of the parcels in these categories, which might be more potentially accessible for the construction of infiltration basins are actually electrical transmission line easements or associated with the Long Beach (I-710) freeway. Since the number of subcatchments with potential regional BMP opportunities was limited and the identified parcels relatively small for these facilities, a coarse assessment of total catchment BMP sizing needs, regardless of site constraints, was prepared for comparison with future unanticipated private parcel acquisition opportunities. The major catchments in LAR UR2 WMA used for this analysis are consistent with monitoring sites in the CIMP and are illustrated in **Figure 3-6**. This analysis was prepared as the product of the sum of areas, for each of the major LAR UR2 WMA Cities, area weighted land use based imperviousness, and the weighted 85th percentile 24-hour rainfall depth.

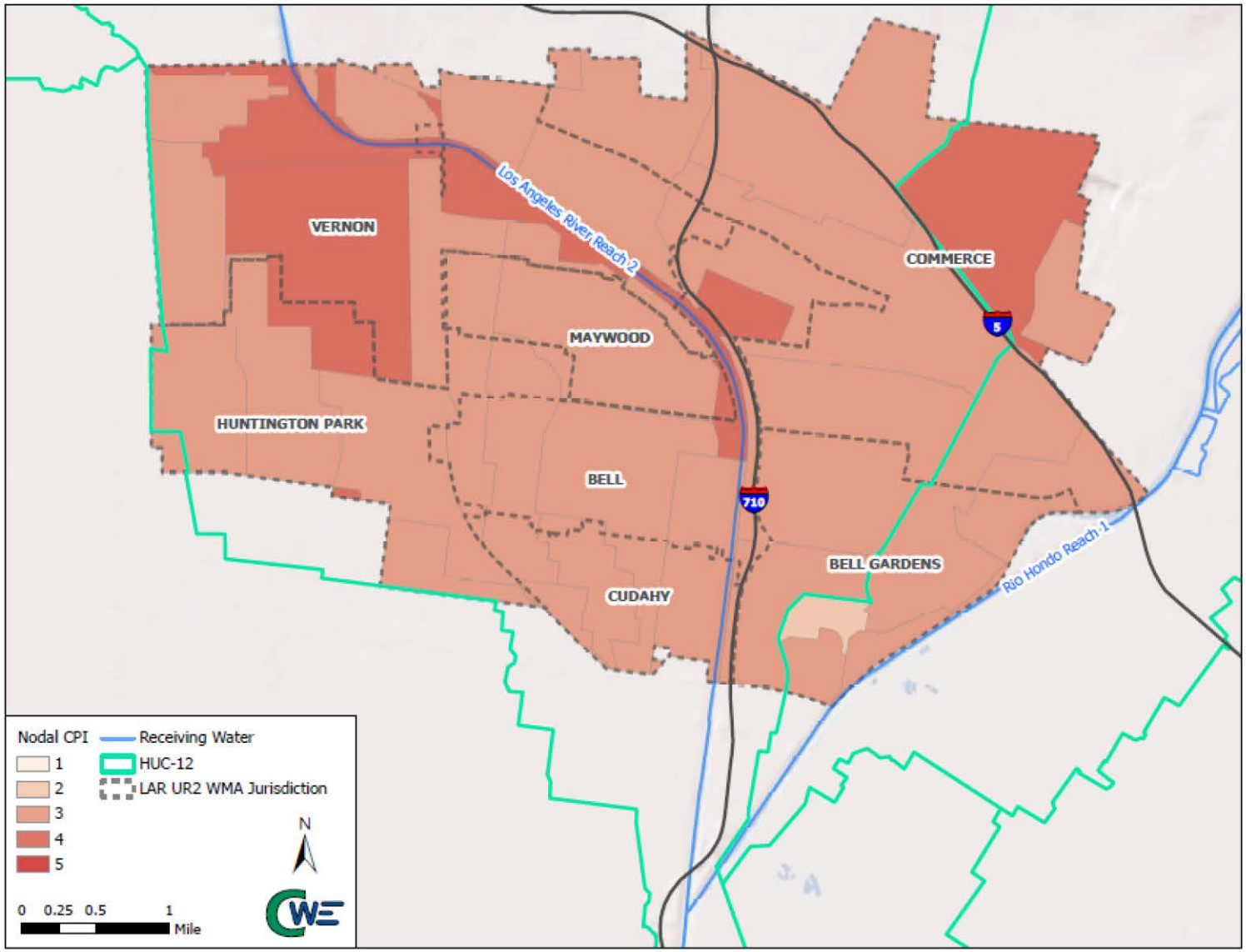


Figure 3-2 SBPAT NCPI Scores

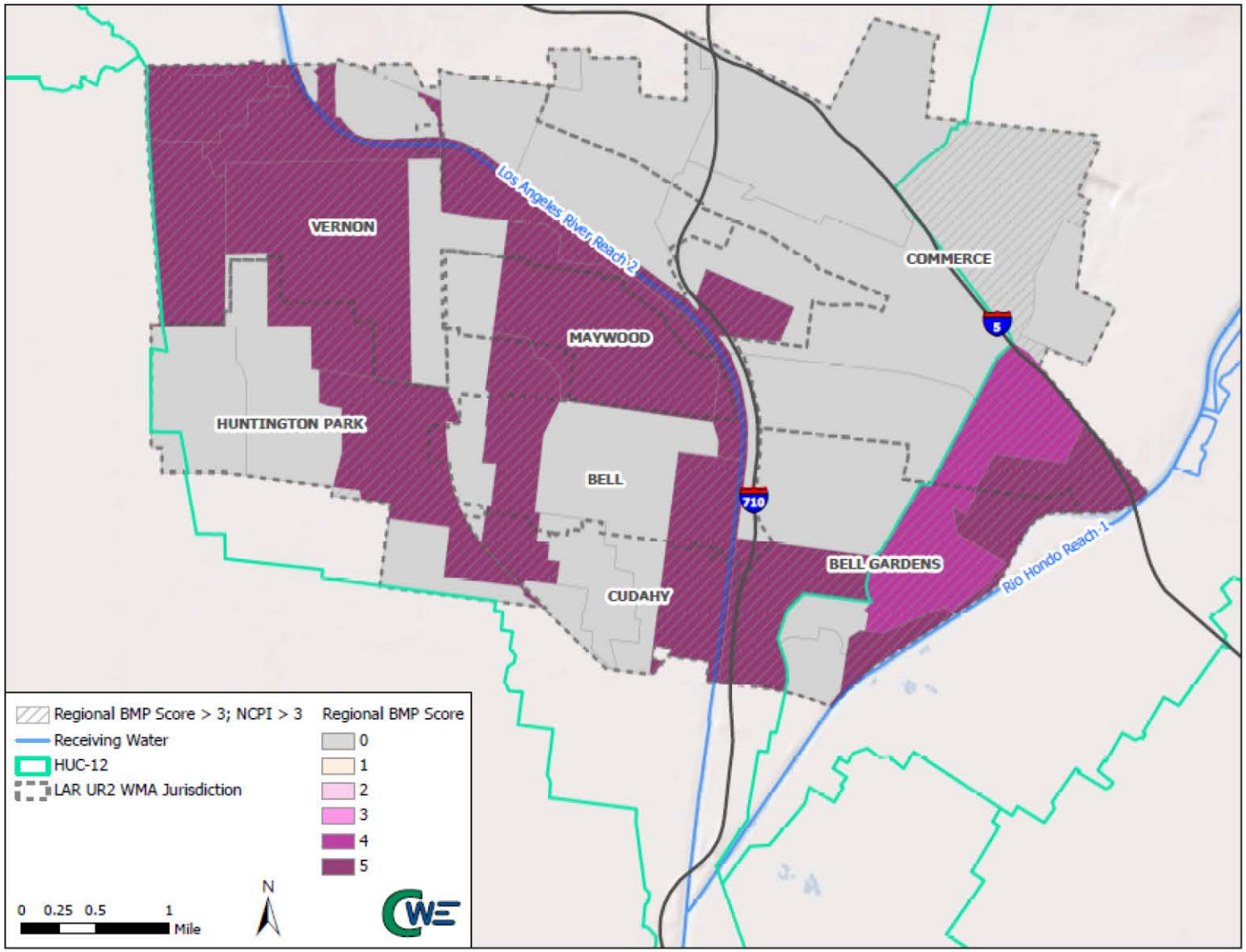


Figure 3-3 SBPAT Regional BMP Opportunity Scores (normalized to values of 0 to 5)

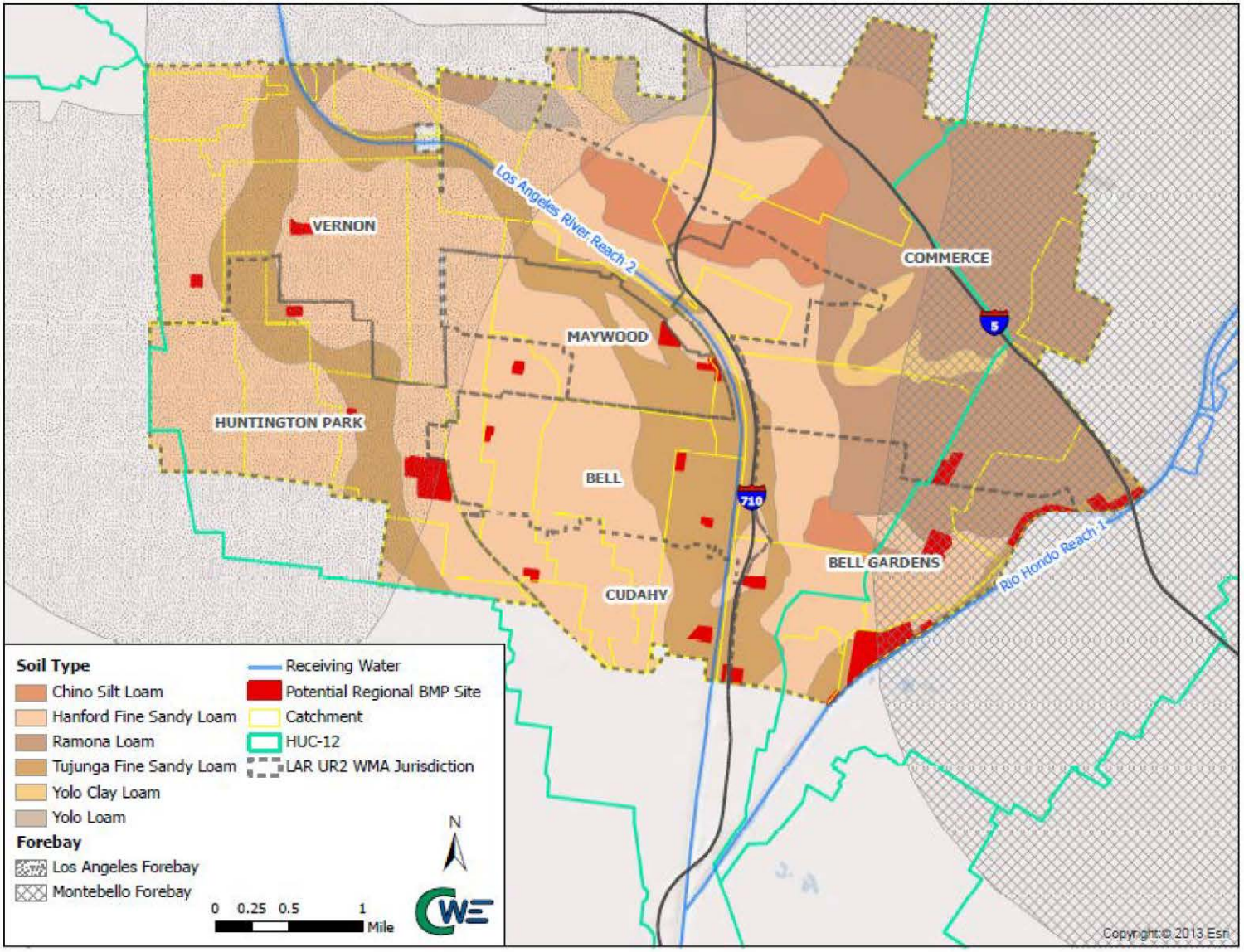


Figure 3-4 Surficial Soil Types, Groundwater Basins, and Potential Regional BMP Sites

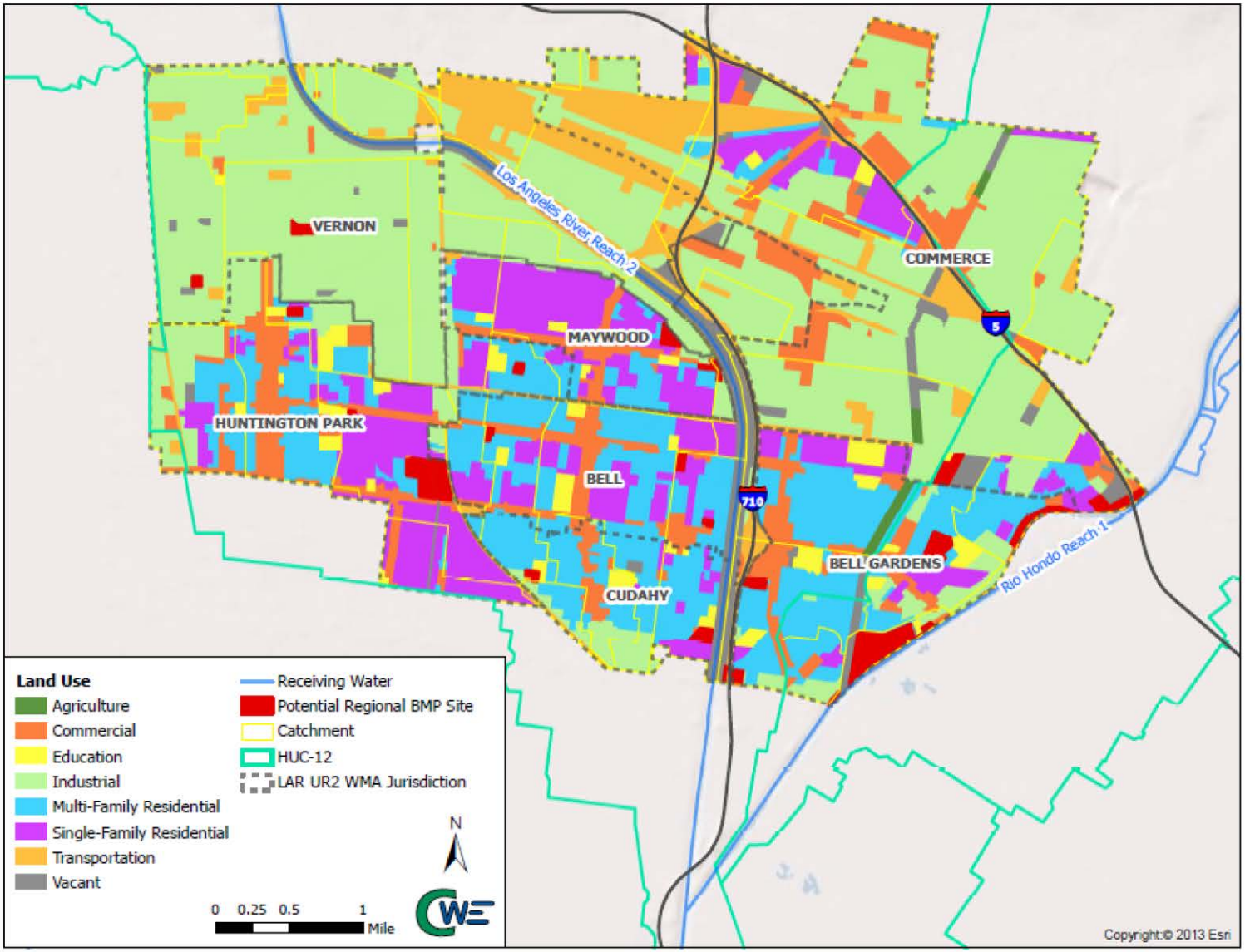


Figure 3-5 Land Use Classes Near Potential Regional BMP Locations

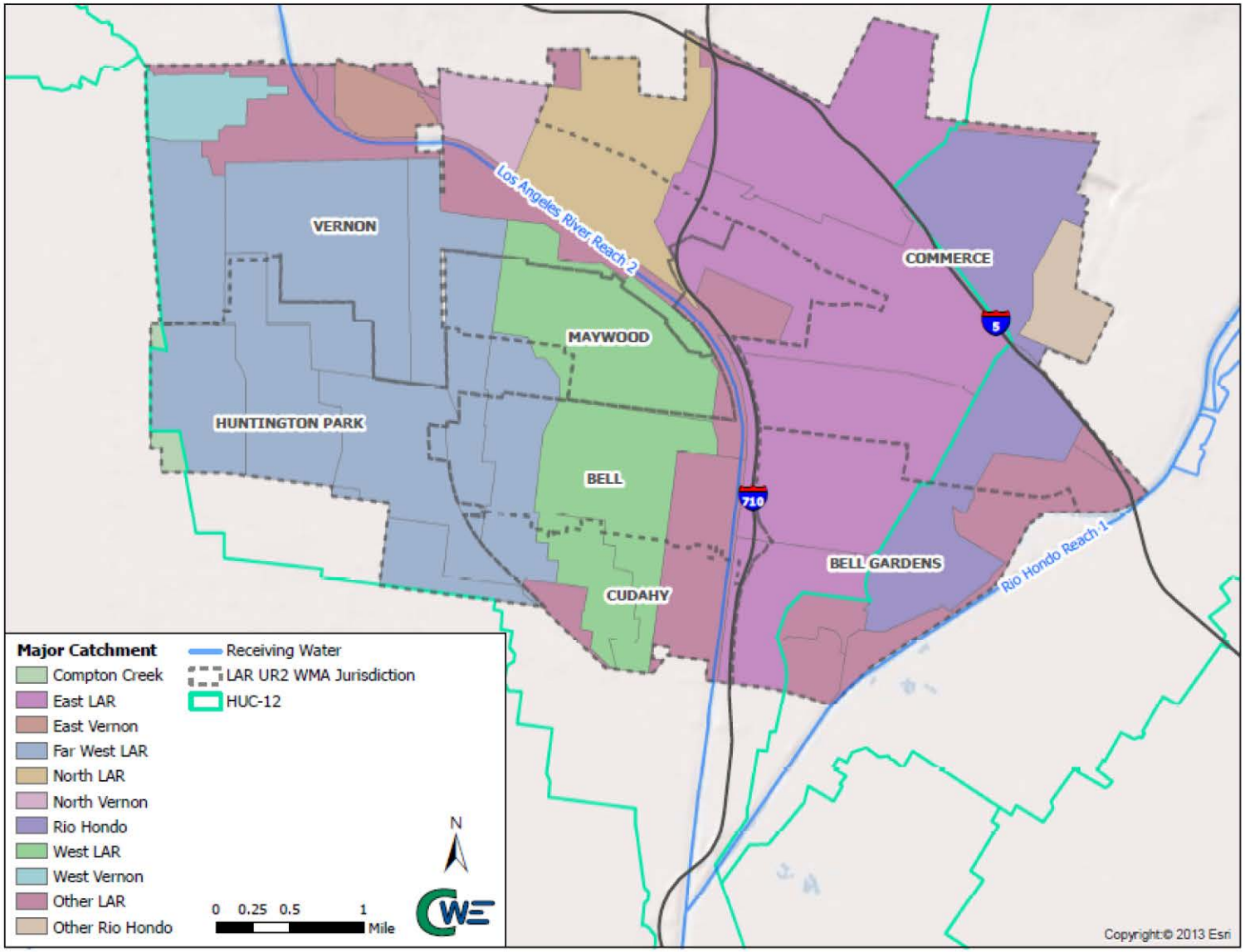


Figure 3-6 LAR UR2 WMA Major Catchments

The results expressed as runoff volume in acre-feet are in the second column from the right in **Table 3-5**. The area needed for a regional BMP holding an average water depth of 1 foot, would be approximately the same as this volume, while the area of a basin, or cistern, holding a depth of 10 feet of water would be approximately an order of magnitude less (i.e. one tenth the surface area size). Assuming an infiltration rate of 0.3 inches per hour (very low type B soil) and desired draw down time of 72 hours, results in a water depth of 1.8 feet and basin area as summarized in the rightmost columns of the two tables.

3.2.3.2 Other Potential Regional BMP Project Sites

Based on the results of monitoring, water quality, technical studies, and source control studies it is questionable as to whether bacteria can be consistently controlled to meet the dry- and wet-weather numeric limits identified in Attachment O of the MS4 Permit, which are based on recreational beneficial use objectives within the Basin Plan, unless MS4 discharges can be eliminated.

Therefore LAR UR2 WMA identified a variety of exemplar projects which were further investigated during the initial phase of the WMP development process to identify new inter-agency opportunities for LID that reduce runoff and control the discharge from within the LAR UR2 WMA. The potential projects are summarized in **Table 3-6.**

Table 3-5 Estimate Runoff Volume and Regional BMP Area by City and Catchment

City	Major Catchment	Area (Acres)	Weighted		Runoff Volume (Acre Feet)	Basin Area 1.8' Deep
			Imperviousness	Rain (inch)		
Bell	East LAR	388	0.832	0.91	24	14
	Far West LAR	329	0.609	0.92	15	9
	North LAR	10	0.741	0.91	1	0
	West LAR	539	0.666	0.92	28	15
	Other LAR	410	0.787	0.92	25	14
	Total	**1676**	**0.723**	**0.918**	**93**	**51**
Bell Gardens	East LAR	780	0.637	0.93	39	21
	Rio Hondo	354	0.677	0.94	19	10
	Other LAR	443	0.600	0.94	21	12
	Total	**1578**	**0.636**	**0.935**	**78**	**43**
Commerce	East LAR	2279	0.791	0.91	137	76
	North LAR	377	0.886	0.9	25	14
	North Vernon	1	0.910	0.91	0	0
	Rio Hondo	1025	0.857	0.9	66	37
	Other LAR	310	0.679	0.92	16	9
	Other Rio Hondo	203	0.899	0.91	14	8
	Total	**4194**	**0.813**	**0.907**	**258**	**143**
Cudahy	East LAR	38	0.639	0.94	2	1
	Far West LAR	113	0.621	0.93	5	3
	West LAR	339	0.792	0.93	21	12
	Other LAR	297	0.716	0.94	17	9
	Total	**786**	**0.731**	**0.934**	**45**	**25**
Huntington Park	Compton Creek	42	0.864	0.95	3	2
	Far West LAR	1853	0.667	0.93	96	53
	West LAR	31	0.565	0.93	1	1
	Other LAR	4	0.239	0.93	0	0
	Total	**1930**	**0.670**	**0.930**	**100**	**56**
Maywood	Far West LAR	131	0.620	0.92	6	3
	West LAR	601	0.551	0.92	25	14
	Other LAR	22	0.792	0.92	1	1
	Total	**754**	**0.570**	**0.920**	**33**	**18**
Vernon	East LAR	85	0.758	0.91	5	3
	East Vernon	157	0.911	0.92	11	6
	Far West LAR	1448	0.885	0.96	103	57
	North LAR	367	0.840	0.93	24	13
	North Vernon	211	0.880	0.93	14	8
	West LAR	130	0.908	0.94	9	5
	West Vernon	202	0.903	0.95	14	8
	Other	697	0.889	0.93	47	26
	Total	**3298**	**0.880**	**0.944**	**228**	**126**
LAR UR2 WMA	**Total**	**14215**	**0.761**	**0.925**	**834**	**463**

Table 3-6 Preliminary Assessment of Potential Regional BMP Sites

Potential Project Name	Catchment	Cross Streets	Area (ac)	Green Area (ac)	Attributes	Challenges
Bell						
Bell High School	WLAR	Pine Avenue and Florence Avenue	18.1	4.9		Small Trib
Park Avenue School	WLAR	Florence Avenue and Wilcox Avenue	5.7	1.7	Large Trib	
Veterans Memorial Park	WLAR	Gage Avenue and Wilcox Avenue	3.3	2.4	Med Trib	
United States Army Reserve	Other LAR		UNK	N/A	Current Const	Federal Govt
I-710/Transmission Line	Other LAR	West of I-710	UNK	N/A	LFDs?	Small Trib
Abandoned RR Spurs	Other LAR	Various Locations	UNK	N/A		Pvt Property
Bell Gardens						
Bell Gardens Elementary School	ELAR	Quinn Street and Jaboneria Road	10.4	2.2	Large Trib	
Bell Gardens Intermediate School	ELAR	Florence Avenue and Jaboneria Road	14.6	4.5	Large Trib	
Bell Gardens Park	RH	Florence Avenue and Loveland Street	13.7	10.3		No Drain
Ford Park Golf Course	RH	Garfield Avenue and Park Lane	25.3	18.9	Large Trib	Golf Course
John Anson Ford Park	RH	Garfield Avenue and Park Lane	9.6	7.2	Large Trib	
I-710/Transmission Line	Various	West of I-710/Garfield Avenue	45.8	34.3	LFDs?	Small Trib
Commerce						
Bandini Park	NLAR	Astor Avenue and Hepworth Avenue	2.4	1.8		MS4 Unclear
Bristow Park	NLAR	Triggs Street and McDonnell Avenue	7.0	5.3		No MS4
Park Lawn Memorial Park	RH	Gage Avenue and Garfield Avenue	18.3	13.7		No MS4
Power Facilities Total	ELAR	West of Garfield Avenue	21.6	16.2	Nr Telegraph	
Rosewood Park	ELAR	Commerce Way and Harbor Street	11.3	8.5	Med Trib	
Veterans Park Total	Other RH	Gage Avenue and Zindell Avenue	9.7	7.3	Small Trib	
Abandoned RR Spurs	Various	Various Locations	UNK	N/A		Pvt Property

Table 3-6 Preliminary Assessment of Potential Regional BMP Sites

Potential Project Name	Catchment	Cross Streets	Area (ac)	Green Area (ac)	Attributes	Challenges
Cudahy						
Clara Street Park	ELAR	Clara Street b/w Wilcox and Atlantic Ave	4.1	3.1		No MS4
Cudahy Park	Other LAR	River Drive and Santa Ana Street	7.0	5.2		Unk MS4
Lugo Park	FWLAR	Elizabeth Street and Otis Avenue	1.5	1.1	Med Trib	
Park Avenue Elementary School	Other LAR	River Drive and Elizabeth Street	1.5	1.1		Unk MS4
I-710/Transmission Line	Other LAR	West of I-710/Garfield Avenue	UNK	N/A	LFDs	Small Trib
Huntington Park						
Freedom Park Total	FWLAR	E. 61st Street and Carmelita Avenue	0.8	0.6		No MS4
Nimitz Middle School	FWLAR	E. 60th Street and Carmelita Avenue	8.5	2.3	Small Trib	
Salt Lake Park Total	FWLAR	E. Florence Avenue and Salt Lake Ave	33.4	25.1	Lrg Trib/Prcl	
Maywood						
Maywood Academy High School	WLAR	E. 61st Street and Pine Avenue	1.8	1.4		No MS4
Maywood Elementary School	WLAR	E. 52nd Place and Cudahy Avenue	0.5	0.4		Small Trib
Maywood Park	WLAR	E. 52nd Place and E. 58th Street	6.0	2.6		No MS4
Maywood Riverfront Park Total	Other LAR	E. 59th Place and Alamo Avenue	4.6	3.5		Unk MS4
Vernon						
Abandoned RR Spurs	Various	Various Locations	UNK	N/A		Pvt Property
Vacant Parcel	FWLAR	2221 E 55th Street	7.6	0.0		No Drains
Vernon Power Plant	FWLAR	2701 50th Street	5.510	0.00	South Parcel	Power Plant

3.2.3.3 Evaluating and Prioritizing Potential Regional BMP Project Sites

A planning-level, desktop-based feasibility screening assessment was performed to identify potential regional BMP projects for inclusion in the WMP Plan. The County Assessor's website was queried for current parcel ownership information and the County Department of Public Works searched for information pertinent to drainage conveyance characteristics for existing facilities. Aerial imagery were reviewed to verify actual and adjacent land use characteristics, assess potential engineering design alternatives, facility footprint, possible sizing and other criteria generally pertinent to an initial assessment of feasibility. Based on this information the subsequent RAA model evaluation step was undertaken to assess the potential beneficial impact of these parcels on LAR UR2 WMA MS4 discharges. The potential regional BMP projects were also evaluated using the cost and water quality analysis module in SBPAT.

The potential regional BMP project configurations and planning-level capital and operation and maintenance costs were evaluated (i.e., quantification of costs and water quality benefits) using SBPAT. SBPAT evaluates BMP performance by linking a long-term hydrologic output from USEPA's Stormwater Management Model (SWMM) to a stochastic Monte Carlo water quality model to develop statistical descriptions of stormwater quantity and quality. The statistics generated in this process are then used to characterize the low (25^{th} percentile), average (mean), and high (75^{th} percentile) values for the annual volume, pollutant loads, and pollutant concentrations in stormwater runoff from the modeled area, with and without BMPs implemented. Water quality benefits are reported as the difference between Monte Carlo-derived statistics of the modeled area without BMPs and the same area with a specific suite of BMPs. Additional details regarding the modeling system are provided in Section **4**.

The prioritization of regional BMPs considers the relative costs, benefits, and ease of implementation associated with each potential project. Potential projects yielding higher water quality benefits at lower costs will receive higher prioritization rank in instances where ease of implementation is considered to be comparable. Regional BMP projects that are constrained by engineering or site considerations and projects that are seen to be more challenging to implement may receive a lower priority rank than projects with similar costs and benefits with less significant constraints.

3.2.3.4 Process for Selecting Regional BMP Projects

The process of selecting the final list of regional BMPs was based on the prioritization results, RAA results, and agency input. The RAA quantifies the water quality benefits from quantifiable non-structural BMPs and distributed structural BMPs that are included in this WMP. The sum of load reductions from non-structural, distributed, and regional BMPs will then be compared with the target load reductions necessary for compliance with final TMDL limits for the purpose of reasonable assurance demonstration. BMP phasing (i.e., the planned implementation of some BMPs before others) will then be developed to meet the schedule of interim compliance milestones. The selection process and results are detailed in Section **4.5**.

3.2.4 Summary of BMP Performance Data

The CASQA Development and Municipal BMP Handbook provides a general summary of BMP performance data within Southern California, which is summarized in **Table 3-7**.

3.3 Proposed Control Measures

Through the RAA iterative modeling process, detailed in Section **4**, control measures were identified which will ensure compliance with applicable numeric limits in the time frame required by existing TMDLs. The types of control measures are outlined in this section, while the quantities are discussed in Section **4**. Through the adaptive management process, the proposed control measures may change.

3.3.1 Proposed MCM / Institutional BMP Modifications

In addition to the existing MCMs and Institutional BMPs characterized in section **3.1** additional pollutant load reductions should result from non-modeled non-structural BMPs program enhancements (i.e., beyond the MS4 Permit minimum):

- Enhanced street sweeping
- Enhanced catch basin and storm drain cleaning
- Enhanced commercial and food outlet inspection
- Enhanced pet waste controls
- Enhanced education and outreach
- Enhanced homeless waste control efforts
- Enhanced Illicit Discharge Detection Elimination (IDDE) efforts

Non-structural BMP enhancements were identified in the Los Angeles River Reach 2 Metals TMDL Implementation Plan. **Table 3-8** provides enhancements associated with each of the programs listed above. Each LAR UR2 WMA City will have the flexibility to implement some or all of the enhancements, which may vary among the group members based on their individual assessment of priorities and the applicability of the potential enhancement.

Table 3-7 Treatment Control BMP Removal Efficiency

Pollutant of Concern	Treatment Control BMPs					
	Vegetated Swale/Strip	Catch Basin Screen/ Insert	Hydrodynamic Separator	Infiltration Basin/Trench	Bioswale	Grease Trap
Sediment/ Turbidity/ Suspended Solids/ pH	High/Medium	High/Medium	High/Medium Low for Turbidity	High/Medium	High/Medium	Low
Nutrients	Low	Low	Low	High/Medium	Low	Low
Organic Compounds	Medium/Low	Low	Low	High/Medium	Medium	Low
Trash & Debris	Low	High/Medium	High/Medium	High/Medium	Low	Medium
Oxygen Demanding Substances	Low	Low	Low	High/Medium	Low	Low
Pathogens (Bacteria/ Viruses)	Low	Low	Low	High/Medium	low	Low
Oil & Grease	High/Medium	Medium	Medium/Low	High/Medium	High/Medium	Medium
Pesticides/PCBs	Medium	Low	Low	High/Medium	Medium	Low
Metals	High/Medium	Medium	Low	High	High/Medium	Low

Table 3-8 Non-Structural BMP Enhanced Implementation Efforts and Dates

Broad Non-Structural BMP Program	Specific Non-Structural BMP Enhancements	Implementation Dates for LAR UR2 WMA Permittees[a]						
		Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon
		Implementation Status						
Street Sweeping or Vacuuming (SS/V)	Conduct SS/V at least once per week	July 31, 2015	December 28, 2012	December 28, 2012	December 28, 2012	December 28, 2012	December 31, 2013	December 28, 2012
	Utilize signage/parking enforcement to maximize SS/V performance	December 28, 2012	December 28, 2012	December 28, 2012	December 28, 2012	December 28, 2012	December 31, 2013	December 28, 2012
	Contract for SS/V at or below 5 MPH with parking enforcement oversight	December 28, 2012	December 28, 2012	October 31, 2019	November 30, 2018	January 1, 2016	Financial Constraints	October 31, 2015
	Expand SS/V to include arterial medians	December 28, 2012	December 28, 2012	December 28, 2012	December 28, 2012	December 28, 2012	December 31, 2016	December 28, 2012
	Contract for regenerative air SS/V	July 31, 2015	December 28, 2012	October 31, 2019	December 28, 2012	December 28, 2012	December 31, 2013	December 28, 2012
Catch Basin and Storm Drain Cleaning	Identify cleaning frequency for catch basins with CPS or ARS[b]	Twice per year	Four times per year	Four times per year	Four times per year[e]	Twice per year	Twice per year [f]	Twice per year
	Enhance the extent, timing, and/or frequency of cleaning	June 31, 2015	December 28, 2012	December 28, 2012[g]	December 28, 2012	December 28, 2012	December 28, 2012	December 28, 2012[b]
	Identify modification opportunities and consider implementation	June 30, 2015	June 30, 2015[c]	October 31, 2014	June 30, 2017	December 28, 2012	December 31, 2015[f]	October 31, 2015[h]
Commercial and Food Outlet Inspection	Develop a targeted outreach effort related to bacterial discharges	Financial Constraints	December 31, 2015	June 30, 2015	June 30, 2016	December 30, 2016	December 31, 2015[f]	December 28, 2012
	Develop and enforce trash bin source control ordinances	Financial Constraints	December 28, 2012	December 28, 2012	June 30, 2017	August 30, 2016	Financial Constraints	December 28, 2012
	Contract with solid waste franchisee to provide bins limited opening lids	Financial Constraints	December 28, 2012	June 30, 2016	June 30, 2017	January 31, 2024	December 31, 2015[f]	June 30, 2016
	Annually inspect fats, oils & grease (FOG) control & disposal equipment	December 28, 2012[i]	December 28, 2012[i]	June 30, 2015	December 28, 2012[i]	December 28, 2012	December 28, 2012[i]	December 28, 2012
Pet Waste Controls	Developing and enforce impervious surface pet waste ordinances	Financial Constraints	December 28, 2012	December 31, 2015	December 28, 2012	December 28, 2012	December 31, 2016[f]	December 28, 2012
	Develop and implement targeted outreach effort through City/SEAACA	July 31, 2015	December 28, 2012	December 31, 2013[i]	June 30, 2016	August 30, 2015	December 31, 2016[f]	January 31, 2016
	Expand the use of alternative media outlets, including city website	July 31, 2015	June 30, 2015	December 31, 2015[j]	June 30, 2016	August 30, 2015	Financial Constraints	June 30, 2016

Table 3-8 Non-Structural BMP Enhanced Implementation Efforts and Dates

Broad Non-Structural BMP Program	Specific Non-Structural BMP Enhancements	Implementation Dates for LAR UR2 WMA Permittees[a]						
		Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon
		Implementation Status						
Education and Outreach	Develop pollutants of concern (POC) source control outreach program	Financial Constraints	June 30, 2015	June 30, 2015	September 30, 2015	March 1, 2016	December 31, 2015[f]	December 28, 2012
	Utilize alternative media outlets to support POC source control program	Financial Constraints	June 30, 2015	June 30, 2017	December 28, 2012	March 1, 2016	Financial Constraints	December 28, 2012
	Study of opportunities to enhance or modify program for implementation	Financial Constraints	December 31, 2016	June 30, 2017	June 30, 2017	March 1, 2016	December 31, 2016[f]	June 30, 2016
Homeless Mentally-Impaired Assistance[c]	Assist Southeast Regional Mental Health Evaluation Teams (SRMET)	April 30, 2015	April 30, 2015	Public Safety Not a Partner	Safety Not a Partner	April 30, 2015	Public Safety Not a Partner	April 30, 2015
	Utilize Gateway COG supported PATH NGO Partnership[d]	December 28, 2012	December 28, 2012	December 28, 2012	December 28, 2012	December 28, 2012	December 28, 2012	December 28, 2012
Industrial/ Commercial Inspections	I/C Facility Inspectors to provide list of watershed TMDL POCs (e.g. trash, zinc, *E. coli* bacteria)	December 31, 2015	December 31, 2015	September 3, 2013[k]	December 31, 2015	December 31, 2016	December 31, 2015	December 31, 2015
Illicit Connection Illicit Discharge	Implement enforcement ordinances and prompt follow up inspections	December 28, 2012	December 28, 2012	June 30, 2016	December 28, 2012	December 31, 2016	December 31, 2015[f]	December 28, 2012
	Identify modification opportunities and consider implementation	Financial Constraints	September 30, 2015	June 30, 2016	June 30, 2016	December 31, 2016	December 31, 2015[f]	June 30, 2016

[a] - The Los Angeles County Flood Control District is currently implementing MCMs, and will continue to do so for the duration of the 2012 MS4 Permit, as defined in Permit Part VI.D. Permit requirements relevant to the District include: the Public Information and Participation Program (PIPP); the Illicit Connection and Illicit Discharge (ICID) Program and; the Public Agencies Activities Program (PAAP).

[b] - Additional cleanings are provided as necessary, such as when identified by the public or agency staff

[c] - Implemented through City Public Safety Departments, County Department of Mental Health, the Gateway Council of Governments, and non-governmental agencies.

[d] - People Assisting The Homeless http://www.epath.org/site/PATHServices/street-outreach.html

[e] - Once during dry season, three time during storm season

[f] - City developing cooperative implementation agreement with other watershed Agencies

[g] - Extended contract from City owned catch basins to all catch basins within the City of Commerce

[h] - All catch basins in the City of Vernon are slated to be retrofitted by this date

[i] - Contracted through the Los Angeles County Department of Public Health Restaurant Inspection Program

[j] – City of Commerce installed pet waste signage and waste bags throughout parks

[k] – Industrial/commercial facilities inspection contract issued resulting in the use of pre-inspection notifications, BMP and IGP education, more industry/pollutant specific brochures/checklists, proper SIC/NAICs categorization, and additional recommended BMPs to address trash, metals, and bacteria TMDLs.

3.3.2 Proposed Non-Stormwater Discharge Control Measures

California Senate Bill 346 (SB 346) was chaptered on September 27, 2010 and phases out the use of copper in automotive friction (brake) pads and prevents its replacement with other toxic substances. Similarly, the US EPA and automotive manufactures signed a Copper-Free Brake Initiative on January 21, 2015[5]. The law prohibits new vehicle brake friction material from exceeding 5 percent copper by weight, by 2021, and 0.5% copper by weight by 2025. As a result of SB 346, over 40 percent of cars manufactured in 2014 contained less than 0.5 percent friction pad copper and the laws implementation is well ahead of schedule. Other copper sources and discharges will be addressed by source controls for zinc, and the effectiveness of BMPs in controlling copper and other pollutants will be reassessed through the AMP.

Permit Attachment E Part IX introduces an aggressive non-stormwater outfall based screening and monitoring program. The LAR UR2 WMA CIMP describes how the non-stormwater screening program will be implemented. Given that the Rio Hondo is normally dry, or at least does not have flowing runoff, the LAR UR2 WMA anticipates that non-storm water discharge source assessment will result in the development of new control measures specific to the unique characteristics of the LAR UR2 WMA.

Partially as a result of the adoption of 2012 Permit and ongoing RAA and WMP development, the Cities of Bell Garden, Commerce, and Vernon have recently surveyed the condition of local roadways and developed Pavement Management Plans (PMP) or, in the case of Commerce, Pavement Management System (PMS), Programs. These Cities are already utilizing these recently implemented PMP and PMS Programs to characterize pavement conditions, design or construction characteristics, prioritize roadway maintenance needs, identify funding opportunities, and secure support for the implementation of proposed future LID and Green Street projects within the context of each cities five year Capital Improvement Program (CIP) and budget. While the initial LID and Green Street projects and proposals, already identified in WMP section 4.3.3.2 (LID Streets), are modest in scope and most effectively control non-stormwater discharges, these projects and the larger PMP and PMS programs have the potential to successfully expand and guide the implementation of the large scale LID and Green Street Project contemplated during WMP implementation for the control of both stormwater and non-stormwater discharge and pollution controls.

3.3.3 Proposed Structural Control Measures

The proposed structural control measures are discussed in greater detail in Section **4.5** including sizing and other design parameters. The proposed structural control measures include both distributed and regional BMPS. Distributed BMPs will be implemented throughout the watershed in accordance with the Planning and Land Development Program specified by the MS4 Permit. The types and sizes of these BMPs are not identified, but assumptions are provided to support the quantities incorporated into the RAA. Following the Los Angeles River Reach 2 metals TMDL Implementation Plan, structural BMPs will be used to meet wet weather TMDL target compliance if the water quality data indicates non-compliance. LID Streets or Green Streets generally consist of bioretention system. These distributed BMPs will be implemented in LAR UR2 WMA as described in Section **4.5.2**.

Six regional projects have been identified through the development, as listed below. The design details associated with the projects will be determined in the future, but as currently conceptualized include infiltration trenches, infiltration basins, and subsurface infiltration systems.

[5] http://water.epa.gov/polwaste/npdes/stormwater/copperfreebrakes.cfm

- Randolph Street Rail to Green Trail;
- LADWP Transmission Easement;
- John Anson Ford Park;
- Rosewood Park;
- Lugo Park; and
- Salt Lake Park.

Several regional projects involving LID or Green streets are in progress or were recently completed. These projects are listed below:

- City of Vernon, two Filterra® tree wells are due to be installed in Summer 2015. The project is located on 26th Street, with each tree well filtering 4.5 acres of stormwater. This project, a part of the Proposition 84 grant, will include water quality monitoring once completed.

- City of Commerce, Telegraph Road Overlay Project. This project was completed in April 2015 and included the installation of 228 square feet of pervious concrete gutter. It is capable of filtering 150 gallons/hour of roadway runoff with nearly 90% of TSS removed.

- City of Commerce, Washington Boulevard Reconstruction and Widening Project. This project began in April 2015 and covers a 2.7 mile segment of Washington Boulevard. Features include permeable median islands, tree wells, and pervious pavers along sidewalks. Construction of the project is expected to last 18 months.

4. Reasonable Assurance Analysis

The 2012 MS4 Permit directs that the WMP groups each prepare a Reasonable Assurance Analysis (RAA), based on physical watershed characteristics, pollutant assumptions, and the determination of Board approved computational hydrology models, supporting the assertion that implementation of the approved WMP Plan will result in the attainment of regional water quality objectives. Like its predecessors, the Permit requires the elimination of unpermitted non-stormwater discharges and, through sustained Permittee efforts, dry-weather flows have been nearly eliminated from the LAR UR2 WMA Rio Hondo tributary area, while the LAR is composed almost exclusively of permitted POTW discharges and rising groundwater. With the Permit requirement to eliminate non-exempted, non-stormwater discharges, there is no technical basis upon which to develop a credible quantitative dry-weather RAA and compliance can be assumed through demonstrated implementation of requirements and prohibitions.

For storm runoff, the purpose of the RAA is to develop and demonstrate that the LAR UR2 WMA WMP Plan implementation scenario, ultimately approved by Board Executive Officer, will achieve WQOs, WQBELs, and RWLs, during critical design storm conditions, for the priority pollutants of concern identified in Section **2**. For each WBPC identified in the WMP, the WQOs or MS4 Permit identified limitations, upon which the RAA is evaluated, are specified in **Appendix C**. For the LAR UR2 WMA TMDL identified bacteria and metal pollutants were anticipated to be priority and BMP design limiting pollutants as a result of the following physical characteristics, approved RAA guidelines, and regulatory criteria:

- Ambitious TMDL interim and final compliance schedules for achieving WLAs;
- Reported and previously observed conservative fate and transport characteristics; and
- Treatability and regrowth characteristics that impose implementation of volumetric watershed control measures on Permittees in order to demonstrate achievement of TMDL WLAs and WQOs.

This section summarizes the modeling approach that was carried out as part of the greater RAA development effort, specifically the process of:

- Setting target load reductions based on MS4 Permit limitations;
- Modeling identified structural BMPs and quantifying their associated load reductions;
- Demonstrating, with reasonable assurance, that target load reductions (and therefore MS4 Permit limitations) can be met by the final compliance dates; and
- Phasing of structural and non-structural BMPs to achieve interim milestones.

The RAA modeling approach conforms to MS4 Permit Part VI.C.5.b.iv.(5), which states:

> *"Permittees shall conduct a Reasonable Assurance Analysis for each water body-pollutant combination addressed by the [WMP]. [The] RAA shall be quantitative and performed using a peer-reviewed model in the public domain. Models to be considered for the RAA, without exclusion, are the Watershed Management Modeling System (WMMS), Hydrologic Simulation Program-FORTRAN (HSPF), and the Structural BMP Prioritization and Analysis Tool (SBPAT. The objective of the RAA shall be to demonstrate the ability of [the WMP] to ensure that Permittees' MS4 discharges achieve applicable water quality based effluent limitations and do not cause or contribute to exceedances of receiving water limitations."*

Although the Regional Board developed document, "Guidelines for Conducting Reasonable Assurance Analysis in a Watershed Management Program, Including an Enhanced Watershed Management Program (March 25, 2014)" provides guidance, and not necessarily requirements, the results of the RAA presented in this WMP conform to the Regional Board guidance document, including those related to assessment of output variability. This approach was presented to the Regional Board by Geosyntec on April 9, 2014 (Geosyntec, 2014) and found to be consistent with their guidelines.

4.1 RAA Modeling System, Approach, and Pre-RAA Calibration

The LAR UR2 WMA RAA leverages the attributes of publicly available, widely utilized, GIS-based models selected for use based on prior application to local water quality priorities, hydrologic processes, and BMP opportunities. The models were specifically referenced in the MS4 Permit Part VI.C.5.b.iv and presented at two Regional Board-led MS4 Permit Group TAC RAA Subcommittee meetings. GIS was additionally used for spatial analysis and result visualization.

4.1.1 RAA Modeling Systems

The Los Angeles County Loading Simulation Program in C++ (LSPC) uses Hydrologic Simulation Program FORTRAN (HSPF) algorithms to develop subwatershed hydrology, sediment transport, and pollutant loadings, which are then integrated to characterize watershed level runoff flow rates, volumes, pollutant loads, and receiving water quality conditions. This model was developed as part of the County Watershed Management Modeling System (WMMS) framework and is suited to develop baseline storm flow and pollutant loading for areas adjacent to and within the LAR UR2 WMA. Pollutant loads are generated using pollutant and land use specific "build up/wash off" algorithms that, although originally adjustable, have been calibrated and set for application in Los Angeles County as a part of WMMS effort.

SBPAT is a public-domain, GIS-based, water quality analysis tool that was used to evaluate pollution load reductions based on structural BMP performance. SBPAT links a modified USEPA SWMM hydrologic engine with a Monte Carlo analysis of 10,000 iterations of pollutant EMCs, based on regionally derived statistical data distributions, and BMP pollutant removal effectiveness, based on International BMP Database treatment data, to obtain statistically characterized, numerical results regarding the expected performance of a specific BMP configuration. Additional information regarding SBPAT can be found in the SBPAT portal (SBPAT, 2013a). The SBPAT model:

- Distinguishes among runoff events, separated by six-hour increments, yet tracks inter-event antecedent conditions;
- Calculates and tracks runoff influent to BMPs, treated discharge, bypass, evaporation, and infiltration, flows and volumes, at user-defined time steps (e.g., 15 minutes);
- Calculates and tracks pollutant concentrations, among alternate BMP runoff flows and volumes;
- Summarizes storm event BMP conveyance, retention, and pollutant load reduction metrics; and
- Annually consolidates BMP conveyance, retention, and pollutant load reduction metrics.

4.1.2 RAA Modeling Approach

The modeling approach begins with the assemblage and analysis of locally relevant storm records from which critical receiving water conditions can be modeled under current and future conditions. For the identified critical conditions, baseline storm hydrology, pollutant loads, and pollutant concentrations, were then determined to allow calculation of modeled daily runoff flows, receiving water quality pollutant concentrations and loads. The model results for runoff volume, flow, and pollutant concentrations were then checked to identify if potential adjustments might be warranted, or whether the baseline results suggest that the model was validated and sufficiently calibrated, to warrant continued RAA progress. Based on the critical storm conditions, Permit and LARWQCB Basin Plan identified regulatory WQOs and baseline runoff volumes were used to calculate allowable pollutant loads which are then subtracted from the previously identified current or baseline modeled receiving water quality conditions, to establish numeric pollutant specific target load reductions. Progress towards achieving WQOs is established for WMP interim milestones and final compliance dates, by evaluating and subtracting from the required target load reduction at timely increments. Initially this is based on non-structural BMP pollutant load reductions, including the reduction in pollutant loads from non-MS4 permit and other regulatory programs

to just match WQOs, LID based redevelopment at the parcel level, and implementation of MCMs and modified MCMs, that were not fully utilized by Permittees located where the model EMCs were developed. For the LAR UR2 WMA, the later included weekly street vacuuming with parking enforcement, which is only sporadically utilized by largest Permittee in the watershed. In response to the complexities of the Los Angeles River Bacteria TMDL, a ranking analysis to identify High Flow Suspension (HFS), Allowable Exceedance Days (AEDs), and the marginal non-compliance day used to facilitate structural BMP sizing. Using the load for the marginal non-compliance day, hypothetical, strategically placed, outfall specific retention basins were sized to achieve outfall compliance. This compliance achieving volume was then compared with the volume of proposed Regional Structural BMPs, and where a residual compliance volume existed, it was attributed to LID and Green Streets outside of the tributary area to the proposed Regional Structural BMPs, so as avoid double counting the contribution to the required target load reduction. Based on scheduled implementation of all BMPs, the cumulatively subtracted required target load reductions was calculated and used to demonstrate RAA based compliance with WQOs.

4.1.3 Pre RAA Model Calibrations

Prior to preparation of the LAR UR2 WMA RAA and even adoption of the 2012 MS4 Permit, LSPC, WMMS and SBPAT were being developed, calibrated, compared to each other, and used to address the growing interest in watershed water quality modeling, BMP implementation and monitoring. The following subsections address some of the broader hydrology and pollutant modeling and calibration efforts, to which LSPC and SBPAT were subjected and evaluated.

4.1.3.1 Hydrology Calibration

As part of the Los Angeles County WMMS system, the LSPC module, including the Los Angeles River Watershed, was calibrated for hydrology and water quality performance. Input parameters and model settings were not modified during the LAR UR2 WMA RAA, so the original County calibration results should continue to apply; however they are partially repeated and summarized herein, with an emphasis on local or WMA applicability. Additional documentation regarding the development and calibration of LSPC within the greater WMMS modeling framework can be found in the Los Angeles County Department of Public Works' WMMS portal (Los Angeles County DPW, 2010c).

The original County LSPC model hydrology calibration compared measured and predicted flow rates at thirty Los Angeles County stream gauge locations, including seven within the Los Angeles River Watershed (Los Angeles County Department of Public Works, 2010a). Tributary areas with a single or dominant land use were calibrated first to establish model land use attributes for application elsewhere in the county. In mixed land use areas, model attributes for larger, then smaller, previously uncalibrated land use categories were subsequently determined. Point source dischargers, such as POTWs, and hydromodification features, such as dams and spreading grounds, were then spatially introduced into the watershed models and the calibration adjusted for their inclusion where adequate data was available. Analyses included both graphical and statistical comparisons of model predictions with stream gauge data, including comparisons of mean daily, monthly, seasonal flows and flow exceedance probabilities.

The County calibration documentation allows us to compare and summarize LSPC predicted and observed flows for key locations within watershed. As shown in **Figure 4-1,** for the Los Angeles River at Sepulveda Dam from October, 2002 to October, 2006, an average difference of 1.25% in annual stream volumes was observed placing these results within RAA Guidelines "very good" range. For the period between October 1988 and October 1992 as shown in **Figure 4-2**, the watershed LSPC model similarly compared favorably with downstream USGS gauge 11103000, with an average difference of only 4.37%, which is also within the "very good" range.

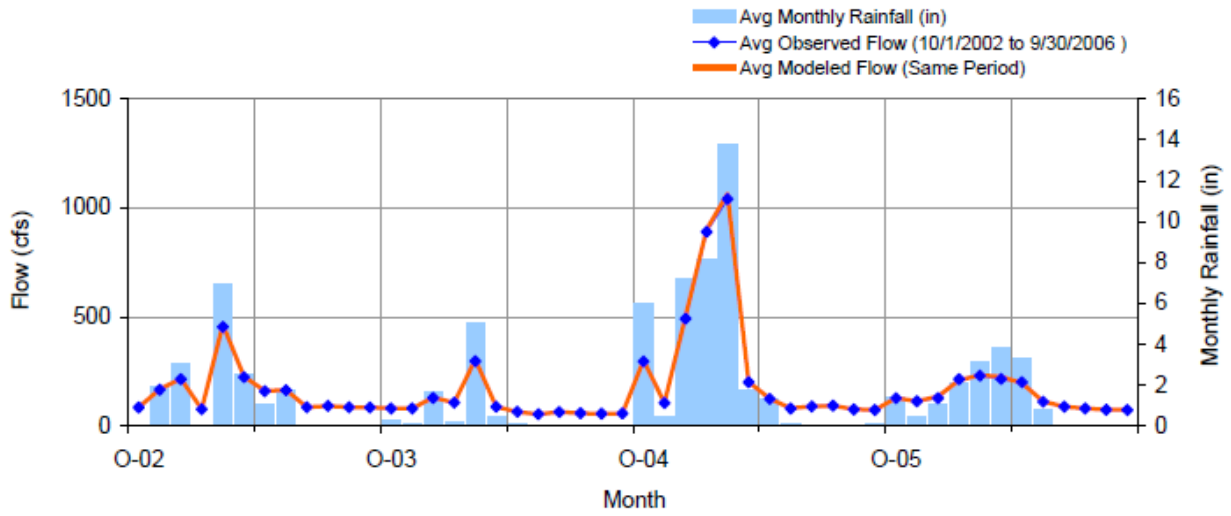


Figure 4-1 LSPC Modeled and Observed Los Angeles River Flows at Sepulveda Dam
(Figure from Los Angeles County Department of Public Works, 2010a)

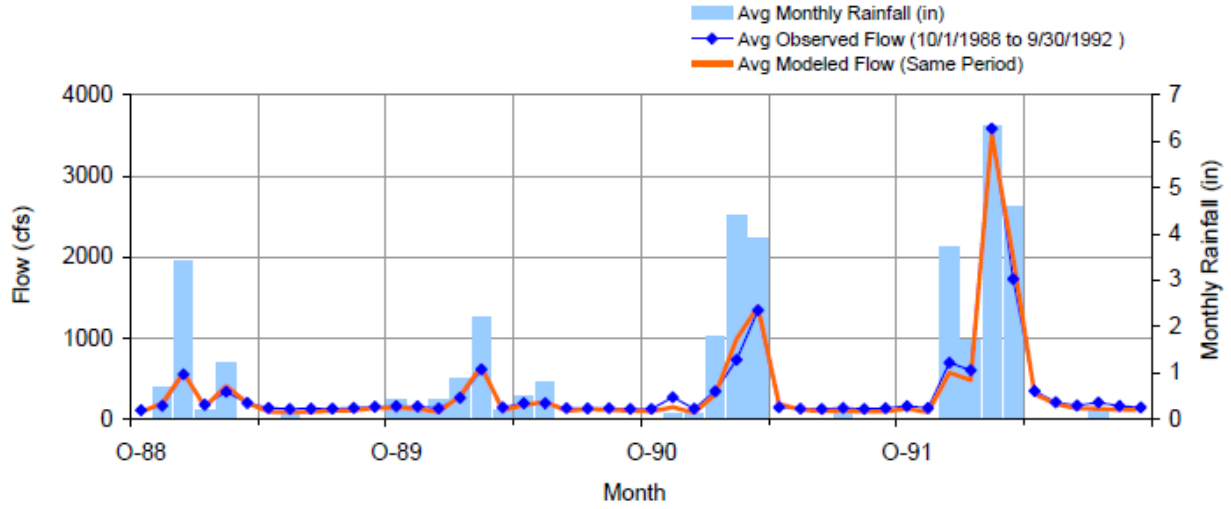


Figure 4-2 LSPC Modeled and Observed Los Angeles River Flows Above Long Beach (Figure from Los Angeles County Department of Public Works, 2010a)

4.1.3.2 LSPC Conveyance and Pollutant Concentration Calibration

The County calibrated the LSPC model with respect to water quality in a similar way, starting in areas where a dominant land use could be assessed and calibrated, then fixing those land use attributes as other land uses were introduced, assessed, and the calibration revised (Los Angeles County Department of Public Works, 2010b). Predicted pollutant concentrations were compared with land use specific water quality data collected between 2001 and 2005, by the Southern California Coastal Water Research Project (SCCWRP, 2007), in verify model input parameters by pollutant and land use. Watershed scale model water quality predictions were validated through comparison with mass emission site data.

For the On January 26 and 27, 2001, storm event, fecal coliform and total metals samples were collected at Los Angeles River Site ME01, on the Los Angeles River at Arroyo Seco and upstream of the WMA, which were then compared with flow based LSPC water quality monitoring data. The comparisons shown in **Figure 4-3** to **Figure 4-6** indicate good agreement for the pollutants of primary concern to the WMA.

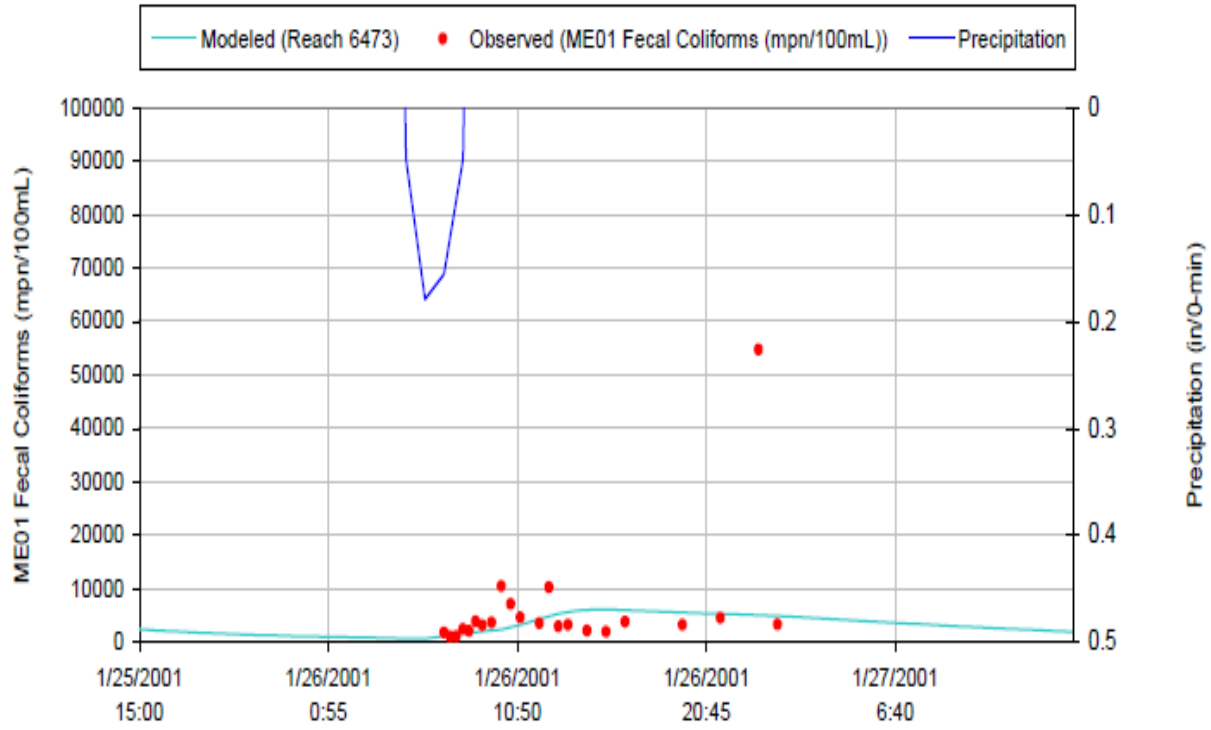


Figure 4-3 LSPC Predicted and Observed Fecal Coliform Concentrations at Site ME01 (Figure from Los Angeles County Department of Public Works, 2010b)

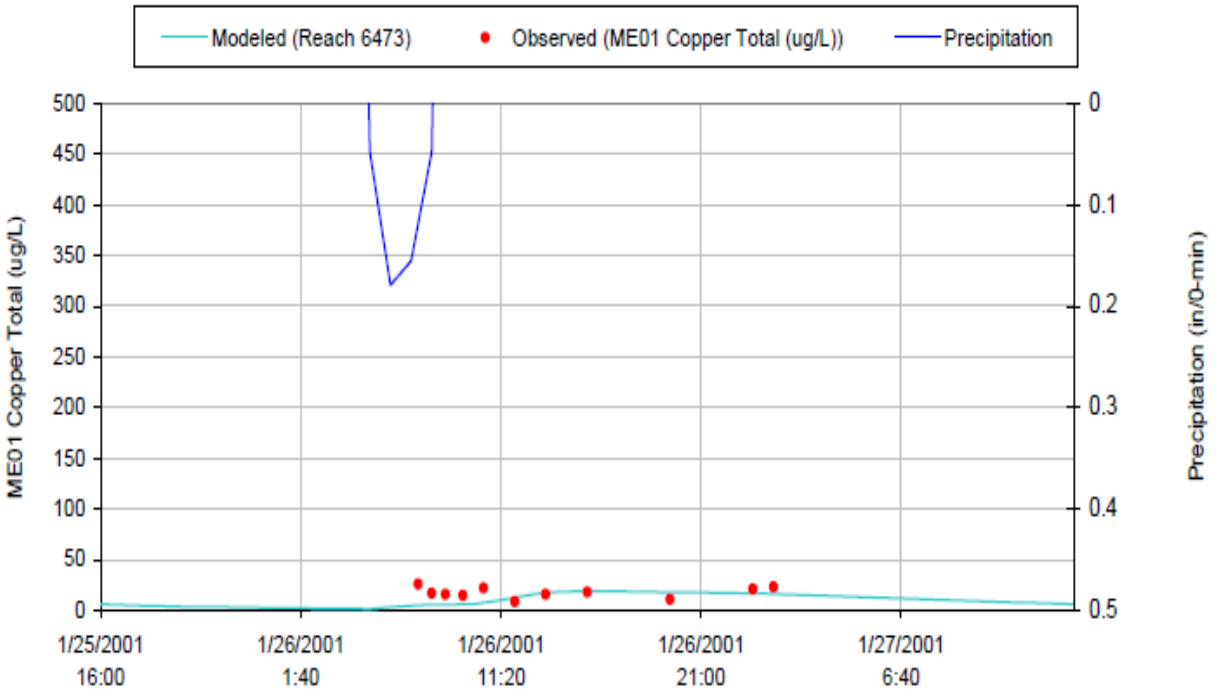


Figure 4-4 LSPC Predicted and Observed Total Copper Concentrations at Site ME01 (Figure from Los Angeles County Department of Public Works, 2010b)

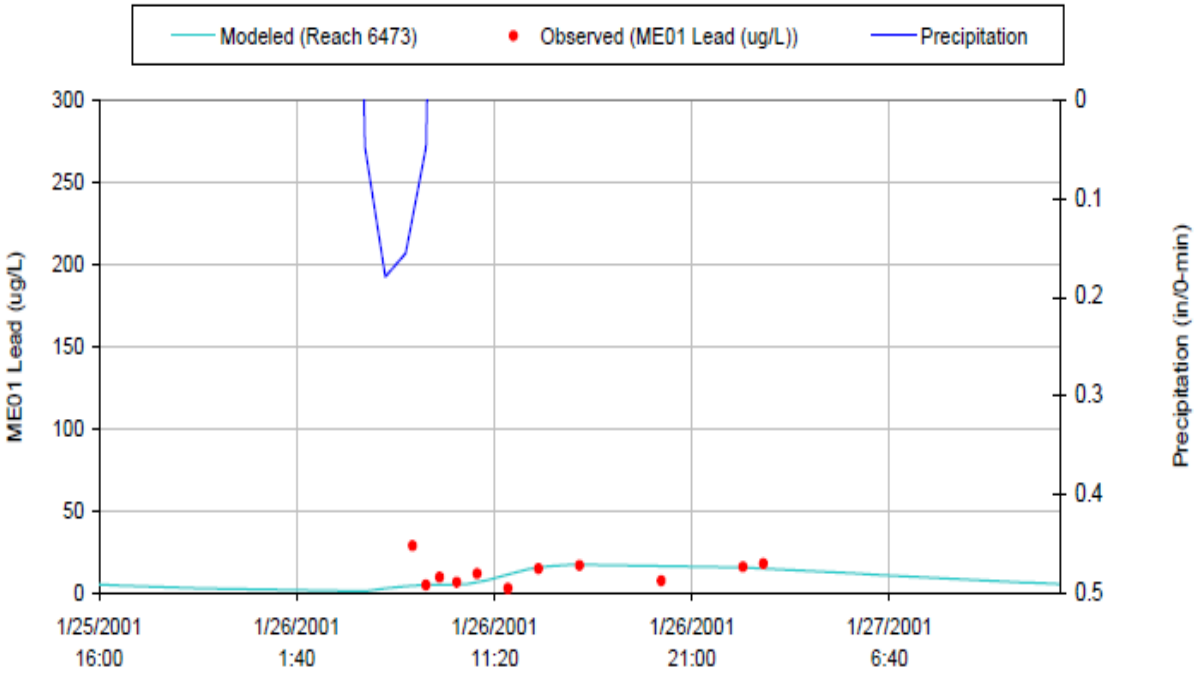


Figure 4-5 LSPC Predicted and Observed Total Lead Concentration at Site ME01 (Figure from Los Angeles County Department of Public Works, 2010b)

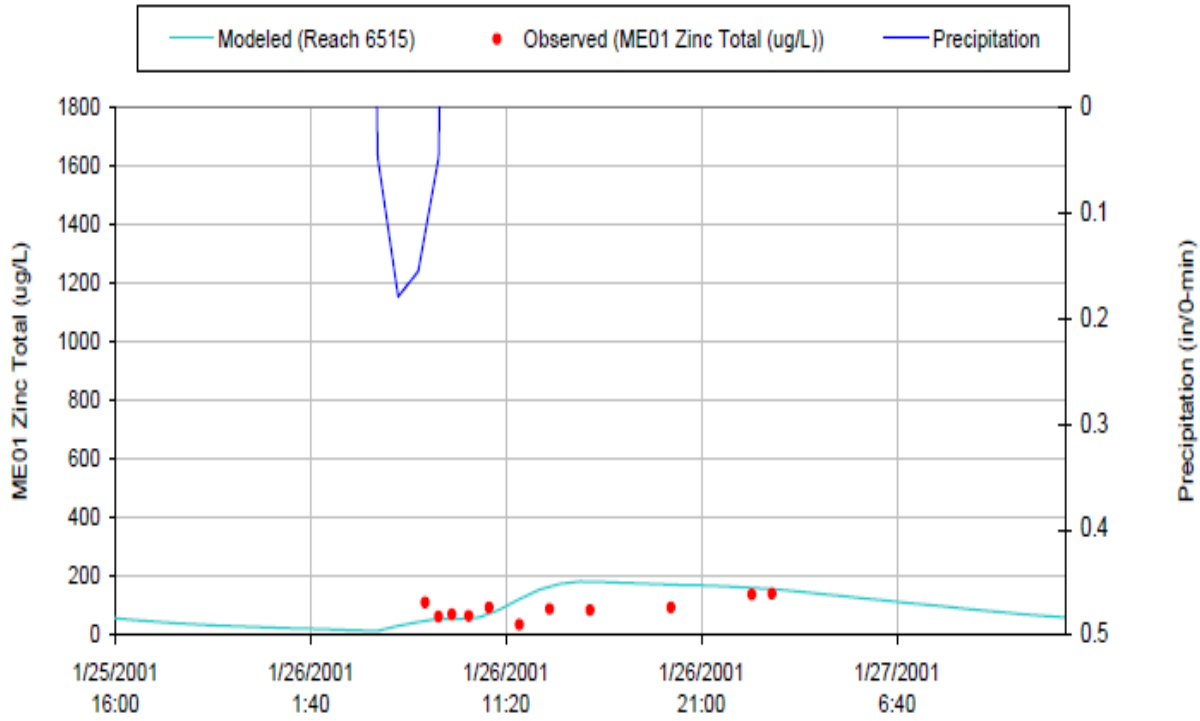


Figure 4-6 LSPC Predicted and Observed Total Zinc Concentration at Site ME01 (Figure from Los Angeles County Department of Public Works, 2010b)

4.1.3.3 Land Use EMC Comparability

Though based on the same original land use and pollutant specific monitoring data, which was collected by Los Angeles County (2000), SCCWRP (2007), LSPC, and SBPAT processed the data differently to develop pollutant EMC values applicable to their purposes. SCWRRP expressed the data as a range of observed EMC values appropriate for the land use and pollutant. For most pollutants LSPC employs land use and pollution specific EMCs which are transformed using by "build up/wash off" functions, while land use specific static EMC values were used for fecal coliforms, then the resulting algorithms were calibrated against observed monitoring data. For SBPAT, the monitoring data was transformed to the log-normal mean and standard deviation EMC statistics shown in **Table 4-3**, which are used in SBPAT to randomly assign each storm event a land use pollutant concentration drawn from the distribution; then performing thousands of period iterations to capture the effect of input variability on predicted results.

In order to visualize the different EMC source values and assess the comparability of these model analyses, SCWRRP, LSPC, and SBPAT pollutant EMCs for fecal coliform, total copper and total zinc were plotted for the dominant LAR UR2 WMA land uses, Industrial and High Density Residential, which make up 42 and 30 percent respectively of the WMA land use composition. The results are summarized in **Figure 4-7** through **Figure 4-12**, which show that while both models are within the range of observed monitoring data, the LSPC based analysis produces a narrow distribution of concentration results that is less comparable to the source monitoring data, while SBPAT produce a statistical distribution of values which better corresponds with the range of variability observed in the source monitoring data.

To translate between LSPC determined baseline pollutant loads and SBPAT BMP derived load reductions, total load reductions were expressed as a percentage of critical condition baseline loads. Therefore, even if specific baseline loads differ between the two models, the relative reduction in loads, resulting from BMP implementation, are comparable. Furthermore, the retention basins used in LSPC and most SBPAT implementation BMPs, rely on reducing runoff volume to achieve pollutant load reductions. Therefore, the effect on loads, relative to baseline loads, is similar, even if analyzed using differing EMC statistics.

While the LARUR2 WMA is centrally located within the watershed, its contribution is only about three percent of the total urban Los Angeles River Watershed area and therefore has a miniscule contribution on watershed scale flow and water quality calibration results. In addition, the Rio Hondo and San Fernando Valley Spreading Grounds should constrain the confidence that a WMA based model could be calibrated against the available stream flow gauge records. Ultimately, while the large proportion of industrial land use within the LAR UR2 WMA is characteristic, the parcels making up that land use are comparable with parcels elsewhere in the watershed, indicating that the WMA LSPC model should be well calibrated and comparable with that of the larger watershed. Furthermore, CIMP implementation, outfall monitoring, and the adaptive management process, should allow directly applicable local LAR UR2 WMA models to be developed, tested, and calibrated based on observed data, allowing revision of this initial RAA and consideration of different pollutants, standards, and implemented watershed control measures.

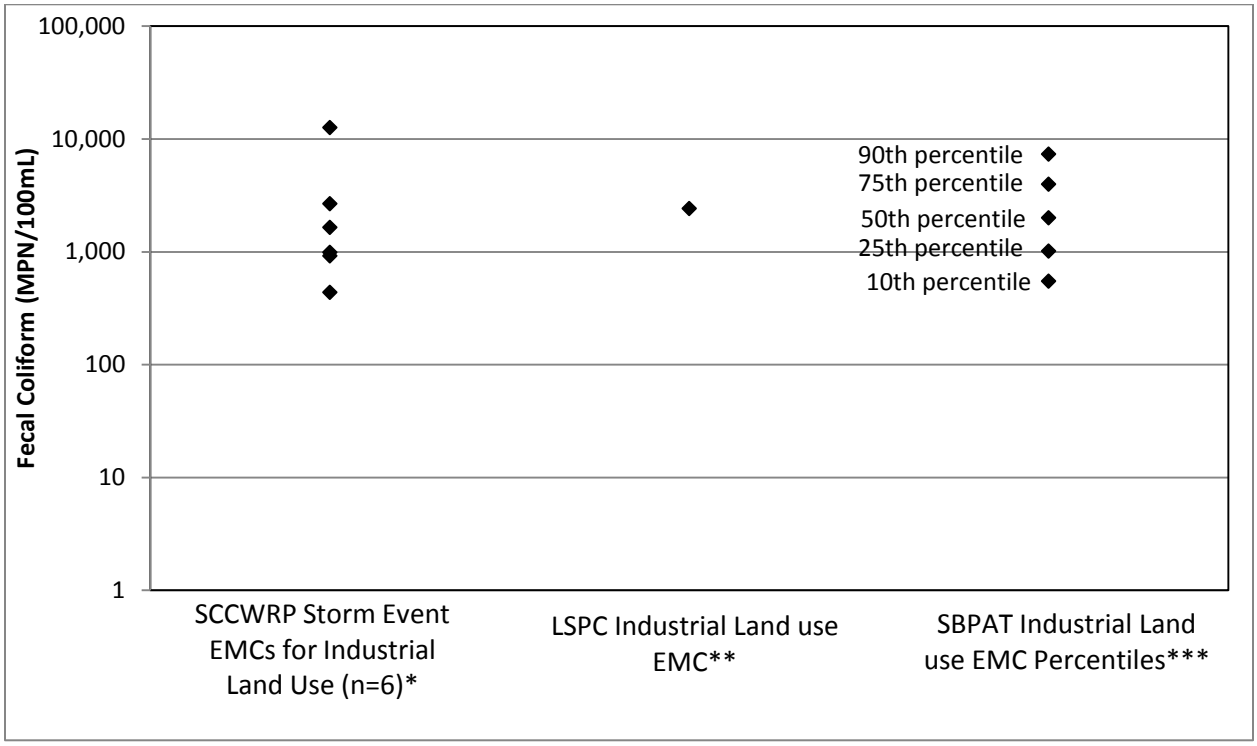


Figure 4-7 Comparison of Industrial Land Use, Fecal Coliform, EMC Values
*Table B-14, SCCWRP, 2007; **Weighted average of LSPC EMCs; ***ln mean 7.6, ln std. dev. 1.0.

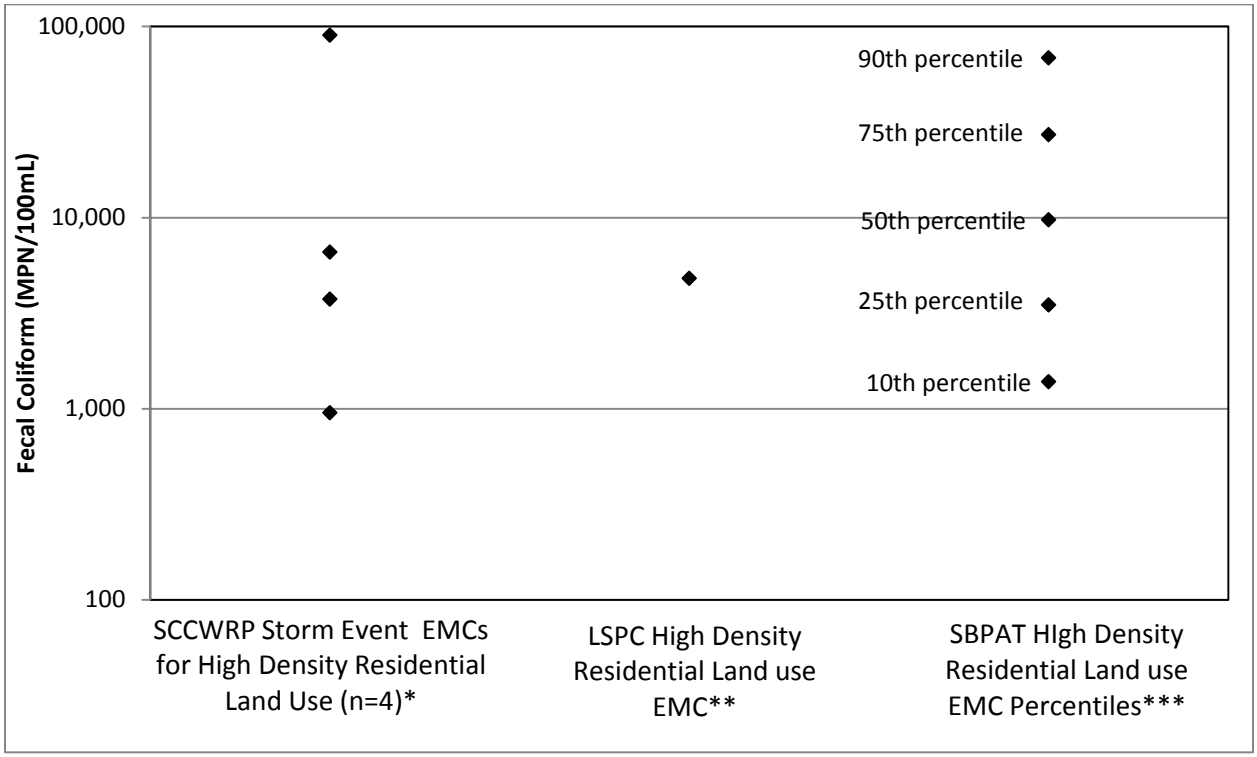


Figure 4-8 Comparison of High Density Residential Land Use, Fecal Coliform, EMC Values
*Table B-14, SCCWRP, 2007; **Weighted average of LSPC EMCs; ***ln mean 9.0, ln std. dev. 1.5.

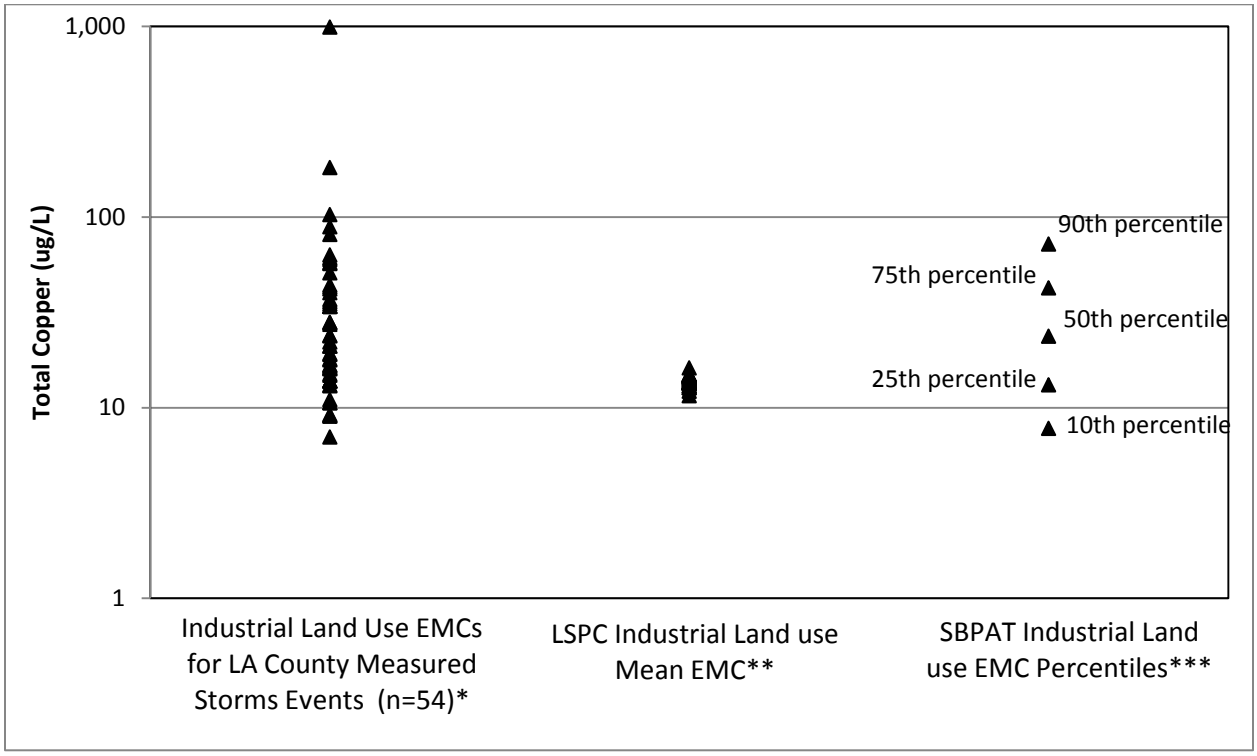


Figure 4-9 Comparison of Industrial Land Use, Total Copper, EMC Values
*LA County, 2000; **Weighted average of LSPC EMCs; ***ln mean 3.2, ln std. dev. 0.9.

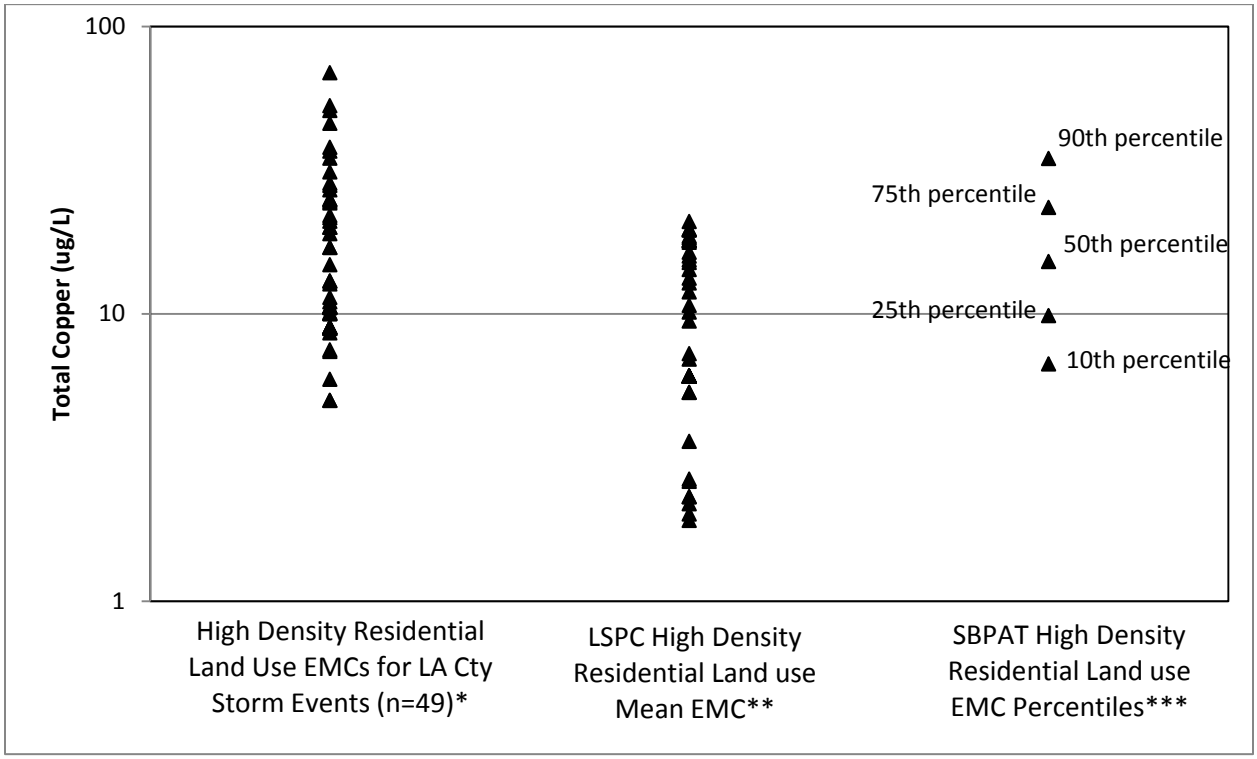


Figure 4-10 Comparison of High Density Residential Land Use, Total Copper, EMC Values
*LA County, 2000; **Weighted average of LSPC EMCs; ***ln mean 2.7, ln std. dev. 0.6.

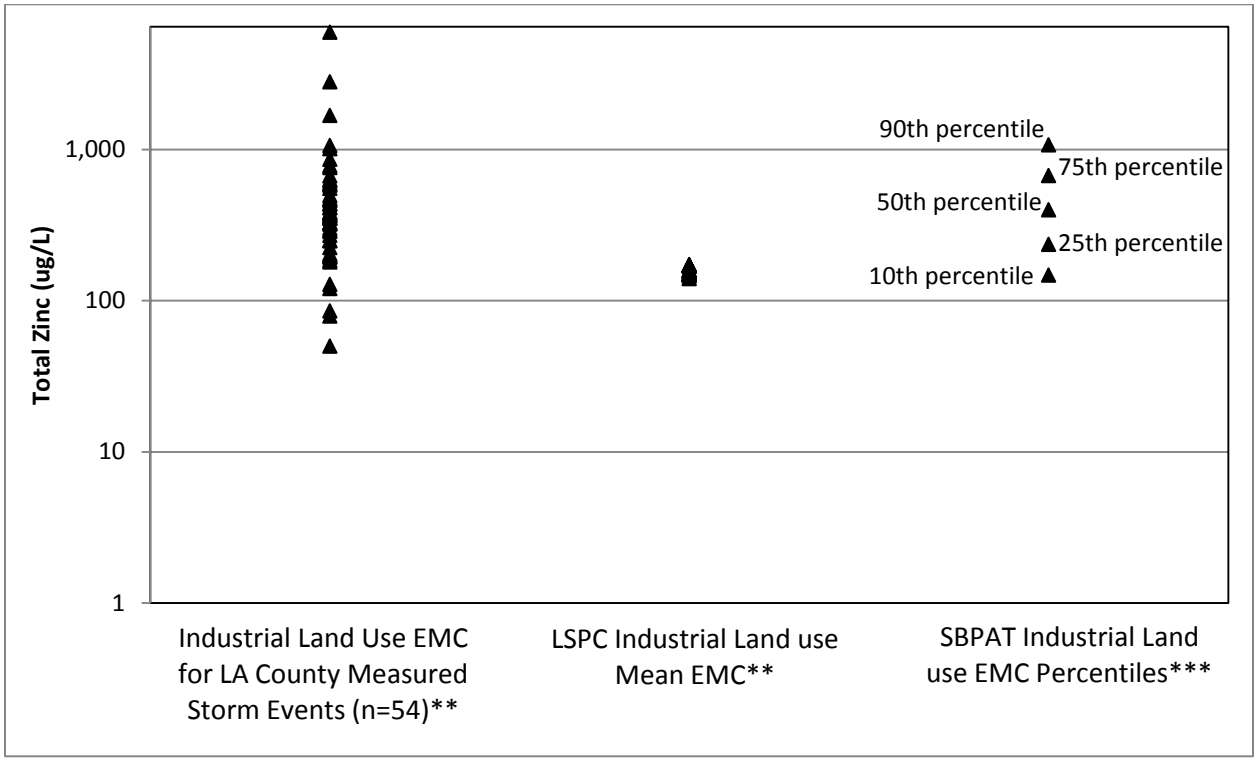


Figure 4-11 Comparison of Industrial Land Use, Total Zinc, EMC Values
*LA County, 2000; **Weighted average of LSPC EMCs; ***ln mean 3.2, ln std. dev. 0.9.

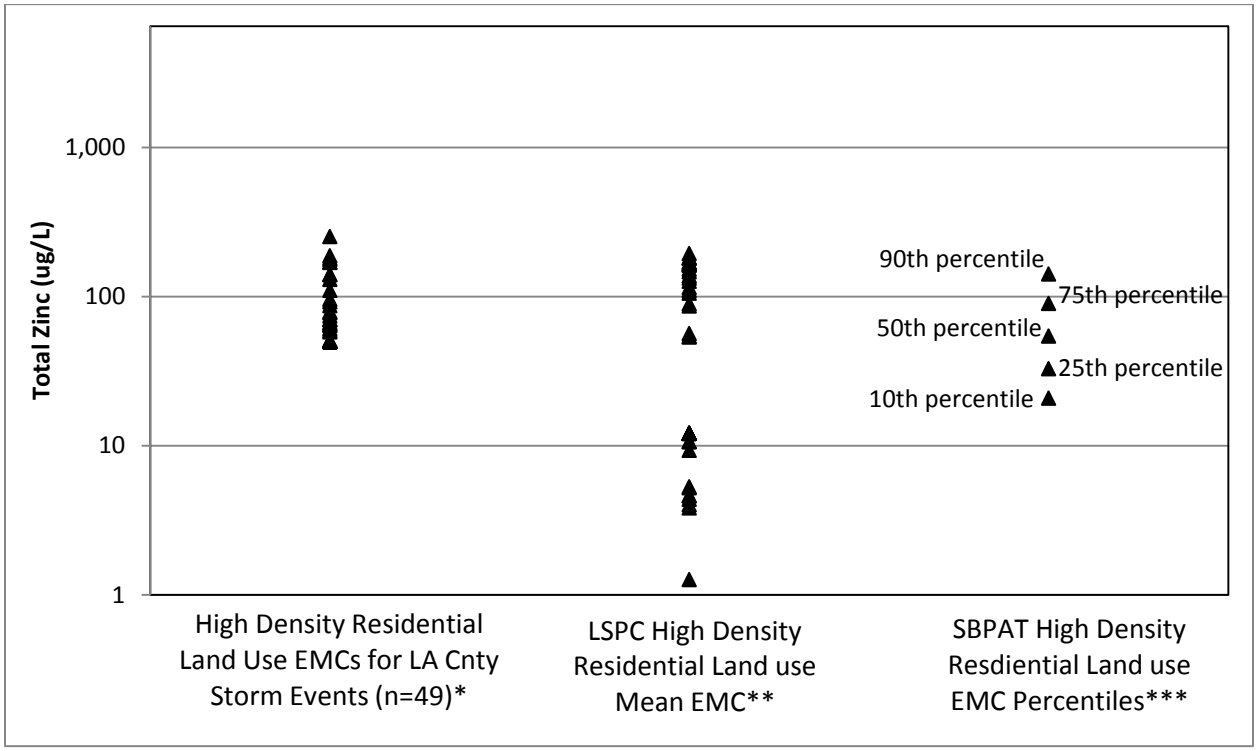


Figure 4-12 Comparison of High Density Residential Land Use, Total Zinc, EMC Values
*LA County, 2000; **Weighted average of LSPC EMCs; ***ln mean 4.0, ln std. dev. 0.8.

4.2 LAR UR2 WMA RAA Modeling and Initial Load Analyses

Information used in developing the LAR UR2 WMA WMP and RAA came from a number of sources, primarily those identified in the 2012 MS4 Permit, the County DPW Website, and RAA Guidelines released the by the Regional Board on March 23, 2014. Once procured for use in the LAR UR2 WMA RAA, the data was surveyed for completeness than restructured to facilitate steps with the RAA analysis, and then again checked for accuracy and comparison with other calibrated model sources.

4.2.1 Critical Condition Modeling Event Determination

Within the LSPC model, subwatershed analysis areas are assigned to Thiessen polygons and assigned rain gauges based on influence, usually as a result of proximity. LACFCD South Gate Transfer Station rain gauge (D1256) influences the largest proportion of the WMA as shown in **Figure 4-13** and based on local topography this gauge can be reasonably assumed to be representative of the WMA meteorological conditions. The Regional Board RAA guidance further directs that the critical condition determination be based on a recent period of at least 10 years in duration. For this gauge, the period from 1989-2011 was selected based on its pre-existence in the County LSPC model.

The guidance document directs RAAs to determine critical conditions, while subsequent communications reported that critical conditions might differ among pollutant classes based on WQBELs, RWLs, and the duration upon which compliance was assessed. After first determining annual rainfall depths, based on the November 1, to October 31, storm year used in the Los Angeles River and Tributaries Bacteria TMDL, the number of wet days, per storm year, was identified as the most appropriate metric for the Los Angeles River Bacteria TMDL, since final compliance is based on the number of wet weather exceedance days per year. For *E. coli* bacteria, and its modeling surrogate fecal coliform, the 90th percentile year was determined by applying the Permit definition of a wet day, that is a calendar day with precipitation greater than 0.1 inches and the three days following, to the identified representative rain gauge and period of analysis. For each analysis, the storm years were then ranked and the 90th percentile critical condition year identified. For the selected gauge and period, the 90th percentile, rainfall depth year was determined to be 1995, while the 2011 storm year was determined to be critical for bacteria as shown in bold text on **Table 4-1**.

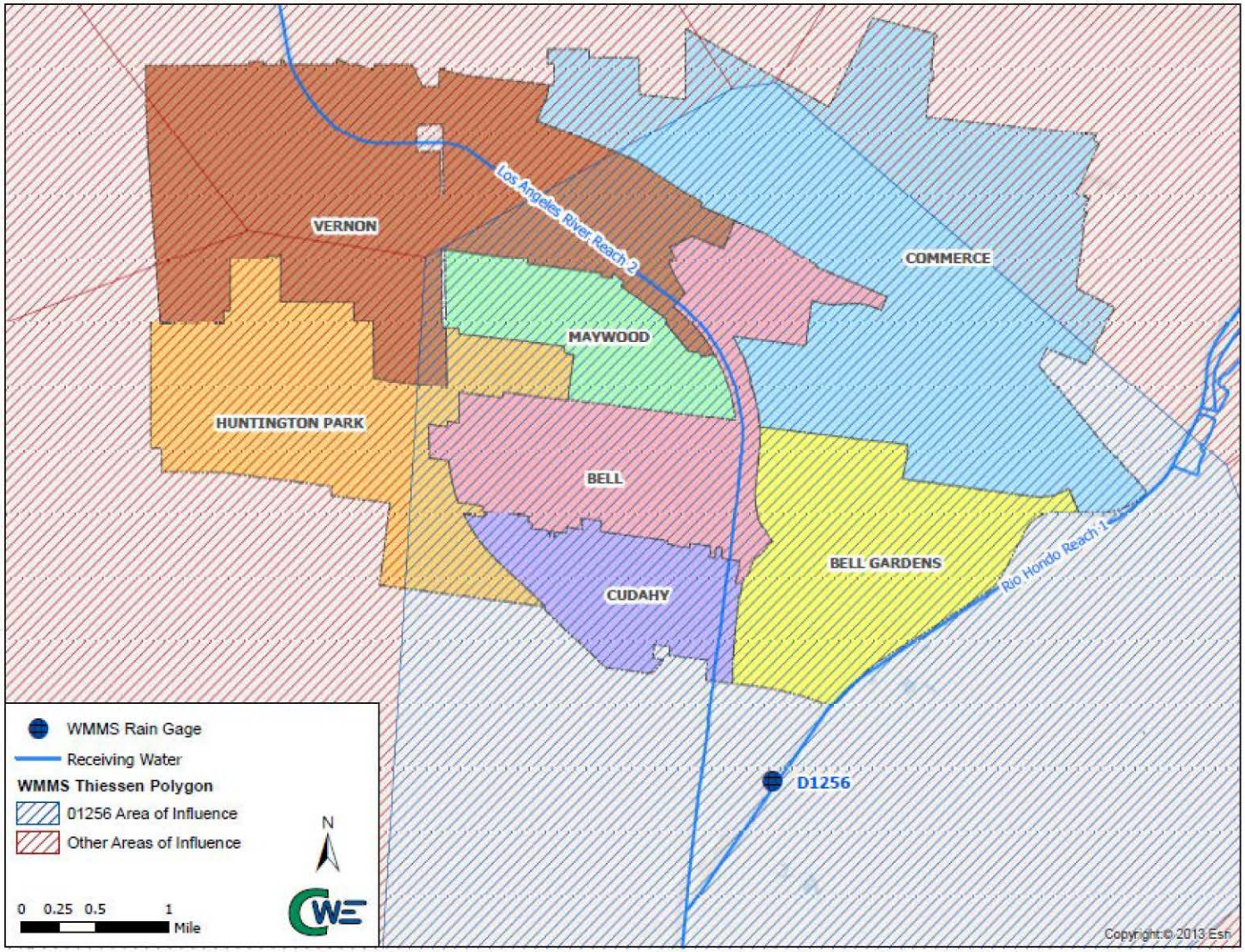


Figure 4-13 LAR UR2 WMA LSPC/HSPF D1256 Thiessen Polygons

Table 4-1 South Gate Transfer Station Rain Gauge Critical Condition Data

Storm	Annual Rainfall Depth		Number of Wet Days	
Year	Inches	Percent of Maximum	TMDL Definition	Percent of Maximum
1989	5.51	20%	48	36%
1990	5.88	24%	34	12%
1991	9.05	36%	45	32%
1992	15.6	76%	67	80%
1993	18.86	88%	65	72%
1994	7.28	32%	57	56%
1995	**23.03**	**92%**	72	88%
1996	12.26	60%	67	76%
1997	9.34	40%	40	24%
1998	29.42	100%	108	100%
1999	6.7	28%	60	64%
2000	11.27	52%	62	68%
2001	13.07	64%	49	44%
2002	2.8	12%	38	20%
2003	17.26	84%	54	52%
2004	13.87	68%	54	48%
2005	28.06	96%	81	96%
2006	9.77	44%	59	60%
2007	3.9	16%	38	16%
2008	11.45	56%	41	28%
2009	10.84	48%	49	40%
2010	14.57	72%	69	84%
2011	15.63	80%	**80**	**92%**

4.2.2 Baseline Runoff Flow and Volume Estimation and Validation

The LSPC model has been extensively used in the LAR watershed, however to be useful in guiding development of the LAR UR2 WMA WMP, the analysis had to be more narrowly focused to the jurisdictional area of interest and the results validated as reputable for the intended purpose. As more completely characterized in early WMP sections, hydrology data from the Los Angeles County Department of Public Works Geospatial Library was downloaded clipped to conform to the WMA as shown in **Figure 4-14**, then the model run to generate critical condition baseline loads so that it could be utilized to determine flow rates, volumes, pollutant loads, with the intent that the process would be repeated following the identification of the watershed control measures necessary to achieve the desired WQOs.

One of the potential load reduction strategies considered by the Board was to assess loads based on a 90th percentile storm rather than the 90th percentile rainfall depth year identified in the prior section. During review of the draft LAR UR2 WMA Board staff requested time based flow frequency curves be provided for subwatersheds areas 6078 and 6083 which are LAR UR2 WMA subwatershed areas within the LAR and Rio Hondo portions of the WMA respectively. For the period from 1988 to 2011, 8401 rain events were recorded and the daily rainfall depths determined. After removing events that produced < 0.1 inches, a total of 528 storm events were left, and the 90th percentile daily flow rate was determined. The 90th percentile storm derived flow for subwatersheds 6078 and 6083 are 433 cfs and for 85 cfs, respectively, as shown in **Figure 4-15** and **Figure 4-16Figure 4-23**.

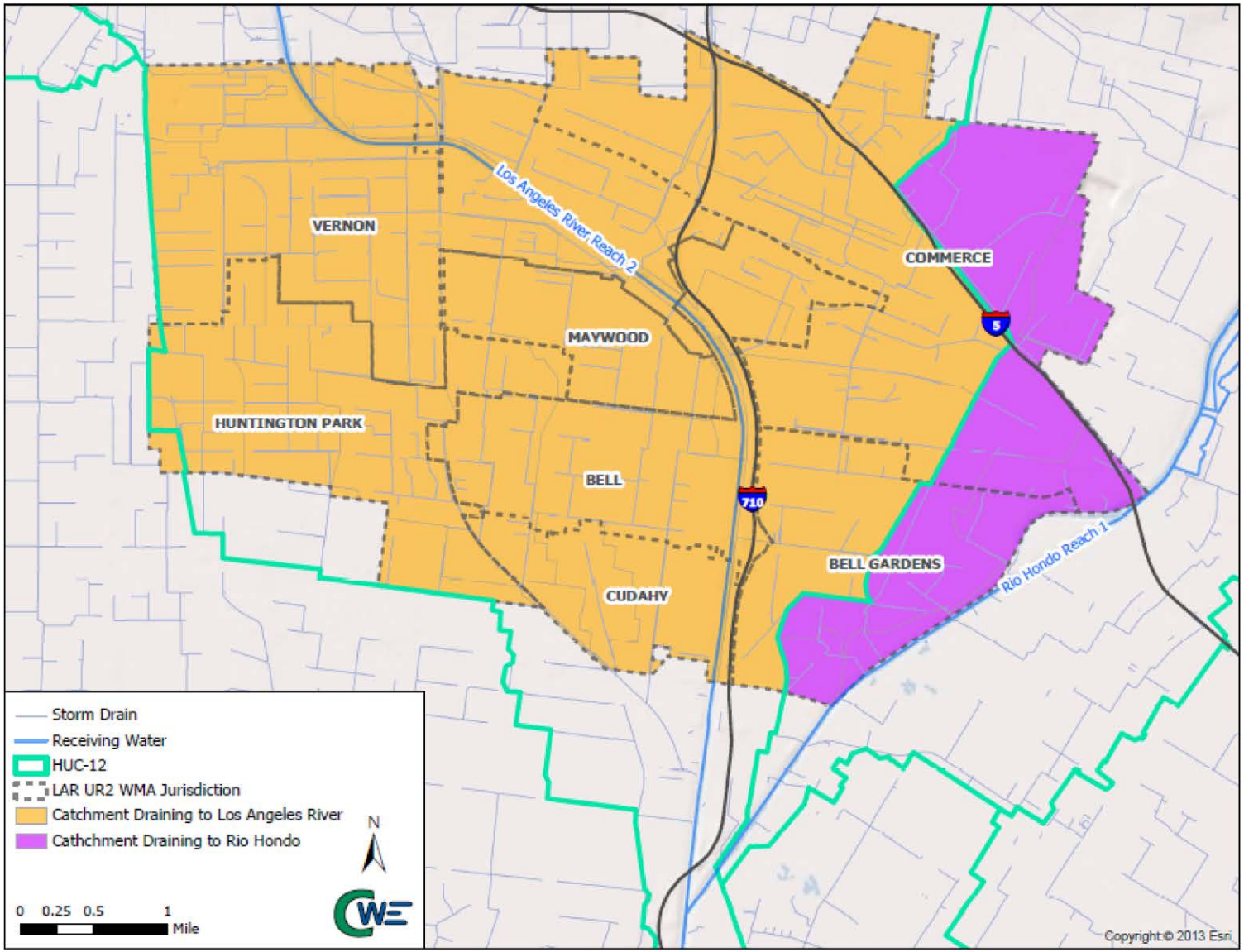


Figure 4-14 LSPC Model Catchments, Storm Drains, and Receiving Waters

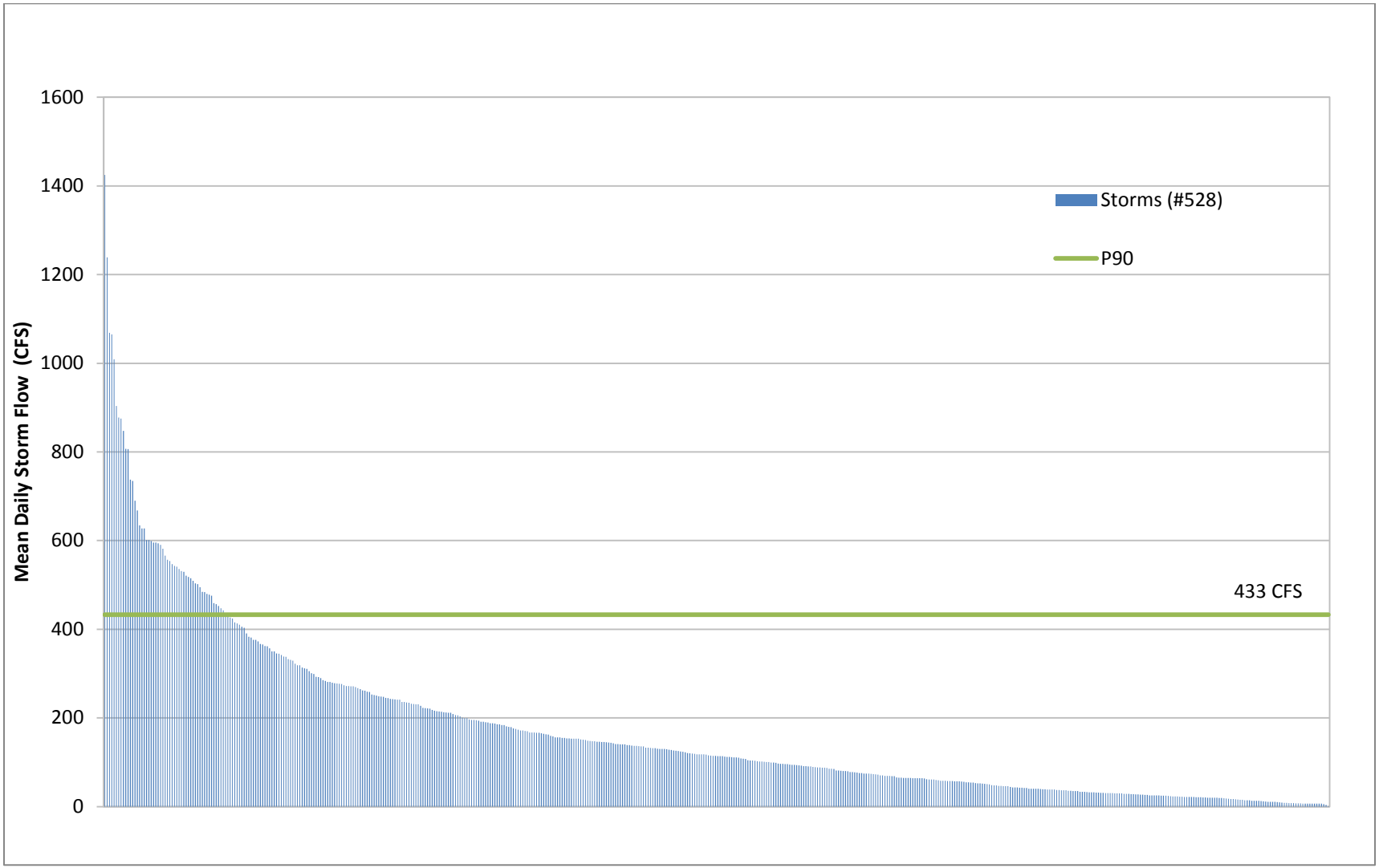


Figure 4-15 Ranked 90th Percentile Mean Daily Storm Flows for LAR Subwatershed 6078

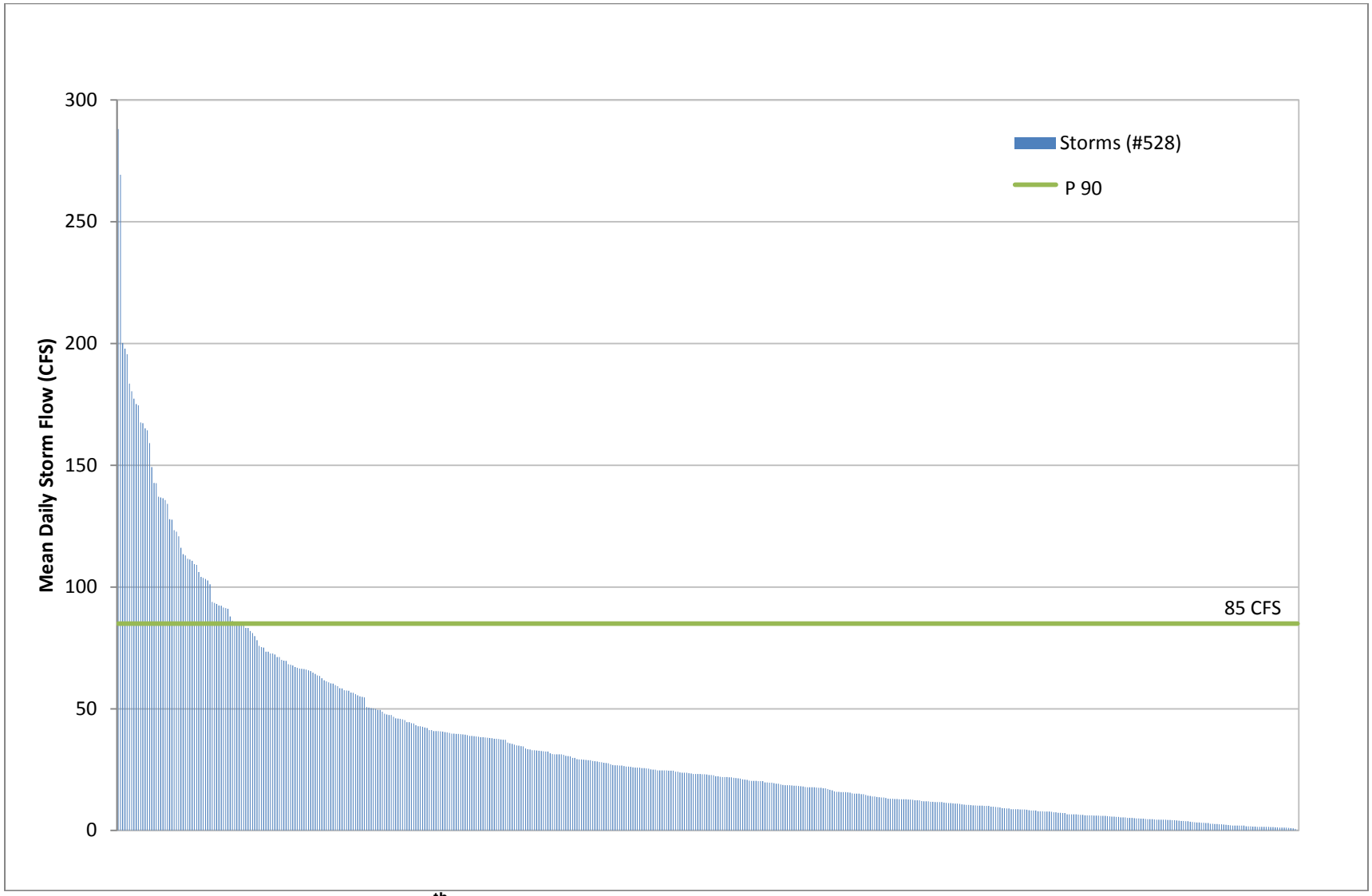


Figure 4-16 Ranked 90th Percentile Mean Daily Storm Flows for Rio Hondo Subwatershed 6083

Although developed for similar reasons, LSPC/WMMS and SBPAT approach the analysis of hydrologically generated pollutant loadings, and their control, differently. During the course of the LAR UR2 WMA RAA, some input parameter adjustments were made to SBPAT, to improve comparability with the County-calibrated LSPC baseline condition outputs. Both programs use the same catchment delineations and primary rain gauge data (South Gate Transfer Station D1256). Prior to comparisons, base flows were isolated and subtracted from LSPC results using a Web-based Hydrograph Analysis Tool for porous aquifers with ephemeral streams; developed by Purdue University (Lim et al., 2005), while imperviousness in SBPAT was increased by five percent of all land uses. These adjustments resulted in the SBPAT predicted annual runoff volumes, for the 1989-2011 modeling period, being within 10% of the LSPC-predicted runoff volumes (after removal of base flows) to meet the "very good" threshold of the RAA Guideline calibration performance criteria. **Table 4-2** summarizes the annual runoff volume comparisons for the entire modeling period and critical condition years of 1995 and 2011. Based on the similarity of runoff volume estimates for LSPC and SBPAT, during the storm analysis duration and particular the critical condition years, the model flow validation was consider reputable and the RAA analysis moved on to Baseline Pollutant Load Estimation process.

Table 4-2 LSPC and SBPAT Runoff Volume Calibration Validation (Acre-Feet)

Runoff Period	Los Angeles River Runoff Volume			Rio Hondo Runoff Volume		
	LSPC	SBPAT	Difference	LSPC	SBPAT	Difference
1995	17,462	18,466	6%	3,291	3,507	7%
2011	11,819	11,832	0%	2,443	2242	-8%
1989-2011	211,720	224,657	6%	42,265	42,532	2%

4.2.3 Baseline Pollutant Load Estimation

The RAA for nutrients is influenced by assessment and implementation technicalities. The primary dry-weather source of nutrient pollutants is POTWs, rather than MS4 discharges, as reflected in the thirty day compliance assessment durations in the TMDL, which do not coincide with the day or year periods typical of MS4 Permit monitoring program assessments. Nitrogen treatment at POTWs typically starts with the oxidation of ammonia, or other organic nitrogen compounds, to nitrite, then nitrate, followed by denitrification that results in the release of nitrogen gas. Therefore, TMDL load estimates are based on nitrogen, rather than the mutable nitrogen compounds. As shown in **Table 4-3**, there is no reference land use EMC guideline data, approved for use in LSPC and SBPAT, for nitrite, while ammonia EMCs for land uses, other than commercial, and nitrate, other than for agriculture, are well below the TMDL identified discharge limitations. The nutrients critical condition was determined based on South Gate Transfer Station Rain Gauge (D1256) data and the 90th percentile rainfall depth year. As shown in **Table 4-1**, the 90th percentile annual rainfall depth TMDL year for the period from 1989 to 2011 is 1995 (November 1, 1994 to October 31, 1995). A rainfall based annual, rather than thirty day, critical assessment period was found to adequately capture monthly variability in baseline nutrient loads and was consistent with the bacteria period. Daily baseline concentrations were also compared with the monthly average WQBEL concentration to verify anticipated compliance based on EMCs.

The Los Angeles River and Tributaries Metals TMDL expresses WQBELs as grouped allowed daily loads, when the maximum flow at the Wardlow Street Stream Gauge station (F319) is greater than or equal to 500 cfs. Los Angeles County Department of Public Works, daily maximum flow data for this station were available from April 1, 2002 to May 1, 2015, while LSPC model, South Gate Transfer Station (D1256) Rain Gauge data exists through April 21, 2012, so the 10-year representative period from April 1, 2002 to April 1, 2012 was assessed for critical daily load events. LSPC output data were generated for this 10 year period for both the Rio Hondo and LAR portions of the WMA, then days during which the maximum flow at the Wardlow Street gauge was reported to be less than 500 cfs were removed from the dataset and the reminding wet days ranked by load, for each of the three metal and two receiving waters.

Table 4-3 SBPAT RAA EMCs and Distributions - Arithmetic Estimates of Lognormal Summary Statistics

Land Use	TSS (mg/L)	TP (mg/L)	DP (mg/L)	NH3 (mg/L)	NO3 (mg/L)	TKN (mg/L)	DCu (µg/L)	TCu (µg/L)	TPb (µg/L)	DZn (µg/L)	TZn (µg/L)	FC (#/100mL)
Agriculture (row crop)	999.2 (648.2)	3.34 (1.53)	1.41 (1.04)	1.65 (1.67)	34.40 (116.30)	7.32 (3.44)	22.50 (17.50)	100.1 (74.8)	30.2 (34.3)	40.1 (49.1)	274.8 (147.3)	60,300 (153,000)
Commercial	67.0 (47.1)	0.40 (0.33)	0.29 (0.25)	1.21 (4.18)	0.55 (0.55)	3.44 (4.78)	12.3 (10.2)	31.4 (25.7)	12.4 (34.2)	153.4 (96.1)	237.1 (150.3)	51,600 (173,400)[a]
Education (Municipal)	99.6 (122.7)	0.30 (0.17)	0.26 (0.2)	0.4 (0.99)	0.61 (0.67)	1.71 (1.13)	12.2 (11.0)	19.9 (13.6)	3.6 (4.9)	75.4 (52.3)	117.6 (83.1)	11,800[b] (23,700)
Industrial	219.2 (206.9)	0.39 (0.41)	0.26 (0.25)	0.6 (0.95)	0.87 (0.96)	2.87 (2.33)	15.2 (14.8)	34.5 (36.7)	16.4 (47.1)	422.1 (534.0)	537.4 (487.8)	3,760 (4,860)
Multi-Family Residential	39.9 (51.3)	0.23 (0.21)	0.20 (0.19)	0.50 (0.74)	1.51 (3.06)	1.80 (1.24)	7.40 (5.70)	12.1 (5.60)	4.5 (7.80)	77.5 (84.1)	125.1 (101.1)	11,800[c] (23,700)
Single Family Residential	124.2 (184.9)	0.40 (0.30)	0.32 (0.21)	0.49 (0.64)	0.78 (1.77)	2.96 (2.74)	9.4 (9.0)	18.7 (13.4)	11.3 (16.6)	27.5 (56.2)	71.9 (62.4)	31,100[d] (94,200)
Transportation	77.8 (83.8)	0.68 (0.94)	0.56 (0.82)	0.37 (0.68)	0.74 (1.05)	1.84 (1.44)	32.40 (25.5)	52.2 (37.5)	9.2 (14.5)	222.0 (201.7)	292.9 (215.8)	1,680 (456)
Vacant/Open Space	216.6 (1482.8)	0.12 (0.31)	0.09 (0.27)	0.11 (0.25)	1.17 (0.79)	0.96 (0.9)	0.60 (1.90)	10.6 (24.4)	3.0 (13.1)	28.1 (12.9)	26.3 (69.5)	484 (806)

Note: EMC statistics are calculated based on 1996-2000 data for Los Angeles County land use sites (Los Angeles County, 2000), except for agriculture which are based on Ventura County MS4 EMCs (Ventura County, 2003) and fecal coliform which are based on 2000-2005 SCCWRP Los Angeles region land use data (SCCWRP, 2007b). These EMC datasets are summarized in the SBPAT User's Guide (Geosyntec, 2012).

[a] The default log distribution summary statistics for this land use-pollutant combination produces unreasonably high deviation, therefore the arithmetic estimate of the log mean was held constant while the log summary statistics were recomputed based on the log CoV for SFR (SCCWRP's low-density residential EMC).

[b] Multi-family residential EMC used here since educational land use site not available in the SCCWRP fecal coliform dataset.

[c] The fecal coliform EMC for the multi-family residential land use is based on SCCWRP dataset for "high-density residential".

[d] The fecal coliform EMC for the single-family residential land use is based on SCCWRP's dataset for "low-density residential".

For each receiving water–metal combination, the day closest to the 90th percentile load was defined to be the critical condition as summarized in **Table 4-1**. The identified 90th percentile metal load days of February 9, 2009, February 22, 2004, January 20, 2010, and November 8, 2002, received 0.90, 1.33, 0.66, and 1.08 inches of rainfall respectively, with some of the events also having antecedent rainfall.

Table 4-4 Critical Evaluation Dates, for Critical Condition MBPC Metal Loads

LAR UR2 Receiving Water	Total Copper	Total Lead	Total Zinc
Los Angeles River Reach 2	Feb 9, 2009	Feb 9, 2009	Jan 20, 2010
Rio Hondo Reach 1	Feb 22, 2004	Feb 22, 2004	Nov 8, 2002

As summarized in **Table 4-1**, the critical condition for the Los Angeles River and Tributaries Bacteria TMDL, was determined to be the 90th Percentile number of wet-weather days, which occurred during the 2011 storm season. As outlined in the introduction to this section, final compliance with this TMDL will be based on a fairly complex annual assessment that considers HFS and AEDs. **Figure 4-17** clarifies this assertion for the LAR UR2 WMA portion of the Los Angeles River. In this figure, the vertical bars are ranked critical condition baseline bacteria loads, while the square points are concentrations. The black bars and points, concentrated to the left side of the figure, are wet-weather days where local rains in excess of 0.5 inch result in a the water bodies REC1 beneficial use being suspended due the likely presence of high flows that should preclude safe body contact with the river water, also known as a HFS. Not all of the black bars are on the left side of the figure, as some large storms, arrive at low intensities on unsaturated soils and therefore generate little runoff or load. The green bars and points represent TMDL identified and defined AEDs, which basically are the number of days where a reference, more natural, water body was not in compliance with bacteria objectives. Another way to express this concept is that neither natural nor constructed conveyance systems consistently meet standards, so these days are not "counted" against the Permittees. The red bars and points are non-allowed exceedance days, which are basically the primary reason behind development of the TMDL and WMP. Eliminating the flow, or bacteria, that causes these exceedances in the primary objective for the RAA target load reduction and BMP assessment that will be subsequently presented. Finally, the blue bars and points, concentrated on the right side of the figure, are days when no exceedance is occurring, that is the model suggests that receiving waters should be compliant with WQOs. These same observations apply to **Figure 4-18**, which summarizes the LSPC modeled critical conditions for the Rio Hondo.

In order to determine LAR UR2 WMA baseline waterbody and pollutant loads, the Los Angeles County LSPC Los Angeles River Watershed model was "clipped" in GIS to conform with the LAR UR2 WMA boundaries as shown in **Figure 4-14** and the resulting subwatershed areas modeled in LSPC, without any structural controls or enhanced MCMs, to estimate RAA baseline pollutant loads conditions. The LSPC model estimated critical condition baseline pollutant loads are summarized in **Table 4-5**.

Table 4-5 LSPC Derived LAR UR2 RAA Critical Condition Baseline Pollutant Loads

Receiving Water	90th Percentile Daily Wet-weather Load			90th Percentile Annual Load	
	Total Copper Kg (lbs) / Day	Total Lead Kg (lbs) / Day	Total Zinc Kg (lbs) / Day	*E. coli* bacteria[1] MPN 10^{12}	Nitrogen Kg (lbs)
Angeles River Reach 2	19.1 (42)	15.4 (34)	202 (444)	997	45,400 (99,950)
Rio Hondo Reach 2	3.2 (7)	2.3 (5)	32.3 (71)	181	8,460 (18,610)

[1] *E. coli* is identified in the TMDL and Permit, while model EMCS were for fecal coliform

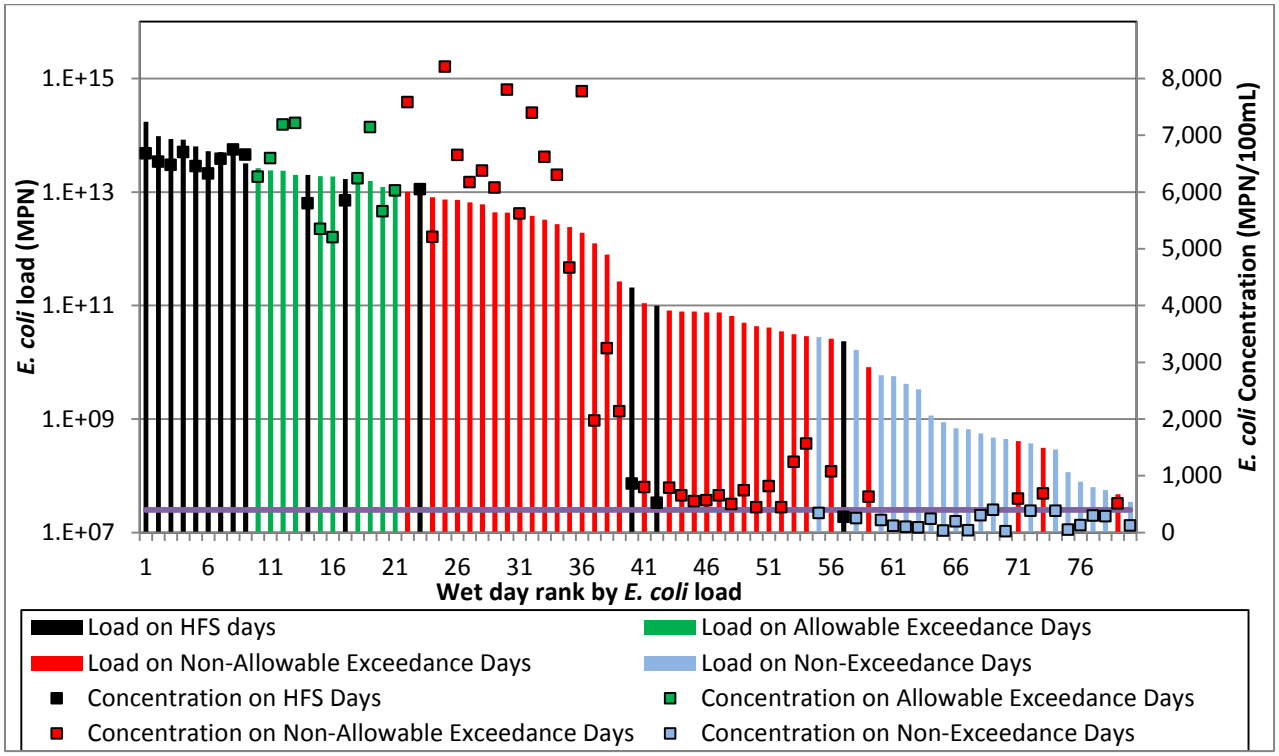


Figure 4-17 Los Angeles River Critical Condition LSPC *E. coli* Loads and Concentrations

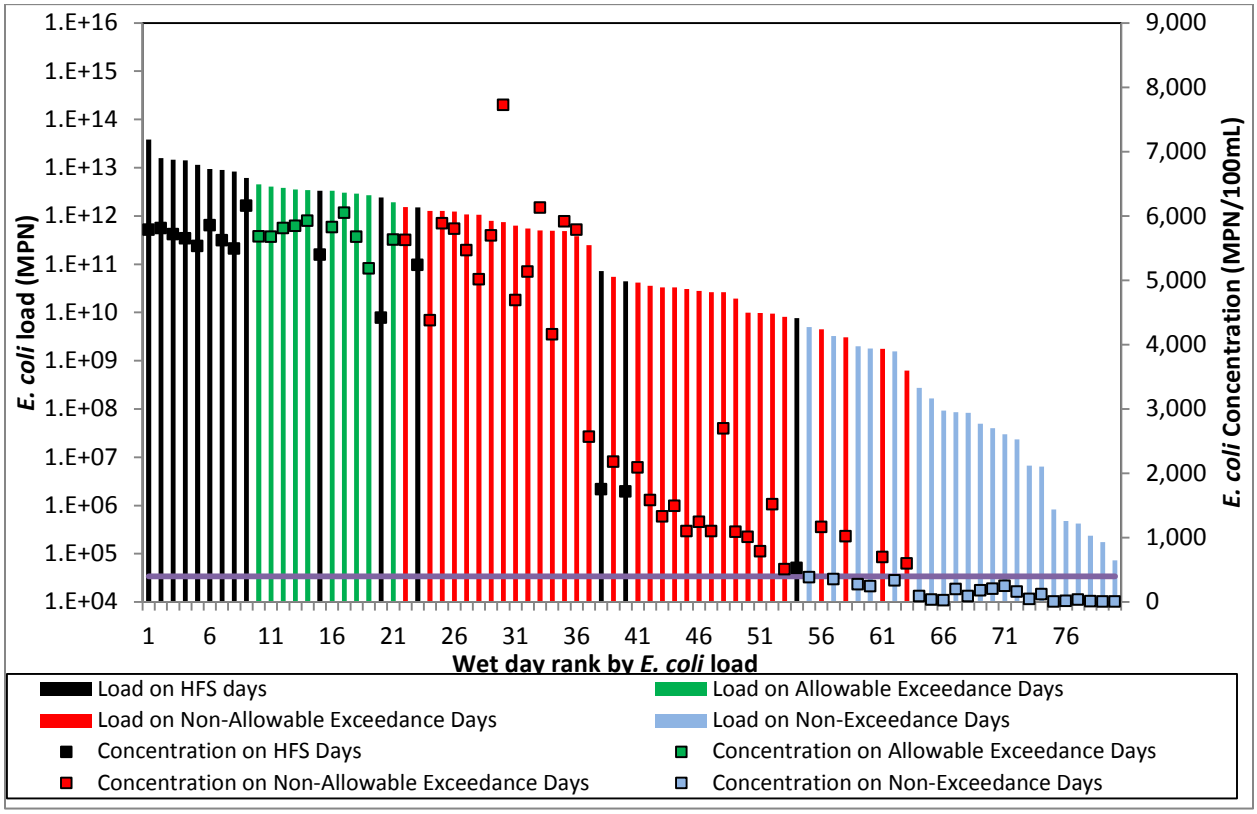


Figure 4-18 Rio Hondo Critical Condition LSPC *E. coli* Loads and Concentrations

4.2.4 Calculate Allowable Pollutant Loads

Allowable pollutant loads for metals and nutrients were calculated by multiplying MS4 Permit identified WQBELs, from MS4 Permit Attachment O, by the LSPC model derived runoff volume for the critical condition of each pollutant. The concentration-based WQBELs, used in the calculation, are as follows:

- Total Copper: 15 µg/L,
- Total Lead: 56 µg/L,
- Total Zinc: 140 µg/L, and
- Total Nitrogen: 10.4 mg/L (sum of ammonia and nitrate WQBELs, since nitrate is rare).

As summarized in **Table 4-1**, the critical conditions for nutrients was the 90th percentile annual rainfall depth, which occurred between November 1, 1994 and October 31, 1995, while for metals the 90th percentile wet-day from **Table 4-4** flow volumes was used to determine the allowable loads for each of the three metals and two waterbodies as shown in **Table 4-6**.

For wet weather conditions, the Permit identified RWLs for *E. coli* bacteria are expressed in terms of AEDs per year, based on the single sample WQO of 235 MPN/100 mL, assuming that sample exceedances of between 126 and 235 MPN, could be rehabilitated by additional samples with results below the geometric mean of 126 MPN/100 mL. However, since the RAA guidelines did not identify *E. coli* EMCs, the marine fecal coliform standard of 400 MPN/100 mL was applied to the RAA to compliment the fecal coliform EMCs identified in the guidelines and used in the baseline load determination. Some receiving waters, such as Rio Hondo Reach 1 and LAR Reach 2, also allow for the suspension of REC1 WQOs on days in which the rainfall depth at the nearest gauge (D1256) is equal to, or greater than, 0.5 inches along with the 24 hours following event termination, and do not count towards the total of 10 AEDs. Finally, the Los Angeles River and Tributaries Bacteria TMDL, annually accommodates 10 AEDs, of REC1 single sample *E. coli* WQOs, based on a reference watershed approach.

From **Table 4-1**, for the bacteria critical condition TMDL year of 2011, there were 80 defined wet days, of which 15 were also HFS days, for which the normal RWLs do not apply, while the next 10 highest load days in each watershed, based on LSPC model output, would be identified as AEDs. The baseline model identified an additional, 35 and 33 exceedance days were observed in the LAR and Rio Hondo subwatersheds respectively, and 20 and 22 wet days, in the LAR and Rio Hondo respectively, did not result in exceedances. This is visually summarized in Figure 4-17 and Figure 4-18. Since only 10 AEDs are allowable for each subwatershed, the 35 and 33 exceedance days must be addressed by a methodology that will be subsequently characterized. The annual load, remaining after the number of exceedances was decreased to the allowable number of exceedance days, became the *E. coli* allowable load. Allowable loads for each WBPC are summarized in **Table 4-6**.

Table 4-6 Allowable Pollutant Loads During RAA 90th Percentile Critical Condition

Receiving Water	90th Percentile Allowable Daily Load			90th Percentile Annual Load	
	Total Copper Kg (lbs) / Day	Total Lead Kg (lbs) / Day	Total Zinc Kg (lbs) / Day	*E. coli* bacteria[1] MPN 10^{12}	Nitrogen Kg (lbs)
Angeles River Reach 2	7.7 (17)	29.1 (64)	172 (379)	709	249,000 (547,000)
Rio Hondo Reach 2	2.3 (5)	9.1 (20)	22.7 (50)	124	46,400 (102,000)

[1] *E. coli* is identified in the TMDL and Permit, while model EMCs were for fecal coliform

In the future, the allowable loads of copper and lead, on **Table 4-6**, should dramatically increase in response to the April 9, 2015 adoption of Los Angeles River Watershed Water Effects Ratio (WER) for Copper and Recalculated Lead Site Specific Objectives Basin Plan Amendment by the LARWQCB. This is a result of the Los Angeles River Copper and Lead Special Study Implementation Study and Report (Larry Walker Associates, 2013) supported by a majority of the LAR Permittees including those in the LAR UR2 WMA. Once the amendment adoption process is completed, WQOs for total copper could increase from 15, to 60, µg/L (assuming a 3.971 WER) and for total lead from 56, to 85, µg/L, while being equally protective of receiving water beneficial uses.

4.2.5 Establish Target Load Reductions

Pollutant target load reductions are the reduction, from critical condition baseline loads, needed to achieve the Permit identified WQOs, WLAs, WQBELs, and RWLs. Excluding *E. coli* bacteria, the target load reduction s were calculated using the LSPC Model data for each pollutant's critical condition, in each LAR UR2 WMA receiving water, by subtracting the allowable load shown in **Table 4-6**, from the baseline loads shown in **Table 4-5**, then dividing the difference by the baseline loads and expressing the resulting value as a percentage as shown in **Table 4-7**. Expressing the target load reductions as percentages facilitates comparisons of LSPC loads and SPBAT load reductions, even though absolute concentration and volumes may vary slightly between the two model system platforms.

Target load reductions for *E. coli* bacteria aim to reduce the LSPC modeled, critical condition based, number of wet-weather exceedance days, after exclusion of HFS and AEDs. While watershed control measures can be expected to reduce bacteria loads even during HFS and AED events, it is unlikely that bacteria numbers would be reduced to below concentration based WQOs, on those extreme event days. In order to calculate a required load reduction, one hypothetical retention basin was conceptualized as receiving the combined LSPC critical condition modeled runoff flow volume from the clipped LAR UR2 WMA LAR subwatershed, as conceptually indicated by **Figure 4-19**, while a second basin similarly addressed the LAR UR2 WMA Rio Hondo runoff, as conceptually presented in **Figure 4-20**. The volumes of these two basins were iteratively adjusted until the only exceedances occurred on HFS or AEDs. Restated, these hypothetical basins were sized to accommodate and retain the LAR UR2 WMA discharge volume and bacterial pollutant load that resulted in the marginal "non-allowed" exceedance day. The *E. coli* target load reductions shown on **Table 4-7** were then determined based on the mean subwatershed bacteria concentration and volume of runoff contained within the two conceptual basins.

Table 4-7 RAA Target Load Reduction Percentages For Critical Condition Baseline

Receiving Water	Total Copper	Total Lead	Total Zinc	*E. coli* bacteria[1]	Nitrogen
Angeles River Reach 2	59%	0%	15%	29%	0%
Rio Hondo Reach 2	21%	0%	29%	31%	0%

[1] *E. coli* is identified in the TMDL and Permit, while model EMCs were for fecal coliform

For total lead and nitrogen, critical condition baseline loads achieve the MS4 Permit Attachment O WQOs, therefore no reductions are necessary, although they would still be expected to occur as a result of measures taken to reduce other pollutant loads. Based on simple percentages, it would appear the total copper in LAR Reach 2, presents the greatest challenge and priority for control; however as will be clarified in the following section, a significant reduction in copper concentrations is anticipated through the imposition of non-structural controls, especially through the actions of non-MS4 Permittees. An additional, ignored, margin of safety, is the a recently adopted, but yet to be approved, LARWQB Basin Plan Amendment would be expected to increase the allowable load of copper and reduce or eliminate the necessary load reduction to achieve copper WQOs, while protecting beneficial use objectives.

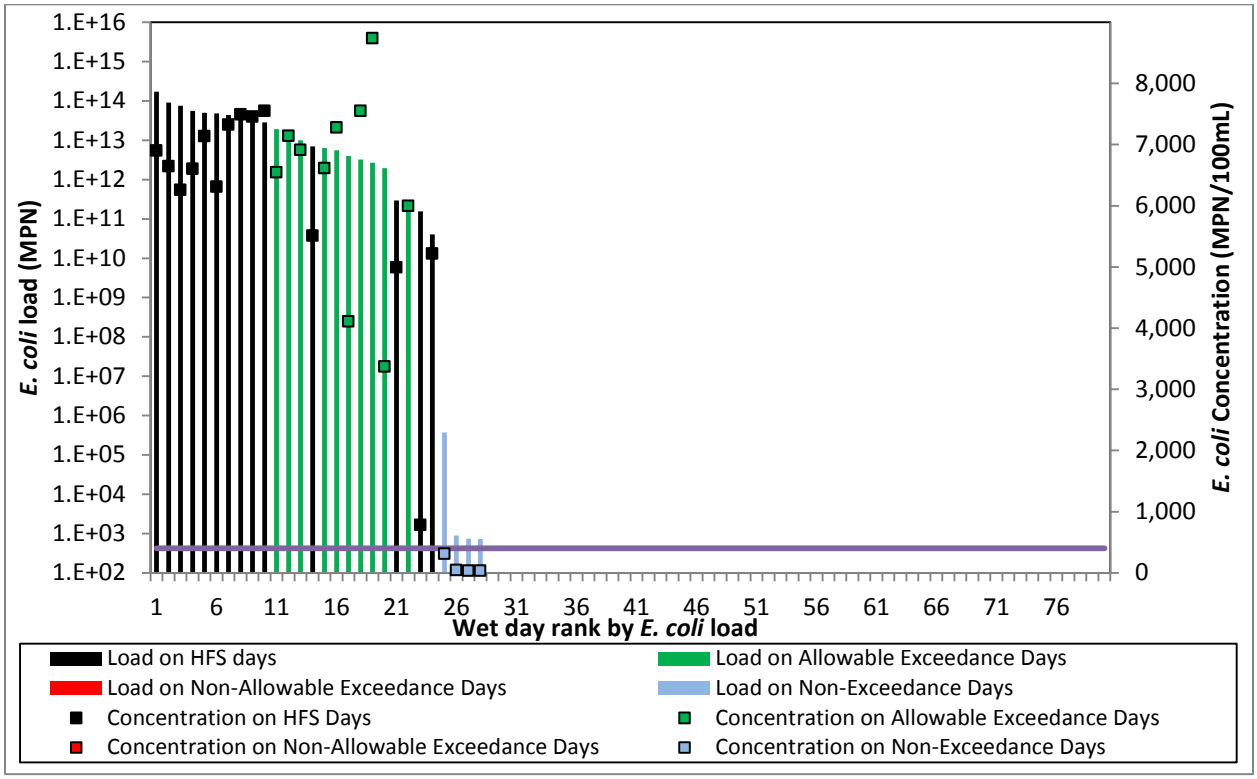


Figure 4-19 LAR *E. coli* Loads and Concentrations w/ Hypothetical Load Reducing Basin

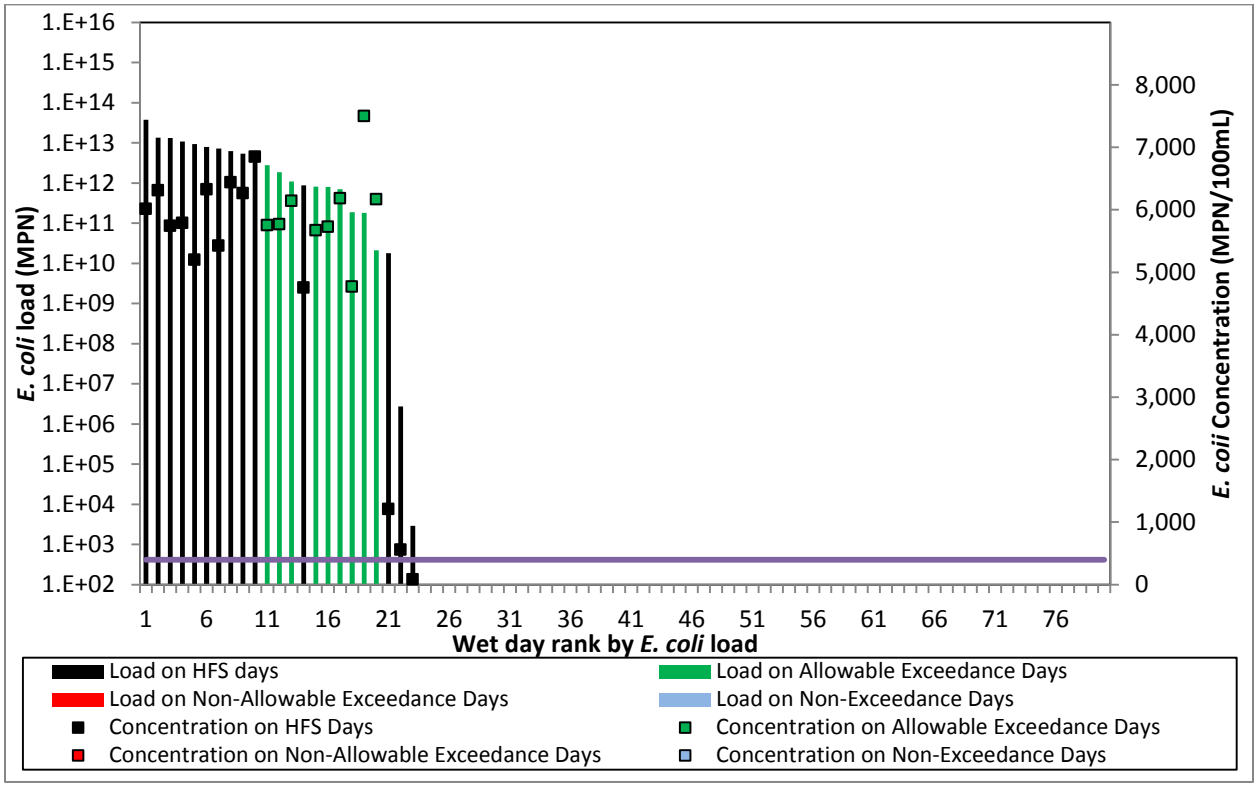


Figure 4-20 Rio Hondo *E. coli* Loads & Concentrations w/ Hypothetical Load Reducing Basin

4.3 Watershed Control Measure Implementation Scheduling

Based on the calculated target load reductions, it was apparent that additional controls for nitrogen and lead would most likely be unnecessary, while the implementation on significant new watershed control measures would need to be planned, paced, constructed and prioritized based on the milestone and final compliance dates contained primarily within the Los Angeles River and Tributaries TMDLs for Trash, Metals, and Bacteria. The primary milestone dates in these TMDL are summarized as follows:

- October 1, 2015 (final WQBEL - trash TMDL)
- January 11, 2020 (75% dry-weather WQBEL - metals TMDL)
- January 11, 2024 (final dry-weather, 50% wet-weather WQBEL - metals TMDL)
- January 11, 2028 (final wet-weather WQBEL metals TMDL)
- September 23, 2028 (LAR Segment B dry-weather second phase WQBEL - bacteria TMDL)
- March 23, 2030 (Rio Hondo dry-weather second phase WQBEL - bacteria TMDL)
- March 23, 2037 (final wet-weather WQBEL and RWL - bacteria TMDL)

For RAA analysis and WMP pacing and implementation purposes, the September 23, 2028 milestone date was shifted forward to January 11, 2028, but may fall back to the original date for regulatory purposes.

4.4 Evaluation of Non-Structural BMP Pollutant Load Reductions

Continued implementation of recently adopted and planned non-structural BMPs, at both the jurisdictional and state levels, can be anticipated to improve water quality through the reduction of pollutants loads, and runoff, during both wet- and dry-weather conditions. This RAA section evaluates and numerates the load reductions, which can be reasonably anticipated and analyzed, with the most productive and functionally quantifiable watershed control measures including the following:

- Discharger Compliance, Other Than by the LAR UR2 WMA Agencies;
- LID Ordinance Based Redevelopment;
- Senate Bill (SB) 346 Copper Load Reductions; and
- LAR UR2 WMA Agency Implemented Non-Structural BMPs and MCMs.

Additionally, some BMPs are planned, or have begun implementation, but are unnecessary for consideration in the current RAA or WM based on the calculated pollutant target load reductions. As an example, lead wheel weights, used on vehicles tires rims, are being eliminated through the California Department of Toxic Substances Control (DTSC) Safer Consumer Product Regulations; however additional load reduction implementation strategies for total lead appear unnecessary to comply with WQOs.

Other measures may result in pollutants load reductions, which would benefit future RAA and WMP Plans, but are insufficiently programmed for development of credible load reduction estimates. For example, the load reduction benefits from a phase out of the zinc used to vulcanize (harden) rubber tires, was quantitatively estimated by Kelly Moran for CASQA's True Source Control subcommittee, but formalized implementation, such as legislative action, has not occurred. Combined Load Reduction Plans, recently implemented in San Diego County, should result in bacteria load reductions (SBPAT, 2013b), but the implementation commitments and mechanisms are insufficiently defined for credible inclusion in this RAA.

4.4.1 Discharger Compliance, Other Than by the LAR UR2 WMA Agencies

In addition to agencies with discharges directly regulated in the 2012 Permit, such as municipalities, the geographical LAR UR2 WMA includes other categories of NPDES Permittees and dischargers that are independently responsible for complying with TMDL WLAs and WQOs, but included in the baseline model as contributing problematic land use derived pollutant loads. In addition to unpermitted rail parcels, discharges are received from Individual NPDES, General NPDES, General Industrial NPDES, and General Construction NPDES Permittees. Within the LAR UR2 WMA, the area attributable to these dischargers is substantial, which has repercussions on runoff volume generation, model calibration, and pollutant load calculations, and more generally the RAA and WMP implementation. With the exception of General Construction Permittees which tend to be temporary discharge sites, the State Stormwater Monitoring and Report Tracking System (SMARTS) website was used to identify street address for NPDES Permitted dischargers, the Los Angeles County Assessor Identification Number (AIN) identified, as recorded in **Appendix H**, and the parcel determined. Along with parcels identified as being owned by rail roads, these other discharger parcels were mapped by CWE in ArcGIS, as illustrated in **Figure 4-21**, and the resulting shapefile provided to Geosyntec for use in the SBPAT RAA.

For these other discharger parcels, load reductions were determined by applying new land use pollutant EMC values, equivalent to the transformed Permit limitations as shown in **Table 4-8**, which reflects the conservative assumption that runoff from these sites will marginally comply with Permit WQOs. In order to characterize variability, the coefficients of variation for the industrial EMCs were preserved. In reality, pollutant concentrations would likely be lower than the identified EMCs, otherwise these other Permittees would be in frequent non-compliance due to variability, so the assumption is conservative.

Table 4-8 Non-MS4 NPDES Facility Parcel's Land Use EMCs (arithmetic estimates of log means)

Land Use	TCu (µg/L)	TZn (µg/L)	FC/*E. coli* (# /100 mL)	NH3 (mg/L)	NO3 (mg/L)	NO2 (mg/L)	TPb (µg/L)	TCd (µg/L)
Non-MS4 NPDES Facility Parcels	21.9 (23.3)	189 (172)	653 (843)	3.62 (5.79)	12.4 (13.6)	1.66 (1.82)	78.4 (220)	5.12 (5.33)

Note: SBPAT assumes lognormal distributions for its water quality input datasets. SBPAT's log mean values for the new non-MS4 NPDES Facility parcel land use were set to the log of the WQBEL concentrations (i.e., 15 µg/L for total copper, 140 µg/L for total zinc, and 400 MPN/100mL for fecal coliform); log standard deviations (in parentheses) were scaled based on the industrial EMC COVs. This table reports arithmetic estimates of the log summary statistics; i.e., the log mean and log standard deviations were converted into arithmetic space using statistical conversion equations.

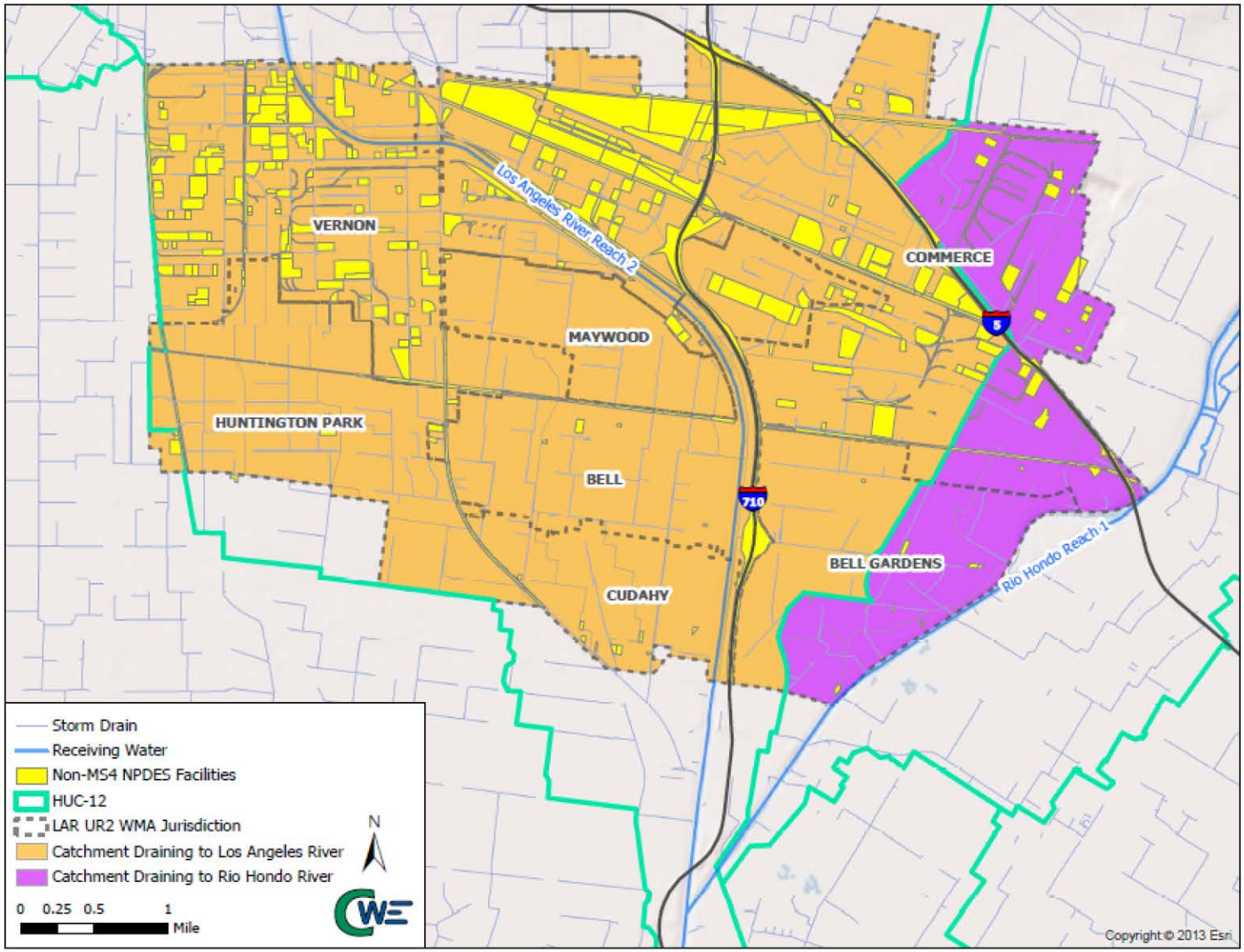


Figure 4-21 Non-MS4 NPDES Permittees in LAR UR2 WMA

4.4.2 LID Ordinance Based Redevelopment

MS4 Permit Part VI.C.4.c.i.(1) requires Permittees to develop and implement a LID ordinance applicable to redevelopment meeting minimum criteria thresholds of disturbance. In an April 16, 2014, memorandum to the MS4 Permittees, the LARWQCB Executive Officer directed that the Permit required final LID ordinances to be in place by the time of WMP submittal, which was independently confirmed by the Permittees. Average annual redevelopment rates released by the City of Los Angeles (City of Los Angeles Bureau of Sanitation, 2009) were used to establish what area within each land use category can be expected to be retrofitted consistent with the Permit's post-construction onsite retention requirements. Average annual redevelopment rates were extrapolated to final compliance dates, or 2028 for metals and 2037 for bacteria. The area redeveloped each year, was modeled without replacement, meaning that the area to which redevelopment could be attributed, was reduced each year. Relevant land use annual redevelopment rates and milestone date cumulative redevelopment areas are presented in **Table 4-9**. **Table 4-10** and **Table 4-11** report redevelopment areas, by City, in 2028 and 2037 respectively.

Table 4-9 Redevelopment Rates by Land Use

Land Use	Average Annual Percent Area that is Redeveloped	Percent of Total Area that is Redeveloped by Milestone Year	
		Metals Compliance Date (2028)	Bacteria Compliance Date (2037)
Commercial	0.15	2.1	3.4
Education	0.16	2.2	3.6
Industrial	0.34	4.7	7.5
Residential	0.18	2.5	4.1
Transportation	2.7	31.8	46.7

Table 4-10 2028 LID Based Redeveloped Area in Acres by City and Land Use

LAR UR2 City	Residential	Commercial	Industrial	Education	Transportation
Bell	20	6	11	0.9	8
Bell Gardens	23	5	8	2.1	0.2
Commerce	10	8	105	0.5	35
Cudahy	12	1	5	0.8	4
Huntington Park	26	7	15	2.0	8
Maywood	14	3	2	0.5	3
Vernon	0.03	0.2	95	0.06	55
LAR UR2 WMA Total	**105**	**29**	**241**	**7**	**112**

Table 4-11 2037 LID Based Redevelopment Area in Acres by City and Land Use

LAR UR2 City	Residential	Commercial	Industrial	Education	Transportation
Bell	32	9	18	1.4	11
Bell Gardens	37	8	12	3.5	0.3
Commerce	17	13	167	0.9	52
Cudahy	20	2	7	1.4	5
Huntington Park	43	12	24	3.2	11
Maywood	23	4	4	0.7	3.7
Vernon	0.05	0.4	152	0.1	81
LAR UR2 WMA Total	**172**	**47**	**385**	**11**	**174**

Implementation of LID based redevelopment was modeled uniformly throughout the LAR UR2 WMA. Areas redeveloped in compliance with LID ordinances, were modeled with an equal split of biofilters and bioretention. Bioretention systems were sized based on the 85th percentile storm depth of 0.98 inches (Los Angeles County DPW, 2004), a 12 inch effective depth, and saturated hydraulic conductivity (K_{sat}) of 0.15 inch per hour. Biofilters were modeled using bioswale based volume reduction and bioretention effluent EMCs. Bioswale design assumed a 3 percent longitudinal slope, 0.25 Manning's n, 10 minute hydraulic residence time, 4 inches flow depth, and 0.3 inches/hour storm intensity, consistent with Permit flow through BMP sizing criteria of 150% of the 85th percentile, 24-hour design storm intensity. Biofilter hydraulic conductivity assumed the average value the model subbasin in which they were implemented.

4.4.3 Copper Load Reduction as a Result of Senate Bill (SB) 346

Automotive friction, or brake, pad wear is reported to be the source of approximately 60 percent of the copper load in highly urbanized California watersheds, like the LAR UR2 WMA (Donigian, 2009 as cited by Moran, 2013). A 2007 study by AquaTerra attributed 15 to 50 percent of the San Francisco Bay copper load to brake pad wear. A similar Santa Clara Valley Urban Runoff Program study, of pollutant loads to the San Francisco Bay, attributed 42 percent of the copper load to brake pad wear (SCVURP, 1997).

California SB 346 mandates that the copper composition of brake pads sold in state must be less than 5, and 0.5, percent by weight in 2021, and 2025, respectively. A CASQA funded study developed by TDC Environmental (Moran, 2013), developed mass balance assessments to estimate changing copper loadings as a result of SB 346. Three scenarios, bracketing manufacturer uncertainty in response and projected load reductions from baseline years, are summarized in **Table 4-12**. A December 2014, CASQA progress report indicates manufacturers will achieve the 0.5 objective in 2021, ahead of schedule.

For the LAR UR2 WMA RAA, a conservative 50 percent copper load reduction, after structural BMP were accounted for to avoid double counting, was assumed by the 2028 metals TMDL final compliance date.

Table 4-12 Estimated Runoff Copper Reduction from Friction Pad Reformulation

Year	Scenario 1 - One Step Reduction	Scenario 2 - Step Reduction	Scenario 3 - Aftermarket Exemption from 0.5% Copper
2020	29%	17%	17%
2024	60%	45%	39%
2028	61%	60%	49%
2032	61%	61%	55%

4.4.4 LAR UR2 WMA Agency Implemented Non-Structural BMPs and MCMs

There are many substantial changes between the 2001 to 2012 MS4 Permits which can reasonably be assumed to result in substantially reduced pollutant generation, increased source controls, and significant watershed control measure induced load reductions. In response to a conditional approval WMP revision request, additional details regarding MCM and permit enhancement commitments by the LAR UR2 WMA Permittees, mostly with current permit cycle dates certain, was prepared and is presented as **Table 3-8** in Section **3.3.1**. Unlike much larger watershed Permittees, upon which the land use EMC loadings were based, the LAR UR2 WMA has had a standing weekly street sweeping and parking enforcement program that should only improve with contractual conversions to regenerative vacuum sweepers.

Following discussions with the Regional Board staff, load reductions derived from not otherwise modeled, non-structural BMPs were estimated to results in a modest 5 percent of baseline loads for all pollutants.

As characterized previously, these non-structural BMPs include the following program enhancements (i.e., beyond the Permit minimum), with an emphasis on those BMPs that most effectively target urban stormwater bacteria sources: enhanced street sweeping, enhanced catch basin and storm drain cleaning, enhanced commercial and food outlet inspection, enhanced pet waste controls, enhanced education and outreach, enhanced homeless waste control efforts, and enhanced IDDE efforts.

4.5 Evaluation of Structural BMP Pollutant Load Reductions

After the calculation of target load reductions and evaluation of non-structural BMP load reductions, load reductions attributable to structural BMPs are first added for initial RAA consideration, then revised and finalized for inclusion in the WMP. For the LAR UR2 WMA, structural BMPs were considered in two steps. First the load reductions attributable to regional structural BMPs were determined, then any remaining total load reduction is used by SBPAT to calculate a tributary area, outside of the influence of the regional structural projects, which would be addressed through the implementation of distributed or parcel scale structural BMPs, such as LID or Green Streets, the relative contributions of these structural BMPs iterative revised while Permittees consider costs, implementation strategies, and other constraints. Though the use of SBPAT load and load reduction statistical analysis capabilities, iteratively assessed compliance with load-based and exceedance day-based TMDL compliance metrics can be projected, while expected pollutant reduction ranges are provided, thereby capturing the variability of BMP performance, and reflecting local risk tolerance characteristics. Once the relative contribution of differing categories of BMPs is satisfactorily determined, the model is run to conclusive demonstrate completion of the RAA.

4.5.1 Structural Regional BMPs

Potential structural regional BMP opportunities were initially identified for Permittee staff consideration using the approach and criteria discussed in Section **3.2.3**. Based on an iterative consideration of Permit objectives, implementation costs, load reductions, and alternative BMP implementation opportunities, six regional infiltration BMPs (two infiltration trenches and four subsurface infiltration systems) were selected for inclusion in the final RAA modeling iteration. These regional BMPs, and their tributary drainage areas, are shown in **Figure 4-22** and include:

- Randolph Street Green Rail Trail;
- LADWP Transmission Easement;
- John Anson Ford Park;
- Rosewood Park;
- Lugo Park; and
- Salt Lake Park.

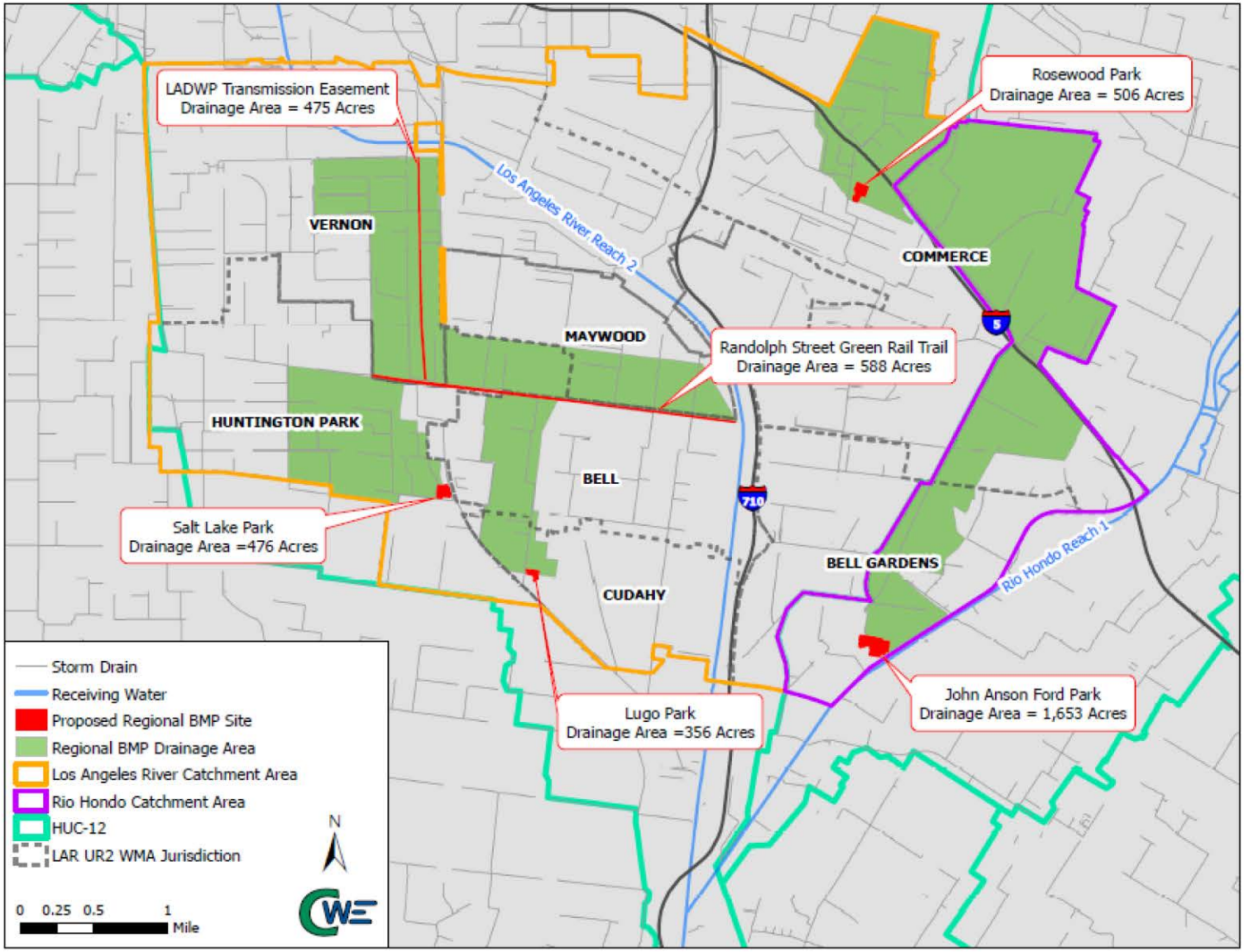


Figure 4-22 Proposed Regional Project Sites and Tributaries

4.5.1.1 Randolph Street Rail to Green Trail

The Randolph Street Rail to Green Trail infiltration trench project regional BMPs was sized using the maximum dimensions presently considered feasible due to size and design constraints. **Figure 4-23** illustrates the specific proposed project site and corresponding tributary drainage area. This BMP was modeled as an infiltration basin using the design parameters and assumptions in **Table 4-13**:

Table 4-13 Randolph Street Rail to Green Trail Design Parameters

Design Parameter	Value
Water Quality Design Volume	8.2 acre feet/354,000 cubic feet
Infiltration Rate	0.17 inches/hour
Design Storm Treated	0.19 inches
Regional BMP Length	10,400 feet
Regional BMP Width	10 feet
Regional BMP Depth	10 feet
Area Assumed for Pretreatment and Side Slopes	15%
Assumed Void Ratio	0.4

4.5.1.2 LADWP Transmission Easement

The Los Angeles Department of Water and Power Transmission Easement infiltration trench project regional BMPs was sized using the maximum dimensions presently considered feasible due to size and design constraints. **Figure 4-24** illustrates the proposed project site and corresponding tributary drainage area. The water quality design volume of the planned infiltration trench was modeled as an infiltration basin in SBPAT using the design parameters and assumptions shown in Table 4-19:

Table 4-14 LADWP Transmission Easement Design Parameters

Design Parameter	Value
Water Quality Design Volume	15 acre feet/656,000 cubic feet
Infiltration Rate	0.17 inches/hour
Design Storm Treated	0.43 inches
Regional BMP Length	4,760 feet
Regional BMP Width	20 feet
Regional BMP Depth	10 feet
Area Assumed for Pretreatment and Side Slopes	15%
Assumed Void Ratio	0.9

Figure 4-23 Randolph Street Rail to Green Trail

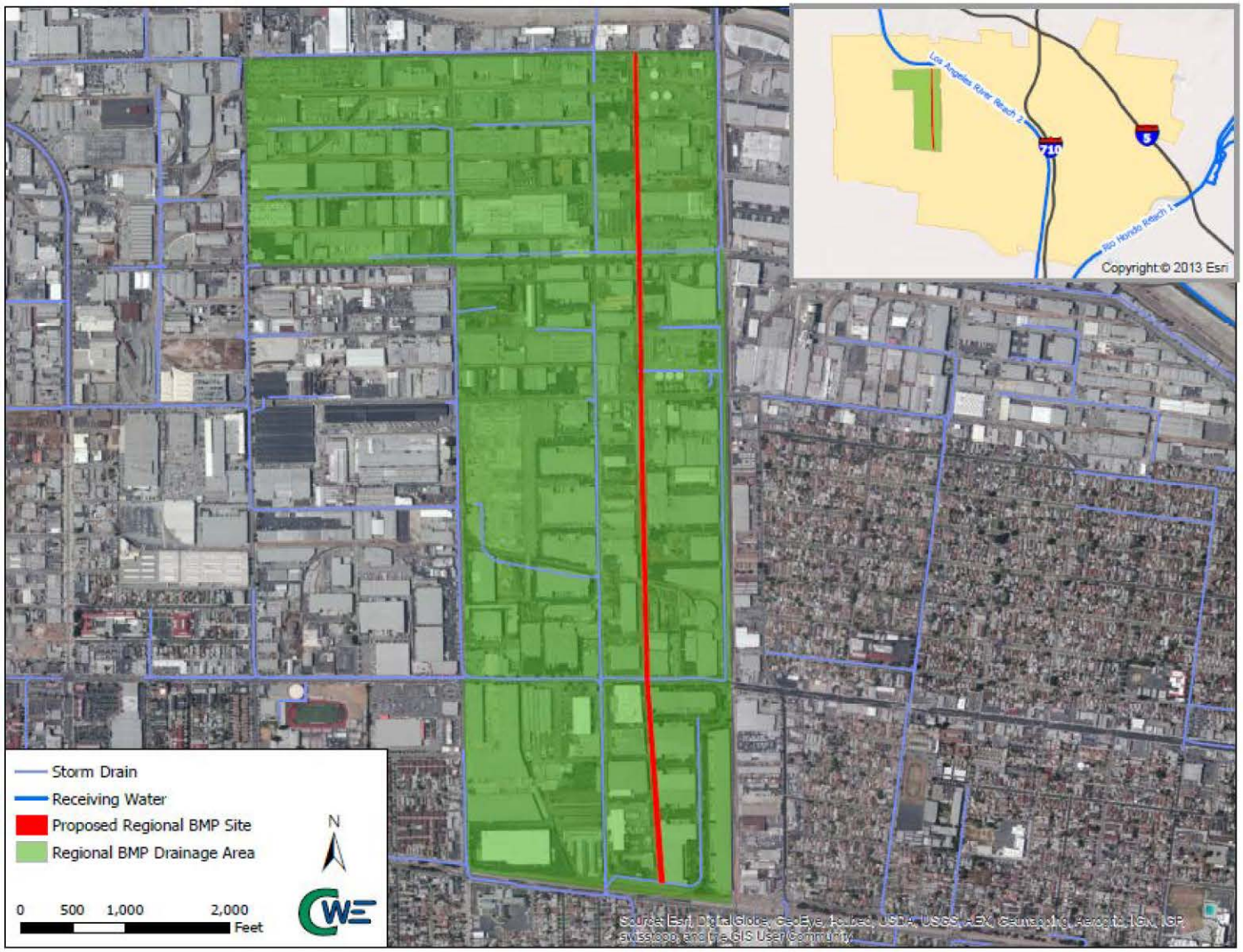


Figure 4-24 LADWP Transmission Easement

4.5.1.3 John Anson Ford Park

A subsurface infiltration project opportunity was identified at the ball fields of John Anson Ford Park. An illustration of the proposed regional BMP footprint is presented in **Figure 4-25**. The water quality design volume of this subsurface infiltration facility was modeled as an infiltration basin in SBPAT using the design parameters and assumptions shown in **Table 4-15:**

Table 4-15 John Anson Ford Park Design Parameters	
Design Parameter	**Value**
Water Quality Design Volume	72 acre feet/3,124,000 cubic feet
Infiltration Rate	0.36 inches/hour
Design Strom Treated	0.6 inches
Footprint Area	544,500 square feet
Assumed Void Ratio	0.9

4.5.1.4 Rosewood Park

A subsurface infiltration project opportunity was identified at the baseball field in Rosewood Park. An illustration of the proposed regional BMP footprint is presented in **Figure 4-26**. The water quality design volume of this subsurface infiltration facility was modeled as an infiltration basin in SBPAT using the design parameters and assumptions shown in **Table 4-16**:

Table 4-16 Rosewood Park Design Parameters	
Design Parameter	**Value**
Water Quality Design Volume	29 acre feet/1,250,000 cubic feet
Infiltration Rate	0.23 inches/hour
Design Storm Treated	0.77 inches
Footprint Area	21,000 square feet
Assumed Void Ratio	0.9

4.5.1.4 Lugo Park

A subsurface infiltration project opportunity was identified at the softball field and open space of Lugo Park. An illustration of the proposed regional BMP footprint is presented in **Figure 4-27**. The water quality design volume of this subsurface infiltration facility was modeled as an infiltration basin in SBPAT using the design parameters and assumptions shown in **Table 4-17**:

Table 4-17 Lugo Park Design Parameters	
Design Parameter	**Value**
Water Quality Design Volume	13.2 acre feet/575,000 cubic feet
Infiltration Rate	0.17 inches/hour
Design Storm Treated	0.71 inches
Footprint Area	100,000 square feet
Assumed Void Ratio	0.9

Figure 4-25 John Anson Ford Park

Figure 4-26 Rosewood Park

Figure 4-27 Lugo Park

4.5.1.6 Salt Lake Park

A subsurface infiltration facility project opportunity was identified at the ball fields of Salt Lake Park. An illustration of the regional BMP footprint is presented in **Figure 4-28**. The water quality design volume of this subsurface infiltration facility was modeled as an infiltration basin in SBPAT using the design parameters and assumptions shown in **Table 4-18**:

Table 4-18 Salt Lake Park Design Parameters

Design Parameter	Value
Water Quality Design Volume	26 acre feet/1,125,000 cubic feet
Infiltration Rate	0.17 inches/hour
Design Storm Treated	0.75 inches
Footprint Area	196,000 square feet
Assumed Void Ratio	0.9

Figure 4-28 Salt Lake Park

4.5.2 LID and Green Streets

LID Streets control pollutants, especially bacteria, from residential and commercial land use areas, and they will be located near runoff collection or discharge points where there benefit is most easily accessed and quantifiable. LID Streets were applied to treat 28 percent of commercial and residential land uses in areas that were not tributary to proposed regional BMPs on the Los Angeles River side of LAR UR2 WMA, however none were required in the Rio Hondo portion of the WMA. LID Streets are different from the arterial Green Streets identified in the Permit and Green Streets Policy in that LID Streets are more comparable to distributed parcel level BMPs within the public Right of Way (ROW). LID Streets will be implemented on smaller street projects which do not trigger the requirements of the Green Streets Policy. **Table 4-19** identifies the cumulative area within each LAR UR2 WMA City that will be tributary to a LID Street based on the afore-mentioned assumptions. LID and Green Streets were modeled with an equal split of biofilters and bioretention. Bioretention systems were sized based on the 85th percentile storm depth of 0.98 inches (Los Angeles County DPW, 2004), a 12 inch effective depth, and saturated hydraulic conductivity (K_{sat}) of 0.15 inch per hour. Biofilters were modeled using bioswale based volume reduction and bioretention effluent EMCs. Bioswale design assumed a 3 percent longitudinal slope, 0.25 Manning's n, 10 minute hydraulic residence time, 4 inches flow depth, and 0.3 inches/hour storm intensity, consistent with Permit flow through BMP sizing criteria of 150% of the 85th percentile, 24-hour design storm intensity. Biofilter hydraulic conductivity assumed the average value the model subbasin in which they were implemented. As a result, a total tributary area of 693 acres of residential and 256 acres of commercial land uses were assumed to be treated by green street BMPs on the Los Angeles River subwatershed of the WMA.

Table 4-19 LID Street Required Tributary Area in Acres by LAR UR2 WMA Permittee Implemented within commercial and residential land use areas, within the LAR watershed portion of the LAR UR2 WMA, that are not tributary to regional structural BMPs.

LAR UR2 WMA City	Total Tributary Area	Tributary to LID Street	Percent of Total
Bell	871	244	23.8%
Bell Gardens	638	179	17.5%
Commerce	385	108	10.6%
Cudahy	458	128	12.6%
Huntington Park	832	233	22.9%
Maywood	444	124	12.2%
Vernon	11	4	0.4%
Total	**3,640**	**1,019**	**100%**

As characterized in WMP Section 3.2.2 (Proposed Non-stormwater Discharge Control Measures), the Cities of Bell Garden, Commerce and Vernon have implemented PMP or PMS Programs which will contribute to guiding WMP proposed LID and Green Street Implementation Projects. Following Final Approval of the WMP, these projects can more effectively be incorporated into the Programs and implemented through each City's budgeting and CIP planning process; however as identified in the following paragraphs, the process has already started for some LAR UR2 WMA Permittees.

The City of Commerce recently completed the Telegraph Road Overlay Project, from Atlantic Boulevard to the City of Downey border, which included 76 linear feet of three feet wide porous concrete gutter, for a total surface area of 228 square feet with a contractor identified infiltration rate of 2.5 GPM. The City has also identified the Washington Boulevard Widening and Reconstruction Project, between (Indiana Street and Interstate 5, as a potential Green Street project, assuming LAR UR2 WMA WMP approval and procurement of needed additional funding, to support the design consultant recommendations.

Similarly, the City of Vernon will be constructing two Tree Boxes at 3820 and 4100 South 26th Street, using Proposition 84 grant support, during the summer of 2015. The design consultant estimated tributary area to each Tree Box is 4.5 acres of primarily industrial and transportation land use areas. The City of Vernon is also currently designing the proposed the Soto Street Resurfacing Project, between the LAR and Vernon Avenue, for construction as an LID Street, for implementation in 2019.

The City of Bell Gardens has just approved design specifications for a Tree Well to be constructed at the intersection of Florence and Garfield Avenues during Fiscal Year 2015/16.

It is important to note that the majority of LAR UR2 WMA Permittees do not yet have a Pavement Management System (PMS), or pre-approved street maintenance budget, and that LID or Green Street project implementation may vary substantially from one year to the next. Especially after the Great Recession, every street maintenance project is subject to competitive grant funding and LID and Green Street Project may make local projects appear less cost-effective to transportation supporting agencies. LID Street projects proposed within the LAR UR2 WMA must first be specified through the CIP program for each City and the appropriation of these substantially more costly construction efforts will be facilitated by Regional Board approval of the WMP and documented through future elaborations of the AMP. WMP approval by the Board will hasten the process of incorporating LID Street projects into municipal Pavement Management System (PMS) and CIP programs.

4.5 Modeling Output

An iterative process was employed to identify suites of structural and non-structural BMPs capable of achieving the TLRs. Bacteria was found to be the driving (or limiting) pollutant for the Los Angeles River drainage area, and zinc was the driving pollutant for the Rio Hondo drainage area. The following tables present individual and summed BMP load reductions for fecal coliform, copper, and zinc for the Los Angeles River and Rio Hondo drainage areas. The following tables will follow the units presented in Attachment O of the MS4 Permit. Bacteria loads will be presented in MPN/day, and metal loads will be presented in kg/day. Bacteria load reduction results (**Table 4-20** and **Table 4-21**) are shown for the final wet-weather bacteria TMDL compliance date of 2037, modeled using rainfall data from the 90th percentile year based on wet days (2011). Metals load reduction results (**Table 4-22** and **Table 4-23**) are shown for the final wet-weather metals TMDL compliance date of 2028, modeled using rainfall data from the 90th percentile year based on rainfall (1995). Average (mean) load reduction results are shown, as well as the interquartile ranges (25th to 75th percentiles), to reflect model output variability, which is primarily driven by land use EMC variability. Total BMP load reductions that exceed the TLRs indicate that reasonable assurance (of meeting the MS4 Permit limits) has been demonstrated for that pollutant for that drainage area.

4.6 Demonstration of Reasonable Assurance

Based on the identified Critical Conditions in both the Los Angeles River Reach 2 and Rio Hondo Reach 1, the LAR UR3 WMA RAA indicates that for each pollutant of concern, the load reductions anticipated by the average cumulative BMP implementation strategy will exceed the final total load reductions, and the phased BMP load reductions also meet the interim compliance targets (i.e., 50% of final metal TLRs by 2024). Therefore, reasonable assurance has been demonstrated based on the proposed suite and phasing of non-structural and structural BMPs for the LARUR2 WMA.

Table 4-20 *E. coli* BMP Load Reductions for Los Angeles River Drainage Area Expressed as Percent Reduction From Critical Condition Baseline Load in 2037

Control Measure	Average	Low (25th Percentile)	High (75th Percentile)
Non-Structural BMPs			
Non-MS4 NPDES Parcels	3.3%	2.6%	3.7%
2037 LID Ordinance Based	2.6%	1.9%	3.0%
Other Non-Modeled	5%	5%	5%
Regional BMPs			
Randolph Rail to Green Trail	0.5%	0.4%	0.6%
LADWP Transmission Easement	0.2%	0.2%	0.2%
Rosewood Park	2.2%	1.5%	2.5%
Lugo Park	0.8%	0.6%	1.0%
Salt Lake Park	1.9%	1.4%	2.2%
Distributed BMPs			
LID Streets	13%	8.2%	15%
Target Load Reduction	**29%**		
Total BMP Load Reduction	**30%**	**22%**	**33%**

Table 4-21 *E. coli* BMP Load Reductions for Rio Hondo Drainage Area Expressed as Percent Reduction from Critical Condition Baseline Load, in 2037

Control Measure	Average	Low (25th Percentile)	High (75th Percentile)
Non-Structural BMPs			
Non-MS4 NPDES Parcels	3.2%	2.4%	3.8%
LID Ordinance	2.9%	2.1%	3.3%
Other Non-Modeled	5%	5%	5%
Regional BMPs			
John Anson Ford Park	22%	17%	25%
Distributed BMPs			
LID Streets	NA	NA	NA
Target Load Reduction	**31%**		
Total BMP Load Reduction	**34%**	**26%**	**37%**

Table 4-22 Copper and Zinc BMP Load Reductions, Los Angeles River Watershed Expressed as Percent Reductions From Critical Condition Baseline Load, in 2028

Control Measure	Total Copper		Total Zinc	
	90th Percentile Day Average	10 Year Daily Average	90th Percentile Day Average	10 Year Daily Average
Non-Structural BMPs				
Non-MS4 NPDES Parcels	12%	13%	8.8%	11%
LID Ordinance	11%	5.8%	0.0%	6.2%
Other Non-Modeled	5%	5%	5%	5%
Brake Pad (SB 346)	34%	36%	-	-
Regional BMPs				
Randolph Rail to Green Trail	0.0%	1.2%	0.1%	1.3%
Distributed BMPs				
LID/Green Streets	2.5%	1.6%	1.4%	1.2%
Target Load Reduction	**59%**		**15%**	
Total BMP Load Reduction	**64%**	**63%**	**15%**	**25%**

Table 4-23 Copper and Zinc BMP Load Reductions for Rio Hondo Drainage Area Expressed as Percent Reductions From Critical Condition Baseline Load, in 2028

Control Measure	Total Copper		Total Zinc	
	90th Percentile Day Average	10 Year Daily Average	90th Percentile Day Average	10 Year Daily Average
Non-Structural BMPs				
Non-MS4 NPDES Parcels	7.6%	6.2%	6.0%	5.4%
LID Ordinance	0.0%	5.8%	0.0%	6.7%
Other Non-Modeled	5%	5%	5%	5%
Brake Pad (SB 346)	42%[3]	15%	-	-
Regional BMPs				
John Anson Ford Park	2.2%	52%	23%	54%
Target Load Reduction	**21%**		**29%**	
Total BMP Load Reduction	**57%**	**84%**	**34%**	**71%**

5. Compliance Schedule and Cost

Interim and final compliance dates in the LAR Metals and Bacteria TMDLs are the primary drivers for the LAR UR2 WMA RAA and WMP Plan implementation schedule. The dates identified in this WMP Plan are subject to the procurement of grants or other financing support commensurate with the existing and future fiduciary responsibilities of the Permittees. They may furthermore be adjusted based on evolving information developed through the iterative adaptive management process identified in the 2012 MS4 Permit or similar Parts within future MS4 Permits.

5.1 WMP Implementation Schedule

Part VI.C.5.c of the MS4 Permit discusses the compliance schedule requirements associated with the WMP. The WMP Implementation schedule was developed based on TMDL milestones (i.e., interim and final numeric limits) identified in **Table 1-6**. The Los Angeles River Trash TMDL will be implemented by October 1, 2015, in order to meet the annual compliance assessment date on September 30, 2016. The Los Angeles River Metals TMDL requires 50 percent of the final load reductions to be achieved by 2024, while the Los Angeles River Bacteria TMDL allows agencies to set a percent of final load reductions to be achieved by the 2030 interim milestone.

Table 5-1 identifies the proposed control measure implementation schedule based on what LAR UR2 WMA deems feasible and the phasing needed to achieve compliance with interim and final compliance targets for both bacteria and metals. The resulting average load reductions, phased by milestone date, are presented in the following figures. **Figure 5-1** through **Figure 5-3** address fecal coliform, copper, and zinc, respectively, for the Los Angeles River drainage area. **Figure 5-4** through **Figure 5-6** address fecal coliform, copper, and zinc, respectively, for the Rio Hondo drainage area. The WMP, including the schedule aspect, will be updated through the adaptive management process; to that extent, the implementation schedules identified are tentative unless determined as a date certain associated with specific TMDL provisions. Any LAR UR2 WMA WMP schedule date extensions must be approved by the Los Angeles Water Board's Executive Officer pursuant to Part VI.C.6.a or Part VI.C.8.a.ii-iii of the 2012 MS4 Permit.

Table 5-1 Control Measure Implementation Schedule	
Control Measure	**Current Control Measure "Final" Implementation Dates**
Non-Structural BMPs	
City of Commerce Pavement Management System	April 30, 2016
Enhanced Non-MS4 NPDES Parcel Inspections	December 31, 2017
Other Non-Modeled	January 31, 2028
Brake Pad (SB 346)	January 31, 2028
Annual Ordinance Based LID Redevelopment	March 31, 2037[1]
Regional BMPs	
John Anson Ford Park	January 31, 2024[2]
Randolph Rail to Green Trail	January 31, 2028[2]
LADWP Transmission Easement	January 31, 2028[2]
Rosewood Park	January 31, 2030[3]
Lugo Park	March 23, 2037
Salt Lake Park	March 23, 2037
Distributed BMPs	
Telegraph Road Overlay Project (Commerce)	April 30, 2015
3820 & 4100 S. 26th St Prop 84 Tree Boxes (Vernon)	September 22, 2015
Washington Blvd Widening Project (Commerce)	October 31, 2016
Final CPS/Catch Basin Trash TMDL Modifications	October 1, 2015
Initial (25% of Total) LID/Green Streets (LAR only)	January 31, 2028[2]
Initial (50% of Total) LID Streets (LAR only)	March 23, 2030[3]
Final LID Streets (Los Angeles River WMA)	March 23, 2037

[1] Interim milestone dates assume an annual percentage of final load reduction

[2] Scheduling of these projects, driven by Metals TMDL. Projects could be extended to 2037 Assuming final approval of copper SSO, development and approval of a similar zinc SSO

[3] Date identified for project pacing. Project primarily contributes Bacteria TMDL compliance.

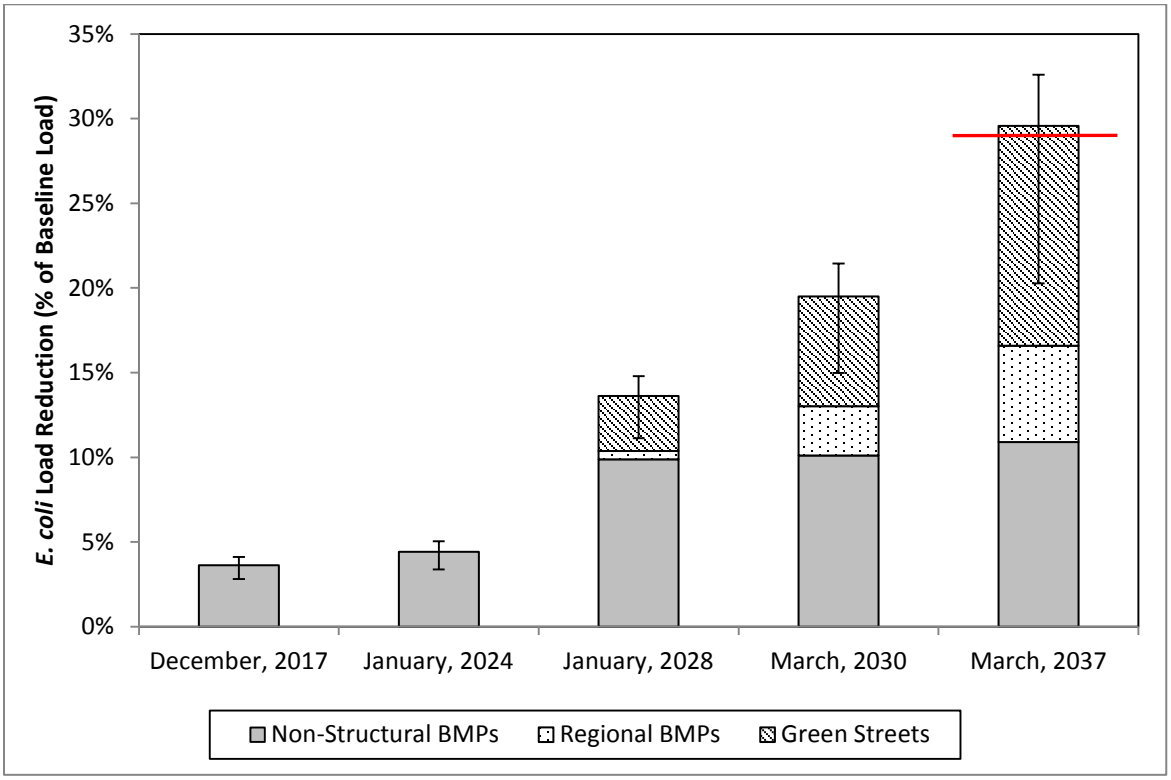


Figure 5-1 Los Angeles River *E. coli* Load Reductions at Milestone Dates by BMP Category

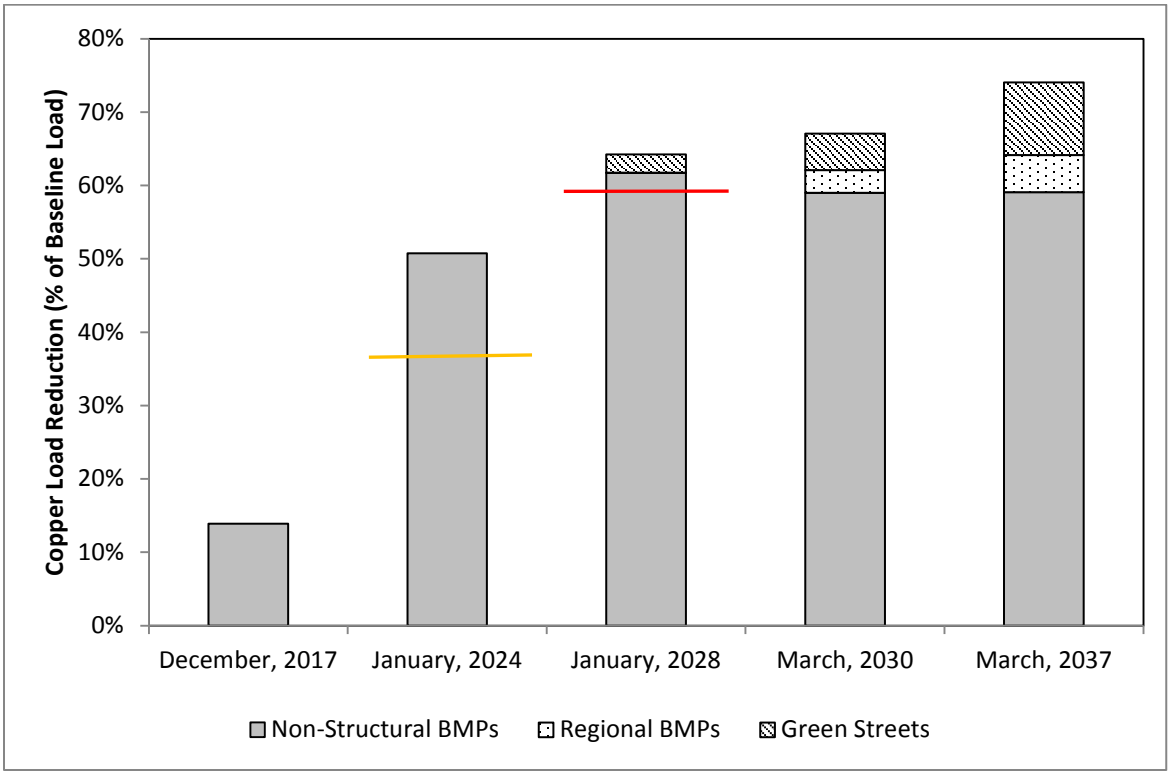


Figure 5-2 Los Angeles River Copper Load Reductions by Milestone Dates by BMP Category

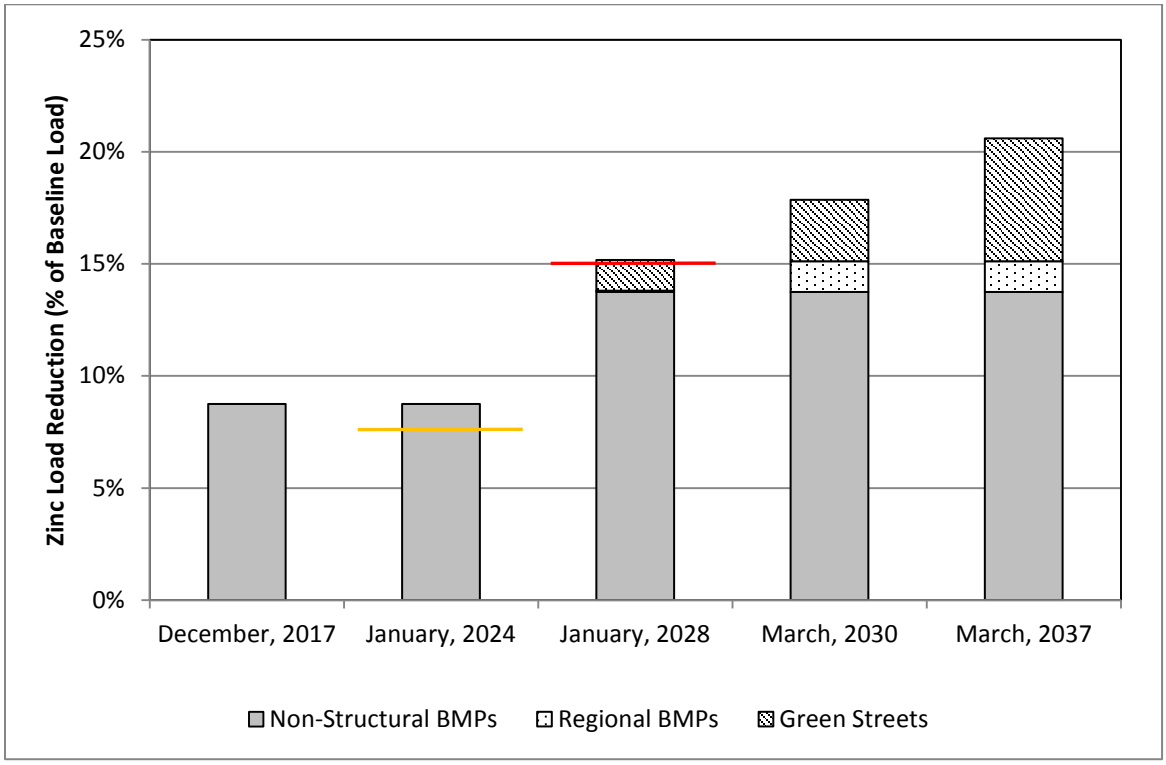


Figure 5-3 Los Angeles River Zinc Load Reductions at Milestone Dates by BMP Category

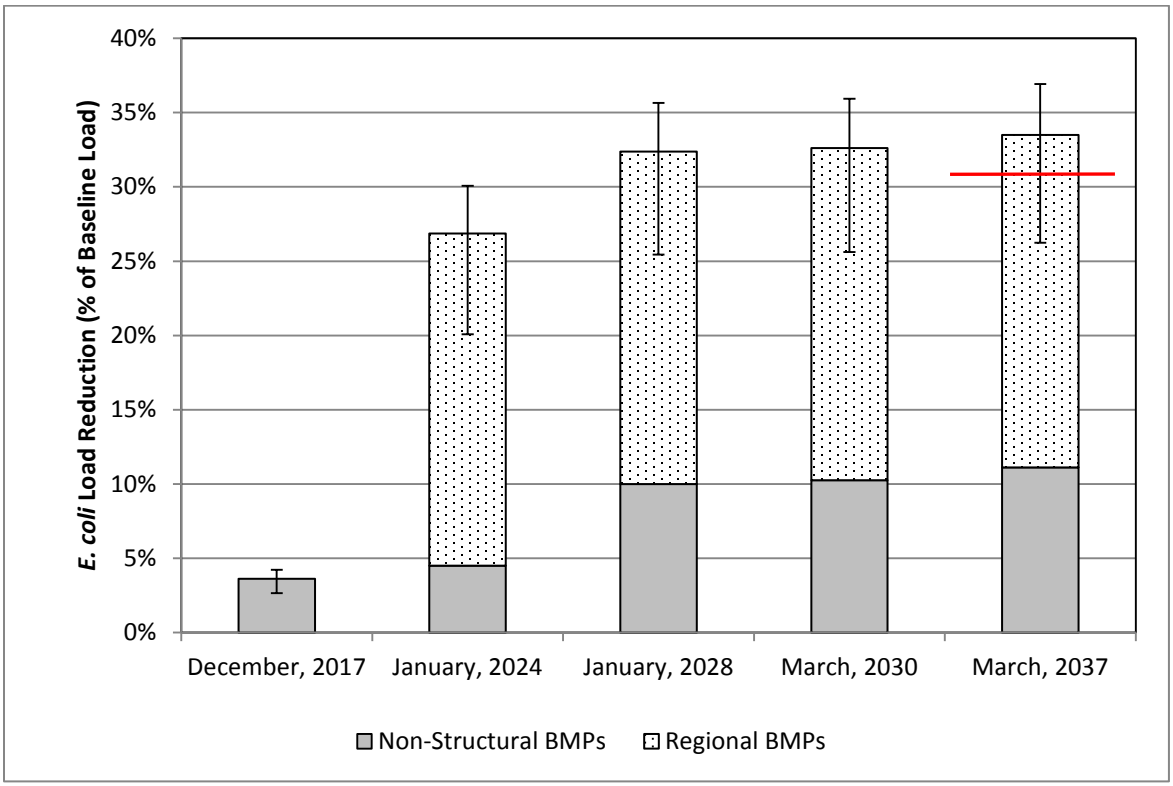


Figure 5-4 Rio Hondo *E. coli* Load Reductions at Milestone Dates by BMP Type

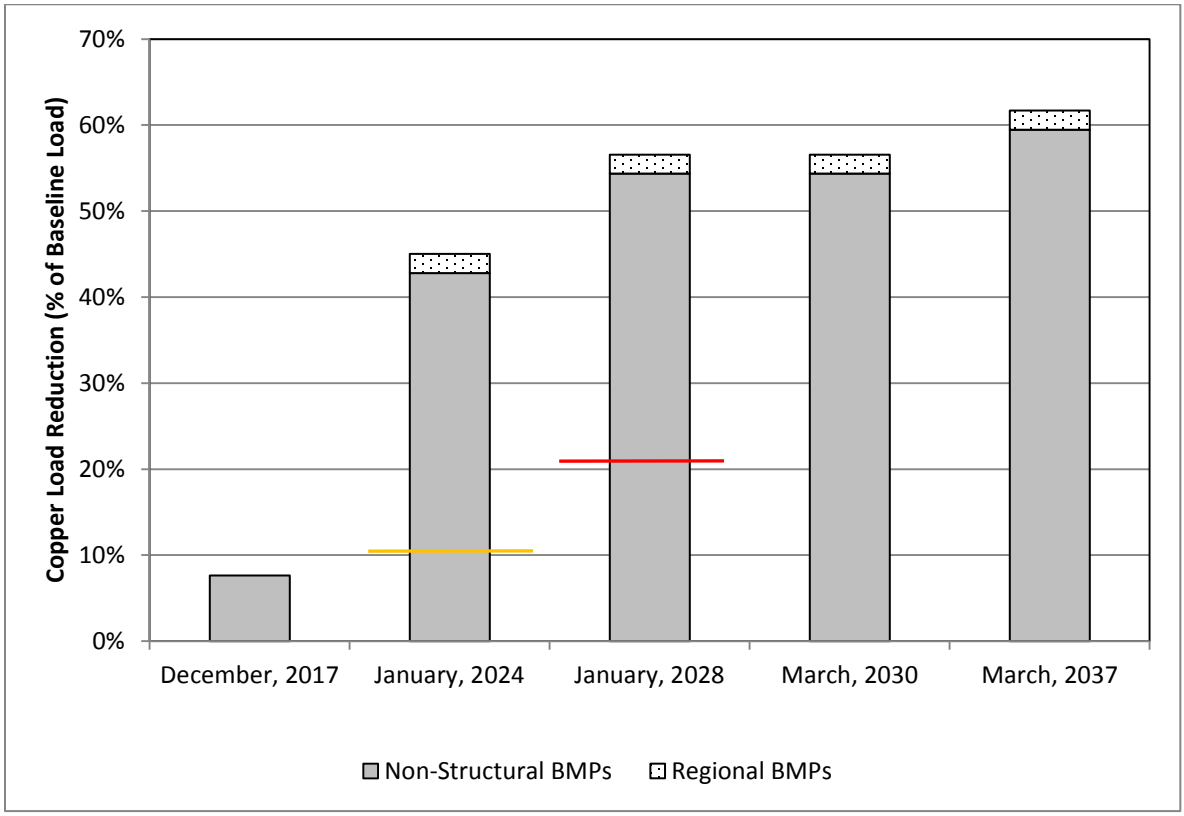


Figure 5-5 Rio Hondo Copper Load Reductions at Milestone Dates by BMP Category

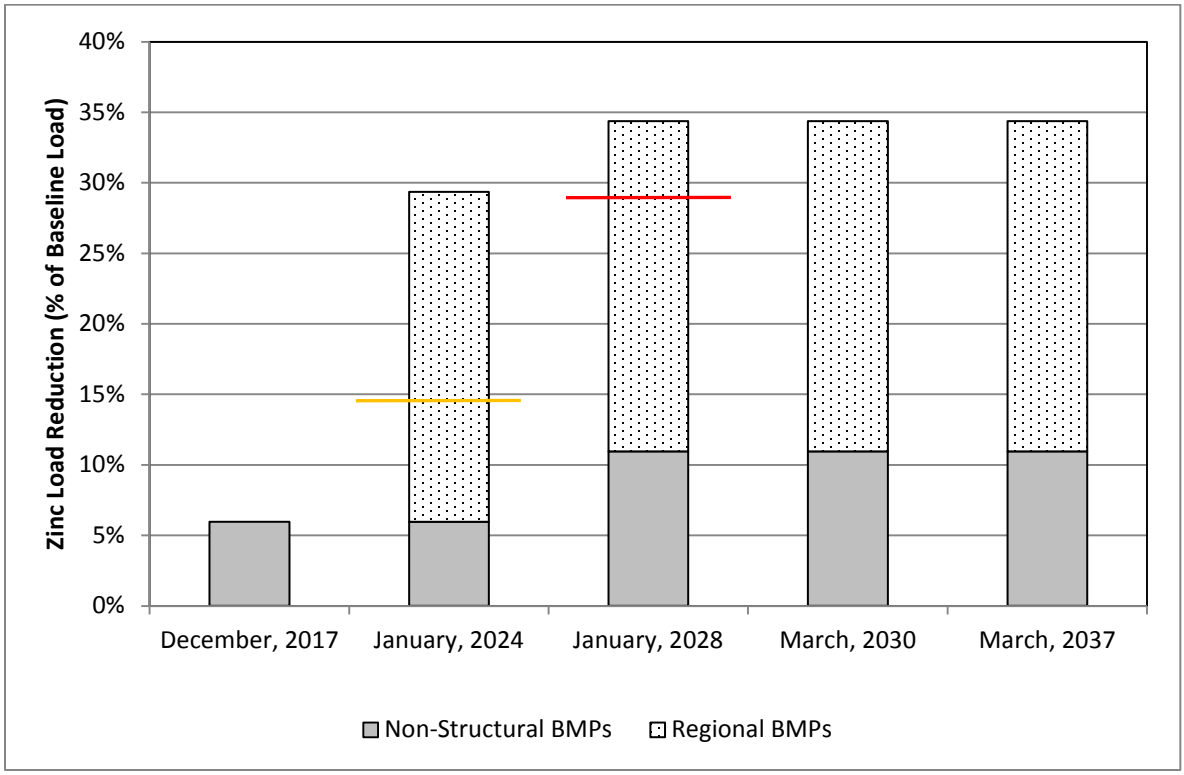


Figure 5-6 Rio Hondo Zinc Load Reductions at Milestone Dates by BMP Category

5.2 WMP Implementation Cost

In order to determine potential funding strategies, costs associated with the implementation of the control measures identified in this WMP must be considered. This section identifies the cost associated with the structural BMPs (regional and distributed) and non-structural BMPs. A Memorandum of Understanding (MOU) between LAR UR2 WMA jurisdictions determined that LACFCD would pay ten percent of the WMP development costs and each City would pay an equal one seventh share of forty-five percent of the WMP development costs. In addition, each City paid its pro-rata share of forty-five percent of the WMP developments cost at the cost sharing allocation percentage provided in **Table 5-2**.

Table 5-2 Cost Sharing Allocation of Forty-Five Percent of WMP Cost

LAR UR2 WMA Jurisdiction	Land Area (mi^2)	Cost Allocation Percentage
Bell	2.64	11.90
Bell Gardens	2.49	11.22
Commerce	6.57	29.61
Cudahy	1.12	5.05
Huntington Park	3.03	13.65
Maywood	1.18	5.32
Vernon	5.16	23.25

The cost of the regional BMPs will be shared based on future MOU(s), while the distributed BMPs (LID Streets or Green Streets) will be paid for by the jurisdiction for which they are implemented.

Planning-level cost estimates are presented for each of the six preliminary regional BMP projects and the distributed BMPs (LID Streets) for LAR UR2 WMA. During the preliminary concept phase it may be difficult to produce a precise cost estimate because the specific details pertaining to the projects have not been determined therefore the costs are presented as a range. The cost estimate employs best engineering judgment and was determined based on a per acre-feet unit rate, or for the LID Streets, a cost per acre of tributary area. The cost estimates consider the costs associated with planning, design, permits, an environmental assessment, construction, operation and maintenance, construction administration and inspections, post-construction effectiveness monitoring, contingency, and mobilization. Land acquisition costs may be of importance depending on the site, and are not considered in the cost estimates presented, as none of the preliminary project concepts require land acquisition. The following generally accepted costs were used for cost estimates presented:

- Planning - minimum between 5 percent of construction cost or $100,000
- Engineering design - 10 percent of construction cost
- Permits and specifications - 25 percent of engineering design cost
- Construction administration and inspections - 10 percent of construction (including mobilization)
- Contingency - 10 percent of construction (including mobilization)
- Mobilization - 10 percent of construction

The costs estimates associated with the six regional BMP projects will be adjusted as more information becomes available and as additional project concept details are developed. Based on the current estimates, the cost of implementing all six projects is approximately $209 million. Applying the cost allocations contained in the WMP development MOU, **Table 5-3** summarizes the cost each LAR UR2 WMA jurisdiction will contribute under current assumptions and **Table 5-4** summarizes the cost and major characteristics of each of the proposed regional BMPs.

Table 5-3 Cost Allocation for Proposed Regional BMP Projects	
LAR UR2 WMA Jurisdiction	**Cost**
Bell	$24,600,000
Bell Gardens	$24,000,000
Commerce	$41,200,000
Cudahy	$18,200,000
Huntington Park	$26,300,000
Maywood	$18,500,000
Vernon	$35,300,000
Other Agencies	$20,900,000
Total:	**$209,000,000**

Table 5-4 LAR UR2 WMA Regional BMP Cost Estimate	
Name	**Cost**
Randolph Street Rail to Green Trail	$10,800,000
LADWP Transmission Easement	$19,600,000
John Anson Ford Park	$91,300,000
Rosewood Park	$36,800,000
Lugo Park	$17,200,000
Salt Lake Park	$33,200,000
Total:	**$209,000,000**

Note: Estimates are based on 2014 dollars.

Based on the LID Street assumptions outlined in Section **4.5.2**, the tributary area of commercial and residential land uses tributary to a LID Street were determined for each jurisdiction draining to the Los Angeles River. A cost was determined for each jurisdiction, taking into account the area tributary to a proposed regional BMP. **Table 5-5** summarizes the costs anticipated due to LID Streets.

The Los Angeles County Flood Control District will also work with the LAR UR2 WMA to address source controls; assess, develop, and pursue funding for structural BMPs, and promote water reuse and infiltration. As the identified or alternative regional project scopes are further refined, the District will contribute to implementation of the WMP projects on a case-by-case basis.

Table 5-5 LAR LID/Green Streets Cost Estimate by Permittee and Tributary Acres Implemented in commercial/residential land use areas, within the LAR watershed portion of the LAR UR2 WMA, that are not tributary to regional structural BMPs.			
LAR UR2 WMA City	**Total Tributary Area**	**Tributary to LID Street**	**Cost Estimate**
Bell	871	244	$24,400,000
Bell Gardens	638	179	$17,900,000
Commerce	385	108	$10,800,000
Cudahy	458	128	$12,800,000
Huntington Park	832	233	$23,300,000
Maywood	444	124	$12,400,000
Vernon	11	4	$400,000
Total	**3,640**	**1,020**	**$102,000,000**

5.3 WMP Funding

In order to implement the control measures identified within the LAR UR2 WMA WMP, or future WMP iterations developed through the iterative AMP, funding from a variety of sources, including the possibility of partnering with other agencies, will need to be developed and managed in such a way so as to ensure that the programs and projects are implemented on schedule. According to an article titled "Financial Strategies for Stormwater Management" (Treadway, 2000), stormwater programs are generally funded with both primary and secondary funding methods.

Primary methods generally have adequate capacity and flexibility to fund the bulk of the stormwater program and can be lumped into two categories:

- General fund revenues - property tax, franchise fees, local income tax, and/or general sales tax
- Stormwater user fees - also known as stormwater utility fees

Secondary funding methods are used to enhance equity or simplicity. These funds are generally generated by various fees (e.g. impact fees or plan review fees), debt financing, grants or government cost share programs, special assessments, improvement districts, connection charges, in lieu of fees, etc. Each of these secondary methods has conditions and limitations that restrict their use to specially targeted parts of the stormwater program (Treadway, 2000).

Table 5-6 outlines the current stormwater program funding for LAR UR2 WMA. LAR UR2 WMA will evaluate the various funding options in order to determine what works best. The funding mechanisms may vary by jurisdiction and by project. **Table 5-7** identifies potential funding strategies based on implementation actions which will be further evaluated. In addition, a summary of the identified grant and loan opportunities that will be further evaluated can be found in **Appendix I**.

The Gateway Cities Transportation Water Quality Strategic Plan, released in March 25, 2014 identifies over one hundred local and Transportation Corridor related BMP projects that could be constructed within the Gateway Cities region. Many of these projects are along the I-5 and I-710 Freeway corridors and would primarily benefit Caltrans by reducing the discharges of pollutants from that Permittee. A few are located within the LAR UR2 WMA. John Anson Ford Park and Salt Lake Park are also identified in this LAR UR2 WMA WMP. Others, such as Veterans and Little Bear Park in Bell, Bell Gardens Park in Bell Gardens, and Veteran's Memorial Park in Commerce, were considered during preparation of this study, but appeared to provide little benefit, often because of the lack of a nearby drainage system, legacy contamination issues, permitting difficulties or small tributary catchment. The report referenced the Federal USEPA and State Department of Water Resources as potential funding sources for its projects.

In a study entitled ***Stormwater Funding Options*** prepared for The League of California Cities, Los Angeles County Division and California Contract Cities Association, and dated May 29, 2014, the proponents acknowledge the enormity of the tasks that lie ahead for the LAR UR2 WMA and all Los Angeles County MS4 Permittees. They propose a multi-pronged range of existing and proposed funding mechanisms and encourage each agency to develop an appropriate mix to support its needs and expectations. Without substantial additional and adequate financial support to the LAR UR2 WMA, it will not be possible to implement the WMP or MS4 Permit to the extent intended by the Permittees.

Table 5-6 Recent Stormwater Program Costs and Budgets

Stormwater Program	Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon	Total
2011-2012 Program Costs[1]								
Public Information and Participation Program	$1,836	$0	$20,000	$2,500	$7,950	$2,950	$9,376	**$44,612**
Industrial/Commercial Facilities Program	$2,204	$53,300	$205,000	$3,000	$75,000	$3,600	$13,520	**$355,624**
Planning and Land Development Program	$2,160	$5,250	$50,000	$4,000	N/A	$0	$4,925	**$66,335**
Development and Construction Program	$692	$7,875	$12,000	$5,000	N/A	$0	$8,259	**$33,826**
Public Agency Activities Program	$453,576	$1,911,906	$1,495,500	$6,300	$725,000	$49,506	$615,417	**$5,257,205**
IC/ID Elimination Program	$1,620	$10,500	$5,100	$4,000	N/A	$0	$7,745	**$28,965**
Total	**$462,088**	**$1,988,831**	**$1,787,600**	**$24,800**	**$807,950**	**$56,056**	**$659,242**	**$5,786,567**
2012-2013 Program Budget[1]								
Public Information and Participation Program	$1,700	$2,250	$100,000	$3,000	$7,950	$15,500	$30,000	**$160,400**
Industrial/Commercial Facilities Program	$3,500	$50,000	$205,000	$5,000	$75,000	$10,000	$40,000	**$388,500**
Planning and Land Development Program	$3,000	$5,250	$75,000	$4,000	N/A	$2,000	$23,000	**$112,250**
Development and Construction Program	$1,500	$7,875	$25,000	$5,000	N/A	$3,000	$16,000	**$58,375**
Public Agency Activities Program	$452,000	$2,196,000	$1,935,000	$40,000	$700,000	$67,550	$1,077,000	**$6,467,550**
IC/ID Elimination Program	$1,800	$10,500	$5,100	$4,000	N/A	$0	$70,000	**$91,400**
Total	**$463,500**	**$2,271,875**	**$2,345,100**	**$61,000**	**$782,950**	**$98,050**	**$1,256,000**	**$7,278,475**

[1] Based on 2012 Annual Reports, except the 2011 Annual Reports were used for the Cities of Cudahy and Huntington Park.

Table 5-7 Funding Opportunities by WMP Implementation Effort

Funding Opportunity	Stormwater Program						Regional BMP Projects						Distributed BMP Projects
	Public Information and Participation Program	Industrial/Commercial Facilities Program	Planning and Land Development Program	Development Construction Program	Public Agency Activities Program	IC/ID Elimination Program	Randolph Street Rail to Green Trail	LADWP Easement	John Anson Ford Park/Golf Course	Rosewood Park	Lugo Park	Salt Lake Park	LID or Green Streets
General Funds	X	X	X	X	X	X							
Additional taxes	X	X	X	X	X	X	X	X	X	X	X	X	X
Stormwater Utility Fee	X	X	X	X	X	X	X	X	X	X	X	X	X
General Fees	X	X	X	X	X	X							X
Grant Opportunities													
Proposition 84 Stormwater Program							X	X	X	X	X	X	X
Community Action for a Renewed Environment (CARE)	X	X	X	X	X	X	P		P	P	P	P	
Pollution Prevention (P2)	X	X	X	X	X	X	P		P	P	P	P	
Urban Waters Small Grant	X	X	X	X	X	X	P		P	P	P	P	
Environmental Education Grant and SubGrant	X	X	X	X	X	X	P		P	P	P	P	
Cooperative Watershed Management Plan	X	X	X	X	X	X	X	X	X	X	X	X	X
State of California Coastal Conservancy Program	P						X	X	X	X	X	X	
Wildlife Conservation Board (WCB)													

Table 5-7 Funding Opportunities by WMP Implementation Effort

Funding Opportunity	Stormwater Program						Regional BMP Projects						Distributed BMP Projects
	Public Information and Participation Program	Industrial/Commercial Facilities Program	Planning and Land Development Program	Development Construction Program	Public Agency Activities Program	IC/ID Elimination Program	Randolph Street Rail to Green Trail	LADWP Easement	John Anson Ford Park/Golf Course	Rosewood Park	Lugo Park	Salt Lake Park	LID or Green Streets
Habitat Conservation Fund (HCF)													
Land and Water Conservation Fund (LWCF)													
Recreational Trails Program (RTP)							X						
TIGER Discretionary Grant							X						
Environmental Solutions for Communities	P						X	X	X	X	X	X	
Clean Water Act (CWA) §319(h) Non-Point Source													P
Potential 2014 Water Bond	P	P	P	P	P	P	P	P	P	P	P	P	
Loan Opportunities													
Clean Water State Revolving Fund (CWSRF)							X	X	X	X	X	X	
Financial Incentives for Recycled Water Projects to Provide Drought Relief							X	X	X	X	X	X	
Infrastructure State Revolving Fund (ISRF)							X	X	X	X	X	X	X

X = Eligible for opportunity (with conditions); P = Potentially eligible for opportunity

6. Legal Authority

Permit Part VI.C.5.b.iv.(6) directs that the *Permittee shall provide documentation that they have the necessary legal authority to implement the Watershed Control Measures identified in the plan, or that other legal authority exists to compel implementation of the Watershed Control Measures.* This authority appears to be more narrow than the broad legal authority addressed within Permit Part VI.A.2, which has been an annual report requirement since early in the implementation of the 2001 MS4 Permit. Statements of Legal Authority, provided by the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon, and Los Angeles County Flood Control District, are provided in **Appendix J**. In addition to the legal authority of each Permittee, the Regional Water Quality Control Board, Los Angeles Region and U.S. Environmental Protection Agency (USEPA) have additional legal authorities, provided under the Clean Water Act, to compel implementation of Watershed Control Measures. The majority of the Watershed Control Measures identified in the LAR UR2 WMA WMP Plan are associated with regional structural BMPs and LID streets that have been preliminarily sited on municipal public lands including parks, street right of ways. The primary exception to this practice of using municipal public lands is the Los Angeles Department of Water and Power (LADWP) Transmission Line Easement through the City of Vernon. However, as visible in aerial photographs, this easement has allowed many encroachments compatible with its primary purpose and the concept proposal includes alternatives to maintain the primary purpose of the easement. With a project implementation date over a decade in the future, we believe the design and permitting hurdle can be surpassed or the RAA and WMP modified through the adaptive management process. Permittees, or other entities, regulated under state or federal law (e.g. Railroads and other NPDES Permittees) and found to have problematic discharges, may be identified through the adaptive management process or during implementation of the CIMP and WMP plans. If these entities are found to require authorities beyond those of the Permittees, or are otherwise recalcitrant to instituting comparable Watershed Control Measures, they may be referred to other legal authorities enabled to compel implementation.

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Appendix A

June 27, 2013, Los Angeles River Upper Reach 2 WMA Notice of Intent (NOI) Letter

City of Commerce

Office of the
City Administrator

June 27, 2013

Mr. Sam Unger
Executive Officer
California Regional Water Quality Control Board
Los Angeles Region, Suite 200
320 W. Fourth St., Suite 200
Los Angeles, CA 90013

RE: Notice of Intent for a Watershed Management Program and Coordinated Integrated Monitoring Program for the Los Angeles River Upper Reach 2 Gateway Sub Watershed.

Dear Mr. Unger:

The Permittees listed in Table 1 below that are party to this Notice of Intent (NOI) hereby notify the Los Angeles Regional Water Quality Control Board (Regional Water Board) of their intent to develop a Watershed Management Program (WMP) for the Los Angeles River Upper Reach 2 Sub Watershed (LAR UR2 Sub Watershed) which includes the Cities of Bell, Bell Gardens, Cudahy, Commerce, Huntington Park, Maywood, Vernon, and the Los Angeles County Flood Control District. This NOI is hereby submitted in accordance with Part VI.C.4.b.i of Order R4-2012-0175. Permittees meet the LID and Green Streets conditions and will submit the Draft WMP within 18 months of the effective date of Order R4-2012-0175 (June 28, 2014).

In addition, the same permittees listed in Table 1 hereby notify the Regional Water Board of their intent to develop a Coordinated Integrated Monitoring Program (CIMP) as part of their WMP. The Permittees intend to follow a CIMP approach for each of the required monitoring plan elements including Receiving Water Monitoring, Storm Water Outfall Based Monitoring, Non-Storm Water Outfall Based Monitoring, New Development/Re-Development Effectiveness Tracking, and Regional Studies and will submit the CIMP within 18 months of the effective date of Order R4-2012-0175 (June 28, 2014) with the WMP.

SECTION 1. PROGRAM TYPE AND PERMITTEES

Table 1 lists the permittees who have agreed to work cooperatively and to jointly develop a WMP and CIMP under a Memorandum of Understanding (MOU) with the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority for administration and cost sharing.

Table 1. Watershed Management Program Permittees

City of Bell
City of Bell Gardens
City of Commerce
City of Cudahy
City of Huntington Park
City of Maywood
City of Vernon
Los Angeles County Flood Control District (LACFCD)

SECTION 2. TOTAL MAXIMUM DAILY LOADS ESTABLISHED WATER QUALITY BASED EFFLUENT LIMITATIONS:

Table 2 lists applicable interim and final Water Quality Based Effluent Limitations (WQBELs) and receiving water limitations established by Total Maximum Daily Loads (TMDLs) and identified by Section VI.C.4.B.ii of the Order that occur prior to the anticipated approval of the WMP.

Table 2. Applicable Interim and Final Trash WQBELs and all other Final WQBELs and Receiving Water Limitations Occurring Before Watershed Management Program Approval

TMDL Order	WQBEL	Interim or Final	Compliance Date
Los Angeles River Trash	80% reduction of baseline	Interim	09/30/2013
	90% reduction of baseline	Interim	09/30/2014
	96.7% reduction of baseline	Interim	09/30/2015
	100% reduction of baseline	Final	09/30/2016

Los Angeles River Nitrogen Compounds and Related Effects TMDL	100% of MS4 drainage area complies with waste load allocations	Final	03/23/2004
Los Angeles River Bacteria Implementation Schedule for Dry Weather – upper and middle reach 2 (Figueroa St. to Rosecrans Ave.) R4-2012-0175	Submit a Load Reduction Strategy (LRS) for Segment B (or submit an alternative compliance plan)	Interim	09/23/2014

SECTION 3. IDENTIFY TMDL CONTROL MEASURES:

Table 3 identifies the control measures being implemented by each Permittee for each TMDL that have interim and final WQBELs that occur prior to the anticipated approval of the WMP. The Permittees will continue to implement these measures during the development of the WMP.

Table 3. Control Measures that will be Implemented Concurrently with WMP Development for TMDLs

TMDL	Permittees	Implementation Plan and Control Measures	Status of Implementation
Los Angeles River Trash R4-2012-0175	Cities of: Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon	Install Full Capture Systems or other BMPs to reduce baseline by 80%	Completed
		Install Full Capture Systems or other BMPs to reduce baseline by 90%	Completed
		Install Full Capture Systems or other BMPs to reduce baseline by 96.7%	Completed
Los Angeles River Bacteria Implementation Schedule for Dry Weather – upper and middle reach 2 (Figueroa St. to Rosecrans Ave.) R4-2012-0175	Cities of: Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon	Developed a Coordinated Monitoring Plan (CMP) for the Los Angeles River Watershed.	Submitted the CMP to the LA Regional Water Quality Control Board on March 23, 2013 with the expressed intention of integrating the CMP with a future CIMP.

SECTION 4. DEMONSTRATION OF MEETING LID ORDINANCE AND GREEN STREETS POLICY REQUIREMENTS:

The Permittees that are party to this NOI developed LID Ordinances and Green Streets Policies that are in the process of being adopted by their governing board.**Table 4** summarizes the status of the Permittees' LID ordinances and Green Streets policies. More than 50% of the MS4 watershed area that will be addressed by the WMP is covered by LID Ordinances and Green Streets Policies.

Table 4. Status of LID Ordinance and Green Streets Policy Coverage of the MS4 Watershed Area Addressed by the WMP

Permittee	Land Area (mi^2)	LID Ordinance Status	Green Streets Policy Status
City of Bell	2.64	Developed	Developed
City of Bell Gardens	2.49	Adopted	Adopted
City of Commerce	6.57	Adopted	Adopted
City of Cudahy	1.12	Developed	Adopted
City of Huntington Park	3.03	Developed	Adopted
City of Maywood	1.18	Developed	Adopted
City of Vernon	5.16	Developed	Developed
LACFCD	0	N/A	N/A
Total MS4 Watershed Area	22.19		

The listed permittees are diligently working together and making progress towards compliance with Order R4-2012-0175. Please contact the individual permittees should you have questions pertaining to their jurisdiction's compliance measures. A list of contact information is enclosed. Please direct all inquiries regarding the LAR UR2 Sub Watershed's WMP/CIMP development to Ms. Claudia Arellano at carellano@ci.vernon.ca.us or (323) 583-8811, ext. 258. Thank you.

Sincerely,

The LAR UR2 Sub Watershed Permittees
(Individual signatures enclosed)

cc: Ms. Renee Purdy, California Regional Water Quality Control Board
Mr. Ivar Ridgeway, California Regional Water Quality Control Board

6330 Pine Avenue
Bell, California 90201
(323) 588-6211
(323) 771-9473 fax

CITY OF BELL

June 12, 2013

Mr. Samuel Unger, P.E., Executive Officer
California Regional Water Quality
Control Board – Los Angeles Region
320 West Fourth Street, Suite 200
Los Angeles, CA 90013

Attention: Ms. Renee Purdy

Dear Mr. Unger:

LETTER OF INTENT – LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
LOS ANGELES RIVER UPPER REACH 2 SUB WATERSHED
WATERSHED MANAGEMENT PROGRAM
AND COORDINATED INTEGRATED MONITORING PROGRAM

The City of Bell submits this Letter of Intent to participate in and share the cost of the development of a Watershed Management Program (WMP) and a Coordinated Integrated Monitoring Program (CIMP) with the Los Angeles River Upper Reach 2 Sub Watershed Group. This Letter of Intent serves to satisfy the WMP notification requirements of Section VI.C.4.b. of Order No. R4-2012-0175 (Municipal Separate Storm Sewer System Permit) and the CIMP requirements of Section IV.C.1 of Attachment E of the Municipal Separate Storm Sewer System Permit.

The Los Angeles River Upper Reach 2 Sub Watershed Group consists of the following agencies: the cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the LACFCD. The City of Bell intends to submit a final Memorandum of Understanding to the City Council for approval on July 17th, 2013.

If you have any questions, please contact Mr. Terry Rodrigue at (323)588-6211 or trodrigue@cityofbell.org.

Sincerely,

Doug Wilmore
City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6/19/13

CITY OF BELL GARDENS
Mr. Philip Wagner
City Manager
7100 Garfield Avenue
Bell Gardens, CA 90201

Philip Wagner, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 06/13/2013

CITY OF COMMERCE
Mr. Jorge Rifa
City Administrator
2535 Commerce Way
Commerce, CA 90040

Jorge Rifa, City Administrator

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6/19/13

CITY OF CUDAHY
Mr. Hector Rodriguez
City Manager
5220 Santa Ana Street
Cudahy, CA 90201

Hector Rodriguez, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6/24/13

CITY OF HUNTINGTON PARK
Mr. Rene Bobadilla, P.E.
City Manager
6550 Miles Avenue
Huntington Park, CA 90255

Rene Bobadilla, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6-25-13

CITY OF MAYWOOD
Ms. Lilian Myers
City Manager
4319 East Slauson Avenue
Maywood, CA 90270

Lilian Myers, City Manager

The Watershed Permittees, described as the LAR UR2 Sub Watershed, made and entered into an MOU by and between the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (GWMA), a California Joint Powers Authority, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, Vernon and the Los Angeles County Flood Control District (LACFCD). In said MOU and pursuant to Section V.C.4.b of the MS4 Permit Order R4-2012-0175, the Watershed Permittees agreed to jointly draft, execute and submit to the Los Angeles Regional Water Quality Control Board, a Notice of Intent (NOI) letter by June 28, 2013 that complies with all applicable MS4 Permit provisions for development of a joint Watershed Management Program (WMP) and Coordinated Integrated Monitoring Program (CIMP) and execute such joint NOI as follows:

DATE: 6-20-13

CITY OF VERNON
Mr. Samuel Kevin Wilson, P.E.
Director of Community Services & Water
4305 Santa Fe Avenue
Vernon, CA 90058

Samuel Kevin Wilson, Director of
Community Services & Water

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

GAIL FARBER, Director

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100
http://dpw.lacounty.gov

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE
REFER TO FILE: WM-7

June 24, 2013

Mr. Samuel Unger, P.E.
Executive Officer
California Regional Water Quality
Control Board – Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Attention Ms. Renee Purdy

Dear Mr. Unger:

LETTER OF INTENT – LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
LOS ANGELES RIVER UPPER REACH 2 SUB WATERSHED
WATERSHED MANAGEMENT PROGRAM
AND COORDINATED INTEGRATED MONITORING PROGRAM

The Los Angeles County Flood Control District (LACFCD) submits this Letter of Intent to participate in and share the cost of the development of a Watershed Management Program (WMP) and a Coordinated Integrated Monitoring Program (CIMP) with the Los Angeles River Upper Reach 2 Sub Watershed Group. This Letter of Intent serves to satisfy the WMP notification requirements of Section VI.C.4.b. of Order No. R4-2012-0175 (Municipal Separate Storm Sewer System Permit) and the CIMP requirements of Section IV.C.1 of Attachment E of the Municipal Separate Storm Sewer System Permit.

The Los Angeles River Upper Reach 2 Sub Watershed Group consists of the following agencies: LACFCD and cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. The LACFCD intends to submit a final Memorandum of Understanding to the County of Los Angeles Board of Supervisors (which is the LACFCD's governing body) for approval prior to December 28, 2013.

If you have any questions, please contact Ms. Terri Grant at (626) 458-4309 or tgrant@dpw.lacounty.gov.

Very truly yours,

for GAIL FARBER
Chief Engineer of the Los Angeles County Flood Control District

TA:jht
P:\wmpub\Secretarial\2013 Documents\Letter\LOI LAR UR2 LACFCD.doc\C13230

cc: City of Bell
City of Bell Gardens
City of Commerce
City of Cudahy
City of Huntington Park
City of Maywood
City of Vernon

Watershed Permittee Contact List

Permittee	*Contact*	*Contact Mailing Address*	*Contact Telephone and Email Address*
City of Bell	Young Park Terry Rodrigue	6330 Pine Ave. Bell, CA 90201	(323) 588-6211 Ext 228 ypark@cityofbell.org trodrigue@cityofbell.org
City of Bell Gardens	Chau Vu	7100 Garfield Ave. Bell Gardens, CA 90201	(562) 334-1790 cvu@bellgardens.org
City of Commerce	Gina Nila Environmental Services Manager	2535 Commerce Way Commerce, CA 90040	(323) 722-4805, ext. 2839 ginan@ci.commerce.ca.us
City of Cudahy	Aaron Hernandez-Torres Assistant City Engineer	5220 Santa Ana St. Cudahy, CA 90201	(323) 773-5143 ahernandez@cityofcudayca.gov
City of Huntington Park	James A. Enriquez Director of Public Works/City Engineer	6550 Miles Ave. Huntington Park, CA 90255	(323) 584-6253 jenriquez@huntingtonpark.org
City of Maywood	Andre Dupret	4319 E. Slauson Ave. Maywood, CA 90270	(323) 562-5700 andre.dupret@cityofmaywood.org
City of Vernon	Samuel Kevin Wilson, P.E. Director of Community Services & Water Claudia Arellano Project Engineer	4305 Santa Fe Ave. Vernon, CA 90058	(323) 583-8811, ext. 245 kwilson@ci.vernon.ca.us (323) 583-8811, ext. 258 carellano@ci.vernon.ca.us
LACFCD	Gary Hildebrand	900 S. Freemont Ave. Alhambra, CA 91803	(626) 458-4300 ghildeb@dpw.lacounty.gov

Appendix B

September 25, 2013, Approval of NOIU to Develop WMP Letter

September 25, 2013

Los Angeles River Upper Reach 2 Sub-watershed Management Group
(See Distribution List)

APPROVAL OF NOTIFICATION OF INTENT (NOI) TO DEVELOP A WATERSHED MANAGEMENT PROGRAM (WMP), PURSUANT TO THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear Los Angeles River Upper Reach 2 Sub-watershed Management Group Participants:

Regional Board staff received and reviewed the NOI to prepare a WMP that the Los Angeles River Upper Reach 2 Sub-watershed Management Group submitted to the Regional Board on June 27, 2013. According to the NOI, the participants in the Los Angeles River Upper Reach 2 Sub-watershed Management Group are the Los Angeles County Flood Control District, and the Cities of Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon. Upon review, Regional Board staff determined the NOI meets the notification requirements of Part VI.C of Order No. R4-2012-0175, *Waste Discharge Requirements for MS4 Discharges within the Coastal Watersheds of Los Angeles County, except those Discharges Originating from the City of Long Beach* (hereafter, Order).

As you are aware, the Order allows permittees the option to submit to the Regional Board for approval an NOI to prepare a WMP. Preparing a WMP allows permittees to implement the requirements of the Order on a watershed scale through customized strategies, control measures, and best management practices (BMPs). Implementing a WMP allows permittees to address the highest watershed priorities, including complying with the requirements of Part V.A (Receiving Water Limitations), Part VI.E (Total Maximum Daily Load Provisions) and Attachments L through R, by customizing the control measures in Parts III.A (Prohibitions – Non-Storm Water Discharges) and VI.D (Minimum Control Measures) of the Order.

The Los Angeles River Upper Reach 2 Sub-watershed Management Group must submit to the Regional Board for review and approval a draft WMP for the Los Angeles River Upper Reach 2 Sub-watershed no later than June 28, 2014. Until Regional Board staff approves the Los Angeles River Upper Reach 2 Sub-watershed Management Group

WMP, each Los Angeles River Upper Reach 2 Sub-watershed Management Group participant must do the following:

1. Continue to implement all the watershed control measures in their corresponding storm water management programs, including actions within each of the six categories of minimum control measures consistent with Title 40 Code of Federal Regulations Section 122.26(d)(2)(iv) and Part VI.C.4.d.i of the Order.
2. Continue to implement watershed control measures to eliminate non-storm water discharges through the MS4 that are a source of pollutants to receiving waters consistent with Clean Water Act Section 402(p)(3)(B)(ii) and Part VI.C.4.d.ii of the Order.
3. Implement watershed control measures, including those identified in existing TMDL implementation plans, to ensure MS4 discharges achieve compliance with interim and final trash WQBELs and all other final WQBELs and receiving water limitations pursuant to Part VI.E and set forth in Attachments L through Q by the applicable compliance deadlines occurring prior to approval of the WMP per Part VI.C.4.d.iii of the Order.
4. Target implementation of watershed control measures listed above to address known contributions of pollutants from MS4 discharges to receiving waters.
5. Meet all interim and final deadlines for development of a WMP.

If you have any questions, please contact Ms. Pavlova Vitale of the Storm Water Permitting Unit by electronic mail at Pavlova.Vitale@waterboards.ca.gov or by phone at (213) 576-6761. Alternatively, you may also contact Mr. Ivar Ridgeway, Chief of the Storm Water Permitting Unit, by electronic mail at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

cc: Young Park, City of Bell
Chau Vu, City of Bell Gardens
Gina Nila, City of Commerce
Aaron Herandez-Torres, City of Cudahy
James Enriquez, City of Huntington Park
Andre Dupret, City of Maywood
Samuel Kevin Wilson, City of Vernon
Gary Hildebrand, Los Angeles County Flood Control District
Dave Smith, US EPA
Walt Shannon, State Water Resources Control Board – Storm Water Section
Jennifer Fordyce, State Water Resources Control Board – Office of Chief Counsel

ECM#

Distribution List for the Los Angeles River Upper Reach 2 Sub-watershed Management Group

1. Doug Wilmore, City Manager
   City of Bell
   6330 Pine Avenue
   Bell, CA 90201

2. Philip Wagner, City Manager
   City of Bell Gardens
   7100 Garfield Avenue
   Bell Gardens, CA 90201

3. Jorge Rifa, City Administrator
   City of Commerce
   2535 Commerce Way
   Commerce, CA 90040

4. Hector Rodriguez, City Manager
   City of Cudahy
   5220 Santa Ana Street
   Cudahy, CA 90201

5. Renee Bobadilla, City Manager
   City of Huntington Park
   6550 Miles Avenue
   Huntington Park, CA 90255

6. Lilian Myers, City Manager
   City of Maywood
   4319 East Slauson Avenue
   Maywood, CA 90270

7. Kevin Wilson, Director of Community Services and Water
   City of Vernon
   4305 Santa Fe Avenue
   Vernon, CA 90058

8. Gail Farber, Chief Engineer
   Los Angeles County Flood Control District
   900 South Freemont Avenue
   Alhambra, CA 91803

Appendix C

MS4 Permit LAR Watershed TMDL Water Quality Objectives

This Appendix outlines the Water Quality-Based Effluent Limitations (WQBELs) and Receiving Water Limitations (RWLs) identified in Attachment O of the MS4 Permit. The following Total Maximum Daily Loads (TMDLs) are applicable to the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA):

- Los Angeles River Trash TMDL
- Los Angeles River Nitrogen Compounds and Related Effects TMDL
- Los Angeles River and Tributaries Metals TMDL
- Los Angeles River Watershed Bacteria TMDL

LAR Watershed Trash TMDL

The litigation and implementation history of the Los Angeles River Watershed Trash TMDL is complex, however the current TMDL was adopted by the Los Angeles Regional Water Quality Control Board (LARWQCB) as Resolution 2007-012, which became effective on September 23, 2008. Simplistically, TMDL compliance is assessed based on Daily Generation Rate (DGR) studies, the remainder of the catchment not protected by Full Capture Certified Devices (FCCDs), or a combination of both metrics. **Table C-1** and **Table C-2** list (in gallons and pounds) interim and final DGR estimated residual WQBELs from Attachment O Part A.3 of the MS4 Permit, while the allowable remainder of the catchment unprotected by FCCDs is identified in parentheses within the table header rows.

Table C-1 LAR Watershed Trash TMDL Effluent Limitations per Storm Year (gal of uncompressed trash)

Permittees	Baseline	2012 (30%)	2013 (20%)	2014 (10%)	2015 (3.3%)	2016 (0%)
Bell	16026	4808	3205	1603	529	0
Bell Gardens	13500	4050	2700	1350	446	0
Commerce	58733	17620	11747	5873	1938	0
Cudahy	5935	1781	1187	594	196	0
Huntington Park	19159	5748	3832	1916	632	0
Maywood	6129	1839	1226	613	202	0
Vernon	47203	14161	9441	4720	1558	0

Table C-2 LAR Watershed Trash TMDL Effluent Limitations per Storm Year (lbs of drip dry trash)

Permittees	Baseline	2012 (30%)	2013 (20%)	2014 (10%)	2015 (3.3%)	2016 (0%)
Bell	25337	7601	5067	2534	836	0
Bell Gardens	23371	7011	4674	2337	771	0
Commerce	85481	25644	17096	8548	2821	0
Cudahy	10061	3018	2012	1006	332	0
Huntington Park	30929	9279	6186	3093	1021	0
Maywood	10549	3165	2110	1055	348	0
Vernon	66814	20044	13363	6681	2205	0

The final WQBEL of zero trash discharged, or catchment area unprotected, is to be achieved for the 2016 storm year that begins on October 1, 2015 and ends on September 30, 2016. During the current period from October 1, 2013 to September 30, 2014, 90% of the baseline study trash volume or weight must be

captured based on DGR study analysis and only 10% estimated to have been discharged. Alternatively, 90% of a Permittee catchment may be protected by FCCDs, leaving 10% unprotected.

LAR Nitrogen Compounds and Related Effects TMDL

The LAR Nitrogen TMDL was adopted by the LARWQCB as Resolution 2003-009 and became effective on March 23, 2004. Site Specific Objectives (SSOs) for ammonia were approved by the State Water Resources Control (SWRCB) Board on June 4, 2013. This TMDL has been primarily addressed by Publically Owned Treatment Works (POTWs), or Water Recovery Plants (WRPs), and MS4 Permittee discharges do not appear to cause or contribute to the exceedance of the applicable RWLs. **Table C-3** lists the currently effective TMDL WQBELs, as identified in Attachment O, Part B.2 of the MS4 Permit, which the LAR UR2 WMA Permittee discharges would be expected to comply with as assessed through the Coordinated Integrated Monitoring Program (CIMP).

Table C-3 LAR Nitrogen Compounds and Related Effects TMDL Final WQBELs

Water Body	NH_3-N (mg/L)		NO_3-N (mg/L)	NO_2-N (mg/L)	NO_3-N+NO_2-N (mg/L)
	One-hour Average	Thirty-day Average	Thirty-day Average	Thirty-day Average	Thirty-day Average
LAR below LAG	8.7	2.4	8.0	1.0	8.0
Rio Hondo Reach 1 and 2	10.1	2.3	8.0	1.0	8.0

LAG = Los Angeles-Glendale WRP

LAR and Tributaries Metals TMDL

The litigation and implementation history of the LAR and Tributaries Metals TMDL is complex, however the current TMDL was adopted by the LARWQCB as Resolution 2007-014 and became effective on October 29, 2008. The TMDL assesses compliance based on the load or concentration of several metals in comparison to the California Toxic Rule (CTR) values, during dry- and wet-weather conditions. Dry-weather is defined as days when the maximum daily flow in the Los Angeles River is less than 500 cubic feet per second (cfs) as measured at the Wardlow Street gauge station in Long Beach. Since metal toxicity is correlated to bioavailability, which is higher for dissolved metals, and decreases in the presence of competing cations, as assessed by water hardness, the permit and TMDL WQBEL values were determined using total to dissolved “translator” values, prepared by the USEPA, weather, and water body specific hardness data, which results in relatively significant variability in WQBELs among the various water body and weather combinations. Furthermore, local water characteristics, such as organic content, may result in Water Effect Ratios (WERs) and SSOs that alter the preliminary toxicity assessment used in developing a TMDL and may change the final numeric WQBELs.

Table C-4 through **Table C-7** list the "final" WQBELs that may be of importance to the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA), subject to any future basin plan amendments, established by the LAR and Tributaries Metals TMDL and identified in Attachment O Parts C.2 and C.3 of the MS4 Permit. **Table C-4** lists the grouped (shared) dry-weather final WQBELs, expressed as total recoverable metals daily loads. Dry-weather flows in Rio Hondo Reach 1, have normally been much lower than the TMDL estimate of 0.5 cfs, however TMDL watershed compliance has generally been first assessed based on concentration, rather than load.

Table C-4 LAR Metals TMDL Dry-Weather Final WQBELs Expressed as Total Recoverable Metals			
Water Body	**Effluent Limitations Daily Maximum (kg/day)**		
	Copper	**Lead**	**Zinc**
LAR Reach 2	WER[1] x 0.13	WER[1] x 0.07	--
LAR Reach 1	WER[1] x 0.14	WER[1] x 0.07	--
Rio Hondo Reach 1	WER[1] x 0.01	WER[1] x 0.006	WER[1] x 0.16

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved via the Basin Plan Amendment process

Concentration based dry-weather WQBEL that may be of importance to the RH/SGRWQG are summarized in **Table C-5**.

Table C-5 LAR Metals TMDL Concentration Based Dry-Weather Final WQBELs Expressed as Total Recoverable Metals			
Water Body	**Effluent Limitations Daily Maximum (µg)**		
	Copper	**Lead**	**Zinc**
LAR Reach 2	WER[1] x 22	WER[1] x 11	--
LAR Reach 1	WER[1] x 23	WER[1] x 12	--
Rio Hondo Reach 1	WER[1] x 13	WER[1] x 5.0	WER[1] x 131

[1] WER(s) have a default value of 1.0 unless site-specific WER(s) are approved via the Basin Plan Amendment process

Load and approximate concentration based wet-weather WQBELs that are applicable to the LAR UR2 WMA are summarized in **Table C-6**. Since the TMDL includes both Waste Loads (WLs) and WLAs, and multiple discharge groups, the WQBEL concentration for MS4 Permittees varies with the volume of runoff measured at Wardlow Street, but the rightmost column is a serviceable first order estimate.

Table C-6 LAR Metals TMDL Wet-Weather Final WQBEL Expressed as Total Recoverable Metals		
Constituent	**Effluent Limitations Daily Maximum (kg/day)**	**Approximate Effluent Limitation (µg/L)**
Cadmium	WER[1] x 2.8 x 10^{-9} x daily volume (L) - 1.8	WER[1] x 2.8
Copper	WER[1] x 1.5 x 10^{-8} x daily volume (L) - 9.5	WER[1] x 15
Lead	WER[1] x 5.6 x 10^{-8} x daily volume (L) - 3.85	WER[1] x 56
Zinc	WER[1] x 1.4 x 10^{-7} x daily volume (L) - 83	WER[1] x 140

Table C-7 outlines the interim and final Metals TMDL WQBELs schedule which Permittees are expected to comply with through the EWMP and RAA development process. The LAR UR2 WMA affected by this TMDL is located within Jurisdictional Group 2, thus it should be noted that the June 29, 2012 Implementation Study, funded by the Permittees, identified Watershed Control Measures to achieve the interim and final WQBELs. Among the more important measures was State Senate Bill 346, chaptered in September 2010, which called for phased elimination of copper from automotive friction (brake) pads. A similar effort to reduce the zinc content in automotive tires has also been initiated, but is many years from being chaptered.

Table C-7 LAR Metals TMDL Schedule of Interim and Final WQBELs		
Deadline	**Total Drainage Area Served by the MS4 required to meet the water quality-based effluent limitations (%)**	
	Dry-Weather	**Wet-Weather**
January 11, 2012	50	25
January 11, 2020	75	-
January 11, 2024	100	50
January 11, 2028	100	100

Along with most other LAR Watershed municipalities, the LAR UR2 WMA Permittees supported a study to develop Copper WER and Lead Recalculation SSOs that will become effective after approved by the LARWQCB as Basin Plan Amendments. The draft study reports suggest that for copper, in both dry- and wet-weather, a final WER of 3.971 for LAR Reaches 1 and 2 and 9.691 for the Rio Hondo should be adopted. The lead recalculation study suggest that during dry-weather the WQBELs for LAR Reach 1 should increase from 12 to 102 µg/L for LAR Reach 1, increase from 11 to 94 µg/L for LAR Reach 2, and rise from 5 to 37 µg/L for the Rio Hondo. In wet-weather, the lead WQBEL should increase from 62 to 94 µg/L in all of these water bodies. Favorable translators between total and dissolved metal concentrations were also determined by these studies, but are not explicitly referenced in the MS4 Permit so their eventual impact is unclear at this time. As a result of these studies and legislative efforts, the LAR Metals TMDL has probably moved from a regional to specific outfall priority.

LAR Watershed Bacteria TMDL

The LAR Watershed Bacteria TMDL was adopted by the LARWQCB as Resolution 2010-007 and became effective on March 23, 2012. As expressed in Attachment O Part D4 of the MS4 Permit, this TMDL is very complex with multiple implementation phases, river segments that do not coincide with reaches, wet and dry compliance schedules, WLAs expressed as both WQBELs and RWLs, complex analytical methods, and requires the development with submission of Segment Specific Load Reduction Strategies (LRS). In addition, studies indicate that there are significant natural sources including endogenous replication of the "pollutant." **Table C-8** through **Table B-12** summarize the final WQBELs and RWLs that may be of importance to the LAR UR2 WMA.

Table C-8 LAR Bacteria TMDL WQBEL		
Constituent	**Effluent Limitation (MPN or cfu)**	
	Daily Maximum	**Geometric Mean**
E. coli	235/100 mL	126/100 mL

Table C-9 summaries the "grouped interim dry-weather single sample bacteria WQBEL for the specific river segment and tributaries," that may be of importance to the LAR UR2 WMA. While the Rio Hondo watershed area is approximately half of the total Segment B catchment area and would be expected to generate comparable discharge volumes during dry- and wet-weather, the WQBEL differs by over 250 fold. This is a result of the latter being based on the flow of water, mostly discharged from wastewater treatment plants, into the reach, while the Rio Hondo is primarily a headwater catchment. The interim dry-weather WQBELs are group-based and shared among the Permittees within a drainage area; however, alternatively they may be distributed based on proportion of drainage area, upon approval of the Regional Board Executive Officer. It is currently unclear how compliance with the LAR Bacteria TMDL will be assessed.

Table C-9 LAR Bacteria TMDL Grouped Interim Dry-Weather Single Sample Bacteria WQBEL			
River Segment of Tributary	**Daily Maximum *E. coli* Load (10^9 MPN/day)**	**First Phase Compliance Date**	**Second Phase Compliance Date**
LAR Segment A (Willow to Rosecrans)	301	March 23, 2024	September 23, 2031
LAR Segment B (Rosecrans to Figueroa)	518	March 23, 2022	September 23 2028
Rio Hondo	2	September 23, 2023	March 23, 2030

In addition to WQBELs for MS4 discharges, the LAR Bacteria TMDL includes a RWL that is attributable to all MS4 Permittees, including the City of Long Beach and Caltrans. This RWL is assessed as a limit on the number of days, or weeks, per year, where the RWLs are not achieved. The final compliance dates, for the annually assessed grouped single sample bacteria RWLs, are March 23, 2022 for dry-weather and March 23, 2037 for wet-weather. These requirements can be found in **Table C-10**, while the numeric water quality objective is shown on **Table C-11**.

Table C-10 LAR Bacteria TMDL Grouped Final Single Sample Bacteria RWLs		
Time Period	**Annual Allowable Exceedance Days of the Single Sample Objective (days)**	
	Daily Sampling	**Weekly Sampling**
Dry-Weather	5	1
Non-HFS[1] Waterbodies Wet-Weather	15	2
HFS[1] Waterbodies Wet-Weather	10 (not including HFS days)	2 (not including HFS days)

[1] HFS stands for high flow suspension as defined in Chapter 2 of the Basin Plan

Table C-11 LAR Bacteria TMDL Geometric Mean RWL	
Constituent	**Geometric Mean (MPN or cfu)**
E. coli	126/100 mL

The distinction that these water quality objectives are expressed annually may be important, as MS4 Permit Part VI.A.13.g states that for some WQBELs that are expressed as annual effluent limitations, such as those for trash, violations may only be assessed annually; however Part VI.C.1.d.(i) states that EWMPs must "achieve applicable WQBELs in Part VI.E and Attachments L through R pursuant to the corresponding compliance schedules." It is unclear why an annually assessed WQBEL is substantially and inherently different than an annually assessed RWL, although this question is likely to be resolved long before the dry-weather final compliance schedule is reached.

Appendix D

Summary of Existing Water Quality Studies Relevant to LAR UR2 WMA

This Appendix summarizes the existing water quality studies relevant to the Los Angeles River Upper Reach 2 Watershed Management Area (LAR UR2 WMA), including:

- Los Angeles County Annual Mass Emission and Tributary Station Monitoring Data (2002 – 2012);
- Los Angeles River Metals TMDL Coordinated Monitoring Plan (CMP) Ambient Monitoring Program (2008 – 2013);
- Council for Watershed Health (CWH) Los Angeles River Watershed Monitoring Program (LARWMP) data (2009 – 2012); and
- Cleaner Rivers through Effective Stakeholder-led TMDLs (CREST) Los Angeles River Bacteria Source Identification (BSI) Study.

Los Angeles County Annual Stormwater Monitoring Reports (2002-2012)

The Los Angeles County Department of Public Work Annual Stormwater Monitoring Report (LACDPW SMR) presents stormwater quality findings for each July to June storm season. The 2002–2003, 2003–2004, 2005–2006, 2006–2007, 2007–2008, 2008–2009, 2009–2010, 2010-2011, and 2011-2012 monitoring reports addressed the following programs and associated elements:

- Core Monitoring Program – mass emission, tributary, water column toxicity, shoreline, and trash monitoring.
- Regional Monitoring Program – estuary sampling and bioassessment.
- Special studies – New Development Impacts Study in the Santa Clara Watershed, Peak Discharge Impact Study and BMP Effectiveness Study.

Attachment 1, Figure 1 shows the LA River (S10) Core Monitoring program, mass emission station nearest the LAR UR2 WMA, while **Figure 2** shows the Rio Hondo Channel tributary monitoring station studied during the 2002-2003 and 2003-2004 storm seasons. The S10 station is located at the existing stream gauge station (i.e., Stream Gauge F319-R) between Willow Street and Wardlow Road in the City of Long Beach and was chosen to avoid tidal influences. The Rio Hondo Channel monitoring station is located on Beverly Boulevard, downstream of Whittier Narrows dam, at the USGS – U.S. Army Corps of Engineers (ACOE) Stream gage No. 1102300 or E327-R and upstream of the LAR UR2 WMA.

A minimum of three wet-weather and two dry-weather events were monitored for all sites during each annual storm season. Grab samples were collected and analyzed for conventional pollutants and bacteria during both dry- and wet-weather events. Additionally, composite samples were collected for both dry- and wet-weather events and were analyzed for general minerals, metals, semi-volatiles, chlorinated pesticides, organophosphate pesticides, herbicides, PCBs and TSS. A summary of constituents that did not meet applicable WQOs from 2002 – 2012 is as follows:

LAR (S10):

Dry-Weather – a total of 18 samples.

Cyanide – 13 exceedances with a range of values from 0.022 to 0.109 mg/L,
pH –11 exceedances, all greater than 9.0,
TKN – 3 exceedances ranging from 5.82 to 6.18 mg/L,
Nitrite-N – 6 exceedances with a range of values from 1.093 to 1.6039 mg/L, and
Total Phosphorus as P – a total of 2 exceedances.

Wet-Weather –a total of 40 samples.
Cyanide – 9 exceedances with a range of values from 0.024 to 1.2 mg/L,
Dissolved Oxygen (DO) – 1 exceedance with a value of 2.5 mg/L,
pH – 2 exceedances with measurements below 6.5,
Chemical Oxygen Demand (COD) – 1 exceedance, a values of 578 mg/L,
TKN – 13 exceedances with a range of values from 4.9 to 30.68 mg/L,
Total Phosphorus as P – 7 exceedances, and
Total Suspended Solids (TSS) – 24 exceedances ranging from 276 to 2,280 mg/L.

Rio Hondo Channel (TS06):

Dry-Weather, n = 3
Cyanide –1 exceedance with a value of 0.025 mg/L,
pH - 2 exceedances with one under 6.5 and one over 8.5, and
TKN – 1 exceedance with a value of 7 mg/L.

Wet-Weather, n = 9
Cyanide – 1 exceedance with a 0.043 mg/L,
pH – 1 exceedance under 6.5,
Chloride – 1 exceedance with a value of 759 mg/L,
TKN – 2 exceedances with a value of 7 and 12.8 mg/L, and
TSS – 5 exceedances with a range of values from 266 to 1186 mg/L.

Metals

Figure D-1 through **Figure D-5** show measured metal concentrations, and selected standards, for the 2002 to 2012 storm seasons at the Los Angeles River S10 site. **Figure D-6** through **Figure D-11** show measured metal concentrations, and selected standards for the 2002 to 2012 storm seasons at the Rio Hondo TS06 tributary monitoring site. As expected, exceedances were generally higher in wet-weather and assumption of amended WER and Lead Recalculation SSOs, reduced the prevalence of exceedances.

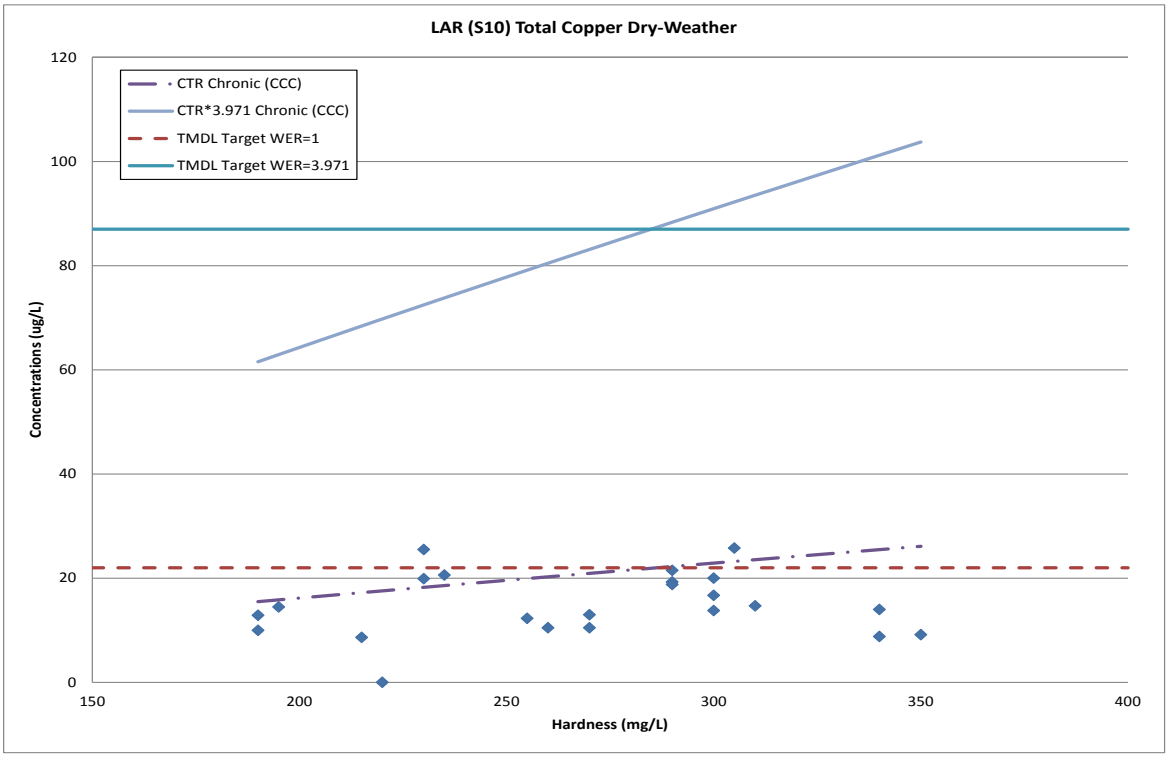

Figure D-1 LAR S10 Total Copper Concentrations Compared to Hardness Monitoring Plot from 2002-2012 storm seasons Dry-Weather

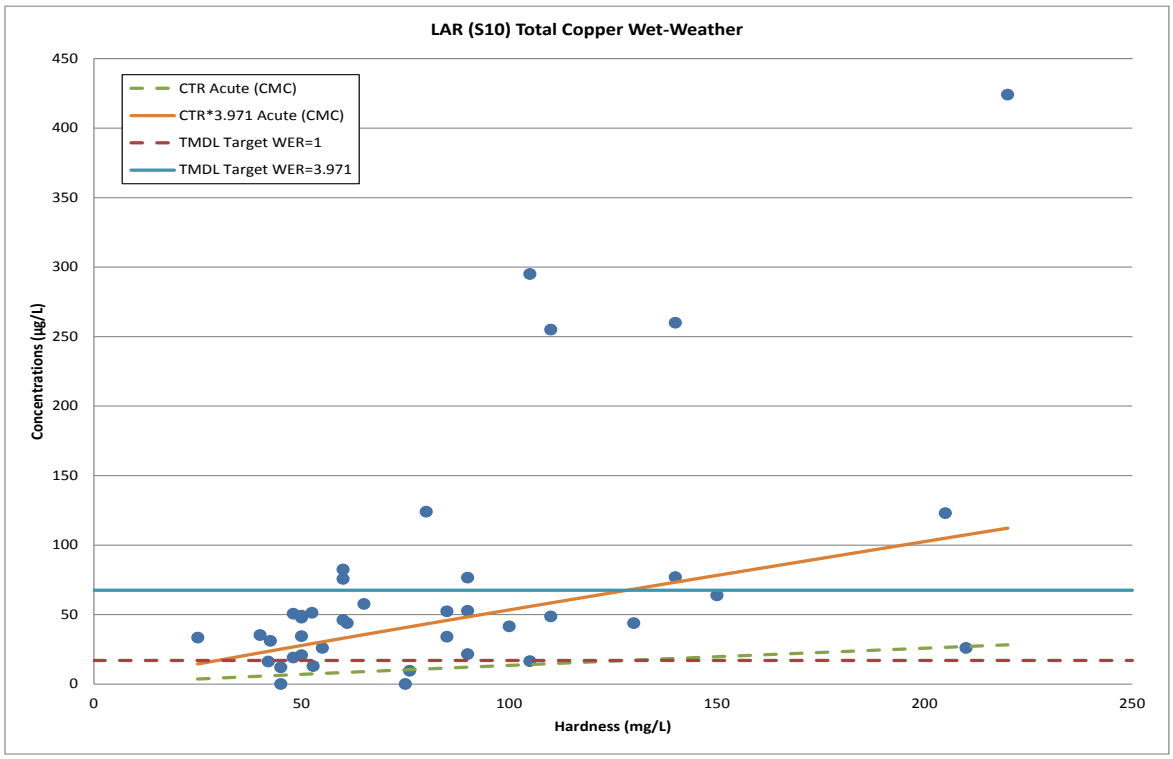

Figure D-2 LAR S10 Total Copper Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

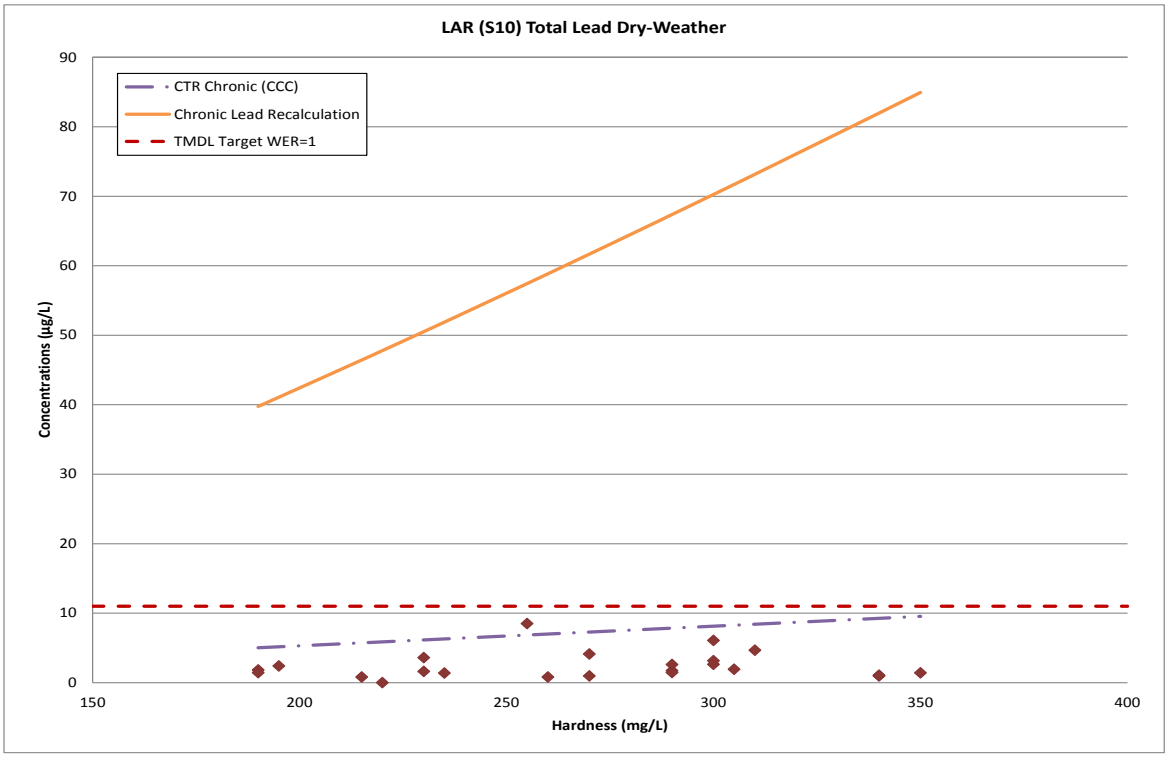

Figure D-3 LAR S10 Total Lead Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Dry-Weather

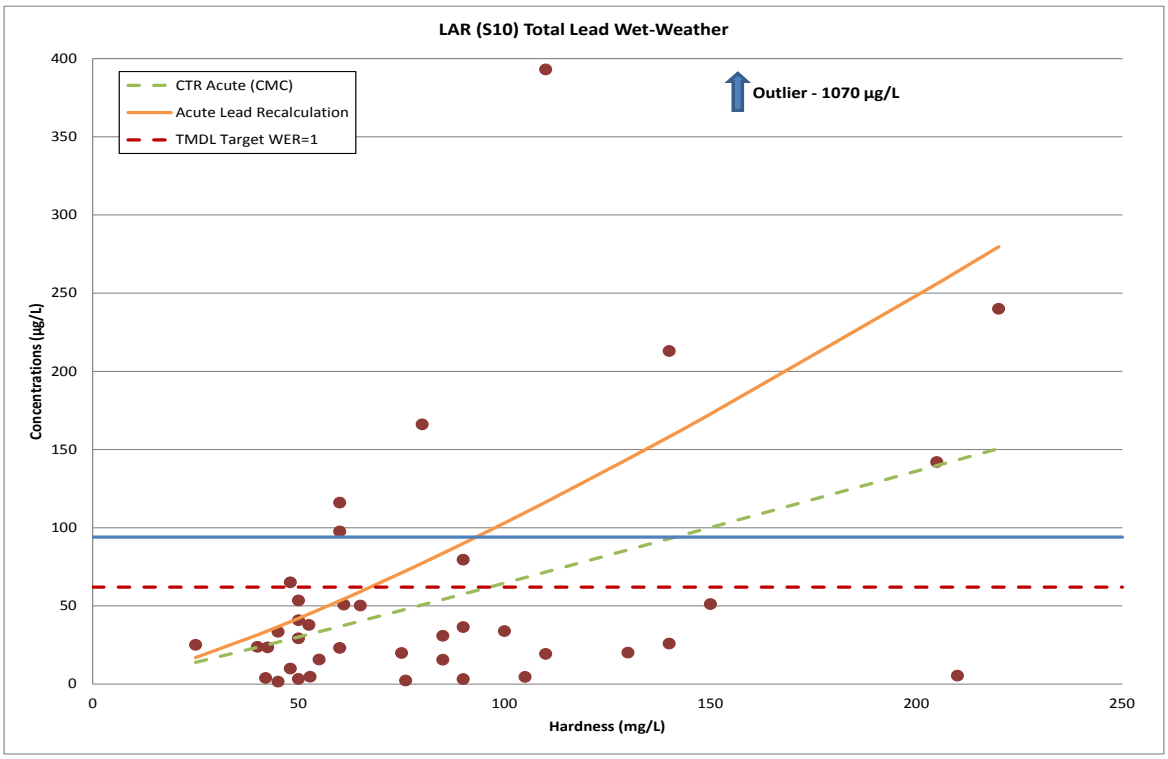

Figure D-4 LAR S10 Total Lead Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

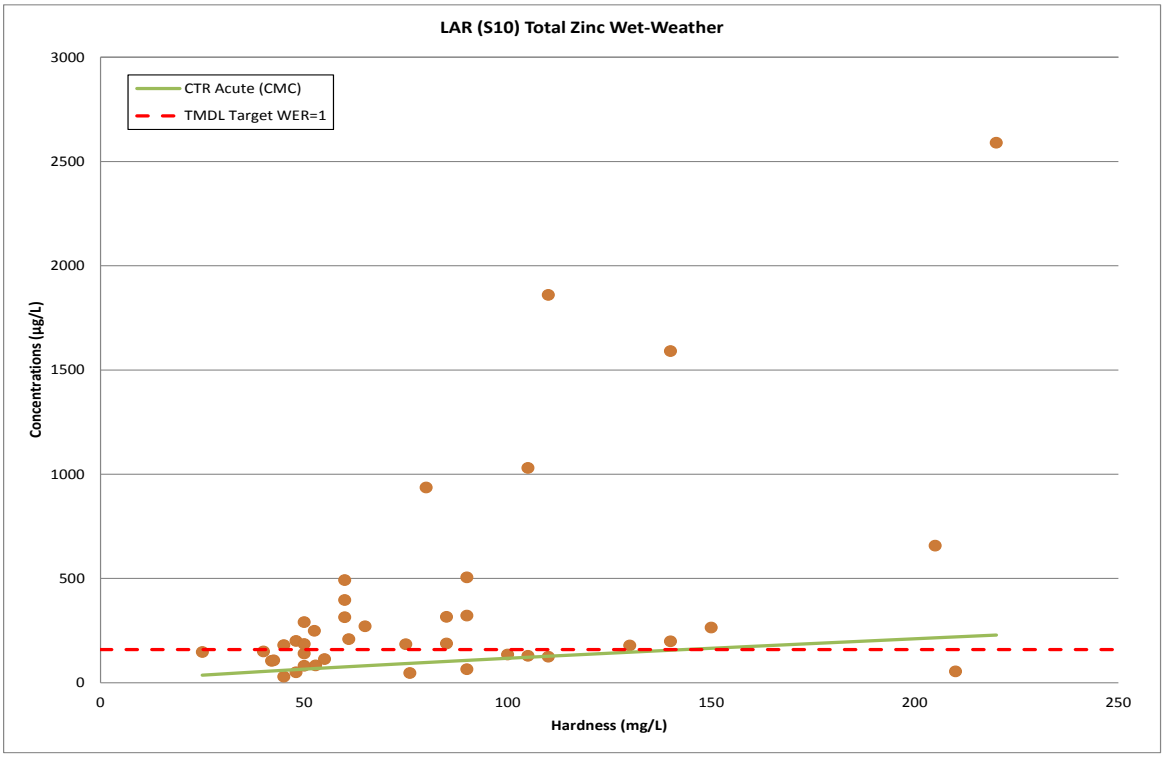

Figure D-5 LAR S10 Total Zinc Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

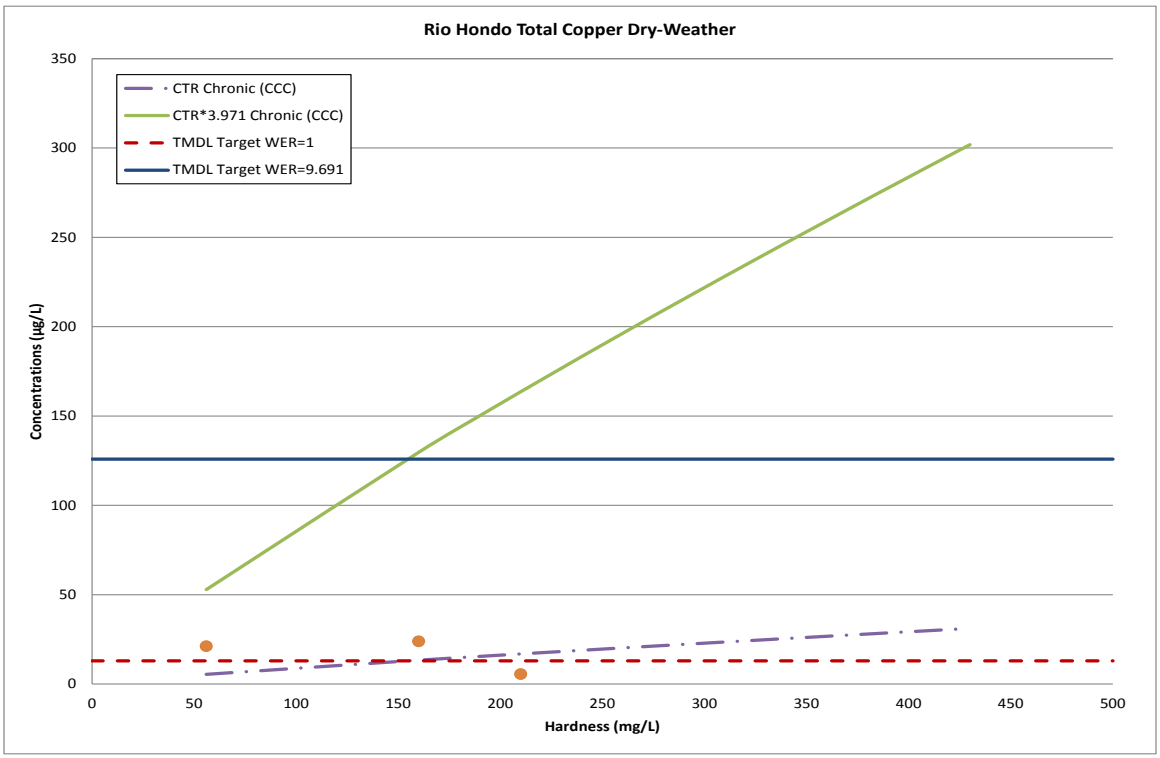

Figure D-6 Rio Hondo Total Copper Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Dry-Weather

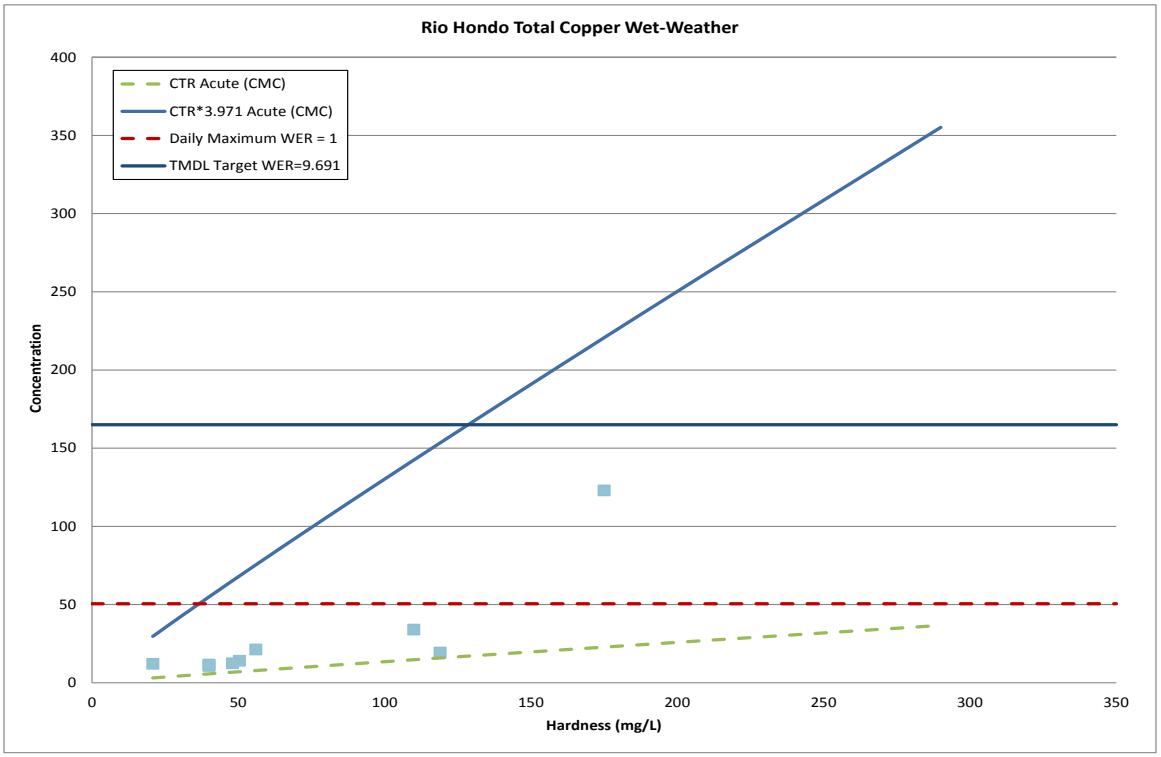

Figure D-7 Rio Hondo Total Copper Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

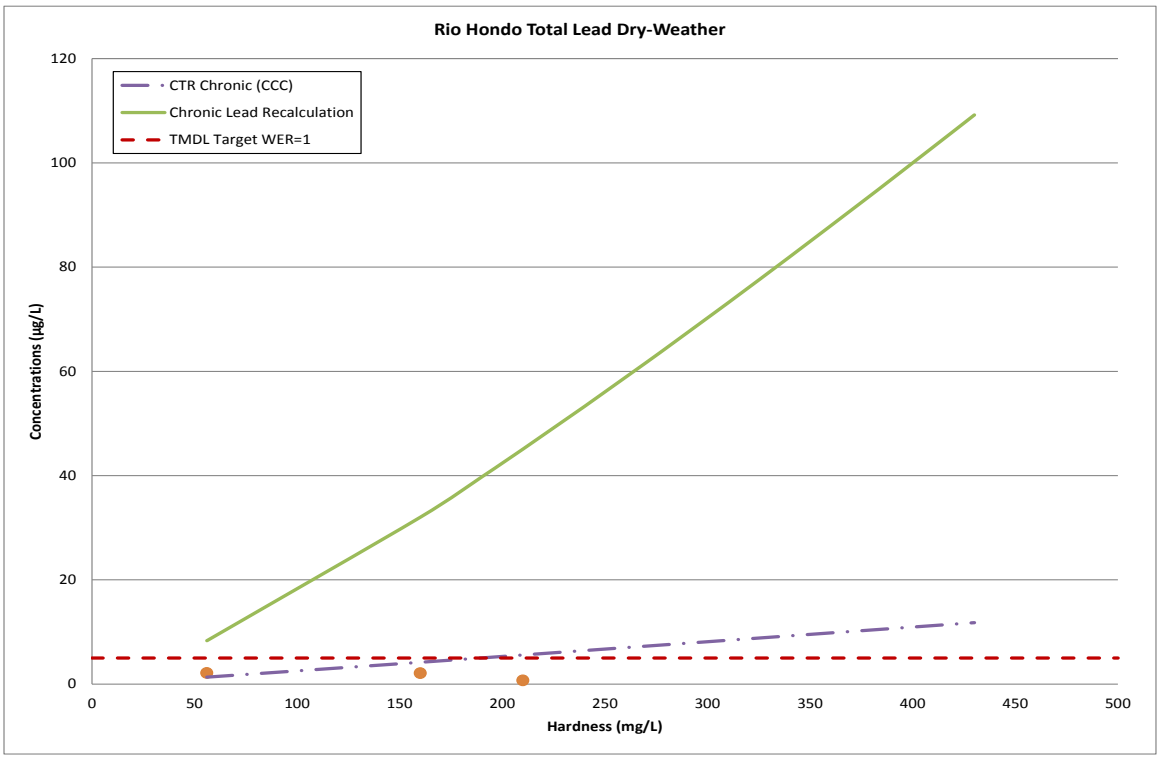

Figure D-8 Rio Hondo Total Lead Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Dry-Weather

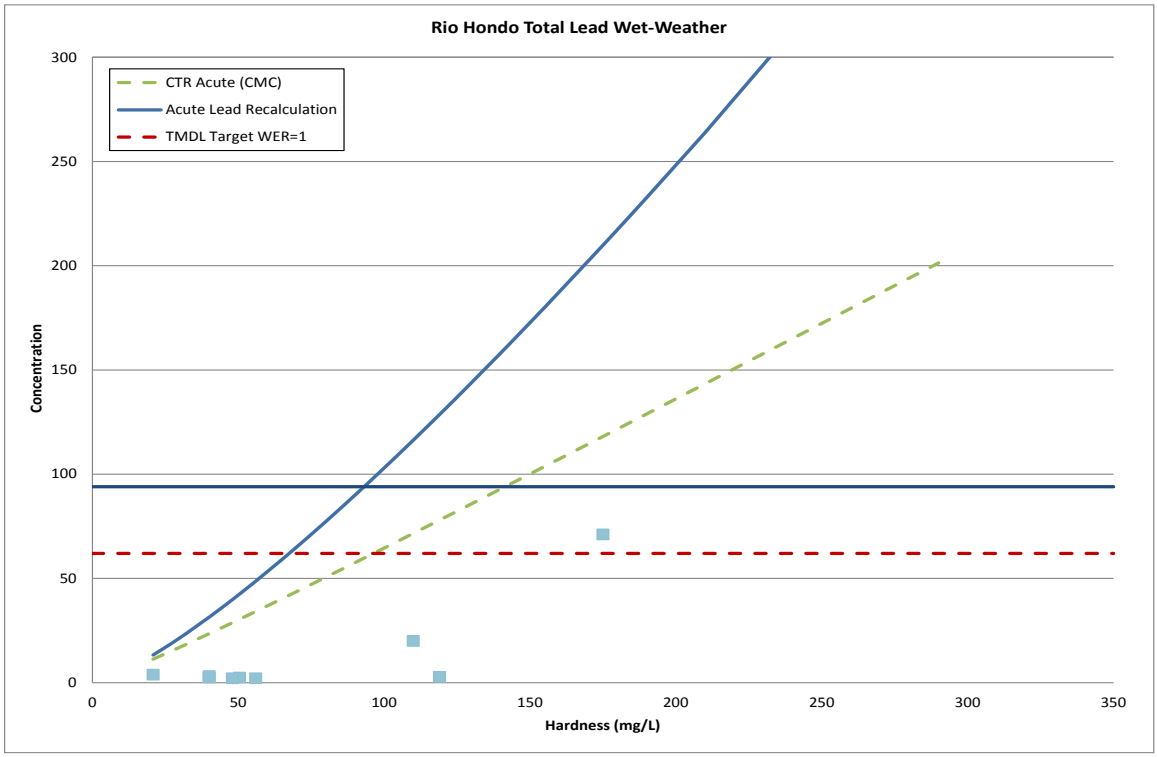

Figure D-9 Rio Hondo Total Lead Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

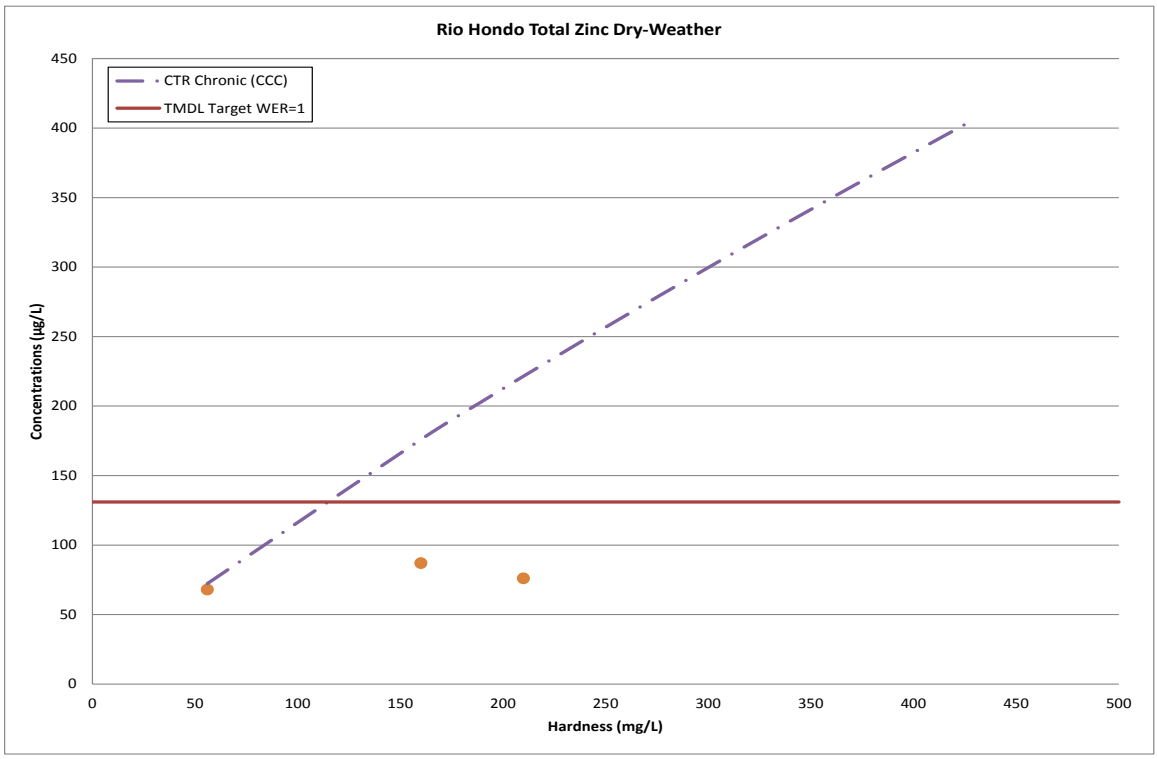

Figure D-10 Rio Hondo Total Zinc Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Dry-Weather

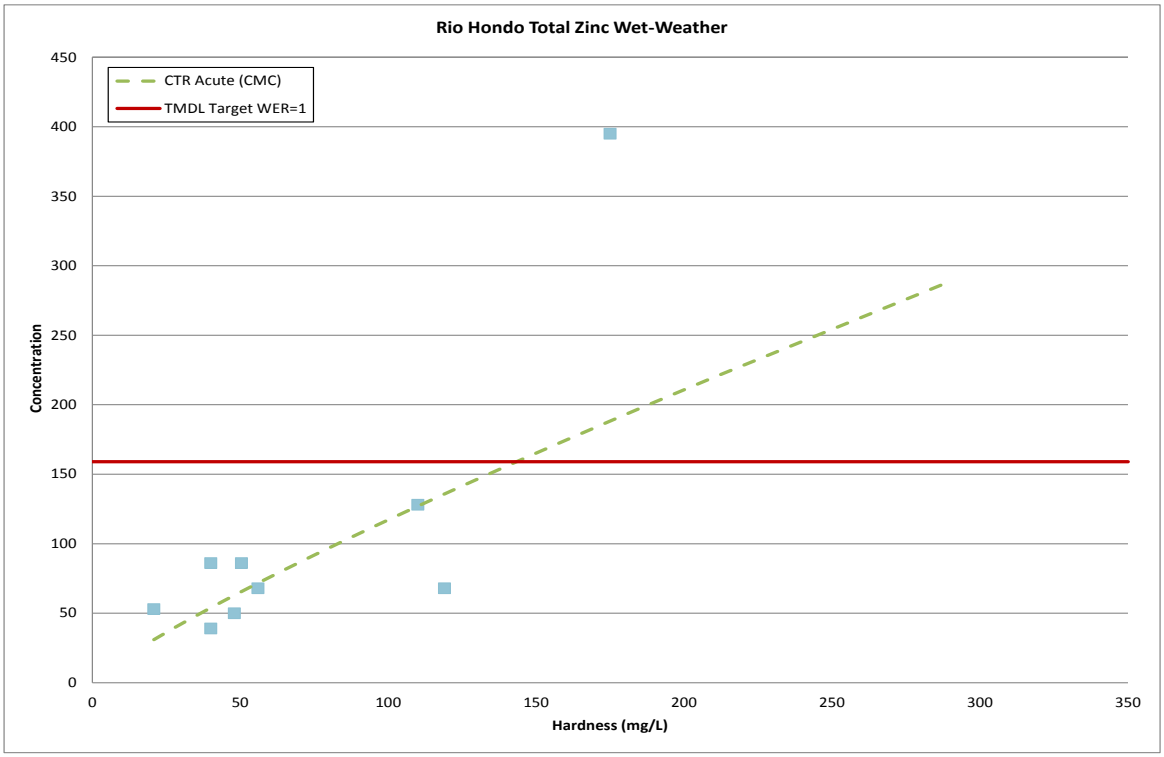

Figure D-11 Rio Hondo Total Zinc Concentrations Compared to Hardness Monitoring Plot from 2002-2012 Storm Seasons - Wet-Weather

Bacteria

Fecal and total coliforms concentrations, for sampling site LAR S10 and the Rio Hondo TS06, have been plotted against time in **Figure D-12** through **Figure D-15**. The Los Angeles River bacteria TMDL *E. coli* wet- and dry-weather effluent limitation daily maximum of 126 MPN/100 mL is shown on each figure. Although not directly comparable, during both dry- and wet-weather events, and for both the LAR S10 and Rio Hondo TS06, fecal and total coliform concentrations consistently did not meet the *E. coli* daily maximum.

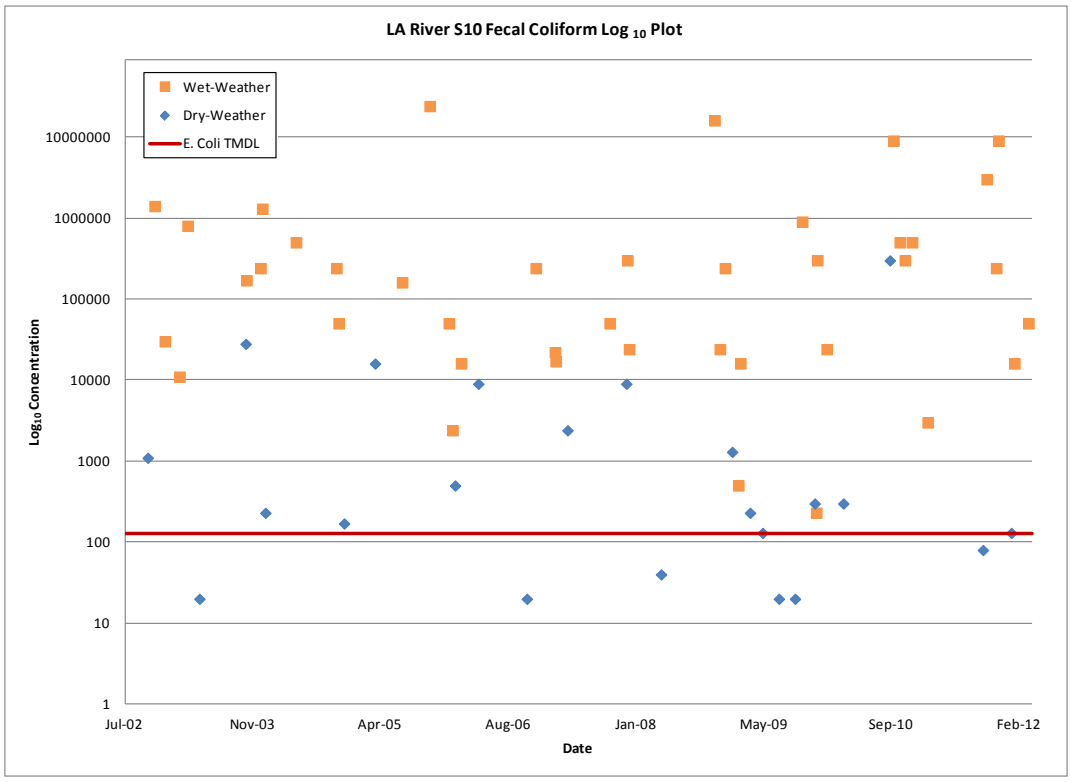

Figure D-12 LAR S10 Fecal Coliform Concentration Plot from 2002-2012 Storm Seasons

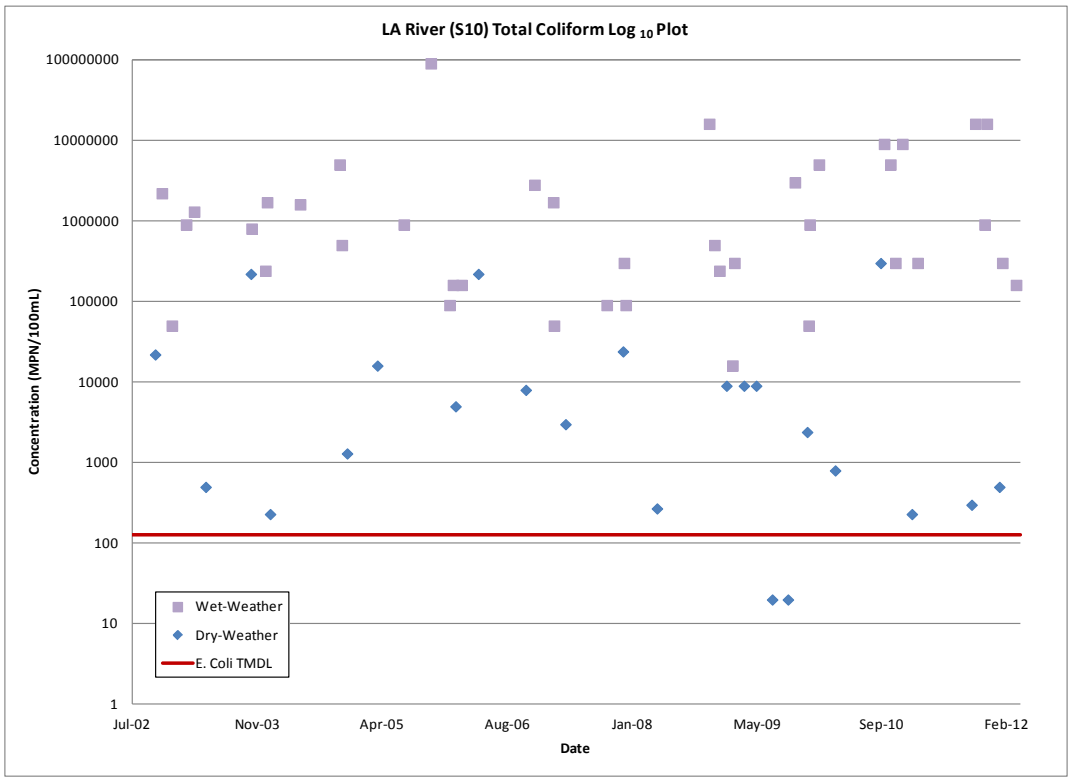

Figure D-13 Total Coliform Concentration Plot from 2002-2012 Storm Seasons

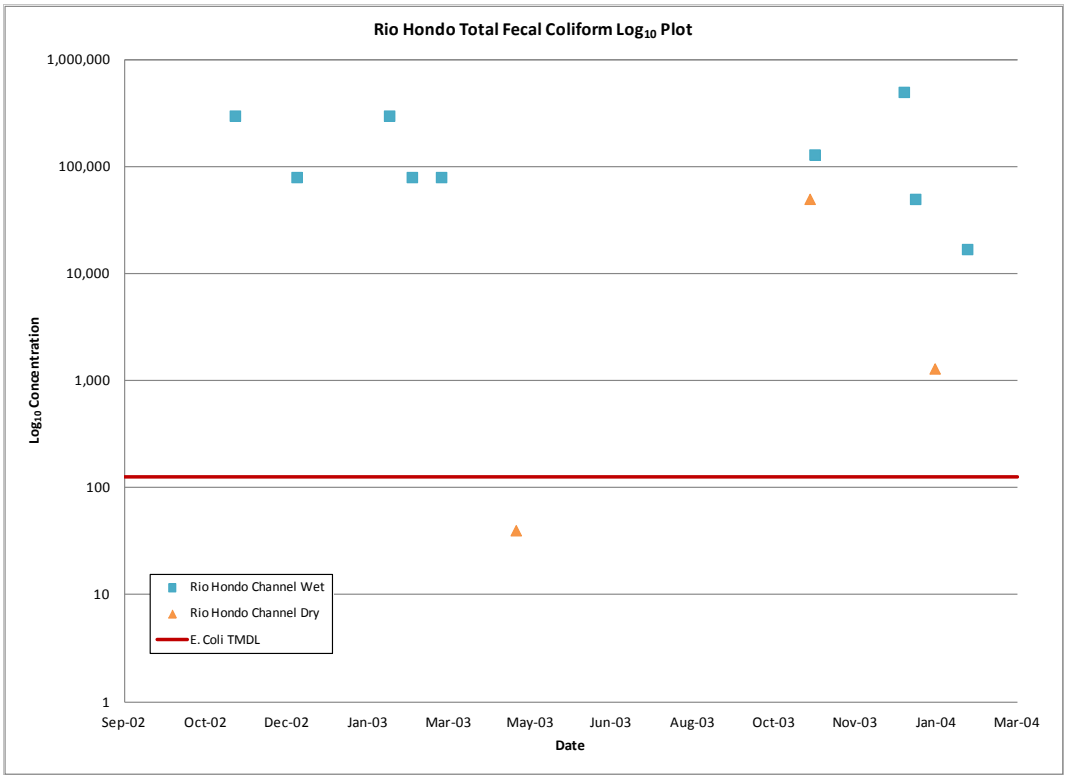

Figure D-14 Rio Hondo Fecal Coliform Concentration Plot form 2002-2012 Storm Seasons

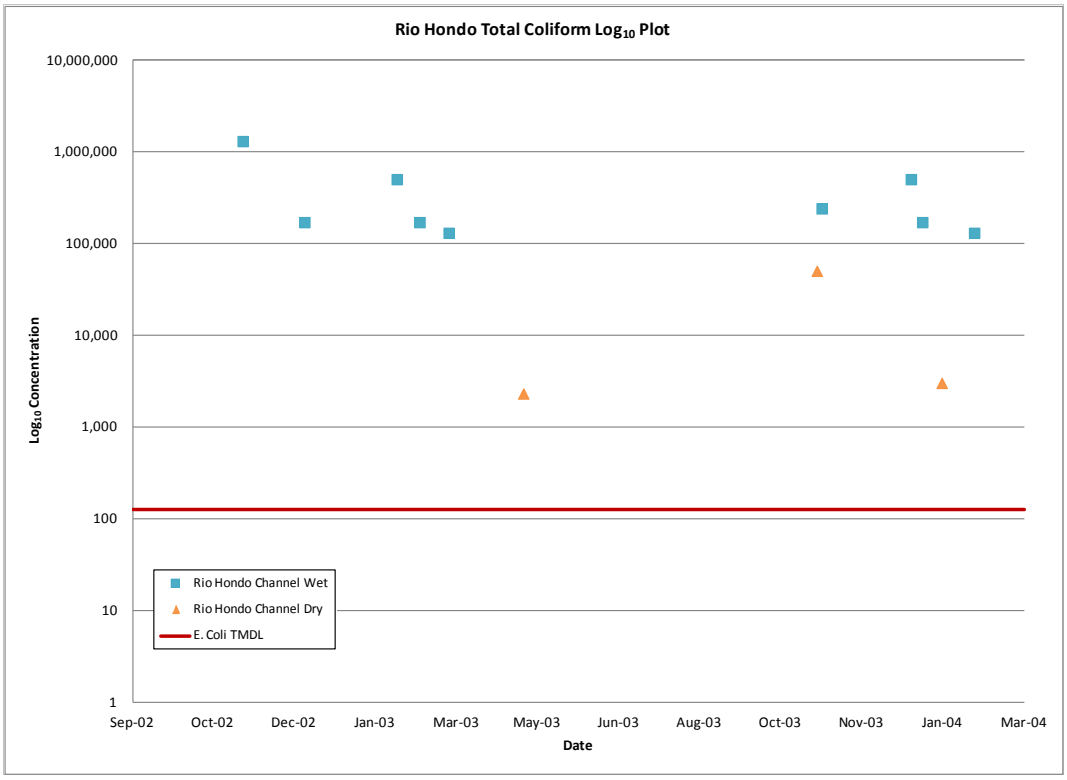

Figure D-15 Rio Hondo Total Coliform Concentration Plot from 2002-2012 Storm Seasons

Los Angeles River Metals TMDL CMP and Ambient Monitoring Submittal (2010-2011, 2011-2012)

At its July 17, 2006 meeting, the Los Angeles River Watershed Management Committee recommended formation of a Los Angeles River Metals TMDL Technical Committee (TC) and tasked the group with preparation of a Coordinated Monitoring Plan (CMP). The CMP includes both ambient (Tier I) and effectiveness monitoring (Tier II). The Tier I ambient monitoring program collects monthly samples at thirteen (13) locations shown in **Attachment 1, Figure 3**. Tier I monitoring site LAR1-8, LAR1-9, and LAR1-10 are located adjacent to the LAR UR2 WMA and the data from these sites would give the LAR UR2 WMA a better understanding of the distribution of metals concentrations in the adjacent WMAs.

Sampling results for CMP ambient monitoring for July 1, 2010 to June 30, 2011 (2010-2011) and July 1, 2011 through June 30, 2012 (2011-2012) was acquired. The 2011-2012 CMP results include submittal for both Ambient (Tier I) and Effectiveness (Tier II) Monitoring. Sampling sites LAR1-8, LAR1-9, and LAR1-10 were not sampled during wet-weather events. **Figure D-16** through **Figure D-19**, show that sampling sites LAR1-8 and LAR1-9 are in compliance of the LA Rivers metals TMDL daily maximums for Reach 2. However, sampling site LAR1-10, with a total of 10 sampling events, had a total of seven exceedances for total copper and three exceedances for total lead. LAR1-10 was compared to the metals TMDL daily maximum for the Rio Hondo.

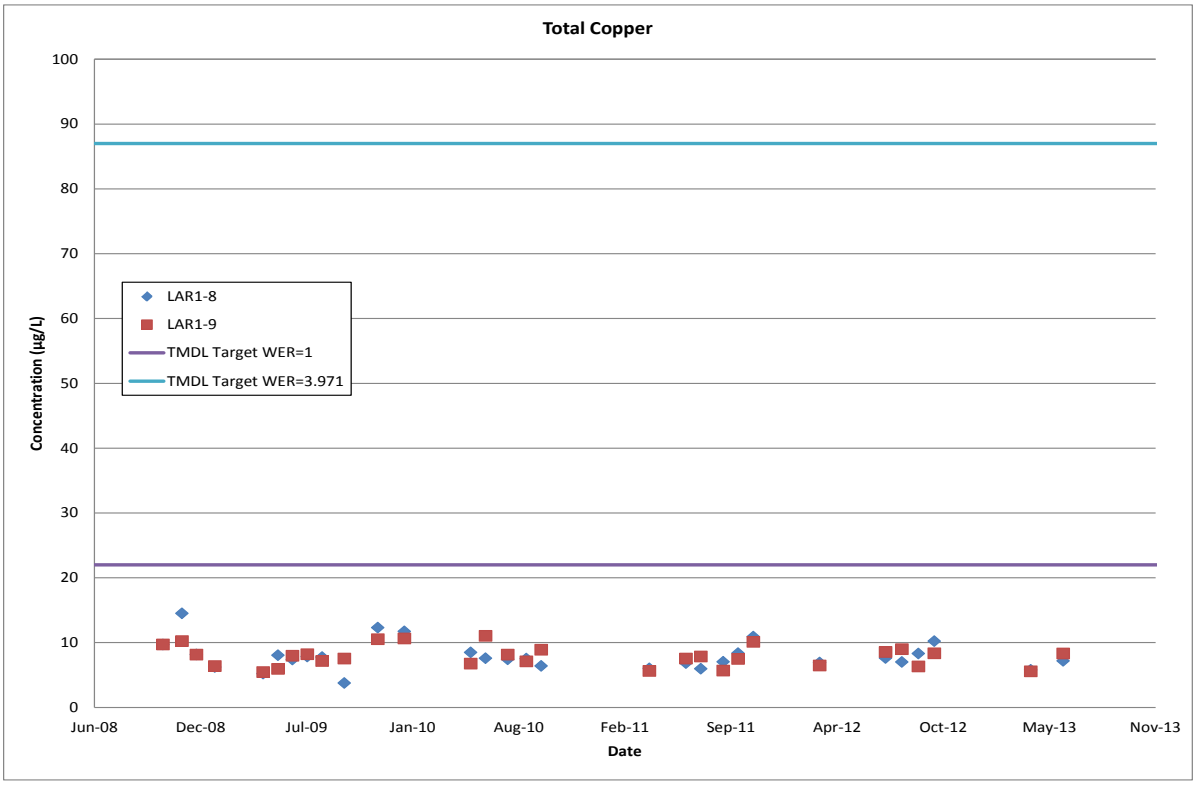

Figure D-16 Total Copper Concentration Comparison for LAR1-8 LAR1-9

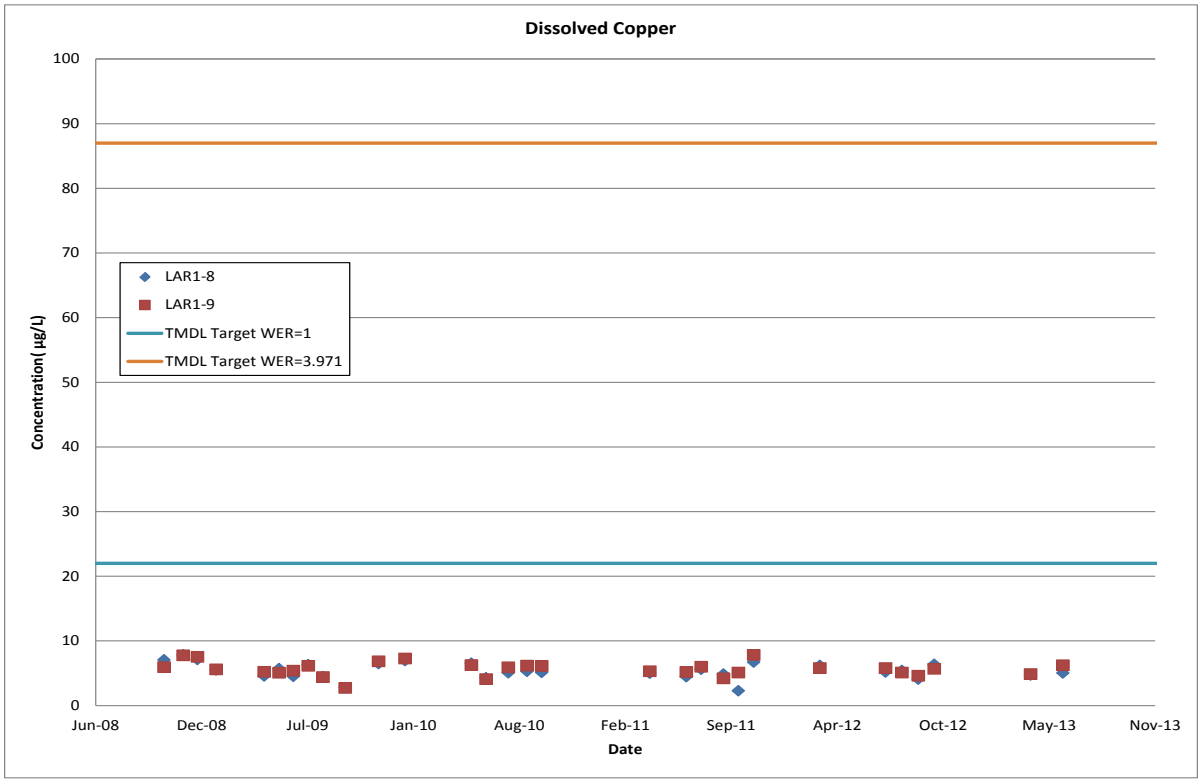

Figure D-17 Dissolved Copper Concentration Comparison for LAR1-8 LAR1-9

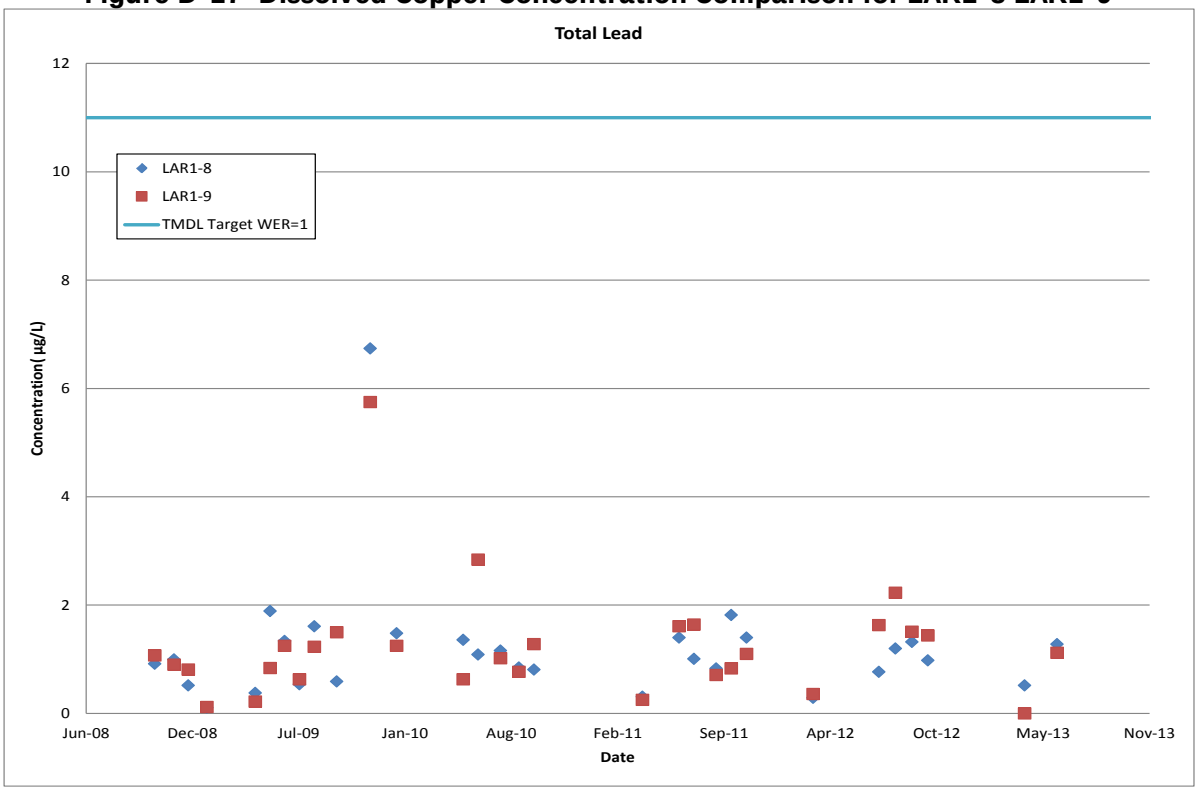

Figure D-18 Total Lead Concentration Comparison Plots for LAR1-8 and LAR1-9

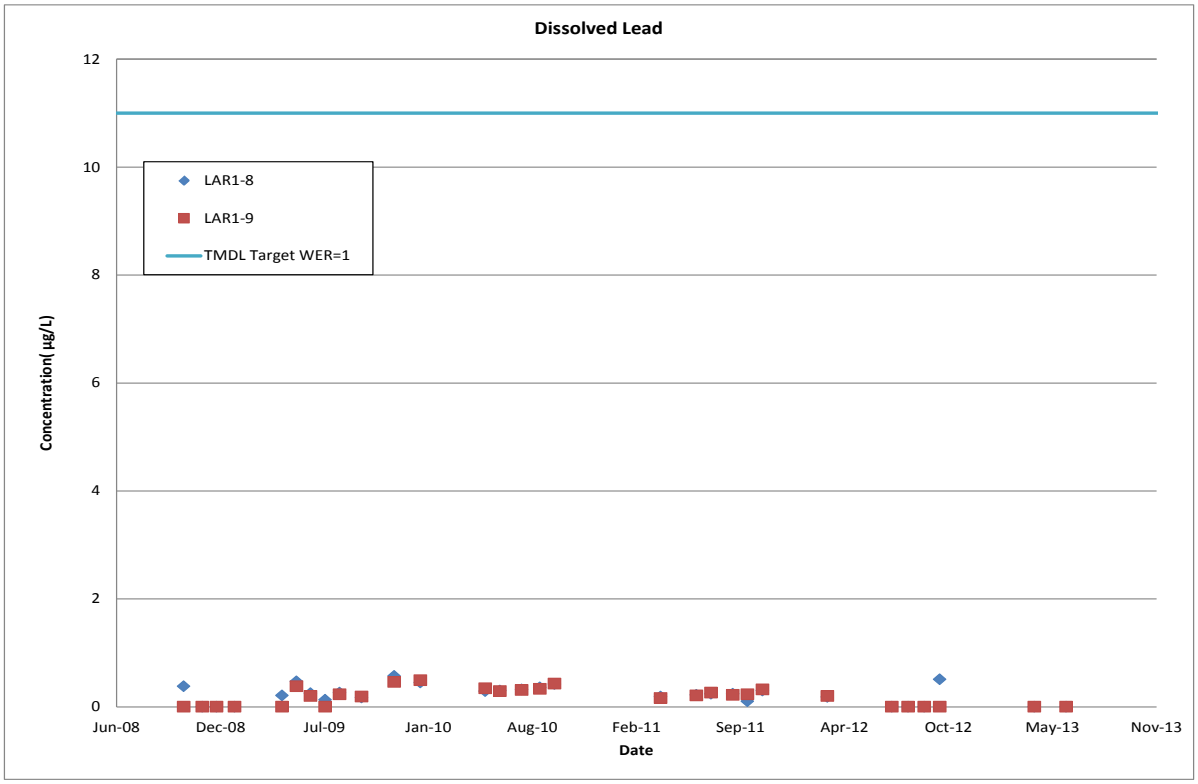

Figure D-19 Dissolved Lead Concentration Comparison Plots for LAR1-8 and LAR1-9

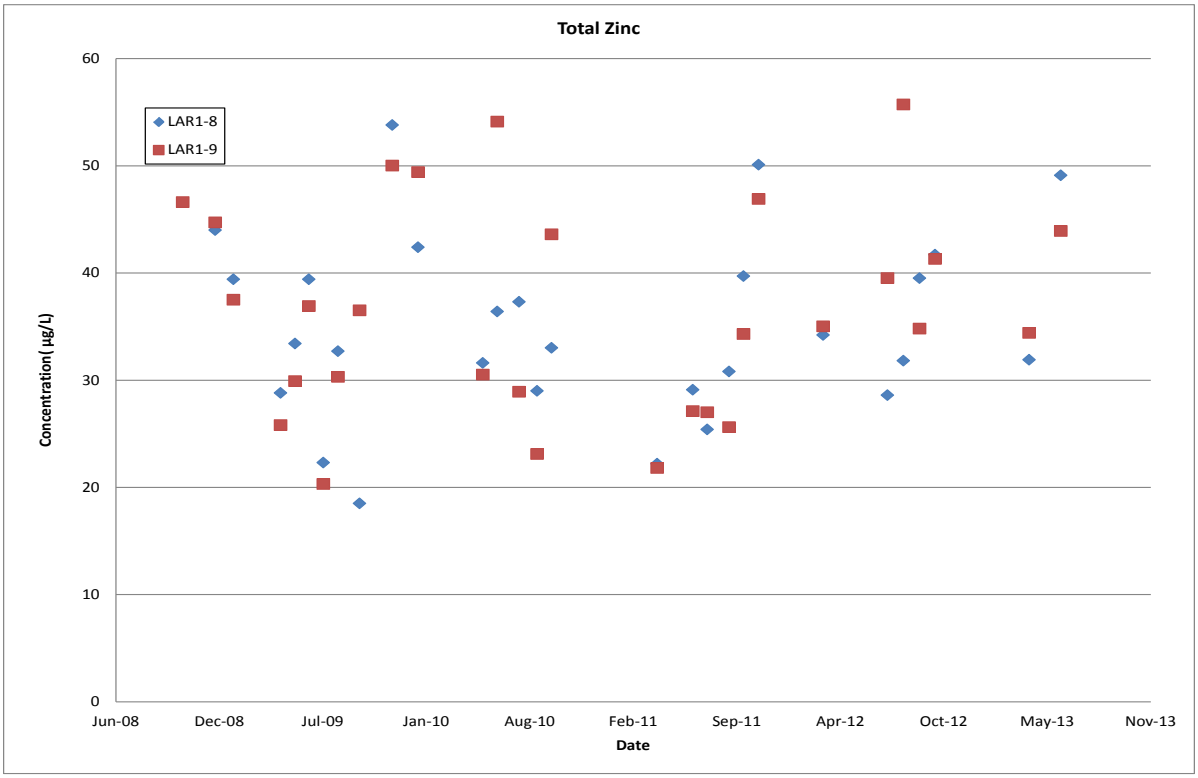

Figure D-20 Total Zinc Concentration Comparison Plots for LAR1-8 and LAR1-9

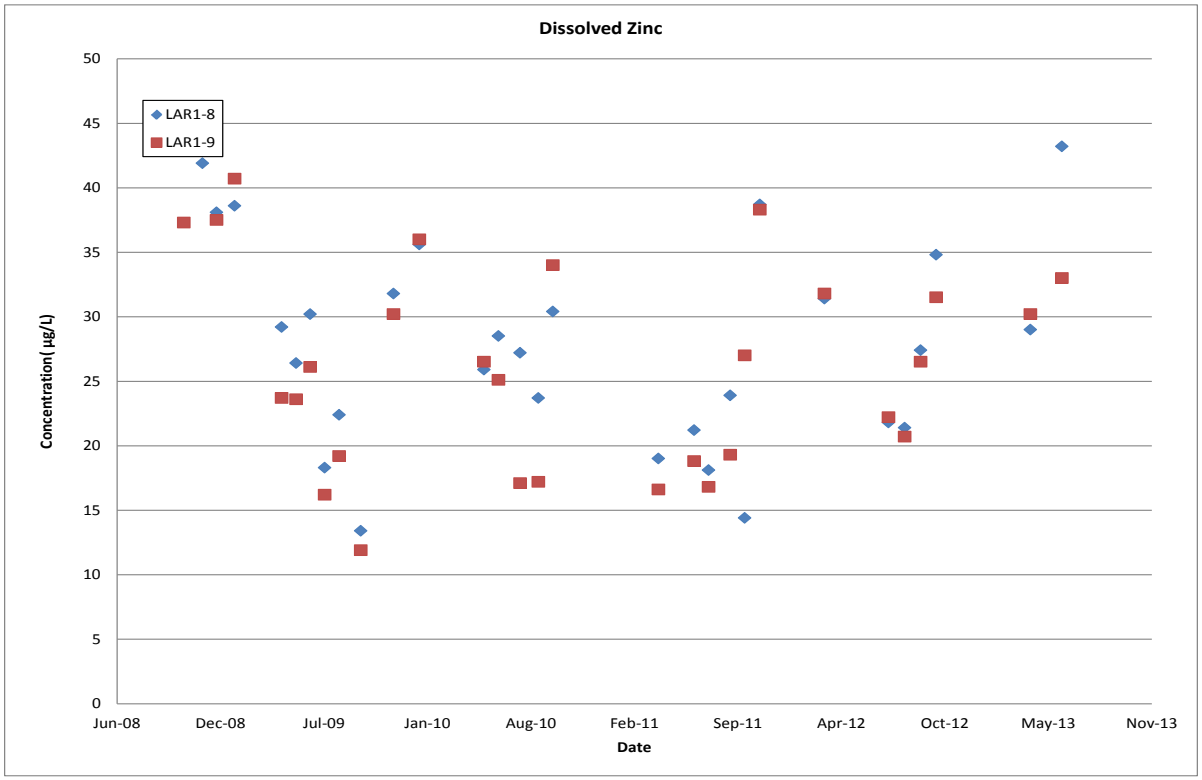

Figure D-21 Dissolved Zinc Concentration Comparison Plots for LAR1-8 and LAR1-9

Council for Watershed Health: Los Angeles River Watershed Monitoring

The Council for Watershed Health (CWH) coordinates the Los Angeles River Watershed Monitoring Program (LARWMP) to assess Watershed health based on five broad objectives: are stream conditions improving; are specific critical site conditions improving; do discharges meet WQOs; is it safe to swim; and are locally caught fish safe to eat. The CWH LARWMP collects water samples and performs bioassessments throughout the watershed using a stratified randomized sampling scheme that separates the watershed into natural, urban and mainstem portions from which random samples may be taken to facilitate comparisons. Sampling occurs annually, during the late spring or early summer, and the water is analyzed for general chemistry (nutrients), metals (total and dissolved), organophosphorus, and pyrethroid pesticides. The CWH provided for monitoring data from 2009 – 2012, which was reviewed for relevance. The most recent monitoring sites near the LAR UR2 WMA are LALT500, located at the LAR and Rio Hondo confluence, and LAR00830, which is located within Rio Hondo. As shown in **Attachment 1, Figure 4** both sites are located directly downstream of the LAR UR2 WMA. Although these sampling locations are not within the LAR UR2 WMA, the data provides perspective regarding water quality passing through the LAR UR2 WMA.

The CWH LARWMP found that one of four samples exceeded the MS4 Permit Total Kjeldahl Nitrogen (TKN) MAL of 4.59 mg/L. Based on the MS4 Permit MAL for Total Nitrate three exceedances, out of four samples, with a range of values from 2.02 to 5 mg/L were observed.

Site LALT500 observed one exceedance for total copper and two exceedances for total lead, among three samples. Sampling site LAR00830 had one exceedance for total copper from only one sample.

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Consistent decreases in *E. coli* concentrations are observed where discharges of tertiary-treated, water reclamation plant (WRP) effluent overwhelm and dilute in stream flows. Generally single sample *E. coli* numbers at the base of reaches 2 and 4 are up to two orders of magnitude (100x) higher than water quality objectives (WQO). Identification of the sources responsible for these increases was a high priority of the BSI study, which was designed to characterize the bacteria inputs to the LA River, support the development of the Bacteria TMDL source assessment, and assist with prioritization of the types and locations of TMDL implementation actions. Bacteria concentrations in the LA River are typically at a minimum in reaches that are supplied with recycled water from municipal WRPs (Reach 4 - LAR @ Sepulveda Boulevard and Reach 2 - LAR @ Figueroa Street).

Monitoring for the BSI Study was conducted within LA River Reaches 2, 4, and 6, during a two-month period, when six “Snapshot” and six “WRP” events, consisting of more than 600 water samples, were collected for the BSI Study. Monitoring locations for Snapshot Events included 10 LA River sites, three tributary sites, and over 110 storm drain sites. **Attachment 1, Figure 5** shows the BSI Study WRP sampling locations while **Figure 6** and **Figure 7** illustrate the storm drain sampling locations. The sampling logistics associated with the Snapshot Events were immense; each event was conducted over two days using four teams of field personnel. During WRP Events, untreated influent and tertiary-treated, disinfected effluent were collected from two WRPs: D.C. Tillman and City of LA-Glendale. All ~600 samples were analyzed for *E. coli*, *Enterococcus*, universal *Bacteroidales*, human-specific *Bacteroidales*, human adenovirus, flow rate, and seven other constituents. Along LAR R2 four receiving water sites were sampled and approximately 47 storm drain discharge sites were sampled, regularly or irregularly.

Therefore it appears that significant loads of bacteria are entering the water column in Reach 2, leading to concentration increases and WQO exceedances.

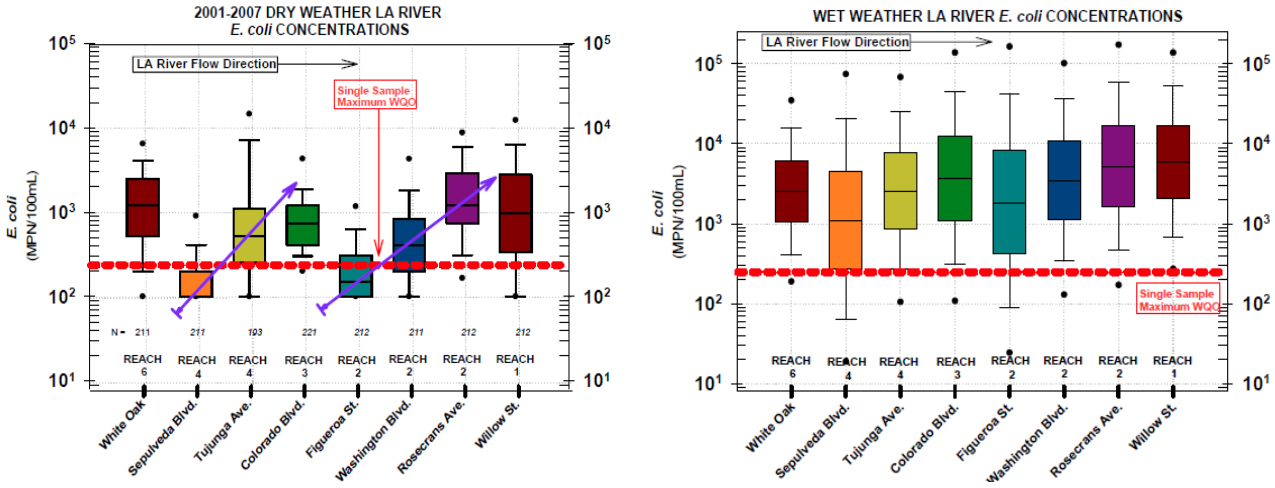

Figure D-22 Mainstem LA River E. coli Concentrations as Measured during Dry and Wet Weather by Status and Trends from 2001-2007

Status and Trends monitoring dataset collected from wet-weather shows that bacteria concentrations are about one order of magnitude higher during dry-weather, and there is less apparent spatial variation, as shown in **Figure D-23**. Median bacteria concentrations are well above the single sample maximum WQOs at all sites during wet-weather. Although the trend is not as strong as with dry-weather sampling, there is still a slight upward trend in the median concentrations in the downstream direction in both Reaches 2 and 4 during wet-weather. This may be an indication that the same source(s) may be influencing bacteria levels during both dry- and wet-weather. Overall, the relatively uniform spatial patterns suggest that strong, ubiquitous inputs of bacteria affect the LA River during wet-weather. Studies in other southern California watersheds have observed similarly strong and ubiquitous wet-weather bacteria sources, with > 99% of the annual bacteria loading from watersheds occurring during storm events.

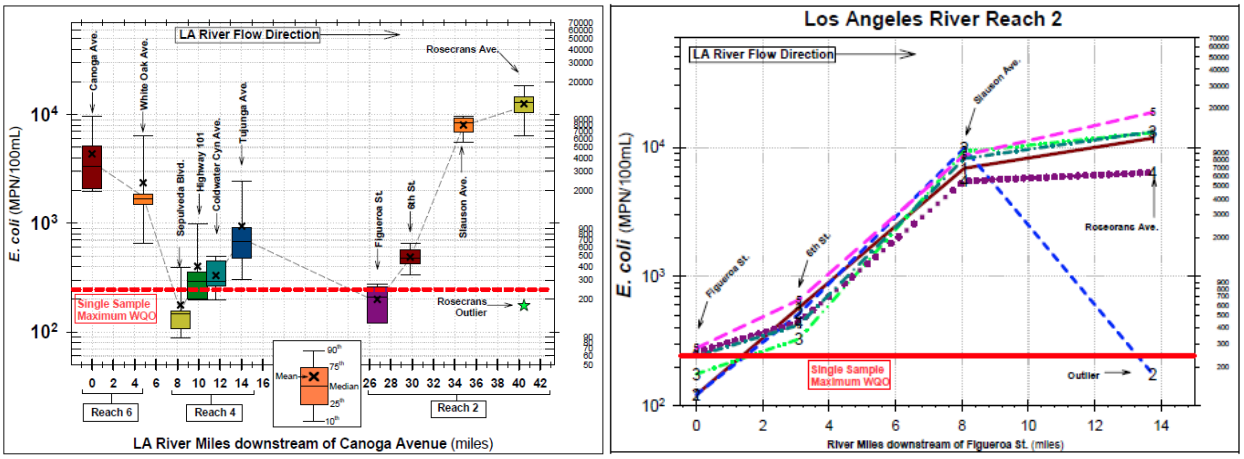

Figure D-23 Measured *E. coli* Concentration along the LA River - BSI Monitoring Study

E. coli

Along Reach 2, both *E. coli* concentrations and loading rates increased from upstream to downstream on each sampling date. The measured concentration and loading rate always increased from Figueroa Street to 6th Street to Slauson Avenue to Rosecrans Avenue. Respectively, the average concentrations

along Reach 2, from upstream to downstream, were 199, 488, 8030, and 10,522 MPN/100mL, and average loading rates were 415, 1,030, 18,642, and 27,174 x109 MPN/day. Overall, *E. coli* concentrations increased by approximately two orders of magnitude (100x) between the upstream and downstream ends of Reach 2. As such, apparently strong sources of *E. coli* are significantly affecting Reach 2, primarily along the lower section between 6th Street and Rosecrans Avenue. This large upstream-downstream increase, which was one of the motivations behind the BSI Study, was also apparent during other studies of Reach 2, including the Status and Trends monitoring.

Enterococcus

Along Reach 2, *Enterococcus* concentrations generally increased from upstream to downstream with average concentrations of 59, 299, 399, and 556 MPN/100mL at Figueroa Street, 6th Street, Slauson Avenue, and Rosecrans Avenue, respectively. However, the concentration differences among lower and upper Reach 2 sites for *Enterococcus* were not nearly as dramatic as for *E. coli*, with an approximately order of magnitude (10x) increase in *Enterococcus* concentration from Figueroa Street to Rosecrans Avenue, compared to two orders of magnitude increases (100x) for *E. coli*. Concentrations of *Enterococcus* were generally more variable when compared to *E. coli*, particularly at 6th Street (coefficient of variation [CV] of 0.24 for *E. coli* compared to 1.61 for *Enterococcus*) and Slauson Avenue (CV of 0.20 for *E. coli* compared to 0.95 for *Enterococcus*). The only statistically significant difference among Reach 2 sites was for Rosecrans Avenue versus Figueroa Street; the mean log *Enterococcus* concentrations and loading rates were significantly higher at Rosecrans Avenue (HSD test, α=0.05).

Bacteroidales

Along Reach 2, universal and human *Bacteroidales* concentrations apparently increased between Figueroa Street and 6th Street and then remained relatively constant between 6th Street and Rosecrans Avenue. All-event average concentrations slightly increased from 28 gc/mL to 32 gc/mL and the rate of detection indicate a source of human fecal inputs affecting LA River concentrations along this segment; human *Bacteroidales* was detected on 3 of 6 dates at Figueroa Street and 6 of 6 events at 6th Street. Average concentrations of universal *Bacteroidales* also increased from 2,282 to 3,973 gc/mL between Figueroa Street and 6th Street. *E. coli* concentrations increased along this segment, from generally in-compliance with WQOs at Figueroa Street to out-of-compliance at 6th Street. It is interesting to note that a majority of the homeless person activity observed along Reach 2 during the BSI Study was near the 6th Street bridge, where there were numerous encampments near storm drain outfalls. One of the most significant storm drain inputs of human *Bacteroidales* (storm drain site R2-A) was between these sites as well.

Further downstream, universal and human *Bacteroidales* concentrations remained relatively constant or decreased. Average human *Bacteroidales* concentrations at Slauson Avenue and Rosecrans Avenue were 75 gc/mL and 47 gc/mL, respectively. Average universal *Bacteroidales* concentrations at Slauson Avenue and Rosecrans Avenue were 4,668 gc/mL and 4,650 gc/mL, respectively. During 5 of 6 events and 3 of 6 events, respectively, universal and human *Bacteroidales* concentrations decreased between Slauson Avenue and Rosecrans Avenue. There were no significant differences among Reach 2 sites for universal or human *Bacteroidales*. *E. coli* concentrations increased dramatically along this segment. Thus, it appears that the apparent bacteria source(s) affecting lower Reach 2 are predominantly non-human, highly abundant in *E. coli*, and low in *Bacteroidales*.

Tributary Measurements

Three tributaries were monitored during this study; Arroyo Seco and Rio Hondo along Reach 2 and Tujunga Wash along Reach 4. Concentrations of *E. coli* in tributaries were generally above the WQO of 235 MPN/100mL. Rio Hondo was the only tributary that exhibited concentrations below the WQO 2 of 6 samples were <235 MPN/100mL, one of these was non-detect. However, the maximum tributary

E. coli (48,840 MPN/100mL) concentration was also measured at Rio Hondo, making it the tributary with the most variable *E. coli* concentrations and loading rates.

Concentrations of *Enterococcus* in tributaries ranged from 74 to 10,462 MPN/100mL and loading rates ranged from 0.09 to 584 x109 MPN/day. Compared to *E. coli*, the variability of *Enterococcus* in Arroyo Seco was greater, but lower for Rio Hondo. Median concentrations, from high to low, were Tujunga Wash > Arroyo Seco > Rio Hondo.

Concentrations of universal *Bacteroidales* ranged from 244 to 16,800 gc/mL while human *Bacteroidales* ranged from non-detect to 6150 gc/mL. The variability of universal *Bacteroidales* in tributaries was generally lower than *E. coli or Enterococcus*, and human *Bacteroidales* were detected in 10 of 18 samples. The Rio Hondo exhibited the highest median universal *Bacteroidales* and lowest median human *Bacteroidales* concentration, indicating non-human sources. Loading of human *Bacteroidales* in the Rio Hondo was two orders of magnitude lower than the Tujunga Wash and Arroyo Seco. For both 200-mL and 4-liter methodologies, human viruses were detected in 0 of 18 tributary samples.

Attachment 1

Additional Figures

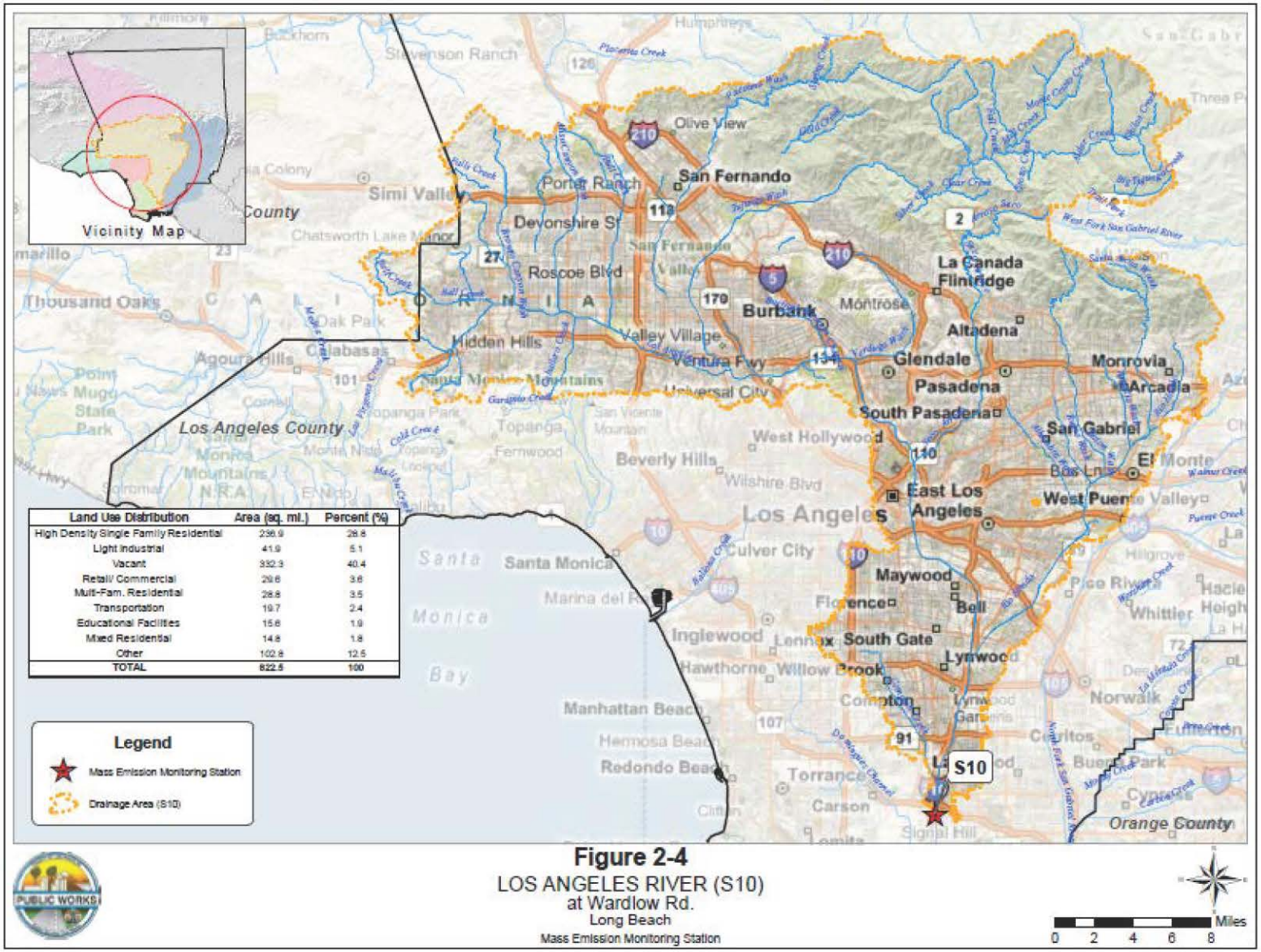

Figure 1 LA County Annual Stormwater Monitoring Reports (2002-2012) - LA River S10 Locations

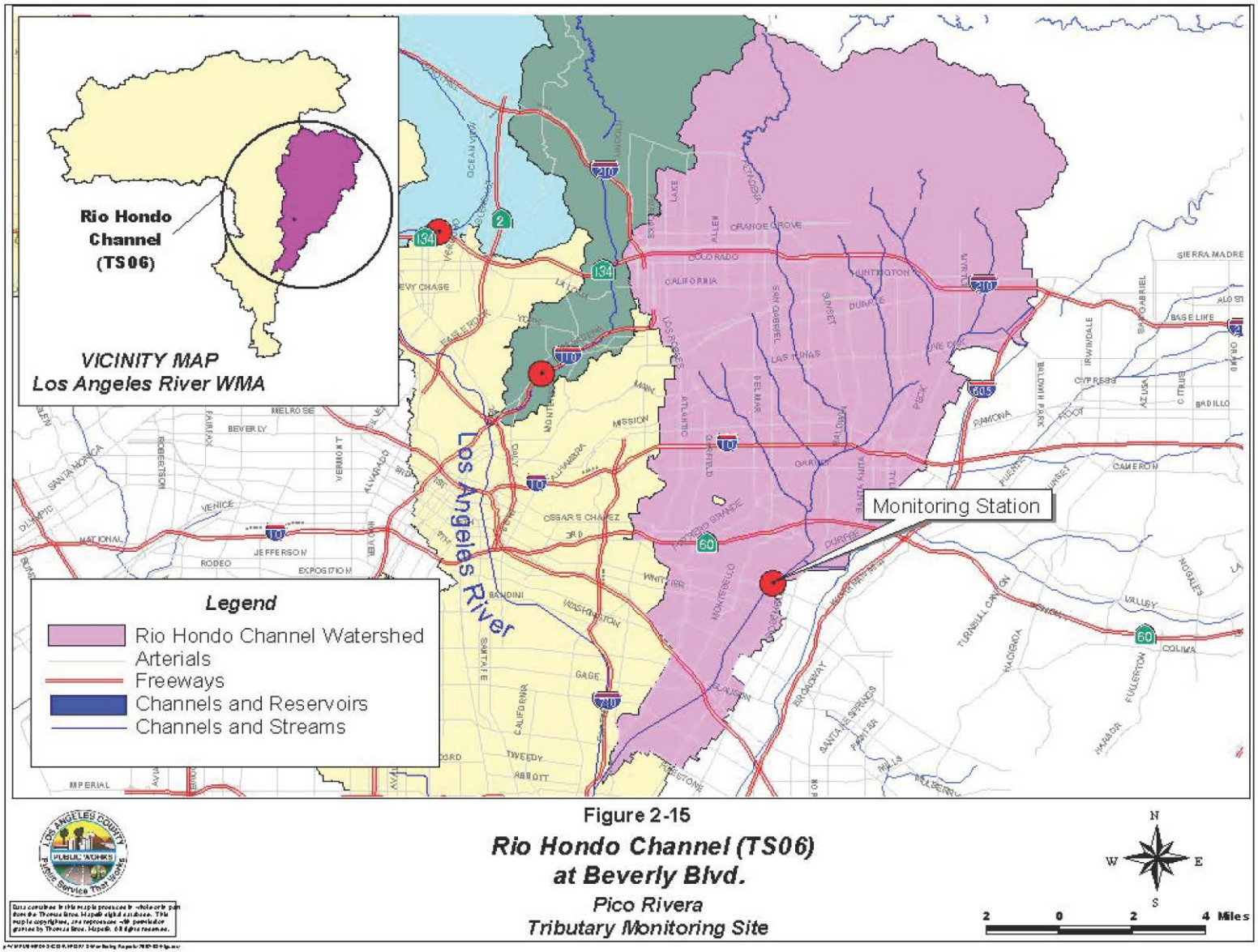

Figure 2 LA County Annual Stormwater Monitoring Reports (2002-2012) - Rio Hondo TS06 Location

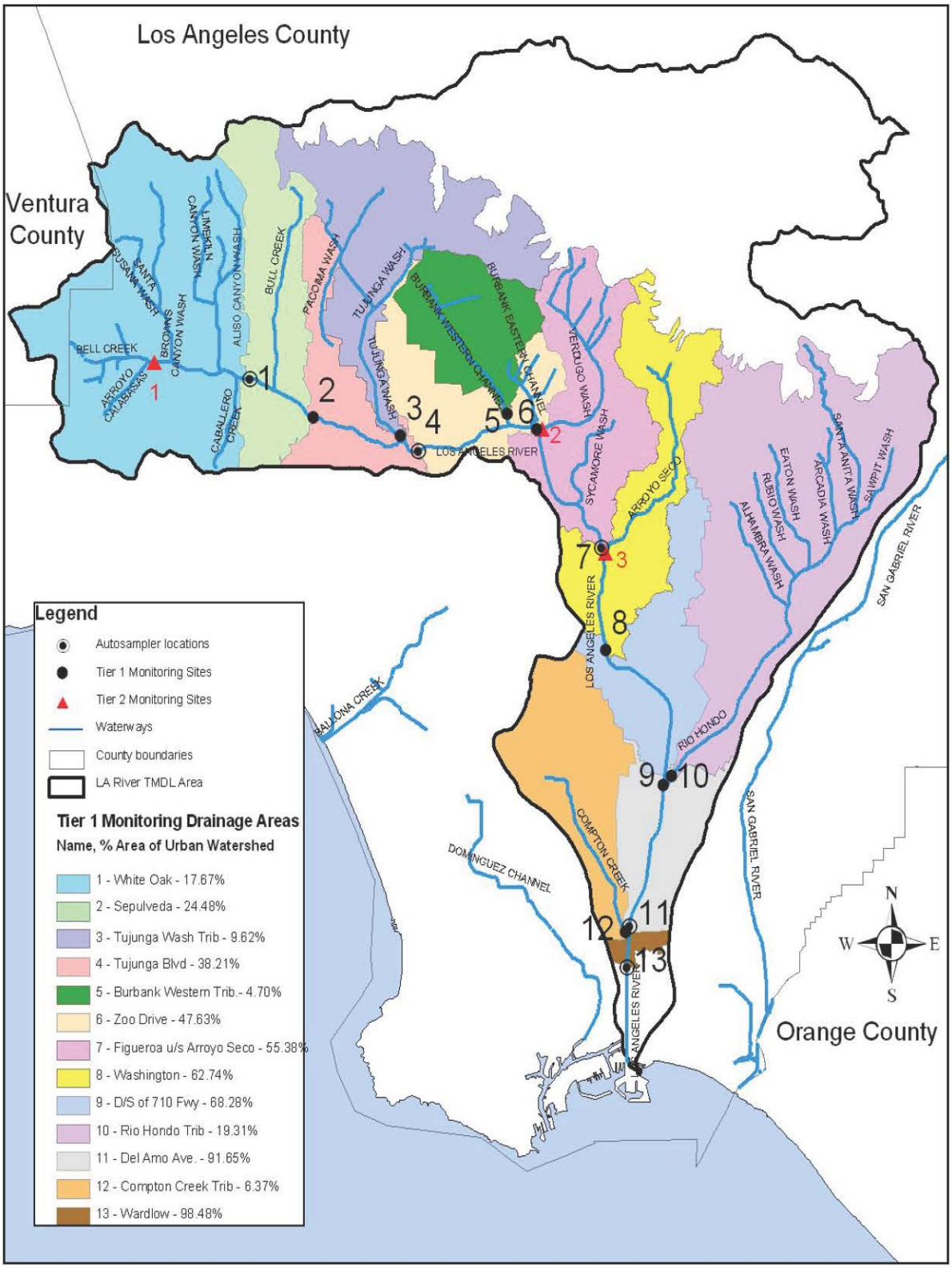

Figure 3 LA River Metals TMDL Coordinated Monitoring Plan Tier I and II Monitoring Locations

Figure 4 CWH Los Angeles River Watershed Monitoring Program (2011 Draft Report) LARWMP Sampling Locations 2011

Figure 5 Crest LA River Bacteria Source Identification (BSI) Study Final Report - LA River Reaches and Long-Term Bacteria Monitoring Locations along the Mainstream LA River

Figure 6 Crest LA River Bacteria Source Identification (BSI) Study Final Report - BSI Study Monitoring Locations

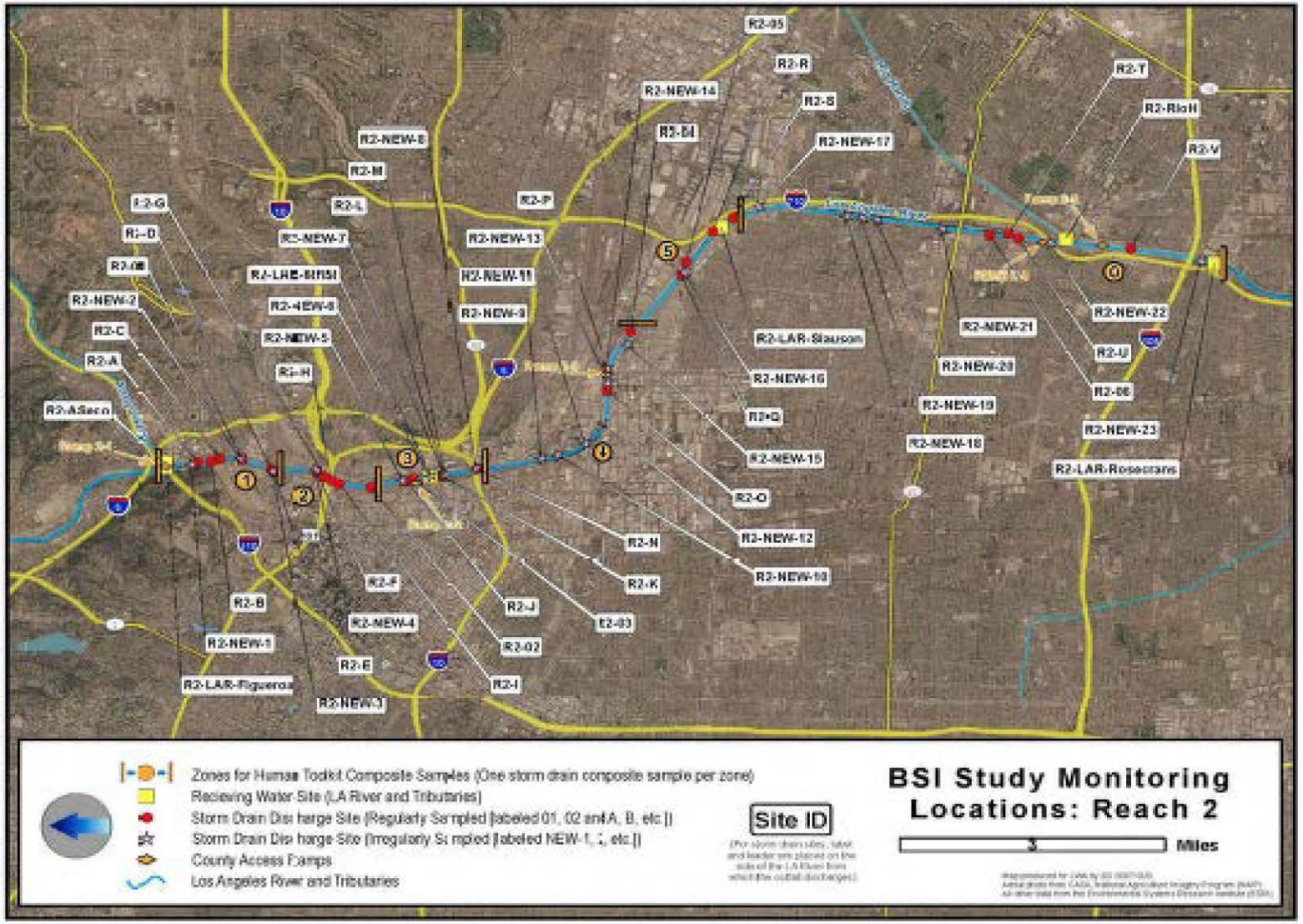

Figure 7 Crest LA River Bacteria Source Identification (BSI) Study Final Report - BSI Study Monitoring Locations: Reach 2

Appendix E

Summary of Existing MCMs/Institutional BMPs Implemented by LAR UR2 WMA

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
General Permit Requirements									
Prohibit non-stormwater discharges into the MS4 and watercourses	1	Feb-02	I	I	I		I	D	I
Comply with Receiving Water Limitations (RWL) requirements	2	Feb-02	I	I	I		I	I	I
Implement the Stormwater Quality Management Plan (SQMP)	3.A.1	Feb-02	I	I	I		I	I	I
Revise the SQMP	3.A.4	Aug-02	I	I	I		I	NA	I
Implement the most effective combination of BMPs for storm water/ urban runoff pollution	3.B	Feb-02	I	I	I		I	I	I
Prepare and submit Annual Budget Summary as part of the annual report to the RWQCB	3.E.5	Oct-02	I	I	I		I	I	I
Conduct quarterly watershed management committee meetings	3.F.3.g	Mar-02	I	NA	I		I	I	NA
Amend and adopt county ordinance to enforce all requirements of the permit, if needed	3.G.3	Nov-02	I	I	I		I	I	I
Submit to RWQCB a legal statement demonstrating the necessary legal authority	3.G.4	Dec-02	I	I	I		I	I	I
Prepare and submit to the RQWCB individual annual reports	1.B	Aug-02	I	I	I		NA	I	I
Special Provisions									
Public Information and Participation - Permit Requirements									
Implement public information and participation program	4.B	Feb-02	I	NA	I		I	I	I
Convene an Advisory Committee	4.B	ASAP	NA	NA	I		NA	NA	NA
Mark all storm drain inlets with a "no dumping" message	4.B.1.a	Feb-04	I	I	I		I	I	I
Maintain the (888) CLEAN-LA hotline	4.B.1.b	Feb-02	I	NA	I		I	NA	NA
Provide a list of reporting contacts to public through www.888CleanLA.com	4.B.1.b	Mar-02	I	NA	I		I	I	I
Media campaign for Storm Water Pollution Prevention (SPP)	4.B.1.c.1	Feb-02	I	I	I		I	I	I
Strategy to educate ethnic communities about SPP	4.B.1.c.2	Feb-03	NA	I	I		I	I	NA
Enhance outreach for proper disposal of cigarette butts	4.B.1.c.3	Feb-02	I	I	I		NA	I	NA
Conduct educational activities within jurisdiction and participate in county-wide events	4.B.1.c.4	Feb-02	I	I	I		I	I	I

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Organize Public Outreach Strategy meetings quarterly	4.B.1.c.5	May-02	I	NA	I		I	I	NA
Conduct Media Outreach to 35 million impressions per year	4.B.1.c.6	Annually	NA	NA	I		I	D	NA
Distribute SPP information to K-12 schools	4.B.1.c.7	-	I	I	I		I	I	I
Coordinate and provide contact information for public education activities	4.B.1.c.8	Apr-02	I	I	I		I	I	I
Strategy to measure effectiveness of in-school programs	4.B.c.9	May-02	NA	I	I		NA	NA	NA
Behavioral change assessment strategy towards SPP	4.B.c.10	May-02	NA	I	I		NA	NA	NA
Coordinate watershed-specific pollution prevention outreach programs	4.B.1.d	Feb-03	I	NA	I		I	I	I
Corporate Outreach Program to target retail gas outlets and restaurant chains	4.B.2.a	Feb-03	I	NA	I		I	I	NA
Coordinate an SPP program for a Business Assistance Program	4.B.2.b	Optional	NA	I	I		NA	NA	I
Industrial/Commercial Facilities Control - Permit Requirements									
Maintain a list of industrial/commercial facilities to be inspected	4.C.1	Aug-02	I	I	I		I	D	I
Inspect/visit industrial/commercial facilities appropriately	4.C.2	Aug-04	I	I	I		I	NA	I
Initiate progressive enforcement for facilities failing to implement BMP's	4.C.3	-	I	I	I		I	NA	I
Inspect restaurants twice during Permit cycle	4.C.2	Aug-04	I	I	I		I	I	I
Development Planning - Permit Requirements									
Implement development planning program that requires SUSMP	4.D	Feb-02	I	I	I		I	I	I
Develop peak flow control criteria	4.D.1	Feb-05	I	D	D		I	NA	I
Amend codes and ordinances to give legal effect to SUSMP changes in permit	4.D.2.a	Aug-02	I	I	I		I	I	I
Implement revised SUSMP	4.D.2.b	Sep-02	I	I	I		I	I	I
Submit an Environmentally Sensitive Areas (ESAs) Delineation map to RWQCB	4.D.2.d	Jun-02	NA	NA	NA		NA	NA	I
Implement SUSMP requirements for industrial/commercial projects >1 acre	4.D.5	Mar-03	I	I	I		I	I	I
Update CEQA guidelines to include specific storm water related issues	4.D.11	Feb-02	NA	I	I		NA	I	I

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Update General Plan to include specific storm water related issues	4.D.12	-	I	I	I		NA	**	I
Train targeted employees in permit requirements for Development Planning	4.D.13	Varies	I	I	I		I	NA	I
Develop and make SUSMP guidelines available to the developer	4.D.14.a	Feb-02	I	D	D		I	D	I
Develop a technical manual for the siting and design of BMPs	4.D.14.b	Feb-04	I	D	D		I	NA	I
Development Construction - Permit Requirements									
Implement a development construction program	4.E.1 &2	Feb-02	I	I	I		I	I	I
Require proof of a Waste Discharger ID (WDID) number prior to filing Notice of Intent (NOI)	4.E.2.c	Mar-03	I	I	I		I	I	I
Require proof of an NOI and a copy of SWPPP for a transfer of ownership	4.E.3	Feb-02	I	I	I		NA	D	I
Track the number of issued building and grading permits	4.E.3.c	Feb-02	I	I	I		I	I	I
Refer General Construction Activities Stormwater Permit (GCASP) violations to RWQCB	4.E.4	Feb-02	I	I	I		I	I	I
Train targeted employees in permit requirements for Development Construction	4.E.5	Varies	I	I	I		I	NA	I
Public Agency Activities - Permit Requirements									
Implement a sewer overflow prevention and response program	4.F.1	Aug-02	NA	I	I		I	I	I
Implement Development Planning Program at Permittee-owned construction projects	4.F.2.a	Aug-02	I	I	I		I	I	I
Implement Development Construction Program at Permittee-owned construction projects	4.F.2.b	Feb-02	I	I	I		I	I	I
Develop, if needed, and implement SWPPPs for field facilities	4.F.3	Feb-02	NA	I	D		NA	NA	I
Equip wash areas with a clarifier, pre-treatment device, or be connected to sewer	4.F.3.c	Feb-02	NA	I	I		NA	NA	I
Store pesticides/herbicides/fertilizers indoors and apply only in accordance	4.F.4.c&g	Feb-02	NA	I	I		NA	NA	I
Designate Catch Basins as priority A, B, or C	4.F.5.a	Feb-02	I	I	I		I	I	I
Ensure that Catch Basins (CBs) are cleaned appropriately	4.F.5.c.1	Feb-02	I	I	I		I	NA	I
Place temporary screens on CBs prior to special events or cleanout immediately afterwards	4.F.5.c.2	Feb-02	I	I	I		I	NA	I
Place and maintain trash receptacles at all transit stops with shelters	4.F.5.c.3	Feb-02	I	I	I		I	I	I

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Inspect the legibility of CB stencils and re-label within 180 days if necessary	4.F.5.d	-	I	I	I		I	I	I
Visually monitor and clean all open channels annually for debris	4.F.5.e.1	Feb-02	NA	I	I		NA	NA	NA
Designate curbed streets as priority A, B, or C based on liter accumulation	4.F.6.a.b	Feb-02	I	I	I		I	I	I
Recover saw cutting waste and dispose it offsite	4.F.6.c	Feb-02	I	I	I		I	I	I
Train targeted employees in permit requirements for Public Agency Activities	4.F.6.d	Varies	I	I	I		I	NA	I
Inspect and, if needed, clean Permittee owned parking lots twice per month, but at least once	4.F.7	Feb-02	I	I	I		I	NA	I
Conduct a dry weather diversion study and create a priority list of drains for diversion	4.F.10	Jul-03	NA	I	D		**	I	I
Illicit Connections / Illicit Discharges - Permit Requirements									
Develop an Implementation Program which specifies how revisions of the IC/ID SQMP are implemented	4.G.1.a	-	I	D	D		I	I	I
Create a database for permitted storm drain connections and map IC/ID	4.G.1.b	Feb-03	I	I	I		NA	NA	I
Perform IC/ID Trend Analysis	4.G.1.b	Feb-03	NA	I	I		**	NA	I
Train targeted employees in the permit requirements for IC/ID	4.G.1.c	Varies	I	I	I		I	NA	I
Field screen the storm drain system for illicit connections in open channels	4.G.2.a	Feb-03	NA	I	D		NA	NA	NA
Field screen the storm drain system for illicit connections in underground storm drains in priority areas	4.G.2.a	Feb-05	I	I	D		I	NA	I
Field screen the storm drain system for illicit connections in underground s/d larger than 36 inch diameter	4.G.2.a	Dec-06	I	I	D		I	NA	I
Review all permitted connections to the storm drain system for compliance	4.G.2.a	Dec-06	NA	NA	I		NA	NA	I
Investigate illicit connections 21 days after discovery	4.G.2.b	-	I	I	I		I	I	I
Terminate illicit connections 180 days after confirmation	4.G.2.b	-	I	I	I		I	I	I
Respond to illicit discharges within one business day of discovery	4.G.3.a	-	I	I	I		I	I	I
Investigate illicit discharges as soon as practicable	4.G.3.a	-	I	I	I		I	I	I

Table E-1 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2010-2011									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**

NA - Not Applicable or Not Completed
D - Developed
I - Program Implemented/Completed
** - Not Scheduled

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
General Permit Requirements									
Prohibit non-stormwater discharges into the MS4 and watercourses	1	Feb-02		I	I			I	I
Comply with Receiving Water Limitations (RWL) requirements	2	Feb-02		I	I			I	I
Implement the Stormwater Quality Management Plan (SQMP)	3.A.1	Feb-02		I	I			I	I
Revise the SQMP	3.A.4	Aug-02		I	I			**	I
Implement the most effective combination of BMPs for storm water/ urban runoff pollution	3.B	Feb-02		I	I			I	I
Prepare and submit Annual Budget Summary as part of the annual report to the RWQCB	3.E.5	Oct-02		I	I			I	I
Conduct quarterly watershed management committee meetings	3.F.3.g	Mar-02		I	I			NA	I
Amend and adopt county ordinance to enforce all requirements of the permit, if needed	3.G.3	Nov-02		I	I			NA	I
Submit to RWQCB a legal statement demonstrating the necessary legal authority	3.G.4	Dec-02		I	I			I	I
Prepare and submit to the RQWCB individual annual reports	1.B	Aug-02		I	I			I	I
Special Provisions									
Public Information and Participation - Permit Requirements									
Implement public information and participation program	4.B	Feb-02		I	I			I	I
Convene an Advisory Committee	4.B	ASAP		I	I			NA	I
Mark all storm drain inlets with a "no dumping" message	4.B.1.a	Feb-04		I	I			I	I
Maintain the (888) CLEAN-LA hotline	4.B.1.b	Feb-02		I	I			NA	NA
Provide a list of reporting contacts to public through www.888CleanLA.com	4.B.1.b	Mar-02		I	I			I	I
Media campaign for Storm Water Pollution Prevention (SPP)	4.B.1.c.1	Feb-02		I	I			I	I
Strategy to educate ethnic communities about SPP	4.B.1.c.2	Feb-03		I	I			I	NA
Enhance outreach for proper disposal of cigarette butts	4.B.1.c.3	Feb-02		I	I			I	NA
Conduct educational activities within jurisdiction and participate in county-wide events	4.B.1.c.4	Feb-02		I	I			I	NA

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Organize Public Outreach Strategy meetings quarterly	4.B.1.c.5	May-02		I	I			NA	NA
Conduct Media Outreach to 35 million impressions per year	4.B.1.c.6	Annually		D	I			NA	NA
Distribute SPP information to K-12 schools	4.B.1.c.7	-		NA	I			I	I
Coordinate and provide contact information for public education activities	4.B.1.c.8	Apr-02		I	I			I	NA
Strategy to measure effectiveness of in-school programs	4.B.c.9	May-02		NA	I			NA	NA
Behavioral change assessment strategy towards SPP	4.B.c.10	May-02		NA	I			NA	NA
Coordinate watershed-specific pollution prevention outreach programs	4.B.1.d	Feb-03		I	I			I	NA
Corporate Outreach Program to target retail gas outlets and restaurant chains	4.B.2.a	Feb-03		NA	I			NA	NA
Coordinate an SPP program for a Business Assistance Program	4.B.2.b	Optional		**	I			NA	I
Industrial/Commercial Facilities Control - Permit Requirements									
Maintain a list of industrial/commercial facilities to be inspected	4.C.1	Aug-02		I	I			I	I
Inspect/visit industrial/commercial facilities appropriately	4.C.2	Aug-04		I	I			I	I
Initiate progressive enforcement for facilities failing to implement BMP's	4.C.3	-		I	I			I	I
Inspect restaurants twice during Permit cycle	4.C.2	Aug-04		D	I			I	I
Development Planning - Permit Requirements									
Implement development planning program that requires SUSMP	4.D	Feb-02		I	I			I	I
Develop peak flow control criteria	4.D.1	Feb-05		I	D			NA	NA
Amend codes and ordinances to give legal effect to SUSMP changes in permit	4.D.2.a	Aug-02		I	I			I	I
Implement revised SUSMP	4.D.2.b	Sep-02		I	I			I	I
Submit an Environmentally Sensitive Areas (ESAs) Delineation map to RWQCB	4.D.2.d	Jun-02		NA	NA			I	NA
Implement SUSMP requirements for industrial/commercial projects >1 acre	4.D.5	Mar-03		I	I			I	I
Update CEQA guidelines to include specific storm water related issues	4.D.11	Feb-02		I	I			I	I

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Update General Plan to include specific storm water related issues	4.D.12	-		I	I			**	I
Train targeted employees in permit requirements for Development Planning	4.D.13	Varies		I	I			NA	I
Develop and make SUSMP guidelines available to the developer	4.D.14.a	Feb-02		I	D			I	I
Develop a technical manual for the siting and design of BMPs	4.D.14.b	Feb-04		I	D			NA	NA
Development Construction - Permit Requirements									
Implement a development construction program	4.E.1 &2	Feb-02		I	I			I	I
Require proof of a Waste Discharger ID (WDID) number prior to filing Notice of Intent (NOI)	4.E.2.c	Mar-03		I	I			I	I
Require proof of an NOI and a copy of SWPPP for a transfer of ownership	4.E.3	Feb-02		I	I			I	I
Track the number of issued building and grading permits	4.E.3.c	Feb-02		I	I			I	D
Refer General Construction Activities Stormwater Permit (GCASP) violations to RWQCB	4.E.4	Feb-02		I	I			I	I
Train targeted employees in permit requirements for Development Construction	4.E.5	Varies		I	I			NA	I
Public Agency Activities - Permit Requirements									
Implement a sewer overflow prevention and response program	4.F.1	Aug-02		I	I			I	I
Implement Development Planning Program at Permittee-owned construction projects	4.F.2.a	Aug-02		I	I			I	I
Implement Development Construction Program at Permittee-owned construction projects	4.F.2.b	Feb-02		I	I			I	I
Develop, if needed, and implement SWPPPs for field facilities	4.F.3	Feb-02		I	D			NA	I
Equip wash areas with a clarifier, pre-treatment device, or be connected to sewer	4.F.3.c	Feb-02		I	I			NA	I
Store pesticides/herbicides/fertilizers indoors and apply only in accordance	4.F.4.c&g	Feb-02		I	I			NA	I
Designate Catch Basins as priority A, B, or C	4.F.5.a	Feb-02		I	I			I	I
Ensure that Catch Basins (CBs) are cleaned appropriately	4.F.5.c.1	Feb-02		I	I			I	I
Place temporary screens on CBs prior to special events or cleanout immediately afterwards	4.F.5.c.2	Feb-02		I	I			I	I
Place and maintain trash receptacles at all transit stops with shelters	4.F.5.c.3	Feb-02		I	I			I	I

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**
Inspect the legibility of CB stencils and re-label within 180 days if necessary	4.F.5.d	-		I	I			I	I
Visually monitor and clean all open channels annually for debris	4.F.5.e.1	Feb-02		I	I			NA	I
Designate curbed streets as priority A, B, or C based on liter accumulation	4.F.6.a.b	Feb-02		I	I			I	I
Recover saw cutting waste and dispose it offsite	4.F.6.c	Feb-02		I	I			I	I
Train targeted employees in permit requirements for Public Agency Activities	4.F.6.d	Varies		I	I			NA	I
Inspect and, if needed, clean Permittee owned parking lots twice per month, but at least once	4.F.7	Feb-02		I	I			I	I
Conduct a dry weather diversion study and create a priority list of drains for diversion	4.F.10	Jul-03		I	D			I	NA
Illicit Connections / Illicit Discharges - Permit Requirements									
Develop an Implementation Program which specifies how revisions of the IC/ID SQMP are implemented	4.G.1.a	-		I	D			I	I
Create a database for permitted storm drain connections and map IC/ID	4.G.1.b	Feb-03		I	I			NA	I
Perform IC/ID Trend Analysis	4.G.1.b	Feb-03		I	I			NA	I
Train targeted employees in the permit requirements for IC/ID	4.G.1.c	Varies		I	I			NA	I
Field screen the storm drain system for illicit connections in open channels	4.G.2.a	Feb-03		NA	I			NA	I
Field screen the storm drain system for illicit connections in underground storm drains in priority areas	4.G.2.a	Feb-05		I	D			I	I
Field screen the storm drain system for illicit connections in underground s/d larger than 36 inch diameter	4.G.2.a	Dec-06		I	D			I	I
Review all permitted connections to the storm drain system for compliance	4.G.2.a	Dec-06		I	I			I	I
Investigate illicit connections 21 days after discovery	4.G.2.b	-		D	I			I	I
Terminate illicit connections 180 days after confirmation	4.G.2.b	-		I	I			I	I
Respond to illicit discharges within one business day of discovery	4.G.3.a	-		D	I			I	I
Investigate illicit discharges as soon as practicable	4.G.3.a	-		I	I			I	I

Table E-2 LAR UR2 WMA Existing Minimum Control Measures Reported during Permit Year 2011-2012									
Program Tasks and Milestones	**2001 MS4 Permit Part**	**Due Date**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**

NA - Not Applicable or Completed
D - Developed
I - Program Implemented/Completed
** - Not Scheduled

Appendix F

Regional and Distributed BMP Comparison Matrix

Table F-1 Regional BMP Comparison Matrix

Ranking Factor	Score (1=worst, 5=best)						
	Infiltration Basins	Detention Basins	Detention with SSF Wetlands	Constructed SF Wetlands	Treatment Facility	Hydrodynamic Devices	Channel Naturalization
Cost							
Capital	4	4	2	4	1	3	4
Operations and Maintenance	1	3	2	2	2	4	3
Effectiveness							
Effluent Concentration							
Trash	5	4	5	5	5	4	2
Nutrients	5	2	5	5	5	2	5
Bacteria	5	2	4	3	5	2	1
Metals	5	3	5	5	5	3	4
Sediment	5	3	5	5	5	4	4
"Other" Pollutant	5	3	4	4	4	3	3
Volume Mitigation	5	3	3	3	2	1	2
Reliability	2	3	3	3	5	3	3
Implementation							
Implementation Issues							
Engineering Feasibility	Based on Site-Specific Evaluation						
Ownership/ROW							
Environmental Clearance	4	4	4	4	2	4	2
Permitting Water Rights	5	5	5	2	2	2	2
Public Safety	3	3	3	3	4	4	3
Environment/Other Factors							
Other Potential Benefits	5	4	4	4	1	1	5
Other Potential Impacts	3	2	3	2	3	3	3

SSF = Subsurface Flow
SF = Surface Flow

Table F-2 Distributed BMP Comparison Matrix

Ranking Factors	Score (1=worst, 5=best)							
	Cisterns	Bioretention	Vegetated Swales	Green Roofs	Porous/ Permeable Pavements	GSRDs	Media Filters	Catch Basin Inserts
Cost								
Capital	3	2	4	1	2	2	3	5
Operations and Maintenance	5	3	4	4	5	3	4	4
Effectiveness								
Effluent Concentration								
Trash	5	5	4	4	5	4	5	4
Nutrients	5	5	4	4	5	1	3	1
Bacteria	5	5	1	4	5	1	3	1
Metals	5	5	4	4	5	2	4	1
Sediment	5	5	3	4	5	3	5	2
"Other" Pollutant	4	4	4	4	4	1	4	1
Volume Mitigation	3	4	4	4	4	1	1	1
Reliability	3	4	4	3	2	3	3	3
Implementation								
Implementation Issues								
Engineering Feasibility	Based on Site-Specific Evaluation							
Ownership/ROW								
Environmental Clearance	5	5	5	5	5	5	5	5
Permitting Water Rights	5	5	5	5	5	5	5	5
Public Safety	4	3	3	4	3	4	4	4
Environment/Other Factors								
Other Potential Benefits	5	4	4	4	3	1	1	1
Other Potential Impacts	2	3	3	3	3	3	3	3

GSRDs = Gross Solid Removal Devices

Appendix G

BMP Installation Summary

Table G-1 LAR UR2 WMA BMPs Installed by Year									
BMP Type	**Year Installed**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**	**Total**
Catch Basin Screens									
Automatic Retracting Screens(ARS)	2011-2012	137	154	321	105	136	116	3	972
	2010-2011							10	10
	2009-2010					148			148
United Storm Water Clean Screens III	2010-2011			403			152		555
	Subtotal	137	154	724	105	284	268	13	1,685
BioClean Flume Filter	2011-2012							3	3
	2010-2011							7	7
	2006-2007							2	2
	Subtotal							12	12
BioClean Grate Inlet Skimmer Box	2011-2012							8	8
	2005-2006							1	1
	Subtotal							9	9
Clean Screen Catch Basin Inserts	2010-2011	163	101	288		450			1,002
	2005-2006			29					29
	2004-2005		5						5
	2003-2004		50						50
Full Capture Catch Basin Inserts	2010-2011		146						146
Connector Pipe Screens (CPS)	2011-2012	238	243	545	130	442	151		1,749
	2010-2011							631	631
	Subtotal	401	545	862	130	892		631	3,461

Table G-1 LAR UR2 WMA BMPs Installed by Year

BMP Type	Year Installed	Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon	Total
Catch Basin Inserts/Filters									
Fossil Filter Catch Basin Inserts	2011-2012						4		4
	2010-2011					2			2
	2009-2010	2				2			4
	2008-2009			1					1
	2007-2008	2							2
	2006-2007	2		3					5
	2005-2006			4	4			22	30
	2004-2005			1					1
	Subtotal	6		9	4	4	4	22	49
Kristar Flo Guard Inserts	2008-2009							3	3
	2007-2008							11	11
	2006-2007							11	11
	Subtotal							25	25
Bioclean Catch Basin Inserts	2010-2011							16	16
	2007-2008							7	7
	Subtotal							23	23
Suntree Technologies	2008-2009							2	2
	2007-2008							2	2
	Subtotal							4	4
Catch Basin Insert - Watershed Only	2004-2005							7	7
Catch Basin Inserts	2010-2011			1					1
Kristar Panel	2007-2008							6	6
Filter Insert	2011-2012			1					1
SuntrekTech Catch Basin Insert	2006-2007							2	2

Table G-1 LAR UR2 WMA BMPs Installed by Year

BMP Type	Year Installed	Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon	Total
Sediment/Oil Trap									
CDS Gross Pollutant Separators	2010-2011					1			1
	2005-2006							3	3
	Subtotal					1		3	4
Stormceptor Gross Pollutant Separators	2008-2009							1	1
	2007-2008							1	1
	2006-2007							1	1
	2005-2006							1	1
	2003-2004								2
	Subtotal					1	1	4	6
Vegetated Swale/Strip	2008-2009			3					3
Grease Interceptors	2004-2005							1	1
Grease Trap	2006-2007			1					1
Infiltration BMPs									
Flow-thru Planter	2011-2012			1					1
	2010-2011			1					1
	Subtotal			2					2
Infiltration System	2006-2007			4					4
Infiltration Trenches	2008-2009			1					1
	2006-2007							2	2
	2003-2004					1			1
	Subtotal			1		1		2	4
Landscape/infiltration	2004-2005			2					2

Table G-1 LAR UR2 WMA BMPs Installed by Year

BMP Type	Year Installed	Bell	Bell Gardens	Commerce	Cudahy	Huntington Park	Maywood	Vernon	Total
Trash Bins									
Covered Trash Bins	2010-2011					2			2
	2009-2010					3			3
	2008-2009			3					3
	2005-2006			6	5			9	20
	2004-2005			4					4
	2003-2004		30			2	2		34
	Subtotal		30	13	5	7	2	9	66
Extra Trash Cans	2010-2011					2			2
	2009-2010			10		9			19
	2003-2004	10	30			50	10		100
	Subtotal	10	30	10		61	10		121
Trash Can Lid	2010-2011		50						50
Parks									
Dog Parks	2003-2004					1			1
Other									
Enhanced Street Sweeping	2009-2010	6	46			1			53
	2008-2009	6							6
	2007-2008	6							6
	2006-2007	6							6
	2005-2006	6			1				7
	2003-2004	6			2	1	1		10
	Subtotal	36	46		3	2	1		88
Trash Enclosures	2004-2005							8	8
Catch Basin Signage	2004-2005							8	8
Diversion System with rain switch	2005-2006							1	1

Table G-1 LAR UR2 WMA BMPs Installed by Year									
BMP Type	**Year Installed**	**Bell**	**Bell Gardens**	**Commerce**	**Cudahy**	**Huntington Park**	**Maywood**	**Vernon**	**Total**
Kristar Roof Downspout	2006-2007							6	6
Restaurant Vent Traps	2006-2007			1					1
	2003-2004					2	1		3
	Subtotal			1		2	1		4
Catch Basin Clean-outs cycles	2006-2007	6							6
Safedrain (Spill Prevention Valve)	2007-2008							1	1
	City Total:	**596**	**855**	**1,634**	**247**	**1,256**	**438**	**797**	**5,823**

Appendix H

Non-MS4 NPDES Permittees

Table H-1 Active Permitted Industrial Facilities in Los Angeles County within Bell, Bell Gardens, Cudahy, Huntington Park, and Maywood

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I000777	3/20/1992	Custom Bldg Prods	6511 Salt Lake Ave	Bell	90201	7.0	2899	3272	-
4 19I002530	6/25/2013	US Army Patton Reserve	5340 Bandini Blvd Bldg 334	Bell	90201	21.0	4231	-	-
4 19I022905	6/26/2013	Bell US Army Reserve Center	5631 Rickenbacker Rd	Bell	90201	43.0	4231	9711	-
4 19I023321	9/8/2011	FedEx Home Delivery	4801 S Eastern Ave	Bell	90201	1.0	4215	-	-
4 19I009019	11/3/1992	Temple Inland Inc dba International Paper	5991 Bandini Blvd	Bell[1]	90040	15.0	2653	-	-
4 19I014288	7/1/1998	YRC Inc Los Angeles Bell	4700 S Eastern Ave	Bell[1]	90040	15.0	4231	-	-
4 19I012040	12/14/1995	David H Fell & Co	6009 Bandini Blvd	Bell[1]	90040	0.4	3341	-	-
4 19I001684	3/30/1992	Metal Surfaces	6060 Shull St	Bell Gardens	90201	1.0	3471	-	-
4 19I004413	4/6/1992	J P Turgeon & Sons	7758 Scout Ave	Bell Gardens	90201	0.5	3471	-	-
4 19I003408	4/3/1992	Day Glo Color Corp	4615 Ardine St	Cudahy	90201	1.3	2851	-	-
4 19I010996	5/18/1994	Artson Manufacturing Co	4915 Cecilia St # 4907	Cudahy	90201	3.2	3315	3496	-
4 19I012606	10/15/1996	Consolidated Foundries Inc	8333 Wilcox Ave	Cudahy	90201	3.1	3369	-	-
4 19I013803	3/13/1998	David Downs Co	4539 Cecilia St	Cudahy	90201	75.0	2992	-	-
4 19I016698	8/7/2001	Consolidated Foundaries GE Core Co	8346 Salt Lake Ave	Cudahy	90201	1.0	3369	-	-
4 19I024275	5/28/2013	HF Cox Inc	8330 S Atlantic Avenue	Cudahy	90201	3.2	7538	-	-
4 19I000122	2/21/1992	LA Brass Prod	2529 55th	Huntington Park	90255	1.0	3364	3366	-
4 19I000835	7/18/2012	Henry Co	5731 Bickett St	Huntington Park	90255	5.0	2952	-	-
4 19I001609	3/27/1992	Aircraft Foundry	5316 Pacific Blvd	Huntington Park	90255	0.5	3365	-	-
4 19I001831	3/30/1992	Acme Castings	2319 Randolph St	Huntington Park	90255	1.3	3321	3325	3369
4 19I004458	4/6/1992	LA Galvanizing	2518 E 53rd St	Huntington Park	90255	0.6	3471	-	-
4 19I010372	8/2/1993	Covert Iron Works	7821 Otis Ave	Huntington Park	90255	3.0	3321	-	-
4 19I013694	1/12/1998	Calpac Chemical Co Inc	6231 Maywood Ave	Huntington Park	90255	2.0	2842	-	-
4 19I016489	4/25/2001	Aircraft X-ray Laboratories Inc	5216 Pacific	Huntington Park	90255	1.5	3471	3479	-
4 19I018443	10/29/2003	Bodycote Thermal Processing	3370 Benedict Way	Huntington Park	90255	1.6	3398	-	-
4 19I019552	5/31/2005	H P Used Auto Parts	2461 E Slauson Ave	Huntington Park	90255	0.4	5015	-	-
4 19I020668	2/9/2007	West Coast Foundry	2450 E 53rd St	Huntington Park	90255	Unknown	Unknown	-	-
4 19I021216	10/17/2007	Crown Poly Inc	5700 Bickett St	Huntington Park	90255	5.3	3081	3089	-
4 19I022418	11/24/2009	Joseph Levin & Sons Inc	2863 E Slauson Ave	Huntington Park	90255	2.0	5093	-	-
4 19I023686	6/21/2012	I A Machinery Co	2301 Belgrave Ave	Huntington Park	90255	1.1	3545	3549	3547
4 19I023952	11/30/2012	Ace Recycling LLC	6069 Maywood Ave	Huntington Park	90255	2.9	5093	-	-
4 19I004074	4/6/1992	Alloys Cleaning Inc	1960 Gage	Huntington Park[1]	90001	0.8	3471	-	-
4 19I014184	6/18/1998	Madison Industries	1900 64th	Huntington Park[1]	90001	5.4	3441	-	-
4 19I011248	11/1/1994	LA Unified Sch Dist Alameda Ga	6901 S Alameda St	Huntington Park[1]	90001	4.4	4151	-	-
4 19I021660	7/9/2008	Windsor Foods	6711 through 6717 Alameda St	Huntington Park[1]	90001	1.1	2038	-	-
4 19I000680	3/18/1992	W S Dodge Oil Co Inc	3710 Fruitland Ave	Maywood	90270	1.0	2992	-	-
4 19I010960	3/14/1994	Cook Induction Heating	4925 Slauson Ave	Maywood	90270	0.6	3398	3679	3399
4 19I013344	8/18/1997	Keeney Truck Lines Inc	3500 Fruitland Ave	Maywood	90270	3.0	4212	-	-
4 19I013345	8/18/1997	Food Express Inc	5127 Maywood Ave	Maywood	90270	3.0	4231	-	-
4 19I014688	10/21/1998	Evans Dedicated Systems	5711 Maywood Ave	Maywood	90270	1.4	3081	-	-

Table H-1 Active Permitted Industrial Facilities in Los Angeles County within Bell, Bell Gardens, Cudahy, Huntington Park, and Maywood

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I021671	7/14/2008	Gemini Plastic Ent Inc	3574 Fruitland	Maywood	90270	0.4	5093	-	-
4 19I024365	7/22/2013	Panda International Trading Co	570 Fruitland Ave	Maywood	90270	0.8	3471	-	-

[1] Permittee listed as City of Los Angeles in Permit Documents

Table H-2 Active Permitted Industrial Facilities in Los Angeles County within Commerce

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I000163	2/26/1992	Amvac Chemical Corp	4100 E Washington Blvd	Commerce[1]	90023	3.0	2879	2869	-
4 19I000205	3/2/1992	Ashland Chemical Co	6608 26th	Commerce	90040	5.6	2821	-	-
4 19I000411	3/11/1992	Engineered Polymer Solutions	5501 E Slauson Ave	Commerce[1]	90040	4.0	2821	-	-
4 19I001142	3/25/1992	Calstrip Industries Inc	7140 Bandini Blvd	Commerce[1]	90040	7.0	3316	-	-
4 19I001502	3/27/1992	Hickory Springs	4542 East Dunham St	Commerce	90023	5.9	3086	-	-
4 19I001761	3/30/1992	Monogram Aerospace Fasteners	3423 Garfield Ave	Commerce[1]	90040	3.0	3452	-	-
4 19I002134	3/30/1992	Gallo Wine	2650 Commerce Way	Commerce[1]	90040	7.0	2084	-	-
4 19I002702	4/1/1992	Huhtamaki Inc	4209 Noakes St	Commerce[1]	90023	8.9	2656	3089	2671
4 19I002878	4/2/1992	Newark Pac Paperboard	6001 S Eastern Ave	Commerce	90040	Unknown	Unknown	-	-
4 19I003336	4/3/1992	Oldcastle BuildingEnvelope	5631 Ferguson Dr	Commerce[1]	90022	10.5	3231	-	-
4 19I003406	4/3/1992	Globe Iron Foundry	5649 Randolph St	Commerce	90040	1.6	3321	-	-
4 19I003509	4/3/1992	Vons Grocery Co Safeway	3361 Boxford Ave	Commerce[1]	90040	17.0	2024	2051	2026
4 19I004620	4/8/1992	UPS Ground Freight	2747 Vail Ave	Commerce	90040	Unknown	Unknown	-	-
4 19I004896	4/7/1992	ATK Space Systems Inc	6033 Bandini	Commerce	90040	4.0	3795	3449	-
4 19I005001	4/8/1992	Commerce East LA	4341 Washington	Commerce[1]	90023	218.0	4011	-	-
4 19I005064	4/7/1992	Mission Foods Corp Olympic	5505 E Olympic Blvd	Commerce[1]	90022	4.0	2099	-	-
4 19I006760	5/6/1992	Unified Grocers Inc	5200 Sheila St	Commerce	90040	66.0	4225	-	-
4 19I006988	5/19/1992	Interstate Consolidation	5800 Sheila St	Commerce[1]	90040	7.0	4212	-	-
4 19I007019	5/27/1992	Adelwiggins Grp	5000 Triggs St	Commerce[1]	90022	8.0	3499	-	-
4 19I009384	11/15/1992	LA Paper Box & Board	6027 S Eastern Ave	Commerce[1]	90040	5.0	2631	-	-
4 19I009618	12/22/1992	W R Grace Construction Co	7237 Gage	Commerce[1]	90040	2.0	2899	-	-
4 19I010842	1/4/1994	Ei Du Pont Sardo & Sons Whse	5468 Union Pacific Ave	Commerce	90022	3.5	4225	-	-
4 19I012397	6/24/1996	Tzeng Long Usa Inc	2801 Vail Ave	Commerce	90040	5.0	5093	4225	-
4 19I012612	10/25/1996	Strategic Materials Inc	7000 Bandini Blvd	Commerce	90040	3.0	5093	-	-
4 19I012671	11/22/1996	Fleming Metal Fabricators	2810 Tanager	Commerce	90040	2.0	3499	-	-
4 19I013540	11/20/1997	Precision Wire Products Inc	6150 Sheila	Commerce[1]	90040	10.6	3496	-	-
4 19I013577	12/23/1997	Colonial Dames	6820 Watcher St	Commerce[1]	90040	0.4	2844	-	-
4 19I014215	6/18/1998	Pac Die Casting Corp	6155 S Eastern Ave	Commerce[1]	90040	1.5	3363	-	-
4 19I015449	10/21/1999	Parsec Inc Bnsf Railroad	4000 E Sheila St	Commerce[1]	90023	2.0	4011	-	-
4 19I015576	1/12/2000	US Lubricants	4000 E Washington Blvd	Commerce	90023	2.0	2992	-	-
4 19I015663	3/10/2000	Valley Plating Works Inc	5900 Sheila St	Commerce[1]	90040	4.9	3471	-	-
4 19I016019	8/14/2000	Exide Corp	5909 Randolph	Commerce	90040	1.7	3399	-	-
4 19I016034	8/21/2000	American RENOLIT Corp	6900 Elm St	Commerce[1]	90040	2.0	3081	2821	-
4 19I016230	11/20/2000	API Kirk Containers	2131 Garfield	Commerce[1]	90040	0.2	3089	-	-
4 19I017590	11/3/2002	General Mills	5469 Ferguson	Commerce[1]	90022	3.0	2045	-	-
4 19I018180	6/13/2003	Parsec Operations at BNSF Railway	2818 Eastern Ave	Commerce[1]	90040	36.0	4011	-	-
4 19I018741	4/19/2004	American Graphic Board Inc	5880 East Slauson Ave	Commerce	90040	2.4	2655	-	-
4 19I018851	6/23/2004	Commerce Refuse to Energy Facility	5926 Sheila St	Commerce[1]	90040	6.0	4911	4953	-
4 19I018989	9/2/2004	Wiretech Inc	6440 E Canning St	Commerce	90040	1.6	3315	-	-

Table H-2 Active Permitted Industrial Facilities in Los Angeles County within Commerce

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I020422	8/22/2006	Horizon Milling LLC	5471 Ferguson Dr	Commerce	90022	5.8	2041	-	-
4 19I020783	4/10/2007	Liberty Packing & Estruding Inc	3015 Supply Ave	Commerce	90040	1.1	2673	2671	-
4 19I020805	4/12/2007	OXY USA East LA Facility	5901 Triumph	Commerce	93340	2.4	1311	-	-
4 19I020806	4/12/2007	OXY USA Bandini Facility	5141 Astor	Commerce	93340	1.0	1311	-	-
4 19I020821	4/12/2007	Signature Flexible Packaging	5519 Jillson St	Commerce	90040	0.6	2673	-	-
4 19I020881	5/14/2007	US Polymers Inc	5910 Bandini	Commerce	90040	1.5	3084	3082	3087
4 19I020887	5/16/2007	E Z Plastic Packaging Corp	2051 S Garfield Ave	Commerce	90040	1.7	3081	-	-
4 19I021220	10/19/2007	FP International	6195 E Randolph St	Commerce	90040	1.7	3086	-	-
4 19I021380	8/15/2012	Superior Printing Ink Co Inc	2121 Yates Ave	Commerce	90040	0.4	2893	-	-
4 19I021525	4/14/2008	Southern Fiber Los Angeles LLC	2748 Tanager Ave	Commerce	90040	2.0	2297	-	-
4 19I021540	4/29/2008	Kaiser Aluminum	6250 E Bandini Blvd	Commerce[1]	90040	4.5	3354	3341	-
4 19I022102	4/10/2009	Kerry Ingredients & Flavours	1916 Tubeway Ave	Commerce	90040	2.5	2087	-	-
4 19I022351	10/7/2009	SI Tourcoach	1230 S Tubeway Ave	Commerce	90040	2.0	4173	-	-
4 19I023412	11/28/2011	Smart and Final Distribution	5500 Sheila St	Commerce	90040	23.0	4225	-	-
4 19I023650	5/31/2012	Replanet LLC	5603 Randolph St	Commerce	90040	2.7	5093	-	-
4 19I023653	6/4/2012	Green Land Metals Inc	6400 Bandini Blvd	Commerce	90040	0.6	5093	-	-
4 19I023769	8/7/2012	99 Cent Only Stores	4000 Union Pacific Ave	Commerce	90023	20.7	5149	5099	-
4 19I023992	12/27/2012	Western State Industrial	5635 Sheila St	Commerce	90040	0.7	5051	-	-
4 19I024214	4/22/2013	Sun Plastics Inc	7140 East Slauson Ave	Commerce	90040	2.5	3089	-	-
4 19I024241	5/6/2013	Spirit Foodservice Inc	5951 Rickenbacker Road	Commerce	90040	0.8	3089	-	-
4 19I024336	7/2/2013	Arion Global Inc	2919 Tanager Ave	Commerce	90040	0.7	5093	-	-
4 19I000163	2/26/1992	Amvac Chemical Corp	4100 E Washington Blvd	Commerce[1]	90023	3.0	2879	2869	-

[1] Permittee listed as City of Los Angeles in Permit Documents

Table H-3 Active Permitted Industrial Facilities in Los Angeles County within Vernon

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I000107	2/20/1992	Ajax Forge Co	1956 E 48th St	Vernon[1]	90058	0.9	3462	-	-
4 19I000335	3/11/1992	Punch Press Products Inc	2035 51st	Vernon	90058	2.5	3469	-	-
4 19I000341	3/11/1992	King Meat Inc	4215 Exchange	Vernon	90058	4.3	2013	-	-
4 19I000505	3/13/1992	Metro Division 34	4462 Pacific Blvd	Vernon	90058	Unknown	Unknown	-	-
4 19I000688	3/18/1992	Gasser Olds Co	2618 Fruitland Ave	Vernon	90058	0.9	3369	3499	3365
4 19I000797	3/20/1992	West Coast Rendering	4105 Bandini Blvd	Vernon[1]	90023	2.4	2077	-	-
4 19I001136	3/25/1992	Lubricating Specialties	3365 E Slauson Ave	Vernon	90058	0.3	5171	2992	-
4 19I001435	3/27/1992	Coast Packing Company	3275 Vernon	Vernon	90058	3.0	2079	-	-
4 19I001661	3/27/1992	Bodycote Thermal Proc	2900 S Sunol Dr	Vernon	90023	2.0	3398	-	-
4 19I001697	10/10/2011	Norton Packaging Inc	5800 S Boyle Ave	Vernon	90058	5.0	3089	-	-
4 19I002066	3/30/1992	L A Junction R&R	4433 Exchange Ave	Vernon[1]	90058	2.0	4011	-	-
4 19I002078	3/30/1992	United Parcel Service	4925 Boyle	Vernon	90058	2.0	4215	-	-
4 19I002083	3/30/1992	United Parcel Ser Cagvs	3333 S Downey Rd	Vernon[1]	90023	15.0	4215	-	-
4 19I002142	3/30/1992	Tremco Manufacturing	3060 E 44th St	Vernon	90058	2.1	2952	-	-
4 19I002179	3/30/1992	FedEx Freight Inc SLG	4500 Bandini Blvd	Vernon	90058	16.0	4213	-	-
4 19I002639	4/1/1992	Exxon Mobil Oil Corp Vernon Cu	2619 37th	Vernon	90058	18.0	5171	-	-
4 19I002920	4/2/1992	Dunn Edwards Corp	4885 E 52nd Pl	Vernon[1]	90040	6.4	2851	-	-
4 19I002950	4/2/1992	Air Prod & Chemicals	3305 E 26th St	Vernon[1]	90023	5.0	2899	-	-
4 19I002998	4/2/1992	City Fibers Inc	2500 S Santa Fe Ave	Vernon[1]	90058	4.0	5093	-	-
4 19I003535	4/3/1992	Alpert & Alpert Iron & Metal	1820 S Soto St	Vernon[1]	90023	7.0	5093	-	-
4 19I003834	4/3/1992	F & S Distributing Co Inc	4444 E 26th St	Vernon[1]	90023	3.4	4225	-	-
4 19I004283	4/6/1992	Neptune Foods	4510 Alameda	Vernon	90058	2.0	2092	-	-
4 19I004285	4/6/1992	Clougherty Packing Co	3049 E Vernon Ave	Vernon	90058	19.0	2013	-	-
4 19I004956	4/7/1992	Norman Fox and Co	5611 S Boyle Ave	Vernon	90058	4.9	2841	2843	-
4 19I005336	4/10/1992	Rehrig Pacific Co	4010 26th	Vernon[1]	90023	4.7	3089	2821	-
4 19I005454	4/7/1992	Sandberg Furniture	3251 E Slauson Ave	Vernon[1]	90058	11.0	2511	-	-
4 19I005929	4/17/1992	Darling Delaware Co	2626 E 25th St	Vernon[1]	90058	5.0	2077	-	-
4 19I006257	4/22/1992	Catalina Pacific Concrete Co	1862 E 27th St	Vernon[1]	90058	1.0	3273	-	-
4 19I006948	5/11/1992	Barksdale Inc	3211 Fruitland Ave	Vernon[1]	90058	5.0	3499	-	-
4 19I007214	6/18/1992	Engineered Coating Tech Inc	2838 E 54th St	Vernon	90058	0.2	2851	-	-
4 19I009526	12/2/1992	Vernon Warehouse Liquid Division	2322 37th	Vernon	90058	1.9	2099	2869	-
4 19I009847	3/18/1993	General Mills	4309 Fruitland	Vernon	90058	7.0	2041	-	-
4 19I009855	6/8/2011	FLOWSERVE	2300 VERNON	Vernon[1]	90058	13.0	3561	-	-
4 19I009927	4/22/1993	Arcadia Inc	3225 E Washington Blvd	Vernon	90023	Unknown	Unknown	-	-
4 19I009970	5/27/1993	D K Enviromental	3650 E 26th St	Vernon	90058	2.0	4953	-	-
4 19I010454	8/17/1993	Quickway Trucking Co	2929 E 50th St	Vernon[1]	90058	3.0	4214	-	-
4 19I010612	9/20/1993	Core Mark Int	2311 E 48th St	Vernon[1]	90058	6.4	4213	-	-
4 19I010685	10/20/1993	Modern Pattern & Foundry Co	5610 Alcoa Ave	Vernon	90058	1.0	3325	3365	-
4 19I011162	9/16/1994	Robertsons Ready Mix Los Angeles	3365 26th	Vernon[1]	90023	3.0	3273	-	-

Table H-3 Active Permitted Industrial Facilities in Los Angeles County within Vernon

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I011194	9/30/1994	Cargill Inc	2750 Jewel Ave	Vernon	90058	3.3	2079	-	-
4 19I011284	11/22/1994	Four Star Chemical	3137 E 26th St	Vernon[1]	90023	3.0	2869	-	-
4 19I011463	3/8/1995	P Kay Metal Supply	2448 E 25th St	Vernon[1]	90058	0.7	3369	-	-
4 19I011862	9/14/1995	Packaging Advantage Corp	4633 S Downey Rd	Vernon[1]	90058	12.0	2841	2844	2842
4 19I012393	6/24/1996	Clorox Products Manufacturing Co	4333 Bandini	Vernon	90023	7.0	2819	-	-
4 19I012450	7/31/1996	LA Fiber Co	920 S Boyle Ave	Vernon	90058	2.8	2299	-	-
4 19I012994	3/19/1997	BNSF Railway Hobart	3770 E Washington Blvd	Vernon[1]	90023	2.0	4212	-	-
4 19I013129	6/25/1997	Vest Inc	6023 Alcoa Ave	Vernon	90058	10.0	3317	-	-
4 19I013230	7/1/1997	Innovative Waste Control Inc T	4133 Bandini Blvd	Vernon	90023	2.0	4953	-	-
4 19I013457	10/8/1997	Fed Ex Ground	2600 28th	Vernon	90058	13.0	4215	-	-
4 19I014854	12/22/1998	Sweetener Products Co Trucking Division	4181 Ross St	Vernon	90058	2.8	4231	-	-
4 19I015027	3/23/1999	Heitz Trucking Inc	3575 Ross St	Vernon	90058	2.0	4212	4213	-
4 19I015100	5/7/1999	Packaging Co CA	4240 Bandini Blvd	Vernon[1]	90023	12.0	2653	-	-
4 19I015868	11/20/2012	ExxonMobil Oil Corp Vernon Terminal	2709 37th	Vernon	90058	3.0	5171	-	-
4 19I016288	12/21/2000	Cherokee Chemical Co Inc	3540 E 26th St	Vernon[1]	90023	2.0	2899	-	-
4 19I016397	3/14/2001	US Radiator Corp	4423 District Blvd	Vernon	90058	2.0	3714	-	-
4 19I016811	9/25/2001	Dependable Highway Express Inc	2626 E 26th St	Vernon	90058	4.0	4212	4213	-
4 19I017351	7/3/2002	Earthgrains Baking Company Inc	5200 S Alameda St	Vernon	90058	7.9	2051	-	-
4 19I017499	9/25/2002	J&J Snack Food	5353 Downey	Vernon	90058	8.0	2052	-	-
4 19I017741	1/8/2003	Seven Up Rc Botting Co	3220 E 26th St	Vernon	90058	22.0	2086	-	-
4 19I018427	10/24/2003	Southwest Processors Inc	4120 Bandini Blvd	Vernon[1]	90023	4.0	4952	4953	2077
4 19I018451	10/29/2003	Aerojet Rocketdyne Inc	2929 E 54th St	Vernon[1]	90058	3.0	3483	-	-
4 19I018475	11/24/2003	Aul Pipe Tube & Steel Inc	701 S Bonnie Beach Pl	Vernon[1]	90023	0.6	3317	-	-
4 19I018486	12/5/2003	Allied Feather & Down Corp	2661 E 46th St	Vernon	90058	0.9	3999	-	-
4 19I018493	12/5/2003	Hollander Home Fashion Corp	553 Seville Ave	Vernon	90058	2.8	2392	-	-
4 19I018501	12/8/2003	C S America Inc	4309 Exchange Ave	Vernon[1]	90058	1.8	2281	-	-
4 19I018503	12/8/2003	Randall Foods Inc	2905 E 50th St	Vernon	90058	2.0	2015	-	-
4 19I018508	12/10/2003	Overhill Farms	2727 E Vernon Ave	Vernon[1]	90058	3.9	2038	-	-
4 19I018509	12/10/2003	Overhill Farms No 2	3055 E 44th St	Vernon[1]	90058	1.0	2038	-	-
4 19I018514	12/15/2003	Huxtables Kitchen	2100 E 49th St	Vernon[1]	90058	1.2	2038	2099	-
4 19I018516	12/15/2003	Camino Real Foods Inc	2638 E Vernon Ave	Vernon[1]	90058	3.0	2011	2099	-
4 19I018518	12/15/2003	Fruitland Assoc	3336 Fruitland Ave	Vernon	90058	5.0	5147	4222	2038
4 19I018579	1/14/2004	Clougherty Packing Co	2750 E 37th St 2730 And2740	Vernon	90058	4.0	2013	-	-
4 19I018594	1/22/2004	F J Food Service Inc	3855 S Soto St	Vernon[1]	90058	2.0	2013	-	-
4 19I018597	1/23/2004	Dot Line Transp	4366 E 26th St	Vernon[1]	90023	4.6	4213	-	-
4 19I018625	2/6/2004	Square H Brands Inc	2731 S Soto St	Vernon[1]	90023	3.8	2013	-	-
4 19I018628	10/3/2012	Orient Fisheries Intl	5970 Alcoa Ave	Vernon[1]	90058	1.3	919	-	-
4 19I018647	2/18/2004	As Match Dyeing	522 E 37th St	Vernon[1]	90058	4.6	2261	-	-
4 19I018715	3/26/2004	A 1 Express Delivery Services	4520 S Maywood Ave	Vernon	90058	1.8	4213	-	-

Table H-3 Active Permitted Industrial Facilities in Los Angeles County within Vernon

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I018753	4/22/2004	Screamline Inv Tourcoach	2715 Bonnie Beach	Vernon	90023	Unknown	4173	-	-
4 19I018836	6/14/2004	Consolidated Fabricators Corp	4600 S Santa Fe Ave	Vernon[1]	90058	3.5	3469	-	-
4 19I018866	6/23/2004	Kal Plastics	2050 48th	Vernon[1]	90058	1.3	3089	-	-
4 19I018894	7/12/2004	Caltex Plastics Inc	2380 E 51st St	Vernon	90058	1.8	3081	-	-
4 19I018907	7/21/2004	Lifoam Industries LLC	2340 E 52nd St	Vernon[1]	90058	1.5	3086	-	-
4 19I018922	7/27/2004	Metal Improvement Co LLC	3239 E 46th St	Vernon[1]	90058	1.1	3398	-	-
4 19I018952	8/6/2004	Atlas Galvanizing LLC	2639 Leonis Blvd	Vernon[1]	90058	0.1	3479	-	-
4 19I018954	8/6/2004	Engine Trend Co	4515 S Soto St	Vernon[1]	90058	0.5	5015	-	-
4 19I018965	8/17/2004	Evergreen Scientific	2254 to 2300 E 49th St	Vernon[1]	90058	6.0	3089	-	-
4 19I018970	8/19/2004	Vernon Pallets Inc	875 E 27th St	Vernon[1]	90058	2.0	2448	-	-
4 19I018987	9/2/2004	Baker Coupling Co Inc	2929 S Santa Fe Ave	Vernon[1]	90058	2.0	3494	-	-
4 19I019033	9/8/2004	Edris Plastic Mfg Inc	4560 Pacific Blvd	Vernon	90058	1.5	3089	-	-
4 19I019039	9/14/2004	Stericycle Inc	2775 E 26th St	Vernon	90023	1.9	4953	-	-
4 19I019096	10/14/2004	Flores Design Fine Furniture Inc	4618 Pacific Blvd	Vernon	90058	2.4	2512	-	-
4 19I019122	11/5/2004	Stone Blue Inc	2501 28th	Vernon	90058	2.0	7211	-	-
4 19I019267	9/27/2011	RCH Supply Co Inc	4511 Everett	Vernon	90058	0.3	5085	2842	-
4 19I019373	3/22/2005	Commercial Sandblast Company	2678 East 26th St	Vernon	90058	3.0	3471	-	-
4 19I019379	3/23/2005	Joes Plastics Inc	5725 District Blvd	Vernon[1]	90040	2.0	3089	-	-
4 19I019422	4/15/2005	Oseguera Trucking Co Inc	2634 E 26th St	Vernon[1]	90058	2.0	4214	-	-
4 19I019433	4/20/2005	Dollar Empire LLC	4423 Bandini Blvd	Vernon	90023	3.7	4225	-	-
4 19I019450	5/4/2005	Saia Motor Freight Line Inc	2550 28th	Vernon	90058	7.8	4213	-	-
4 19I019453	5/4/2005	Simply Fresh Fruit	4383 Exchange Ave	Vernon[1]	90058	2.6	2024	-	-
4 19I020300	6/21/2006	F Gavina & Sons Inc	2700 Fruitland Ave	Vernon	90058	8.7	2095	-	-
4 19I020418	8/21/2006	Superior Electric Motor Service	4623 Hampton St	Vernon	90058	Unknown	Unknown	-	-
4 19I020625	1/4/2007	Vernon Air Separation Plant 870	5555 District Blvd	Vernon	90058	7.0	2813	-	-
4 19I020647	1/24/2007	Ameripride Uniform Services	5950 Alcoa Ave	Vernon	90058	Unknown	Unknown	-	-
4 19I020880	5/11/2007	Pacific Coast Trans Vernon	1925 E Vernon Ave	Vernon	90058	0.5	4213	-	-
4 19I021228	10/19/2007	Arcadia Inc	2301 E Vernon Ave	Vernon	90058	5.9	3499	-	-
4 19I021527	4/14/2008	Vernon City Light & Power Dept	4990 Seville Ave	Vernon	90058	0.4	4911	-	-
4 19I021537	4/23/2008	Malburg Generating Station	4963 Soto St	Vernon	90058	3.4	4911	-	-
4 19I021543	4/30/2008	Hannibal Industries INC	3851 Santa Fe Ave	Vernon[1]	90058	Unknown	Unknown	-	-
4 19I021637	7/1/2008	AFC Hydraulic Seals	4926 S Boyle Ave	Vernon	90058	0.2	3053	-	-
4 19I021752	8/21/2008	Rancho Foods Inc	2528 E 37th St	Vernon	90058	1.6	2011	-	-
4 19I022040	2/17/2009	Strategic Materials Inc	3211 E 26th St	Vernon	90058	3.7	5093	-	-
4 19I022161	5/28/2009	Progressive Fram & Fabrication	5050 Euerett Ct	Vernon	90058	0.5	3441	3452	-
4 19I022239	7/27/2009	Premier Meat Co	5030 Gifford Ave	Vernon	90058	0.5	5147	-	-
4 19I022277	8/13/2009	Sewing Collection Inc	3113 E 26th St	Vernon	90058	Unknown	3089	-	-
4 19I022281	8/18/2009	PABCO Paper	4460 Pacific Blvd	Vernon	90058	Unknown	Unknown	-	-
4 19I022592	4/13/2010	Waste Management Healthcare Solutions Inc	4280 Bandini Blvd	Vernon	90058	2.3	4953	-	-

Table H-3 Active Permitted Industrial Facilities in Los Angeles County within Vernon

WDID	Status Date	Site/Facility Name	Site/Facility Address	Site/Facility City	Site/Facility Zip Code	Facility Area (acres)	SIC	SIC	SIC
4 19I022644	5/19/2010	Command Packaging	3840 E 26th St	Vernon	90058	4.6	3081	-	-
4 19I022704	7/7/2010	Pacific Precision Formulators	5511 District Blvd	Vernon	90058	1.0	2992	-	-
4 19I022726	7/19/2010	Geo Plastics	2200 E 52nd St	Vernon	90058	2.3	3089	-	-
4 19I022781	8/10/2010	Great American Packaging	4361 S Soto St	Vernon	90058	1.3	2673	-	-
4 19I022931	12/6/2010	V & L Prodce Inc	2550 E 25th St	Vernon	90058	0.1	4225	-	-
4 19I023091	4/5/2011	Valley Fruit and Produce Co	2043 Ross St	Vernon	90058	1.4	5148	-	-
4 19I023121	4/25/2011	Vans Natural Foods	3285 Vernon Ave	Vernon	90058	1.8	2099	-	-
4 19I023354	9/30/2011	Forever 21 Distribution Center	2800 2860 Sierra Pine Ave	Vernon	90058	4.1	4225	-	-
4 19I023474	1/20/2012	Service Oil Co Transportation Inc	5122 S Atlantic Blvd	Vernon	90058	0.3	4213	-	-
4 19I023485	1/26/2012	Yi Bao Produce Group Inc	3105 Leonis Blvd	Vernon	90040	2.5	4222	-	-
4 19I023644	5/24/2012	Pencco Inc	4921 Gifford Ave	Vernon	90058	1.5	2819	-	-
4 19I023654	6/4/2012	D and W Fine Pack	4380 Ayers Ave	Vernon	90058	2.6	2671	-	-
4 19I023667	6/19/2012	Axex Inc	4641 Hampton St	Vernon	90058	0.2	4226	-	-
4 19I023683	6/20/2012	PPP LLC	5991 Alcoa Ave	Vernon	90058	2.1	3089	5093	-
4 19I023721	7/16/2012	Ryerson	4310 E Bandini Blvd	Vernon	90058	9.2	5051	-	-
4 19I023765	8/3/2012	Primo Corporation	3301 Fruitland Ave	Vernon	90058	2.3	3089	-	-
4 19I023878	10/19/2012	Exide Technologies	2700 S Indiana Ave	Vernon	90058	15.0	3341	-	-
4 19I023880	10/19/2012	Holliday Rock Vernon 24	2822 South Soto Street	Vernon	90058	2.6	3273	-	-
4 19I023907	11/2/2012	Pactiv Packaging Inc	3751 Seville Ave	Vernon	90058	7.0	3089	-	-
4 19I023939	11/30/2012	Proportion Foods LLC	3501 E Vernon Ave	Vernon	90058	3.5	2011	-	-
4 19I023940	11/30/2012	CLW Foods LLC	3425 E Vernon Ave	Vernon	90058	4.6	2011	-	-
4 19I023950	11/30/2012	CR Laurence Co Inc	2200 E 55th Street	Vernon[1]	90058	10.8	3442	-	-
4 19I023967	12/17/2012	CR Laurence Co Inc	2100 E 38th St	Vernon[1]	90058	6.2	3442	-	-
4 19I024017	1/23/2013	Americold Vernon 3	4224 District Blvd	Vernon	90058	8.7	2092	-	-
4 19I024176	3/28/2013	Pacific Blue Wash House Inc	2713 South Bonnie Beach Place	Vernon	90058	0.3	7211	-	-
4 19I024273	5/28/2013	Siemens Water Technologies LLC	5375 S Boyle Avenue	Vernon	90058	4.5	4953	-	-

[1] Permittee listed as City of Los Angeles in Permit Documents

Table H-4 General Individual Permitted Facilities in Los Angeles County within Bell, Bell Gardens, Commerce, Cudahy, Huntington Park, Maywood, and Vernon

Order No.	CI No.	Discharger	Facility Address	Facility City, State, and Zip Code	Program Type	General or Individual	Active Historical	Effective Date	Facility Area (acres)
2006-0003-DWQ	None	Bell City	6330 Pine Avenue	Bell, CA	NON15	G	Active	--	
R4-2003-0108	8385	Southern California Water Co.	6424 S. Otis Ave	Bell, CA	NPDES	G	Active	1/14/2004	
R4-2003-0108	8729	Southern California Water Co.	7026 Walker Ave	Bell, CA	NPDES	G	Active	4/23/2004	
R4-2003-0108	8666	Southern California Water	6612 Bissell St	Bell, CA 90210	NPDES	G	Active	10/4/2003	
2006-0003-DWQ	None	Bell Gardens City	7100 Garfield Avenue South	Bell Gardens, CA	NON15	G	Active	--	
R4-2003-0108	8762	Southern California Water Co.	6440 Clara St	Bell Gardens, CA 90201	NPDES	G	Active	6/24/2004	
R4-2003-0108	8184	Southern California Water Co.	6112 E. Gage Ave	Bell Gardens, CA 90201	NPDES	G	Active	12/23/2003	
R4-2003-0108	7708	Bell Gardens DPW	6607 Florence Place	Bell Gardens, CA 90201	NPDES	G	Active	10/23/2003	
R4-2007-0019	9613	6863 East Florence Place, LLC	6863/45 East Florence Place	Bell Gardens, CA 90201	NON15	G	Active	6/21/2010	
P 8163	6389C	Maravilla Transport	5936 E. Clara St	Bell Gardens, CA 90201	NON15	I	C	1/23/1978	
2006-0003-DWQ	None	Commerce City	2535 Commerce Way	Commerce, CA	NON15	G	Active	--	
P 8416	6623C	Apex Drum Co.	6226 Ferguson Dr	Commerce, CA 90022	NON15	I	C	3/22/1982	
R4-2007-0019	9875	Univar USA Inc.	4256 Noakes St	Commerce, CA 90023	NON15	G	Active	3/25/2013	
R4-2003-0108	9802	California Water Service Company	2000 S. Tubeway Ave	Commerce, CA 90040	NPDES	G	Active	3/28/2012	
P 8462	6655C	Benjamin Moore & Co.	3325 S. Garfield Ave	Commerce, CA 90040	NON15	I	C	2/28/1983	
2006-0003-DWQ	None	Cudahy City	5220 Santa Ana St	Cudahy, CA 90201	NON15	G	Active	--	
R4-2003-0108	9229	Tract 180 Water Company	4566 Florence Ave	Cudahy, CA 90201	NPDES	G	Active	2/20/2007	
2006-0003-DWQ	None	Huntington Park City	6550 Miles Avenue	Huntington Park, CA	NON15	G	Active	--	
R4-2003-0108	7942	Walnut Park Mutual Water Co.	2460 E. Florence Ave	Huntington Park, CA 90255	NPDES	G	Active	11/26/2003	
2006-0003-DWQ	None	Maywood City	4319 Slauson Avenue East	Maywood, CA	NON15	G	Active	--	
R4-2008-0032	9917	Maywood Mutual Water Company No. 3	6253 Prospecet Ave	Maywood, CA 90270	NPDES	G	Active	2/19/2013	
R4-2009-0047	9172	Maywood Mututal Water Company	4421 E. 52nd Street	Maywood, CA 90270	NPDES	G	Active	1/14/2011	
2006-0003-DWQ	None	Vernon City	4305 Santa Fe Avenue	Vernon, CA	NON15	G	Active	--	
R4-2007-0019	8676	Soco West, Inc.	3270 E. Washington Blvd	Vernon, CA 90023	NON15	G	Active	8/27/2012	
R4-2009-0047	7652	Coast Packing Co.	3275 E. Vernon Ave	Vernon, CA 90058	NPDES	G	Active	6/10/2010	
R4-2009-0068	8160	ExxonMobil Oil Corporation	2709 E. 37th St	Vernon, CA 90058	NPDES	G	Active	8/6/2009	
R4-2010-0087	6079	Owens-Illinois, Incorporated	2901 Fruitland Ave	Vernon, CA 90058	NPDES	I	Active	7/3/2010	
R4-2010-0087-R01	6079	Owens-Illinois, Incorporated	2901 Fruitland Ave	Vernon, CA 90058	NPDES	I	Active	3/2/2012	
P 8255	6505C	Millennium Tech	2438 E. 55th St	Vernon, CA 90058	NON15	I	C	3/24/1980	
R4-2003-0108	8717	California Water Service Co.			NPDES	G	Active	2/25/2004	

NON15 = New, General, Nonsubchapter 15 Program
NPDES = NPDES Permit

Appendix I

Secondary Funding Opportunities

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**Proposition 84 Stormwater Program**	**Proposition 84 (Chapter 2, §75026) Integrated Regional Water Management (IRWM)**	**Proposition 84 Urban Stream Restoration**
Department	State Water Resources Control Board (SWRCB)	SWRCB	SWRCB
Purpose	Provides funding for projects that reduce and prevent stormwater contamination of rivers, lakes, and streams.	Projects to assist local public agencies to meet long-term water management needs of the State, including the delivery of safe drinking water, flood risk reduction, and protection of water quality and the environment.	Projects that reduce urban flooding and erosion, restore environmental values, and promote stewardship of urban streams.
Eligibility Requirements	Local public agencies	Local public agencies or nonprofit representing an accepted IRWM Region	Local government agencies and citizens groups/nonprofits (together)
Eligible Uses	➢ Implement Low Impact Development (LID) and other onsite and regional practices that seek to maintain predevelopment hydrology. ➢ Comply with stormwater related TMDL requirements	Projects that implement IRWM Plans	Creek cleanups; eradication of exotic or invasive plants; revegetation efforts; bioengineering bank stabilization projects; channel reconfiguration to improve stream geomorphology and aquatic habitat functions; acquisition of parcels critical for flood management; and coordination of community involvement in projects.
Ineligible Uses	Operation and maintenance activities	Operation and maintenance activities	Exclusively educational or fish and wildlife enhancement projects; lake or reservoir enhancements; planning only projects; and mitigation for development or other projects
Funding Limits	$250,000 to $3,000,000 per project Requires 20% match (less for Disadvantaged Communities (DACs))	➢ Bond funding allocation for entire program is $1,000,000,000. ➢ Prop 84 allots grant funding to 11 funding areas. ➢ Each proposal solicitation package will have predetermined amount of funds available.	$1,000,000 per eligible project
Terms/Dates	Round 2 proposals were due February 27, 2014 with grants being awarded by June 2014, ending Round 2. Future opportunities will be presented at a future time.	➢ 25% minimum cost share with waivers for DACs ➢ Round 3 expected in Fall 2014 (approximately $130,000,000 available for Los Angeles Funding Areas)	Next grant application solicitation anticipated in Spring 2014 ($9,000,000 available)
Website	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/prop84/index.shtml	http://www.water.ca.gov/irwm/grants/	http://www.water.ca.gov/urbanstreams
Examples	➢ City of Los Angeles Broadway Neighborhood Stormwater Greenway Project ➢ City of Encinitas Cottonwood Creek Watershed LID Retrofit Project	➢ City of Carson's Trash Reduction Automatic Retracting Screen Project ➢ Dominguez Gap Spreading Grounds West Basin Percolation Improvements ➢ Oxford Retention Basin Multi-Use Enhancement Project ➢ Vermont Avenue Stormwater Capture and Green Street Project.	➢ Restoration of Berkshire Creek sponsored by Pasadena and Arroyo Seco ➢ Dry Canyon Creek Historic Meander Restoration sponsored by the City of Calabasas ➢ Upper Otay Watershed Restoration Project sponsored by the City of San Diego Water Department
Comments	All projects awarded funds through this grant program have planning and monitoring requirements or an implementation requirement. The projects funded through this program also involve LID or green streets in order to reduce and prevent stormwater contamination of rivers, lakes, and streams. This program gives agencies the opportunity to enhance water quality while also assisting in compliance.	IRWM is a collaborative effort to manage all aspects of water resources in a region. IRWM crosses jurisdictional, watershed, and political boundaries; involves multiple agencies, stakeholders, individuals, and groups; and attempts to address the issues and differing perspectives of all the entities involved through mutually beneficial solutions. Some eligible project types include: ➢ Stormwater capture, storage, clean-up, treatment, and management; ➢ Non-point source pollution reduction, management, and monitoring; ➢ Groundwater recharge and management projects; ➢ Planning and implementation of multipurpose flood management programs; and ➢ Watershed protection and management.	LAR UR2 WMA may be able to take advantage of this funding opportunity if the proposed projects are related to stream restoration. If project concepts change in the future, this opportunity may be more applicable..
LAR UR2 WMA Potential Uses	➢ Regional BMP Projects ➢ Distributed BMP Projects	➢ Regional BMP Projects ➢ Distributed BMP Projects	No projects apply at this time
Contact Information	Erik Ekdahl Division of Financial Assistance Project Development (916) 341-5877 Erik.Ekdahl@waterboards.ca.gov	(916) 651-9613 or email DWR_IRWM@water.ca.gov	Program Manager Amy Young Staff Environmental Scientist (916) 651-9626 Amy.Young@water.ca.gov

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**Community Action for a Renewed Environment (CARE)**	**Pollution Prevention (P2)**	**Clean Beaches Initiative (CBI)**
Department	United States Environmental Protection Agency (USEPA)	USEPA	SWRCB
Purpose	Provide support to help communities form collaborative partnerships, develop a comprehensive understanding of many sources of risk from toxics and environmental pollutants, set priorities and identify and carry out projects to reduce risks through collaborative action at the local level.	Fund projects that help reduce hazardous substances, pollutants, or contaminants entering waste streams or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, disposal or energy recovery activities.	Projects that restore and protect water quality of coastal waters, estuaries, bays, and near shore waters, with an emphasis on projects that reduce bacterial contamination on public beaches.
Eligibility Requirements	Local non-profit organizations, Native American Organizations, quasi-public non-profit organizations, inter and intrastate, local government, colleges, and universities.	State governments, colleges, and universities, federally-recognized tribes and intertribal consortia.	Local agencies, public agencies, non-profits, and Indian tribes
Eligible Uses	Community projects involving education of environmental pollutants	Projects that implement pollution prevention technical assistance services and/or training for businesses and support projects that utilize pollution prevention techniques to reduce and/or eliminate pollution from air, water, and/or land.	Planning and implementation projects meeting CBI priorities
Ineligible Uses	Not identified	Not identified	Operation and maintenance activities
Funding Limits	➢ Two funding levels: $75,000-$100,000 and $150,000-$300,000 ➢ No matching required	➢ Approximately forty grants awarded annually for $20,000-$180,000 ➢ 50 percent match required	$150,000 to $5,000,000 Requires match (variable based on project or if benefits a DAC)
Terms/Dates	Applications dates are to be determined.	Grants are usually awarded between May and August and application deadlines are currently unavailable, but will be posted online.	➢ Continuous funding cycle, with intermittent closures to review proposals, until funds are exhausted ($49,500,000 available). ➢ Applications through Financial Assistance Application Submittal Tool (FAAST)
Website	www.epa.gov/care	http://www.epa.gov/p2/pubs/grants/index.htm	http://www.waterboards.ca.gov/water_issues/programs/beaches/cbi_projects/index.shtml
Examples	➢ Environmental Justice Action Collaborative for Maywood in 2010 ➢ Environmental Health Coalition - Clean Ports in 2009 ➢ Pacoima Beautiful in 2007 and 2005	➢ Funded the Santa Ynez Band of Chumash Indians and trained over 1,700 business employees regarding pollution prevention techniques (2013) ➢ Funded the University of California San Francisco so that a database could be developed that identifies environmentally friendlier product alternatives (2012)	➢ Los Angeles Sanitation District and City of Los Angeles Ballona Creek Water Quality Improvement and Beneficial Use Project ➢ City of Santa Cruz Reduce Sources of Bacteria at Cowell Beach and Main Beach Project ➢ Low flow diversions and sewer improvements
Comments	CARE projects have been implemented and funded within the United States since 2005. LAR UR2 WMA may be able to take advantage of the CARE grant opportunity to fund community programs associated with MCM program elements involving community outreach.	P2 has funded various training and educational programs across the United States. LAR UR2 WMA may be able to benefit from this grant program in order to implement requirements associated with the M4 Permit required MCMs and other pollution prevention training programs.	The projects awarded this grant promote LID and projects designed to implement a stormwater resource plan. As mentioned above, priority is given to project that reduce bacterial contamination on public beaches. An even higher priority is given to projects addressing bacteria on beaches that have a low grade on the Heal the Bay Report Card (http://brc.healthebay.org).
LAR UR2 WMA Potential Uses	➢ Stormwater Program	➢ Stormwater Program	➢ Regional BMP Projects ➢ Distributed BMP Projects (If a link between clean beaches can be made)
Contact Information	CARE Program USEPA (8001A) 1200 Pennsylvania Avenue, NW Washington, DC 20460 (877) CARE-909	Jessica Counts-Arnold USEPA Region 9 75 Hawthorne Street (WST-7) San Francisco, CA 94105 (415) 972-3288 Counts-arnold.jessica@epa.gov	Patricia Leary Senior Water Resources Control Engineer Division of Financial Assistance (916) 341-5167 pleary@waterboards.ca.gov

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**Urban Waters Small Grant**	**Environmental Education Grant and SubGrant**	**Cooperative Watershed Management Plan**
Department	USEPA	USEPA	United States Department of the Interior Bureau of Reclamation
Purpose	Fund projects that will foster a comprehensive understanding of local urban water issues, identify and address these issues at the local level, and educate and empower the community.	Provide financial support for projects which design, demonstrate or disseminate environmental education practices, methods, or techniques.	Enhance water conservation including alternative uses, improve water quality, improve ecological resiliency of a river or stream, and reduce conflicts over water at the watershed level by supporting the formation of watershed groups.
Eligibility Requirements	Educational institutions, Indian tribes, local governments, non-profit groups, schools, governments, state/territorial agency, and Tribal agencies.	Local, Tribal, or state education agencies, colleges and universities, state environmental agencies, and non-commercial educational broadcasting agencies.	Existing or proposed watershed groups, states, and local districts.
Eligible Uses	Fund research, investigations, experiments, training, surveys, studies, and demonstrations that will advance the restoration of urban waters by improving water quality through activities that also support community revitalization and other local priorities.	Project must address one of the following educational and environmental priority issue. Educational issues: community projects; human health and environment; or career development. Environmental issues: protecting air quality; safety of chemicals; cleaning up our communities; or protecting America's waters.	Activities falling under categories Task Area A and Task Area B described below. Task Area A: establishment of a new watershed group. Task Area B: expansion of an existing watershed group.
Ineligible Uses	Not identified	Not identified	Not identified
Funding Limits	Approximately $1.6 million annually, $40,000-$60,000 each	➢ Approximately $2,778,940 available annually ➢ Each grant between $75,000-$200,000 ➢ 2-3 grants awarded to each region for an expected 22-32 grants total	Typically $22,000-$100,000 each and an annual total of about $200,000
Terms/Dates	The 2013/14 application period is closed and the 2014/15 not announced.	Applications accepted annually. Expect solicitation for 2015 funding near the end of 2014 and applications due January 2015.	Schedule for 2014 and future funding is currently under development.
Website	http://www2.epa.gov/urbanwaters/urban-waters-small-grants	http://www2.epa.gov/education/environmental-education-ee-grants	http://www.usbr.gov/WaterSMART/cwmp/index.html
Examples	➢ California Coastal Commission in Santa Cruz County (see below) ➢ Council for Watershed Health (see below)	➢ Bay institute of San Francisco for a watershed restoration educational program ➢ San Joaquin for an Adopt-a-Watershed training for teachers ➢ Santa Monica Baykeeper for a variety of stormwater pollution prevention education	➢ Western Slope Conservation Center in Colorado (see below) ➢ Friends of Teton River, Inc. in Idaho (see below)
Comments	During the 2011/12 funding cycle, the California Coastal Commission in Santa Cruz County received funding for a project that will reduce specific urban sources of water quality impacts in two target watershed areas by implementing structural and non-structural control measures. The Council for Watershed Health also received funding to develop a Los Angeles River Watershed assessment framework and then disseminate the results to the community via multi-media outlets. LAR UR2 WMA may be able to take advantage of funding through this grant depending on the requirements set forth during the application year. These funds could be used to fund various MCM programs, other institutional BMP control measures, and distributed structural BMPs.	Various environmental educational programs within California have received funding through this grant program dating back as far as 1992. LAR UR2 WMA may be able to utilize this grant opportunity for funding any stormwater pollution prevention educational programs, including various MCM program elements.	Five entities received funding in 2013 to establish or expand watershed groups in Colorado, Idaho, and Oregon. The Western Slope Conservation Center in Colorado was an established watershed group that will use the funding to address exceedances in E. coli and selenium. The Friends of Teton River, Inc. in Idaho used the grant money to expand their current watershed group to form an advisory council to prioritize and endorse various projects. The Cooperative Watershed Management Program grant is applicable to LAR UR2 WMA and could be used to expand or implement projects or programs associated with the group.
LAR UR2 WMA Potential Uses	➢ Stormwater Program	➢ Stormwater Program	➢ Stormwater Program ➢ Regional BMP Projects ➢ Distributed BMP Projects (as long as the group applies for the grant opposed to individual agencies)
Contact Information	Jared Vollmer USEPA Region 9 (WTR-3) 75 Hawthorne Street San Francisco, CA 94105 (415) 972-3447 Vollmer.jared@epa.gov	Adrienne Priselac USEPA Region 9 Environmental Education (CED-4) 75 Hawthorne Street San Francisco, CA 94105 Priselac.adrienne@epa.gov	Dean Marrone (303) 445-3577 www.usbr.gov/WaterSMART

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**State of California Coastal Conservancy Program**	**Wildlife Conservation Board (WCB)**	**Habitat Conservation Fund (HCF)**
Department	State of California Coastal Conservancy	State of California Wildlife Conservation Board	State of California Department of Parks and Recreation
Purpose	Projects that protect and improve coastal wetlands, streams, and watersheds; work with local communities to revitalize urban waterfronts; and helps to solve complex land use problems.	Projects that are applicable to the following WCB program, riparian habitat conservation, inland wetlands conservation, ecosystem restoration or agricultural lands, and habitat enhancement and restoration.	Projects that protect threatened species, address wildlife corridors, create trails, and provide nature interpretation programs.
Eligibility Requirements	Government agencies and non-profit organizations	Government agencies, state departments, federal agencies, and non-profit organizations	Cities, counties, and districts
Eligible Uses	Goals and projects that meet the objectives in the Conservancy's Strategic Plan and consistent with the purposes of the funding source (typically Proposition 84)	Projects that restore and enhance wildlife habitats	Nature interpretation programs to bring urban residents into park and wildlife areas, protection of various plant and animal species, and acquisition and development of wildlife corridors and trails.
Ineligible Uses	Not identified	Not identified	Not identified
Funding Limits	No established minimum or maximum grant amount	No established minimum or maximum grant amount	➢ $2,000,000 funded annually through 2019-2020 Fiscal Year ➢ 50 percent match required from grantees
Terms/Dates	Proposals are accepted on a continuous basis. Periodically grant rounds will be advertised and applications will be accepted for projects of a particular type or a particular location.	Proposals are accepted on a continuous basis. WCB meets four times per year, typically in February, May, August, and November.	Applications are due the first workday in October each year.
Website	http://scc.ca.gov/applying-for-grants-and-assistance/forms/	www.wcb.ca.gov/Programs.aspx	http://www.parks.ca.gov/?Page_id=21361
Examples	➢ Los Cerritos Wetlands Authority (see below) ➢ Mountains Recreation and Conservation Authority (see below) ➢ Ballona Creek Wetlands Ecological Reserve (see below)	➢ Malibu Lagoon State Park Coastal Restoration Project ➢ Moss Landing Wildlife Area Wetland Restoration Project	Projects identified on the 2013-14 HCF recommended projects list: ➢ City of Pasadena's Arroyo Seco Adventure Camp ➢ County of Los Angeles Golden Braille Trail Project ➢ County of Los Angeles Placerita Canyon Riparian Habitat Preserve/Restoration Project
Comments	Various projects within southern California have received funding through the Coastal Conservancy Grant Program. In 2011, $225,000 was provided to the Los Cerritos Wetlands Authority to prepare a comprehensive conceptual restoration plan for the Los Cerritos wetlands complex in the Cities of Long Beach and Seal Beach near the mouth of the San Gabriel River. $500,000 was awarded to the Mountains Recreation and Conservation Authority for the design and construction of the Compton Creek Nature Park and $280,000 was provided for site improvements and planning to provide for public access, community stewardship, and educational programs at the Ballona Wetlands Ecological Reserve. This grant program may be applicable to LAR UR2 WMA for different types of control measures.	Various projects within California have received funding through this grant program. Projects that may be authorized as inland wetland conservation projects incorporate elements such as the construction of swales, installation of water control structures, and the establishment of upland grasslands. LAR UR2 WMA may be able to benefit from the WCB Grant Program if the projects identified through the WMP development pertain to wetlands or habitat enhancements. It may be easy `to add elements to potential projects so that the project qualifies for funding while also incorporating water quality improvement elements.	The HCF has opportunities annually that the LAR UR2 WMA may be able to benefit from if selected projects concern a wildlife aspect. In some cases, projects can be modified to incorporate additional elements to address water quality. Multi-use projects may qualify for funding through this grant.
LAR UR2 WMA Potential Uses	No projects apply at this time	No projects apply at this time	No projects apply at this time
Contact Information	South Coast: Ventura County to San Diego County Joan Cardellino (510) 286-4093 jcard@scc.ca.gov	Dave Means Assistant Executive Director Dave.means@wildlife.ca.gov www.wcb.ca.gov/Programs.aspx	California State Parks Office of Grants & Local Services P.O. Box 942896 Sacramento, CA 94296 (916) 653-7423 localservices@parks.ca.gov

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation			
Grant Program	**Land and Water Conservation Fund (LWCF)**	**Recreational Trails Program (RTP)**	**TIGER Discretionary Grant**
Department	State of California Department of Parks and Recreation	State of California Department of Parks and Recreation	Department of Transportation (DOT)
Purpose	Projects that protect threatened species, address wildlife corridors, create trails, and provide nature interpretation programs.	Provides funding for recreational trails and trails-related projects.	Provides funding for road, rail, transit, and port projects that will deliver long-term outcomes of safety, economic competitiveness, state of good repair, livability, and environmental sustainability.
Eligibility Requirements	Cities, counties, Native American tribes, joint power authorities, and non-state agency recreation and park districts	Cities, counties, districts, state agencies, federal agencies, and non-profit organizations	State, local, and tribal governments, including United States territories, transit agencies, port authorities, metropolitan planning organizations, other political subdivisions of state or local governments, and multi-state or multi-jurisdictional groups applying through a single lead applicant.
Eligible Uses	Projects that are associated with parks which promote children play, exercise, family bonding, senior socializing, connections with nature, and cultural differences.	Non-motorized and motorized projects that involve acquisitions for trails, trail rehabilitation, and construction of new trails.	Based on the Consolidated Appropriations Act, 2014 (Public Law No. 113-76)
Ineligible Uses	Not identified	See application guidelines	Not identified
Funding Limits	➢ $2,000,000 is the maximum grant request which cannot exceed 50 percent of total project cost ➢ This is a reimbursement-only program	➢ No minimum or maximum amount specified ➢ The maximum amount of funds allowed for each project is 88 percent, requiring a minimum of 12 percent match	$600 million to be awarded for National Infrastructure Investments
Terms/Dates	Applications are due February 3rd of every year	Current funding source expires September 30, 2014 and additional dates cannot be identified until new authorizations are finalized.	Grant applications must be submitted by April 28, 2014. Future opportunities are unknown at this time.
Website	http://www.parks.ca.gov/?Page_id=21360	http://www.parks.ca.gov/?Page_id=24324	http://www.dot.gov/tiger
Examples	➢ City of Covina's City Center Park ➢ Los Angeles County Cold Creek High Trail ➢ City of El Monte's Rio Hondo River Park	➢ City of Los Angeles' Peck Bandini ➢ City of Diamond Bar's Sycamore Canyon Park ➢ City of Gendale's San Rafael Hills "Mountain Do" Trail	➢ Crenshaw/Los Angeles Airport Light Rail Connection ➢ Port of Long Beach Rail Realignment ➢ Port of Los Angeles West Basin Rail Yard
Comments	Types of projects eligible: ➢ Athletic fields and courts ➢ Community gardens ➢ Non-motorized neighborhood and regional recreational trails ➢ Open space and natural areas ➢ Picnic areas ➢ Play grounds LAR UR2 WMA may be able to take advantage of this funding opportunity if the proposed projects are related to parks. It may be easy to add elements to potential projects so that the project qualifies for funding while also incorporating water quality improvement elements.	LAR UR2 WMA may be able to take advantage of this funding opportunity if the proposed projects are related to trails. It may be easy to add elements to potential projects so that the project qualifies for funding while also incorporating water quality improvement elements.	According to the March 24, 2014 CASQA bi-weekly newsletter, the notice for available funding provides guidance on selection criteria and application requirements for the National Infrastructure Investments. The legislation includes substantial language including funding for "addressing stormwater through natural means", "groundwater recharge in areas of water scarcity", and "stormwater mitigation", therefore stormwater projects may be eligible for funding. LAR UR2 WMA may be able to receive funding from this program now or in the future in order to assist in projects that incorporate both a transportation and water quality aspect.
LAR UR2 WMA Potential Uses	➢ Regional BMP Projects (with park elements)	➢ Regional BMP Projects (with trail elements)	➢ Regional BMP Projects ➢ Distributed BMP Projects (related to transportation)
Contact Information	California State Parks Office of Grants & Local Services P.O. Box 942896 Sacramento, CA 94296 (916) 653-7423 localservices@parks.ca.gov	California State Parks Office of Grants & Local Services P.O. Box 942896 Sacramento, CA 94296 (916) 653-7423 localservices@parks.ca.gov	Office of Infrastructure Finance and Innovation -Office of the Secretary of Transportation 1200 New Jersey Avenue, SE Washington, DC 20590 (202) 366-0301 TIGERgrants@dot.gov

Table I-1 Potential Grant Programs to Fund LAR UR2 WMA WMP Implementation

Grant Program	Environmental Solutions for Communities	Clean Water Act (CWA) §319(h) Non-Point Source (NPS)	Potential 2014 Water Bond
Department	Wells Fargo and the National Fish and Wildlife Foundation	CWA	State of California
Purpose	Support projects that link economic development and community well-being to the stewardship and health of the environment.	Support implementation and planning projects that address water quality problems in surface and ground water resulting from NPS. The goal of these projects is to eventually restore the impacted beneficial uses in receiving waters.	Provide funding for projects that ensure reliable water supply for future generations.
Eligibility Requirements	Community/watershed groups, cooperative associations or districts, local governments, state/territorial agencies, and non-profit groups.	The projects must be located within watersheds that has a TMDL with constituents identified in the NPS Program Preferences. The project must also be located in a watershed that has a plan or suite of plans that meet the Nine Key Elements found in Appendix A of the grant guidelines. Lastly the project cannot be located in an area subject to an NPDES Permit.	Unclear at this time.
Eligible Uses	Funding priorities include: supporting sustainable agricultural practices and private lands stewardship; conserving critical land and water resources and improving local water quality; restoring and managing natural habitat, species, and ecosystems that are important to community livelihood; facilitating investments in green infrastructure, renewable energy and energy efficiency; and encouraging broad-based citizen participation in project implementation.	Projects that address TMDLs associated with NPS.	Provide funding for projects must address water storage capacity, recycling facilities, levee improvements, flood control facilities, water treatment plants, ecosystem restoration, and habitat improvements.
Ineligible Uses	Not identified	Projects in areas that are under or affiliated with a NPDES Permit or address an issue in a land use included in a MS4 Permit	Unclear at this time.
Funding Limits	➢ Approximately $3,000,000 annually, between $25,000-$100,000 each ➢ 1:1 match required	➢ Funding allocation for entire program is $4,000,000 ➢ Provide the minimum match funding of 25 percent of the total project cost	Unclear at this time, but budget may include $4 billion for local resources development, $4 billion for ecosystem restoration, and $3 billion for public benefits associated with groundwater storage.
Terms/Dates	Applications accepted in December annually until 2016.	Annual solicitations (2014 solicitations were required by January 2014)	On the 2014 California ballot.
Website	http://www.nfwf.org/environmentalsolutions/Pages/home.aspx	http://www.waterboards.ca.gov/water_issues/programs/nps/grant_program.shtml#eligible	http://www.acwa.com/spotlight/2014-water-bond
Examples	➢ Newark Urban Tree and Urban Farm Project ➢ Removing Blight to Restore the Bay and Create Jobs Project ➢ Greening Art Alley: Pedestrian Corridor/Urban Renewal Project	➢ San Diego County Nutrient Source Reduction Program in Rainbow Creek Watershed ➢ Desert Wildlife Unlimited Alamo River Treatment Wetlands at Shank Road	Not Applicable
Comments	The Urban Tree and Urban Farm Project established tree and urban farms in Newark to reduce the carbon footprint, improve stormwater management, and provide job training opportunities for the youth. Removing Blight to Restore the Bay and Create Jobs Project that deconstructed 56 vacant homes in Baltimore Harbor Watershed and replaced them with permanent green space to treat stormwater and create jobs in the local community. The Greening Art Alley: Pedestrian Corridor/Urban Renewal Project installed rain gardens and other green infrastructure techniques in a local pedestrian facility to improve stormwater management and increase community engagement with natural habitats.	LAR UR2 WMA will not be able to benefit from this grant program because the receiving waterbodies associated with the group are not identified on the NPS Program Preferences. In addition, the projects the LAR UR2 WMA would be interested in implementing would be in areas covered by an NPDES Permit and therefore would not quality.	The 2014 Water Bond is the product of a comprehensive legislative package developed in 2009 by Governor Schwarzenegger and state lawmakers to meet California's growing water challenges. This package represented a major step toward ensuring reliable water supply for future generations as well as restoring the Sacramento-San Joaquin Delta and other ecologically sensitive areas. The progression of this bond will be tracked in the future in order to determine if funding opportunities exist for LAR UR2 WMA.
LAR UR2 WMA Potential Uses	➢ Regional BMP Projects ➢ Distributed BMP Projects	➢ Potentially Proposition 1	Unclear at this time.
Contact Information	National Fish and Wildlife Foundation Carrie Clingan (202) 595-2471 Carrie.Clingan@nfwf.org	For CWA §319(h) Grant Program: Division of Water Quality Matthew Freese (916) 341-5485 Matthew.Freese@waterboards.ca.gov For FAAST: Patricia Leary (916) 341-5167 Patricia.Leary@waterboards.ca.gov	Timothy Quinn Association of California Water Agencies (CWA) Executive Director (916)441-4545 Timq@acwa.com

Table I-2 Potential Loan Programs to Fund LAR UR2 WMA WMP Implementation

Loan Program	Clean Water State Revolving Fund (CWSRF)	Financial Incentives for Recycled Water Projects to Provide Drought Relief	Infrastructure State Revolving Fund (ISRF)
Department	SWRCB	SWRCB	California Infrastructure and Economic Development Bank
Purpose	Provide funding for publically-owned facilities	Provide funding for recycled water projects that would be completed within three years of the Governor's January 17, 2014 drought declaration.	Provide financing for public infrastructure projects.
Eligibility Requirements	Public agencies and nonprofit organizations	See CWSRF. This program is has new low interest financing terms, funded through CWSRF.	Applicant must be a local municipal entity Project must promote economic development and attract, create, and sustain long-term employment opportunities
Eligible Uses	Stormwater treatment and diversions, sediment and erosion control, stream restoration, and land acquisitions.	Construct or modify public infrastructure, purchase and install pollution control or noise abatement equipment, or acquire land. Project must meet tax-exempt financing criteria.	Construct or modify public infrastructure, purchase and install pollution control or noise abatement equipment, or acquire land. Project must meet tax-exempt financing criteria.
Ineligible Uses	Operation and maintenance activities, legal fees	Privately owned facilities or debt refinancing	Privately owned facilities or debt refinancing
Funding Limits	$50,000,000 per agency per year	$800 million total in one percent loans	➢ $2,000,000 maximum per environmental mitigation project per fiscal year ➢ $10,000,000 maximum per project for all other purposes per fiscal year ➢ $20,000,000 per jurisdiction per fiscal year
Terms/Dates	➢ Interest rate is one-half general obligation bond rate. ➢ Repayment term of twenty years ➢ Applications accepted continuously	Open application process until December 2, 2015	➢ Maximum 30 year term and open application process ➢ Preliminary application available at www.ibank.ca.gov
Website	http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/index.shtml	http://www.waterboards.ca.gov/press_room/press_releases/2014/pr031914.pdf	http://ibank.ca.gov/infrastructure_loans.htm
Examples	➢ City of Anaheim Sewer Reconstruction Project ➢ Eastern Municipal Water District Recycled Water Pond Expansion and Optimization Project	Program just began therefore no example projects at this time.	➢ City of Paramount Water Well #15 Construction Project ➢ City of Monterey Park Water Main Replacement Project ➢ Lawndale Redevelopment Agency Hawthorne Boulevard Revitalization Project ➢ City of Lawndale Charles B. Hopper Park Project
Comments	Other project types that are considered under this financing program include: ➢ Construction of publicly-owned facilities: ▪ Wastewater treatment ▪ Local sewers ▪ Sewer interceptors ▪ Water reclamation facilities ▪ Stormwater treatment ➢ Expanded Use projects include, but are not limited to: ▪ Implementation of nonpoint source projects or programs ▪ Development and implementation of estuary comprehensive conservation and management plan Expanded Use project include, but are not limited to NPS projects/programs and estuary comprehensive conservation and management plan.	This program provides low-cost, long-term financing to local governments for water recycling projects. Water recycling is the use of treated municipal wastewater for beneficial purposes such as agricultural and landscape irrigation, industrial processes, and replenishment of groundwater basins. Amount the projects that will be eligible for funding are recycled water treatment, distribution, and storage facilities.	This program provides low-cost, long-term financing to local governments for a variety of public infrastructure projects. A lot of the eligible project categories are not applicable to the LAR UR2 WMA in terms of using this funding to implement stormwater compliance measures, but the following project categories would be applicable to LAR UR2 WMA: ➢ Drainage, water supply, and flood control ➢ Environmental mitigation measures ➢ Parks and recreation facilities. It may be easy to add water quality elements to potential infrastructure projects so that the project qualifies for funding while also incorporating water quality improvement elements.
LAR UR2 WMA Potential Uses	➢ Regional BMP Projects ➢ Distributed BMP Projects	➢ Regional BMP Projects ➢ Distributed BMP Projects	➢ Regional BMP Projects ➢ Distributed BMP Projects
Contact Information	(916) 327-9978 CleanWaterSRF@waterboards.ca.gov	Kathie Smith (916) 341-5263	Ruben Rojas, Deputy Executive Director 980 9th Street, 9th floor Sacramento, CA 95814 (916) 539-4408 Ruben.Rojas@ibank.ca.gov (OR) Marilyn Muñoz, General Counsel Same address (916) 324-1299 Marilyn.Munoz@ibank.ca.gov

Appendix J

Statements of Legal Authority

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December 9, 2014

Mr. Sam Unger, Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, California 90013-1105

Re: Statement of Legal Authority

Dear Mr. Unger:

We are the City Attorney for the City of Bell (the "City"). We are authorized to provide you with this Statement of Legal Authority which is being submitted with the City's Annual Report pursuant to Part VI.A.2.b. of Order No. R4-2012-0175 for NPDES Permit No. CAS004001. We are of the considered legal opinion that the City has all the necessary legal authority to implement and enforce the requirements contained in 40 CFR § 122.26(d)(2)(i)(A-F) and this Order during the reporting period of July 1, 2013 through June 30, 2014, to the extent permitted by State and Federal law, subject to the limitations on municipal action under the California and United States Constitutions.

Per the requirement in Part VI.A.2.b.i., here are citations to the City's Municipal Code for each of the following requirements found in Part VI.A.2.a:

i. *Control the contribution of pollutants to its MS4 from storm water discharges associated with industrial and construction activity and control the quality of storm water discharged from industrial and construction sites. This requirement applies both to industrial and construction sites with coverage under an NPDES permit, as well as to those sites that do not have coverage under an NPDES permit.*

   Municipal Code Sections: 13.08.070 Stormwater pollution control measures, 13.08.080 Urban runoff mitigation requirements for construction, 13.08.085 Standard Urban Stormwater Mitigation Plan (SUSMP)—Development projects, 13.08.090 Proof of coverage under state general construction permit, and 13.08.100 NPDES industrial permits

ii. *Prohibit all non-storm water discharges through the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A.*

Municipal Code Sections: 13.08.050 Illicit discharges and connections prohibited, 13.08.060 Illegal disposal of significant material, and 13.08.110 Prohibited acts and discharges

iii. *Prohibit and eliminate illicit discharges and illicit connections to the MS4.*

Municipal Code Section: 13.08.050 Illicit discharges and connections prohibited

iv. *Control the discharge of spills, dumping, or disposal of materials other than storm water to its MS4.*

Municipal Code Section: 13.08.110 Prohibited acts and discharges

v. *Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows);*

Municipal Code Sections: 13.08.010 Purpose and intent and 13.08.130 Enforcement and penalties

vi. *Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders.*

Municipal Code Section: 13.08.130 Enforcement and penalties

vii. *Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements among Co-permittees;*

Municipal Code Sections: 13.08.050 Illicit discharges and connections prohibited and 13.08.110 Prohibited acts and discharges

viii. *Control of the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other owners of the MS4 such as the State of California Department of Transportation;*

Municipal Code Sections: 13.08.050 Illicit discharges and connections prohibited and 13.08.110 Prohibited acts and discharges

ix. *Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of this Order, including the prohibition of non-storm water discharges into the MS4 and receiving waters.*

This means the Permittee must have authority to enter, monitor, inspect, take measurements, review and copy records, and require regular reports from entities discharging into its MS4;

Municipal Code Section: 13.08.120 Inspection

x. *Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations;*

Municipal Code Section: 13.08.070 Stormwater pollution control measures

xi. *Require that structural BMPs are properly operated and maintained;*

Municipal Code Sections: 13.08.080 Urban runoff mitigation requirements for construction and 13.08.085 Standard Urban Stormwater Mitigation Plan (SUSMP)—Development projects

xii. *Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4.*

Municipal Code Sections: 13.08.080 Urban runoff mitigation requirements for construction and 13.08.085 Standard Urban Stormwater Mitigation Plan (SUSMP)—Development projects

Per the requirement in Part VI.A.2.b.ii., the City's legal procedures available to mandate compliance with applicable municipal ordinances identified in the above section, and therefore with the conditions of the Order, can be found in Municipal Code Section 13.08.130 Enforcement and penalties. Here is the relevant text from that provision:

13.08.130 Enforcement and penalties.

A. The director of development services or his/her designee, is authorized to enforce this chapter as follows:

1. For the first failure to comply with any provision contained in this chapter, the department of development services shall issue to the affected person a written notice which includes the following information: (i) a statement specifying the violation committed; (ii) a specified time period within which the affected person must correct the failure or file a written notice disputing the notice of failure to comply; (iii) a statement of the penalty for continued noncompliance.

2. Each subsequent failure to comply with any provision of this chapter following written notice pursuant to subsection (A)(1) of this section, shall constitute an infraction and

shall be punishable by a penalty of up to one hundred dollars ($100.00) per day of violation for the first cited violation and five hundred dollars ($500.00) per day for subsequent violations.

3. It shall not be a defense to the assessment of any penalty or to any other civil enforcement action, provided for under this section for a person to assert that any violation of this chapter was caused by the actions of a person other than the person assessed except if the violation was caused by the criminal or negligent action of a person who was not an agent, servant, employee or family member of the person.

4. Any penalty collected hereunder shall be used as reimbursement for the city, costs and expenses of administration, inspection and enforcement of this chapter.

5. A violation of any provision of this chapter is declared to be a public nuisance. The city may abate such violation(s) by means of a civil action with all costs for such abatement to be borne by the party responsible for the nuisance.

6. The penalties and remedies established by this chapter shall be cumulative.

B. Other Penalties. Any person who violates any provision of this chapter, any provision of any permit issued pursuant to this chapter, or who discharges waste or wastewater which causes pollution, or who violates any cease and desist order, prohibition, or effluent limitation, may also be in violation of the federal Clean Water Act and/or Porter-Cologne Act and may be subject to the sanctions of those Acts including civil and criminal penalties.

[...]

Thus, enforcement actions can be completed administratively or judicially if necessary.

Please contact our firm if you have any questions.

Sincerely,

ALESHIRE & WYNDER, LLP

David J. Aleshire
City Attorney

ALVAREZ-GLASMAN & COLVIN

ATTORNEYS AT LAW

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December 13, 2013

Sam Unger, P.E., Executive Officer
California Regional Water Quality
Control Board -- Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013-1105

Subject: Certification of Legal Authority

Dear Mr. Unger:

Alvarez-Glasman & Colvin serves as the City Attorney's Office for the City of Bell Gardens. As the City Attorney for the City of Bell Gardens (the "City"), I am aware of the following legal authority requirements specified in *VI.A.2.b, of the MS4 Permit for Los Angeles County, Order No. R4-2012-0175, NPDES Permit No. CAS004001*:

> *Each Permittee must submit a statement certified by its chief legal counsel that the Permittee has the legal authority within its jurisdiction to implement and enforce each of the requirements contained in 40 CFR § 122.26(d)(2)(i)(A-F) and this Order. Each Permittee shall submit this certification annually as part of its Annual Report beginning with the first Annual Report required under this Order. These statements must include:*
>
> i. *Citation of applicable municipal ordinances or other appropriate legal authorities and their relationship to the requirements of 40 CFR § 122.26(d)(2)(i)(A)-(F) and of this Order; and*
>
> ii. *Identification of the local administrative and legal procedures available to mandate compliance with applicable municipal ordinances identified in subsection (i) above and therefore with the conditions of this Order, and a statement as to whether enforcement actions can be completed administratively or whether they must be commenced and completed in the judicial system.*

The City has the legal authority to require compliance with the requirements associated with 40 CFR § 122.26(d)(2)(i)(A-F) and applicable provisions of the Order[1] per ***Chapter 11.12 Urban Stormwater Management*** of the City of Bell Gardens Municipal Code. The City has had such legal authority since 1998.

The City's Municipal Code provides for both administrative enforcement and legal enforcement of violations, which may result in administrative, civil, or criminal penalties. Article V of Chapter 11.12 provides that in the event of a failure to comply with a notice of violation, the City has remedies which are not listed to be exclusive or exhaustive, including prosecuting violations as nuisance abatement resulting in liens and cost recovery, and prosecuting violations as a misdemeanor resulting in fines or imprisonment.

Should you have any questions regarding this matter, please feel free to contact Deputy City Attorney Teresa Chen at (562) 699-5500.

Sincerely,

ALVAREZ-GLASMAN & COLVIN

Arnold M. Alvarez-Glasman
City Attorney

[1]Generally applies to the six core programs that make up the City's stormwater quality management program including program management, development planning, development construction, illicit connection and discharge detection and elimination, public agency, and industrial and commerical inspections. These programs are carried-over from the previous permit. They are to be revised by permittees after the Regional Board has approved the watershed management program which is to be submitted by June 28, 2014.

CERTIFICATION STATEMENT

PLEASE BE ADVISED that the City of Commerce has, through adoption of ordinances and municipal code modifications, obtained all necessary legal authority in accordance with 40 CFR 122.26(d)(2) (i) (A-F), and to comply with Order No. R4-2012-0175 (NPDES No. CAS004001), Area Wide Urban Storm Water Runoff Management Program, Los Angeles County MS4 Permit.

Dated: December 3, 2013

Eduardo Olivo,
City Attorney
City of Commerce

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November 24, 2014

Samuel Unger, P.E., Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013-2343

Re: Annual Report Statement by Chief Legal Counsel Pursuant to the Federal National Pollutant Discharge Elimination System (NPDES) Program and State Water Board Order No. R4-2012-0175, NPDES Permit No. CAS004001

Dear Mr. Unger:

This law firm serves as City Attorney to the City of Cudahy. In accordance with 40 CFR § 122.26(d)(2)(i) and Part VI.A.2 of the above-referenced NPDES Permit, we hereby certify to the following:

> City of Cudahy has the legal authority within its jurisdiction to implement and enforce each of the requirements contained in 40 CFR § 122.26(d)(2)(i)(A-F) and the above-referenced Order.
>
> Pursuant to the compliance provisions described below, the Cudahy Municipal Code provides for enforcement actions to be completed administratively by written notice, or prosecuted judicially, or as a public nuisance by means of a civil action.

Citation of applicable municipal ordinances or other appropriate legal authorities and their relationship to the requirements of 40 CFR § 122.26(d)(2)(i)(A)-(F) and of this Order:

The primary applicable laws and ordinances are listed below. Depending on the particular facts, there may be other provisions that could potentially be applied. Undesignated section references herein are to the Cudahy Municipal Code.

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
i. Control the contribution of pollutants to its MS4 from storm water discharges associated with industrial and construction activity and control the quality of storm water discharged from industrial and construction sites. This requirement applies both to industrial and construction sites with coverage under an NPDES permit, as well as to those sites that do not have coverage under an NPDES permit.	§ 13.08.070 Elimination of pollutants in storm water. § 13.08.080 Prohibited activities. § 13.08.120 Requirements for construction projects.
ii. Prohibit all non-storm water discharges through the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A.	§ 13.08.070 Elimination of pollutants in storm water. § 13.08.080 Prohibited activities.
iii. Prohibit and eliminate illicit discharges and illicit connections to the MS4.	§ 13.08.070 Elimination of pollutants in storm water. § 13.08.080 Prohibited activities.
iv. Control the discharge of spills, dumping, or disposal of materials other than storm water to its MS4.	§ 13.08.070 Elimination of pollutants in storm water. § 13.08.080 Prohibited activities.
v. Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows).	§ 13.08.080 Prohibited activities. § 13.08.100 Enforcement.
vi. Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders.	§ 13.08.100 Enforcement. § 1.36.040 Penalties and arrests for violation.
vii. Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements among Copermittees.	§ 13.08.020 Findings. § 13.08.080 Prohibited activities. Cal. Gov. Code § 6502

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
viii. Control of the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other owners of the MS4 such as the State of California Department of Transportation.	§ 13.08.020 Findings. § 13.08.080 Prohibited activities. Cal. Gov. Code § 6502
ix. Carry out all inspections surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of this Order, including the prohibition of non-storm water discharges into the MS4 and receiving waters. This means the Permittee must have authority to enter, monitor, inspect, take measurements, review and copy records, and require regular reports from entities discharging into its MS4.	§ 13.08.100 Enforcement. § 13.08.120 Requirements for construction projects. § 13.08.140 Inspection.
x. Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations.	§ 13.08.070 Elimination of pollutants in storm water. § 13.08.080 Prohibited activities. § 13.08.110 Standard urban storm water mitigation plan for new developments. § 13.08.120 Requirements for construction projects.
xi. Require that structural BMPs are properly operated and maintained.	§ 13.08.110 Standard urban storm water mitigation plan for new developments. § 13.08.120 Requirements for construction projects.
xii. Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4.	§ 13.08.110 Standard urban storm water mitigation plan for new developments. § 13.08.120 Requirements for construction projects.

Identification of the local administrative and legal procedures available to mandate compliance with applicable municipal ordinances identified above and with the conditions of the Order:

§ 13.08.100 Enforcement.

Cudahy Municipal Code Chapter 1.36 Penalty Provisions.

Pursuant to California Penal Code section 836.5, the code enforcement officers of the city may make arrests, and may issue citations for misdemeanors pursuant to Penal Code section 853.5 et seq., and Cudahy Municipal Code Chapter 1.36, for violations of Cudahy Municipal Code Chapter 13.08 (Storm Water and Urban Runoff Pollution Control). (See § 1.36.040 Penalties and arrests for violation.)

If you have any questions, please contact me.

Very truly yours,

Isabel Birrueta

RUTAN
RUTAN & TUCKER, LLP

Todd Litfin
Direct Dial: (714) 641-5100
E-mail: tlitfin@rutan.com

December 16, 2013

VIA ELECTRONIC MAIL

Mr. Sam Unger
Executive Officer
Los Angeles Regional Water Quality Control Board
320 West Fourth Street, Suite 200
Los Angeles, CA 90013
sunger@waterboards.ca.gov

Re: City of Huntington Park Statement of Legal Authority in Compliance with Los Angeles Regional Water Quality Control Board Order No. R4-2012-0175

Dear Mr. Unger:

The City of Huntington Park ("City") hereby submits this Statement of Legal Authority in its capacity as co-permittee in accordance with Section VI.A.2 of the Los Angeles Regional Water Quality Control Board Order No. R4-2012-0175, National Pollution Discharge Elimination System ("NPDES)" Permit and Waste Discharge Requirements for the Municipal Separate Storm Sewer System ("MS4") Discharges Within the Coastal Watersheds of Los Angeles County Except Those Discharges Originating from the City of Long Beach ("Permit" or "Order").

As you are aware, the City and a number of other co-permittees are currently seeking review of certain portions of the Order through an administrative petition to the State Water Resources Control Board, the outcome of which may alter its terms. Consequently, this Statement of Legal Authority is not intended to be, and should not be construed as, a waiver of any rights the City has or may have to (A) bring or maintain any legal challenge to any part of the Order, or (B) to seek to recover any costs or other expenditures incurred or to be incurred to comply with programs that are or may be considered unfunded State mandates. The City hereby reserves any and all rights in this regard.

The undersigned City Attorney for the City hereby states that the City has or will have obtained all necessary legal authority to comply with the legal requirements imposed upon the City by the Order, consistent with the requirements set forth in the regulations to the Clean Water Act, 40 CFR [Code of Federal Regulations] §122.26(d)(2)(i)(A-F), to the extent permitted by State and federal law, but subject to the limitations on municipal actions under the California Constitution and United States Constitution. Subject to such limitations, the City's authority includes the following authority, within the City's jurisdictional boundaries, to:

- Control the contribution of pollutants to its MS4 from storm water discharges associated with industrial and construction activity and control the quality of storm

water discharged from industrial and construction sites. (Huntington Park Municipal Code [HPMC], § 7-9.05 (a)-(n).)

- Prohibit all non-storm water discharges through the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A. (HPMC § 7-9.05 (a)-(r).)

- Prohibit and eliminate illicit discharges and illicit connections to the MS4. (HPMC § 7-9.05 (a).)

- Control the discharge of spills, dumping, or disposal of materials other than storm water to its MS4. (HPMC §§ 7-9.05 (b)-(n); and 7-9.06 (a)-(c).)

- Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows). (HPMC §§ 7-9.05 and 7-9.06.)

- Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders. (HPMC § 7-9.07.)

- Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4, through interagency agreements among Copermittees or among other owners of the MS4, such as the California Department of Transportation. (Under the City's Charter and applicable State law, the City has adequate authority to enter into any and all necessary interagency agreements.)

- Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of the Permit, including the prohibition of non-storm water discharges into the MS4 and receiving waters. This authority includes the authority to enter, monitor, inspect, take measurements, review and copy records, and require reports from entities discharging into the MS4. (HPMC §§ 7-9.07 (a) & (b); 7-9.09 (e), and 7-9.12.)

- Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations. (HPMC §§ 7-9.07 (c) and 7-9.06.)

- Require that structural BMPs are properly operated and maintained. (HPMC §§ 7-9.04, 7-9.08, 7-9.08.02, 7-9.08.03, 7-9.08.04, 7-9.08.05, and 7-9.09.)

- Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4. (HPMC 7-9.04, 7-9.08, 7-9.08.02, 7-9.08.03, 7-9.08.04, 7-9.08.05, and 7-9.09.)

The administrative and legal procedures available to the City to mandate compliance with the applicable City ordinances include the following, among others:

- Criminal Penalties: Violations of City ordinances may constitute infractions or misdemeanors, enforceable through the judicial system. (HPMC §§ 1-2.01 and 7-9.07 (d).)

- Civil Actions: The City may pursue civil suits for various remedies, including equitable remedies such as nuisance abatement and injunctive relief. (HPMC §§ 1-2.01 and 7-9.07 (e) & (f); and Cal. Civil Code § 3490 *et. seq.*)

- Administrative Enforcement: The City may enter onto property to conduct inspections to enforce its requirements (HPMC §§ 7-9.07 and 7-9.12), to pursue nuisance abatement proceedings (HPMC §§ 7-9.07 (e) & (f), 7-9.09 (h) & (i) and 1-2.01), and to issue notices of violations and pursue violations administratively. (HPMC §§ 7-9.07 (c), (e) & (f).)

***

Please contact the undersigned should you have any questions or need additional information.

Thank you for your cooperation in this matter.

Very truly yours,

RUTAN & TUCKER, LLP

Todd O. Litfin

Todd Litfin
City Attorney, City of Huntington Park

STATEMENT OF LEGAL AUTHORITY

Pursuant to Part VI.A.2.b. of Order No. R4-2012-0175, the City of Maywood has all the necessary legal authority to implement and enforce the requirements contained in 40 CFR § 122.26(d) (2) (i) (A-F) and this Order during the reporting period of July 1, 2013 through June 30, 2014. This is made evident by municipal code citation to each of the following requirements found in Part VI.A.2.a:

1. Control the contribution of pollutants to its MS4 from storm water discharges associated with industrial and construction activity and control the quality of storm water discharged from industrial and construction sites. This requirement applies both to industrial and construction sites with coverage under an NPDES permit, as well as to those sites that do not have coverage under an NPDES permit.
   Municipal Code Section: *6-9.07 - Requirements for industrial, commercial and construction activities*
2. Prohibit all non-storm water discharges through the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A.
   Municipal Code Section: *6-9.04 - Prohibited activities*
3. Prohibit and eliminate illicit discharges and illicit connections to the MS4.
   Municipal Code Section: *6-9.04 - Prohibited activities*
4. Control the discharge of spills, dumping, or disposal of materials other than storm water to its MS4.
   Municipal Code Section: *6-9.06 - Good housekeeping provisions*
5. Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows);
   Municipal Code Section: *6-9.03 - Construction and application*; 6-9.08 *Enforcement*; 6-10.07 *Enforcement*
6. Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders.
   Municipal Code Section: *6-9.08 – Enforcement;* 6-10.07 *Enforcement*
7. Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements among Co-permittees;
   Municipal Code Section: *6-9.04 - Prohibited activities; General Law City contracting authority (During the reporting period the City entered into a memorandum of understanding with a number of neighboring cities to commence the preparation of a Watershed Management Plan and a Coordinated Integrated Monitoring Plan)*
8. Control of the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other owners of the MS4 such as the State of California Department of Transportation;
   Municipal Code Section: *6-9.04 - Prohibited activities; General Law City contracting authority*

9. Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of this Order, including the prohibition of non-storm water discharges into the MS4 and receiving waters. This means the Permittee must have authority to enter, monitor, inspect, take measurements, review and copy records, and require regular reports from entities discharging into its MS4;
   Municipal Code Section: *6-9.08 - Enforcement;* 6-9.03 - *Construction and Application;* 6-10.07 (a) & (b) - *Enforcement;* 6-10.09 (f) – *Content of Urban Storm Water Mitigation Plan*; 6-10.15 – *Inspection; City's authority to condition city issued permits and plans*
10. Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations;
    Municipal Code Section: *6-9.08 - Enforcement*
11. Require that structural BMPs are properly operated and maintained; and
    Municipal Code Section: *6-9.06 - Good housekeeping provisions*
12. Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4.
    Municipal Code Section: *6-9.08 – Enforcement*; 6-10.9 *Content of Low Impact Development (LID) Plan.*

The City of Maywood legal procedures available to mandate compliance with applicable municipal ordinances identified in the above section, and therefore with the conditions of the Order, can be found in Section *6-9.08 - Enforcement*. Under this Section Enforcement may occur through misdemeanor prosecution, suspension or revocation of permits, and through administrative penalties. Further, the City may declare any violation of the City's Stormwater and Urban Runoff Pollution Prevention ordinances a public nuisance, and the City may then file a civil or criminal action to abate or enjoin the nuisance. In addition, the section provides the City may enforce any violation of the Chapter 6-9 (Stormwater and Urban Runoff Pollution Prevention) of the City's Code through a civil action to obtain a temporary and permanent restraining order and costs for enforcement and for damage caused by the violation. Finally, the City may also issue cease and desist orders, and revoke permits via administrative processes. .

Signature: 

Richard L. Adams II, City Attorney

Date: 11/19/2014

City of Vernon
4305 Santa Fe Avenue, Vernon, California 90058
Telephone (323) 583-8811

December 16, 2013

N-1

Sam Unger, Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, California 90013-1105

RE: STATEMENT OF LEGAL AUTHORITY

Dear Mr. Unger:

This letter is provided to serve as the Statement of Legal Authority for the City of Vernon (the "City") pursuant to Part VI.A.2.b. of Order No. R4-2012-0175, for NPDES Permit No. CAS004001. As legal counsel for the City[1], I have determined that the City had the legal authority within its jurisdiction to implement and enforce the requirements contained in 40 CFR § 122.26(d)(2)(i)(A-F) and Order R4-2012-0175 during the reporting period of July 1, 2012 through June 30, 2013 to the extent permitted by State and Federal law, subject to the limitations on municipal action under the California and United States Constitutions.

Per the requirement in Part VI.A.2.b.i., pursuant to California Constitution Article XI, section 7, and Chapter 2.1 of the City's Charter that confirms the City's power over municipal affairs, and the other legal authorities cited below, the City has the legal authority to control pollutant discharges into and from its MS4 through ordinance, statute, permit, contract or similar means. Below are citations to additional authority confirming the City's power to enforce each of the following requirements found in Part VI.A.2.a:

i. Control the contribution of pollutants to its MS4 from stormwater discharges associated with industrial and construction activity and control the quality of stormwater discharged from industrial and construction sites. This requirement

[1] The City Attorney recently retired. As of the date of this letter, a replacement has not yet been appointed. As the deputy city attorney with the most years of legal experience, I write in lieu of the City Attorney.

applies both to industrial and construction sites with coverage under an NPDES permit, as well as to those sites that do not have coverage under an NPDES permit;
Municipal Code Sections: 21.1.3 Purpose and Intent; 21.5.5 Control of pollutants from industrial activities; 21.5.6 Control of pollutants from other industrial facilities; 21.5.7 Control of pollutants from state permitted construction activities, and; 21.5.8 Control of pollutants from other construction activities.

ii. Prohibit all non-storm water discharges through the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A;
Municipal Code Sections: 21.1.3 Purpose and Intent and 21.5.1 Illicit discharges, dumping, and non-stormwater discharges.

iii. Prohibit and eliminate illicit discharges and illicit connections to the MS4;
Municipal Code Sections: 21.1.3 Purpose and Intent; 21.5.1 Illicit discharges, dumping, and non-stormwater discharges, and; 21.5.2 Illicit connections.

iv. Control the discharge of spills, dumping, or disposal of materials other than stormwater to its MS4;
Municipal Code Sections: 21.1.3 Purpose and Intent, and 21.5.1 Illicit discharges, dumping, and non-stormwater discharges.

v. Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows);
Municipal Code Sections: 1.8 General penalty; continuing violations; 1.8-1 Administrative Enforcement – scope, definitions and hearing procedures; 1.8-5 Nuisances; 21.5.2 Illicit connections; 21.5.4 Control of pollutants from commercial facilities; 21.5.5 Control of pollutants from industrial activities; 21.5.6 Control of pollutants from other industrial facilities; 21.5.7 Control of pollutants from state permitted construction activities; 21.5.8 Control of pollutants from other construction activities; 21.5.9 Control of pollutants from new developments/redevelopment projects; 21.6.1 Violation of this chapter a public nuisance, and; 21.6.4 Abatement of illicit or unlawful discharges.

vi. Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders;
Municipal Code Sections: 1.8 General penalty; continuing violations; 1.8.1 Administrative Enforcement; 1.8-2 Administrative enforcement—Compliance orders; 1.8-3 Administrative enforcement—Citations.; Sec. 1.8-4 Administrative enforcement—Civil penalties.; 1.8-5 Nuisances; 21.6.1 Violation of this chapter a public nuisance; 21.6.4 Abatement of illicit or unlawful discharges, and; 26.6.3 Conditional Use Permits.

vii. Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements among Copermittees;
Municipal Code Sections: 21.1.3 Purpose and Intent; 21.5.1 Illicit discharges, dumping, and non-storm water discharges; and 21.5.2 Illicit connections; and 21.5.3 Reduction of pollutants in runoff. The City is in the process of a developing a Watershed Management Plan and Coordinated Integrated Management Plan with

seven other nearby local governmental entities to limit the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4. It is expected that the plan will be submitted to the Regional Water Quality Control Board by June 28, 2014.

viii. Control of the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other owners of the MS4 such as the State of California Department of Transportation;
Municipal Code Sections: 21.1.3 Purpose and Intent, 21.5.1 Illicit discharges, dumping, and non-storm water discharges; 21.5.2 Illicit connections; and 21.5.3 Reduction of pollutants in runoff.

ix. Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of this Order, including the prohibition of non-storm water discharges into the MS4 and receiving waters. This means the Permittee must have authority to enter, monitor, inspect, take measurements, review and copy records, and require regular reports from entities discharging into its MS4;
Municipal Code Sections: 13.23 Right of Entry of health officer; obedience to orders of health officer; 21.5.1 Illicit discharges, dumping, and non-stormwater discharges; 21.5.5 Control of pollutants from industrial activities; 21.5.7 Control of pollutants from state permitted construction activities; 21.6.2 Containment and testing; 24.11 Building Code amendments, additions, deletions; California Building Code 104.4 Inspections, and; California Building Code 104.6 Right of Entry.

x. Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations;
Municipal Code Sections: 21.5.4 Control of pollutants from commercial facilities; 21.5.5 Control of pollutants from industrial activities; 21.5.6 Control of pollutants from other industrial facilities; 21.5.7 Control of pollutants from state permitted construction activities; 21.5.8 Control of pollutants from other construction activities, and; 21.5.9 Control of pollutants from new developments/redevelopment projects.

xi. Require that structural BMPs are properly operated and maintained; and
Municipal Code Sections: 21.5.4 Control of pollutants from commercial facilities; 21.5.5 Control of pollutants from industrial activities; 21.5.6 Control of pollutants from other industrial facilities; 21.5.7 Control of pollutants from state permitted construction activities; 21.5.8 Control of pollutants from other construction activities; 21.5.9 Control of pollutants from new developments/redevelopment projects, and; 24.11 Building Code amendments, additions, deletions (See especially Section J101 General).

xii. Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4.
Municipal Code Sections: 21.5.4 Control of pollutants from commercial facilities; 21.5.5 Control of pollutants from industrial activities; 21.5.6 Control of pollutants

from other industrial facilities; 21.5.7 Control of pollutants from state permitted construction activities; 21.5.8 Control of pollutants from other construction activities, and; 21.5.9 Control of pollutants from new developments/redevelopment projects (See especially Section J101 General).

The City's legal procedures available to mandate compliance with applicable municipal ordinances identified in the above section, and therefore with the conditions of the Order, can be found in Section 21.3.1 Local Authority. Violations of this section are deemed a "Public Nuisance" in section 21.6.1, where every violation of this chapter is a misdemeanor and a public nuisance. The City may enforce violations of its code either administratively or via the judicial system.

If you have any questions please contact me at 323-583-8811 extension 162 or Claudia Arellano of the Community Services Department staff at 323-583-8811 extension 258.

Sincerely,

Scott E. Porter
Deputy City Attorney

SEP/SKW/ca

COUNTY OF LOS ANGELES
OFFICE OF THE COUNTY COUNSEL
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JOHN F. KRATTLI
County Counsel

December 16, 2013

Mr. Samuel Unger, P.E., Executive Officer
California Regional Water Quality Control Board – Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013-2343

Attention: Mr. Ivar Ridgeway

Re: Certification By Legal Counsel For Los Angeles County Flood Control District's Annual Report

Dear Mr. Unger:

Pursuant to the requirements of Part VI(A)(2)(b) of Order No. R4-2012-0175 (the "Order"), the Office of the County Counsel of the County of Los Angeles makes the following certification in support of the Annual Report of the Los Angeles County Flood Control District ("LACFCD"):

Certification Pursuant To Order Part VI(A)(2)(b)

"*Each Permittee must submit a statement certified by its chief legal counsel that the Permittee has the legal authority within its jurisdiction to implement and enforce the requirements contained in 40 CFR §122.26(d)(2)(i)(A-F) and this Order.*"

LACFCD has the legal authority within its jurisdiction to implement and enforce each of the requirements contained in 40 CFR §122.26(d)(2)(i)(A-F) and the Order.

Order Part VI(A)(2)(b)(i)

"*Citation of applicable municipal ordinances or other appropriate legal authorities and their relationship to the requirements of 40 CFR §122.26(d)(2)(i)(A-F) and this Order*"

Citations Of Applicable Ordinances Or Other Legal Authorities

Although many portions of State law, the Charter of the County of Los Angeles, the Los Angeles County Code and LACFCD's Flood Control District Code ("Code") are potentially applicable to the implementation and enforcement of these requirements, the primary applicable laws and ordinances are as follows:

Los Angeles County Code, Title 12, Chapter 12.80 STORMWATER AND RUNOFF POLLUTION CONTROL, including:

§12.80.010 - §12.80.360 Definitions

§12.80.370 Short title.

§12.80.380 Purpose and intent.

§12.80.390 Applicability of this chapter.

§12.80.400 Standards, guidelines and criteria.

§12.80.410 Illicit discharges prohibited.

§12.80.420 Installation or use of illicit connections prohibited.

§12.80.430 Removal of illicit connection from the storm drain system.

§12.80.440 Littering and other discharge of polluting or damaging substances prohibited.

§12.80.450 Stormwater and runoff pollution mitigation for construction activity.

§12.80.460 Prohibited discharges from industrial or commercial activity.

§12.80.470 Industrial/commercial facility sources required to obtain a NPDES permit.

§12.80.480 Public facility sources required to obtain a NPDES permit.

§12.80.490 Notification of uncontrolled discharges required.

§12.80.500 Good housekeeping provisions.

§12.80.510 Best management practices for construction activity.

§12.80.520 Best management practices for industrial and commercial facilities.

§12.80.530 Installation of structural BMPs.

§12.80.540 BMPs to be consistent with environmental goals.

§12.80.550 Enforcement—Director's powers and duties.

§12.80.560 Identification for inspectors and maintenance personnel.

§12.80.570 Obstructing access to facilities prohibited.

§12.80.580 Inspection to ascertain compliance—Access required.

§12.80.590 Interference with inspector prohibited.

§12.80.600 Notice to correct violations—Director may take action.

§12.80.610 Violation a public nuisance.

§12.80.620 Nuisance abatement—Director to perform work when—Costs.

§12.80.630 Violation—Penalty.

§12.80.635 Administrative fines.

§12.80.640 Penalties not exclusive.

§12.80.650 Conflicts with other code sections.

§12.80.660 Severability.

§12.80.700 Purpose.

§12.80.710 Applicability.

§12.80.720 Registration required.

§12.80.730 Exempt facilities.

§12.80.740 Certificate of inspection—Issuance by the director.

§12.80.750 Certificate of inspection—Suspension or revocation.

§12.80.760 Certificate of inspection—Termination.

§12.80.770 Service fees.

§12.80.780 Fee schedule.

§12.80.790 Credit for overlapping inspection programs.

§12.80.800 Annual review of fees.

Los Angeles County Code, Title 12, Chapter 12.84 LOW IMPACT DEVELOPMENT STANDARDS, including:

§12.84.410 Purpose.

§12.84.420 Definitions.

§12.84.430 Applicability.

§12.84.440 Low Impact Development Standards.

§12.84.445 Hydromodification Control.

§12.84.450 LID Plan Review.

§12.84.460 Additional Requirements.

Los Angeles County Code, Title 22 PLANNING AND ZONING, Part 6 ENFORCEMENT PROCEDURES, including:

§22.60.330 General prohibitions.

§22.60.340 Violations.

§22.60.350 Public nuisance.

§22.60.360 Infractions.

§22.60.370 Injunction.

§22.60.380 Enforcement.

§22.60.390 Zoning enforcement order and noncompliance fee.

Los Angeles County Code, Title 26 BUILDING CODE, including:

§26.103 Violations And Penalties

§26.104 Organization And Enforcement

§26.105 Appeals Boards

§26.106 Permits

§26.107 Fees

§26.108 Inspections

LACFCD Code Chapter 21 - STORMWATER AND RUNOFF POLLUTION CONTROL including:

§21.01 Purpose and Intent

§21.03 Definitions

§21.05 Standards, Guidelines, and Criteria

§21.07 Prohibited Discharges

§21.09 Installation or Use of Illicit Connections Prohibited

§21.11 Littering Prohibited

§21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity

§21.15 Notification of Uncontrolled Discharges Required

§21.17 Requirement to Monitor and Analyze

§21.19 Conflicts With Other Code Sections

§21.21 Severability

§21.23 Violation a Public Nuisance

California Government Code §6502

California Government Code §23004

California Water Code §8100 *et. seq.*

Relationship Of Applicable Ordinances Or Other Legal Authorities To The Requirements of 40 CFR §122.26(d)(2)(i)(A-F) And The Order

Although, depending upon the particular issue, there may be multiple ways in which particular sections of the County of Los Angeles' ordinances, LACFCD's ordinances, and statutes relate to the requirements contained in 40 CFR §122.26(d)(2)(i)(A-F) and the Order, the table below indicates the basic relationship with Part VI(A)(2)(a) of the Order:

Order Part VI(A)(2)(a) Items	**Primary Applicable Ordinance/Statute**
i. Control the contribution of pollutants to its MS4 from storm water discharges associated with industrial and construction activity and control the quality of storm water discharged from industrial and construction sites. This requirement applies both to industrial and construction sites with coverage under an NPDES permit, as well as to those sites that do not have coverage under an NPDES permit.	Los Angeles County Code: §12.80.410 [illicit discharge prohibited]; §12.80.450 [construction] §12.80.460 [industrial and commercial] §12.80.470 and .480 [industrial and commercial NPDES requirements] §12.84.440 [LID standards] §12.84.445 [hydromodification control] §12.84.450 [LID Plan Review] §22.60.330 [general prohibitions] §22.60.340 [violations] §22.60.350 [public nuisance] §22.60.360 [infractions] §22.60.370 [injunction] §22.60.380 [enforcement.] §22.60.390 [zoning enforcement order] §26.103 [violations and penalties]

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
	§26.104 [enforcement] §26.106 [permits] §26.108 [inspections] LACFCD Code: §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze §21.23 Violation a Public Nuisance
ii. Prohibit all non-storm water discharges through the MS4 to receiving waters not otherwise authorized or conditionally exempt pursuant to Part III.A.	Los Angeles County Code: §12.80.410 [illicit discharge prohibited] LACFCD Code: §21.07 Prohibited Discharges
iii. Prohibit and eliminate illicit discharges and illicit connections to the MS4.	Los Angeles County Code: §12.80.410 [illicit discharge prohibited]; §12.80.420 [illicit connections prohibited] LACFCD Code: §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.23 Violation a Public Nuisance

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
iv. Control the discharge of spills, dumping, or disposal of materials other than storm water to its MS4.	Los Angeles County Code: §12.80.410 [illicit discharge prohibited]; §12.80.440 [littering and other polluting prohibited] LACFCD Code: §19.07 Interference With or Placing Obstructions, Refuse, Contaminating Substances, or Invasive Species in Facilities Prohibited §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.11 Littering Prohibited §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze §21.23 Violation a Public Nuisance
v. Require compliance with conditions in Permittee ordinances, permits, contracts or orders (i.e., hold dischargers to its MS4 accountable for their contributions of pollutants and flows).	Los Angeles County Code: §12.80.490 [notification of uncontrolled discharge] §12.80.570 [obstructing access to facilities] §12.80.580 [compliance inspection] §12.80.610 [violation a nuisance] §12.620 [nuisance abatement] §12.80.635 [violation penalty]

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
	§12.80.640 [penalties not exclusive] §12.84.440 [LID standards] §12.84.445 [hydromodification control] §12.84.450 [LID Plan Review] §22.60.330 [general prohibitions] §22.60.340 [violations] §22.60.350 [public nuisance] §22.60.360 [infractions] §22.60.370 [injunction] §22.60.380 [enforcement.] §22.60.390 [zoning enforcement order] §26.103 [violations and penalties] §26.104 [enforcement] §26.106 [permits] §26.108 [inspections] LACFCD Code: §19.11 Violation a Public Nuisance §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.11 Littering Prohibited §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
	§21.19 Conflicts With Other Code Sections §21.23 Violation a Public Nuisance
vi. Utilize enforcement mechanisms to require compliance with applicable ordinances, permits, contracts, or orders.	Same as item v., above
vii. Control the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements among Copermittees.	California Government Code §6502 California Government Code §23004
viii. Control of the contribution of pollutants from one portion of the shared MS4 to another portion of the MS4 through interagency agreements with other owners of the MS4 such as the State of California Department of Transportation.	California Government Code §6502 California Government Code §23004
ix. Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with applicable municipal ordinances, permits, contracts and orders, and with the provisions of this Order, including the prohibition of non-storm water discharges into the MS4 and receiving waters. This means the Permittee must have authority to enter, monitor, inspect, take measurements, review and copy records, and require regular reports from entities discharging into its MS4.	Los Angeles County Code: §12.80.490 [notification of uncontrolled discharge] §12.80.570 [obstructing access to facilities] §12.80.580 [compliance inspection] §12.80.610 [violation a nuisance] §12.80.620 [nuisance abatement] §12.80.635 [violation penalty] §12.80.640 [penalties not exclusive] §22.60.380 [enforcement.] §26.106 [permits] §26.108 [inspections]

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
	LACFCD Code: §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.11 Littering Prohibited §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze §21.23 Violation a Public Nuisance
x. Require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards/receiving water limitations.	Los Angeles County Code: §12.80.450 [construction mitigation] §12.80.500 [good housekeeping practices] §12.80.510 [construction BMPs] §12.80.520 [industrial/commercial BMPs] §12.84.440 [LID standards] §12.84.450 [LID Plan Review] §22.60.330 [general prohibitions] §22.60.380 [enforcement.] §22.60.390 [zoning enforcement order] §26.106 [permits] §26.108 [inspections] LACFCD Code: §21.05 Standards, Guidelines, and Criteria

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
	§21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.11 Littering Prohibited §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze §21.23 Violation a Public Nuisance
xi. Require that structural BMPs are properly operated and maintained.	Los Angeles County Code: §12.80.530 [installation of structural BMPs] §22.60.380 [enforcement.] §22.60.390 [zoning enforcement order] §26.106 [permits] §26.108 [inspections] LACFCD Code: §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.11 Littering Prohibited §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze

Order Part VI(A)(2)(a) Items	Primary Applicable Ordinance/Statute
	§21.23 Violation a Public Nuisance
xii. Require documentation on the operation and maintenance of structural BMPs and their effectiveness in reducing the discharge of pollutants to the MS4.	Los Angeles County Code: §12.80.530 [installation of structural BMPs] §22.60.380 [enforcement.] §22.60.390 [zoning enforcement order] §26.106 [permits] §26.108 [inspections] LACFCD Code: §21.05 Standards, Guidelines, and Criteria §21.07 Prohibited Discharges §21.09 Installation or Use of Illicit Connections Prohibited §21.11 Littering Prohibited §21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity §21.15 Notification of Uncontrolled Discharges Required §21.17 Requirement to Monitor and Analyze §21.23 Violation a Public Nuisance

Order Part VI(A)(2)(b)(ii)

"*Identification of the local administrative and legal procedures available to mandate compliance with applicable municipal ordinances identified in subsection (i) above and therefore with the conditions of this Order, and a statement as to whether enforcement actions can be completed administratively or whether they must be commenced and completed in the judicial system.*"

The local administrative and legal procedures available to mandate compliance with the above ordinances are specified in those ordinances, particularly in:

Los Angeles County Code:

§12.80.550 Enforcement—Director's powers and duties.

§12.80.600 Notice to correct violations—Director may take action.

§12.80.610 Violation a public nuisance.

§12.80.620 Nuisance abatement—Director to perform work when—Costs.

§12.80.630 Violation—Penalty.

§12.80.635 Administrative fines.

§12.80.640 Penalties not exclusive.

§12.84.450 LID Plan Review.

§12.84.460 Additional Requirements.

Title 26, §103 Violations And Penalties

Title 26, §104 Organization And Enforcement

Title 26, §105 Appeals Boards

Title 26, §106 Permits

§22.60.330 General prohibitions.

§22.60.340 Violations.

§22.60.350 Public nuisance.

§22.60.360 Infractions.

§22.60.370 Injunction.

§22.60.380 Enforcement.

§22.60.390 Zoning enforcement order and noncompliance fee.

LACFCD Code:

§21.05 Standards, Guidelines, and Criteria

§21.07 Prohibited Discharges

§21.09 Installation or Use of Illicit Connections Prohibited

§21.11 Littering Prohibited

§21.13 Evidence of Compliance With Permit Requirements for Industrial or Commercial Activity

§21.15 Notification of Uncontrolled Discharges Required

§21.17 Requirement to Monitor and Analyze

§21.23 Violation a Public Nuisance

LACFCD attempts to first resolve each enforcement action administratively. However, the above cited ordinances also provide LACFCD with the authority to pursue such actions in the judicial system as necessary.

Very truly yours,

JOHN F. KRATTLI
County Counsel

By
JUDITH A. FRIES
Principal Deputy County Counsel
Public Works Division

JAF:jyj

Condition #	WMP Reference	Permit Element	Reviewer Condition Summary	LAR UR2 Response	Action Undertaken
1	Section 1.3.1.1 (2012 MS4 Permit Review Process)		Remove quoted language from WMP and if preferred, replace language with acceptable quoted language.	Board provided replacement language is amenable with the intent of the original wording.	Removed original WMP language and inserted Board supplied alternative language.
1	Table 1.6 (Schedule of TMDL Compliance Milestones)	Attachment O, Table O-1	In Table 1-6, include First Phase deadlines for full implementation of the LAR UR2 WMG's LRS of March 23, 2019 for Segment B and September 23, 2020 for Segment B Tributaries. Include implementation actions and milestones associated with full implementation of the Segment B LRS by March 23, 2019, including interim milestones within this permit term.	Table 1-6 revised; however the December 2014 LAR UR2 LRS only identified four outlier drains discharges, requiring additional investigation rather than any structural actions.	Table 1-6 revised to have four milestones at 6 month increments for investigating each LRS outlier outfalls (R2-06, R2-T, R2-NEW-18, and R2-NEW-20) starting on September 24, 2015, ending September 23, 2017.
2	Section 3.1.5 (TMDL Implementation Plan)		Reference the Los Angeles River Bacteria TMDL LRS, which was submitted by the LARUR2 WMG in December 2014, in Section 3.1.5 of the revised draft WMP and include specific steps and dates for their achievement to be taken to investigate outlier outfalls consistent with the general approach of the LRS	Section 3.1.5 revised to reflect submission of the December 2014 LRS study, findings, and investigation of outlier drains.	Revised Section 3.1.5.3 to reflect submission of the December 2014 LAR UR2 WMA Segment B LRS and Implementation Plans.
3	Section 3.1.5 (TMDL Implementation Plans)		Revise the revised draft WMP to include a strategy to comply with the Los Angeles River Trash TMDL, considering language in the Tentative Basin Plan Amendment for the Reconsideration of the Los Angeles River Watershed Trash TMDL, publicly noticed April 3, 2015.	The LAR UR2 WMA has a high and forthright compliance rate, limited by the structural criteria applied to existing basins. The Group will work with the County to identify alternate criteria and additional opportunities.	Revised Section 3.1.5.2 to reflect the current Los Angeles Trash TMDL Reconsideration process and design criteria reconsideration by the County.
4	Table 3-8 (Potential Non-Structural BMP Enhanced Implementation Efforts)		Delete the reference to "Potential" and "Proposed" in Table 3-8 and revise table to only include specific commitments to non-structural BMP enhanced implementation actions. Indicate each Permittee's specific commitment(s) to each action in Table 3-8 "Potential Non-Structural BMP Enhanced Implementation Efforts," since these actions are the basis for the 5% load reduction from baseline.	Permittees agree to delete the tentative words and will individually provide specific implementation dates and criteria regarding non-structural BMP and Minimum Control Measure (MCM) implementation information.	Removed references to "Potential" and "Proposed" in Table 3-8. Revised table to reflect specific commitment actions and dates provided by each Permittee.
5	Section 4 (Reasonable Assurance Analysis)		Revise the revised draft WMP to present all model results of pollutant loads, allowable loads, target load reductions, and load reductions associated with control measures	The RAA was revised to reflect the TMDL loading and date units for inclusion in the WMP.	Geosyntec prepared a revised RAA and RAA Technical Memorandum that was used to modified Sections 4 to 6

Condition #	WMP Reference	Permit Element	Reviewer Condition Summary	LAR UR2 Response	Action Undertaken
			in units consistent with the respective TMDL (e.g., Los Angeles River Metals TMDL allowable loads should be given as daily loads not annual loads in Table 4-3). Each table in Section 4.0 must include units per time step (e.g. , lbs/day) for the numeric values for clarity.		
6	Section 4.5 (Modeling Calibration)		Provide the comparison of SBPAT and LSPC runoff volumes as an appendix or subsection to the model calibration section.	Section 4 was be revised to reflect RAA model calibration activities	Geosyntec prepared a revised RAA and RAA Technical Memorandum that was used to modified Sections 4 to 6
7	Table 5-1 (Tentative Control Measure Implementation Schedule)		Delete all instances of the word "tentative".	Permittees agree to delete the word tentative from use on Table 5-1.	Revised Table 5-1 to delete the use of the word "tentative".
7	Section 5.1 (WMP Implementation Schedule)		Change the last sentence of the WMP to the quoted sentence. Where there is a failure to meet scheduled milestones without obtaining Executive Officer approval (or non-objection in the case of Part VI.C.8.a.iii of the LA County MS4 Permit), then the Permittees in the LAR UR2 WMG shall be subject to the baseline requirements of the LA County MS4 Permit, including demonstrating compliance with applicable receiving water limitations and TMDL-based WQBELs/WLAs through outfall and receiving water monitoring. See Parts VI.C.2.c and VI.E.2.d.i.(4)(c) of the LA County MS4 Permit.	The last sentence of Section 5.1 will be revised.	Sentence changed to the prescribed sentence.
8	Table 5-1 and Figures 5-1 to 5-4 (Control Measure Implementation Schedule, and Milestones)		Include interim milestones for LID Street implementation for each Permittee, associated with the LID Street Required Tributary Area by LAR UR2 WMG WMA Permittee in Table 5-1 and Figures 5-1 to 5-4 of the revised draft WMP that demonstrate progress toward achieving the final deadline of 2037.	The Permittees have implemented several projects that were only in the planning stages in June 2014. Additional interim milestones will be identified.	WMP section 3.3.3 revised to reflect Commerce and Vernon Green/LID Street Projects. A footnote with an interim milestone date will be reconnected to table 5-1. A new footnote with at 2022 milestones added.
9	Section 3.1.1.2 (Industrial/Com		Include specific actions and interim dates to *enhance* industrial facility inspections and	Permittees agree to undertake the identified enhanced IGP	Section 3.1.1.2 revised to identify additional IGP

Condition #	WMP Reference	Permit Element	Reviewer Condition Summary	LAR UR2 Response	Action Undertaken
	mercial Facilities Program)		follow-up enforcement, if necessary, particularly in those jurisdictions where industrial land use comprises a significant portion of the land area (e.g., Commerce and Vernon) to achieve the "Non-MS4 NPDES Parcels" control measure by December 2017 as indicated in Table 5-1 of the revised draft MS4. Indicate each Permittee's responsibilities for these actions. Indicate how efforts will be focused on achieving progress toward reducing discharges of zinc and bacteria.	related inspection activities.	inspection enhancements.
9	Section 4.3.2.3 (Non-Modeled Non-Structural BMPs)		Correct discussion in Section 4.3.2.3 of the revised draft WMP, which states that the 2001 LA County MS4 Permit did not require that Permittees enforce BMPs at industrial and commercial facilities. The 2001 LA County MS4 Permit did require Permittees to conduct progressive enforcement, per Part 4.C.3.c) and d) of the 2001 LA County MS4 Permit. Therefore, enforcement is not a change from the 2001 permit.	Mandatory enforcement is a part of the 2001 LA County MS4 permit and has been expanded in the 2012 LA County MS4 permit.	Revised the first paragraph of section 4.3.2.3 to reflect that enforcement was a requirement of the 2001 and 2012 permits.

August 13, 2015

Permittees of the Los Angeles River Upper Reach 2 Watershed Management Group[1]

FINAL APPROVED LOS ANGELES RIVER UPPER REACH 2 GROUP'S WATERSHED MANAGEMENT PROGRAM (WMP), PURSUANT TO THE LOS ANGELES COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT (NPDES PERMIT NO. CAS004001; ORDER NO. R4-2012-0175)

Dear Permittees of the Los Angeles River Upper Reach 2 Watershed Management Group:

On November 8, 2012, the California Regional Water Quality Control Board, Los Angeles Region (Los Angeles Water Board) adopted Order No. R4-2012-0175, *Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, except those Discharges Originating from the City of Long Beach MS4* (hereafter, LA County MS4 Permit). The LA County MS4 Permit allows Permittees the option to develop either a Watershed Management Program (WMP) or an Enhanced Watershed Management Program (EWMP) to implement permit requirements on a watershed scale through customized strategies, control measures, and best management practices (BMPs). Development of a WMP or EWMP is voluntary and allows a Permittee to address the highest watershed priorities, including complying with the requirements of Part V.A (Receiving Water Limitations), Part VI.E and Attachments L through R (Total Maximum Daily Load Provisions), by customizing the control measures in Parts III.A (Prohibitions – Non-Storm Water Discharges) and VI.D (Minimum Control Measures), except the Planning and Land Development Program.

On April 28, 2015, on behalf of the Los Angeles Water Board, I approved, with conditions, the Los Angeles River Upper Reach 2 (LAR UR2) Group's WMP. My approval letter directed the LAR UR2 Group to submit a final WMP that satisfies all the conditions listed in the letter no later than June 12, 2015. On June 12, 2015, the LAR UR2 Group submitted its final WMP, as directed.

After review of the final LAR UR2 Group's WMP submitted on June 12, 2015, I have determined that the ULAR2 Group's WMP satisfies all of the conditions identified in my April 28, 2015

[1] Permittees of the Los Angeles River Upper Reach 2 Watershed Management Group include the City of Bell, City of Bell Gardens, City of Commerce, City of Cudahy, City of Huntington Park, City of Maywood, City of Vernon, and the Los Angeles County Flood Control District. See attached distribution list.

approval letter. The WMP dated June 12, 2015 constitutes the final approved WMP for the LAR UR2 Group.

The Los Angeles Water Board appreciates the participation and cooperation of the LAR UR2 Group in the implementation of the LA County MS4 Permit. If you have any questions, please contact Ivar Ridgeway, Storm Water Permitting, at Ivar.Ridgeway@waterboards.ca.gov or by phone at (213) 620-2150.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

Enclosure: Distribution List

LOS ANGELES RIVER UPPER REACH 2

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Terry Rodrigue	Bell	trodrigue@cityofbell.org
Al Cablay	Bell	acablay@cityofbell.org
Philip Wagner	Bell Gardens	pwagner@bellgardens.org
Young Park	Bell Gardens	ypark@infeng.co
Chau Vu	Bell Gardens	cvu@bellgardens.org
Gina Nila	Commerce	ginan@ci.comerce.ca.us
Aaron Hernandez-Torres	Cudahy	ahernandez@cityofcudahyca.gov
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Jose Pulido	Cudahy	jpulido@cityofcudahyca.gov
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