

Chapter 4: Strategic Planning and Programs of Implementation

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Introduction

The Regional Water Board's mission is to achieve and maintain water quality that is necessary to protect all beneficial uses of the Region's surface and ground waters and to protect and preserve high quality waters in the Region. The Board accomplishes this by controlling the discharge of pollutants to surface and ground waters and, where necessary, requiring the remediation of surface water or groundwater pollution resulting from discharges, through a variety of mechanisms and strategies. The mechanisms and strategies used depend on the nature of the water quality problem (e.g., surface and/or ground water, ongoing and/or historic, single source and/or multiple sources) and the characteristics of the discharge (e.g., discrete vs. diffuse source).

This chapter describes the Regional Water Board programs and actions that are utilized to protect the beneficial uses of surface and ground waters as presented in Chapter 2, and attain the water quality objectives established to protect beneficial uses and maintain high quality waters, as specified in Chapter 3, as well as in other statewide water quality control plans and federal regulations.¹ A program of implementation needed for achieving water quality objectives is one of the required elements of a water quality control plan, as defined in Water Code section 13050(j)(3) and, in conjunction with Chapters 5, 6, 7, and 8, it fulfills the requirement of Water Code section 13242 that the implementation program contain a description of the actions necessary to achieve water quality objectives, a time schedule for the actions to be taken, and a description of surveillance to be undertaken to determine compliance with objectives. It also addresses required Regional Board actions laid out in Water Code section 13225 regarding coordination with other agencies, providing support for waste disposal programs, and coordinated regional planning.

This chapter is divided into the following sections: Overview of Discharge Permitting Program, Surface Water Programs, Groundwater Programs, Remediation of Pollution, Enforcement, Funding for Water Quality Improvement Projects, and Climate Change Considerations.

An overview of the Water Boards' discharge permitting programs is provided first, since discharge permits are the principal tools that the Water Boards utilize to control discharges of pollutants to both surface water and groundwater. Further, the surface water and groundwater programs both

¹ These include, but are not limited to, the Water Quality Control Plan for Ocean Waters of California, Water Quality Control Plan for Enclosed Bays and Estuaries, Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California, and California Toxics Rule (40 C.F.R. § 131.38).

rely on common legal authorities in the Water Code and similar approaches to permitting waste discharges.

The Surface Water Programs section is organized into four subsections: Control of Point Source Pollutants, Control of Nonpoint Source Pollutants, Restoration of Impaired Surface Waters, and Drought/Salinity Loading Issues.

The Groundwater Programs section is organized into two subsections: Groundwater Permitting and Land Disposal Programs and Protection of Groundwater. Water reclamation and recycling has become increasingly important in the Region and the State. The Water Boards' programs related to water reclamation and recycling are included in this section.

The Remediation of Pollution section discusses the Site Cleanup Program, the Underground Storage Tank (UST) Program, and General WDRs for the UST and Site Cleanup Programs.

Where legal and regulatory requirements are not complied with, an enforcement action may be necessary and appropriate. An enforcement action can be any informal or formal action taken to address an incidence of actual, threatened, or potential violation of legal and regulatory requirements designed to protect water quality and prevent nuisance. Such actions include, but are not limited to, issuance of notices of violation, orders to submit information, cleanup and abatement orders, and assessment of monetary penalties. among other consequences for violations. The Regional Water Board's enforcement program coordinates with other Regional Water Board programs, and in some cases the State Water Board, to address violations of legal and regulatory requirements by collecting evidence to support enforcement actions and targeting and ranking enforcement priorities. A discussion of the Regional Water Board's enforcement program and enforcement tools is also provided in this chapter.

To assist surface water and groundwater dischargers implement water quality improvement projects and achieve regulatory requirements, the State Water Board administers a variety of grant and low-interest loan programs, which are also described in this chapter.

Finally, this chapter concludes with a discussion on Climate Change Considerations.

Overview of Discharge Permitting Programs

The State's Waste Discharge Requirements (WDRs) permitting program (established in the 1950s) is a key regulatory program used in both Surface Water Programs and Groundwater Programs. All discharges of waste² in the Region to surface water or groundwater are subject to Waste Discharge Requirements (WDRs) pursuant to Water Code section 13260 et seq. In addition, the USEPA has delegated responsibility to the State and Regional Water Boards for implementation of the federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES) program that requires permitting of point source discharges of pollutants to waters of the U.S. State WDRs for discharges to surface waters also serve as federal NPDES permits in these cases. Similarly, all reuse of recycled wastewater is subject to WDRs/Water Reclamation Requirements (WRRs). These programs are the legal means to regulate discharges of waste/pollutants to waters of the state and waters of the U.S. It is illegal to discharge waste/pollutants into any surface or ground waters of the State or to reuse recycled wastewater without obtaining the appropriate WDRs, NPDES permits, and/or WRRs.

Each of the following persons shall file with the Regional Water Board a report of waste discharge (ROWD), pursuant to Water Code section 13260, describing the quantity and nature of the discharge and any other information required by the Board: (1) any person discharging waste, or proposing to discharge waste, within the Los Angeles Region that could affect the quality of the waters of the state (other than into a community sewer system); (2) a person who is a citizen, domiciliary, or political agency or entity of this state discharging waste, or proposing to discharge waste, outside the boundaries of the state in a manner that could affect the quality of the waters of the state within the Los Angeles Region; (3) a person operating, or proposing to construct, an injection well; or (4) any person who makes a material change or proposed change to the character, location, or volume of the discharge. The ROWD, which initiates the application process for WDRs/NPDES permits,³ is submitted to the Regional Water Board for review. Discharges are categorized according to their threat to water quality and operational complexity (Table 4-1). In determining a discharge's threat to water quality, the Regional Water Board considers volume, duration, frequency, and seasonality of the discharge, and other factors that

² "Waste" is broadly defined in Water Code § 13050(d) as including "sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal."

³ In the case of general permits, a Notice of Intent, or the use of an alternate application, often satisfies the ROWD filing requirement. The general permit will specify the appropriate application document.

affect the scope of the impact from the discharge. In addition, discharges to surface waters regulated by the State under the federal NPDES program are categorized as major or minor discharges.

Table 4-1. “Threat to Water Quality” and “Complexity” Definitions.

Category	Definition	Example
THREAT TO WATER QUALITY		
Category I (Major threat)	Those discharges of waste that could cause the long-term loss of a designated beneficial use of the receiving water.	Loss of drinking water supply; the closure of an area used for water contact recreation; or the posting of an area used for spawning or growth of aquatic resources, including shellfish and migratory fish
Category II (Moderate threat)	Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.	Adverse impact on receiving biota; aesthetic impairment
Category III (Minor threat)	Those discharges of waste that could degrade water quality without violating water quality objectives, or cause a minor impairment of designated beneficial uses as compared with Category I and Category II.	Small pulses of water from low volume cooling water discharges
COMPLEXITY		
Category “a”	Any major NPDES discharger; any discharge of toxic wastes; any small volume discharge containing toxic waste; any facility having numerous discharge points or groundwater monitoring; any Class I waste management unit.	Small volume complex discharger with numerous discharge points, leak detection systems or ground water monitoring wells
Category “b”	Any discharger not included in Category “a” that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class II or Class III waste management units.	Marinas with petroleum products, solid wastes or sewage pump-out facilities
Category “c”	Any discharger for which waste discharge requirements have been or would be prescribed pursuant to Section 13263 of the Water Code not included in Category “a” or Category “b”.	Discharges having no waste treatment systems or that must comply with best management practices, discharges having passive treatment and disposal systems, or dischargers having waste storage systems with land disposal
NPDES Major or Minor		
Major	Publicly Owned Treatment Works, that have a design flow of one million gallons per day or greater or serve a population of 10,000 or more or cause significant water quality impacts. Non-POTW discharges classified as such on the basis of the number of points accumulated using the NPDES Permit Rating Work Sheet < www.epa.gov/npdes/pubs/owm0116.pdf >	Large municipal wastewater treatment facilities, power generating stations, industrial refineries
Minor	All other dischargers that are not categorized as a Major.	Municipal and industrial treatment facilities with design flows of less than one million gallons per day, that are not categorized as major

The ROWD must be accompanied by a filing fee, which is calculated according to the discharge’s threat to water quality and operational complexity, pursuant to fees established by the State Water Board. Additionally, all dischargers regulated under WDRs and NPDES permits must pay an

annual fee. The fee schedule is based on California Code of Regulations, Title 23, section 2200(a)(3). Upon review of the ROWD and all other pertinent information, the Regional Water Board will provide an opportunity for the discharger and interested persons to submit written comments on draft tentative WDRs for the Board's review. The Regional Water Board, after any necessary public hearing, will prescribe waste discharge requirements that incorporate appropriate measures and limitations to protect public health and water quality and prevent nuisance.

Standard Provisions apply to all WDRs. These provisions require dischargers to take steps to prevent permit violations and provide evidence that the facility is operated by a certified individual. Additionally, the Regional Water Board must be notified of a change in ownership, treatment, or waste, a hazardous release or treatment failure, and endangerment of health or the environment. The Regional Water Board may terminate the WDRs for cause, including failure to comply, submission of incorrect information, or omission of required information. Standard Provisions also include monitoring and reporting and signatory requirements. WDRs that serve as NPDES permits must include all federal standard provisions as provided for in 40 CFR section 122.41, as well as section 122.42 if applicable.

NPDES permits are issued for a five-year period, but may be administratively extended if necessary. Non-NPDES WDRs and WRRs usually do not have an expiration date, but are reviewed and renewed periodically on a schedule based on the level of threat to water quality.

Most WDRs are individual WDRs that are tailored to a specific discharge of waste at a specific facility. In some cases, however, multiple discharges can be regulated under general WDRs (Table 4-2), which simplify the permitting process for certain types of discharges. Pursuant to Water Code section 13263, subdivisions (i), the State or Regional Water Board may prescribe general WDRs for a category of discharges if the State or Regional Water Board finds or determines that all of the following criteria apply to the discharges in that category: (1) the discharges are produced by the same or similar operations; (2) the discharges involve the same or similar types of waste; (3) the discharges require the same or similar treatment standards; and (4) the discharges are more appropriately regulated under general WDRs than individual WDRs. After adoption of general WDRs by the State or Regional Water Board at a public hearing, dischargers wishing to seek coverage under the general WDRs are usually required to submit a Notice of Intent (indicating the discharger's intent to comply with the general permit), which satisfies the ROWD filing requirement for general WDRs. Upon review of a complete Notice of

Intent and other pertinent information, the Regional Water Board’s Executive Officer or the State Water Board’s Executive Director, or their delegees, will determine whether the discharge meets the conditions specified in the general WDRs. If so, the discharger will be notified that they are enrolled under the general WDRs, and whether any additional requirements apply.

Point source discharges include wastewater discharges from municipal sewage treatment plants (also called Publicly Owned Treatment Works (POTWs)), industrial and manufacturing facilities, shipyards and power generation stations, as well as discharges of stormwater and non-stormwater from municipal separate storm sewer systems (MS4s) (e.g. storm drains), industrial facilities, and construction sites (see examples in Table 4-2). The Regional Water Board administers several hundred WDRs for these type of discharges, including WDRs for 34 POTWs with design flows of over 100,000 gallons per day (Table 4-3; Figure 4-1). Major or significant point source discharges in the Los Angeles Region fall into the categories shown in Table 4-4.

Table 4-2. Examples of Industrial and Municipal Point Source Discharges.

Discrete Discharge	Examples of pollutants*	Examples of Affected Waterbodies
POTWs (See Table 4-4 for more information)	BOD, COD, TDS, chloride, sulfate, nutrients, NH3, residual chlorine, metals, organic chemicals	Most inland waters, Pacific Ocean
Cooling tower water (contact and non-contact), boiler blowdown	Suspended solids, oil and grease, dissolved minerals, settleable solids, chemical additives, temperature	Most inland rivers and streams
Power generation plants	Temperature, chemical additives, minerals	Los Angeles River, Los Cerritos Channel, Santa Monica Bay, Los Angeles Harbor, San Gabriel River Estuary, Pacific Ocean
Zoo wastewaters	Suspended solids, BOD, bacteria	Los Angeles River
Oil refinery wastewaters	Oil, chemical additives, dissolved mineral salts, VOCs (BTEX**), BOD, suspended solids, metals, temperature	Santa Monica Bay, Dominguez Channel, Long Beach and Los Angeles Harbors
Stormwater and non-stormwater runoff from MS4s	Metals, bacteria, suspended solids, trash, pesticides, PCBs, PAHs	All inland and coastal waters
Stormwater and non-stormwater runoff from State-owned rights-of-way	Metals, bacteria, suspended solids, trash, pesticides, PCBs, PAHs	All inland and coastal waters
Industrial stormwater	Metals, suspended solids, pre-production plastic, organic pollutants	Region-wide
Construction stormwater	Suspended solids, trash, pesticides, PCBs, metals	Region-wide
Manufacturing (process/wash) waste water	Temperature, residual chlorine	Most inland rivers and streams

Discrete Discharge	Examples of pollutants*	Examples of Affected Waterbodies
Ground water from remediation or from construction de-watering	TDS, chloride, sulfate, VOCs (BTEX), and other petroleum hydrocarbons	Region-wide
Oil field drilling brine disposal <i>Regulated by the California Department of Conservation, Division of Oil and Gas</i>	BOD, COD, TDS, chloride, settleable solids, suspended solids, oil and grease, sulfur, heavy metals	Re-injection in groundwater basins
Shipyard, boatyard wastes	Oil and grease, metals (Pb, Cr, Cu, Zn), suspended solids, settleable solids, temperature, chemical additives	Long Beach Harbor, Los Angeles Harbor, Pacific Ocean
Vessel waste	Aquatic nuisance species, nutrients, pathogens, oil and grease, metals, and toxics.	Coastal waters, Bays and Harbors, Pacific Ocean
Aquaculture wastewater	Suspended solids and nutrients	Pacific Ocean

* The examples are not exhaustive. Additionally, actual presence in all discharges within the discharge category is not implied.

** BTEX is benzene-toluene-ethylbenzene-xylene

Table 4-3. Wastewater Treatment Facilities (Design Flow > 100,000 Gallons per Day).

Facility Name	*2014 Average flow/Peak flow-MGD	Design flow 2014/ Projected - MGD	Receiving waterbody	Water Recycling/ percolation ponds	Treatment level	Future plans
Avalon, City of: Avalon Wastewater Treatment Facility	0.412/ 1.09	1.2/ same	Pacific Ocean	Studying recycle/reuse options	Secondary	No changes anticipated.
Burbank, City of: Burbank Water Reclamation Plant	7.8/ 14.07	12.5/ same	Burbank Western Channel	Plans to increase sales for irrigation	Tertiary	The Facility was upgraded to include nitrification and denitrification (NDN), a flow equalization basin, and chloramination. No future plans for expansion.
Camarillo Sanitation District: Water Reclamation Plant	3.74/ 7.6	7.25/ same	Conejo Creek	Future plans	Tertiary	Filtration, NDN, and chloramination upgrades are complete. The Facility plans on connecting to the Calleguas Municipal Water District's brine line by December 31, 2016..
Joint Outfall System: Joint Water Pollution Control Plant	263/ 540	540 (dry) 675 (wet)/ same	Pacific Ocean	N/A	Secondary	Recycling. New outfall tunnel.
County Sanitation Districts of Los Angeles County: La Canada Water Reclamation Plant	0.08/ 0.09	0.2/ same	None	Irrigation	Secondary	No changes anticipated
Joint Outfall System: Long Beach Water Reclamation Plant	15.25/ 24.0	25/ same	Coyote Creek	Irrigation and industrial use	Tertiary	NDN, and chloramination upgrades are complete. No changes anticipated.
Joint Outfall System: Los Coyotes Water Reclamation Plant	21.19/ 44.9	37.5/ same	San Gabriel River	Ornamental pond, irrigation, street sweeping, and sewer flushing	Tertiary	NDN, and chloramination upgrades are compl.ete. No changes anticipated
Joint Outfall System: Pomona Water Reclamation Plant	7.0/ 11.5	15/ same	South Fork San Jose Creek	Industrial, agricultural, and irrigation use as well as groundwater recharge	Tertiary	NDN, and chloramination upgrades are complete. No future plans for expansion.
Joint Outfall System: San Jose Water Reclamation Plant	57.7/ 62	100/ same	San Gabriel River and San Jose Creek	Groundwater recharge, irrigation, and industrial recycle/reuse	Tertiary	Plan for increased recycling and spreading and for the addition of an equalization basin.
Santa Clarita Valley Sanitation District of Los Angeles County: Saugus Water Reclamation Plant	5.45/ 6.7 (excess is diverted to Valencia for treatment)	6.5/ same	Santa Clara River	Plans for recycled water use	Tertiary	NDN, and chloramination upgrades are complete. No plans for expansion. The Facility is contemplating possibly adding ultraviolet (UV) disinfection.

Facility Name	*2014 Average flow/Peak flow-MGD	Design flow 2014/ Projected - MGD	Receiving waterbody	Water Recycling/ percolation ponds	Treatment level	Future plans
Santa Clarita Valley Sanitation District of Los Angeles County: Valencia Water Reclamation Plant	13.8/ 18.9	21.6/ same	Santa Clara River	Some existing recycled water use	Tertiary	NDN, and chloramination upgrades are complete. The Facility is contemplating upgrading to partially treat a percentage of the effluent with reverse osmosis.
Joint Outfall System: Whittier Narrows Water Reclamation Plant	8.25/ 10.9	15.0/ same	San Gabriel River and Rio Hondo	Irrigation and groundwater recharge	Tertiary	NDN, chloramination, and UV disinfection upgrades are complete. No changes anticipated.
Las Virgenes Municipal Water District: Tapia Water Reclamation Facility	1.9/ 19.8	16.1/ same	Malibu Creek and Arroyo Calabassas Creek	Agricultural	Tertiary	Exploring additional recycle options.
Los Angeles, City of, Bureau of Sanitation: Donald C. Tillman Water Reclamation Plant	43/ 80	80/ same	Los Angeles River	Japanese garden, Wildlife Lake, Lake Balboa. Irrigation. Future groundwater recharge.	Tertiary	Increased discharge for groundwater recharge.
Los Angeles, City of, Bureau of Sanitation: Hyperion Treatment Plant	231/ 528	450/ same	Santa Monica Bay	West Basin Water Recycling Facility reclaims up to 70 MGD	Secondary	No changes anticipated.
Los Angeles, City of, Bureau of Sanitation: Los Angeles-Glendale Water Reclamation Plant	9.93/ 22.6	20/ same	Los Angeles River	Irrigation and industrial use	Tertiary	NDN, and chloramination upgrades are complete. No changes anticipated.
Los Angeles, City of, Bureau of Sanitation: Terminal Island Treatment Plant	13.8/ 66.6	30/ same	Los Angeles Harbor	Injection into the Dominguez Gap Seawater Intrusion Barrier	Tertiary/ Advanced	Increase capacity for advanced treatment and water recycling. Switch to advanced oxidation disinfection.
Los Angeles, County of, Department of Public Works: Malibu Mesa Wastewater Treatment Plant	0.128/ 0.569	0.20/ same	Marie Canyon Creek	Irrigation	Tertiary	Modify the treatment process to comply with ammonia nitrogen effluent limitations.
Los Angeles, County of, Department of Public Works: Trancas Sewage Treatment Plant	0.12/ Same	0.12/ same	N/A	Leaching fields	Tertiary	Plant upgrades completed in 2008. No changes anticipated.
Los Angeles, County of, Mech Dept: Acton Rehabilitation Center	0.041/ 0.067	0.15/ same	N/A	N/A	Secondary	No changes anticipated.
Newhall Ranch Sanitation District: Newhall Ranch Water Reclamation Plant	0/ 0	2/ same	Santa Clara River	Plans for water recycling	Tertiary	Plans to build this new plant in 2017.
Ojai Valley Sanitary District: Ojai Valley Wastewater Treatment Plant	1.57/ 3.4	3.0/ same	Ventura River	N/A – Currently not recycling	Tertiary	Modify NDN treatment process to comply with Total Nitrogen and Total Phosphorus.

Facility Name	*2014 Average flow/Peak flow-MGD	Design flow 2014/ Projected - MGD	Receiving waterbody	Water Recycling/ percolation ponds	Treatment level	Future plans
Oxnard, City of, Municipal Corporation: Oxnard Wastewater Treatment Plant	17.4/ 32	37.1/ same	Pacific Ocean	Irrigation, and industrial recycle/reuse	Tertiary	Indirect potable reuse
Ventura, City of: Ventura Water Reclamation Plant	7.3/ 14	14/ 9	Santa Clara River Estuary via Wildlife Ponds	Plan to increase use of reclaimed water	Tertiary	Plan to develop alternative discharge locations
Simi Valley, City of: Simi Valley Water Quality Control Plant	8.33/ 19.19	12.5/ same	Arroyo Simi	Irrigation and dust control at landfill	Tertiary	NDN, and chloramination upgrades are complete. No changes anticipated.
Thousand Oaks, City of: Hill Canyon Wastewater Treatment Plant	8.88/ 24.3	14/ same	Arroyo Conejo	Future irrigation plans	Tertiary	NDN, and chloramination upgrades are complete. No future plans for expansion.
US Navy: Naval Auxiliary Landing Field, San Clemente Island Waste Water Treatment Plant	0.013/ 0.046	0.03/ same	Pacific Ocean	Soil compaction/ dust control	Secondary/ Tertiary	Increase recycled water use.
Ventura, County of, Water Works District: Moorpark Wastewater Treatment Plant	0/ 0	1.5/ 3.0	Arroyo Las Posas	100% Reclaimed use and percolation ponds	Tertiary/ Secondary	Plans to expand its water recycling distribution system and terminate the surface water discharge
Ventura, County of, Water Works District: No. 16: New Piru Treatment Facility	0.5/ 1.75	1.75/ same	N/A	Percolation/Evaporation ponds	Secondary	New Plant construction completed in 2010. No changes anticipated.
Camrosa Water District: Camrosa Wastewater Treatment Plant	0/ 0	1.5/ 2.25	Calleguas Creek	Reclamation reservoir and irrigation	Tertiary	Increase design capacity
Ventura Regional Sanitation District: City of Fillmore Wastewater Recycling Plant	0.88/ 1.6	1.8 /2.4	N/A	Percolation ponds	Tertiary	The design includes the capability to be expanded to a future average daily flow capacity of 2.4 MGD.
Ventura Regional Sanitation District: Liquid Waste Treatment Fac. #1, sludge treatment (No Information Found)	0.04/ 0.06	0.15/ same	N/A	No	Primary	No changes anticipated.
Ventura Regional Sanitation District: Montalvo Treatment Plant	0.25/ 0.22	0.36/ same	N/A	Percolation Ponds	Secondary	No changes anticipated.
Ventura Regional Sanitation District:: New Santa Paula Wastewater Recycling Plant	1.87 2.04	8.0/ same	N/A	Percolation/Evaporation ponds and Landscape irrigation	Secondary	No changes anticipated.

Facility Name	*2014 Average flow/Peak flow-MGD	Design flow 2014/ Projected - MGD	Receiving waterbody	Water Recycling/ percolation ponds	Treatment level	Future plans
Ventura Regional Sanitation District: Saticoy Sanitation District: Jose Flores Wastewater Treatment Plant	0.088/ 0115	0.25/ same	N/A	Percolation ponds	Secondary	Plant upgrades completed in 2002. No changes anticipated.

* Average and peak flow rates based on 2014 annual reports or the actual data if not included in the annual report.

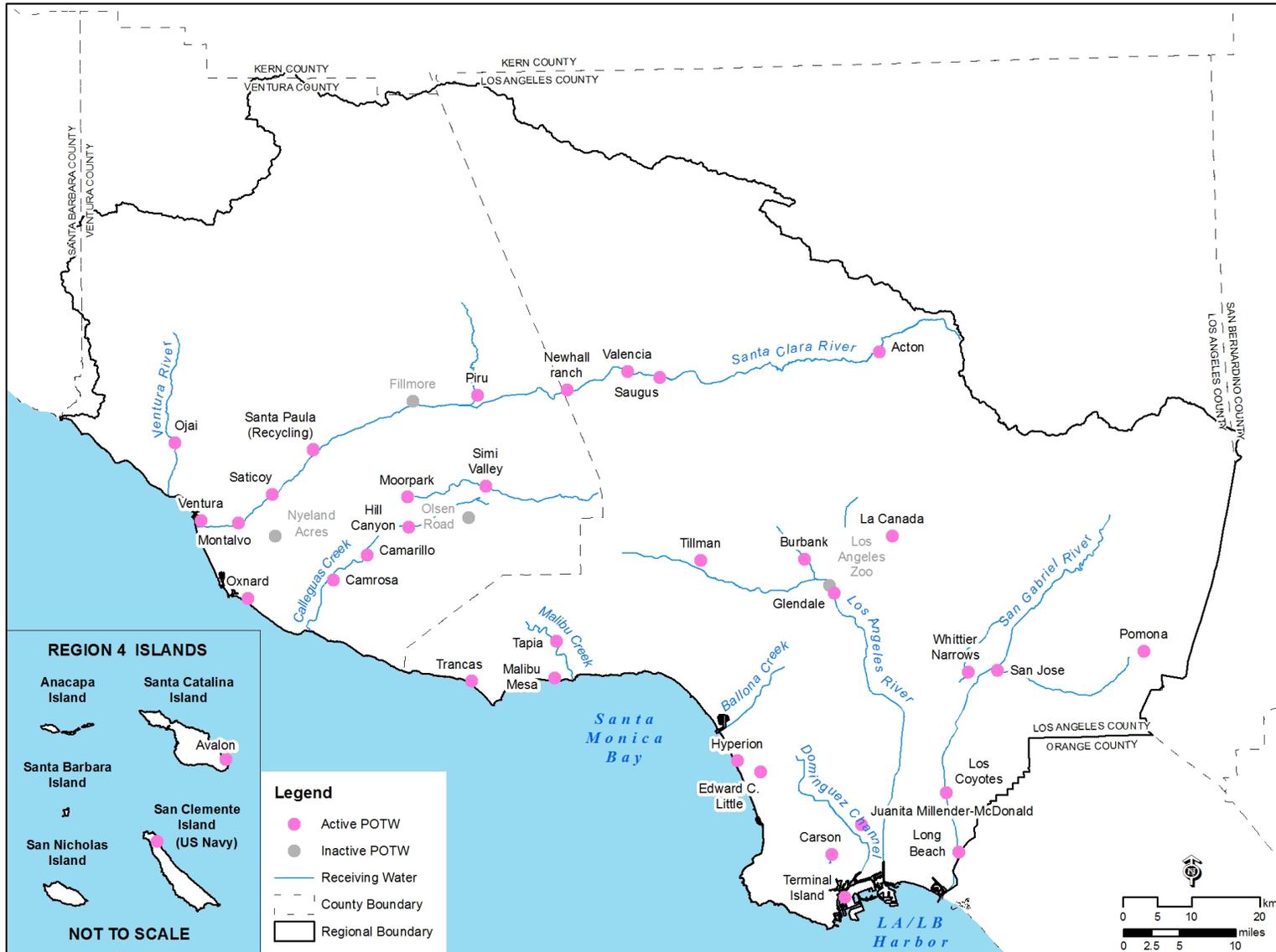


Figure 4-1. Publicly Owned Treatment Works (POTWs).

Table 4-4: Major and Minor NPDES and WDR Discharge Categories#

Category	Major		Minor				WDR	WRR	WDR Waiver	Total Facilities
	No of Individual NPDES	Total Design Flow (MGD±)	No. of General NPDES	Total Design Flow (MGD)	No. of Individual NPDES	Total Design Flow (MGD)				
Domestic Wastewater	26	1321.93					231	30		287
Industrial Stormwater *	11	910.83	2279	n.a.	29	31.08				2319
Municipal Separate Storm Sewer System (MS4) Phase 1**	100	n.a								
Municipal Separate Storm Sewer System (MS4) Phase 2**	18	n.a								
Cooling waters: Contact	1	1014	1	.06						2
Cooling waters: non-contact**	6	1402.17	7	0.97	2	0.66				15
Process waste (industrial/manufacturing)	6	2846.91			2	0.8				8
Contaminated Groundwater	3	201.40	89	48.92	7	1.55	129			228
Contaminated Soil							6			6
Potable water			33	73.03			4			37
Filter backwash brine waters					4	1.92				4
Other filter backwash					1	0.02				1
Washwater Waste	1	108			5	2.41				6
Pesticide Application			10	0.0		0.0				10
Miscellaneous ****	10	279.09	244	289.32	19	33.73	12			285
Inert solid waste							23			23
Solid waste							32			32
Irrigation runoff									14 78	2
Dredging spoils							20			20

Numbers as of November 2015.

Total design flow includes secondary discharges (other categories) from some facilities. The WDRs listed include multiple permits for some major dischargers, particularly municipal sewage treatment plants.

Construction stormwater discharge is not included in the table due to the dynamic nature of construction sites.

* These numbers indicate some process or other wastes.

** Per federal statute and regulation, municipal separate storm sewer systems (MS4s) are grouped as either "Phase I Large/Medium MS4s" or "Phase II Small MS4s" rather than as Major or Minor.

*** Includes power plants.

**** Includes refineries, shipyards, aquaculture, vessel waste, and others. No design flow data for enrollees under the general NPDES permit for drinking water system and utility vault discharges.

Surface Water Programs

Generally, ongoing discharges of pollutants to surface waters are grouped into two categories for regulatory purposes: point sources and nonpoint sources. Various programs and mechanisms are used to control these sources of pollutants to the Region's surface waters. In surface waters where water quality is degraded beyond the levels necessary to support the waterbody's beneficial uses, the Regional Water Board develops a total maximum daily load (TMDL) for the pollutant(s) to further control point and nonpoint sources in order to improve water quality and restore the waterbody's beneficial uses.

Introduction to Control of Point Source Discharges of Pollutants

Pollutants from point sources are transported to waterbodies in discernible, confined and discrete conveyances at well-defined locations. Examples of point sources include discharges of wastewater from municipal and industrial wastewater treatment facilities and discharges of stormwater and non-stormwater from municipal separate storm sewer systems (commonly referred to as storm drains) and industrial facilities and construction sites. According to the federal CWA, concentrated animal feeding operations (CAFOs) are point sources, while agricultural stormwater discharges and return flows from irrigated agriculture are not categorized as point sources.

Programs that protect water quality from point source discharges of pollutants are primarily regulatory in nature. Permitting programs such as California's Waste Discharge Requirements (WDRs) program (established in the 1950s) and the federal National Pollutant Discharge Elimination System (NPDES) program (established in the 1970s) are examples of key regulatory programs. Significant progress toward the control of point source discharges of pollutants especially from municipal and industrial wastewater treatment facilities has been made through these permitting programs although some challenges remain. While permits have undergone significant evolution in the past 20 years and innovative approaches have been developed, work remains to be done to control stormwater and non-stormwater discharges of pollutants from municipal separate storm sewer systems (MS4s), industrial facilities and construction sites.

Introduction to Control of Nonpoint Source Discharges of Pollutants

Pollutants from nonpoint sources are diffuse, both in terms of their origin and mode of transport to surface and ground waters. Nationwide, pollutants from nonpoint sources represent a

significant threat to water quality. Examples of nonpoint sources in southern California include runoff from agricultural fields that conveys fertilizers and pesticides; discharges of bacteria and nutrients from improperly sited or maintained onsite wastewater treatment systems; runoff from grazing, intensive livestock operations and equestrian facilities that carries sediment and animal waste; discharges from boats such as copper from antifouling hull paint; and atmospheric deposition of various pollutants.

Discharges of pollutants from nonpoint sources can be more difficult to control than those from point sources and a combination of regulatory control strategies along with outreach, education, technical assistance and financial incentives is used. Emphasis is placed on pollution prevention as the most effective means of addressing these diffuse sources. The State's nonpoint source (NPS) pollution program was developed to prevent nonpoint source pollution from impacting California's waterbodies. The program is guided by the NPS Program Plan, first developed in 1988 and upgraded in 1999, which provides a unified, coordinated statewide approach to dealing with NPS pollution. In 2004, the State Water Board adopted the *Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Implementation and Enforcement Policy), which identifies the authorities and mechanisms that will be used to implement and enforce the NPS Program Plan. The NPS Program Plan and policy are summarized in Chapter 5.

Overview of Program to Restore Impaired Surface Waters

The Regional Water Board conducts periodic water quality assessments of surface waters in the region. When a waterbody is determined to contain levels of one or more pollutants that prevent it from supporting any of its existing or designated beneficial uses, it is considered impaired. For such impaired waters, a total maximum daily load (TMDL) of the impairing pollutant is determined. A TMDL is the maximum allowable discharge of the pollutant into the waterbody that will still allow it to support its beneficial uses (e.g., recreation, including fishing; aquatic life; agriculture water supply). A program of implementation to improve the water quality of the waterbody is included as part of TMDL development, and any limitations on discharges associated with the TMDL are implemented through either the point source or nonpoint source programs described below. TMDLs are included in Chapters 5 and 7.

Control of Point Source Pollutants

Surface Water Permitting Programs

The sections below describe the Regional Water Board permitting programs that pertain to surface water discharges.

National Pollutant Discharge Elimination System Permitting

The Clean Water Act (CWA) authorizes the United States Environmental Protection Agency (US EPA) to regulate point sources that discharge pollutants into the waters of the United States under the National Pollutant Discharge Elimination System (NPDES) permitting program. As described above, point sources are discrete conveyances such as pipes or man-made ditches. In 1973, California became the first delegated state for issuing NPDES permits in accordance with a Memorandum of Agreement between the US EPA and the State Water Board, and as codified in the Water Code. These federal NPDES permits also serve as WDRs as required by the Water Code. Municipal, industrial, and other facilities must obtain permits if their discharges enter surface waters. The discussion below generally describes NPDES permit requirements and presents information in the context of NPDES permits; however, the requirements and information also apply to State WDRs for surface water discharges.

NPDES permits and WDRs can be issued as individual or general permits. An individual permit is a permit specifically tailored for an individual facility. As previously described, a general permit is developed and issued to cover multiple facilities within a specific category and/or specific geographic area. The Regional Water Board develops and implements both individual and general NPDES permits. Additionally, discharges are classified as major or minor. Publicly owned treatment works (POTW) discharges that have a design flow of one million gallons per day or greater, serve a population of 10,000 or more, or cause significant water quality impacts are classified as major discharges (US EPA, 2010)⁴. Non-POTW discharges are classified as major facilities based on the results of the NPDES Permit Rating Work Sheet or if reported maximum flows are greater than one million gallons per day (US EPA, 2010). Any facility not classified as a major discharge is considered a “minor” discharge.

⁴ NPDES Permit Writers' Manual. U.S. EPA, Office of Wastewater Management, Water Permits Division. September 2010.

The Water Boards have a standard template for NPDES permits, which includes the following sections:

- Cover page and facility information - Includes the name and location of the facility, identifies the discharge location(s), includes a statement authorizing the discharge, and specifies the permit expiration date.
- Findings - Provides an official description of the facility, process(es), type and quantity of waste(s), existing requirements, enforcement actions, public notice, and applicable Water Quality Control Plans.
- Discharge prohibitions - Narrative restrictions concerning the condition and/or location of the discharge to ensure that the discharge does not adversely affect the beneficial uses of the receiving water.
- Effluent limitations - Narrative and/or numerical limits for effluent quality.
- Receiving water limitations - Narrative and/or numerical limits for the receiving water quality.
- Provisions - Specifies the standard permit provisions required by the Regional Water Board and by federal law and any permit specific special provisions. Special provisions may include: terms for permit modification, mandatory special studies, and required best management practices.
- Compliance/task schedules - If necessary, specifies time schedules, interim effluent limitations, and interim reporting deadlines for compliance.
- Definitions (Attachment A)
- Map (Attachment B) and flow schematic (Attachment C)
- Standard Provisions (Attachment D)
- Monitoring and reporting program (Attachment E) - Establishes monitoring and reporting requirements, in accordance with federal and state regulations. Specifies locations of monitoring stations and sampling frequency for all parameters for which there are effluent limitations in the permit as well as other pollutants of concern.

- Fact Sheet (Attachment F) - The Fact Sheet is incorporated by the Regional Water Board as findings to the permit and includes the legal requirements and technical rationale that serve as the basis for the requirements of permit.

Developing NPDES Permit Requirements

Effluent Limitations

The federal Clean Water Act requires that NPDES permits include technology-based effluent limitations and, if applicable, water quality-based effluent limitations. Technology-based effluent limits for industrial facilities are based on US EPA effluent limitation guidelines (ELGs) (40 CFR Parts 405-499) and best professional judgment (BPJ) on a case-by-case basis in the absence of ELGs. The US EPA ELGs are industry-specific and developed based on the performance of treatment and control technologies. At a minimum, POTWs are required to meet “secondary treatment” requirements. Additionally, municipal POTW dischargers are required to meet performance-based requirements based on available wastewater treatment technology.

When technology-based effluent limitations fail to attain or maintain acceptable water quality (as compared to water quality objectives) or comply with water quality control plans, additional or more stringent effluent limitations are required to attain water quality objectives (Clean Water Act section 301(b)(1)(C).) These limitations are known as water quality-based effluent limitations (WQBELs). WQBELs are intended to protect the designated beneficial uses of the receiving water. WQBELs must control all pollutants that the Regional Water Board determines are or may be discharged at a level that will cause or contribute to an exceedance above any water quality objective, including State narrative criteria for water quality.

WQBELs can consist of narrative requirements and/or numeric limitations necessary to protect the existing and designated beneficial use(s) that are most sensitive to the pollutant(s) in the receiving water. Most often, WQBELs are expressed as pollutant specific numeric limitations on the quality of the discharge consistent with the applicable water quality objective for the receiving water. The Regional Water Board prescribes WQBELs after conducting a reasonable potential analysis pursuant to 40 CFR section 122.44(d)(1), identifying any available wasteload allocations established in a TMDL that must be implemented for the discharge, and assessing the nature of the waste, treatment level, other nearby waste discharges, and allowable mixing zones (if any)⁵.

⁵ A reasonable potential analysis determines whether a pollutant is or may be discharged at a level that will cause, have the

NPDES permits must include effluent limitations consistent with the assumptions and requirements of any available wasteload allocation for the discharge. (40 C.F.R. § 122.44(d)(1)(vii)(B))

WQBELs are developed to comply with narrative and numeric water quality objectives in this Basin Plan, the California Ocean Plan, the California Toxics Rule (40 CFR § 131.38), other State and Regional Water Board plans and policies, and any available wasteload allocations for the discharge established in a TMDL. In addition, the Regional Water Board refers to several guidance documents, policies, and other technical references when developing effluent limitations. These documents include, but are not limited to, the following:

- Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP)
- US EPA National Recommended Water Quality Criteria for Priority Pollutants
- US EPA Development Documents for Effluent Limitations Guidelines
- US EPA Technical Support Document for Water Quality Based Toxics Control
- A Compilation of Water Quality Goals (State Water Board)
- Clean Water Act Section 303(d) List
- Total Maximum Daily Loads (TMDLs)

WQBELs for discharges to inland surface waters, enclosed bays, and estuaries may be developed using various technical approaches, including:

- Determination of WQBELs based on a steady-state model. This approach applies a model to project the impact of the effluent on the receiving water under a single set of design conditions. Because the model only evaluates a single set of conditions, generally the critical condition is evaluated in order to ensure protection of the receiving water.
- In cases where sufficient effluent and receiving water data exist, a dynamic model, approved by the Regional Water Board, may be used to establish WQBELs. The output from a dynamic model can be used to determine effluent limitations based on probability estimates of the receiving water concentration rather than the critical condition.

reasonable potential to cause, or contribute to an excursion above any state water quality standard, including State narrative criteria for water quality. Reasonable potential can be demonstrated in several ways, one of which is through the TMDL development process. Where a point source is assigned a wasteload allocation in a TMDL, the analysis conducted in the development of the TMDL provides the basis for the Regional Water Board's determination that the discharge has the reasonable potential to cause or contribute to an exceedance of water quality standards in the receiving water.

- The Regional Water Board may consider intake water credits on a pollutant-by-pollutant and discharge-by-discharge basis when establishing water quality-based effluent limitations if specific conditions outlined in the SIP are met.
- To derive WQBELs for total recoverable metals and selenium, where the water quality objectives are expressed in the dissolved form, a translator must first be applied to the objective in order to express it as the total recoverable form. The translator shall be the US EPA conversion factor that applies to the dissolved aquatic life metals criterion as specified in 40 CFR section 131.38 unless:
 - A. the discharger, in the permit application, (1) commits to completing a defensible site-specific translator study and proposing a dissolved to total recoverable translator to the Regional Water Board, and (2) describes the method(s) to be used in developing the translator; and
 - B. the discharger, within a time period specified by the Regional Water Board not exceeding two years from the date of issuance/reissuance of the permit, submits to the Regional Water Board (1) the proposed translator, and (2) all data and calculations related to its derivation.

Where necessary for the protection of beneficial uses or where otherwise required by law, the Regional Water Board may impose more restrictive requirements (e.g., discharge prohibitions established in accordance with Water Code section 13243, or TMDL Waste Load Allocations). Effluent limitations for ocean discharges are based on objectives in the California Ocean Plan unless otherwise specified in the Basin Plan (as is the case for the Los Angeles Region's bacteria objectives for marine waters).

In cases where narrative water quality objectives must be implemented to ensure the attainment and maintenance of a beneficial use, the Regional Water Board may use best professional judgment in conjunction with technical guidance documents (including but not limited to those listed above) to translate the narrative objective into a numeric effluent and/or receiving water limitation.

Antidegradation Policy

Discharges must comply with federal and State antidegradation requirements. Federal regulation 40 CFR section 131.12 requires that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's Antidegradation Policy in State Water Board Resolution 68-16, *Statement of Policy with Respect to Maintaining High Quality Waters in California*. Resolution 68-16 is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. Discharges authorized by a NPDES permit must be consistent with the antidegradation provision of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16. This Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies.

Resolution 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. Resolution 68-16 also protects waterbodies where existing water quality is higher than necessary for the protection of beneficial uses. In accordance with California's Antidegradation Policy, any action that can adversely affect water quality in all surface and ground waters must: 1) be consistent with the maximum benefit to the people of the state, 2) not unreasonably affect present and anticipated beneficial use of such water, and 3) not result in water quality less than that prescribed in water quality control plans and/or policies.

The State Water Board's Administrative Procedures Update (90-004) titled "Antidegradation Policy for NPDES Permitting", provides further guidance to the Regional Water Board for implementing both State and federal antidegradation policies, as they apply to the NPDES permitting process. Where degradation is a concern, the permit fact sheet includes an antidegradation analysis.

Anti-Backsliding Requirements

There are federal statutory (Clean Water Act §§ 402(o) and 303(d)(4)) and regulatory provisions (40 CFR § 122.44(l)) that restrict backsliding in NPDES permits. These antibacksliding provisions require effluent limitations in a reissued or modified NPDES permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. Where backsliding is allowed, the NPDES permit fact sheet provides the necessary justification for the backsliding.

Receiving Water Limitations

Receiving water limitations are developed to comply with narrative and numerical water quality objectives in the California Ocean Plan, the Basin Plan for the Region, and other State and Regional Water Board plans and policies and federal regulations (e.g., 40 C.F.R. § 131.38). Receiving water limitations are established to prevent the discharge from adversely affecting the beneficial uses of the receiving water or degrading high quality waters unless allowed pursuant to the federal and State antidegradation requirements described above.

Mixing Zones/Dilution Credit

On a case-by-case basis, following the completion of an approved dilution or mixing zone study, the Regional Water Board can allow a mixing zone for compliance with water quality objectives, consistent with either the Ocean Plan or the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP), if the study has demonstrated that there is sufficient assimilative capacity in the receiving water. If the mixing zone or dilution study has been approved, a multiplier, or a dilution factor is applied in the calculation of final effluent limitations at the point of initial discharge (i.e., “end-of-pipe”), to account for the dilution that will take place in the receiving water. While compliance is still determined at the end of pipe, receiving water monitoring is required. In rivers and streams, an approved mixing zone cannot extend more than 250 feet from the point of discharge or be located less than 500 feet from an adjacent mixing zone. Since many of the streams in the Region have minimal upstream flows, mixing zones are usually not appropriate. In lakes or reservoirs, an approved mixing zone may not extend 25 feet in any direction from the discharge point, and the sum of mixing zones may not be more than 5% of the volume of the waterbody. As detailed in the Ocean Plan, ocean dilution zones and credits are determined using standard models.

Standard Provisions in NPDES Permits and WDRs

The standard provisions included in each NPDES permit and surface water WDR include requirements that are applicable to all permitted dischargers.⁶ These provisions include but are not limited to:

- Duty to comply with the requirements in the permit.
- Duty to mitigate discharges that violate the permit.
- Duty to properly operate and maintain the facility and/or treatment systems.

⁶ A full copy of the standard provisions for NPDES permits can be obtained at the Regional Water Board office.

- Duty to allow inspection and entry to the facility by State and Regional Water Board and/or USEPA or authorized representatives.
- Duty to monitor and maintain records.
- Duty to report data or other information submitted under penalty of perjury.
- Duty to report all data collected at the intervals specified in the permit.
- Duty to report noncompliance that may endanger health or the environment orally within 24-hours of the discharger or becoming aware of the circumstances.
- The Regional Water Board is authorized to enforce the terms of the permit under provisions in the Water Code, including but not limited to, sections 13385, 13386, and 13387.
- Additional provisions.

Special Conditions for Municipal Publicly Owned Treatment Works

NPDES permits that cover discharges from municipal Publicly Owned Treatment Works (POTWs) specify, at a minimum, requirements related to the following:

- Pretreatment
- Use of biosolids and/or sludge
- Non-ocean disposal of sludge
- Sanitary sewer overflows
- Secondary treatment

Each of these is described in more detail below.

Pretreatment Requirements

CWA section 402(b)(8) requires that certain POTWs receiving pollutants from significant industrial sources (subject to CWA section 307(b) standards) establish a pretreatment program. Individual POTWs (or a group of POTWs operated by the same authority) with a total design flow greater than five million gallons per day, and receiving waste from industrial operations that passes through or interferes with the operation of the POTW, are required to implement a pretreatment program. Additionally, as specified in 40 CFR section 403.8(a) POTWs with a design flow of five million gallons per day or less may be required to develop a pretreatment program. Information such as the nature and volume of industrial influent and a history of treatment process upsets may be used to determine if a pretreatment program is necessary.

Pretreatment programs are designed to reduce pollutants that interfere with biological treatment processes, contaminate sludge, and violate water quality objectives of receiving waters. POTWs are responsible for implementing and enforcing their own pretreatment programs, but are subject to US EPA and Regional Water Board approval and oversight. Pretreatment requirements are incorporated into a POTW's NPDES permit.

Biosolids and Sludge Management

Biosolids are solid organic materials resulting from the treatment of domestic sewage in a treatment facility. Biosolids are carefully treated and monitored and must be used or disposed of in accordance with regulatory requirements. Biosolids may be recycled as fertilizer, disposed of in a landfill, or incinerated. Federal regulations (40 CFR §503) require that producers of biosolids meet certain reporting, handling, and use or disposal requirements. NPDES permits for municipal POTWs contain biosolids requirements. Biosolids and/or sewage sludge that is hazardous, as defined in 40 CFR section 261, must be disposed of in accordance with the Resource Conservation and Recovery Act (RCRA). The US EPA tracks and enforces compliance with the Biosolids Program.

Sanitary Sewer Overflows

A sanitary sewer overflow (SSO) is any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. To provide a consistent, statewide regulatory approach to address SSOs, the State Water Board issued statewide General WDRs for Sanitary Sewer Systems. The WDRs require public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or collect and convey, on any single day, more than 25,000 gallons of untreated or partially treated wastewater to a publicly or privately owned treatment facility or sanitary sewer system to enroll for coverage under the General WDRs. The WDRs require agencies to develop and implement sanitary sewer management plans and report all sanitary sewer overflows to the State Water Board.

Specific municipal NPDES permit requirements including the Spill Clean-up Contingency Plan, Construction, Operation, and Maintenance Specifications, and Spill Reporting Requirements for POTWs are intended to be consistent with the requirements of the Sanitary Sewer Systems General WDRs. There may be some overlap between Regional Water Board NPDES permit requirements and the Sanitary Sewer Systems General WDRs; however, provisions in the Sanitary Sewer Systems General WDRs are considered the minimum requirements.

Secondary Treatment Requirements

US EPA requires secondary treatment standards (40 CFR Part 133) for POTWs utilizing a combination of physical and biological treatment to remove biodegradable organics and suspended solids. The regulation applies to all POTWs and identifies the technology-based performance standards achievable based on secondary treatment for 5-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), and pH. The regulation also includes a set of alternative standards for certain POTW facilities that utilize waste stabilization ponds or trickling filters as the principal treatment process.

General WDRs and NPDES Permits

The Regional Water Board and/or the State Water Board develops and issues general permits to cover multiple facilities with common elements such as similar operations and/or similar waste discharge characteristics (see Table 4-5). When a large number of similar facilities require permits, a general permit allows the Water Boards to provide timely permit coverage and consistent permit conditions for comparable facilities. Once the Water Board issues the general permit, a discharger wishing to enroll under the permit submits a Notice of Intent (NOI). After the NOI is reviewed and approved by the Executive Officer (or Director) the permit requirements are issued administratively to the discharger.

The Regional Water Board implements both region specific and statewide general NPDES permits for discharges to surface water. The table below lists the existing general permits and summarizes the types of discharge eligible for these permits.

Table 4-5: Summary of General NPDES Permits for Discharges to Surface Water issued by the State or Regional Water Board (as of November 2015)

General WDR/NPDES Permit	Example of Eligible Discharges
Regional General Permits	
General NPDES Permit for Discharges of Groundwater from Construction and Project Dewatering (NPDES No. CAG994004, Order No. R4-2008-0032)	<ul style="list-style-type: none"> ▪ Groundwater from permanent or temporary construction de-watering activities ▪ Groundwater from cleanup projects ▪ Incidental stormwater and irrigation water collected from basements ▪ Process and non-process wastewater that could not be covered under other general permits
	<ul style="list-style-type: none"> ▪ Waste waters from hydrostatic testing of pipe(s), tanks(s), and other storage vessels

General WDR/NPDES Permit	Example of Eligible Discharges
<p>General NPDES permit for Discharges of Low Threat Hydrostatic Test Water</p> <p>(NPDES No. CAG674001, Order No. R4-2009-0068)</p>	
<p>General NPDES permit for Discharges of Groundwater from Potable Water Supply Wells</p> <p>(NPDES No. CAG994005, Order No. R4-2003-0108)</p>	<ul style="list-style-type: none"> ▪ Well water associated with well purging for data collection ▪ Well pumping and aquifer tests ▪ Other water from well rehabilitation, well drilling, construction, and development
<p>General NPDES Permit For Discharges of Non-Process Wastewaters</p> <p>(NPDES No. CAG994003, Order No. R4-2009-0047)</p>	<ul style="list-style-type: none"> ▪ Non-contact cooling water ▪ Boiler blowdown ▪ Air conditioning condensate ▪ Water treatment plant filter backwash ▪ Swimming pool filter backwash water ▪ Swimming pool drainage
<p>General NPDES permit for Discharges of Treated Groundwater and Other Wastewaters from Investigation and/or Cleanup of Petroleum Fuel Contaminated Sites</p> <p>(NPDES No. CAG834001, Order No. R4-2007-0021)</p>	<ul style="list-style-type: none"> ▪ Treated groundwater from cleanup of groundwater polluted with petroleum fuel including groundwater extracted during pump tests, well development, well purging, and from equipment decontamination onsite
<p>General NPDES permit for Discharges of Treated Groundwater from Investigation and/or Cleanup of Volatile Organic Compound Contaminated Sites</p> <p>(NPDES No. CAG914001, Order No. R4-2007-0022)</p>	<ul style="list-style-type: none"> ▪ Treated groundwater from cleanup of waters polluted with volatile organic compounds, including groundwater extracted during pumping tests, well development, well purging, and from decontaminating equipment onsite
Statewide General Permits	
<p>Statewide General NPDES Permit for Stormwater Discharges Associated with Industrial Activities</p>	<ul style="list-style-type: none"> • This General Permit regulates industrial storm water discharges and authorized non stormwater discharges (NSWDs) from specific categories of industrial facilities, and industrial storm water discharges and authorized NSWDs from facilities designated by the Regional Water Boards to obtain

General WDR/NPDES Permit	Example of Eligible Discharges
(Water Quality Order No. 2014-0057; General Order No. CAS 000001)	coverage under this General Permit. This General Permit does not apply to industrial storm water discharges and NSWDS that are regulated by other individual or general NPDES permits
<p>Statewide General NPDES Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities</p> <p>(Water Quality Order No. 2012-0006; General Order No. CAS 000002)</p>	<ul style="list-style-type: none"> This General Permit regulates discharges of pollutants in storm water associated with construction activity (storm water discharges) to waters of the United States from construction sites that disturb one or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface.
<p>Statewide General NPDES Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s)</p> <p>(Water Quality Order No. 2013-0004; General Order No. CAS 000004)</p>	<ul style="list-style-type: none"> This Order regulates discharges of storm water from Regulated Small MS4s. A Regulated Small MS4 is a Small MS4 that has been designated as regulated in accordance with criteria described in 40 C.F.R. 122.32.
<p>Statewide General NPDES Permit for Drinking Water System Discharges to Waters of the United States</p> <p>(Water Quality Order No. 2014-0194; General Order No. CAG 140001)</p>	<ul style="list-style-type: none"> Discharges authorized by this Order are composed solely of water that is dedicated by drinking water facilities for the primary purpose of providing safe and reliable drinking water. Such discharges include, but are not limited to, discharges from supply wells, transmission systems, water treatment facilities, water distribution systems, and storage facilities.
<p>Statewide General NPDES Permit for Residual Pesticide Discharges to Waters of the United States from Aquatic Animal Invasive Species Control Applications</p> <p>(Water Quality Order No. 2011-0003-DWQ, General Permit No. CAG 990006)</p>	<p>This General Permit covers the point source discharge of pesticide residues resulting from direct applications for aquatic animal invasive species control using pesticides containing sodium hypochlorite. This General Permit does not cover invasive species eradication programs that use rotenone.</p>
<p>Statewide General NPDES Permit For Biological and Residual Pesticide Discharges to Waters of the United States from Spray Applications</p> <p>(Water Quality Order No. 2011-0004-DWQ General Permit No. CAG 990007)</p>	<p>This General Permit is only applicable to the California Department of Food and Agriculture and US Forest Service. The permit authorizes the point source discharge of biological and residual pesticides resulting from spray applications of the following:</p>

General WDR/NPDES Permit	Example of Eligible Discharges	
	Acetamiprid	Aminopyralid
	Bacillus thuringiensis kurstaki (Btk)	Carbaryl
	Chlorsulfuron	Cclopyralid
	Cyfluthrin	Dinotefuran
	Glyphosate	Imazapyr
	Imidacloprid	Malathion
	Naled	Nuclear
	Polyhedrosis virus (NPV)	Pheromone
	Pyrethrins	Spinosad A and D
	Triclopyr butoxyethyl ester (BEE)	Triclopyr triethylamine salt (TEA)
<p>Statewide NPDES Permit for Biological and Residual Pesticide Discharges to Waters of the United States from Vector Control Applications</p> <p>(Water Quality Order No. 2011-0002-DWQ General Permit No. CAG 990004)</p>	<p>This General Permit covers the point source discharge of biological and residual pesticides resulting from direct and spray applications for vector control using:</p> <p>1) larvicides containing monomolecular films, methoprene, <i>Bacillus thuringiensis</i> subspecies <i>isralensis</i> (or <i>Bti</i>), <i>Bacillus sphaericus</i> (or <i>B. sphaericus</i>), temephos, petroleum distillates, or spinosad</p> <p>2) adulticides containing malathion, naled, pyrethrin, permethrin, resmethrin, sumithrin, prallethrin, piperonyl butoxide (PBO), etofenprox, or N-octyl bicycloheptene dicarboximide (or MGK-264)</p> <p>This General Permit only covers the discharge of larvicides and adulticides that are currently registered in California.</p>	

General WDR/NPDES Permit	Example of Eligible Discharges
<p>Statewide General NPDES Permit for the Discharge of Aquatic Pesticides for Aquatic Weed Control in Waters of the United States</p> <p>(General Permit No. CAG990005, Water Quality Order No. 2004-0009-DWQ)</p>	<p>This General Permit covers discharge of aquatic pesticides related to the application of 2,4-D, acrolein, copper, diquat, endothall, fluridone, glyphosate, imazapyr, sodium carbonate peroxyhydrate, and triclopyr-based aquatic pesticides to surface waters for the control of aquatic weeds.</p>
<p>General NPDES Permit for Discharges from Utility Vaults and Underground Structures To Surface Waters</p> <p>(Order No. 2006-0008-DWQ NPDES No. CAG990002)</p>	<p>This General Permit addresses discharges by utility companies that operate and maintain numerous vaults and underground structures within their service territories. For safety reasons, utility companies must de-water vaults and underground structures prior to performing any repair, maintenance, and/or installation of equipment. The volume of discharges can vary from a few gallons to a few thousand gallons depending on the configuration and individual situation at each vault or structure. These intermittent discharges are routed to waters of the United States directly or indirectly via local storm conveyance systems.</p>

Standard Procedures for Enrollment under General NPDES Permits

Eligibility and Requirements for Enrollment

To be covered under a general NPDES permit, the discharger must:

- Demonstrate that pollutant concentrations in the discharge shall not cause a violation of any applicable water quality objective.
- Demonstrate that the discharge has no reasonable potential to cause or contribute to an excursion above toxics water quality criteria/objectives.
- Perform reasonable potential analysis using a representative sample of groundwater or wastewater to be discharged.

Enrollment under a General Permit

Dischargers seeking enrollment under general NPDES permits must submit a complete Notice of Intent (NOI) form. The information and application forms necessary for enrollment under general NPDES permits are posted on the Water Boards’ website under Publications/Forms (http://www.waterboards.ca.gov/losangeles/publications_forms/forms/npdes-wdr_forms.shtml). The NOI form replaces the standard individual Report of Waste of Discharge (ROWD)/NPDES

permit application forms. After receiving the completed NOI the Water Board may 1) request additional information, 2) notify the discharger that their enrollment is approved, or 3) require the facility to apply for an individual permit.

Pre-permitting Sampling and Inspection Requirements

As part of the NOI form, the discharger is required to analyze representative sample of the untreated wastewater or groundwater proposed for discharge for all pollutants identified in the Supplemental Requirements Appendix to the NOI. This is necessary to verify the expected quality of the discharge. The laboratory used for sample analysis must achieve the minimum method detection levels specified in 40 CFR 136 for all constituents that have final effluent limitations in the permit. For constituent where minimum level is above the water quality criteria, the Discharger is required to use the most sensitive 40 CFR 136 test method for analysis. The analytical results should be submitted with the NOI. If the analytical results show elevated pollutant concentrations, the discharger must submit a treatment system flow schematic diagram as part of the NOI form. Additionally, Water Board staff will conduct pre-permitting site inspection prior to the enrollment under a general permit.

Enrollment under the General NPDES Permit

It takes Regional Water Board staff about 30 to 45 days after a discharger submits a complete application to authorize enrollment under a general permit. Typically, enrollment under the general NPDES permit consists of an authorization letter from the Regional Water Board Executive Officer or his/her delegee and a fact sheet that contains project background and description, volume and description of the discharge, applicable effluent limitations, water reuse analysis, and other requirements. A site-specific monitoring and reporting program (MRP) is also issued to the discharger, which sets out the monitoring and reporting program requirements. The MRP contains the list of pollutants the discharger is required to monitor, their sampling and reporting frequency, any required sampling test methods, and other requirements.

Compliance Schedules

A compliance schedule is a schedule of remedial measures, including an enforceable sequence of actions or operations leading to compliance with an effluent limitation, other limitations, prohibition, or standard. The statewide *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (Resolution No. 2008-0025) applies to all NPDES permits

adopted by the Water Boards that must comply with Clean Water Act section 301(b)(1)(C) and that are modified or reissued after the effective date of the Policy. Pursuant to the Policy, the Regional Water Board is authorized to include a compliance schedule in a NPDES permit for an existing discharger to implement a new, revised, or newly interpreted water quality objective or criterion in a water quality standard that results in a permit limitation more stringent than the limitation previously imposed where the Regional Water Board determines that the discharger has complied with the application requirements provided for in the Policy and has demonstrated that the discharger needs additional time to implement actions to comply with the limitation. These actions may include, but are not limited to, designing and constructing facilities or implementing new or significantly expanded programs and securing financing, if necessary, to comply with a permit limitation specified to implement the objective or criterion.

Compliance schedules are not authorized under a several circumstances, including: 1) in permits for new dischargers; 2) for permit limitations implementing criteria promulgated in the California Toxics Rule, as amended (40 CFR § 131.38); or 3) where a water quality objective or criterion in a water quality standards has been relaxed and the new permit limitations are less stringent than limitations based on the prior, more stringent objective or criterion.

Any authorized compliance schedule must be as short as possible, taking into account the amount of time reasonably required for the discharger to implement management and/or treatment actions, and must include steps that will be taken to achieve the limit. The compliance schedule in the NPDES permit cannot, under any circumstances, exceed the maximum length for compliance schedules (10 years) or implementation schedules contained in a TMDL implementation plan.

If the Regional Water Board is not authorized to provide a compliance schedule in an NPDES permit, and a discharger is unable to achieve immediate compliance with an effluent limitation, the Regional Water Board may issue a separate Time Schedule Order (TSO) or Cease and Desist Order (CDO), both of which are a type of enforcement action issued under the authority of the California Water Code designed to bring a discharge into compliance with permit requirements. If a TSO or CDO is issued pursuant to Water Code section 13385(j)(3), a discharger may be temporarily shielded from mandatory minimum penalties if the discharger maintains full compliance with the TSO or CDO during its term. The discharger may still be subject to discretionary penalties or citizen suits for violation of the permit.

Monitoring, Reporting and Inspections

Discharger Self Monitoring

Monitoring and reporting requirements direct the discharger to conduct routine or episodic monitoring of permitted discharges and report the analytical results to the Regional Water Board on a specified basis with the information necessary to evaluate discharge characteristics and compliance status. Monitoring is performed to determine compliance with effluent limitations established in NPDES permits, establish a basis for enforcement actions where necessary, assess treatment efficiency, characterize effluents and characterize discharge impacts to receiving water.

The monitoring and reporting requirements contained in NPDES permits generally include specific requirements for the following items:

- Monitoring locations
- Physical, chemical and biological parameters to be monitored
- Monitoring and reporting frequencies
- Sample collection methods
- Analytical methods
- Reporting and recordkeeping requirements

If the monitoring results demonstrate that the discharger is not in compliance with permit requirements, the discharger is required to take measures, including change of operations, in order to come into compliance. Monitoring and reporting requirements are developed for individual permits on an individual basis. Monitoring and reporting requirements for general permits can apply to all permit enrollees.

Compliance Monitoring and Inspections

The Regional Water Board conducts periodic inspections and compliance monitoring. The Regional Water Board conducts unannounced inspections, which may include sample collection to evaluate permit compliance. All facilities classified as major dischargers are inspected at least once a year, while minor individual permittees and facilities covered under general permits are inspected according to a prioritized schedule.

Stormwater Permitting

Introduction

Stormwater and urban runoff from cities, highways, industrial facilities and construction sites carry pollutants that impair water quality and harm the beneficial uses of surface and ground waters. Pollutants in stormwater and urban runoff include trash, suspended solids, bacteria, viruses, heavy metals, pesticides, petroleum hydrocarbons, and other organic compounds. These pollutants threaten the quality of receiving waters in numerous and varied ways. Suspended solids (such as soil particles) can, upon settling, destroy spawning grounds and other aquatic habitats. Trash can impact aquatic life by ingestion and entanglement and can present health risks such as cuts, punctures, and disease. High levels of bacteria frequently necessitate beach postings to warn beachgoers of possible health risks including gastrointestinal illness, upper respiratory infections, and skin rashes. Heavy metals and organic compounds contaminate sediment near harbors and other recreational areas and can bioaccumulate in aquatic organisms. Stormwater and urban runoff are two of the most significant sources of pollutants causing impairment of water quality in the Region's surface waters.

The federal CWA established the NPDES Permitting Program in 1972 to regulate the discharge of pollutants from point sources to waters of the United States. However, the NPDES Program did not initially recognize or address the discharge of pollutants from stormwater and non-stormwater urban runoff as a point source discharge. As a result, the discharge of pollutants in stormwater and urban runoff remained largely unabated through the 1970s and 1980s. In 1987, the US Congress amended the CWA to specifically require stormwater discharges, including those from municipalities, industrial facilities and construction sites, to be addressed as point sources under the NPDES Program.

In response to the 1987 CWA amendments, the US EPA promulgated regulations (40 CFR Parts 122, 123, and 124) for stormwater discharges in November 1990 and December 1999. The regulations list the types of stormwater discharges for which NPDES permits are required. These include discharges from small, medium and large municipal separate storm sewer systems (MS4s), discharges associated with industrial activities, discharges from construction activities, and discharges that contribute to violations of water quality standards or are significant contributors of pollutants to the receiving waters (40 CFR §126.26(a)(9)(i)(C) and (D)). Starting in 1990, the State and Regional Water Board began regulating discharges of stormwater and urban runoff from municipalities, industries, construction sites, and the State Department of Transportation under the

NPDES Permitting Program. These permits aim to prevent and reduce discharge of harmful pollutants from storm drains into rivers, lakes, estuaries, and ocean waters among other waterbodies, while simultaneously endeavoring to capture and beneficially use stormwater, recognizing it as a valuable resource in the semi-arid Los Angeles Region. These dual goals are addressed through an emphasis on eliminating discharges of urban runoff during dry weather; stormwater capture through regional stormwater retention projects; site and neighborhood level low impact development (LID) and green infrastructure; and prioritization of efforts on a watershed level based on local water quality issues and concerns.

There are three types of NPDES stormwater permits – municipal separate storm sewer system (MS4), industrial, and construction. The MS4 permits are further categorized as Phase I or Phase II, according to the size of the system. The Regional Water Board has issued three Phase I MS4 permits and the State Water Board has issued one statewide Phase I MS4 permit to the California Department of Transportation. The State Water Board has also issued a statewide Phase II Small MS4 general permit for municipalities serving populations less than 100,000 and non-traditional (non-municipal) owners/operators of public storm drain systems.

In addition, the State Water Board has issued statewide general NPDES permits for stormwater discharges from certain categories of industrial activities and construction projects. The Industrial Storm Water General Permit regulates discharges associated with ten of the eleven⁷ industrial classifications described in the federal stormwater regulations (Table 4-6). The Construction Storm Water General Permit regulates projects that disturb one or more acres of soil or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres. Construction activities subject to this permit include clearing, demolition, grading and disturbances to the ground such as stockpiling, or excavation, but do not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

⁷ The construction classification is covered under a separate general permit issued by the State Water Board because of the significant difference in the nature of its associated activities in comparison to other industrial activities.

Table 4-6. Industrial and Construction Stormwater Categories (as defined in 40 CFR §122.26(b)(14)(i)-(xi))

Category	Description
Industrial Activities	
One (i)	Facilities subject to federal stormwater effluent discharge standards in 40 CFR Parts 405-471
Two (ii)	Heavy manufacturing (for example, paper mills, chemical plants, petroleum refineries, and steel mills and foundries)
Three (iii)	Coal and mineral mining and oil and gas exploration and processing
Four (iv)	Hazardous waste treatment, storage, or disposal facilities
Five (v)	Landfills, land application sites, and open dumps with industrial wastes
Six (vi)	Metal scrapyards, salvage yards, automobile junkyards, and battery reclaimers
Seven (vii)	Steam electric power generating plants
Eight (viii)	Transportation facilities that have vehicle maintenance, equipment cleaning, or airport deicing operations
Nine (ix)	Treatment works treating domestic sewage with a design flow of 1 million gallons a day or more
Eleven (xi)	Light manufacturing (For example, food processing, printing and publishing, electronic and other electrical equipment manufacturing, and public warehousing and storage)
Construction Activities	
Ten (x)	Construction activities (such as clearing, grading, excavating, and stockpiling) that disturb one or more acres, or smaller sites that are part of a larger common plan of development or sale

Municipal Separate Storm Sewer System Permits

The MS4 Permitting Program regulates stormwater and non-stormwater discharges from municipal separate storm sewer systems (MS4s). According to 40 CFR section 122.26(b)(8), “[a] 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, man-made channels, or storm drains):

- 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;
- Designed or used for collecting or conveying stormwater;
- Which is not a combined sewer; and

- Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR [section] 122.2.”

Large and small MS4 owners and operators must comply with permits that regulate stormwater and non-stormwater discharged from their systems under a two-phase program. Phase I regulates stormwater for medium (serving between 100,000 and 250,000 people) and large (serving greater than 250,000 people) municipalities. Phase II regulates smaller municipalities, including non-traditional small operations, such as military bases, public campuses, and prison and hospital complexes. The largest single municipal discharger in California is the California Department of Transportation (Caltrans); a single, statewide permit issued by the State Water Board regulates stormwater and non-stormwater discharges from the Department’s network of highways and maintenance facilities.

The key objectives of MS4 permits are to effectively prohibit non-stormwater discharges through MS4s to the region’s waterways; to reduce the discharge of pollutants in stormwater to the maximum extent practicable (MEP); and to implement other pollutant controls as necessary to achieve water quality standards. To achieve these objectives, section 402(p) of the federal Clean Water Act and implementing regulations⁸ require that NPDES permits for MS4 discharges include: (1) requirements necessary to achieve water quality standards; (2) effluent limitations consistent with the assumptions and requirements of available wasteload allocations from TMDLs applicable to the discharges; (3) a requirement to effectively prohibit non-stormwater discharges into the MS4⁹; (4) controls to reduce the discharge of pollutants in stormwater to the maximum extent practicable, including management practices, control techniques and system, design, and engineering methods; (5) provisions for monitoring and reporting; and (6) other provisions as the permitting authority determines appropriate for the control of pollutants in MS4 discharges.

To address the requirements in (1) and (2), in particular, MS4 permits include “receiving water limitations” (i.e., pollutant-specific, water quality thresholds that must be attained in waterbodies) and requirements that MS4 discharges do not cause or contribute to exceedances of these receiving water limitations, and also include water quality-based effluent limitations consistent

⁸ Implementing regulations include but are not limited to 40 C.F.R. §122.26 *et seq.* and 40 C.F.R. §122.44 *et seq.*

⁹ Federal regulations define stormwater as “storm water runoff, snow melt runoff, and surface runoff and drainage” (40 C.F.R. § 122.26(b)(13)). While “surface runoff and drainage” is not defined in federal law, US EPA’s preamble to the federal regulations demonstrates that the term is related to precipitation events such as rain or snowmelt (55 Fed. Reg. 47990, 47995-96 (Nov. 16, 1990)). Generally, the Regional Water Board uses the terms non-stormwater discharge and urban runoff to refer to non-precipitation related runoff. The distinction is important from a regulatory standpoint because federal regulations require that non-stormwater discharges are effectively prohibited in the context of MS4 permits.

with the assumptions and requirements of available wasteload allocations assigned to MS4 discharges contained in TMDLs.

Effluent limitations in MS4 permits are established pursuant to Clean Water Act section 402(p)(3)(B) and, if applicable, section 303(d).

Phase I

During the first three generations of Phase I MS4 permits, the focus was on standard programmatic approaches to controlling pollutants through implementation of stormwater management programs (historically referred to as “SWMPs”) with stormwater pollution control programs (sometimes referred to as “minimum control measures”) in the areas of public information and public participation; industrial and commercial facilities pollutant control; planning and land development; development construction pollutant control; public agency activities; and illicit connection and illicit discharge elimination.

Since approximately 2010, the program has evolved to support more customized, holistic watershed-based strategies driven by waterbody-specific desired water quality outcomes (e.g., TMDLs). Additionally, the stormwater program is increasingly providing opportunities to utilize stormwater as a local resource, particularly to augment local water supplies. Low impact development and green infrastructure techniques are increasingly used as tools to both address the water quality concerns of stormwater as well as water supply and open space needs of communities in the Region. The goal is to capture the water that runs off non-permeable surfaces such as concrete and asphalt and use it, for example, to water landscape and gardens on the same plot of land from which it would otherwise flow away. Local groundwater supplies are replenished, too, and the amount of pollutants that flow into the Region’s waterbodies is reduced.

The Regional Water Board reviews annual program and monitoring reports submitted pursuant to the Phase I MS4 permits’ monitoring and reporting requirements to assess permittees’ compliance with permit provisions. The Regional Water Board works cooperatively with permittees to resolve water quality problems arising from activities of the general public and businesses.

Los Angeles County

The greater Los Angeles County MS4, like many MS4s in the nation, is based on regional floodwater management systems that use both natural and altered waterbodies to achieve flood management goals. The Los Angeles County MS4 is a large interconnected system, controlled in

large part by the Los Angeles County Flood Control District (LACFCD), among others, and used by multiple cities along with Los Angeles County. These systems convey stormwater and non-stormwater across municipal boundaries where it is often commingled within the MS4 and then discharged to a receiving waterbody.

A network of more than 4,300 miles of storm drains across 86 cities and unincorporated areas within Los Angeles County collects runoff from various land uses, eventually discharging this stormwater and non-stormwater runoff into the Region's surface waters. High concentrations of pollutants that have accumulated on impervious surfaces during southern California's long, dry summers are flushed into the storm drains and into surface waters during major storms that typically occur in the winter.

The Regional Water Board issued the first county-wide MS4 permit to the LACFCD, the unincorporated areas of the County of Los Angeles and some incorporated cities on June 18, 1990 at the request of the County of Los Angeles for an "early" permit, prior to the promulgation of the 1990 federal stormwater regulations (Order No. 90-079). Order No. 90-079 was replaced by Order No. 96-054, which was adopted on July 15, 1996. On December 13, 2001, Order No. 96-054 was replaced by Order No. 01-182.

Order No. 01-182 was amended several times to incorporate provisions to implement total maximum daily loads (TMDLs) for bacteria and trash and pursuant to a peremptory writ of mandate.

On November 8, 2012, Order No. 01-182 was replaced by Order No. R4-2012-0175, which became effective on December 28, 2012. The requirements of Order No. R4-2012-0175 apply to the LACFCD, the unincorporated areas of the County of Los Angeles, and 84 incorporated cities (collectively, Permittees) within the County of Los Angeles with the exception of the City of Long Beach, which is separately permitted under another Phase I MS4 permit. The Permittees discharge stormwater and non-stormwater from their MS4s, also called storm drain systems, within the Los Angeles County coastal watersheds of the Santa Clara River, Malibu Creek, Ballona Creek, Los Angeles River, San Gabriel River, Los Cerritos Channel, Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters and Santa Monica Bay.

Order No. R4-2012-0175 is a single system-wide permit with some sections devoted to universal requirements for all Permittees and others devoted to requirements specific to each major

Watershed Management Area (WMA), including TMDL implementation provisions.¹⁰ A single permit ensures consistency and equitability in regulatory requirements within the County, while watershed-based sections within the single permit will provide flexibility to tailor permit provisions to address distinct watershed characteristics and water quality issues.

Key permit provisions of Order No. R4-2012-0175 include: (1) provisions allowing Permittees the opportunity to develop and implement Watershed Management Programs as a means of complying with a number of permit requirements in a more integrated and efficient fashion; (2) provisions consistent with the assumptions and requirements of waste load allocations established in 33 TMDLs; (3) requirements to implement low impact development for new development and significant redevelopment to control pollutant loads and runoff volume to receiving waters, among other programmatic elements; and (4) requirements for outfall monitoring as well as receiving water monitoring to determine compliance with permit provisions and the impact MS4 discharges have on receiving water quality.

City of Long Beach

The Regional Water Board regulated discharges from the City of Long Beach's MS4 from 1990 through 1999 under the Los Angeles County MS4 Permit. On June 30, 1999, the Regional Water Board issued a separate MS4 permit to the City of Long Beach (Order No. 99-60). Order No. 99-060 was replaced with Order No. R4-2014-0024 on February 6, 2014.

The City of Long Beach's MS4 serves a population of approximately 465,576. While the City of Long Beach's MS4 is interconnected with portions of the MS4 serving the greater Los Angeles County area, the City's MS4 is, for the most part, located downstream of other portions of the countywide MS4 and is at the base of several major watersheds draining to coastal waters in the Region.

The City of Long Beach MS4 Permit includes the same fundamental elements as the Los Angeles County MS4 Permit. Key permit provisions include: (1) provisions allowing the City of Long Beach the opportunity to develop and implement Watershed Management Programs as a means of complying with a number of permit requirements in a more integrated and efficient fashion; (2) provisions consistent with the assumptions and requirements of wasteload allocations assigned to MS4 discharges from the City of Long Beach contained in nine TMDLs; (3) requirements to

¹⁰ Section 402(p) of the Clean Water Act and 40 CFR § 122.26, subdivisions (a)(1)(v) and (a)(3)(ii) authorize the issuance of system-wide or jurisdiction-wide permits.

implement low impact development for new development and significant redevelopment to control pollutant loads and runoff volume to receiving waters; and (4) requirements for outfall monitoring as well as receiving water monitoring to determine compliance with permit provisions and the impact MS4 discharges have on receiving water quality.

Ventura County

On August 22, 1994, the Regional Water Board issued the first Ventura County MS4 Permit to the Ventura County Watershed Protection District, County of Ventura, and the incorporated cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, San Buenaventura (Ventura), Santa Paula, Simi Valley and Thousand Oaks (Order No. 94-082). Order No. 94-082 was replaced by Order No. 00-108, which was adopted on July 27, 2000. On May 7, 2009, Order No. 00-108 was replaced by Order No. 09-0057.

Several stakeholders petitioned the State Water Board to review the Regional Water Board's issuance of Order No. 09-0057. On March 11, 2010, the Regional Water Board agreed to voluntarily re-issue Order No. 09-0057. On July 8, 2010, the Regional Water Board issued Order No. R4-2010-0108, replacing Order No. 09-0057. Key permit provisions of the Ventura County MS4 Permit include: (1) provisions consistent with the assumptions and requirements of waste load allocations established in 8 TMDLs; (2) requirements to minimize impervious surfaces and implement on-site stormwater retention through low impact development for new development and significant redevelopment, among other programmatic elements; and (3) requirements for outfall monitoring as well as receiving water monitoring to determine compliance with permit provisions and the impact MS4 discharges have on receiving water quality.

California Department of Transportation (Caltrans)

The California Department of Transportation (Caltrans) MS4 Permit is a statewide NPDES MS4 permit that regulates the discharge of stormwater associated with the operation and management of the State's highway system. The permit was most recently issued by the State Water Board on September 19, 2012.

Caltrans manages more than 50,000 lane-miles of State highway, and numerous related facilities. Stormwater runs off of these highways and facilities and is discharged to receiving waters. Permit requirements under 40 CFR Part 122 apply to all large and medium MS4s, including roads. Thus, the State highway system is considered an MS4 and is subject to the regulations.

There have been numerous advances in the science and art of stormwater management since the Caltrans MS4 permit was first issued in 1999 (Order No. 99-06-DWQ). The 2012 permit (Order No. 2012-0011-DWQ) incorporates many of these advances, and focuses limited resources on the highest priority water quality needs and in a manner producing the greatest water quality benefit. Some of these include:

- Improving the quality of stormwater discharges to Areas of Special Biological Significance (ASBS). ASBS are those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. (See Chapter 5 for descriptions of ASBSs in the Region.)
- Improving the quality of stormwater discharges to water bodies identified as polluted or impaired, including implementation of provisions to achieve wasteload allocations established in TMDLs.
- Maximizing opportunities for incorporation of green infrastructure, including LID features, into new projects that promote stormwater reuse.
- Promoting opportunities to incorporate Integrated Pest Management and Integrated Vegetation Management into the Caltrans vegetation management program.

Statewide Phase II Storm Water General Permit

In 1999, the US EPA established regulations requiring regulation of stormwater discharges from small MS4s through issuance of a NPDES permit.¹¹ Similar to the federal regulations for Phase I MS4s, the regulations specify six minimum control measures including Public Education and Outreach, Public Participation/Involvement, Illicit Discharge Detection and Elimination, Construction Site Run-off Control, Post-Construction Run-off Control, and Pollution Prevention/Good Housekeeping that must be implemented in the Phase II small MS4 permits.

The Statewide Phase II Storm Water General Permit regulates stormwater discharges from municipalities in urbanized areas that serve populations of less than 100,000 persons and other non-traditional publicly owned municipal separate storm sewer systems. The permit currently provides statewide coverage for about 250 traditional (municipal government) and about 185 non-traditional (e.g., state and federal facilities, universities, military bases) small MS4s, which have been designated by the State Water Board. Figure 4-2 identifies the Phase II traditional and non-traditional permittees designated as of April 2014 in the Region.

The first Phase II Small MS4 Permit, issued in 2003, contained the six control measures but only in very broad terms. The permit required the Permittees to develop stormwater management programs (SWMPs) with time frames for accomplishing the tasks described.

On February 5, 2013, the Phase II Small MS4 General Permit was reissued by the State Water Board and became effective on July 1, 2013 (Order No. 2013-0001-DWQ). The 2013 Small MS4 General Permit specifies actions necessary to reduce the discharge of pollutants in stormwater to the maximum extent practicable. This level of specificity was included in order to clearly define the Water Boards' expectations for control of stormwater runoff from Phase II dischargers and address concerns raised by the federal courts about whether submittal of the SWMP was allowing the

¹¹ Pursuant to 40 C.F.R. 122.26(b)(16), "*Small municipal separate storm sewer system* means all separate storm sewers that are:
(i) Owned or operated by the United States, 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, storm water, 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) Not defined as "large" or "medium" municipal separate storm sewer systems pursuant to paragraphs (b)(4) and (b)(7) of this section, or designated under paragraph (a)(1)(v) of this section.
(iii) This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings."

Permittee to write its own permit without the process of public review and comment. It also eliminates the need for the municipality to prepare a SWMP.

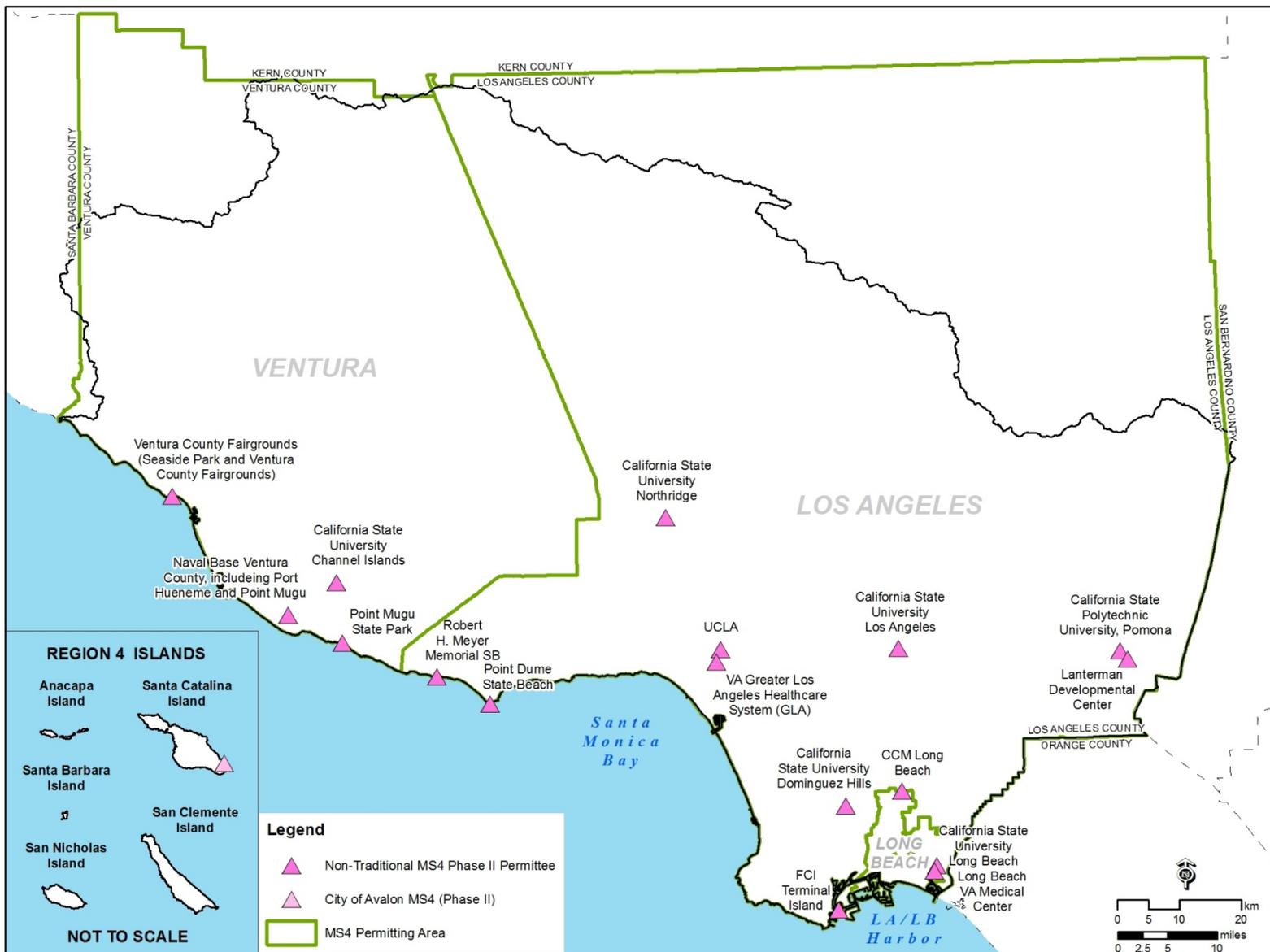


Figure 4-2. Regional Storm Water (MS4) Permitting Areas and Non-Traditional Phase II Permittees.

Statewide General Industrial and Construction Storm Water Permits

Historically, many large manufacturers or industrial operators collected runoff (non-process wastewater) on their properties and discharged it to storm drains or sent it to a sewage treatment plant. However, most small industries and construction sites did not collect or monitor their runoff. As a result of the 1987 CWA amendments and 1990 and 1999 federal stormwater regulations, stormwater and non-stormwater runoff from a variety of industrial facilities and construction sites of a certain size must be eliminated or regulated under a NPDES stormwater permit.

The State and Regional Water Boards issue and administer two statewide general permits for stormwater discharges from these industrial facilities and construction sites. The general permit for stormwater discharges from industrial facilities addresses stormwater discharges from facilities engaged in activities such as manufacturing, mining, landfills, recycling, and transportation (Order 2014-0057-DWQ, NPDES Permit No. CAS000001). The permit requires that specific industrial facilities control pollutant discharges in stormwater and authorized non-stormwater using best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT) to prevent discharges of pollutants. It also requires that these industrial facilities implement pollutant controls to achieve any more stringent effluent limitations necessary for receiving waters to meet applicable water quality standards. In addition, they are required to develop a stormwater pollution prevention plan and monitor whether measures to reduce or prevent pollutant discharges are adequate to meet the water quality requirements of the permit and whether additional control measures are needed.

The general permit for stormwater discharges associated with construction and land disturbance activities addresses stormwater discharges for land disturbing activities on (i) one or more acres, or (ii) less than one acre but part of a larger common plan of development or sale if the larger common plan will ultimately disturb one acre or more (Order 2009-0009-DWQ as amended by 2010-0014-DWQ & 2012-0006-DWQ, NPDES Permit No. CAS000002). The permit requirements are based on a project's overall risk and include measures to prevent erosion and reduce sediment and other pollutants in construction site discharges. As with the industrial general permit described above, the construction general permit requires that construction sites control pollutant discharges in stormwater and authorized non-stormwater using best available technology

economically achievable (BAT) and best conventional pollutant control technology (BCT) to prevent discharges of pollutants. It also requires that these construction sites implement pollutant controls to achieve any more stringent effluent limitations necessary for receiving waters to meet applicable water quality standards. In addition, they are required to develop a stormwater pollution prevention plan and monitor whether measures to reduce or prevent pollutant discharges are adequate to meet the water quality requirements of the permit and whether additional control measures are needed.

As of November 2015, there were 2,900 industrial facility permit holders and 1,211 construction permit holders in the Los Angeles Region. The Regional Water Board oversees permit compliance at these sites through inspections, public outreach and compliance assistance, and enforcement.

Permit Objectives and Requirements

The objective of the general stormwater permits is to ensure that discharges of stormwater and non-stormwater are in compliance with discharge prohibitions, effluent limitations, and receiving water limitations. Permittees are required:

- To prohibit unauthorized non-stormwater discharges and to prohibit authorized non-stormwater discharges that cause or threaten to cause pollution, contamination, or nuisance;
- To comply with TMDL-specific requirements applicable to the discharge that have been incorporated into the general stormwater permits;
- To develop and implement a stormwater pollution prevention plan (SWPPP);
- To implement structural and non-structural best management practices (BMPs), including exposure minimization BMPs, stormwater containment and discharge reduction BMPs; erosion and sediment control BMPs (stabilization, hydro-seeding, avoiding mass grading, silt fences, and sand bags), and stormwater treatment BMPs; and
- Conduct sampling and submit annual reports.

Facility compliance inspections are routinely conducted during which a site's SWPPP is reviewed, followed by a site tour to evaluate the facility's implementation of structural and non-structural BMPs. Other inspection types include enforcement follow-up inspection (to determine if compliance has been achieved after an enforcement action has been taken); notice of termination

(NOT) inspections to evaluate if a site qualifies to terminate its permit coverage; non-filer inspection (to determine if a site needs to be covered by a stormwater permit); complaint response inspections; and delinquent fee status site inspections.

The inspections are based on the season of the year and standard industrial classification (SIC) codes. In the rainy season, inspections focus on construction sites to ensure that permitted facilities have adequate sediment and erosion control BMPs on-site. During the dry season, industrial facilities are targeted for inspection and are prioritized by SIC codes. The program prioritizes those SIC codes that have operations related to adopted TMDLs for the Region's waterbodies.

Compliance and Enforcement

Annual reports and facility inspections are used to evaluate permit compliance and determine appropriate enforcement actions, if necessary. The enforcement actions in the program include a notice to comply ("fix-it ticket") issued at the site by the inspector, a notice of non-compliance (NNC) for a non-filer to compel permit enrollment, a notice of violation (NOV), and formal enforcement actions such as a cleanup abatement order (CAO) and an administrative civil liability compliant (ACLC). All inspection and enforcement data are entered into the stormwater database, SMARTS (described in Chapter 6). Permittees also use this database to submit permit registration documents and annual reports.

Waste Discharge Requirements for Dredging Projects

The State has determined that dredged material falls within the definition of waste as specified by the Water Code; therefore, a report of waste discharge (ROWD) must be submitted to the Regional Water Board at least 120 days prior to the anticipated start of any dredging operations. The ROWD must provide information describing the facility involved, the type of operation proposed, the type and volume of waste, location of the point of waste disposal, and compliance with the California Environmental Quality Act. The ROWD must be accompanied by any supporting documentation required by the Regional Water Board to evaluate the proposed dredging and disposal operations, particularly physical and chemical characterization of the sediments to be dredged. The ROWD must also be accompanied by a filing fee, which is calculated according to the volume of material to be dredged.

The Regional Water Board reviews the ROWD to determine whether the proposed dredging project has the potential to adversely impact water quality or affect beneficial uses of State waters. The Regional Water Board generally focuses on potential impacts associated with the physical removal of sediments during the actual dredging operations, and potential impacts related to the disposal of the dredged material. Dredging operations often produce a noticeable discoloration of the waters around the dredge site as sediments are removed from the bottom and particles are released into the water column. The areal extent of this turbidity plume will depend on the nature of the dredging operation and circulation patterns in the area. Dredging projects are evaluated to ensure that operations do not produce excessive turbidity or cause other water quality problems (e.g., depression of dissolved oxygen concentrations), and that toxic pollutants are not released at levels that will degrade aquatic communities, populations, or individuals.

Identification and approval of a disposal site for the dredged material is often the key issue to be resolved for each dredging project. If unrestricted disposal of the sediments is proposed (e.g., beach replenishment with sandy material, offshore disposal of fine-grained materials), the applicant must demonstrate that the material will not release pollutants to state waters or adversely impact beneficial uses. If the applicant proposes to dewater the sediments and discharge return water, potential impacts from this activity must be addressed.

Dredging WDRs contain a Monitoring and Reporting Program. The monitoring requirements described below are typically included in dredging WDRs; however, the Regional Water Board may prescribe additional monitoring requirements based on project specific conditions. The most common requirement is to conduct water column monitoring for dissolved oxygen, light transmittance, pH, and suspended solids. This type of monitoring usually is required in three general locations: (1) location(s) up-current of the dredging operations, representative of reference conditions (referred to as a control station); (2) location(s) directly down-current of the dredging, anticipated to be the location(s) of maximum impact; and (3) more distant location(s) down-current of the dredging.

In some cases, monitoring of chemical concentrations (e.g., trace metals and trace organics) in the water column may be required. These measurements are designed to monitor whether dredging or disposal operations result in unacceptable releases of toxicants into the water column via resuspension or runoff of contaminants, which could adversely affect aquatic communities. If

dewatering of sediments is performed, monitoring of the return water for settleable solids is included to ensure that the discharge does not contain excessive turbidity, which could adversely affect aquatic communities or beneficial uses. Monitoring of chemical concentrations in the return water also may be required. Other monitoring requirements may be included to verify proper placement or containment of the dredged material at the disposal site (e.g., bathymetric measurements to verify the thickness of the capping layer at a confined aquatic disposal site).

In addition to direct measurements, the monitoring program requires the discharger to record some standard observations during dredging and disposal operations. These observations include information on general weather conditions, wind velocity, water currents, tide stage, and recording the appearance of trash, oily slicks, discoloration, turbidity and odors. The discharger also must record the amount of material dredged and depth of dredging prior to the collection of monitoring samples, and the cumulative total of material dredged to date.

The Monitoring and Reporting Program also specifies the frequency of monitoring and report submittal. Generally, a pre-discharge survey must be conducted at least one week prior to the start of dredging operations, to assess normal background conditions of the receiving waters. A post-discharge survey must be conducted for at least one week following completion of the dredging and disposal operations to demonstrate the receiving water conditions have returned to normal. Basic water column monitoring (dissolved oxygen, pH, light transmittance) must be conducted a minimum of once per week throughout the entire duration of the dredging and disposal operations. Monitoring reports must be submitted to the Regional Water Board as soon as possible and no later than 10 days following each weekly sampling period.

Waste Discharge Requirements for Concentrated Animal Feeding Operations

Animal Feeding Operations (AFOs) are agricultural operations where animals are kept and raised in confined situations. Animal Feeding Operations congregate animals, feed, manure and urine, dead animals, and production operations on a designated land area. Feed is brought directly to the animals, rather than the animals grazing or otherwise seeking feed in pastures, fields, or on rangeland. A facility is an AFO if it meets both of the following conditions:

1. Animals are confined for at least 45 days in a 12-month period.
The 45 days of confinement do not have to be consecutive, and the 12-month period can be any consecutive 12 months.
2. There is no grass or other vegetation in the confinement area during the normal growing season.

AFOs may be defined or designated as a Concentrated Animal Feeding Operation (CAFO). An AFO is defined as a CAFO if it has a certain number of animals and it meets the other criteria such as size thresholds based on the number of animals confined at the operation (Table 4-7) and the period of confinement. Additionally, an AFO may be designated as a CAFO by the permitting authority if it finds that the facility is a significant contributor of pollutants.

Table 4-7. Size Thresholds for Confined Animal Feeding Operations

Animal Sector	Size Thresholds (number of animals)		
	Large CAFOs ¹	Medium CAFOs ²	Small CAFOs ³
Cattle or calf pairs	1,000 or more	300-999	less than 300
Mature dairy cattle	700 or more	200-699	less than 300
Veal calves	1,000 or more	300-999	less than 300
Swine (weighing over 55 pounds)	2,500 or more	750-2,499	less than 750
Swine (weighing less than 55 pounds)	10,000 or more	3,000-9,999	less than 3000
Horses	500 or more	150-499	less than 150
Sheep or lamb	10,000 or more	3,000-9,999	less than 3000
Turkeys	55,000 or more	16,500-54,999	less than 16,500

Animal Sector	Size Thresholds (number of animals)		
	Large CAFOs ¹	Medium CAFOs ²	Small CAFOs ³
Laying hens or broilers (liquid manure handling systems)	30,000 or more	9,000-29,999	less than 9,000
Chickens (other than laying hens (other than liquid manure handling systems))	125,000 or more	37,500-124,999	less than 37,500
Laying hens (other than laying hens (other than liquid manure handling systems))	82,000 or more	25,000-81,999	less than 25,000
Ducks (other than liquid manure handling systems)	30,000 or more	10,000-29,000	less than 10,000
Ducks ((liquid manure handling systems))	5,000 or more	1,500-4,999	less than 1,500

¹ A Large CAFO confines at least the number of animals described in the table.

² A Medium CAFO falls within the size range in the table below and either:

- has a manmade ditch or pipe that carries manure or wastewater to surface water; or
- the animals come into contact with surface water that passes through the area where they are confined.

³ A Small CAFO confines fewer than the number of animals listed in the table and has been designated as a CAFO by the permitting authority as a significant contributor of pollutants.

According to the federal regulations (40 CFR §122.23(d)) all concentrated animal feeding operations that discharge or propose to discharge must obtain an NPDES permit. US EPA has issued Effluent Limitations Guidelines and Standards (ELGs) for CAFOs (40 CFR Part 412). The ELGs for CAFOs include both discharge limits and best management practice requirements.

Control of Nonpoint Source Pollutants

Unlike pollution from distinct point sources (such as industrial or sewage treatment plant discharge pipes and municipal storm drains), nonpoint source (NPS) pollution comes from many diffuse sources; rainfall, snowmelt, or irrigation water that moves over and through the ground results in NPS pollution. As the runoff moves, it picks up and carries pollutants and deposits them into lakes, rivers, wetlands, groundwater, and other inland and coastal waters. NPS pollution accounts for more than 76% of the impaired waterbodies in California. The goal of the NPS Program is to prevent nonpoint source pollution from impacting California's waterbodies, which support a diversity of beneficial uses.

Regulation of Nonpoint Source Pollution

The State Water Board and the nine Regional Water Boards together with the California Coastal Commission are the lead State agencies for implementing the NPS Program. US EPA approved the *Plan for California's Nonpoint Source Pollution Control Program* (NPS Program Plan) on July 17, 2000. The NPS Program Plan complied with the requirements of CWA section 319 and section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA).

The NPS Program Plan provided a single unified, coordinated statewide approach to address NPS pollution structured around 61 management measures (MMs). MMs serve as general goals for the control and prevention of polluted runoff. Site-specific management practices (MPs) are then used to achieve the goals of each management measure. The NPS Program Plan was updated in 2015 with the 2014-2020 NPS Program Implementation Plan. The updated plan continues to implement the 61 management measures to address NPS pollution consistent with CWA section 319 and CZARA and to stress cooperation and local stewardship, while using applicable State regulatory authorities to protect and restore water quality. To that end, the following set of broad goals and objectives were developed to focus the efforts of the CA NPS Program:

- Goal No. 1: Restore and protect surface water and groundwater resources from the impacts of NPS pollution.

- Goal No. 2: Implement strategies to improve watershed–based planning processes to focus implementation and funding efforts, and better communicate priorities to others including partners and stakeholders.
- Goal No. 3: Improve and evaluate the effectiveness of the CA NPS Program implementation actions and communicate successes.

The lead State agencies developed a series of initiatives that address these goals and objectives. The initiatives group the NPS implementation activities that each of the agencies will be focusing on from 2014-2020. The NPS Program Plan also contains a list of waters on the CWA Section 303d list, where CA NPS program resources have been invested, to be tracked for water quality improvement and possible de-listings. The existing and future iterations of the NPS Program Plan are posted on the State Water Board’s NPS website at: http://www.waterboards.ca.gov/water_issues/programs/nps/

In 2004, the State Water Board adopted the *Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Implementation and Enforcement Policy). The NPS Implementation and Enforcement Policy influences the structure of the NPS Program and the NPS Program Implementation Plan.

The NPS Implementation and Enforcement Policy explains how the mandates and authorities, provided by the Water Code, are used to implement and enforce the NPS Program. The mandates and authorities include:

- Planning authority to designate beneficial uses of the waters of the State, establish water quality objectives to protect those uses, and develop implementation programs to meet water quality objectives and maintain and/or restore designated beneficial uses;
- Administrative permitting authority in the form of waste discharge requirements, waivers of waste discharge requirements, and basin plan prohibitions; and
- Enforcement options to ensure that dischargers comply with permitting requirements.

The information provided in the NPS Implementation and Enforcement Policy is designed to assist all responsible and/or interested parties in understanding how the State’s NPS water quality control requirements will be implemented and enforced. Implementation programs for NPS

pollution control may be developed by the Regional Water Board, the State Water Board, an individual discharger, or by or for a coalition of dischargers in cooperation with a third-party representative, organization, or government agency.

There are agencies, in addition to the State and Regional Water Boards, with the authority to implement programs to meet water quality objectives and protect beneficial uses. Several of these agencies are formally linked to the State and Regional Water Boards through memoranda of understanding (MOUs) or management agency agreements (MAAs). For example, there is an MOU between the State Water Board and the California Coastal Commission and an MAA between the State Water Board and the Department of Pesticide Regulation. MOUs and MAAs are important for NPS regulation because they delineate the roles and responsibilities of individual agencies in the State's efforts to control NPS pollution sources. In all cases, agencies with regulatory power act in accordance with their own authorities and processes.

In addition to using the Water Code's planning, permitting, and enforcement authorities to prevent and control nonpoint sources of pollution, the State and Regional Water Boards have implemented a broad program of outreach, education, technical assistance and financial incentives. This program is supplemented by collaborative efforts with other agencies and non-governmental organizations to help implement and coordinate the use of their programs that contribute to NPS control. For example, the NPS Interagency Coordinating Committee (IACC) is a cooperative working group composed of 28 State agencies involved in implementing the NPS Program Implementation Plan (<http://www.coastal.ca.gov/nps/nps-boating.html>). The IACC's primary goals are to: (1) improve interagency coordination and promote statewide consistency in implementing the NPS Program Implementation Plan, (2) promote the watershed approach in addressing nonpoint source pollution, and (3) provide a forum for resolving policy and programmatic conflicts among State agencies.

Nonpoint Source Categories

The NPS Program Implementation Plan groups the 61 management measures related to control of nonpoint source pollutants into six categories; these categories are agricultural sources, forestry (silviculture), urban areas, marinas, hydromodification activities, and wetlands, riparian areas and vegetated treatment systems. The following sections describe the six categories, including the nature and extent of the nonpoint source problem they are intended to address in

the region, the management measures identified to control runoff from these nonpoint sources of pollution, and specific programs of implementation relevant to the Region, where appropriate.

Agricultural Sources

Agriculture is a significant and economically important industry in California. Irrigated agriculture is over a one billion dollar industry within the Los Angeles Region and is comprised of approximately 100,000 irrigated acres (Figure4-3). Agriculture is concentrated in Ventura County, which has approximately 97,000 acres under cultivation. In 2014, in Ventura County, agriculture generated \$2.1 billion in gross sales. The top five crops (based on value) in Ventura County are strawberries, lemons, raspberries, nursery stock, and celery (2014 Ventura County Crop Report). In the Los Angeles Region, activities and facilities associated with animal husbandry such as grazing, horse stables, and equestrian facilities are also present. As previously described, some large animal husbandry facilities (e.g., dairies and poultry farms) are defined as Concentrated Animal Feeding Operations (CAFOs) under US EPA regulations (40 CFR §122.23) and are regulated as point source discharges, requiring coverage under a NPDES permit. However, all other animal facilities are considered nonpoint sources. In the Los Angeles Region, horse racing facilities have been the primary facilities with high numbers of concentrated animals.

While these agricultural activities provide important contributions to the Region, discharges from agriculture can adversely affect water quality by transporting pollutants including pesticides, sediment, nutrients, salts, pathogens and heavy metals to the State's surface and ground waters. Many of California's surface waters are currently impaired because of these pollutants from agriculture discharges. Statewide, approximately 9,500 miles of rivers and streams, and some 500,000 acres of lakes and reservoirs are listed on the CWA section 303(d) list as being impaired by pollutant discharges associated with agriculture. Agricultural pesticides, nitrates and salts can also impair groundwater. Agricultural activities may also affect habitat through removal of riparian vegetation and buffer zones, physical disturbances caused by livestock, or the control or diversion of waterways.

In such cases, the Regional Water Board has the responsibility and authority to protect water quality through issuance of WDRs, waivers of WDRs, or prohibitions for discharges associated with these activities and facilities.

Management measures to address agricultural NPS pollution

The NPS Program Plan identifies the following management measures to address agricultural NPS pollution: (1) Erosion and Sediment Control, (2) Animal Waste, (3) Nutrient Management, (4) Pest and Weed Management, (5) Grazing Management, (6) Irrigation Water Management, (7) Groundwater Protection, and (8) Education and Outreach.

Since 2005, the Regional Water Board has regulated NPS discharges from irrigated agriculture activities under a Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Order No. R4-2016-0143). The objectives of the Irrigated Lands Conditional Waiver are to protect and restore the water quality of the waters of the state consistent with section 13269 of the California Water Code. This objective is accomplished through monitoring the water quality impacts caused by irrigated agricultural discharges and requiring control of those discharges as necessary to protect water quality. Specifically, the goal is to attain water quality benchmarks¹² by regulating the discharges of waste from irrigated agricultural lands within the Los Angeles Region.

There are two approved Discharger Groups participating in the Conditional Waiver for Irrigated Lands as of 2016. The Ventura County Agricultural Irrigated Lands Group (VCAILG) represents growers in Ventura County and the Nursery Growers Association – Los Angeles Irrigated Lands Group (NGA-LAILG) represents growers in Los Angeles County. As of 2016, there are 1,348 members and 82,189 acres enrolled in the Conditional Waiver program through membership in VCAILG. The Nursery Growers Association – Los Angeles Irrigated Lands Group currently has 275 members with 1,952 acres enrolled throughout Los Angeles County.

With regard to grazing activities, intensive livestock and equestrian facilities, the Regional Water Board has identified these activities as contributing to water quality impairments in some watersheds (e.g., Ventura River, Malibu Creek) and has developed TMDLs to address these sources among others. The Regional Water Board is working on regulatory mechanisms to address pollutant discharges from these activities and facilities.

¹² “Water quality benchmark” means narrative or numeric water quality objectives established in this Basin Plan, prohibitions established consistent with Water Code section 13243, a requirement established by an applicable Statewide plan or policy, criteria established by USEPA (including those in the California Toxics Rule and the applicable portions of the National Toxics Rule), and load allocations established pursuant to a total maximum daily load (TMDL) (whether established in the Basin Plan or other lawful means).

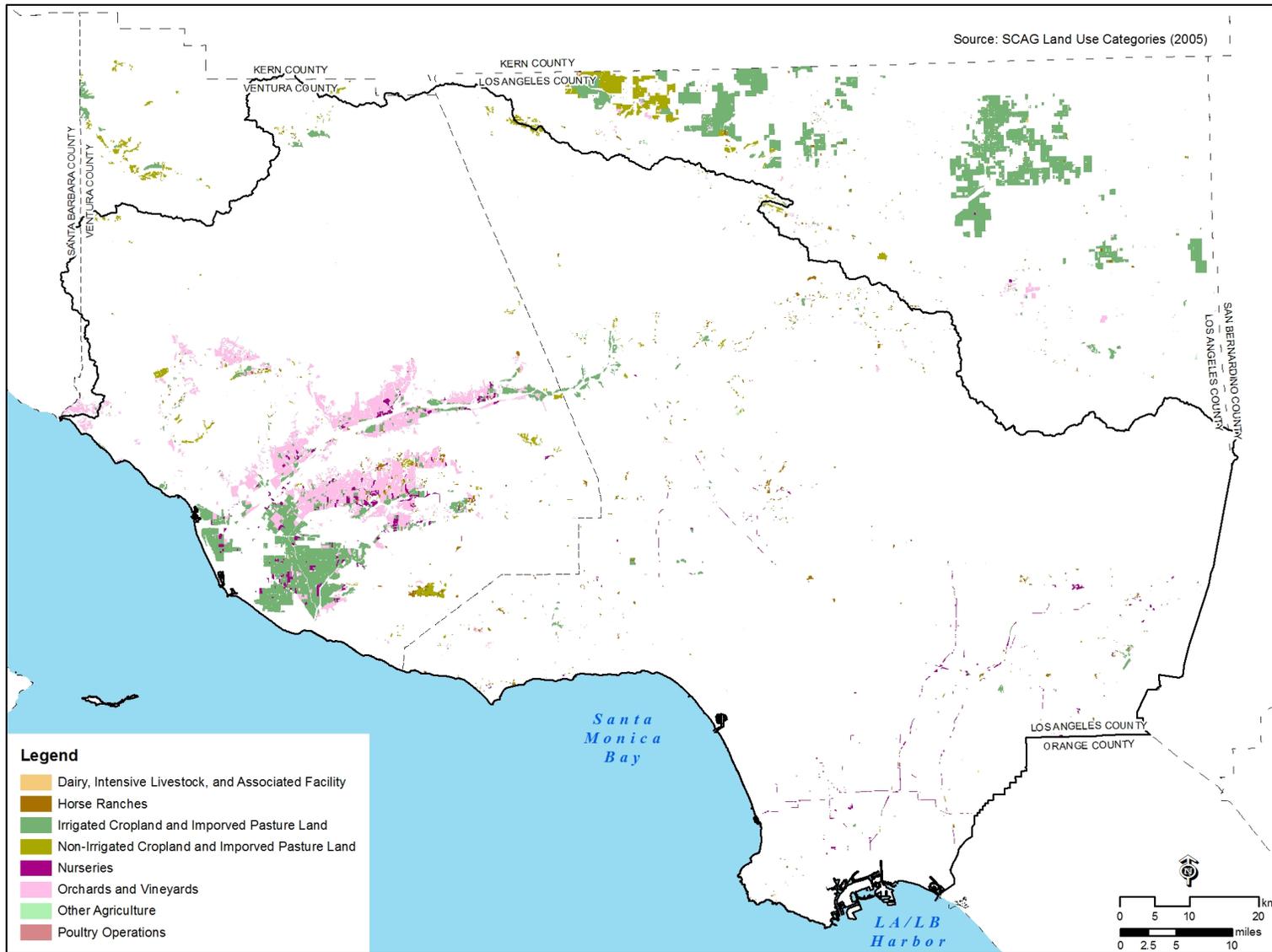


Figure 4-3. Los Angeles County and Ventura County Agriculture Land Use.

Forestry (Silviculture)

Forestry or silviculture is the process of managing trees in a forest and includes activities such as site preparation, cultivation, timber harvest, and transport. Such activities are significant sources of nonpoint source pollution unless properly managed. Silviculture contributes pollutants to 17% of the polluted rivers and 21% of the polluted lakes in California. In addition to these management activities, wildfire poses one of the greatest threats to water quality. In addition to the ash and debris resulting from wildfires, destruction of vegetation results in elevated levels of erosion and sedimentation in streams and increased levels of nutrients in the aquatic systems. Removal of streamside cover results in increased water temperature and reduced dissolved oxygen levels. In addition, flooding results in stream bank erosion and loss of riparian habitat.

Management measures to address forestry NPS pollution

The NPS Program Plan identifies the following management measures to address forestry NPS pollution: (1) Pre-harvest Planning, (2) Streamside Management Areas, (3) Road Construction and Reconstruction, (4) Road Management, (5) Timber Harvesting, (6) Site Preparation and Forest Regeneration, (7) Fire Management, (8) Revegetation of Disturbed Areas, (9) Chemical Management, (10) Wetlands Forest Management, (11) Postharvest Evaluation, and (12) Education and Outreach.

The U.S. Department of Agriculture, Forest Service (USFS) administers and manages National Forest Service (NFS) lands. Within the Los Angeles Region, NFS lands include the Angeles National Forest and the Los Padres National Forest. On May 26, 1981, the State Water Board and the USFS signed a Management Agency Agreement (MAA) that resulted in the formal designation of the USFS as a water quality management agency. It also certified the USFS document entitled *Water Quality Management for Forest System Lands* in California, including its BMPs, as the USFS Water Quality Management Plan (WQMP). The WQMP was updated in 2000. In 2011, the USFS, in collaboration with the State and Regional Water Boards adopted a Water Quality Management Handbook (WQMH) that replaced the existing WQMP. The WQMH includes new and stronger objectives for protecting beneficial uses, new and stronger BMPs, an enhanced remediation program, expanded water quality monitoring program, and a new adaptive management program. On December 6, 2011, the State Water Board adopted a waiver of waste discharge requirements conditioned in large part upon implementation of the USFS WQMH. Along

with the waiver, the State Water Board entered into a Memorandum of Understanding with the USFS. The MOU and the waiver collectively replaced the 1981 MAA.

Urban Areas

Eighty percent of the nation's population resides along the coast and polluted runoff from urban areas is a major source of pollutants that degrade regional waters. Pollutants include sediment, nutrients, heavy metals, petroleum hydrocarbons, pesticides, pathogenic bacteria, and viruses.

Management measures to address urban NPS pollution

The NPS Program Plan identifies the following management measures to address urban NPS pollution: (1) Runoff from Developing Areas, (2) Runoff from Construction Sites, (3) runoff from Existing Development, (4) Onsite Wastewater Treatment Systems, (5) Transportation Development, and (6) Education and Outreach.

As a result of the 1987 CWA amendments and the extensive urbanization within the Los Angeles Region, urban runoff is addressed primarily through the NPDES MS4 permitting program described under "Control of Point Source Pollutants" above, although the NPS Program applies where the runoff is not otherwise regulated as a permitted point source discharge.

The NPDES Program supersedes the NPS Program in the areas where there is overlap. The NPDES permits are at generally more stringent than the MMs in the NPS Program and will ensure at least the same level of compliance and water quality protection as the NPS Program's management measures provide. The authority of the NPS Program still applies for land use activities not covered by NPDES permits and for municipalities, construction sites, and industries that fall outside of the Phase I and Phase II Stormwater Programs.

Additionally, discharges from onsite wastewater treatment systems are regulated by the State's Policy for Siting, Operation and Maintenance of Onsite Wastewater Treatment Systems (see "Groundwater Programs" below).

Marinas

Because marinas are located at the water's edge, pollutants generated from marinas and boats are less likely to be buffered or filtered by natural processes. Poorly managed marinas and boat

maintenance areas may threaten the health of aquatic systems and pose environmental hazards. These sources include: poorly flushed waterways; pollutants, such as sewage and vessel waste, discharged from boats; pollutants carried in stormwater runoff; pollutants generated from boat maintenance activities (e.g., copper antifouling paints, gas, oil, and grease); physical alteration of wetlands and shellfish or other benthic communities during construction of marinas, ramps, and related facilities; and introduction of invasive species from ballast water. The Los Angeles Region hosts eight coastal marinas. Several of these have been identified as impaired for one or more pollutants, including Channel Islands Harbor, Ventura Harbor and Ventura Keys, Port Hueneme Harbor, Los Angeles/Long Beach Harbor, and Marina del Rey Harbor.

Management measures to address marinas NPS pollution

The NPS Program Plan identifies the following management measures to address marinas NPS pollution: (1) Marina Siting and Design, (2) Operations and Maintenance, and (3) Education and Outreach.

The State and Regional Water Boards work cooperatively with other governmental agencies through the Marinas and Recreational Boating Interagency Coordinating Committee (Marina IACC). The goals of this IACC are to: 1) develop partnerships among entities (e.g., state, federal and local agencies) responsible for addressing NPS pollution related to boating and marinas; 2) make efficient use of state, federal and local resources to address this pollution by sharing information, avoiding duplicative efforts and identifying technical and policy gaps; and 3) promote improvements to marina water quality through implementation of management practices.

The Water Boards also work specifically with the Department of Pesticide Regulation to promote management practices that reduce pesticide runoff through the Copper Antifouling Paint Strategies (AFS) workgroup. The goal of the workgroup is to assess the degree and geographical distribution of copper pollution caused by copper antifouling paint pesticides in California's aquatic environments and identify ways to effectively address copper pollution caused by use of copper-based antifouling paints on boat hulls.

The Regional Water Board has identified copper-based antifouling paints on boat hulls as contributing to water quality impairments in some coastal marinas (e.g., Marina del Rey Harbor) and has developed TMDLs to address this source. The Regional Water Board is working on the regulatory mechanism(s) to address copper discharges from boat hulls.

Hydromodification activities

Hydromodification is the alteration *away from a natural state* of stream flows or the beds or banks of rivers, streams, or creeks, including ephemeral washes, or other waterbodies, which results in hydrogeomorphic changes. Activities that alter natural stream flows include increasing the amount of impervious land within the watershed, altering patterns of surface runoff and infiltration, and channelizing natural water courses. Activities that alter the natural stream channel include, but are not limited to, straightening, narrowing or widening, deepening, lining, piping/undergrounding, filling or relocating; bank stabilization; instream activities (e.g. construction, mining, dredging); dams, levees, spillways, drop structures, weirs, and impoundments.

Hydromodifications may impair beneficial uses in a variety of ways. Modifications to stream flow and the stream channel may alter aquatic and riparian habitat and change which, or how many, aquatic and riparian organisms inhabit the stream channel and riparian zone. As a result of these hydromodifications, the biological community (aquatic life beneficial uses) may be significantly altered, compared to the type of community that would inhabit an unaltered, natural stream. For example, channelization usually involves the straightening of channels and hardening of banks and/or channel bottom with concrete or riprap. These modifications may impair beneficial uses by disturbing vegetative cover; removing habitat; modifying or eliminating instream and riparian habitat; degrading or eliminating benthic communities; increasing scour and erosion as a result of increased velocities; and increasing water temperature when riparian vegetation is removed. The regular maintenance of modified channels may also impair beneficial uses by disturbing instream and riparian habitats. These modifications may also, if not managed properly, impair beneficial uses by depriving wetlands and estuarine shorelines of enriching sediments or by excessive sediment deposition in downstream environments; changing the ability of natural systems to both absorb hydraulic energy and filter pollutants from surface waters; and altering habitat for spawning and other critical life stages of aquatic organisms. Hardening of channels may also eliminate opportunities for groundwater recharge in some areas.

In the Los Angeles Region, beginning in the early part of the 20th century, hydromodifications were made by public agencies to protect residents from floods and to collect and conserve stormwater for drinking water purposes and recreation. In addition, extensive urban development, and the corresponding increase in impervious area within the watersheds and decrease in the width of natural floodplains, has often resulted in significantly altered patterns of surface runoff and infiltration and, consequently, stream flow. This, in turn, has necessitated further in-stream

hydromodification in order to stabilize banks and constrain the stream to the channel to prevent flooding.

A unique type of hydromodification within the Los Angeles Region was the large-scale construction of reservoirs in order to prevent flooding and manage downstream flows. Table 4-8 lists the major reservoirs in the Region, their capacity, and the agencies that operate and maintain them. While a number of open reservoirs were built for drinking water storage in this Region, due to risk of contamination, public agencies now cover drinking water reservoirs or convert them to recreational uses. However, many of the reservoirs still serve the primary purpose of flood control.

As a result of past hydromodifications, there are few natural stream systems remaining in the region. Waterbodies that have not undergone extensive hydromodification such as portions of the Santa Clara River, upper San Gabriel and Los Angeles Rivers, Malibu Creek, Topanga Canyon, Ventura River, coastal streams in the Santa Monica Mountains, and tributaries to these larger rivers provide immeasurable benefits to the Region. These benefits include high quality warm and cold-water aquatic habitat, spawning habitat, migratory pathways, wildlife corridors, wildlife and riparian habitat, wetland habitat, recreational and aesthetic enjoyment, and groundwater recharge. Yet, many of these water bodies and their tributaries continue to be threatened by expanding urban development.

Table 4-8: Select Reservoirs in the Region: Ownership, Capacity and Function

Name of Dam/Reservoir	Function	Capacity (acre-feet)		Ownership & Maintenance	Surface Area (ac)	Watershed
		Built	Current			
Bard	CONS	10,532	10,532	CAMWD	220	Calleguas – Conejo Creek
Big Dalton	CONS, DP, FC	1053	1076 ('15)	LACFCD / LACDPW	23	San Gabriel River
Big Tujunga	CONS, DP, FC	6240	4952 ('15)	LACFCD / LACDPW	84	Los Angeles River
Bouquet	CONS	36,505	n/a	CITY OF LA	628	Santa Clara River
Castaic	CONS, REC	323,702	323,702	DWR	2235	Santa Clara River
Casitas	CONS, FC, REC	254,000	254,000	USBR/CASITAS MWD	2700	Ventura River
Chatsworth	Out of service	9,886	n/a	CITY OF LA		Los Angeles River
Cogswell	CONS, DP, FC	12,298	10,509 ('12)	LACFCD / LACDPW	151	Upper San Gabriel River Tributaries
Devil's Gate	CONS, DP, FC	4601	2,328 ('14)	LACFCD / LACDPW	128	Los Angeles River
Drinkwater	CONS	n/a	n/a	CITY OF LA	n/a	Santa Clara River
Dry Canyon	Out of Service	1100	n/a	CITY OF LA	58	Santa Clara River
Eagle Rock	CONS	n/a	254	CITY OF LA		Los Angeles River
Eaton Wash	CONS, DP, FC	956	653 ('15)	LACFCD / LACDPW	40	Los Angeles River
Elderberry Forebay	Power Plant	28,400	n/a	CITY OF LA	450	Santa Clara River
Elysian	CONS	169	169	CITY OF LA	6.2	Los Angeles River
Encino	CONS	9200	9200	CITY OF LA	158	Los Angeles River
Franklin Canyon	CONS	n/a	205	CITY OF LA	9.9	Los Angeles County Coastal Streams
Hansen	CONS, DP, FC	33,500	33,300	ACOE	826	Los Angeles River
Hollywood/Mulholland Dam	CONS	7900	4000	CITY OF LA	82	Los Angeles County Coastal Streams
Lopez	DIV, DP, FC	209	165 ('10)	ACOE	32	Los Angeles River
Los Angeles	CONS	n/a	10,000	CITY OF LA	156	Los Angeles River
Las Virgenes (Westlake)	CONS	9500	9500	LAS VIRGENES MWD	150	Malibu Creek
Live Oak	CONS	2,500	2,500	MWD	77	San Gabriel River
Live Oak	CONS, DP, FC	250	236 ('15)	LACFCD / LACDPW	11	San Gabriel River
Matilija	CONS, FC	7018	400	VCWPD/CASITAS MWD	85	Ventura River
Morris	CONS, DP, FC	32,300	22,400 ('13)	LACFCD / LACDPW	328	Upper San Gabriel River Tributaries
Pacoima	CONS, DP, FC	6060	2830 ('15)	LACFCD / LACDPW	58	Los Angeles River

Name of Dam/Reservoir	Function	Capacity (acre-feet)		Ownership & Maintenance	Surface Area (ac)	Watershed
		Built	Current			
Piru / Santa Felicia Dam	CONS, REC	88,300	83,244	UWCD	1240	Santa Clara River
Puddingstone	CONS, FC, REC	17,938	16,346 ('89)	LACFCD/ LACDPW	467	San Gabriel River
Puddingstone Diversion	CONS, FC, DIV, DP	148	205 ('015)	LACFCD / LACDPW	17	San Gabriel River
Pyramid	CONS, REC	171,196	171,196	DWR	1297	Santa Clara River
San Antonio	CONS, DIV, DP, FC	9300	9900 ('10)	ACOE	150	San Antonio Creek
San Dimas	CONS, DP, FC	1496	1534 ('09)	LACFCD / LACDPW	36	San Gabriel River
San Gabriel	CONS, DP, FC, REC	53,344	44,104 ('14)	LACFCD / LACDPW	540	Upper San Gabriel River Tributaries
Santa Anita	CONS, DP, FC	1,376	981 ('12)	LACFCD / LACDPW	14	Los Angeles River
Santa Fe	CONS, DIV, FC	33,400	29,600 ('10)	ACOE/LACFCD	1000	Upper San Gabriel River Tributaries
Santa Ynez	CONS	n/a	359	CITY OF LA	9.2	Los Angeles Coastal Streams
Sawpit	DP	476	0	LACFCD / LACDPW	N/A	Los Angeles River
Sepulveda	FC	17,440	18,100 ('04)	ACOE	1350	Los Angeles River
Silver Lake	CONS	n/a	2020	CITY OF LA	96	Los Angeles River
Stone Canyon	CONS	10,372	n/a	CITY OF LA	117	Los Angeles County Coastal Streams
Thompson Creek	CONS, DP, FC	675	515 ('04)	LACFCD / LACDPW	26	San Gabriel River
Whittier Narrows	CONS, FC	36,100	36,300 ('11)	ACOE	2400	San Gabriel River

n/a not available

CON Conservation (domestic water supply)

DIV Diversion

DP Debris Protection

FC Flood Control

REC Recreation

CAMWD

ACOE

DWR

LACDPW

LACFCD

MWD

USBR

UWCD

VCWPD

Calleguas Municipal Water District

United States Army Corp of Engineers

Department of Water Resources

Los Angeles County Department of Public Works

Los Angeles County Flood Control District

Metropolitan Water District of Southern California

United State Bureau of Reclamation

United Water Conservation District

Ventura County Watershed Protection District

Management measures to address hydromodification activities

The NPS Plan identifies the following MMs to address sources of nonpoint source pollution related to hydromodification activities: (1) Channelization/Channel Modification, (2) Dams, (3) Streambank and Shoreline Erosion, and (4) Education/Outreach.

The Regional Water Board reiterated its authority over hydromodification activities via Resolution No. 2005-002 *Reiteration of Existing Authority to Regulate Hydromodifications within the Los Angeles Region, and Intent to Evaluate the Need for and Develop as Appropriate New Policy or Other Tools to Control Adverse Impacts from Hydromodification on the Water Quality and Beneficial Uses of Water Courses in the Los Angeles Region* in February 24, 2005.

The Regional Water Board strongly discourages direct hydromodification of watercourses except in limited circumstances where avoidance or other natural alternatives are not feasible. In these limited circumstances, project proponents must clearly demonstrate that a range of alternatives, including avoidance of impacts, has been thoroughly considered, hydromodification has been minimized to the extent practicable, and adequate in situ and/or off site mitigation measures have been incorporated. Project proponents must also document that there will be no adverse effects to water quality or beneficial uses.

The Regional Water Board primarily relies upon three approaches to regulating hydromodifications: (1) waste discharge requirements issued pursuant to Water Code section 13263 and waivers issued pursuant to Water Code section 13269 to protect waters of the State; (2) certifications issued in accordance with Clean Water Act section 401 to protect waters of the U.S. (these two approaches are often used in combination (Cal. Code Regs., tit. 23, § 3857)); (3) municipal stormwater permits issued pursuant to section 402 (p) of the Clean Water Act to address stormwater related problems including stormwater quality and increased flows.

401 Water Quality Certification & Waste Discharge Requirements for Dredge and Fill Activities

The CWA Section 401 Certification and Waste Discharge Requirements Program for dredge and fill activities is an important tool for regulating hydromodification projects in addition to other

projects that involve dredge and fill. Dredge and fill projects for which the Regional Water Board requires water quality certification/permitting include, but are not limited to:

Construction or development projects that include:

- Dams, Levees, Drop Structures
- Debris Basins, Ponds
- Piping/Under-grounding
- Intake/Outfall Structures
- Boat Ramps, Pilings, Piers, Docks, Wharves

Streambank, Shoreline and Habitat Modifications:

- Beach Maintenance or Renourishment
- Streambank Erosion Control, Stabilization
- Dredging
- Mining
- Aquatic Plant Control
- Fish or Wildlife Habitat Restoration
- Wetlands Restoration

Crossings:

- Bridges
- Culverts
- Dams
- Utility Crossings

The Army Corps of Engineers (ACOE) and State water quality agencies regulate the discharge of fill or dredged material into the waters of the United States. All the types of projects listed above require permitting from the ACOE under CWA section 404 when the project impacts waters of the United States. Section 404 also gives the US EPA authority to restrict or prohibit the discharge of any dredged or fill material that can cause an unacceptable adverse effect. Projects permitted under section 404, or other projects that require federal permits for activities that can result in discharge to any water of the United States, require a Section 401 Water Quality Certification (401 WQC) from the State.

The CWA (section 401(a)(1)) gives states the authority to issue, issue with conditions, deny without prejudice, or deny applications for Section 401 WQCs. Section 401 WQCs are issued by the Regional Water Board for all 404 permits, permits issued by the ACOE under Section 10 of the Rivers and Harbors Act, and other federal permits. Most Section 401 WQCs are issued with conditions, which ensures that the project will comply with the State's water quality standards as designated in the Basin Plan. Conditions can include Best Management Practices such as working in the dry season or out of the water, among many others; monitoring and reporting

requirements; and compensatory mitigation to ensure the State complies with the wetland “no net loss” policy (Executive Order W-59-93, see Chapter 5).

These dredge and fill activities are also regulated by WDRs under the Water Code. Projects that are issued a Section 401 WQC by the Regional Water Board are also regulated under the *Statewide General Waste Discharge Requirements for Dredged or Fill Discharges that have received State Water Quality Certification* (Order 2003-0017-DWQ). This Order requires compliance with all conditions of the Section 401 WQC. Additionally, these WDRs fulfill the requirements of Article 4, of Chapter 4 of Division 7 of the Water Code for proposed dredge or fill discharges to waters of the United States that are regulated under the State’s CWA section 401 authority. In some cases, the Regional Water Board may issue individual WDRs to projects after a hearing by the Regional Water Board. In situations where the proposed discharge is to waters of the State (e.g. isolated waters, vernal pools, etc.) which are not, also, waters of the U.S., or in situations where the federal agency does not claim jurisdiction, the Regional Water Board issues individual WDRs without also issuing a Section 401 WQC.

Wetlands, Riparian Areas and Vegetated Treatment Systems

Wetlands and riparian areas reduce polluted runoff by filtering runoff-related contaminants such as sediment, nitrogen, and phosphorus. Changes in hydrology, substrate, geochemistry, or species composition can impair the ability of wetland or riparian areas to filter out excess sediment and nutrients. Harmful activities include drainage of wetlands for cropland, overgrazing, hydromodification, highway construction, deposition of dredged material, and excavation for ports and marinas.

Management measures to address wetlands, riparian areas and vegetated treatment systems

The NPS Plan identifies the following MMs for protecting and restoring wetlands and riparian areas and using vegetated treatment systems as a way of controlling pollution from nonpoint sources: (1) Protection of Wetlands and Riparian Areas, (2) Restoration of Wetlands and Riparian Areas, (3) Vegetated Treatment Systems, and (4) Education/Outreach.

A key mechanism for implementing these MMs in the Region is the Southern California Wetlands Recovery Project (WRP), which was created in 1997. The Regional Water Board is a WRP partner, along with 15 other State and federal agencies. The WRP is designed as a vehicle to accelerate the pace, the extent and the effectiveness of coastal wetland restoration in the Southern California Bight. Using a non-regulatory approach and an ecosystem-based perspective, the WRP works together to identify wetland acquisition and restoration priorities, prepare plans for these priority sites, pool funds to undertake these projects, implement priority plans, and oversee post-project maintenance and monitoring. The WRP also conducts public education and outreach programs.

As directed by the State Water Board in [Resolution No. 2008-0026](#), the State and Regional Water Boards are also developing a Statewide Wetland and Riparian Area Protection Policy. The policy is being implemented in three phases, which will allow for development of the internal program infrastructure necessary to support its implementation.. The Phase 1 effort is called the *Wetland Area Protection and Dredge and Fill Permitting Policy*. The purpose of Phase 1 is to protect all waters of the State, including wetlands, from dredge and fill discharges. It includes a wetland definition and associated delineation methods, an assessment framework for collecting and reporting aquatic resource information, and requirements applicable to discharges of dredged or fill material. (See Chapter 5.)

Recreational Impacts

Though not identified as an individual land use category, recreational activities can result in water quality impacts. The Region's watersheds and waterbodies are some of the most heavily used for recreation. Water contact and non-contact recreational activities range from swimming, surfing, and sunbathing at coastal beaches to hiking along some of the pristine stretches of streams in the canyons of the Transverse Mountain Ranges. With the intense residential, commercial, and industrial development throughout much of the Region, however, relatively few natural environments remain for the enjoyment of urban residents. Many of those environments that do remain are threatened by overuse as well as disregard for the sensitivity of natural ecosystems. Water quality impacts from recreational use include discharges of litter; discharges from overloaded sewage containment and septic systems; and erosion of dunes and stream banks from trampling and off-road vehicles. In addition to degrading riparian, estuarine, and coastal habitats, these impacts leave sites in unsightly and unhealthy conditions, limiting future

recreational opportunities. Golf courses are kept green by applications of pesticides and fertilizers. Overwatering transports these chemicals into surface waters. In some cases, the extra irrigation water itself causes a disruption of the hydrologic balance of surface waters. The Regional Water Board coordinates and collaborates with the US Forest Service (USFS) on activities such as trash abatement and control in and around the Los Angeles Regions' waterbodies that lie within the National Forest System. Such activities are consistent with the goals of the Memorandum of Agreement between the USFS and the USEPA¹³ to address water quality impairments by maintaining and restoring National Forest System watersheds. Also, regulatory actions such as the adoption of total maximum daily loads (TMDLs) for trash in recreational waterbodies, and the resulting compliance strategies in response to the TMDLs have made significant inroads towards addressing litter in streams and on banks of the waters of the more urbanized areas of the Region. In addition, community programs such as organized river clean-ups have raised public awareness of recreational impacts to rivers lakes and streams, while also improving water quality conditions.

The Regional Water Board encourages mitigation of recreational impacts through planning efforts at a local level, and supports those that address maintenance of parks, campgrounds, beaches, and other open spaces. Public outreach and education measures are considered to be some of the most effective ways of controlling this type of pollution and maintaining these resources.

¹³ Memorandum of Agreement on Fostering Collaboration and Efficiencies to Address Water Quality Impairments on National Forest System Lands between the US Forest Service and the US Environmental Protection Agency (September 28, 2007)

Restoration of Impaired Surface Waters

Total Maximum Daily Loads

Sections 303(d) and 305(b) of the CWA contain backstop provisions designed to ensure that all state water quality standards are attained, including in waterbodies where existing permit effluent limitations and other water quality programs are not stringent enough to ensure achievement of water quality standards. Section 305(b) requires each state to assess the quality of the state's water resources every two years. These water quality assessments are reported to US EPA and are used to identify and list impaired waters, as required by section 303(d). The resulting list is referred to as the 303(d) list. The State's 303(d) list is prepared per the *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (see Chapter 5). The 305(b) report and the 303(d) list are combined into the *California 303(d)/305(b) Integrated Report* (see Chapter 6).

The CWA also requires states to develop and implement Total Maximum Daily Loads (TMDL) for the impaired waterbodies identified on the 303(d) list. A TMDL specifies the maximum amount of a pollutant that a waterbody can receive and still attain water quality standards, and allocates pollutant loadings to point and non-point sources. A TMDL is also required to account for seasonal variations and include a margin of safety to address uncertainty in the analysis. TMDLs may be developed to address water quality, sediment quality, fish tissue or other impairments of beneficial uses.

In California, the State Water Board and the nine Regional Water Boards are responsible for preparing the California 303(d)/305(b) Integrated Report and for developing TMDLs. TMDLs are developed following US EPA and State policy (USEPA, 2000; SWRCB, 2005). Often, TMDLs and TMDL implementation plans are adopted as amendments to the Basin Plan (see Chapter 7). However, TMDLs may also be established and implemented through single regulatory actions such as Cleanup and Abatement Orders or within individual WDRs or waivers of WDRs. The US EPA is required to review and either approve or disapprove the TMDLs submitted by states. If the state is unable to develop the TMDL due to resource constraints or if US EPA disapproves a TMDL submitted by a state, US EPA will establish a TMDL for that water body. A complete list of TMDLs developed for waterbodies in the Region, organized by watersheds, is included in Chapter 5. TMDLs adopted as amendments to this Basin Plan are incorporated in Chapter 7.

States must also develop plans to implement the TMDLs (Wat. Code § 13242; 40 CFR §130.6). These TMDL implementation plans are waterbody specific programs of implementation, consistent with the requirements of Water Code section 13242. The Regional Water Boards hold regulatory authority for many of the instruments used to implement the TMDLs, such as NPDES permits and WDRs, which are described in this chapter. The State and Regional Water Boards are required to incorporate TMDL requirements, including effluent limitations consistent with available wasteload allocations into permits, and permits must be consistent with and implement Basin Plans (40 CFR § 122.44(d)(1)(vii)(B); Wat. Code § 13263).

The required elements of a TMDL are set forth in section 303(d) of the CWA and sections 130.2 and 130.7 of Title 40 of the Code of Federal Regulations, and include: Problem Identification, Numeric Targets, Source Assessment, Linkage Analysis, Pollutant Allocations, Critical Conditions/Seasonal Variation, Margin of Safety, and Implementation and Monitoring. These elements are fully described in Chapter 7.

Drought/Salinity Loading Issues

The Region's semi-arid conditions and periodic, extended periods of drought in combination with reliance on significant amounts of imported water containing elevated chloride concentrations result in the need to control salinity loading to regional waters. Chloride concentrations in supply waters imported into the Region are periodically affected by drought. Moreover, baseline concentrations of chloride in supply waters imported into the Region are higher than they were in 1975, when the Regional Water Board set water quality objectives for chloride based upon background concentrations of chloride in the Region's waterbodies. The higher chloride concentrations in imported waters are the result of impairments and/or intensifying demands for and utilization of water resources in watersheds from which the supply waters are imported.

During the 1986-1991 period of drought water supplies imported into the Los Angeles Region often had higher than normal concentrations of chlorides, which, in turn, often resulted in waste discharges that exceeded chloride limitations. To provide a measure of relief to dischargers that were unable to meet chloride limitations primarily due to the quality of imported supply waters, the drought and/or water conservation measures, the Regional Water Board adopted Resolution No. 90-04, *Effects of Drought Induced Water Supply Changes and Water Conservation Measures on Compliance with Waste Discharge Requirements within the Los Angeles Region* (Drought Policy). This policy, which was adopted on March 26, 1990, temporarily raised chloride limitations for municipal wastewater treatment facilities to match chloride increases in the water supply for a period of three years. Under this policy, chloride limitations were temporarily set at the lesser of (i) 250 mg/L or (ii) the supply concentration plus 85 mg/L. As chloride concentrations did not return to pre-drought levels, the Regional Water Board extended the Drought Policy for an 18-month period starting in June 1993, and extended the policy again for a 24-month period starting in February 1995.

In order to develop a long-term solution to chloride compliance problems while still protecting beneficial uses, the Regional Water Board worked with a group of technical experts representing a variety of interests, including water supply, reclamation, and wastewater management; environmental protection; and water softener industry interests. This group together with the Regional Water Board developed a *Policy for Addressing Levels of Chloride in Discharges of Wastewater* (Chloride Policy) to replace the short-term Drought Policy. The Chloride Policy, which

the Regional Water Board adopted on January 27, 1997, permanently reset chloride objectives for certain surface waters and also acknowledged the need to assess and manage salinity loading over the long term. The water quality objectives for chloride were reset at the lesser of (i) levels necessary to fully protect beneficial uses, or (ii) baseline levels of chloride in water supply plus a chloride loading factor. To address salinity loading issues, the Chloride Policy (i) includes requirements for monitoring and assessment of sources of salinity, (ii) encourages consumer education of water hardness issues and water quality problems associated with water softening processes, and (iii) encourages water supply and wastewater treatment agencies to shift to less chlorine-intensive processes to achieve treatment and disinfection of supply waters and wastewaters, to the extent that such shifts are cost-effective and consistent with water quality and reclamation objectives.

Due to concerns expressed about the potential for future adverse impacts to agricultural resources in Ventura County, water quality objectives for chloride in the Santa Clara River and Calleguas Creek watersheds were not revised under the Chloride Policy. Since then, several total maximum daily loads (TMDLs) have been developed to address impairments due to chloride and other salts in both the Santa Clara River and Calleguas Creek watersheds. These TMDLs consider chloride levels in supply waters (including fluctuations that may be due to drought conditions), chloride concentrations necessary to protect beneficial uses, watershed-wide strategies to manage chloride loading, and the associated costs and effectiveness of the various management strategies. Specifically, the TMDL for boron, chloride, sulfate and TDS in the Calleguas Creek watershed adopted in 2007 is contingent on a watershed-wide implementation plan including various structural and administrative elements. Implementation of the plan will should result in exports of salt, thus reducing concentrations of salts in surface water and groundwater, and increases in local sources of water supply, therefore reducing the reliance on imported water. In the Santa Clara watershed, strategies to meet the Upper Santa Clara River Chloride TMDL adopted in 2008, and amended in 2014, include the construction of a reverse osmosis facility, in addition to other management measures.

Water quality objectives for chloride were not changed for the headwaters of the Region's major stream systems. Likewise, water quality objectives for chloride in groundwater were not changed, due to concerns over degradation of groundwater stored in the Region's basins. In accordance with the Water Boards' Antidegradation Policy, water quality objectives currently in effect will continue to protect the naturally high quality of such surface and ground waters.

The new water quality objectives were incorporated into Table 3-10 Water Quality Objectives for Selected Constituents in Inland Surface Waters. The Chloride Policy is included in Chapter 5; TMDLs for chloride and other salts in the Santa Clara River and Calleguas Creek are contained in Chapter 7.

Groundwater Programs

Groundwater Permitting and Land Disposal Programs

Waste Discharge Requirements

All waste discharges including discharges to groundwater (i.e. to land) are subject to California Water Code sections 13260 and 13263 and are issued Waste Discharge Requirements (WDRs) by the Regional Water Board. Discharges to land are also subject to California Code of Regulations Title 23, Sections 640 to 3895, Sections 3930 to 3939.39 and Sections 4000 to 4007 and Title 27, Sections 10010 to 23014. WDRs usually do not have an expiration date (with the exception of dredging WDRs and some Chapter 15 WDRs¹⁴).

Land and groundwater-related WDRs (i.e., “Non-NPDES” WDRs) are described in this section. (WDRs for discharges to surface waters, which also serve as NPDES permits, were described in the National Pollutant Discharge Elimination System Program section, above.) These WDRs protect the beneficial uses of groundwater basins and surface waters in areas with groundwater-surface water interaction.

The types of waste discharge that require groundwater WDRs include, but are not limited to, onsite wastewater treatment systems (OWTSSs, commonly known as septic systems), direct discharges to land, landfills, soil treatment units, and dredge sediment disposal. Application for individual groundwater WDRs requires the submission of a Report of Waste Discharge (ROWD). The ROWD requires facility information, including information on the type and quality of discharge, flow, and an explanation of the proposed treatment and disposal processes. Moreover additional information such as a hydrologic summary, including a description of underlying groundwater and soil properties, may be required. Upon review of the ROWD and all other required information, including comments received at public hearing, the Regional Water Board will consider issuance of WDRs that incorporate appropriate requirements and discharge limitations to protect public health and water quality.

¹⁴ Chapter 15 Waste Discharge Requirements (WDRs) are those discharges of waste to land, which are regulated through waste discharge requirements that implement the requirements of Chapter 15 of Division 3 of Title 23. Examples include, but are not limited to, landfills – both active and closed – and mining operations.

Land Disposal

The Land Disposal Program regulates the discharge of solid, semisolid, and liquid wastes to various waste management units, including landfills, land treatment units, waste piles, surface impoundments, and mining waste management units. The discharge of wastes to land has the potential to create significant pollution to the environment, especially to groundwater resources. The Regional Water Board regulates such discharges by adopting WDRs and conditional waivers of WDRs to ensure that groundwater and surface waters are not impacted by these activities.

The primary State regulations governing waste management units are contained in Title 27 of the California Code of Regulations. Both the California Department of Resources Recycling and Recovery (CalRecycle) and the Water Boards implement these regulations. The Water Boards' regulatory role is to protect water quality from impacts that may occur due to solid waste disposal activities, while CalRecycle and various Local Enforcement Agencies (mainly counties and cities) regulate all other aspects of solid waste disposal. The Regional Water Board routinely cooperates with CalRecycle and other state and federal agencies in regulating waste management facilities (Table 4-9).

Table 4-9. Cooperating Agencies for the Land Disposal Programs

Waste Disposal Category	Cooperating Agency
Mining Waste (also regulated through the Surface Mining and Reclamation Act of 1975 [SMARA]).	California Geological Survey
Nonhazardous solid waste landfills (also regulated by the Federal Resource Conservation and Recovery Act [RCRA], Subtitle D)	CalRecycle and various local enforcement agencies
Hazardous Wastes (also regulated through the Federal Resource Conservation and Recovery Act [RCRA], Subtitle C)	California Department of Toxic Substances Control, US Environmental Protection Agency

The Land Disposal Program operates with the following general WDRs:

- **Order No. 90-148:** General Waste Discharge Requirements for Land Treatment of Petroleum Hydrocarbon Contaminated Soil
- **Order No. 91-93:** General Waste Discharge Requirements for the Discharge of Non-Hazardous Contaminated Soils and Other Wastes
- **Order No. R4-2004-0022:** General Waste Discharge Requirements for Post-Closure Maintenance of Inactive Nonhazardous Waste Landfills
- **State Board Order No. 2015-0121-DWQ,** General Waste Discharge Requirements for Composting Operations, is also managed under the Land Disposal Program.
- **State Board Order No. 2004 - 0012 – DWQ,** General Waste Discharge Requirements For The Discharge of Biosolids To Land For Use As A Soil Amendment In Agricultural, Silvicultural, Horticultural, And Land Reclamation Activities,

Landfills

Landfills in California are categorized into four classes based on the type of wastes accepted at the facility: Class I- hazardous waste, Class II- designated waste, Class III- non-hazardous or municipal solid waste, and unclassified inert solid waste. The definitions of waste types are listed in Table 4-10. As of April 2014, there are no active Class I or Class II landfills in the Region. The California Department of Toxic Substances Control (DTSC), in accordance with federal and State regulations, issues permits to all hazardous waste management units, including closed Class I landfills within the Region. Hazardous and/or designated waste generated within the Region is either processed in a permitted recycling facility or removed to a regulated Class I and/or Class II solid waste management unit in a neighboring area.

Table 4-10. Landfill Classifications

Disposal Site Classification	Definitions of Waste Types [CCR Title 23, Chapter 15, Sections 2521 et seq. (for hazardous wastes) and CCR Title 27, Division 2 (for other types of wastes)]	Examples
Class I – Hazardous Waste	<p>a) Hazardous waste is any waste that, under Section 66261.3 of CCR Title 22, is required to be managed according to Chapter 11 of Division 4.5 of Title 22.</p> <p>b) Hazardous wastes shall be discharged only at Class I waste management units that comply with the applicable provisions of Chapter 15 of CCR Title 23 unless wastes qualify for a variance under Section 66260.210 of CCR Title 22.</p>	Pesticides, acid, paint, materials with hazardous concentrations of metals or organic substances
Class II – Designated Waste	<p>a) “Designated waste” means either of the following:</p> <ol style="list-style-type: none"> 1. Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Section 25143 of the Health and Safety Code. 2. Nonhazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan. 	Materials with high concentrations of BOD, hardness, or chloride. Inorganic salts and heavy metals are “manageable” hazardous wastes

Disposal Site Classification	Definitions of Waste Types [CCR Title 23, Chapter 15, Sections 2521 et seq. (for hazardous wastes) and CCR Title 27, Division 2 (for other types of wastes)]	Examples
Class III- Non-hazardous Solid Waste	<p>a) Non-hazardous solid waste means all putrescible and nonputrescible solid, semi solid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semi solid wastes and other discarded waste (whether of solid or semi solid consistency); provided that such wastes do not contain wastes which must be managed as hazardous wastes, or wastes which contain soluble pollutants in concentrations which exceed applicable water quality objectives, or could cause degradation of waters of the state (i.e., designated waste).</p> <p>b) Except as provided in CCR Title 27 §20200(d) (for liquids), nonhazardous solid waste may be discharged at any classified landfill which is authorized to accept such waste, provided that:</p> <ol style="list-style-type: none"> 1. the discharger shall demonstrate that co-disposal of nonhazardous solid waste with other waste shall not create conditions which could impair the integrity of containment features and shall not render designated waste hazardous (<i>e.g., by mobilizing hazardous constituents</i>); and 2. the discharger shall ensure, to the maximum extent feasible, that the Unit receives only those wastes that are approved for being discharged at that Unit. <p>c) Dewatered sewage or water treatment sludge may be discharged at a Class III landfill under the following conditions, unless DTSC</p>	Garbage, trash, refuse, paper, demolition and construction wastes, manure, vegetable or animal solid and semisolid wastes
Unclassified/ Inert	<p>a) Inert waste does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives. It does not contain significant quantities of decomposable waste.</p> <p>b) Inert wastes do not need to be discharged to classified management units.</p> <p>c) Regional water boards may prescribe individual or general waste discharge requirements for discharges of inert wastes.</p>	Concrete, rock, plaster, brick, uncontaminated soils.

The Regional Water Board has regulated landfills since the 1950s. Many of the small older sites have been closed and waste is now being handled at large regional landfills. See Tables 4-11 and 4-12 for the status of all landfills with ongoing groundwater monitoring programs and Figure 4-4 for the locations of these landfills.

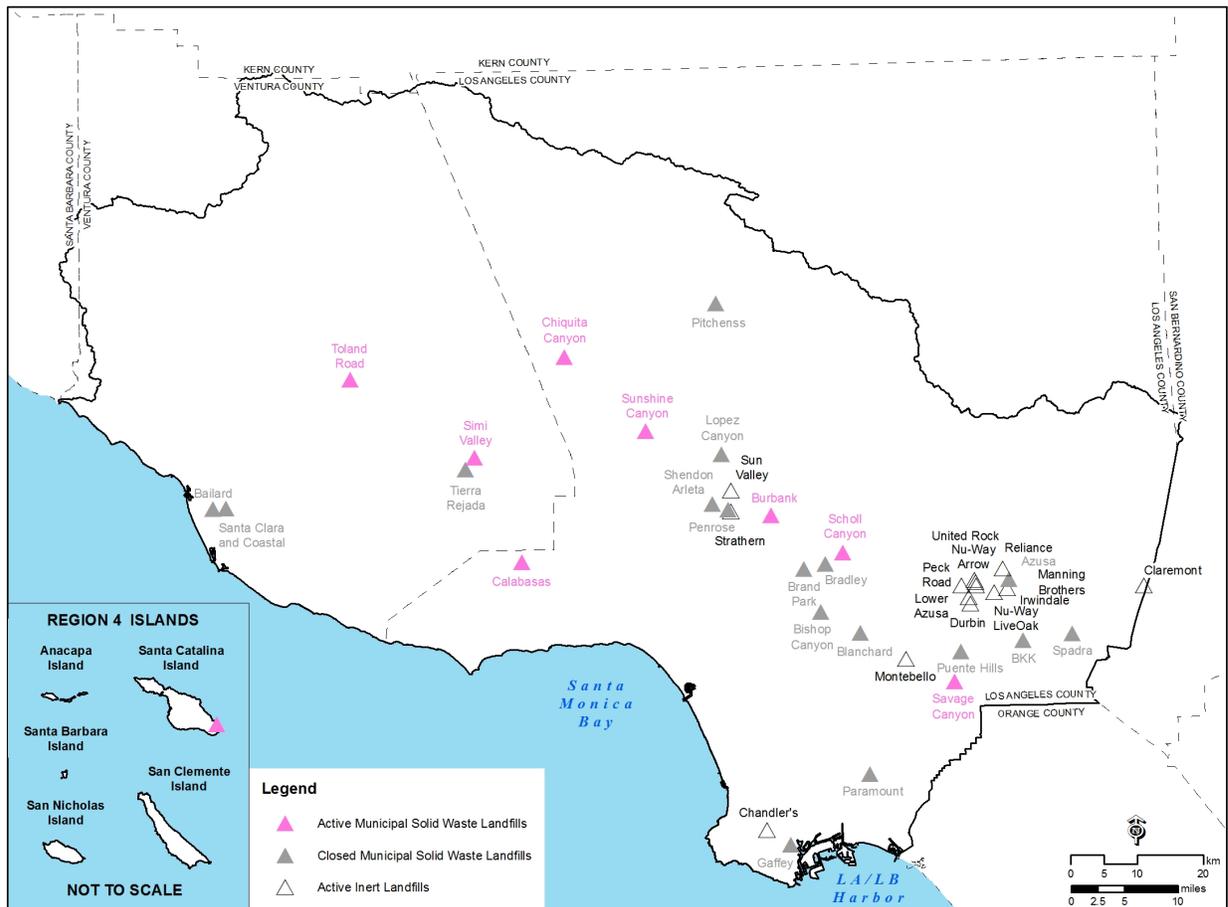


Figure 4-4. Major Landfills.

Table 4-11. Status of Landfills in the Region with Ongoing Groundwater Monitoring Programs *

Landfill (Operator)		Constituents Detected in Groundwater	Monitoring Program
Active Municipal Solid Waste	Burbank Landfill (City of Burbank)	Volatile organic compounds (VOCs)	Evaluation Monitoring Program (EMP)
	Calababas Landfill No. 5 ** (Sanitation Districts of Los Angeles County)	VOCs	Corrective Monitoring Program (CAP)
	Chiquita Canyon Landfill (Chiquita Canyon, LLC)	VOCs, inorganic compounds	CAP
	Pebble Beach Landfill (City of Avalon)	No detected contamination	Detection Monitoring Program (DMP)

	Landfill (Operator)	Constituents Detected in Groundwater	Monitoring Program
	Savage Canyon Disposal Site (City of Whittier)	No detected contamination	DMP
	Scholl Canyon Landfill No. 4 (Sanitation Districts of Los Angeles County)	VOCs, chloride	CAP
	Simi Valley Landfill** (Waste Management of California)	VOCs	CAP
	Sunshine Canyon City/County Landfill (Republic Service Company)	VOCs, chloride	CAP
	Toland Road Disposal Site (Ventura Regional Sanitation District)	No detected contamination	DMP
Closed Municipal Solid Waste Landfills	Azusa Landfill (Azusa Land Reclamation Co., Inc.)	VOCs	CAP, currently operated as an inert landfill
	Bailard Landfill (Ventura Regional Sanitation District)	VOCs	CAP
	Bishop's Canyon Landfill (Los Angeles City Bureau of Sanitation)	VOCs	DMP
	BKK Class III Landfill West Covina (BKK Corporation)	No detected contamination	DMP
	Blanchard Landfill (County of Los Angeles Sheriff's Dept.)	No detected contamination	DMP
	Bradley Landfill (Waste Management, Inc.)	VOCs	CAP
	Brand Park Disposal Site (City of Glendale)	No detected contamination	DMP
	Coastal Landfill (Ventura Regional Sanitation District) and Santa Clara Landfill (City of Oxnard)	VOCs	CAP
	Gaffey Street Landfill (Los Angeles City Bureau of Sanitation)	VOCs	DMP
	Lopez Canyon Landfill (Los Angeles City Bureau of Sanitation)	No detected contamination	DMP
	Paramount Landfill (City of Long Beach)	No detected contamination	DMP
	Penrose Landfill (Los Angeles By-Products Company)	VOCs upgradient and downgradient	EMP
	Peter Pitchess Landfill (Los Angeles County Sheriffs Department)	VOCs	CAP
	Puente Hills Landfill (Sanitation Districts of Los Angeles County)	VOCs	CAP
	Sheldon-Arleta Landfill	VOCs	DMP
	Spadra Landfill (Sanitation Districts of Los Angeles County)	VOCs	CAP
	Tierra Rejada Landfill (Tierra Rejada Consortium) (closed)	VOCs	CAP

Table 4-12. Status of Inert Landfills in the Region with Ongoing Groundwater Monitoring Programs*

	Landfill (Operator)	Constituents detected in Groundwater	Monitoring Program
Active Inert Landfills	Chandler Sand and Gravel (Chandler's Sand and Gravel)	No detected contamination	DMP
	Claremont Landfill (Claremont Colleges Consortium)	No detected contamination	DMP
	Durbin Landfill (Vulcan Material Co.)	No detected contamination	DMP
	Irwindale Quarry Landfill (Hansen Aggregate)	No detected contamination	DMP
	Lower Azusa Reclamation Landfill (Arcadia Reclamation, Inc.)	No detected contamination	DMP
	Manning Pit North (City of Irwindale)	No detected contamination	DMP
	Montebello Land and Water (Montebello Land and Water Co.)	No detected contamination	DMP
	Nu-Way Live Oak Landfill (Mnoian Management, Inc.)	No detected contamination	DMP
	Peck Road Landfill (S.L.S. & N., Inc.)	No detected contamination	DMP
	Reliance Pit Landfill (Vulcan Materials Company)	No detected contamination	DMP
	Strathern Landfill (Los Angeles County Department of Public Works)	VOCs upgradient and downgradient	DMP, plans to develop site into a stormwater retention and treatment facility.
	Sun Valley Inert Landfill (Vulcan Material Co.)	No detected contamination	DMP
	Nu-way Arrow Reclamation	No detected contamination	DMP
	United Rock Products Pit No. 2 Landfill	No detected contamination	DMP

* Note that closed Class I landfills that are currently regulated by DTSC and/or US EPA, including the BKK Class I Landfill, Palos Verde Landfill, and Operating Industries Landfill, are not listed in the table.

** Former Class I landfill that is now an operating Class III landfill.

Class III landfills for the disposal of municipal solid waste are the primary category of waste management units overseen by the Regional Water Board. Table 4-13 lists the active Class III landfills in the Region. Landfill owner/operators must demonstrate that the waste disposal will be in a manner and setting such that wastes will not adversely affect water resources. Criteria for evaluating waste disposal sites include geologic features of the area, liner standards, proposed leachate collection and removal systems, and subsurface barriers to prevent pollutants from being released offsite. Construction standards for waste management units are included in

Table 4-13. Active Regional Class III Landfills

Facility Name	Agency / Discharger	City	County
Burbank Landfill	Burbank City	Burbank	Los Angeles
Calabasas Landfill No. 5	Los Angeles County Sanitation Districts	Agoura Hills	Los Angeles
Chiquita Canyon Landfill	Chiquita Canyon, LLC	Castaic	Los Angeles
Pebble Beach Disposal Site, Avalon	Seagull Sanitation Systems	Avalon	Los Angeles
San Clemente Island Landfill	US Navy Commander Navy Region Southwest	San Clemente Island	Los Angeles
Savage Canyon Landfill	Whittier City	Whittier	Los Angeles
Scholl Canyon Landfill No 4	Los Angeles County Sanitation Districts	Glendale	Los Angeles
Simi Valley Landfill	Waste Management of Calif.	Simi Valley	Ventura
Sunshine Canyon Landfill City/County Landfill	BFI Gardena Div 902	Sylmar	Los Angeles
Toland Road Landfill	Ventura Regional Sanitation District	Santa Paula	Ventura

In addition to municipal solid waste landfills, inert waste landfills are also subject to WDRs. Inert waste landfills in the Region are typically located at historical or active aggregate mining pits in major groundwater basins, where groundwater has been exposed by mining activities. See Table 4-14 for Regional Water Board procedures for siting inert landfills. The WDRs direct the landfill operator to implement a waste load checking program to prevent unacceptable wastes from being discharged at the landfill and implement best management practices (BMPs) to ensure that landfill operations do not cause or contribute to pollution of ground and/or surface water resources. Only inert solid wastes (e.g. uncontaminated concrete, brick, glass, plastics) are permitted at inert waste landfills. Generally, materials such as friable asbestos, asphaltic materials, and rubber tires are prohibited, unless specifically allowed by the facility WDRs.

Table 4-14. Procedures for Siting Inert Landfills.

Regional Water Board procedures for siting inert landfills
A monitoring program approved by the Executive Officer must be in place and operating prior to disposal of any inert waste. This will include groundwater monitoring and waste disposal reporting. In the event that possible leakage from the landfill is observed during routine detection monitoring, an evaluation monitoring program, and if necessary, a corrective action program similar to those included in Chapter 15 will be implemented.
Disposal must be restricted to inert wastes. Organic material is allowed only in insignificant quantities, with the exception of a maximum of 5% by volume of organic material from debris basins. Friable asbestos, asphaltic material*, and rubber tires are specifically prohibited unless allowed by Waste Discharge Requirements from the Regional Water Board.
A waste load checking program similar to those approved for Class III landfills must be carried out.
Installation of precipitation and drainage controls is required to accommodate run-on and runoff.
Inspection of facility by Regional Water Board staff should be conducted at least once per year.
Submittal of a closure plan is required for review and approval by the Executive Officer. Such plan to include groundwater monitoring for a minimum period of five years.

* Asphaltic material that contains less than 50% solids is not allowed (i.e., asphalt). Asphaltic concrete (as defined by the Joint Cooperative Committee of the Southern California Chapter, American Public Works Association, and Southern California Districts, and Associated General contractors: *Standard Specifications for Public Works Construction*) is allowed.

Operators of both municipal solid waste and inert waste landfills must establish monitoring programs in accordance with Title 27 CCR section 20385. There are three types of monitoring programs which may be required depending on whether groundwater is contaminated at the landfill. The Detection Monitoring Program (DMP) is a routine monitoring program to evaluate groundwater quality at the waste management unit. If the DMP identifies significant physical evidence and/or measurably significant evidence of a contaminant release from the waste management unit, the operator must institute an Evaluation Monitoring Program (EMP). The EMP determines the nature and extent of the contaminant release and requires the development of a Corrective Action Program (CAP). The EMP and CAP are subject to approval by the Regional Water Board Executive Officer. Once approved, the WDRs are amended to include CAP requirements. Closed landfills must be monitored for at least 30 years or longer until the wastes no longer pose a threat to the public health and safety and the environment (Title 27 CCR sections 20950, 21900).

In addition to active and recently closed waste management units that are regulated under WDRs, there are a large number (more than 700) of closed, abandoned, and inactive waste management units (CAI landfills) within the Region that were closed prior to November 27, 1984, when modern land disposal regulations became effective in the State. With a few

exceptions, these CAI landfills are not regulated under WDRs. Generally these are small sites that have been closed for decades and in many cases were converted to other land uses. The Regional Water Board maintains limited records (if available) on these sites and takes regulatory actions when environmental issues are identified.

Solid Waste Water Quality Assessment Test (SWAT)

The Regional Water Board may require a Solid Waste Water Quality Assessment Test (SWAT) pursuant to California Water Code section 13273, which requires owners of active or inactive nonhazardous waste landfills to evaluate the possible migration of hazardous wastes or leachate from their landfills. If a SWAT investigation indicates that a landfill has released pollutants to groundwater and/or surface waters, the landfill is required to implement a corrective action program to remediate the pollution. In general, SWAT comparable monitoring and corrective action requirements are included in landfill WDRs; however, if necessary, the Regional Water Board may require a SWAT without adopting WDRs.

Disposal of Hazardous and Non-hazardous Contaminated Soil

Remediation, construction, and other types of projects that require excavation and removal of earth materials generate large quantities of contaminated soils. Contaminated soil or related materials must be treated and/or properly disposed of in order to protect surface and groundwater quality. Dischargers of hazardous and non-hazardous contaminated soil are required to characterize contaminants found in the soil and determine if the soil is classified as hazardous or non-hazardous waste. If the soil is deemed hazardous, it must be disposed of at a Class I landfill regulated by the DTSC. Non-hazardous contaminated soils may be disposed of at permitted municipal solid waste landfills pursuant to individual WDRs. Landfills accepting non-hazardous contaminated soil must implement an appropriate Waste Acceptance Program and a Stormwater Pollution Prevention Plan that addresses the potential pollution from the discharge of contaminated soil.

Land Treatment Units and Surface Impoundments

Land treatment units are waste management systems used to treat contaminated solid wastes through bioremediation processes. Contaminated waste is discharged into such land treatment units where biological, chemical, and/or physical attenuation processes degrade, transform, or immobilize the contaminants over time. The construction and closure standards for land treatment units are included in California Code of Regulations, Title 27, sections 20377, 20435,

and 21420. Land treatment units are often used for the remediation of contaminated soils, especially for soils excavated at site cleanup projects that are impacted by petroleum hydrocarbons. The operation of land treatment units within the Region is regulated with either individual or general WDRs. Waste soils that are adequately treated are permitted to be used onsite or disposed of at other regulated waste management units, such as municipal solid waste landfills.

Surface impoundments are either natural topographic depressions or man-made excavations used for the temporary storage or treatment of liquid waste; examples of surface impoundments include holding, storage, or settling ponds, aeration pits or lagoons. Facilities that produce wastewaters may use surface impoundments as part of wastewater treatment and/or as a mechanism to manage wastewater through evaporation or infiltration. Hazardous waste surface water impoundments must be constructed with a double liner system, a leachate collection and removal system and a leak detection system. The Regional Water Board regulates surface impoundments through WDRs.

Onsite Wastewater Treatment Systems (Septic Systems)

Many areas in the Region rely on onsite wastewater treatment systems (OWTS) for disposal of domestic household waste. OWTS "treat" household wastes by first removing organic solids through settling and decomposition in the tank portion of the system. Further treatment of organic chemicals, nutrients, and bacteria occurs as the effluent released from the tank percolates through the soil. Microbes in the soil digest or remove most contaminants from the wastewater before it eventually reaches groundwater. Advanced OWTS include disinfection by using chlorine, ozone or ultra-violet treatment before discharge when soil treatment is not sufficient. These systems may also include biological or activated sludge nutrient reduction and filters for total suspended solids or high turbidity. Disposal from the advanced OWTSs may be to geotape leach fields, multiple seepage¹⁵ pits connected to a hydrosplitter, or mounds with pressurized effluent released into constructed materials above ground.

OWTS maintenance is typically limited to pumping accumulated septage out of the tank and incidental repairs. If necessary OWTS maintenance is neglected the leach field can become clogged with solids from the septage, causing wastewater to saturate the ground surface or backup into the home. Proper construction of OWTS is imperative. Poorly designed and constructed systems will not function properly and can result in pollution of surface and/or ground waters (Figure 4-5). OWTS used in undersized lots or unsuitable soils are also subject to malfunction and can lead to untreated or poorly treated sewage seeping into yards, roadside ditches, streams, lagoons, or into ground water -- creating a public nuisance and health hazard. Even well-functioning ~~septic systems~~ OWTS can pollute ground water under adverse conditions (e.g., unsuitable sites.)

Nitrogen compounds, which are typically present in effluent from OWTS, are highly soluble and stable in aqueous environments. When not denitrified by bacteria or assimilated into organic growth (plants) in the unsaturated zone, these nitrogen compounds are easily transported to ground water. High levels of nitrate in drinking water sources cause methemoglobinemia (blue-baby syndrome) in infants. The federal drinking water standard of 10 mg/L nitrate plus nitrite (expressed as nitrogen) is based on this causal relationship. Furthermore, high levels of nitrates

¹⁵ In limited use - generally in instances where there is reasonable separation between the discharge point and the groundwater table.

have economic impacts on supplies of potable water, requiring well closure and relocation, well deepening, wellhead treatment, or blending. In addition, new developments may be restricted due to the presence of water supply with nitrogen concentrations that exceed drinking water standards.

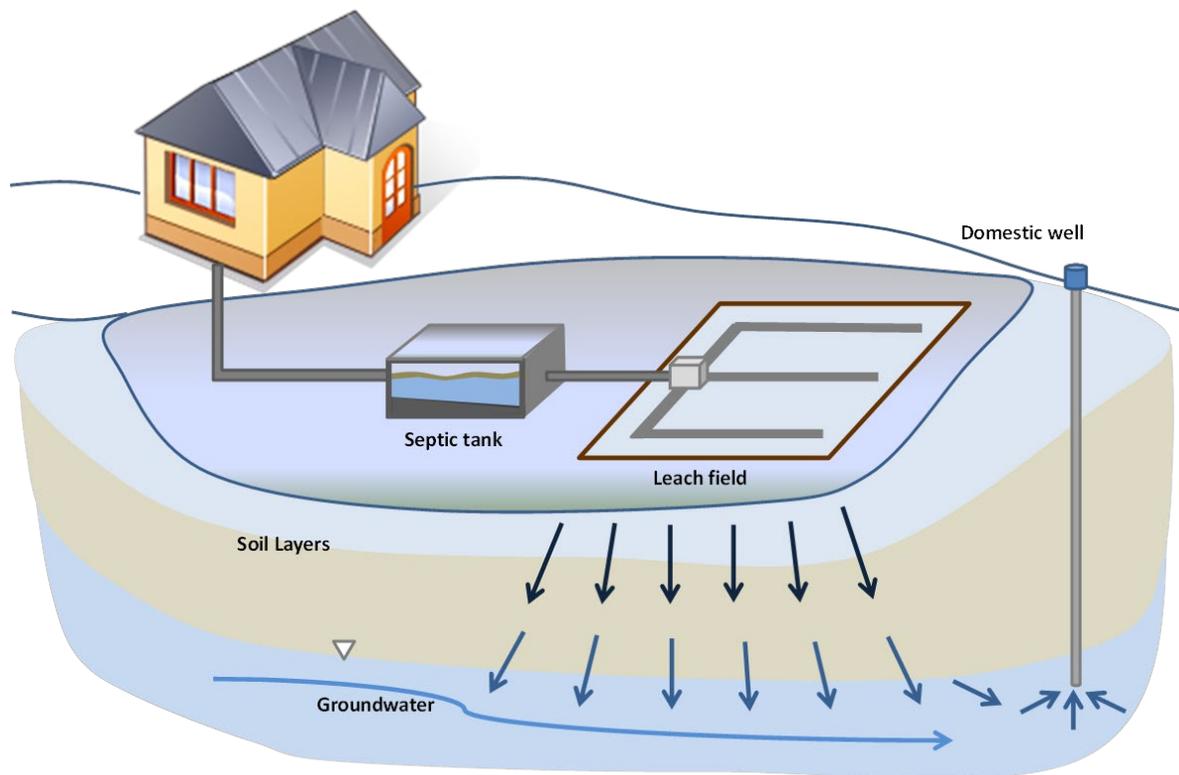


Figure 4-5: Onsite Wastewater Treatment System. In a properly designed OWTS, pollutants in the septic tank effluent are naturally degraded in the leach field before reaching the water table. This diagram, however, illustrates how pollution of groundwater can result from an OWTS that is not properly located or maintained.

Improperly functioning OWTS can result in discharges of effluent high in bacteria that increase the risk of waterborne disease outbreaks and other adverse health effects, upon contamination of the underlying groundwater basins.

The State Water Board's OWTS Policy, which is incorporated by reference into this Basin Plan, addresses these water quality concerns through requirements for the siting, design, operation, maintenance, and management of these systems.

Onsite Wastewater Treatment Systems Regulation

The State and Regional Water Boards have the authority to regulate discharges, including discharges from residential units, multiple-dwelling units, non-domestic septic tank systems, and

large developments. Requirements for siting, design, operation, maintenance, and management of onsite wastewater treatment systems are specified in the State Water Board's *Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems* (OWTS Policy). The OWTS Policy establishes tiered implementation requirements based upon levels of potential threat to water quality posed by the onsite wastewater treatment system. The OWTS Policy includes a conditional waiver of waste discharge requirements for onsite wastewater treatment systems that comply with the policy. The OWTS Policy applies to all areas within the State where onsite wastewater treatment systems are used.

While the OWTS Policy provides for regulation of onsite wastewater treatment systems under a conditional waiver, the policy does not limit the Regional Water Board's authority to require reports of waste discharge and to issue individual or general waivers or waste discharge requirements consistent with applicable State and regional water quality control plans, when such actions are needed to protect water quality. The OWTS Policy upholds and does not supersede or modify any TMDLs or discharge prohibitions imposed on onsite wastewater treatment systems. Additionally, to the extent that there is a direct conflict between the applicable minimum standards of the OWTS Policy and local codes or ordinances (such that it is impossible to comply with both the applicable minimum standards and the local ordinances or codes), the more restrictive standard shall govern.

The OWTS Policy, including future revisions, is incorporated into this Basin Plan and shall be implemented according to the policy's provisions.

Discharge Prohibitions

The California Water Code section 13280 *et seq.* sets forth criteria for prohibiting discharges from onsite wastewater treatment systems (aka residential septic tanks).

Oxnard Forebay Septic Systems Prohibition

On August 12, 1999, the Regional Water Board amended the Basin Plan to include a prohibition on septic systems in the Oxnard Forebay (Figure 4-6), pursuant to Section 13280 of the California Water Code. The prohibition applies to both future and existing septic systems in the Oxnard Forebay. As of May 11, 2001, new septic systems in the Oxnard Forebay were prohibited. By

January 1, 2008, discharges from existing septic systems had to cease. This action was taken in view of:

- The conclusion that discharges of wastewaters from residential and commercial facilities to groundwater underlying the Oxnard Forebay do not meet water quality objectives specified in the Basin Plan, and are impairing the present and future beneficial uses of underlying resources of ground water.
- The need to ensure long-term protection of ground water underlying both the Oxnard Forebay and the Oxnard Plain. Alternatives to replace these supplies of local water, or to treat the water before beneficial use, would be costly and would violate the requirement to protect the water for beneficial uses.

The prohibition was not intended to prevent repairs to existing septic systems in the Oxnard Forebay prior to January 1, 2008, provided that the purpose of such repairs was not to increase capacity.

An exemption to this prohibition or a time extension of the effective date of the prohibition may be granted in the event the Regional Water Board determines that such an exemption or extension is in the best interest of water quality, in accordance with Water Code Section 13241 and the correction of water quality problems associated with the wastewater discharges from septic systems in the Oxnard Forebay.

Individual disposal systems that dispose of domestic wastewater that are located on lot sizes equal to or greater than five acres are not subject to this prohibition.

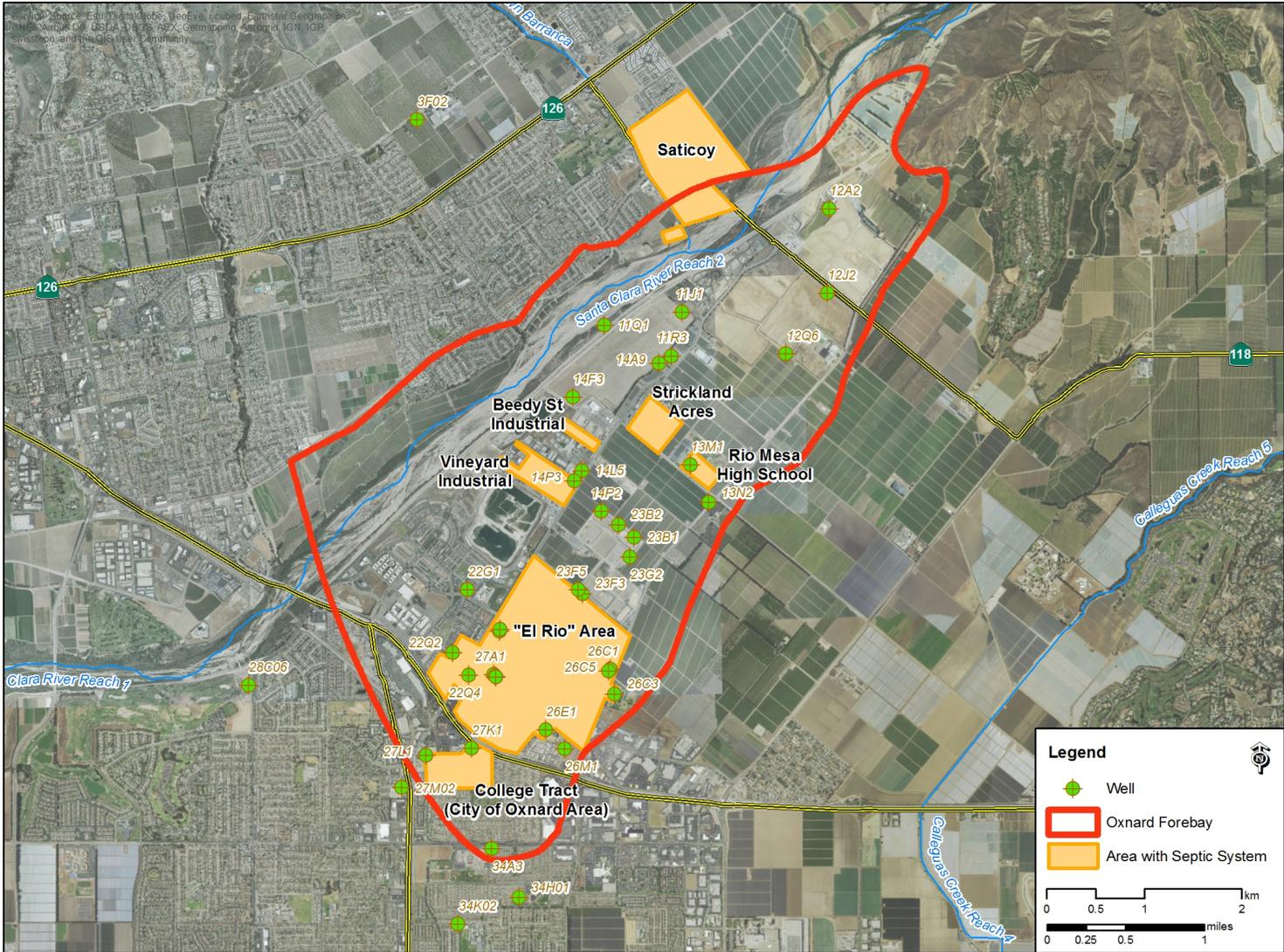


Figure 4-6. Oxnard Forebay Septic Systems Prohibition.

Malibu Civic Center Area Septic Systems Prohibition

On November 5, 2009, the Regional Water Board amended this Basin Plan to prohibit onsite wastewater treatment systems (OWTS) in the Malibu Civic Center area (Figure 4-7), pursuant to section 13280 of the California Water Code, effective December 23, 2010.

- All new onsite wastewater treatment system discharges are prohibited with the exception of the projects identified in Table 4-15, which shall be deemed existing OWTSs.
- All wastewater discharges in commercial areas from existing onsite wastewater treatment systems are prohibited on November 5, 2015, as specified in Figure 4-7.
- All wastewater discharges in residential areas from existing onsite wastewater treatment systems are prohibited on November 5, 2019, as specified in Figure 4-7.

This prohibition does not preclude a publicly owned, community-based, solution that includes specific waste water disposal sites subject to waste discharge requirements to be prescribed by the Regional Water Board.

The prohibition is not intended to prevent repairs, maintenance, and upgrades to existing onsite wastewater treatment systems prior to November 5, 2019, provided that repairs, maintenance, and upgrades do not expand the capacity of the systems or increase flows of wastewater.

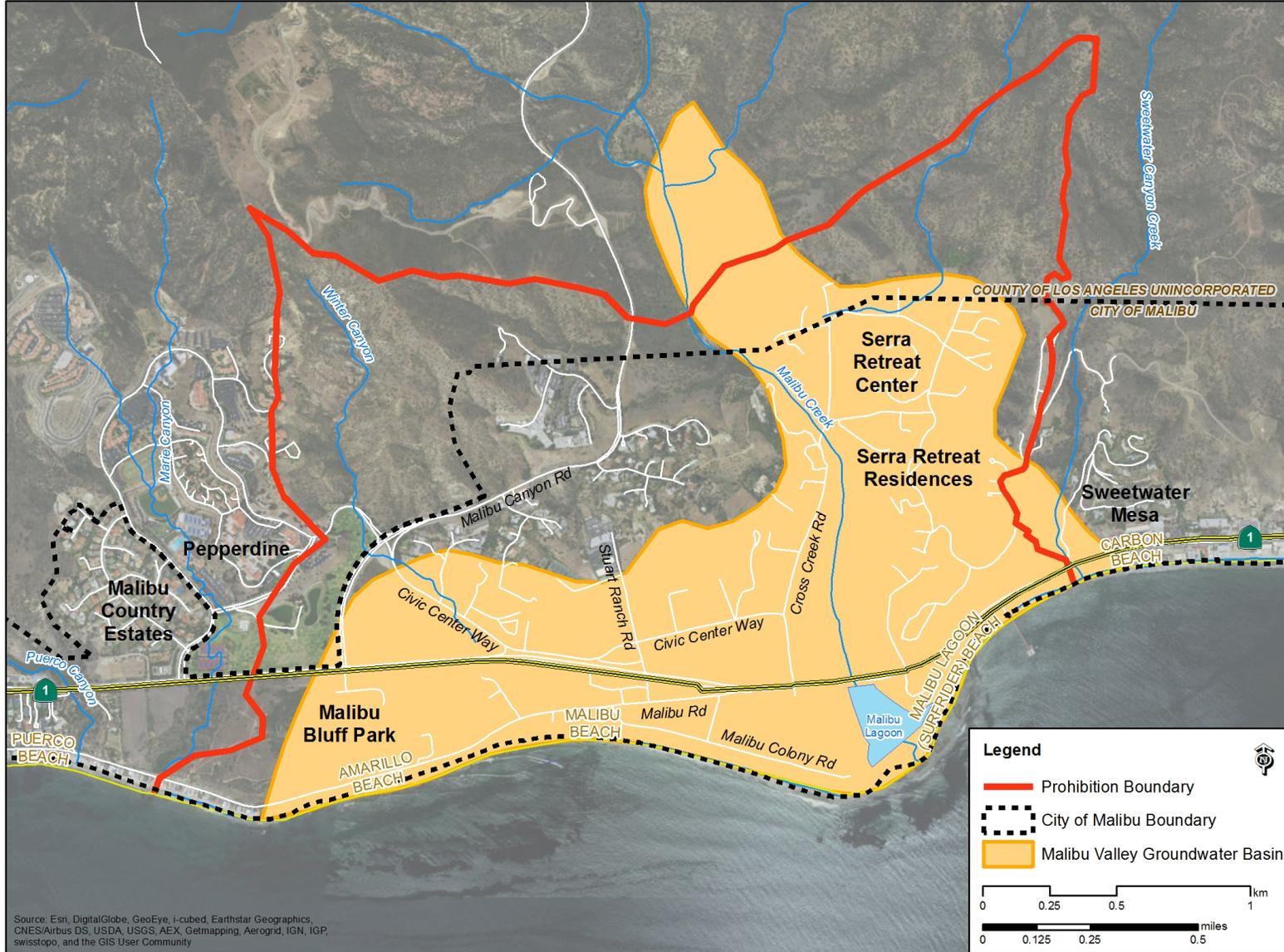


Figure 4-7. Malibu Civic Center Area Septic Systems Prohibition.

Table 4-15. Malibu Civic Center OWTS Prohibition

Address	APN
24001 Malibu Road	4458018005
3469 Cross Creek Road	4458023003
3411 Cross Creek Road	4458023004
3504 Coast View Drive	4458026014
23038 Pacific Coast Highway	4452005001
23060.5 Pacific Coast Highway	4452006902
3516 Sweetwater Mesa Road	4452017006
2930 Sweetwater Mesa Road	4452025021
2860 Sweetwater Mesa Road	4452025023
23460 Malibu Colony Drive	4458004031
23872 Malibu Road	4458007019
23812 Malibu Road	4458007028
24024 Malibu Road	4458009007
24380 Malibu Road	4458011021
22959 Pacific Coast Highway	4452019005
22941 Pacific Coast Highway	4452019009
24132 Malibu Road	4458010009
24266 Malibu Road	4458011010
23618 Malibu Colony Drive	4458005040
23401 Civic Center Way	4458022001
23800 Malibu Crest Drive	4458024038
23465 Civic Center Way	4458022025, 4458022024
23915 Malibu Road	4458018004
23410 Civic Center Way	4458020010
23816 Malibu Crest Drive	4458024023
3556 Sweetwater Mesa Road	4452017008
3314 Serra Road	4452026012
23652 Malibu Colony Drive	4458005030
23664 Malibu Road	4458001003
23720 Malibu Road	4458002900
3535 Coast View Drive	4458027030
23316 Malibu Colony Drive	4452008016
23684 Malibu Colony Drive	4458005022
23872 Malibu Road	4458007019
24052 Malibu Road	4458009002
23405 Malibu Colony Drive	4452010010
23681 Malibu Colony Drive	4458002008
23917 Malibu Road	4458018004
23919 Malibu Road	4458018004
23921 Malibu Road	4458018004
23923 Malibu Road	4458018004

Address	APN
24108 Pacific Coast Highway	4458018002
24120 Pacific Coast Highway	4458018018
24134 Pacific Coast Highway	4458018019
24150 Pacific Coast Highway	APN not available
24174 Pacific Coast Highway	APN not available
3215 Serra Road	4457003023
3217 Serra Road	4457003021 4457003022
3219 Serra Road	4457003019
3221 Serra Road	4457003020
3240 Cross Creek Road	4457002038
4000 Malibu Canyon Road	4458-028-015, 4458-028-019, 4458-030-007

General WDRs for Additional Types of Regulated Discharges

In some cases wastewater may be discharged to a lined pond facility and disposed of through evaporation. The remaining sludge material must be mechanically removed and disposed off-site. This type of wastewater discharge and disposal operation is regulated with WDRs. Additionally, discharges that are identified as presenting a low risk to water quality, generally due to the small volume of discharge and/or the high discharge quality, may be directly discharged to land or to a percolation pond. These discharges are often regulated under general WDRs, but individual WDRs may be used if appropriate.

Table 4-16: Summary of General WDRs for Discharges of Waste to Land issued by the State and Regional Water Boards

General WDR/NPDES Permit	Example of Eligible Discharges
Regional Water Board General Permits	
General Waste Discharge Requirements for Residential Subsurface Sewage Disposal Systems in Areas Where Groundwater is Used for Domestic Purposes (Order No. 91-94)	Applies to waste discharged from private septic systems in residential developments of more than two homes with lot sizes greater than one, but less than five, acres in areas where groundwater is used, or may be used, for domestic supply.
General Waste Discharge Requirements for specified discharges to groundwater in the Santa Clara and Los Angeles River Basins (Order N. 93-10)	Applies to the following discharges where the discharge meets basin plan limits, including drinking water and priority pollutant requirements <ul style="list-style-type: none"> ▪ Hydrostatic testing of tanks, pipes, and storage vessels ▪ Construction dewatering ▪ Dust control application ▪ Water irrigation storage systems ▪ Subterranean seepage dewatering ▪ Well development and test pumping ▪ Aquifer testing ▪ Monitoring well construction
General Waste Discharge Requirements for Small Commercial and Multifamily Residential Subsurface Sewage Disposal Systems (Order No. 01-031)	Applies to waste discharges from small (less than 20,000 gallons per day) commercial and multifamily septic systems.
General Waste Discharge Requirements for Residential Onsite Wastewater Treatment Systems (Order No. R4-2004-0146)	Applies to discharges of wastewater from residential septic systems which are not covered by Order Nos. 91-94 and 01-031.

General WDR/NPDES Permit	Example of Eligible Discharges
Statewide General Permits	
<p>Statewide General Waste Discharge Requirements (WDRs) for Discharges to Land with a Low Threat to Water Quality (Order 2003-0003-DWQ)</p>	<ul style="list-style-type: none"> ▪ Wells/Boring Waste <ul style="list-style-type: none"> • Well Development Discharge • Monitoring Well Purge Water Discharge • Boring Waste Discharge ▪ Clear Water Discharges <ul style="list-style-type: none"> • Water Main/ Water Storage Tank/ Water Hydrant Flushing • Pipelines/Tank Hydrostatic Testing Discharge • Commercial and Public Swimming Pools ▪ Small Dewatering Projects <ul style="list-style-type: none"> • Small /Temporary Dewatering Projects ▪ Miscellaneous <ul style="list-style-type: none"> • Small Inert Solid Waste Disposal Operations • Cooling Discharge
<p>Statewide General Waste Discharge Requirements (WDRs) for Small Domestic Wastewater Treatment Systems (Order – 2014-0153-DWQ)</p>	<p>Applies to Small Domestic Systems, with a monthly average flow rate of 100,000 gallons per day (gpd) or less, that discharge to land.</p> <ul style="list-style-type: none"> ▪ Small Domestic Systems are typically located at individual residences, rural parks, schools, campgrounds, mobile home parks, roadside rest stops, small commercial or residential subdivisions, restaurants, resort hotels/lodges, small correctional facilities, temporary fire-fighting camps, and recreational vehicle (RV) dump locations, including RV parks.

Conditional Waivers from WDRs

The Regional Water Board can conditionally waive WDRs pursuant to California Water Code section 13269 provided that such action is not against the public interest. Discharges eligible for such waivers must comply with all applicable Water Quality Control Plans, and:

- have minimal adverse water quality impact;

- be adequately regulated by another State or local agency; or
- be a category of discharge covered by State or Regional Water Board regulations, guidelines, or Best Management Practices where the Regional Water Board has obtained voluntary compliance.

Waivers of WDRs are conditional and can be terminated at any time by the Regional Water Board.

Water Reclamation and Water Recycling Requirements

The State Water Board adopted the *Policy with Respect to Water Reclamation in California*. This policy, summarized in Chapter 5, directs the Water Boards to encourage reclamation of wastewaters and to promote water reclamation projects that preserve, restore, or enhance in-stream beneficial uses. Projects that reuse treated wastewaters and thereby lessen the demand for higher quality fresh waters are subject to Water Reclamation Requirements (WRRs). Title 22, California Code of Regulations, Division 4, Chapter 3, describes the applicable reclamation criteria (Table 4-17).

The Regional Water Board is responsible for prescribing water reclamation requirements for water that is used or proposed to be used as recycled water according to Water Code section 13523. Projects utilizing recycled water that are required to obtain WRRs include but are not limited to the following:

- Landscape irrigation
- Agriculture irrigation
- Recreational impoundments
- Industrial uses
- Groundwater recharge
- Seawater intrusion barriers

The State Water Board's Division of Drinking Water (DDW) is charged with protection of public health and drinking water supplies and with the development of uniform water recycling criteria appropriate to particular uses of water. The Regional Water Boards appropriately rely on the expertise of the DDW for the establishment of permit conditions needed to protect human health, but may also impose additional requirements for the protection of water quality that support other beneficial uses.

WRRs are not needed for process waters that are completely recycled during plant operations.

In accordance with the Statewide Recycled Water Policy, summarized in Chapter 5, the Regional Water Board supports and encourages the increased use of recycled water from municipal wastewater sources that meet the definition in Water Code section 13050(n), in a manner that implements State and federal water quality laws. The increased use of recycled water supports achieving sustainable local water supplies. Recycled water used in compliance with the Recycled Water Policy, Title 22 and all applicable state and federal water quality laws is safe for approved uses and is a safe alternative to potable water.

In accordance with Water Code section 13552.5, the State Water Board adopted General Waste Discharge Requirements for Landscape Irrigation Uses of Municipal Recycled Water (Order No. 2009-0006-DWQ). For eligible discharges, the General Permit allows the use of recycled water for landscape irrigation.

Landscape irrigation use includes the following:

- Parks, greenbelts, and playgrounds
- School yards
- Athletic fields
- Golf courses
- Cemeteries
- Residential landscaping, common areas¹⁶
- Commercial landscaping, except eating areas
- Industrial landscaping, except eating areas
- Freeway, highway, and street landscaping

To obtain coverage under this General Permit, either a Producer or a Distributor of recycled water shall submit a complete Notice of Intent (NOI) form (Attachment B to Order No. 2009-0006-DWQ), an Operations & Maintenance Plan, and appropriate application fee to the State Water Board.

Additionally, the Regional Water Board adopted Non-Irrigation General Water Reuse (Order No. R4-2009-0049) General Waste Discharge and Water Recycling Requirements for Title 22 Recycled Water for Non-Irrigation Uses Over the Groundwater Basins Underlying the Coastal Watersheds of Los Angeles and Ventura Counties. The purpose of these General WDRs is to

¹⁶ Individually owned residences are not eligible for coverage under the General Permit. The Regional Water Boards address individually owned residences on a case-by-case basis.

serve as a region-wide general permit for non-irrigation uses of recycled water. This permit addresses the following uses of recycled water:

- Industrial boiler feed
- Nonstructural fire fighting
- Backfill consolidation around nonpotable piping
- Soil compaction; Mixing concrete
- Dust control on roads and streets
- Cleaning roads, and outdoor work areas
- Industrial process water that will not come into contact with workers
- Flushing sanitary sewers
- Industrial and commercial cooling or air conditioning not involving cooling tower, evaporative condenser, or spraying that creates a mist
- Additional uses of Title 22 disinfected secondary-23 reclaimed water¹⁷ as approved by DDW

To obtain coverage under this General Permit, either a Producer or a Distributor of recycled water shall submit a complete Notice of Intent (NOI) form (Attachment D to Order No. R4-2009-0049) and the appropriate application fee to the State Water Board.

¹⁷ Adequately disinfected, oxidized wastewater in which the median number of coliform organisms in the effluent does not exceed 23 per 100 milliliters, as determined from the bacteriological results of the last seven days for which analyses have been completed, and the number of coliform organisms does not exceed 240 per 100 milliliters in more than one sample in a 30-day period.

Table 4-17: Reclaimed Water: Uses and California Title 22 Health Requirements

(Division 4, Chapter 3, Article 3)

Permitted use of reclaimed water	Summary of Title 22 (Section 60303 et seq.) Health Requirements
§60304. Use of recycled water for irrigation.	<p>(a) Recycled water used for the surface irrigation of the following shall be a disinfected tertiary recycled water, except that for filtration pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15minutes:</p> <ol style="list-style-type: none"> (1) Food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop, (2) Parks and playgrounds, (3) School yards, (4) Residential landscaping, (5) Unrestricted access golf courses, and (6) Any other irrigation use not specified in this section and not prohibited by other sections of the California Code of Regulations.
§60304. Use of recycled water for irrigation.	<p>(b) Recycled water used for the surface irrigation of food crops where the edible portion is produced above ground and not contacted by the recycled water shall be at least disinfected secondary-2.2 recycled water.</p>
§60304. Use of recycled water for irrigation.	<p>(c) Recycled water used for the surface irrigation of the following shall be at least disinfected secondary-23 recycled water:</p> <ol style="list-style-type: none"> (1) Cemeteries, (2) Freeway landscaping, (3) Restricted access golf courses, (4) Ornamental nursery stock and sod farms where access by the general public is not restricted, (5) Pasture for animals producing milk for human consumption, and (6) Any nonedible vegetation where access is controlled so that the irrigated area cannot be used as if it were part of a park, playground or school yard
§60304. Use of recycled water for irrigation.	<p>(d) Recycled wastewater used for the surface irrigation of the following shall be at least undisinfected secondary recycled water:</p> <ol style="list-style-type: none"> (1) Orchards where the recycled water does not come into contact with the edible portion of the crop, (2) Vineyards where the recycled water does not come into contact with the edible portion of the crop, (3) Non food-bearing trees (Christmas tree farms are included in this category provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting or allowing access by the general public), (4) Fodder and fiber crops and pasture for animals not producing milk for human consumption, (5) Seed crops not eaten by humans, (6) Food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and (7) Ornamental nursery stock and sod farms provided no irrigation with

Permitted use of reclaimed water	Summary of Title 22 (Section 60303 et seq.) Health Requirements
	recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public.
§60304. Use of recycled water for irrigation.	(e) No recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops eaten raw by humans unless the recycled water complies with subsection (a).
§60305. Use of recycled water for impoundments	(a) Except as provided in subsection (b), recycled water used as a source of water supply for nonrestricted recreational impoundments shall be disinfected tertiary recycled water that has been subjected to conventional treatment.
§60305. Use of recycled water for impoundments	<p>(b) Disinfected tertiary recycled water that has not received conventional treatment may be used for nonrestricted recreational impoundments provided the recycled water is monitored for the presence of pathogenic organisms in accordance with the following:</p> <p>(1) During the first 12 months of operation and use the recycled water shall be sampled and analyzed monthly for <i>Giardia</i>, enteric viruses, and <i>Cryptosporidium</i>. Following the first 12 months of use, the recycled water shall be sampled and analyzed quarterly for <i>Giardia</i>, enteric viruses, and <i>Cryptosporidium</i>. The ongoing monitoring may be discontinued after the first two years of operation with the approval of the department. This monitoring shall be in addition to the monitoring set forth in section 60321.</p> <p>(2) The samples shall be taken at a point following disinfection and prior to the point where the recycled water enters the use impoundment. The samples shall be analyzed by an approved laboratory and the results submitted quarterly to the regulatory agency.</p>
§60305. Use of recycled water for impoundments	(c) The total coliform bacteria concentrations in recycled water used for nonrestricted recreational impoundments, measured at a point between the disinfection process and the point of entry to the use impoundment, shall comply with the criteria specified in section 60301.230 (b) for disinfected tertiary recycled water.
§60305. Use of recycled water for impoundments	(d) Recycled water used as a source of supply for restricted recreational impoundments and for any publicly accessible impoundments at fish hatcheries shall be at least disinfected secondary-2.2 recycled water.
§60305. Use of recycled water for impoundments	(e) Recycled water used as a source of supply for landscape impoundments that do not utilize decorative fountains shall be at least disinfected secondary-23 recycled water.
§60306. Use of recycled water for cooling	(a) Recycled water used for industrial or commercial cooling or air conditioning that involves the use of a cooling tower, evaporative condenser, spraying or any mechanism that creates a mist shall be a disinfected tertiary recycled water.
§60306. Use of recycled water for cooling	(b) Use of recycled water for industrial or commercial cooling or air conditioning that does not involve the use of a cooling tower, evaporative condenser, spraying, or any mechanism that creates a mist shall be at least disinfected secondary-23 recycled water.
§60306. Use of recycled water for cooling	<p>(c) Whenever a cooling system, using recycled water in conjunction with an air conditioning facility, utilizes a cooling tower or otherwise creates a mist that could come into contact with employees or members of the public, the cooling system shall comply with the following:</p> <p>(1) A drift eliminator shall be used whenever the cooling system is in operation.</p>

Permitted use of reclaimed water	Summary of Title 22 (Section 60303 et seq.) Health Requirements
	(2) A chlorine, or other, biocide shall be used to treat the cooling system recirculating water to minimize the growth of <i>Legionella</i> and other microorganisms.
§60307 Use of recycled water for other purposes	<p>(a) Recycled water used for the following shall be disinfected tertiary recycled water, except that for filtration being provided pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:</p> <ol style="list-style-type: none"> (1) Flushing toilets and urinals, (2) Priming drain traps, (3) Industrial process water that may come into contact with workers, (4) Structural fire fighting, (5) Decorative fountains, (6) Commercial laundries, (7) Consolidation of backfill around potable water pipelines, (8) Artificial snow making for commercial outdoor use, and (9) Commercial car washes, including hand washes if the recycled water is not heated, where the general public is excluded from the washing process.
§60307 Use of recycled water for other purposes	<p>(b) Recycled water used for the following uses shall be at least disinfected secondary-23 recycled water:</p> <ol style="list-style-type: none"> (1) Industrial boiler feed, (2) Nonstructural fire fighting, (3) Backfill consolidation around nonpotable piping, (4) Soil compaction, (5) Mixing concrete, (6) Dust control on roads and streets, (7) Cleaning roads, sidewalks and outdoor work areas and (8) Industrial process water that will not come into contact with workers.
§60307 Use of recycled water for other purposes	(c) Recycled water used for flushing sanitary sewers shall be at least undisinfected secondary recycled water.

Resource Extraction

Mines

Impacts to water quality from active resource extraction can be significant given that surface mining operations alter the natural landscape in and around the mines and can potentially result in accelerated erosion and sedimentation. Aggregate mines are the dominant type of active mining operation in the Region; they are concentrated along the San Gabriel and Santa Clara Rivers (Figure 4-8). Some minor stone and clay mines are also present. Mining activities are exclusively open pit or quarrying operations. The majority are dry operations that drain internally so they are a limited threat to surface water quality. A small number of wet aggregate mining operations, which occur below the water table, can directly pollute groundwater and otherwise degrade water quality by silting or the release of oil, grease, and other pollutants to groundwater. Discharges of wash waters from mining operations can contain leached dissolved constituents or clay-flocculating additives that can impact water quality.

The Regional Water Board issues NPDES permits and/or WDRs for mining operations on a case-by-case basis. Under the California Water Code (§13263.1) before issuance or revision of waste discharge requirements, the Regional Water Board must "determine that the proposed mining waste is consistent with a waste management strategy that prevents the pollution or contamination of the waters of the State, particularly after closure of any waste management unit for mining waste." Active operations are regulated pursuant to the Water Code, the California Surface Mining and Reclamation Act and/or the federal Clean Water Act.

Closed aggregate pits in the Region have commonly been re-appropriated as waste disposal sites. Active waste disposal sites in closed aggregate pits are managed through the Land Disposal Program and regulated through WDRs pursuant to Title 27 of the California Code of Regulations. Historic waste disposal sites in closed aggregate pits that pre-date modern land disposal regulations are managed as clean-up cases through the Land Disposal Program or Site Cleanup Program when a threat to groundwater quality is indicated.

Oil and Gas Extraction

Southern California has a large number of oil and gas fields (Figure 4.9). Similar to mines, impacts to water quality from active resource extraction at oil and gas production operations can be significant because they too alter the natural landscape and can potentially result in accelerated erosion and sedimentation. In addition, oil and gas production operations pose a significant threat

to surface water quality from seeping or over-flowing reserve pits containing drilling fluids and production pits containing hydrocarbons that can be discharged to receiving waters, either directly or via stormwater runoff. Waste discharges associated with oil and gas production include the disposal of produced wastewater and drill cuttings. Wastewater associated with oil, gas, or geothermal resources extraction frequently contains high levels of sodium, calcium, chloride, sulfate, carbonate, boron, and iodine, as well as trace metals and hydrocarbons.

Oil production facilities in the Region are required to be covered under the State Water Board's general NPDES industrial stormwater permits or individual NPDES permits for the discharge of stormwater runoff and/or other industrial discharges. The California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) is the principal state agency charged with regulating the drilling, operation, maintenance, and abandonment of oil and gas wells on land not held by the federal government. A 1998 Memorandum of Agreement between the State Water Board and DOGGR outlines the procedures for reporting proposed oil, gas, and geothermal field discharges and for prescribing permit requirements. The procedures ensure that construction or operation of oil, gas, and geothermal injection wells and surface disposal of waste water from oil and gas and geothermal production does not cause degradation of waters of the State of California. Among other procedures, the Regional Water Board may review and comment on draft injection well permits, including monitoring requirements, developed by DOGGR. The Regional Water Board shall determine whether or not the draft requirements provide protection to ground and surface waters having present or anticipated beneficial uses. If the draft permit requirements are not adequate, the Regional Water Board shall, within 30 days, propose conditions or revisions that would satisfy the Regional Water Board's concerns. The MOA states that DOGGR will not issue the final permit until Regional Water Board concerns are satisfied.

The Regional Water Board regulates the disposal of hydrocarbon impacted wastes at landfills within the Region and remediation of hydrocarbon impacted soils at land treatment units at oil and gas sites, while the US Bureau of Land Management regulates oil production on federal lands, including National Forest lands. Offshore production within three miles of the coast is under State jurisdiction, while that beyond three miles is under federal jurisdiction. DOGGR conducts environmental inspections of active and inactive offshore and onshore wells, including injection wells for re-injection of produced water associated with oil wells. The USEPA also issues permits for injection wells. Federal underground injection control regulations are found at Title 40 of the Code of Federal Regulations.

More recently, as a result of increasing concern over the potential harmful effects of oil and gas well stimulation methods, such as hydraulic fracturing (fracking) and acid matrix stimulation, the California Legislature passed Senate Bill No. 4 (Chapter 313, Statutes of 2013) (“SB4”) in 2013. SB4 requires groundwater sampling related to hydraulic fracturing and acid matrix stimulation, a permitting process for well stimulation treatments, and data transparency, public notification, and public participation related to oil and gas field operation. SB4 also directed DOGGR to enter into a formal agreement with the State Water Board and any regional water quality control board where well stimulation treatments may occur. SB4 also required the State Water Board to develop model criteria for groundwater monitoring, to be implemented either on a well-by-well basis or on a regional scale. The criteria are intended to provide direction on how to conduct appropriate monitoring on individual oil and gas wells subject to a well stimulation treatment in order to protect all waters designated for beneficial uses and how to prioritize the monitoring of groundwater that is or has the potential to be a source of drinking water.

Following passage of SB4, DOGGR, the State Water Board, and the regional water quality control boards entered into a Memorandum of Agreement in 2014 delineating the agencies’ respective authority, responsibilities, and notification and reporting requirements associated with well stimulation treatments and well stimulation treatment-related activities, including water quality monitoring. DOGGR also issued new regulations applicable to well stimulation treatment which took effect on July 1, 2015.

Further, in July 2015, the State Water Board adopted Model Criteria for Groundwater Monitoring in Areas of Oil and Gas Well Stimulation. The model criteria has three main components: 1) area-specific required groundwater monitoring near stimulation wells by operators, 2) requirements for designated contractor sampling and testing, and 3) regional scale groundwater monitoring to be implemented by the State Water Board.

Concurrent with these actions, the Regional Water Board established an Oil and Gas Program in 2014 to address concerns regarding the potential impact of oil and gas operations on water quality in the Los Angeles Region. The program has three primary objectives: (1) to implement the regulations promulgated in response to SB4 for groundwater monitoring related to hydraulic fracturing and oil and gas well stimulation operations, (2) to evaluate and investigate the sites under the Underground Injection Control (UIC) program at oil and gas fields, and (3) to evaluate and investigate operation sumps containing production water at oil and gas fields.

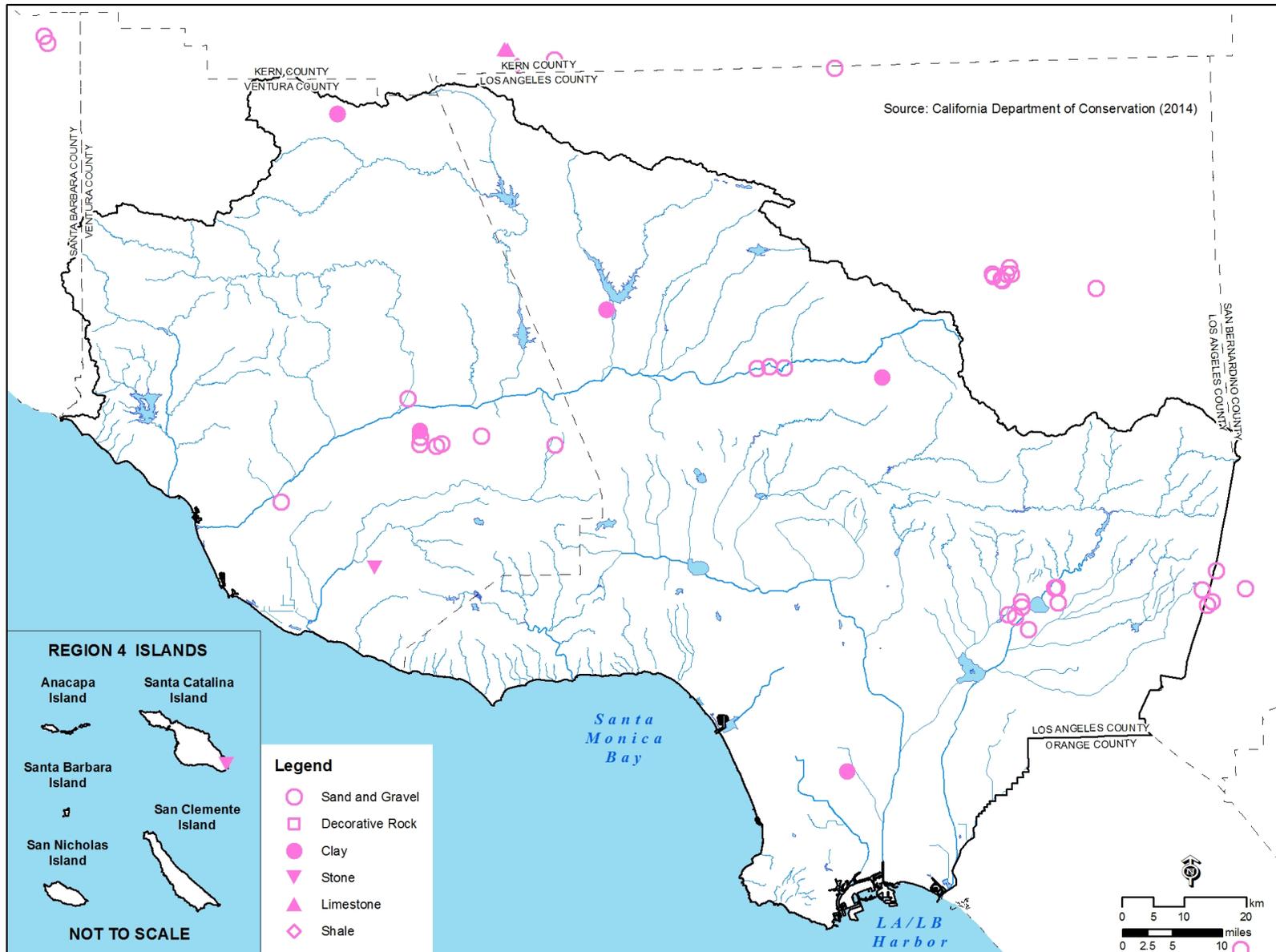


Figure 4-8. Regional Active Mines and Sand & Gravel Operations.

Protection of Ground Water

Salt and Nutrient Management Plans

Recognizing that increased recycled water use could result in increased salt and nutrient loading to local groundwater basins, the *Statewide Recycled Water Policy* requires every groundwater basin/sub-basin in the State to have a salt and nutrient management plan (SNMP). The intent of this requirement is to make certain that salts and nutrients from all sources are managed on a basin-wide or watershed-wide basis in a manner that ensures the attainment of water quality objectives and protection of beneficial uses.

Per the *Recycled Water Policy*, SNMPs are tailored to address water quality concerns in each basin and may address constituents other than salts and nutrients that adversely impact basin/sub-basin water quality. The policy also dictates that each salt and nutrient management plan include:

- Water recycling and stormwater recharge/use goals and objectives;
- Salt and nutrient source identification, basin/sub-basin assimilative capacity and loading estimates, together with fate and transport of salts and nutrients;
- Implementation measures to manage salt and nutrient loading in the basin on a sustainable basis;
- An antidegradation analysis demonstrating that the projects included within the plan will collectively satisfy the requirements of the Antidegradation Policy (Resolution No. 68-16);
- A basin/sub-basin wide monitoring plan that includes an appropriate network of monitoring locations to determine whether concentrations of salt, nutrients, and other constituents of concern are consistent with applicable water quality objectives; and
- A provision for annual monitoring of Constituents of Emerging Concern.

A new chapter in the Basin Plan, Chapter 8 “Groundwater Quality Management – Sustainability and Basin-specific Protection of Groundwater” was created to accommodate implementation measures contained within the SNMPs. This chapter will also contain any future implementation

provisions pertaining to groundwater quality management that result from State or Regional Water Board policies.

Seawater Intrusion

Groundwater supplied most of the water in the Region until the 1940s. By World War II, however, increasing demands for groundwater escalated to such an extent that groundwater pumping far exceeded freshwater recharge (i.e., replenishment) in many aquifers (Fossette, 1986). As a result, degradation of groundwater occurred as seawater seeped inland to replace groundwater in freshwater aquifers that had been overpumped. Referred to as seawater intrusion, this condition is accelerated when coastal aquifers are overdrafted (i.e., when groundwater pumping exceeds recharge).

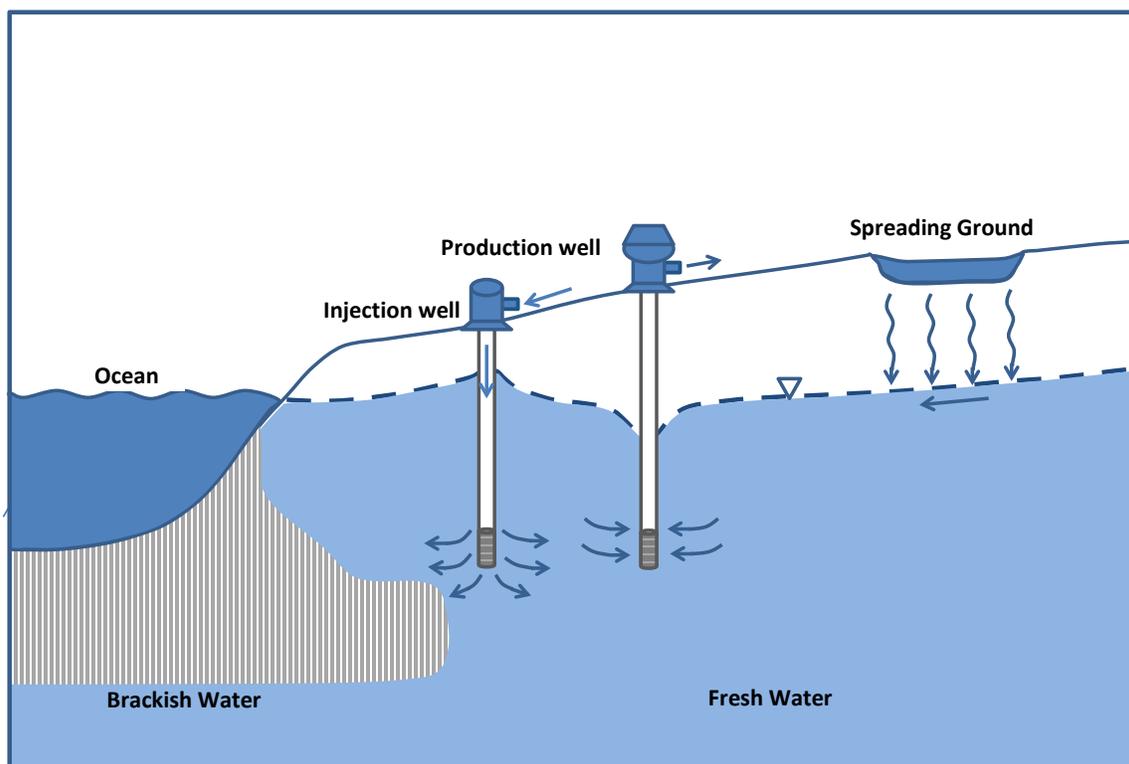


Figure 4-10. Artificial Recharge through Spreading Ground and Injection Wells. Use of artificial recharge in this coastal aquifer helps to (i) maintain groundwater levels through use of spreading grounds and (ii) prevent saltwater intrusion using injection wells. Arrows in figure indicate direction of groundwater flow. (Hatched lines indicate the water table)

Seawater intrusion can be controlled through pumping restrictions and artificial recharge of aquifers. Artificial recharge is especially important in urban areas where paved surfaces,

buildings and flood control measures have eliminated natural recharge areas and drastically reduced recharge rates. Figure 4-10 illustrates two forms of artificial recharge used to combat seawater intrusion: spreading basins and injection wells. Spreading basins are constructed over permeable zones where water can seep into the subsurface. Spreading basins in the Los Angeles Region typically were created by modifying existing terrain with levees or low dams within, or adjacent to, stream channels. Such devices divert excess supplies of surface waters into spreading basins, thus recharging aquifers and creating a seaward gradient that will help prevent seawater intrusion. Injection wells along coastal areas create a freshwater barrier that can halt seawater intrusion, recharge aquifers, and allow groundwater pumping from elevations below sea level. The water used in these injection wells consists of highly treated recycled water blended with drinking water.

On the Los Angeles Coastal Plain, three rows of injection wells (the Alamitos Barrier along the Central Basin, and the Dominguez Gap and West Coast Barriers along the West Coast Basin) protect aquifers from seawater intrusion. Figure 4-11 shows the location of these seawater barriers. In the last ten years, the water levels in the depleted aquifers have stabilized and some injected water is stored for later withdrawal. The Oxnard Plain portion of the Ventura Central Groundwater Basin is another site of seawater intrusion following overpumping for agricultural and domestic uses in the 1950s. The water used to supply these artificial recharge projects is supplemented by in-lieu recharge programs, wherein excess supplies of imported or recycled water (when available) are discounted and sold to groundwater pumpers. In exchange for this discounted water, groundwater pumpers agree that they will not exercise pumping rights on an equivalent amount of groundwater.

While inland groundwater basins are not intruded by seawater, many have also been overdrafted in the past. Spreading grounds along the San Gabriel and Rio Hondo Rivers in the northern part of the Central Basin provide further recharge of the coastal aquifers under the Los Angeles Coastal Plain. Basins beneath the Santa Clara River and Calleguas Creek also have increasing salinity due to overpumping, competing demands for local water, salinity in the imported water that augments the local supply, highly treated wastewater discharged to the surface or ground, and changes in stormwater recharge with channelization and increases in hardscape. In addition to the spreading basins used to collect runoff and spread imported water like those used in the Santa Clara River, a salt management brine line, desalting treatment and wastewater management are used to decrease the salinity in the Calleguas Creek groundwater basins.

Although in-lieu recharge programs in all areas have lessened overdraft conditions, groundwater pumping continues to exceed freshwater recharge.

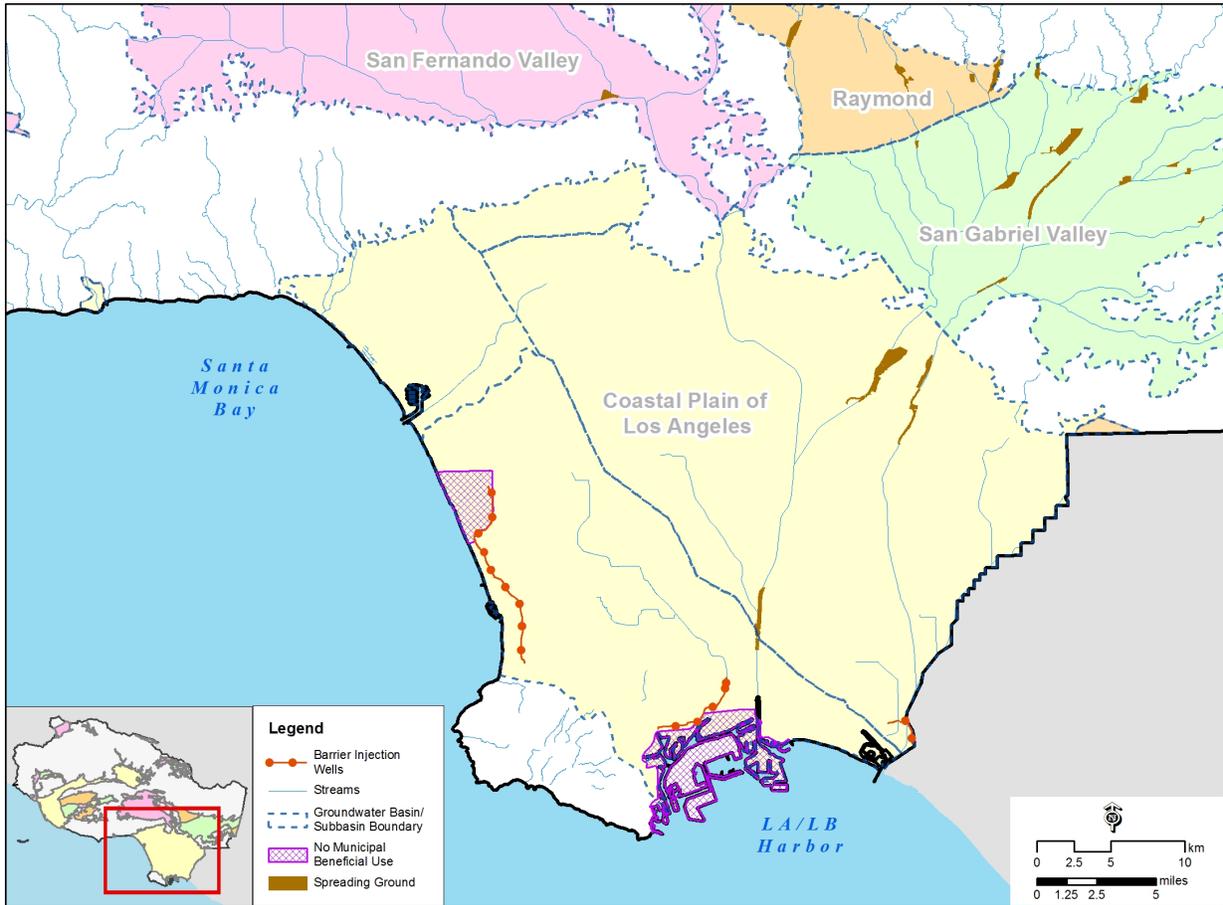


Figure 4-11. Locations of Injection Wells.

Another mechanism to maintain groundwater resources is the enforcement of adjudicated groundwater rights. The Raymond Basin, which is a part of the Main San Gabriel Basin, is protected after adjudication in 1944 by the Raymond Basin Management Board. The remainder of the Main San Gabriel Basin was adjudicated after 1972 and pumping rights are protected by a nine-member board elected by the water purveyors and the San Gabriel water master. The West Coast Basin and Central Basin were adjudicated in 1961 and 1965, respectively. The Department of Water Resources oversees groundwater use in these basins to prevent overpumping. In 1979, the Upper Los Angeles River Area Watermaster was appointed by the Superior Court to protect inland basins from overdraft. For the Santa Clara and Calleguas watersheds, United Water Conservation District and Fox Canyon Groundwater Management Agency were formed after 1950 and collaborated with the US Geological Survey to model and monitor groundwater. Despite these efforts, pumping of the Oxnard Forebay Basin was constrained in 1991 and again in 2014 due to

falling water tables. The Santa Paula Basin, which is replenished by the Santa Clara River, was adjudicated in 1996 to allocate the extracted water for specific farm and drinking water uses.

Recycled water has an increasing role in the maintenance of groundwater supply. While subsurface aquifers have always stored and treated percolating surface water, the direct injection of highly treated recycled water blended with drinking water began in 2005 at the Alamitos, Dominguez Gap and West Coast Basin seawater barriers. Since that time, recycled water recharge of groundwater basins has risen, with 100% recycled water injection made possible by Advanced Oxidation Treatment of tertiary treated wastewater approved by the California Department of Public Health in 2014. Recycled water replenishes groundwater in the San Gabriel, Central and West Basins, and Oxnard Basins through spreading grounds and injection with projects under development in the Los Angeles and Santa Clara River Basins.

The Regional Water Board supports artificial recharge projects through regulatory and financial assistance programs. Water Reclamation Requirements (WRRs) accompany WDRs to regulate groundwater recharge with treated wastewaters.

Remediation of Pollution

Pollutants in groundwater jeopardize an important source of water for municipal, agricultural, industrial process, and industrial supply uses in the Los Angeles Region. Poor groundwater quality furthers a reliance on imported water supplies though these supplies are becoming less reliable. The Regional Water Board allocates substantial resources to the investigation of polluted groundwater and enforcement of corrective actions needed to restore water quality and preserve local supplies to support these beneficial uses.

The Regional Water Board sets cleanup goals based on the *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (Antidegradation Policy) as set forth in State Water Board Resolution No. 68-16 and *Policies and Procedures For Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304* as set forth in State Water Board Resolution No. 92-49. Under the Antidegradation Policy, whenever the existing quality of water is better than that needed to protect present and potential beneficial uses, such existing quality must be maintained unless an analysis demonstrates that it is to the maximum benefit of the people of the State to allow degradation (see Chapter 5, Plans and Policies). Where some level of degradation is justified, water quality may not be degraded below that necessary to protect beneficial uses.

Therefore, consistent with the intent of the Antidegradation Policy to maintain high quality waters, the Regional Water Board prescribes cleanup goals that are based upon background concentrations, where the existing water quality is better than that prescribed by the applicable water quality objectives. For those cases where dischargers have demonstrated that cleanup goals based on background concentrations cannot be attained due to technological and economic limitations, State Water Board Resolution No. 92-49 sets forth policy for cleanup and abatement based on the protection of beneficial uses. Under this policy, the Regional Water Board can - on a case-by-case basis - set cleanup levels as close to background as technologically and economically feasible. Such levels must, at a minimum, protect all beneficial uses of the waters. Furthermore, cleanup levels must be established in a manner consistent with California Code of Regulations, Title 23, Chapter 15, Article 5, cannot result in water quality less than that prescribed in the Basin Plans and policies adopted by the State and Regional Water Boards, and must be consistent with maximum benefit to the people of the State.

Site Cleanup Program

The Site Cleanup Program (SCP) investigates unauthorized releases of pollutants to the environment, including soil, groundwater, surface water, and sediments. Reports of unauthorized discharges from recent or historical surface spills, subsurface releases due to pipelines, sumps, underground storage tanks, etc., and other unauthorized discharges that pollute or threaten to pollute surface water or groundwater are investigated through the Regional Water Board's SCP. This program is not restricted to particular pollutants or environments; rather, the program covers all types of pollutants (such as solvents, petroleum fuels, heavy metals) and all environments (such as soil and waters of the State). Upon confirming that an unauthorized discharge is polluting or threatens to pollute regional waterbodies, the Regional Water Board oversees site investigation, monitoring, and cleanup actions. Division 7, Section 13267 of the California Water Code allows the Regional Water Board to issue investigative orders requiring technical reports from suspected dischargers. Water Code Section 13304 authorizes the Regional Water Board to issue cleanup and abatement orders requiring a discharger to cleanup and abate waste.

Policies and procedures to oversee and regulate site investigation and cleanup and abatement include but are not limited to State Water Board Resolution No. 92-49, *Policies and Procedures For Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*; Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*; and Resolution No. 88-63, *Sources of Drinking Water*. The *Interim Site Assessment and Cleanup Guidebook, May 1996*, developed by the Regional Water Board, describes the steps involved in the site assessment and cleanup process.

Pollutants investigated by the SCP are mainly petroleum fuel products and solvents, which can dissolve in water, adsorb to soils and vaporize, in addition to existing in liquid form as pure compounds ("free product" or light non-aqueous phase liquids [LNAPLs] or dense non-aqueous phase liquids [DNAPLs]). Site investigations to delineate the extent of pollution caused by such substances are very complex. Projects range from small leaks of wastes stored in metal drums to large spills at tank farms and refineries, where tens of millions of gallons of free products are floating on the surface of groundwater in important aquifers. Over 2,000 cases of pollution have been investigated since 1986. Approximately 1,000 of these cases have been remediated and closed as of 2011. Many different methods of remediation have successfully been employed to clean up the pollution, including soil vapor extraction and soil excavation.

Dischargers may utilize screening levels during site investigation and cleanup based on but not limited to California Environmental Protection Agency California Human Health Screening Levels (CHHSLs) and USEPA's Regional Screening Levels (RSLs). Risk assessments or contaminant fate and transport modeling may be conducted in setting up the site-specific cleanup goals. The Regional Water Board determines the site cleanup goals that are protective of the public health and water resources, following USEPA and Cal/EPA guidance. The Regional Water Board also coordinates with USEPA and the California Department of Toxic Substances Control (DTSC) in overseeing corrective actions at some of the current and former permitted facilities under the Resource Conservation and Recovery Act (RCRA). These corrective actions include assessment and cleanup of pollutant sources, and soil and groundwater contamination originating from the RCRA facilities.

Water Code section 13304 also authorizes the Regional Water Board to recover costs for oversight of site investigations and cleanups at sites where a discharge of waste has occurred and that discharge creates, or threatens to create, a condition of pollution or nuisance. Reasonable expenses are billed to the identified or suspected responsible parties, and collected by the Fee Coordinator at the State Water Board in the Division of Clean Water Programs (CWP).

Department of Defense Sites

The Site Cleanup Program also oversees the environmental investigation and cleanup actions at US Department of Defense (DoD) sites. The State and Regional Water Board's DoD program provides regulatory oversight for DoD sites listed in the Department of Defense and State Memorandum of Agreement (DSMOA)/Cooperative Agreement, pursuant to the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). Through an interagency agreement with the Department of Toxic Substances Control (DTSC), the State Water Board administers the DSMOA program and both the Regional Water Boards and DTSC conduct oversight of DoD sites according to the agreement.

DoD sites include active and inactive military bases and formerly utilized defense (FUDs) sites. DoD sites in the Region are listed in Table 4-18.

Table 4-18: DoD Sites in the Los Angeles Region

DoD Facility	Service
Long Beach Naval Complex	Navy
Naval Facilities Engineering Services Center, Port Hueneme	Navy
San Clemente Island Naval Auxiliary Landing Field	Navy
San Pedro Defense Fuel Supply Point (DFSP)	Navy
Los Angeles Air Force Base	Air Force
Fuel Terminal DFSP Norwalk	Defense Energy Support Center (DESC)
Fuel Terminal DFSP San Pedro	DESC
Camarillo Airport	FUDs

Site investigation and cleanup procedures are consistent with State laws and regulations as well as applicable provisions of CERCLA. The DoD and local governments strive to redevelop sites into economically beneficial projects for local communities. Some DoD installation sites have been transferred to a local entity and redeveloped for commercial and/or industrial land use. The Regional Water Board continues to coordinate with local communities, DTSC, and other State agencies, in order to complete cleanup and closure of DoD sites.

Well Investigation Program

The San Gabriel Valley and San Fernando Valley Groundwater Basins are synclinal basins at the base of the San Gabriel Mountains. The two basins, separated by the San Raphael Hills, are largely filled with alluvial sediments eroded from the surrounding mountains and hills. Large volumes of groundwater flow through these alluvial sediments, and both basins are important sources of water for millions of people. In the early 1980s significant contamination was detected in both basins. The primary contaminants of concern are nitrates, volatile organic compounds (VOCs) and hexavalent chromium (see Figures 4-12 and 4-13). Due to the extensive contamination the US EPA declared these areas Superfund sites.

The Regional Water Board established the Well Investigation Program in order to locate and abate sources of pollutants affecting the public water supply wells in the San Gabriel Valley and San Fernando Valley Groundwater Basins. This program was implemented under the authority of the California Water Code section 13304. The Well Investigation Program:

- identified and addressed sources of pollutants in public water supply wells;
- identified responsible parties;
- oversaw remediation of contaminated soils and groundwater;
- coordinated work with US EPA on the San Gabriel Valley and San Fernando Valley Superfund sites.

The US EPA acted as lead agency and is responsible for long-term planning, case development, determination of responsible parties, and settlement negotiations. The Regional Water Board, in cooperation with US EPA, oversaw investigation and remediation.

In addition to meeting a large demand for potable water, the San Gabriel and San Fernando Valley Groundwater Basins store large volumes of groundwater that can be pumped during droughts and recharged during years of surplus surface water supplies. However, the discovery of significant pollution in these basins has significantly reduced groundwater production as well as the potential for conjunctive use, thereby increasing dependence on imported supplies of water.

In order to minimize the spread of pollution caused by groundwater pumping and recharge activities, the Regional Water Board oversees a comprehensive groundwater quantity and quality management program in the San Gabriel Valley. This management program, implemented by the Main San Gabriel Basin Watermaster and about 45 private and municipal water purveyors, has the following objectives.

- Prevent public exposure to contamination
- Maintain adequate water supply
- Protect natural resources
- Control the migration of pollutants
- Remove polluted ground water

Oversight of this management program is authorized by Regional Water Board Resolution No. 91-6, entitled *Amendment to the Water Quality Control Plan for the Los Angeles River Basin and Implementation Plan Concerning the Extraction of Groundwater Within the San Gabriel Valley Basin*, which requires that extraction of groundwater be conducted in a manner that will meet all water supply needs and improve and protect water quality in the basin.

In the San Fernando Valley Groundwater Basin, the Watermaster for the Upper Los Angeles River Area (i.e., the San Fernando Valley Groundwater Basin) cooperates with the Regional Water Board to achieve similar groundwater management objectives (Upper Los Angeles River Area Watermaster)¹⁸.

The Well Investigation Program (WIP) is no longer in use. Existing WIP cases that are still being assessed or remediated are now overseen under the Site Cleanup Program.

¹⁸ Policies and Procedures, Watermaster Service, Upper Los Angeles River Area. July 1, 1993. Los Angeles, CA

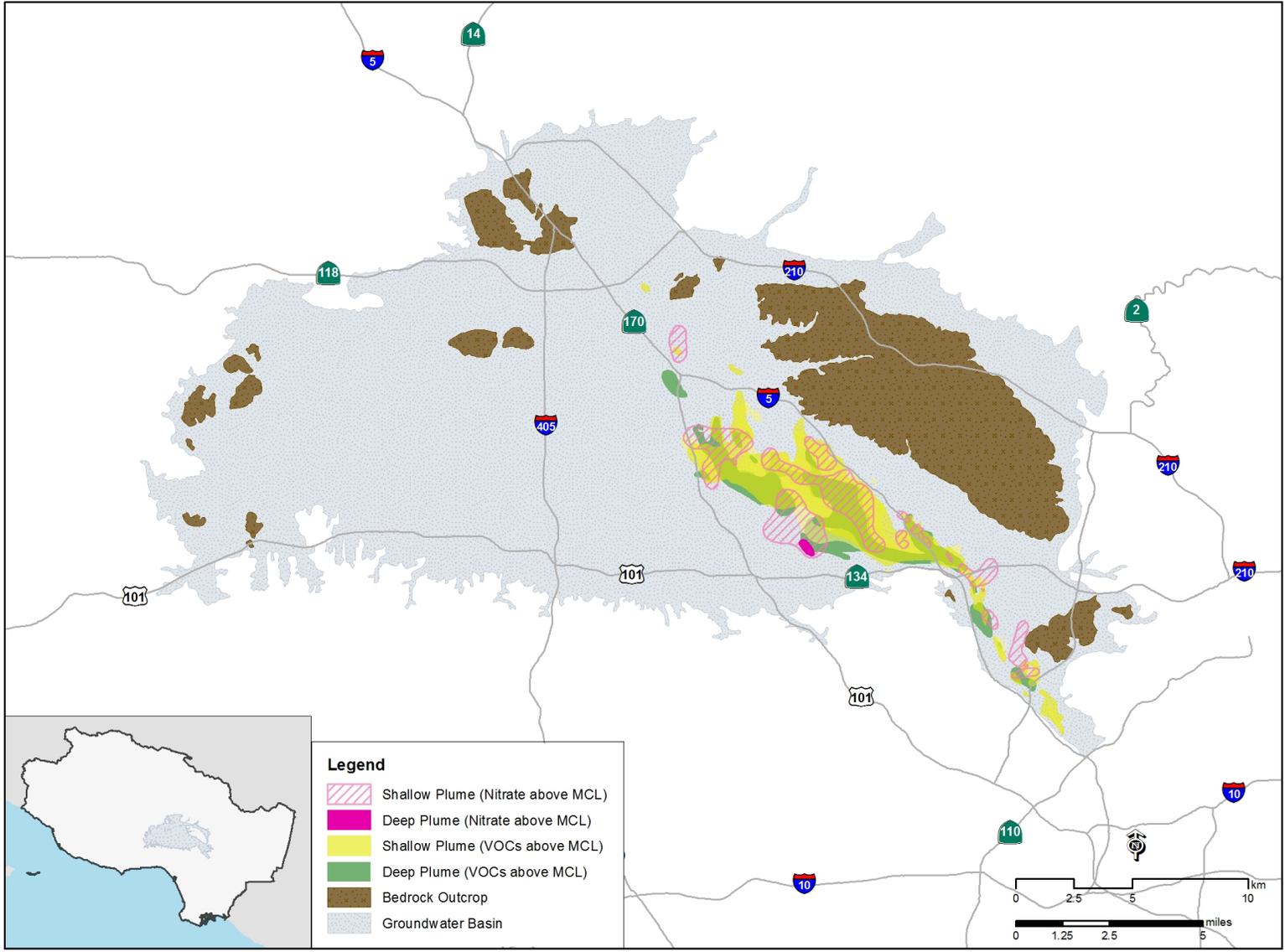


Figure 4-12. San Fernando Valley Groundwater Basin Contamination Plumes.

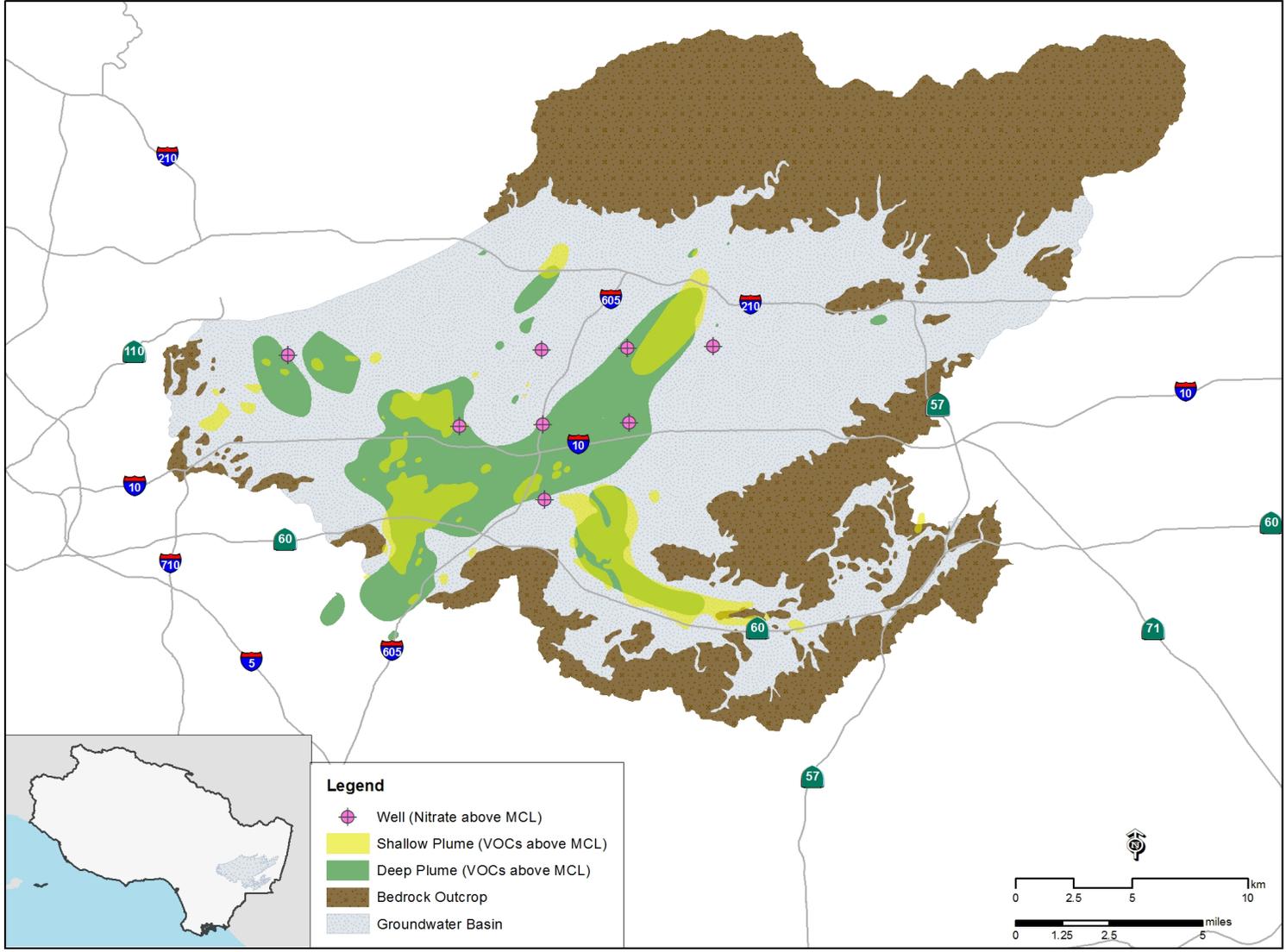


Figure 4-13. San Gabriel Valley Groundwater Basin Contamination Wells and Plumes.

Brownfields

Brownfields are abandoned, idled or underused industrial and commercial facilities where expansion or redevelopment is hindered by actual or suspected environmental contamination. Cleanup and redevelopment of these sites benefit the environment and communities by eliminating pollution and contamination problems, allowing economic growth, and revitalizing neighborhoods. The goals associated with brownfield sites include the following:

- Preserve greenfields¹⁹;
- Protect groundwater resources, safeguard public health, promote environmental justice;
- Streamline site assessments, cleanups, monitoring, and closure requirements/procedures;
- Expedite/facilitate site cleanups and closures for Brownfield sites; and
- Revitalize the economy, job creation, and tax revenue generation.

The procedures for site investigation and cleanup at a brownfields location are generally the same as at other sites overseen by the Site Cleanup Program.

Underground Storage Tank Program

The Underground Storage Tank (UST) Program protects public health and safety and the environment from contamination due to petroleum products (e.g. gasoline and diesel fuel) and other hazardous substances leaking from USTs. Leaking USTs can cause soil, groundwater, and surface water contamination and present a fire or explosion hazard (Figure 4-14).

A UST is defined by the California Health and Safety Code Section 25281 as “any one or combination of tanks, including pipes connected thereto, that is used for storage of hazardous substances and that is substantially or totally beneath the surface of the ground.” Under the authorities specified in Health and Safety Code section 25296.10, California Water Code sections 13267 and 13304 and California Code of Regulations Title 23, Chapter 16, sections 2720 - 2727, the Regional Water Board’s UST program directs responsible parties to carry out corrective actions to mitigate unauthorized release from leaking USTs. Corrective actions include

¹⁹ Undeveloped sites.

preliminary site assessment, soil and groundwater investigation, remediation, verification monitoring, and case closure.

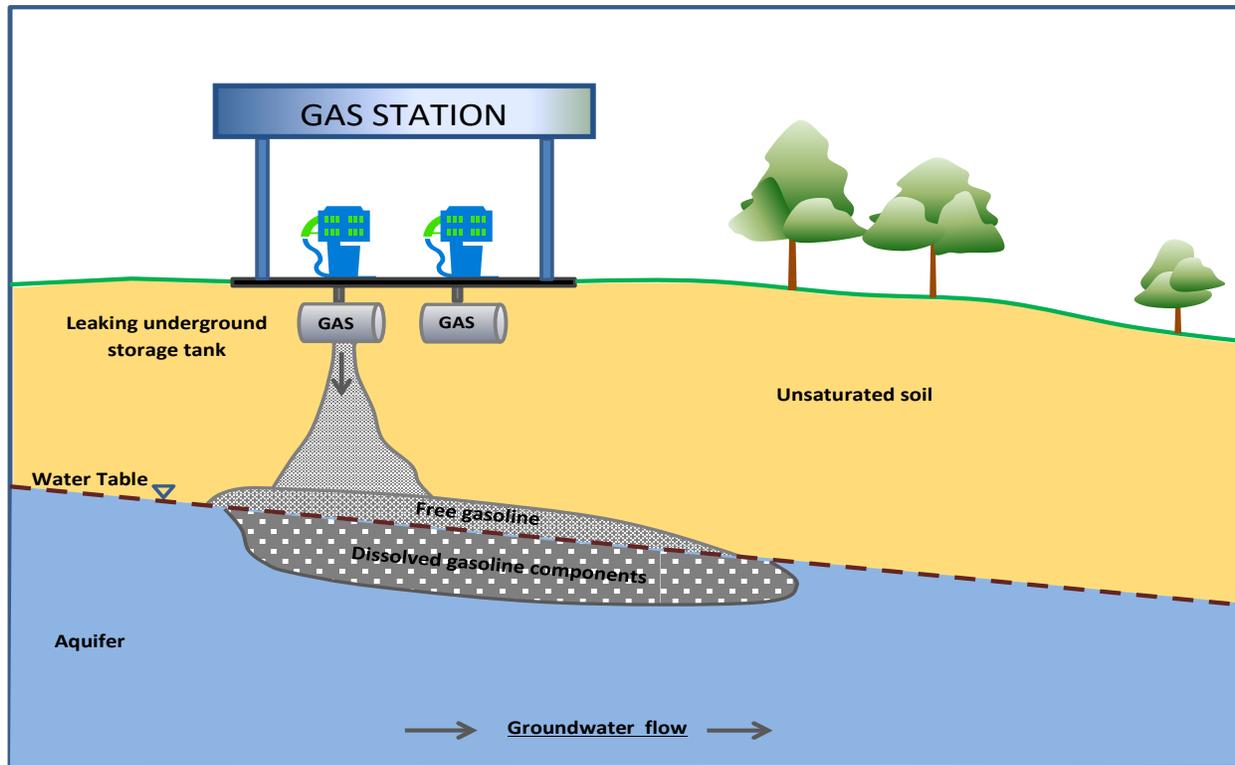


Figure 4-14. Leaking Underground Storage Tank. This diagram illustrates how contamination of the vadose zone and pollution of groundwater can result from leaks of gasoline from an underground storage tank. (Adapted from Fetter, 1988)

In 2012, the State Water Resources Control Board adopted a “Low-Threat Underground Storage Tank Case Closure Policy” (Resolution No. 2012-0016), which establishes consistent statewide case closure criteria for low-threat petroleum UST sites. The Policy contains general criteria and media-specific criteria for case closure. In the absence of unique attributes of a case or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents, cases that meet the general and media-specific criteria described in the Policy are considered to pose a low threat to human health, safety and the environment and are appropriate for closure pursuant to Health and Safety Code section 25296.10. The general criteria that must first be satisfied by candidate sites include:

- (a) The unauthorized release is located within the service area of a public water system;

- (b) The unauthorized release consists only of petroleum;
- (c) The unauthorized (“primary”) release from the UST system has been stopped;
- (d) Free product has been removed to the maximum extent practicable;
- (e) A conceptual site model that assesses the nature, extent, and mobility of the release has been developed;
- (f) Secondary source has been removed to the extent practicable;
- (g) Soil and groundwater has been tested for methyl tert-butyl ether (MTBE) and results reported in accordance with Health and Safety Code section 25296.15; and
- (h) Nuisance as defined by Water Code section 13050 does not exist at the site.

If a candidate site meets the general criteria, the site is evaluated to determine whether it meets the media-specific criteria, which are based on the most common exposure scenarios. Candidate sites must satisfy all three of the following media-specific criteria: (1) groundwater, (2) vapor intrusion to indoor air, and (3) direct contact and outdoor air exposure. Details of each media-specific criteria are included in the Policy. If the case has been determined to meet all of the general and media-specific criteria, the case is eligible for case closure. The following items, if applicable, shall be completed prior to case closure – notification requirements, monitoring well destruction, and waste removal. After completion of these items, and unless the Board revises its determination based on comments received on the proposed case closure, the Board shall issue a uniform closure letter specified in Health and Safety Code section 25296.10 within 30 days from the end of the comment period.

UST Site Assessment and Cleanup

A typical UST case has three primary phases:

- 1) The **site assessment** phase includes contacting the responsible party and requesting all available technical reports for review. Additionally, in accordance with the California Health and Safety Code and/or Water Code section 13267, orders are utilized to direct the characterization of soil and groundwater contamination onsite and offsite.
- 2) The **remediation** phase is initiated once the site is adequately characterized. During the remediation phase the responsible party is directed using the California Health and Safety Code and/or through an order issued pursuant to Water Code 13304 to initiate remedial actions and cleanup contamination.

3) **Post-remediation** monitoring takes place once the final remediation actions are completed. If the post-remediation data indicate a stabilized or declining trend in soil and groundwater concentrations, the site is typically recommend for low-risk case closure. If the post-remediation data do not support a low-risk case closure, remediation actions will continue and remediation and cleanup methods may be re-evaluated.

As part of the site assessment and remediation, cleanup goals are determined based on site-specific criteria. Cleanup goals may be based on documents from other agencies such as the California Environmental Protection Agency California Human Health Screening Levels (CHHSLs) and US EPA's Regional Screening Levels (RSL). The development of site-specific cleanup goals may include contaminant fate and transport modeling and human health risk assessments. In addition, other site specific factors such as the distance to a drinking water well or sensitive receptor (e.g. school or day-care center) and potential land use changes may inform the site-specific cleanup goals.

UST and Site Cleanup Programs, General WDRs

In-situ injection of chemicals and/or biological agents into soil and/or groundwater, for purposes of groundwater remediation, is considered a discharge and responsible parties must obtain WDRs from the Regional Water Board. Since this is a common remediation technology used for soil and/or groundwater cleanup, the Regional Water Board has adopted a General WDR for In-Situ Groundwater Remediation and Groundwater Re-injection (Order No. R4-2014-0187).

If in-situ injection of chemicals and/or biological agents into soil and/or groundwater is considered as a remediation approach for a specific site, the responsible party must propose the approach as part of a Remedial Action Plan (RAP) submitted to the Regional Water Board for review and approval. Additionally, the responsible party must submit an application for coverage under Order No. R4-2014-0187. Upon review and approval of the RAP, the Regional Water Board Executive Officer will enroll the responsible party under Order No. R4-2014-0187 and specify monitoring and reporting requirements.

Responsible parties wishing to use another in-situ remediation material not address by Order No. R4-2014-0187 may submit an application for an individual WDR.

Enforcement

The Water Code grants the Water Boards the authority to implement and enforce the water quality laws, regulations, policies, and plans to protect the groundwater and surface waters of the State. Timely and consistent enforcement of these laws is critical to the success of the Water Boards' water quality programs and to ensure that the people of the State have clean water. The State Water Board's *Water Quality Enforcement Policy* (Policy) facilitates this by defining an enforcement process that addresses water quality problems in the most efficient, effective, and consistent manner. The goal of the Regional Water Board's enforcement program is to protect and enhance the quality of the waters of the State by implementing the Policy. This allows the Regional Water Board to expend its limited enforcement resources in ways that openly address the greatest needs, deter harmful conduct, protect the public, and achieve maximum water quality benefits.

Compliance with regulations is critical to protecting public health and the environment, and the most effective and timely methods must be used to ensure that the regulated community stays in compliance. Tools such as providing assistance, training, guidance, and incentives are commonly used by the Regional Water Board's programs and work very well in many situations. However, at certain times and in certain situations, enforcement is required and necessary. Enforcement (i.e. Regional Water Board actions taken in response to a violation) is a critical element of a successful regulatory program. Without a strong enforcement program to back up the cooperative approach, the entire regulatory framework would be in jeopardy. Enforcement is a critical ingredient in creating the deterrence needed to encourage the regulated community to anticipate, identify, and correct violations. Appropriate penalties and other consequences for violations offer some assurance of equity between those who undertake actions to comply with requirements and those who do not. It also improves public confidence when government is ready, willing, and able to back up its requirements with action.

The Regional Water Board's enforcement program relies on well-developed compliance monitoring systems designed to identify and correct violations, help establish an enforcement presence, collect evidence needed to support enforcement actions where there are identified violations, and help target and rank enforcement priorities. Likewise, the Regional Water Board has a variety of enforcement tools to use in response to non-compliance by dischargers. An enforcement action is any informal or formal action taken to address an incidence of actual or

threatened non-compliance with existing regulations or provisions designed to protect water quality.

Informal Enforcement Actions

Informal enforcement actions are any enforcement action taken by Regional Water Board staff not defined in statute or regulation. Informal enforcement action can include any form of communication (oral, written, or electronic) between Regional Water Board staff and a discharger concerning an actual, threatened, or potential violation. Informal enforcement actions cannot be petitioned to the State Water Board. The purpose of an informal enforcement action is to quickly bring an actual, threatened, or potential violation to the discharger's attention and to give the discharger an opportunity to return to compliance as soon as possible.

Informal actions include:

- Oral and Written Contacts. This involves contacting the discharger by phone or in person and informing the discharger of the specific violations, discussing how and why the violations have occurred or may occur, and discussing how and when the discharger will correct the violation and achieve compliance.

- Notices of Violation (NOV). The NOV letter is the most significant level of informal enforcement action and is used only where Regional Water Board staff has determined that a violation has actually occurred.

Formal Enforcement Actions

Formal enforcement actions are statutorily based actions to address a violation or threatened violation of water quality laws, regulations, policies, plans, or orders and fall into two basic categories: 1) those that direct future actions by dischargers and 2) those that address past violations. Actions which generally direct future action include imposition of time schedules and issuance of Cease and Desist Orders and Cleanup and Abatement Orders. Actions taken to address past violations include issuance of notices to comply (minor violations), rescission of waste discharge requirements, administrative civil liability, and referral to the Attorney General or District Attorney.

Formal Enforcement Actions include:

- Notice to Comply (NTC). The NTC is used to address minor violations that can be corrected within 30 days (Cal. Wat. C. § 13399 et seq.).
- Notices of Stormwater Noncompliance (NNC). The NNC provides a notice of noncompliance to any stormwater discharger who fails to file a notice of intent to obtain permit coverage, a notice of non-applicability, a construction certification, or annual report per Water Code section 13399.25 et seq.
- Technical Reports and Investigations. Pursuant to Water Code sections 13267 subdivision (b), and 13383, the Regional Water Board can conduct investigations and to require technical or monitoring reports from any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste. Failure to comply with a 13267 Order may result in administrative civil liability pursuant to Water Code section 13268. Failure to comply with orders made pursuant to Water Code section 13383 may result in administrative civil liability pursuant to Water Code section 13385.
- Cleanup and Abatement Orders (CAOs). Pursuant to Water Code section 13304, a CAO can be issued to a discharger to clean up the waste or abate the effects of the waste, or both, or, in the case of threatened pollution or nuisance, take other necessary remedial

action, including overseeing cleanup and abatement efforts of waste discharged into the waters of the State in violation of any waste discharge requirement or other order or prohibition issued by the Regional or State Water Board. Failure to comply with a CAOs can trigger further enforcement in the form of administrative civil liabilities, a time schedule order under Water Code section 13308, or a referral to the Attorney General for injunctive relief or monetary remedies.

- Section 13300 Time Schedule Orders (TSO). Pursuant to Water Code section 13300, the Regional Water Board can require a discharger to submit a time schedule that sets forth the actions the discharger will take to address actual or threatened discharges of waste in violation of requirements.
- Section 13308 Time Schedule Orders (Section 13308 TSO). Pursuant to Water Code section 13308, the Regional Water Board can issue a Section 13308 TSO if there is a threatened or continuing violation of a cleanup and abatement order, cease and desist order, or any requirement issued under Water Code sections 13267 or 13383. The Section 13308 TSO prescribes, in advance, a civil penalty if compliance is not achieved in accordance with the time schedule. If the discharger fails to comply with the Section 13308 TSO, the discharger is subject to an administrative civil liability complaint.
- Cease and Desist Orders (CDOs). Pursuant to Water Code sections 13301 and 13303, the Regional Water Board can issue CDOs to dischargers violating or threatening to violate WDRs or prohibitions prescribed by the Regional or State Water Board. Section 4477 of the California Government Code prohibits all state agencies from entering into contracts of \$5,000 or more for the purchase of supplies, equipment, or services from any nongovernmental entity who is the subject of a CDO. Failure to comply with a CDO may trigger further enforcement in the form of an administrative civil liability, 13308 TSO, or referral to the Attorney General for injunctive relief or monetary remedies.
- Modification or Rescission of Waste Discharge Requirements (WDRs). In accordance with the provisions of the Water Code, a Regional Water Board may modify or rescind WDRs

in response to violations such as a failure to pay fees, penalties or liabilities, and for a discharge that adversely affects beneficial uses of the waters of the State.

- Administrative Civil Liabilities (ACLs). The Water Code authorizes the imposition of liabilities in an ACL complaint by the Regional Water Board Executive Officer for certain violations of law. Sections 13323-13327 of the Water Code describe the ACL process. The ACL complaint describes the violation, proposes a specific monetary assessment, and sets a hearing date (no more than 90 days after the complaint is issued). ACL complaints, including mandatory minimum penalties, are posted on the Board's website for a 30-day public comment period prior to settlement. Upon receipt of an ACL complaint, the discharger(s) may waive its right to a public hearing and pay the liability; negotiate a settlement; or appear at a Board hearing to dispute the complaint. If the discharger waives its right to a public hearing and pays the liability, a third party may still comment on the complaint at any time during the public comment period. Following review of the comments, the Executive Officer or his or her delegate may withdraw the ACL complaint. An ACL complaint may be redrafted and reissued as appropriate. An ACL action may be combined with another enforcement mechanism such as a CAO, a CDO, or other order with a time schedule for obtaining compliance.

- Referrals to the Attorney General or District Attorney. The Regional Water Board can refer violations to the State Attorney General or ask the appropriate county District Attorney to seek criminal relief. In either case, a superior court judge will be asked to impose civil or criminal penalties.

Attorney General

- The Attorney General can seek civil enforcement of a variety of Water Code violations, generally the same ones for which the Regional Water Board can impose an ACL. Maximum per-day or per-gallon civil monetary remedies are two to ten times higher when imposed by the court instead of the Regional Water Board. The Attorney General can also seek injunctive relief in the form of a restraining order, preliminary injunction, or permanent injunction pursuant to Water Code sections 13262, 13264, 13304, 13331, 13340 and 13386.

Injunctive relief may be appropriate where a discharger has ignored enforcement orders.

District Attorney

- District Attorneys may seek civil or criminal penalties under their own authority for many of the same violations the Regional Water Board pursues. While the Water Code requires a formal Regional Water Board referral to the Attorney General, the Regional Water Board's Executive Officer is not precluded from bringing appropriate matters to the attention of a District Attorney. In addition to the criminal sanctions and civil fines, the District Attorney may pursue injunctive actions to prevent unfair business advantage.

Spill Response

State and federal law requires that unauthorized discharges of sewage or hazardous materials be reported to the California Office of Emergency Services (Cal OES). Spills must be reported immediately upon knowledge of release. This requirement is necessary to ensure that agencies with first responder duties are on-site, as necessary, and that actions are taken to protect public health and the environment. Upon notification, will immediately notify the local emergency response agencies (if necessary), Regional Water Board, local public health departments, and local offices of environmental health. The local agencies and the Regional Water Board cooperate to determine and implement appropriate public health and environmental safety measures to mitigate the spill. The Regional Water Board also has additional permit specific spill reporting requirements at various time periods to ensure appropriate follow-up and a comprehensive spill response. Typically, additional reporting is required at 24 hours, 5 days, and 30 days.

Hazardous Releases

Except for a discharge that is in compliance with waste discharge requirements, any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (i) that person has knowledge

of the discharge, (ii) notification is possible, and (iii) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State Toxic Disaster Contingency Plan adopted pursuant to Article 3.7 of Chapter 7 of Division 1 of Title 2 of the Government Code, and immediately notify the State Water Board or the appropriate Regional Water Board of the discharge. This provision does not require reporting of any discharge of less than a reportable quantity as provided for under subdivisions (f) and (g) of section 13271 of the Water Code unless the discharger is in violation of a prohibition in the applicable Water Quality Control Plan.

Petroleum Releases

Except for a discharge that is in compliance with waste discharge requirements, any person who without regard to intent or negligence, causes or permits any oil or petroleum product to be discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (i) such person has knowledge of the discharge, (ii) notification is possible, and (iii) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State Oil Spill Contingency Plan adopted pursuant to Article 3.5 (commencing with section 8574.1) of Chapter 7 of Division 1 of Title 2 of the Government Code. This provision does not require reporting of any discharge of less than 42 gallons unless reporting of the discharge is required pursuant to section 311 of the Clean Water Act or the discharge is in violation of a prohibition in the applicable Water Quality Control Plan.

Complaints

The Regional Water Board receives complaints from the public, dischargers, and local, state, and federal agencies. Complaints may be submitted directly to the Regional Water Board by phone or email or via the Cal/EPA Environmental Complaint website. Approximately 200 complaints are typically received each year. Complaints range across media and jurisdiction and may fall under the purview of a number of State and/or federal agencies. The Regional Water Board has developed a complaint triage process in order to organize and respond to complaints. The complaint triage process defines a central point of receipt for complaints, determines the entity best suited to respond to the complaint, and provides a method to track actions taken to address the complaint.

Funding for Water Quality Improvement Projects

Sources of funding for water quality improvement projects fall into two broad categories: grants and loans. Grant programs may be funded through a variety of federal and State monies. Often State grant programs are tied to the sale of bonds (made available through the passage of, for example, Propositions 1, 12, 13, 40, 50, and 84); the authorizing legislation dictates which programs (and which agencies) receive the funding. Some federal grants (such as those provided under CWA section 319(h), discussed below) may be made available through a State application process, while others must be pursued through direct contact with the appropriate federal agency. The State Water Board manages a number of grant programs funded by the sale of bonds; a number of other State agencies also manage grant programs with at least some nexus to water quality. A key part of successfully applying for grants is awareness of the timelines involved with submitting applications. Often potential applicants can sign up for email notifications of open application periods. Key websites to follow when pursuing grant funding can be found at the end of this chapter.

The federal Clean Water Act established the Clean Water State Revolving Fund (CWSRF) Program in 1987 to finance protection and improvement of water quality; it continues today capitalized by State and federal funds. The program provides low-cost loans for a variety of water quality improvement projects including those that address nonpoint source pollution as well as those involving the traditional publicly-owned treatment works (POTWs) projects. The State Water Board manages the CWSRF Program. Another major source of loans for water quality improvement projects is the California Infrastructure and Economic Development Bank (I-Bank). The I-Bank's Infrastructure State Revolving Fund Program provides low-cost loans for a wide variety of projects including some directly related to improving water quality such as sewage collection and treatment, and solid waste collection and disposal.

Funding Considerations

There are many factors to be considered when pursuing grant or loans for water quality improvement projects. The lists below compare and contrast some of these important considerations.

Grant Programs

Bond sales often critical to availability

No payback required

Applying can be complex process

Highly competitive

Extensive reporting and oversight needed

Matching funds generally required

May favor larger/more expensive projects

Some require participation with an IRWMP

Funding limits vary

Generally limited application periods

Operate under agency-specific guidelines

Loans/Financing

State revolving fund program

Loan repayment required

Relatively simple application process

May require getting on priority list

Not tied to bond sales

Repayment terms vary

Threshold eligibility criteria must be met

Can pay for large infrastructure projects

Tie-in with job creation with some programs

Different agencies have different requirements

Some programs favor water quality projects

Some programs favor multi-objective projects

Maximum amount financed can be large

Generally applications accepted continuously

Additional Information on Grant Programs

The grant programs discussed below are active as of this writing. There is no guarantee they will continue to have funding in the future. Additional grant programs may be developed to replace them as the State's needs for water quality improvement projects evolve.

Clean Water Act 319(h) Grant Program

The federal Clean Water Act Section 319(h) NPS pollution control program is funded annually. Project proposals that address problems in impaired waterbodies or TMDL implementation are currently favored in the selection process. There is also a focus on implementing management activities that reduce and/or prevent pollutants that threaten or impair surface and ground waters. Applications are made through the State Water Board.

Stormwater Grant Program

The State Water Board provides funding for projects that reduce and prevent stormwater contamination of freshwater rivers, lakes, and streams. Eligible uses include implementation of LID and other onsite and regional practices that seek to maintain predevelopment hydrology, and compliance with stormwater-related TMDL requirements.

Clean Beaches Initiative Grant (CBI) Program

The State Water Board provides funding for 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. Eligible uses include planning and implementation projects meeting CBI priorities.

Integrated Regional Water Management (IRWM) Grant Program

The California Department of Water Resources (and, at times, the State Water Board) provides funding for 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. Applicants must be participating with an accepted IRWM Region.

Urban Streams Restoration Program

The California Department of Water Resources provides funding to reduce urban flooding and erosion, restore environmental values, and promote stewardship of urban streams. Eligible uses include 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.

Cleanup and Abatement Account

The Cleanup and Abatement Account (CAA) was created by Water Code sections 13440-13443 to provide public agencies with grants for the cleanup or abatement of pollution when there are no viable responsible parties available to undertake the work. The CAA is supported by court judgments and administrative civil liabilities assessed by the State and Regional Water Boards. Only public agencies with authority to cleanup or abate a waste are eligible to receive funding.

Agriculture-specific Grant Programs

Environmental Quality Incentives Program (EQIP): EQIP is a voluntary program funded by the Natural Resources Conservation Service (NRCS) that provides financial and technical assistance to agricultural producers through contracts lasting up to 10 years. The contracts give financial assistance to help plan and implement conservation practices that address natural resource concerns and improvements to soil, water, plant, animal, air and related resources on agricultural land and non-industrial private forestland. All owners of land who are engaged in livestock, agriculture, or forest production can participate in EQIP. Payments are determined based on a portion of the average cost associated with practice implementation, and do not exceed \$300,000 unless a project is determined to have special environmental significance.

Agricultural Water Enhancement Program (AWEP): AWEP is a voluntary conservation initiative that provides financial and technical assistance to agricultural producers to implement enhancement activities on agricultural land to conserve surface and groundwater and improve water quality. This program is provided by the NRCS through EQIP. Owners and operators engaged in livestock and agricultural production are eligible for the program. NRCS enters into partnership agreements with eligible growers and organizations on project areas that have been approved by the NRCS. AWEP is not a grant program, but leverages investment in natural

resource conservation along with services and non-Federal resources of eligible partners. Available funds are provided by the Farm Bill and total up to \$60 million per fiscal year.

Conservation Innovation Grants (CIG): CIG is a voluntary program that uses EQIP funds from the NRCS to award competitive grants to non-Federal governmental organizations or individuals. These grants are intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging federal investment in environmental enhancement and protection. Funding has focused on nutrient management, energy conservation, soil health, wildlife, projects assessment, and market analysis. This program allows the NRCS to work with public and private organizations to accelerate the transfer and adoption of technologies that address natural resource concerns. Applications are accepted from state or local governments, Tribes, non-governmental organizations, and individuals.

Growers should also remain in close contact with their local US NRCS, Farm Bureau, and Resource Conservation District (RCD) offices, which will have knowledge of additional sources of funding relative to improving the efficiency of agricultural practices, which generally have improvement of water quality as a side benefit.

Additional Information on Loan Programs

Clean Water State Revolving Fund (CWSRF) Program

The CWSRF program offers low interest financing agreements for water quality projects. Annually, the program disburses between \$200 and \$300 million to eligible projects. Eligible projects include 1) construction of publicly-owned facilities (including wastewater treatment, local sewers, sewer interceptors, water reclamation facilities, and stormwater treatment) and 2) expanded use projects (including implementation of NPS projects/programs and development and implementation of comprehensive conservation and management plans for estuaries).

California Infrastructure and Economic Development Bank (I-Bank) Loans

The I-Bank provides financing for public infrastructure projects through its Infrastructure State Revolving Fund (ISRF) Program. Applicants must be local municipal entities and their projects must promote economic develop and attract, create, and sustain long-term employment opportunities. Eligible uses include the construction or modification of public infrastructure including installing pollution control equipment and acquiring land as needed.

Websites and Other Resources for Grants and Loans

Subscribe to the State Water Resources Control Board Lyris Lists:

http://www.waterboards.ca.gov/resources/email_subscriptions/swrcb_subscribe.shtml.

Under “Financial Assistance”, click on “Clean Water State Revolving Fund”, “Beaches Water Quality Grants”, “Storm Water Grant Program”, or any other relevant grant programs which may be listed.

Subscribe to the California Department of Water Resources Lyris Lists:

- <http://www.water.ca.gov/irwm/grants/subscribe.cfm>
- <http://www.water.ca.gov/urbanstreams/>

Browse financial assistance websites:

- Los Angeles Regional Water Quality Control Board
http://www.waterboards.ca.gov/losangeles/water_issues/programs/grants_loans/Financial_Assistance/index.shtml
- State Water Resources Control Board
http://www.waterboards.ca.gov/water_issues/programs/grants_loans/
- California Department of Water Resources
http://www.water.ca.gov/funding_home.cfm
- California Financing Coordinating Committee (CFCC) – State grants clearinghouse website
<http://www.cfcc.ca.gov/Default.htm>
- The State’s Bond Accountability website
<http://bondaccountability.resources.ca.gov/P1ProgramList.aspx?Prop=48&ChapterPK=all&ChapterName=Prop.%201>
- Federal grants clearinghouse website
<http://www.grants.gov>

Climate Change Considerations

Human activities over the past century have resulted in releases of large quantities of carbon dioxide and other greenhouse gases into the atmosphere, leading to the onset of significant changes in the earth's climate that will have substantial impacts on water resources, including water quality. More specifically, the various predicted alterations to temperatures and precipitation could significantly affect water supplies in our region as drought periods become more severe and snowpack levels decrease, leading to depleted groundwater levels and decreasing amounts of imported water available to the region.

In addition to water quantity, predicted changes to weather patterns and sea level could also drastically alter hydrological and ecosystem processes in the region. Such impacts could manifest in multiple ways, such as decreases in stream flow, reductions in, and changes to, aquatic habitats, increases in surface water temperature, increases in pollutant levels, sedimentation, and algal growth, and changes in salinity levels and acidification in coastal areas. These impacts could affect many beneficial uses of our waters, including those protecting ecological habitats, recreational uses and commercial practices. Because preserving water quality is essential to protect both human populations and natural ecosystems, and to ensure their prosperity into the future, it is imperative to assess these impacts, and to develop strategies to adapt to the upcoming changes and mitigate their effects on water quality and on the beneficial uses of our waters.

The State's adaptation strategy, [Safeguarding California](#),²⁰ provides a roadmap for state government action to build climate change resiliency. It identifies seven overarching principles that represent foundational objectives for California's approach to climate change adaptation as follows:

- a. Consider climate change in all functions of government;
- b. Partner with California's most vulnerable populations to increase equity and resilience through investments, planning, research, and education;
- c. Support continued climate research and data tools;
- d. Identify significant and sustainable funding sources to reduce climate risks, harm to people, and disaster spending;
- e. Prioritize natural infrastructure solutions that build climate preparedness, reduce greenhouse gas emissions, and produce other multiple benefits;

²⁰ <http://resources.ca.gov/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf>

- f. Promote collaborative adaptation processes with federal, local, tribal, and regional government partners; and
- g. Increase investment in climate change vulnerability assessments of critical built infrastructure systems.

Recognizing the challenges posed by climate change, on March 7, 2017, the State Water Board adopted a “Comprehensive Response to Climate Change” resolution directing a proactive approach to climate change that is integrated in all State and Regional Water Board actions, including drinking water regulation, water quality protection, and financial assistance (State Water Board Resolution No. 2017-0012). The resolution lays the foundation for a robust response to climate change, in part, by encouraging the Regional Water Boards to coordinate with the State Water Board and/or other stakeholders to identify actions and opportunities to reduce greenhouse gas emissions, improve ecosystem resilience, and to account for and/or address climate change related impacts in permitting and planning efforts.

Regionally, the Los Angeles Water Board is committed to considering climate change as part of its decision making and adhering to the principles outlined above. Towards this end, the development of a climate change strategy was initiated in 2014 with the aim to protect beneficial uses and water quality under a changing climate, while achieving the following goals:

- Improve ecosystem resilience;
- Protect and improve the resilience of coastal and inland infrastructure;
- Promote wastewater recycling, stormwater capture and groundwater recharge;
- Promote sustainable watershed management;
- Expand monitoring and research to track the effects of climate change and the effectiveness of mitigation measures; and
- Protect vulnerable communities.

In 2015, the Los Angeles Water Board released Part 1 of the “[Los Angeles Region Framework for Climate Change Adaptation and Mitigation - Current State of Knowledge & Water Quality Regulatory Program Considerations](#)” (Framework)²¹. This document took a first look at impacts of climate change and sea level rise on water supply and water quality for various waterbody

²¹http://www.waterboards.ca.gov/losangeles/water_issues/programs/climate_change/docs/2015/Climatechange-frameworkforclimatechangeadaptation-final7-20-2015.pdf

types in the region, as well as through the lenses of the Los Angeles Water Board's programs, and began a dialogue on issues that would need to be considered and addressed over time.

Part 1 of the Framework was followed in May 2018 by the Los Angeles Water Board's adoption of "A Resolution to Prioritize Actions to Adapt and Mitigate the Impacts of Climate Change on the Los Angeles Region's Water Resources and Associated Beneficial Uses" ([Resolution No. R18-004](#))²². The objectives of the resolution were:

- To acknowledge the need to adapt to and where possible mitigate the impacts of climate change in various Los Angeles Water Board programs/actions;
- To briefly summarize the actions the Los Angeles Water Board had already begun to take in some program areas; and
- To begin to identify some future actions that the Los Angeles Water Board can take moving forward.

Following adoption of the resolution, and building on Part 1 of the Framework, Part 2 "[Potential Regulatory Adaptation and Mitigation Measures](#),"²³ was developed and released in April 2019. This document identifies specific challenges that will likely be caused by climate change within the activities of each of the Los Angeles Water Board's programs and offers a menu of potential actions to address those, including regulatory actions, monitoring and research needs, areas of possible collaboration, and environmental justice considerations.

Further efforts to address climate change will be pursued in conjunction with stakeholders and other regulatory agencies, and will include the consideration of research, monitoring, and other contract needs, as well as the development of climate change provisions in the Los Angeles Water Board's regulatory actions. Results of such efforts and any additional information will be made available on the Los Angeles Water Board's website, where a [web page](#) dedicated to climate change has been created²⁴. The page contains the resolution, Parts 1 and 2 of the Framework, and other pertinent information as well as a link to a web page that summarizes work by the Los Angeles Water Board that was expedited in response to drought.

²²https://www.waterboards.ca.gov/losangeles/board_decisions/basin_plan_amendments/technical_documents/130_new/ResolutionNoR18-004.pdf

²³https://www.waterboards.ca.gov/losangeles/water_issues/programs/climate_change/docs/2019/FrameworkPart2-PotentialRegulatoryAdaptation_MitigationMeasures-final.pdf

²⁴ http://www.waterboards.ca.gov/losangeles/water_issues/programs/climate_change/index.shtml