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July 31, 2018

Deborah Smith, Executive Officer  
Los Angeles Regional Water Quality Control Board  
320 West Fourth Street, Suite 200  
Los Angeles, California 90013

Via email to Ms. Erum Razzak

**Adaptive Modification of the Beach Cities' Coordinated Integrated Monitoring Program**

Dear Ms. Smith:

The Beach Cities Watershed Management Group (Beach Cities WMG) respectfully proposes to make adaptive modifications to the Beach Cities Coordinated Integrated Monitoring Program (Beach Cities CIMP) based on recent updates to the State's 303(d) List of Impaired Water Bodies as well as adaptive management findings from the first complete monitoring year (monitoring year 2016-17).

Proposed CIMP changes are summarized below for the Regional Board's review and approval.

**Revision of Monitoring Parameters**

Section VI.C.1.d (Minimum Wet Weather Receiving Water Monitoring Requirements) and Section VIII.B.1.c. (Minimum Stormwater Outfall Based Monitoring Requirements) of MS4 Permit Attachment E require specific parameters to be monitored at applicable monitoring stations, including "pollutants identified on the CWA section 303(d) List." Following these requirements, the Beach Cities CIMP identified parameters to be monitored based on the 2012 303(d) list, which was the most recent approved 303(d) list at the time the Beach Cities CIMP was written. These parameters are identified in Table 6 (receiving water) and Table 17 (stormwater outfall) of the Beach Cities CIMP.

Due to the recent finalization of the State's 2016 303(d) list, revisions are needed within the Beach Cities CIMP to ensure that the appropriate 303(d)-listed parameters are monitored at receiving water and stormwater outfall monitoring locations. To reflect the 2016 303(d) list, mercury and arsenic have been added to the list of required parameters at all Santa Monica

Bay sites (RW-BCEG-1 and -2 and OF-BCEG-1, -2, -3, and -4), and ammonia has been removed from the list of required parameters at all Dominguez Channel sites (OF-BCEG-5, -6, and -7). These parameters have been updated in Tables 2, 6, 16, and 18 of the Beach Cities CIMP.

### **Revision of OF-BCEG-2 Location**

During Year 1 monitoring activities (monitoring year 2016-17), it was determined that the outfall identified in the Beach Cities CIMP as OF-BCEG-2 collects a significantly smaller drainage area than expected, as the location is a storm drain lateral rather than a main line. As a result, less flow than expected is generated for this sampling point, which presented challenges for sampling. To address these challenges, a decision was made by the Beach Cities WMG to relocate the OF-BCEG-2 site to a more representative location downstream on the main storm drain line that captures a larger tributary area than the original location. This was done by identifying a manhole location in City of Hermosa Beach's Pier Plaza that provides access to the main storm drain line prior to discharge at the adjacent beach.

As of December 16, 2016, sampling was initiated at this newly established location. All future sampling at OF-BCEG-2 will occur at this location.

The only changes in the CIMP necessary to properly identify the new sampling location is replacement of the photograph of the site and revisions to the site description and coordinates in the Appendix C Summary Sheet for OF-BCEG-2. It should be noted that the adjusted location is consistent with the approved September 2015 Beach Cities CIMP with regards to drainage area; however, the specific manhole used to conduct sampling has been updated.

### **Combination of OF-BCEG-3 and OF-BCEG-4 Monitoring Locations**

The Beach Cities CIMP was originally drafted to provide a stormwater sampling location for each individual Beach City in each HUC 12 watershed (i.e., Santa Monica Bay and Dominguez Channel). This resulted in stormwater monitoring locations at four outfalls in the Santa Monica Bay Watershed and three in the Dominguez Channel Watershed within the Beach Cities' jurisdiction. The selection of these outfalls therefore exceeded the threshold set forth in Section VIII.A.2.a of Attachment E of the MS4 Permit, which recommended the selection of "at least one major outfall per subwatershed (HUC 12) drainage area...."

Within the Santa Monica Bay Watershed, outfall monitoring locations representing the cities of Redondo Beach (OF-BCEG-3) and Torrance (OF-BCEG-4) were both identified within the Herondo Drain Subwatershed:

- OF-BCEG-3 is located near the intersection of Rindge Lane and Ripley Avenue in the City of Redondo Beach, at a main storm drain lateral in the upper portion of the subwatershed. The total tributary area to this monitoring location is approximately 565 acres.
- OF-BCEG-4 is located on the main line of the Herondo Drain on W. 190<sup>th</sup> Street in the City of Redondo Beach. The total tributary area to this monitoring location is approximately

2,502 acres. Of this drainage area, approximately 1,580 acres is the City of Torrance; the remainder is composed of the cities of Manhattan Beach and Redondo Beach.

Although these two locations attempted to isolate flows from the cities of Redondo Beach and Torrance, respectively, this was found to be practically infeasible during CIMP development. In fact, the entire tributary area of OF-BCEG-3 is part of the tributary area of OF-BCEG-4 (i.e., OF-BCEG-3 is upstream of OF-BCEG-4).

Following a year of sampling at OF-BCEG-3 and OF-BCEG-4, the Beach Cities WMG determined that it would be in the best interest of the Group to combine these two outfall sites and conduct future stormwater sampling at a downstream location within the Herondo Drain Subwatershed. The reasons for this decision are as follows:

- Safety Concerns - Outfall site OF-BCEG-4 was determined to be too deep to allow for safe access and/or installation of a flow meter, as the storm drain lies more than 60 feet below ground surface. As a result, flow monitoring for this outfall site was located farther downstream in the Herondo Storm Drain, closer to the outfall at the beach. To date, water quality sampling has been conducted at the CIMP-specified location using a rope and pulley system, but the potential use of other equipment (e.g., autosampler or hand-held pump) is not feasible at this location. Coupled with traffic conditions on W 190<sup>th</sup> Street, safety concerns at site OF-BCEG-4 are significant.
- Lack of Distinguishable Variances in Water Quality – Following a year of monitoring each site separately, no distinguishable, consistent difference in water quality was observable between the two sites. As a result, there is no foreseeable benefit in continuing to sample these two sites separately.
- Comingling of Flows Already Occurs – As mentioned above, comingling of flows from the four Beach Cities already occurs at site OF-BCEG-4, and includes runoff from the area tributary to site OF-BCEG-3. As a result, OF-BCEG-4 does not serve as a true representative of isolated flows from the City of Torrance.
- Plan for Future Regional BMP in the Subwatershed – Currently, the Beach Cities WMG is designing a regional stormwater capture project near the downstream end of the Herondo Drain. Relocating the sample location downstream in the subwatershed will allow future benefits to be evaluated, and will also allow for the collection of relevant and representative baseline data prior to construction of the project.


The Beach Cities WMG has updated the CIMP by replacing stormwater sampling at OF-BCEG-3 and OF-BCEG-4 with sampling at a location further downstream in the Herondo Drain Subwatershed. This combined sampling location (OF-BCEG-4a) is located near the intersection of Valley Drive and Herondo Street on the border of Redondo Beach and Hermosa Beach. Parameters sampled at this location will remain consistent with those previously monitored at OF-BCEG-3 and OF-BCEG-4. These changes are reflected in Section 4.2 of the Beach Cities CIMP as well as in Appendix C Monitoring Site Fact Sheets. Additionally, Table 9 Stormwater

Outfall Rotation Schedule has been updated to more accurately reflect the Beach Cities sampling schedule initiated following approval of the CIMP.

Pages from the Beach Cities CIMP as proposed to be revised are attached for reference. Attachment 1 shows the pages as proposed to be revised, and Attachment 2 shows the original pages. Upon your approval, the Beach Cities WMG will provide a full copy of the Beach Cities CIMP with these changes incorporated.

The Beach Cities WMG appreciates your staff's assistance in this matter. Should you have any questions regarding the Beach Cities CIMP, please contact Geraldine Trivedi at [Geraldine.trivedi@redondo.org](mailto:Geraldine.trivedi@redondo.org) or via telephone at 310-318-0661 x 2036.

Sincerely,

  
for

Andrew S. Winje, PE  
City Engineer  
City of Redondo Beach

Cc:

Ivar Ridgeway, California Regional Water Quality Control Board, LA Region  
Renee Purdy, Los Angeles Regional Water Quality Control Board, LA Region  
City of Hermosa Beach  
City of Manhattan Beach  
City of Torrance  
Los Angeles County Flood Control District

Attachment 1: Revised Pages from the CIMP  
With Changes Tracked

## 1.2 Water Quality Priorities

Based on the water quality characterization conducted as part of the EWMP Work Plan, the water body–pollutant combinations (WBPCs) have been classified into one of three categories in accordance with Section IV.C.5(a)ii of the Permit.

This categorization is intended to guide the implementation of structural and institutional best management practices (BMPs) and monitoring activities in the CIMP. **Table 2** presents the identified water quality priorities for the Beach Cities WMG.

**Table 2 Water Body Pollutant Prioritization**

Category	Water Body	Pollutant	Compliance Deadline
1: Highest Priority	Santa Monica Bay Beaches	Dry Weather Bacteria	7/15/2006 (Final: Single sample summer AEDs met)
			11/1/2009 (Final: Single sample winter AEDs met)
		Wet Weather Bacteria	7/15/2009 (Interim: 10% Single sample ED reduction)
			7/15/2021 (Final: Single sample AED and GM targets met) <sup>a</sup>
	Santa Monica Bay	Trash/Debris	3/20/2016 (20% reduction)
			3/20/2020 (100% reduction)
		DDTs	No compliance schedule established since Beach Cities discharges are assumed to be in compliance (Final Grouped WLA for entire Santa Monica Bay: 27.08 g/yr) <sup>b</sup>
	PCBs	No compliance schedule established since Beach Cities discharges are assumed to be in compliance (Final Grouped WLA for entire Santa Monica Bay: 140.25 g/yr) <sup>b</sup>	
	Dominguez Channel (including Torrance Lateral) <sup>c</sup>	Toxicity	12/28/2012 (Interim wet weather: 2 TUc)
			3/23/2032 (Final wet weather: 1 TUc)
		Total Copper	12/28/2012 (Interim wet weather: 207.51 ug/L)
			3/23/2032 (Final wet weather: 1,300.3 g/day)
			3/23/2032 (Final wet weather, Torrance Lateral: 9.7 ug/L)
		Total Lead	12/28/2012 (Interim wet weather: 122.88 ug/L)
			3/23/2032 (Final wet weather: 5,733.7 g/day)
			3/23/2032 (Final wet weather, Torrance Lateral: 42.7 ug/L)
		Total Zinc	12/28/2012 (Interim wet weather: 898.87 ug/L)
3/23/2032 (Final wet weather: 9,355.5 g/day)			
3/23/2032 (Final wet weather, Torrance Lateral: 69.7 ug/L)			
Dominguez Channel	Copper	12/28/2012 (Interim sediment: 220 mg/kg )	

Category	Water Body	Pollutant	Compliance Deadline
	Estuary		3/23/2032 (Final sediment: 22.4 kg/yr)
		Lead	12/28/2012 (Interim sediment: 510 mg/kg) 3/23/2032 (Final sediment: 54.2 kg/yr)
		Zinc	12/28/2012 (Interim sediment: 789 mg/kg) 3/23/2032 (Final sediment: 271.8 kg/yr)
		DDT	12/28/2012 (Interim sediment: 1.727 mg/kg) 3/23/2032 (Final sediment: 0.250 g/yr)
		PAHs	12/28/2012 (Interim sediment: 31.60 mg/kg) 3/23/2032 (Final sediment: 0.134 kg/yr)
		PCBs	12/28/2012 (Interim sediment 1.490 mg/kg) 3/23/2032 (Final sediment: 0.207 g/yr)
		Cadmium	3/23/2032 (Final sediment: 1.2 mg/kg)
		Machado Lake	Total Phosphorus <sup>d</sup>
	Total Nitrogen <sup>d</sup>		3/11/2014 (Interim: 2.45 mg/L) 9/11/2018 (Final: 1.0 mg/L)
	Chlordane (tissue)		9/30/2019 (In sediment, wet and dry weather: 3.24 µg/kg dry weight)
	Total DDT (tissue)		9/30/2019 (In sediment, wet and dry weather: 5.28 µg/kg dry weight)
	Dieldrin (tissue)		9/30/2019 (In sediment, wet and dry weather: 1.9 µg/kg dry weight)
	Total PCBs (tissue)		9/30/2019 (In sediment, wet and dry weather: 59.8 µg/kg dry weight)
	Trash		3/6/2012 (20% reduction)
			3/6/2013 (40 % reduction)
			3/6/2014 (60% reduction)
		3/6/2015 (80% reduction)	
		3/6/2016 (100% reduction)	
2: High Priority	<u>Santa Monica Bay</u>	<u>Mercury</u>	<u>N/A</u>
		<u>Arsenic</u>	<u>N/A</u>
	Dominguez Channel (including Torrance Lateral)	Indicator Bacteria	TBD in EWMP
		<u>Ammonia</u>	<u>TBD in EWMP</u>
	Dominguez Channel Estuary	Indicator Bacteria	TBD in EWMP
		<u>Ammonia</u>	<u>TBD in EWMP</u>
3: Medium Priority	Dominguez Channel (including Torrance Lateral)	Cyanide	TBD in EWMP
		pH	TBD in EWMP
		Selenium	TBD in EWMP
		Mercury	TBD in EWMP
		Cadmium	TBD in EWMP

<sup>a</sup> TMDL reopened in 2013 and the changes became effective July 2, 2014.

**Table 6 Receiving Water Monitoring Sites, Constituents, and Annual Monitoring Frequency**

Constituents	Annual Frequency Wet/Dry <sup>(1)</sup>		
	RW-BCEG-1 and RW-BCEG-2	All Shoreline Monitoring Sites	Mass Emissions Station S28
Total Coliform	3/0	Daily/Weekly	
Fecal Coliform	3/0	Daily/Weekly	
Enterococcus	3/0	Daily/Weekly	
Indicator Bacteria			3/2
<del>Ammonia</del>			<del>3/2</del>
Copper (total and dissolved)			3/2
Lead (total and dissolved)			3/2
Zinc (total and dissolved)			3/2
<del>Mercury</del>	<del>3/0</del>		
<del>Arsenic</del>	<del>3/0</del>		
Flow and field parameters <sup>(2)</sup>	3/0		3/2
Pollutants identified in Table E-2 of the MRP <sup>(3)</sup>	1 <sup>(3,4)</sup> /0		1/1 <sup>(3,4)</sup>
Aquatic Toxicity and Toxicity Identification Evaluation (TIE) <sup>5</sup>	2/0		2/1

1. Annual frequency listed as number of wet-weather/dry-weather events per year, respectively (e.g., 3/0 signifies three wet weather and zero dry weather events per year).
2. Field parameters are defined as dissolved oxygen, pH, temperature, and specific conductivity. For ocean monitoring, field parameters will also include salinity.
3. All pollutants identified in Table E-2 of the MRP not already explicitly addressed by monitoring at this site.
4. Monitoring frequency only applies during the first year of monitoring. Table E-2 parameters will be monitored during the first significant rain event of the storm year and during the critical dry weather event where dry weather sampling is conducted. For pollutants identified in Table E-2 of the MRP that are not detected at the Method Detection Limit (MDL) or the result is below the lowest applicable water quality objective, additional monitoring will not be conducted (i.e., the monitoring frequency will become 0/0). For pollutants detected above the lowest applicable water quality objective, future monitoring will be conducted at the frequency specified in the MRP (i.e., the monitoring frequency will become 3/0 at SMB sites and 3/2 at S28).
5. Aquatic toxicity monitoring requirements are summarized in correspondence from the Regional Board to all Permittees which has been provided as Section D.5 of **Appendix D**.

### 2.3.3 Dry-Weather

Part VI.D.1.a of the MRP states dry-weather receiving water monitoring shall be conducted two times per year. The Beach Cities WMG has installed LFDs to address dry-weather flows. The LFDs are operational year-round and divert dry-weather flows from the storm drains to the sanitary sewer system, keeping dry-weather flows from reaching Santa Monica Bay. Given that the LFDs divert all dry-weather flow from reaching Santa Monica Bay, the Beach Cities WMG has opted not to conduct dry-weather receiving water monitoring for Santa Monica Bay. All LFDs will be closely monitored and maintained to ensure that no dry-weather flow will reach the Santa Monica Bay shoreline. Dry weather monitoring, based on the Los Angeles County Mass Emissions Program protocols, will continue to occur during the historically driest month (August), at MES S28, and be summarized within the WMG annual monitoring report.



## 4.0 Stormwater Outfall Monitoring

Stormwater outfall monitoring is intended to assess discharge water quality relative to municipal action limits (MALs) and WQBELs derived from TMDL WLAs, and evaluates the potential of outfall discharges to have caused or contributed to exceedances of RWLs derived from TMDL WLAs or receiving water quality objectives. Drainage of storm drains within the Beach Cities WMG differs between each equivalent HUC-12 subwatershed. An analysis of land uses within equivalent HUC-12 subwatersheds, jurisdictional areas represented by each outfall site, and each site's drainage area was conducted for each outfall monitoring site.

### 4.1 Program Objectives

As outlined in the MRP (Part VIII.A of the MRP), stormwater discharges from the MS4 shall be monitored at outfalls and/or alternative access points such as manholes, or in channels representative of the land uses within the Permittee's jurisdiction to support meeting the three objectives of the stormwater outfall monitoring program:

1. Determine the quality of a Permittee's discharge relative to municipal action levels, as described in Attachment G of the MS4 Permit;
2. Determine whether a Permittee's discharge is in compliance with applicable stormwater WQBELs derived from TMDL WLAs; and
3. Determine whether a Permittee's discharge causes or contributes to an exceedance of receiving water limitations.

Each stormwater outfall monitoring site was evaluated with regards to how representative they are of the surrounding land use of the overall Beach Cities WMG, the individual jurisdictions in which their drainage areas are located, and the equivalent HUC-12. Each zoning category provided by the RAA guidance manual was fit into one of the following eight land use categories:

- Agricultural;
- Industrial;
- Single Family Residential;
- Open Space;
- Commercial;
- Education;
- Multi-Family Residential; and
- Transportation.

### 4.2 Stormwater Outfall Monitoring Sites

The Permit provides monitoring site "default" requirements - one site per HUC-12 per jurisdiction - for achieving stormwater outfall monitoring objectives. The MS4 Permit also allows for an alternative approach to increase the cost efficiency and effectiveness of the monitoring program. The Beach Cities WMG has chosen the default Permit approach within the Santa Monica Bay and Dominguez Channel Watersheds. The previously approved monitoring program addressing the Machado Lake and Long Beach Harbor HUC-12 area is included as Appendix B to this CIMP; therefore, no new outfall monitoring sites in this HUC-12 have been identified in this document. ~~Seven~~**Six** stormwater outfall monitoring sites, as shown in **Figure 8**, were selected as part of the approach. As indicated by **Table 7** these monitoring locations together comprise about a third of the total Beach Cities WMG area.

The selected sites are representative of a combination of the “equivalent” HUC-12s, and the represented City’s jurisdictional area. The County subwatershed and equivalent HUC-12 GIS data displayed minor misalignments resulting in shifts of less than 1% between watersheds when the two sources were compared. Outfall land use characteristics were based on subwatershed data then compared to the divergent County equivalent HUC-12 data. The Beach Cities WMG stormwater outfall samples will be collected as grab samples at manholes upstream of the outfalls. One stormwater outfall monitoring site (OF-BCEG-7) will be monitored at each of the three required wet-weather events on an annual basis, while the remaining ~~six-five~~ stormwater outfall monitoring sites will be monitored on an alternating annual basis. **Table 8** provides a summary for the ~~seven-six~~ stormwater outfall monitoring sites.

**Table 7 Beach Cities WMG Outfall Tributary Area Percentages (of 20,254 acre Total)**

Monitoring Site	Outfall Drainage Area	Tributary Area Percentage of WMG Total
OF-BCEG-1	1,533 Acres	7.57%
OF-BCEG-2	429 Acres	2.10%
<del>OF-BCEG-4a</del>	<del>2,914 Acres</del>	<del>14.39%</del>
<del>OF-BCEG-3</del>	<del>565 Acres</del>	<del>2.79%</del>
<del>OF-BCEG-4</del>	<del>2,503 Acres</del>	<del>12.36%</del>
OF-BCEG-5	365 Acres	1.80%
OF-BCEG-6	780 Acres	3.85%
OF-BCEG-7	3,314 Acres	16.34%
Total Tributary Area	9,489 Acres	46.81%

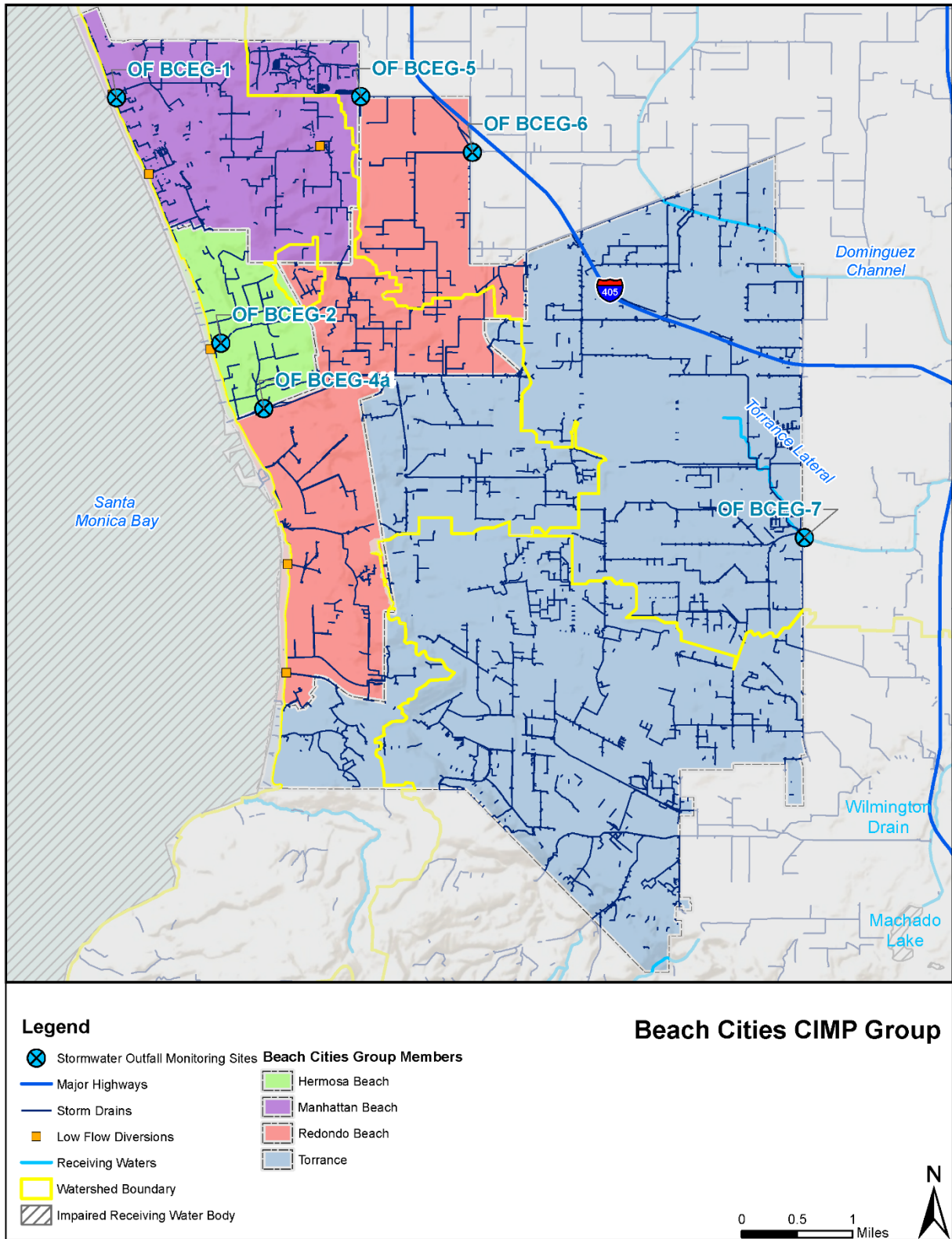
**Table 8 Summary of Stormwater Outfall-Based Monitoring Sites**

Site ID	Coordinates		Hydrologic Unit Code-12	Drainage System
	Latitude	Longitude		
<i>Alternating Sites</i>				
OF-BCEG-1	33.89430	-118.416645	Manhattan Beach Frontal SMB	28 <sup>th</sup> Street
OF-BCEG-2	33.86234	-118.400135	Manhattan Beach Frontal SMB	Hermosa Beach Pier
<del>OF-BCEG-4a</del>	<del>33.853775</del>	<del>-118.393725</del>	<del>Manhattan Beach Frontal SMB</del>	<del>Herondo Drain</del>
<del>OF-BCEG-3</del>	<del>33.859274</del>	<del>-118.372841</del>	<del>Manhattan Beach Frontal SMB</del>	<del>Rindge Lane</del>
<del>OF-BCEG-4</del>	<del>33.858186</del>	<del>-118.37595</del>	<del>Manhattan Beach Frontal SMB</del>	<del>Herondo</del>
OF-BCEG-5	33.894574	-118.378438	Lower Dominguez Channel	Marine Avenue
OF-BCEG-6	33.887345	-118.360899	Lower Dominguez Channel	BI 569
<i>Fixed Site</i>				
OF-BCEG-7	33.83722	-118.30879	Lower Dominguez Channel	Torrance Carson Lateral

Three stormwater outfall monitoring sites, two along Santa Monica Bay and one in Dominguez Channel watershed, will be monitored for all wet-weather events during one year, and the remaining ~~three-two~~ stormwater outfall monitoring sites will be monitored the following year. Each group of monitoring sites will be monitored in alternating years. **Table 9** presents the preliminary rotation schedule for the ~~six-five~~ stormwater outfall monitoring sites. A synopsis of each potential outfall catchment area, along with an analysis of its land use/zoning characteristics is shown below.

**Table 9 Stormwater Outfall Monitoring Rotation Schedule**

Outfall ID	Storm Year					
	<del>2016-2017</del> <del>2014-2015</del>	<del>2017-2018</del> <del>2015-2016</del>	<del>2018-2019</del> <del>2016-2017</del>	<del>2019-2020</del> <del>2017-2018</del>	<del>2018-2019</del> <del>2020-2021</del>	<del>2019-2020</del> <del>2021-2022</del>
<i>Group 1</i>						
OF-BCEG-1	X		X		X	
OF-BCEG-2						
OF-BCEG-6						
<i>Group 2</i>						
<del>OF-BCEG-4a</del>						
<del>OF-BCEG-3</del>						
<del>OF-BCEG-4</del>		X		X		X
OF-BCEG-5						



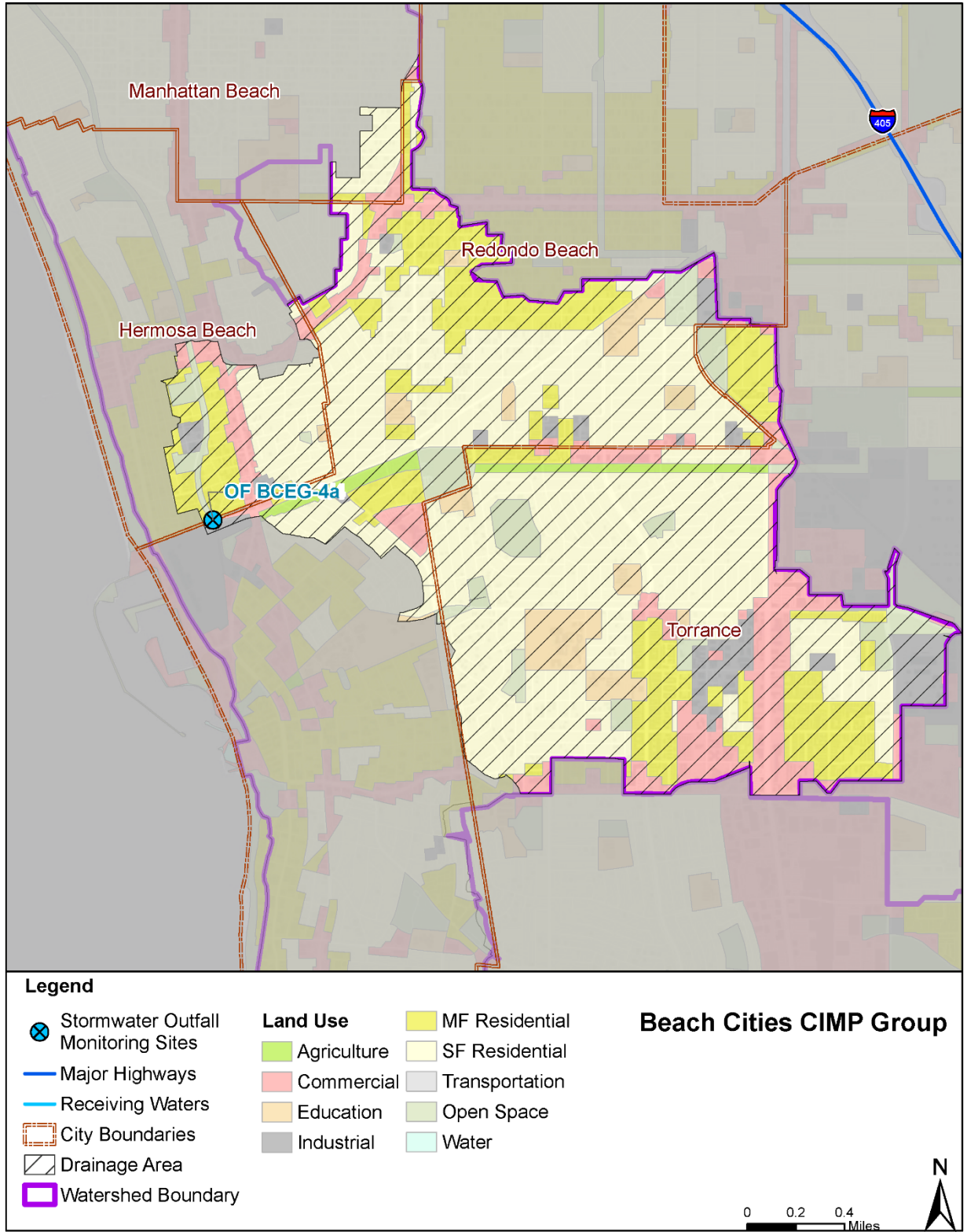
**Figure 8 Stormwater Outfalls Monitoring Site Locations**

### 4.2.3 OF-BCEG-4a

Stormwater outfall monitoring site OF-BCEG-4a is located near the downstream end of the Herondo Drain, approximately 1,800 feet from the storm drain outfall in Santa Monica Bay. The monitoring location is within the Manhattan Beach Frontal Santa Monica Bay HUC-12 area of the Beach Cities WMG. The catchment area is primarily within the cities of Redondo Beach and Torrance (36.0% Redondo Beach, 53.7% Torrance), though some area from both Hermosa Beach (8.5%) and Manhattan Beach (1.8%) also drains to this location. In total, the monitoring location accounts for approximately 38% of the Beach Cities WMG area within the SMB HUC-12 area. The drainage area for OF-BCEG-4a is shown in **Figure 11** and the land use categories are listed in **Table 12**. The tributary area is relatively representative of the cities of Redondo Beach and Torrance, as single family residential and multi-family residential land uses account for approximately 70-75% of the land use in both the watershed and cities within the SMB HUC-12.

**Table 12 Stormwater Outfall Monitoring Site OF-BCEG-4a (Redondo Beach and Torrance)**

-	<u>OF-BCEG-4a Catchment</u>		<u>Redondo/Torrance Portion of SMB MB HUC-12 area</u>		<u>Beach Cities WMG Portion of SMB MB HUC-12 area</u>	
	<u>Acres</u>	<u>Percent</u>	<u>Acres</u>	<u>Percent</u>	<u>Acres</u>	<u>Percent</u>
<i>Land Use Category</i>						
<u>Agriculture</u>	<u>50.92</u>	<u>1.7%</u>	<u>53.44</u>	<u>1.1%</u>	<u>53.44</u>	<u>0.7%</u>
<u>Commercial</u>	<u>359.35</u>	<u>12.3%</u>	<u>454.03</u>	<u>9.6%</u>	<u>791.58</u>	<u>10.4%</u>
<u>Education</u>	<u>138.91</u>	<u>4.8%</u>	<u>266.31</u>	<u>5.7%</u>	<u>392.49</u>	<u>5.2%</u>
<u>Industrial</u>	<u>132.57</u>	<u>4.5%</u>	<u>124.27</u>	<u>2.6%</u>	<u>150.2</u>	<u>2.0%</u>
<u>Multi-Family Residential</u>	<u>574.96</u>	<u>19.7%</u>	<u>946.62</u>	<u>20.1%</u>	<u>1408.82</u>	<u>18.5%</u>
<u>Open Space</u>	<u>185.10</u>	<u>6.4%</u>	<u>215.99</u>	<u>4.6%</u>	<u>374.98</u>	<u>4.9%</u>
<u>Single Family Residential</u>	<u>1,472.13</u>	<u>50.5%</u>	<u>2650</u>	<u>56.3%</u>	<u>4456.36</u>	<u>58.4%</u>
<u>Total</u>	<u>2,913.94</u>	<u>100%</u>	<u>4710.7</u>	<u>100.00%</u>	<u>7627.87</u>	<u>100%</u>
<i>Municipal Jurisdiction</i>						
<u>Hermosa Beach</u>	<u>246.80</u>	<u>8.5%</u>	<u>0</u>	<u>0%</u>	<u>844.95</u>	<u>11.0%</u>
<u>Manhattan Beach</u>	<u>52.91</u>	<u>1.8%</u>	<u>0</u>	<u>0%</u>	<u>2087.02</u>	<u>27.3%</u>
<u>Redondo Beach</u>	<u>1,049.74</u>	<u>36.0%</u>	<u>2599.6</u>	<u>55.2%</u>	<u>2606.7</u>	<u>34.1%</u>
<u>Torrance</u>	<u>1,564.50</u>	<u>53.7%</u>	<u>2111.1</u>	<u>44.8%</u>	<u>2115.28</u>	<u>27.6%</u>
<u>Total</u>	<u>2,913.94</u>	<u>100%</u>	<u>4710.7</u>	<u>100%</u>	<u>7653.95</u>	<u>100%</u>

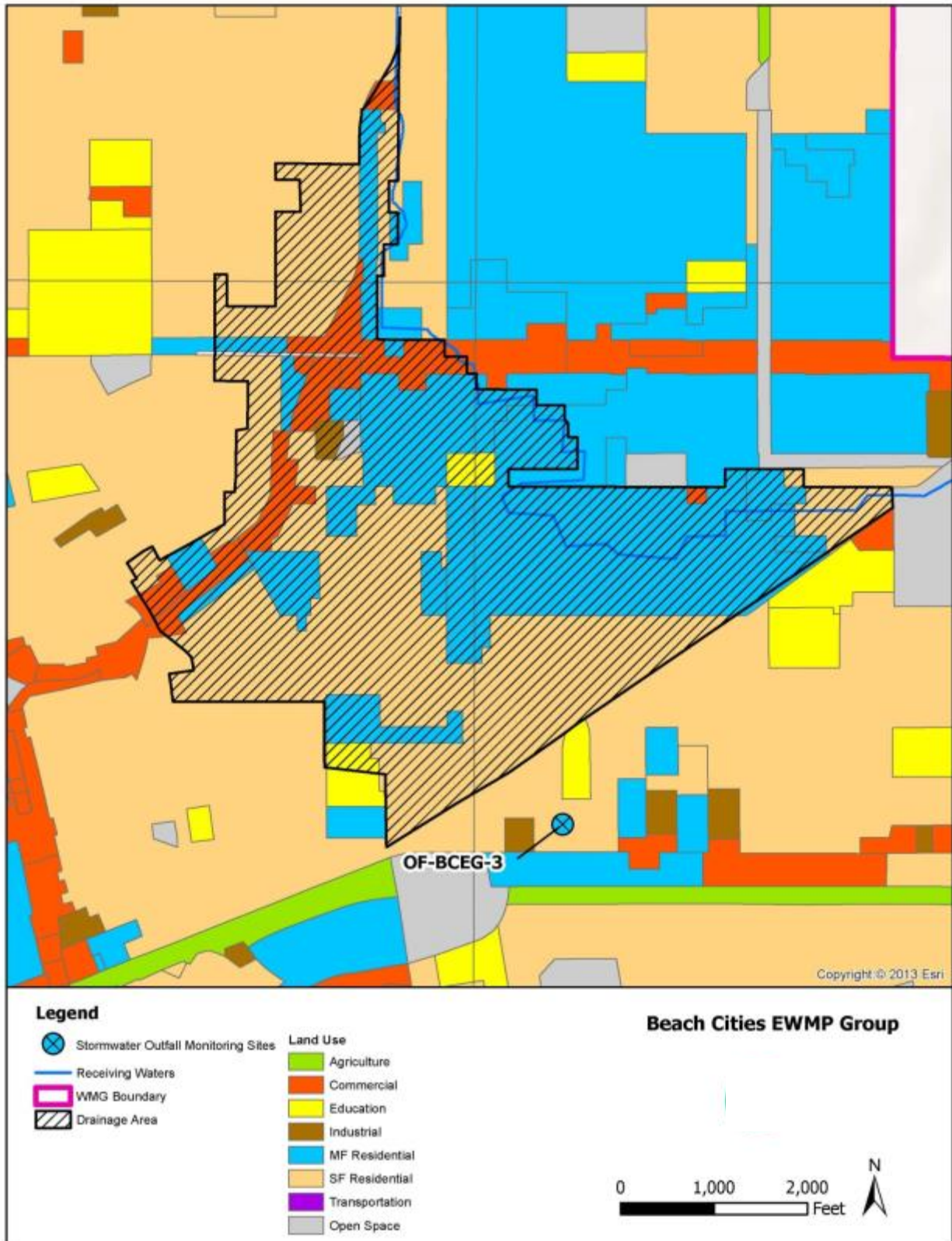


### 4.2.3 OF-BCEG-3

Stormwater outfall monitoring site OF-BCEG-3 discharges from the Rindge Lane storm drain into the Herondo storm drain within the Manhattan Beach Frontal Santa Monica Bay HUC-12 area of Beach Cities WMG. The catchment area is primarily within the City of Redondo Beach (89% Redondo Beach, 1% Hermosa Beach, and 9% Manhattan Beach) and 7.4% of the Beach Cities WMG area portion within the HUC-12 area. The drainage area for OF-BCEG-3 is shown in Figure 11 and the land use categories are listed in Table 12. Ignoring minor land use categories which are absent from the small catchment, the remainder of the tributary area is relatively representative of the City of Redondo Beach, except that there is more multi-family residential than in the City, and the industrial land use category is more characteristic of the Beach Cities WMG within the HUC-12 area.

**Table 12 Stormwater Outfall Monitoring Site OF-BCEG-3 (City of Redondo Beach)**

	OF-BCEG-3 Catchment		Redondo Beach Portion of SMB-MB HUC-12 area		Beach Cities WMG Portion of SMB-MB HUC-12 area	
	Acres	Percent	Acres	Percent	Acres	Percent
<i>Land Use Category</i>						
Agricultural	0	0%	25.34	0.97%	53.44	0.70%
Commercial	45.09	7.98%	310.96	11.96%	791.58	10.38%
Education	7.69	1.36%	150.19	5.78%	392.49	5.15%
Industrial	2.56	0.45%	99.04	3.81%	150.2	1.97%
Multi-Family Residential	231.42	40.95%	712.54	27.41%	1408.82	18.47%
Open Space	1.82	0.32%	106.77	4.11%	374.98	4.92%
Single-Family Residential	276.59	48.94%	1194.7	45.96%	4456.36	58.42%
<b>Total</b>	<b>565.17</b>	<b>100.00%</b>	<b>2599.6</b>	<b>100%</b>	<b>7627.87</b>	<b>100%</b>
<i>Municipal Jurisdiction</i>						
Hermosa Beach	8.07	1.43%	0	0%	844.95	11.04%
Manhattan Beach	51.76	9.16%	0	0%	2087.02	27.27%
Redondo Beach	505.34	89.41%	2599.6	100%	2606.7	34.06%
Torrance	0	0%	0	0%	2115.28	27.64%
<b>Total</b>	<b>565.17</b>	<b>100%</b>	<b>2599.6</b>	<b>100%</b>	<b>7653.95</b>	<b>100%</b>



**Figure 11 Beach Cities WMG Stormwater Outfall Monitoring Site OF-BCEG-3 Drainage Area**

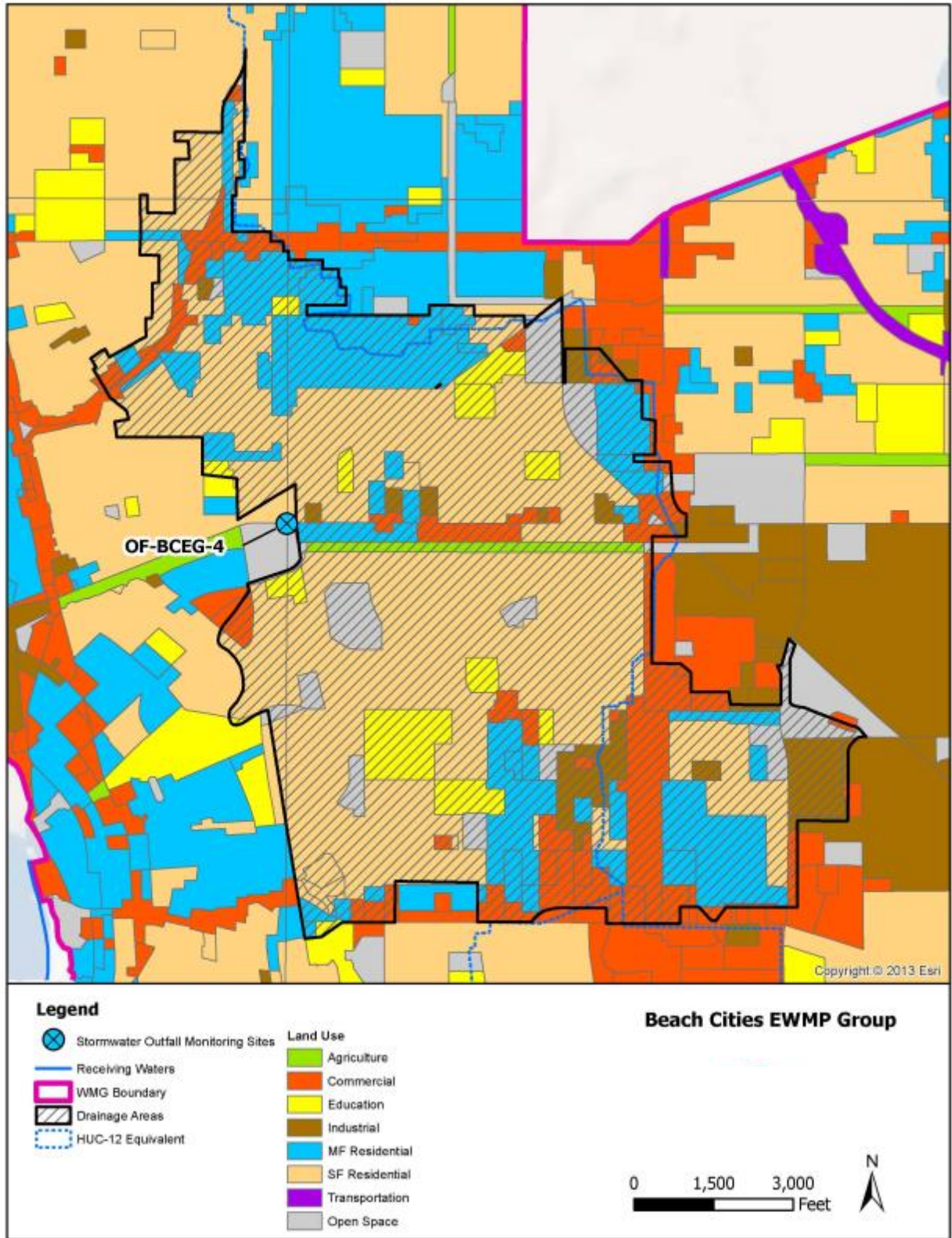


#### 4.2.4 ~~OF-BCEG-4~~

~~Stormwater outfall monitoring site OF BCEG 4 will be accessed via a manhole located near 190th St. and N. Beryl St. in the Herondo storm drain which is located within the Manhattan Beach Frontal Santa Monica Bay HUC 12 area. The OF BCEG 4 catchment area comprises approximately 63.1% of the City of Torrance and 32.8% of the Beach Cities WMG within the Santa Monica Bay HUC 12 area. The drainage area for OF BCEG 4 is depicted in Figure 12 and is summarized in Table 13. The land use of the drainage area is relatively representative of the City of Torrance and the Beach Cities WMG within the HUC 12 area.~~

**Table 13 Stormwater Outfall Monitoring Site OF BCEG-4 (City of Torrance)**

	<del>OF BCEG-4 Catchment</del>		<del>Torrance Portion of SMB MB HUC-12 area</del>		<del>Beach Cities WMG Portion of SMB MB HUC-12 area</del>	
	<del>Aeres</del>	<del>Percent</del>	<del>Aeres</del>	<del>Percent</del>	<del>Aeres</del>	<del>Percent</del>
<i>Land Use Category</i>						
<del>Agricultural</del>	<del>28.1</del>	<del>1.12%</del>	<del>28.1</del>	<del>1.33%</del>	<del>53.44</del>	<del>0.70%</del>
<del>Commercial</del>	<del>309.38</del>	<del>12.36%</del>	<del>143.07</del>	<del>6.78%</del>	<del>791.58</del>	<del>10.36%</del>
<del>Education</del>	<del>133.66</del>	<del>5.34%</del>	<del>116.12</del>	<del>5.50%</del>	<del>403.11</del>	<del>5.28%</del>
<del>Industrial</del>	<del>116.2</del>	<del>4.64%</del>	<del>25.23</del>	<del>1.20%</del>	<del>150.34</del>	<del>1.97%</del>
<del>Multi Family Residential</del>	<del>512.57</del>	<del>20.48%</del>	<del>234.08</del>	<del>11.09%</del>	<del>1408.86</del>	<del>18.44%</del>
<del>Open Space</del>	<del>136.5</del>	<del>5.46%</del>	<del>109.22</del>	<del>5.17%</del>	<del>375.10</del>	<del>4.91%</del>
<del>Single Family Residential</del>	<del>1266.3</del>	<del>50.60%</del>	<del>1455.3</del>	<del>68.93%</del>	<del>4456.40</del>	<del>58.34%</del>
<del>Total</del>	<del>2502.71</del>	<del>100%</del>	<del>2111.1</del>	<del>100%</del>	<del>7638.83</del>	<del>100%</del>
<i>Municipal Jurisdiction</i>						
<del>Hermosa Beach</del>	<del>8.07</del>	<del>0.32%</del>	<del>0</del>	<del>0%</del>	<del>848.37</del>	<del>11.11%</del>
<del>Manhattan Beach</del>	<del>51.76</del>	<del>2.06%</del>	<del>0</del>	<del>0%</del>	<del>2079.79</del>	<del>27.23%</del>
<del>Redondo Beach</del>	<del>865.55</del>	<del>34.52%</del>	<del>0</del>	<del>0%</del>	<del>2599.58</del>	<del>34.03%</del>
<del>Torrance</del>	<del>1582.3</del>	<del>63.10%</del>	<del>2111.1</del>	<del>100%</del>	<del>2111.09</del>	<del>27.64%</del>
<del>Total</del>	<del>2507.68</del>	<del>100%</del>	<del>2111.1</del>	<del>100%</del>	<del>7638.83</del>	<del>100%</del>



**Figure 12 Beach Cities WMG Stormwater Outfall Monitoring Site OF-BCEG-4 Drainage Area**

**Table 16 List of Constituents for Stormwater Outfall Monitoring**

Constituent	Water Body		
	Santa Monica Bay	Dominguez Channel	Torrance Carson Lateral
Flow, temperature, pH, hardness, total suspended solids, dissolved oxygen, and specific conductivity	X	X	X
Table E-2 pollutants detected above relevant objectives	X	X	X
Aquatic Toxicity and Toxicity Identification Evaluation (TIE) <sup>(1)</sup>			
Total Coliform	X		
Fecal Coliform	X		
Enterococcus	X		
<u>Arsenic</u>	<u>X</u>		
<u>Mercury</u>	<u>X</u>		
Total Copper		X	X
Total Lead		X	X
Total Zinc		X	X
Diazinon		X	
<u>Ammonia</u>		<u>X</u>	<u>X</u>
<i>E. coli</i> (Indicator Bacteria)		X	X
Cyanide		X	X
pH		X	X
Selenium		X	X
Mercury		X	X
Cadmium		X	X
DDT and PCB	X		

**Table 18 List of Constituents for Non-Stormwater Outfall Monitoring**

Constituent	Water Body		
	Santa Monica Bay	Dominguez Channel	Torrance Carson Lateral
Flow, hardness, pH, dissolved oxygen, temperature, specific conductivity, and total suspended solids	X	X	X
Table E-2 pollutants detected above relevant objectives	X	X	X
Aquatic Toxicity and Toxicity Identification Evaluation (TIE) <sup>1</sup>			
Total Coliform	X		
Fecal Coliform	X		
Enterococcus	X		
<u>Mercury</u>	<del>X</del>		
<u>Arsenic</u>	<del>X</del>		
Total Copper		X	X
Total Lead		X	X
Total Zinc		X	X
Diazinon		X	
<u>Ammonia</u>		<del>X</del>	<del>X</del>
<i>E. coli</i> (Indicator Bacteria)		X	X
Cyanide		X	X
pH		X	X
Selenium		X	X
Mercury		X	X
Cadmium		X	X

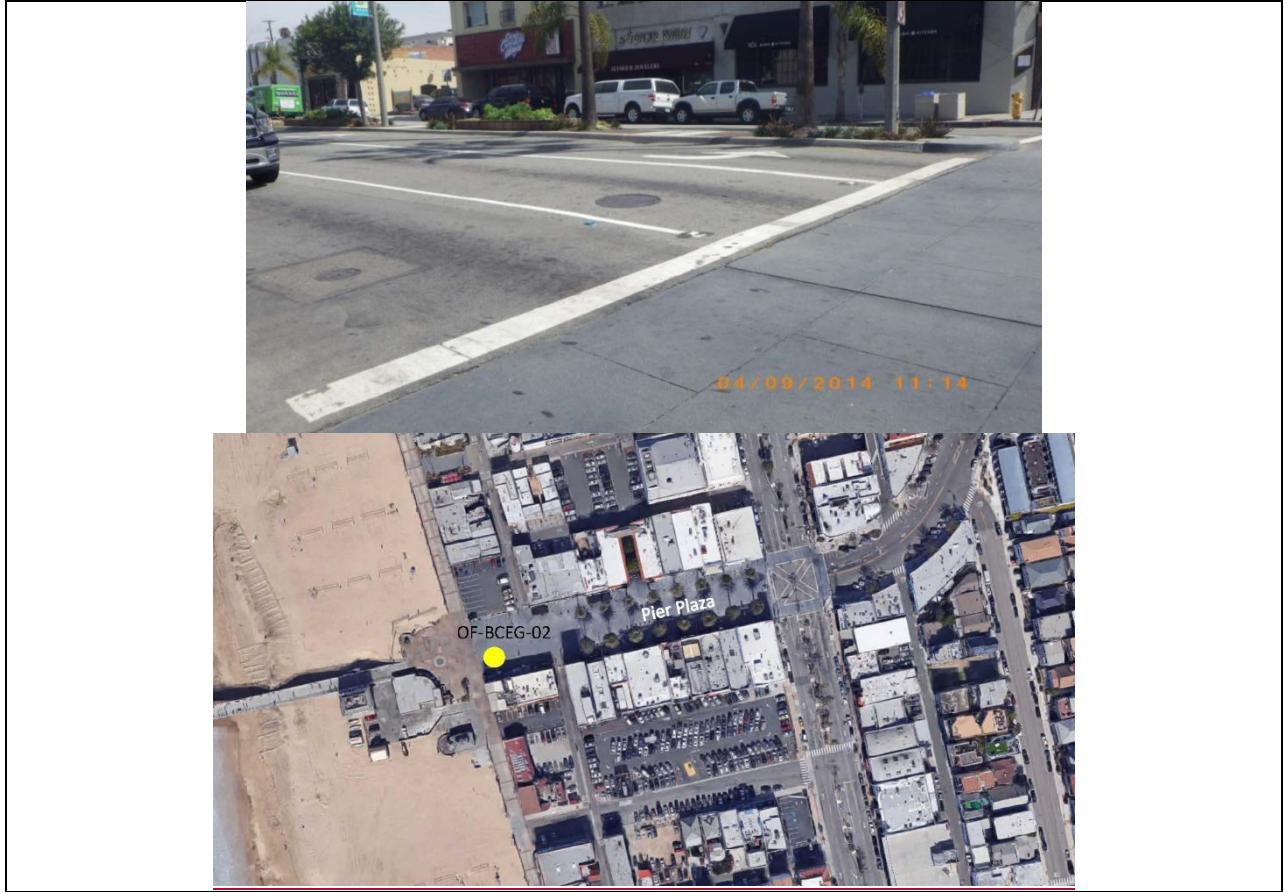
1. Toxicity is only monitored from outfalls when triggered by recent receiving water toxicity monitoring where a TIE on the observed receiving water toxicity test was inconclusive. If toxicity is observed at the outfall a TIE must be conducted.

Outfalls on the monitoring list will be monitored for at least the duration of the Permit term, or until the non-stormwater discharge is eliminated. Additional analytical and monitoring procedures are discussed in the Analytical and Monitoring Procedures per **Appendix D**.

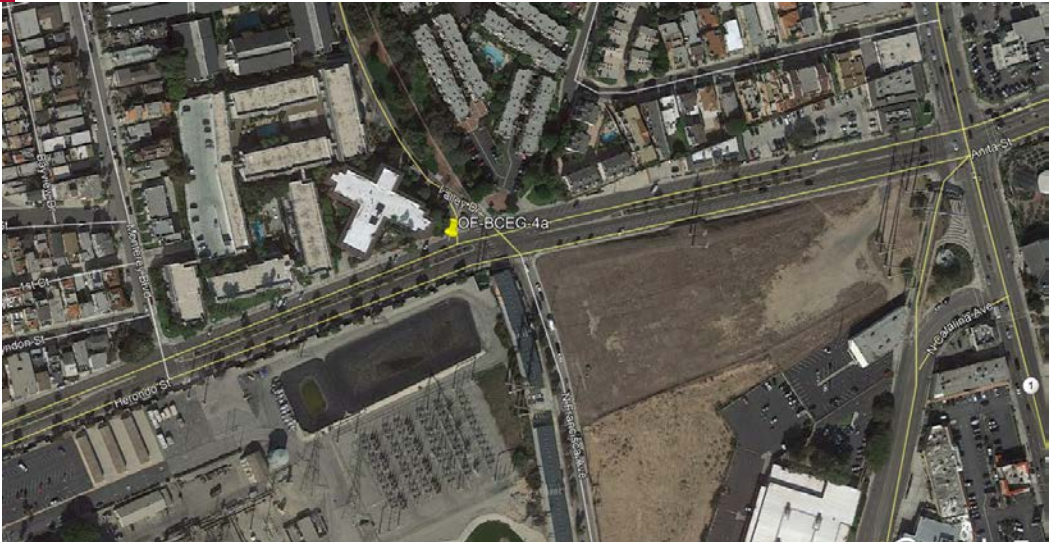
### Summary Sheet for OF-BCEG-2

<b>Site ID:</b> OF-BCEG-2		<b>Monitoring Type:</b> Rotating Stormwater Outfall				
<b>Latitude:</b> 33.8623486188		<b>Watershed:</b> Santa Monica Bay				
<b>Longitude:</b> -118.4001340155		<b>Represented Area:</b> City of Hermosa Beach				
<b>Thomas Guide Grid:</b> pg 762 G2		<b>Drainage System:</b> Hermosa Beach Pier				
<b>Outfall Shape:</b> Round		<b>HUC-12:</b> Manhattan Beach – Frontal Santa Monica Bay (180701040500)				
<b>Outfall Type:</b> Manhole		<b>Nearest Street Address:</b> 84 Pier Avenue, Hermosa Beach, CA 90254				
	<b>OF-BCEG-2 Catchment</b>		<b>Hermosa Beach Portion of SMB MB HUC-12 area</b>		<b>Beach Cities WMG Portion of SMB MB HUC-12 area</b>	
	<b>Acres</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>
<i>Land Use Category</i>						
Agricultural	0	0%	0	0%	53.44	0.70%
Commercial	95.8	22.33%	129.92	15.31%	791.58	10.36%
Education	10.62	2.48%	16.27	1.92%	403.11	5.28%
Industrial	1.7	0.40%	13.3	1.57%	150.34	1.97%
Multi-Family Residential	123.09	28.69%	254.05	29.95%	1408.86	18.44%
Open Space	24.18	5.64%	51.39	6.06%	375.10	4.91%
Single Family Residential	173.57	40.46%	383.44	45.20%	4456.40	58.34%
<b>Total</b>	<b>428.96</b>	<b>100%</b>	<b>848.37</b>	<b>100%</b>	<b>7638.83</b>	<b>100%</b>
<i>Municipal Jurisdiction</i>						
Hermosa Beach	415.52	96.87%	848.37	100%	848.37	11.11%
Manhattan Beach	13.44	3.13%	0	0%	2079.79	27.23%
Redondo Beach	0	0%	0	0%	2599.58	34.03%
Torrance	0	0%	0	0%	2111.09	27.64%
<b>Total</b>	<b>428.96</b>	<b>100%</b>	<b>848.37</b>	<b>100%</b>	<b>7638.83</b>	<b>100%</b>
<b>Site Description:</b> OF-BCEG-2 is located <del>in the number 1 lane of West bound Pier Avenue approximately 10' from the intersection limit line and across from near the west end of Pier Plaza in Hermosa Beach, immediately east of the bike path and in front of Hennessey's Tavern (8 Pier Avenue). Vehicle traffic is prohibited in Pier Plaza, but pedestrian traffic is typically heavy. Due to the location and heavy traffic, a land closure would likely be necessary at this location. While through traffic on to the plaza is prohibited, left turning traffic would be constrained to the left turn pocket.</del> The Hermosa Strand Infiltration Trench, <u>which is immediately downstream,</u> diverts both dry- and wet-weather flows from the Pier Avenue storm drain. <u>This location is subject to backflow conditions from the ocean during high tide. Such conditions will be critical to assess prior to and while sampling.</u>						
<b>Site Location:</b> See CIMP Figure 10						
<b>Site View:</b>						


Appendix C. Monitoring Location Fact Sheets  
July 2018



**Summary Sheet for OF-BCEG-4a**


<b>Site ID:</b> <u>OF-BCEG-4a</u>		<b>Monitoring Type:</b> <u>Rotating Stormwater Outfall</u>				
<b>Latitude:</b> <u>33.853775</u>		<b>Watershed:</b> <u>Santa Monica Bay</u>				
<b>Longitude:</b> <u>-118.393725</u>		<b>Represented Area:</b> <u>City of Redondo Beach, City of Torrance</u>				
<b>Thomas Guide Grid:</b> <u>pg 762 H3</u>		<b>Drainage System:</b> <u>Herondo Drain Subwatershed</u>				
<b>Outfall Shape:</b> <u>Box</u>		<b>HUC-12:</b> <u>Manhattan Beach – Frontal Santa Monica Bay (180701040500)</u>				
<b>Outfall Type:</b> <u>Manhole</u>		<b>Nearest Street Address:</b> <u>Valley Drive at Herondo St, Hermosa Beach, CA 90254</u>				
-	<b>OF-BCEG-4a Catchment</b>		<b>Redondo/Torrance Portion of SMB MB HUC-12 area</b>		<b>Beach Cities WMG Portion of SMB MB HUC-12 area</b>	
	<b>Acres</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>
<i>Land Use Category</i>						
<u>Agriculture</u>	<u>50.92</u>	<u>1.7%</u>	<u>53.44</u>	<u>1.13%</u>	<u>53.44</u>	<u>0.70%</u>
<u>Commercial</u>	<u>359.35</u>	<u>12.3%</u>	<u>454.03</u>	<u>9.64%</u>	<u>791.58</u>	<u>10.36%</u>
<u>Education</u>	<u>138.91</u>	<u>4.8%</u>	<u>266.31</u>	<u>5.65%</u>	<u>403.11</u>	<u>5.28%</u>
<u>Industrial</u>	<u>132.57</u>	<u>4.5%</u>	<u>124.27</u>	<u>2.64%</u>	<u>150.34</u>	<u>1.97%</u>
<u>Multi-Family Residential</u>	<u>574.96</u>	<u>19.7%</u>	<u>946.62</u>	<u>20.10%</u>	<u>1408.86</u>	<u>18.44%</u>
<u>Open Space</u>	<u>185.10</u>	<u>6.4%</u>	<u>215.99</u>	<u>4.59%</u>	<u>375.10</u>	<u>4.91%</u>
<u>Single Family Residential</u>	<u>1,472.13</u>	<u>50.5%</u>	<u>2650</u>	<u>56.25%</u>	<u>4456.40</u>	<u>58.34%</u>
<b>Total</b>	<b><u>2,913.94</u></b>	<b><u>100%</u></b>	<b><u>4710.7</u></b>	<b><u>100.00%</u></b>	<b><u>7638.83</u></b>	<b><u>100%</u></b>
<i>Municipal Jurisdiction</i>						
<u>Hermosa Beach</u>	<u>246.80</u>	<u>8.5%</u>	<u>0</u>	<u>0%</u>	<u>848.37</u>	<u>11.11%</u>
<u>Manhattan Beach</u>	<u>52.91</u>	<u>1.8%</u>	<u>0</u>	<u>0%</u>	<u>2079.79</u>	<u>27.23%</u>
<u>Redondo Beach</u>	<u>1,049.74</u>	<u>36.0%</u>	<u>2599.6</u>	<u>100%</u>	<u>2599.58</u>	<u>34.03%</u>
<u>Torrance</u>	<u>1,564.50</u>	<u>53.7%</u>	<u>2111.1</u>	<u>44.8%</u>	<u>2111.09</u>	<u>27.64%</u>
<b>Total</b>	<b><u>2,913.94</u></b>	<b><u>100%</u></b>	<b><u>4710.7</u></b>	<b><u>100%</u></b>	<b><u>7638.83</u></b>	<b><u>100%</u></b>
<b>Site Description:</b> <u>Located on the north side of Herondo Street, near the intersection of Valley Drive. The access manhole is not in the immediate traffic lane; however, traffic control is likely still necessary due to the general busyness of the street and the intersection.</u>						
<b>Site Location:</b> <u>See CIMP Figure 11</u>						
<b>Site View:</b>						
						

**Summary Sheet for OF-BCEG-3**

<b>Site ID:</b> OF-BCEG-3		<b>Monitoring Type:</b> Rotating Stormwater Outfall				
<b>Latitude:</b> 33.859274		<b>Watershed:</b> Santa Monica Bay				
<b>Longitude:</b> -118.372841		<b>Represented Area:</b> City of Redondo Beach				
<b>Thomas Guide Grid:</b> pg 763 A2		<b>Drainage System:</b> Rindge Lane branch of Herondo Drain				
<b>Outfall Shape:</b> Unknown		<b>HUC-12:</b> Manhattan Beach—Frontal Santa Monica Bay (180701040500)				
<b>Outfall Type:</b> Manhole		<b>Nearest Street Address:</b> 552 Rindge, Redondo Beach, CA 90273				
-	<b>OF-BCEG-3 Catchment</b>		<b>Redondo Beach Portion of SMB MB HUC-12 area</b>		<b>Beach Cities WMG Portion of SMB MB HUC-12 area</b>	
	<b>Acres</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>
<i>Land Use Category</i>						
Agricultural	0	0%	25.34	0.97%	53.44	0.70%
Commercial	45.09	7.98%	310.96	11.96%	791.58	10.36%
Education	7.69	1.36%	150.19	5.78%	403.11	5.28%
Industrial	2.56	0.45%	99.04	3.81%	150.34	1.97%
Multi-Family Residential	231.42	40.95%	712.54	27.41%	1408.86	18.44%
Open Space	1.82	0.32%	106.77	4.11%	375.10	4.91%
Single-Family Residential	276.59	48.94%	1194.7	45.96%	4456.40	58.34%
<b>Total</b>	<b>565.17</b>	<b>100.00%</b>	<b>2599.6</b>	<b>100%</b>	<b>7638.83</b>	<b>100%</b>
<i>Municipal Jurisdiction</i>						
Hermosa Beach	8.07	1.43%	0	0%	848.37	11.11%
Manhattan Beach	51.76	9.16%	0	0%	2079.79	27.23%
Redondo Beach	505.34	89.41%	2599.6	100%	2599.58	34.03%
Torrance	0	0%	0	0%	2111.09	27.64%
<b>Total</b>	<b>565.17</b>	<b>100%</b>	<b>2599.6</b>	<b>100%</b>	<b>7638.83</b>	<b>100%</b>
<b>Site Description:</b> Consists of single lane two direction residential street with moderate traffic. Storm drain is very deep in this area and sample collection maybe difficult. Further investigation is warranted and should anticipate needing a permit and potentially traffic controls.						
<b>Site Location:</b> See CIMP Figure 11						
<b>Site View:</b>						
						
(Ref: Google Maps)						



**Summary Sheet for OF-BCEG-4**

<b>Site ID:</b> OF-BCEG-4		<b>Monitoring Type:</b> Rotating Stormwater Outfall				
<b>Latitude:</b> 33.858186		<b>Watershed:</b> Santa Monica Bay				
<b>Longitude:</b> -118.37595		<b>Represented Area:</b> City of Torrance				
<b>Thomas Guide Grid:</b> pg 763 A3		<b>Drainage System:</b> Herondo				
<b>Outfall Shape:</b> Round		<b>HUC-12:</b> Manhattan Beach—Frontal Santa Monica Bay (180701040500)				
<b>Outfall Type:</b> Manhole		<b>Nearest Street Address:</b> 190 <sup>th</sup> St and N. Beryl St.				
-	<b>OF-BCEG-4 Catchment</b>		<b>Torrance Portion of SMB MB HUC-12 area</b>		<b>Beach Cities WMG Portion of SMB MB HUC-12 area</b>	
	<b>Acres</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>
<i>Land Use Category</i>						
Agricultural	28.1	1.12%	28.1	1.33%	53.44	0.70%
Commercial	309.38	12.36%	143.07	6.78%	791.58	10.36%
Education	133.66	5.34%	116.12	5.50%	403.11	5.28%
Industrial	116.2	4.64%	25.23	1.20%	150.34	1.97%
Multi-Family Residential	512.57	20.48%	234.08	11.09%	1408.86	18.44%
Open Space	136.5	5.46%	109.22	5.17%	375.10	4.91%
Single-Family Residential	1266.3	50.60%	1455.3	68.93%	4456.40	58.34%
<b>Total</b>	<b>2502.71</b>	<b>100%</b>	<b>2111.1</b>	<b>100%</b>	<b>7638.83</b>	<b>100%</b>
<i>Municipal Jurisdiction</i>						
Hermosa Beach	8.07	0.32%	0	0%	848.37	11.11%
Manhattan Beach	51.76	2.06%	0	0%	2079.79	27.23%
Redondo Beach	865.55	34.52%	0	0%	2599.58	34.03%
Torrance	1582.3	63.10%	2111.1	100%	2111.09	27.64%
<b>Total</b>	<b>2507.68</b>	<b>100%</b>	<b>2111.1</b>	<b>100%</b>	<b>7638.83</b>	<b>100%</b>
Site Description: OF-BCEG-4 is located in Torrance at the southeast corner of the intersection of 190th Street and Beryl Street. It may require traffic controls due to its location.						
Site Location: See CIMP Figure 12						
Site View:						
						
(Ref: Google Earth)						

Attachment 2: Revised Pages from the CIMP  
With Changes Accepted

## 1.2 Water Quality Priorities

Based on the water quality characterization conducted as part of the EWMP Work Plan, the water body–pollutant combinations (WBPCs) have been classified into one of three categories in accordance with Section IV.C.5(a)ii of the Permit.

This categorization is intended to guide the implementation of structural and institutional best management practices (BMPs) and monitoring activities in the CIMP. **Table 2** presents the identified water quality priorities for the Beach Cities WMG.

**Table 2 Water Body Pollutant Prioritization**

Category	Water Body	Pollutant	Compliance Deadline
1: Highest Priority	Santa Monica Bay Beaches	Dry Weather Bacteria	7/15/2006 (Final: Single sample summer AEDs met)
			11/1/2009 (Final: Single sample winter AEDs met)
		Wet Weather Bacteria	7/15/2009 (Interim: 10% Single sample ED reduction)
			7/15/2021 (Final: Single sample AED and GM targets met) <sup>a</sup>
	Santa Monica Bay	Trash/Debris	3/20/2016 (20% reduction)
			3/20/2020 (100% reduction)
		DDTs	No compliance schedule established since Beach Cities discharges are assumed to be in compliance (Final Grouped WLA for entire Santa Monica Bay: 27.08 g/yr) <sup>b</sup>
	PCBs	No compliance schedule established since Beach Cities discharges are assumed to be in compliance (Final Grouped WLA for entire Santa Monica Bay: 140.25 g/yr) <sup>b</sup>	
	Dominguez Channel (including Torrance Lateral) <sup>c</sup>	Toxicity	12/28/2012 (Interim wet weather: 2 TUC)
			3/23/2032 (Final wet weather: 1 TUC)
		Total Copper	12/28/2012 (Interim wet weather: 207.51 ug/L)
			3/23/2032 (Final wet weather: 1,300.3 g/day)
			3/23/2032 (Final wet weather, Torrance Lateral: 9.7 ug/L)
		Total Lead	12/28/2012 (Interim wet weather: 122.88 ug/L)
			3/23/2032 (Final wet weather: 5,733.7 g/day)
3/23/2032 (Final wet weather, Torrance Lateral: 42.7 ug/L)			
Total Zinc		12/28/2012 (Interim wet weather: 898.87 ug/L)	
	3/23/2032 (Final wet weather: 9,355.5 g/day)		
	3/23/2032 (Final wet weather, Torrance Lateral: 69.7 ug/L)		

Category	Water Body	Pollutant	Compliance Deadline
	Dominguez Channel Estuary	Copper	12/28/2012 (Interim sediment: 220 mg/kg)
			3/23/2032 (Final sediment: 22.4 kg/yr)
		Lead	12/28/2012 (Interim sediment: 510 mg/kg)
			3/23/2032 (Final sediment: 54.2 kg/yr)
		Zinc	12/28/2012 (Interim sediment: 789 mg/kg)
			3/23/2032 (Final sediment: 271.8 kg/yr)
		DDT	12/28/2012 (Interim sediment: 1.727 mg/kg)
			3/23/2032 (Final sediment: 0.250 g/yr)
		PAHs	12/28/2012 (Interim sediment: 31.60 mg/kg)
			3/23/2032 (Final sediment: 0.134 kg/yr)
	PCBs	12/28/2012 (Interim sediment 1.490 mg/kg)	
		3/23/2032 (Final sediment: 0.207 g/yr)	
	Cadmium	3/23/2032 (Final sediment: 1.2 mg/kg)	
	Machado Lake	Total Phosphorus <sup>d</sup>	3/11/2014 (Interim: 1.25 mg/L)
			9/11/2018 (Final: 0.1 mg/L)
		Total Nitrogen <sup>d</sup>	3/11/2014 (Interim: 2.45 mg/L)
			9/11/2018 (Final: 1.0 mg/L)
		Chlordane (tissue)	9/30/2019 (In sediment, wet and dry weather: 3.24 µg/kg dry weight)
		Total DDT (tissue)	9/30/2019 (In sediment, wet and dry weather: 5.28 µg/kg dry weight)
		Dieldrin (tissue)	9/30/2019 (In sediment, wet and dry weather: 1.9 µg/kg dry weight)
Total PCBs (tissue)		9/30/2019 (In sediment, wet and dry weather: 59.8 µg/kg dry weight)	
Trash		3/6/2012 (20% reduction)	
		3/6/2013 (40 % reduction)	
	3/6/2014 (60% reduction)		
	3/6/2015 (80% reduction)		
		3/6/2016 (100% reduction)	
2: High Priority	Santa Monica Bay	Mercury	N/A
		Arsenic	N/A
	Dominguez Channel (including Torrance Lateral)	Indicator Bacteria	TBD in EWMP
	Dominguez Channel Estuary	Indicator Bacteria	TBD in EWMP
3: Medium Priority	Dominguez Channel (including Torrance Lateral)	Cyanide	TBD in EWMP
		pH	TBD in EWMP
		Selenium	TBD in EWMP
		Mercury	TBD in EWMP
		Cadmium	TBD in EWMP

<sup>a</sup> TMDL reopened in 2013 and the changes became effective July 2, 2014.

**Table 6 Receiving Water Monitoring Sites, Constituents, and Annual Monitoring Frequency**

Constituents	Annual Frequency Wet/Dry <sup>(1)</sup>		
	RW-BCEG-1 and RW-BCEG-2	All Shoreline Monitoring Sites	Mass Emissions Station S28
Total Coliform	3/0	Daily/Weekly	
Fecal Coliform	3/0	Daily/Weekly	
Enterococcus	3/0	Daily/Weekly	
Indicator Bacteria			3/2
Copper (total and dissolved)			3/2
Lead (total and dissolved)			3/2
Zinc (total and dissolved)			3/2
Mercury	3/0		
Arsenic	3/0		
Flow and field parameters <sup>(2)</sup>	3/0		3/2
Pollutants identified in Table E-2 of the MRP <sup>(3)</sup>	1 <sup>(3,4)</sup> /0		1/1 <sup>(3,4)</sup>
Aquatic Toxicity and Toxicity Identification Evaluation (TIE) <sup>5</sup>	2/0		2/1

1. Annual frequency listed as number of wet-weather/dry-weather events per year, respectively (e.g., 3/0 signifies three wet weather and zero dry weather events per year).
2. Field parameters are defined as dissolved oxygen, pH, temperature, and specific conductivity. For ocean monitoring, field parameters will also include salinity.
3. All pollutants identified in Table E-2 of the MRP not already explicitly addressed by monitoring at this site.
4. Monitoring frequency only applies during the first year of monitoring. Table E-2 parameters will be monitored during the first significant rain event of the storm year and during the critical dry weather event where dry weather sampling is conducted. For pollutants identified in Table E-2 of the MRP that are not detected at the Method Detection Limit (MDL) or the result is below the lowest applicable water quality objective, additional monitoring will not be conducted (i.e., the monitoring frequency will become 0/0). For pollutants detected above the lowest applicable water quality objective, future monitoring will be conducted at the frequency specified in the MRP (i.e., the monitoring frequency will become 3/0 at SMB sites and 3/2 at S28).
5. Aquatic toxicity monitoring requirements are summarized in correspondence from the Regional Board to all Permittees which has been provided as Section D.5 of **Appendix D**.

### 2.3.3 Dry-Weather

Part VI.D.1.a of the MRP states dry-weather receiving water monitoring shall be conducted two times per year. The Beach Cities WMG has installed LFDs to address dry-weather flows. The LFDs are operational year-round and divert dry-weather flows from the storm drains to the sanitary sewer system, keeping dry-weather flows from reaching Santa Monica Bay. Given that the LFDs divert all dry-weather flow from reaching Santa Monica Bay, the Beach Cities WMG has opted not to conduct dry-weather receiving water monitoring for Santa Monica Bay. All LFDs will be closely monitored and maintained to ensure that no dry-weather flow will reach the Santa Monica Bay shoreline. Dry weather monitoring, based on the Los Angeles County Mass Emissions Program protocols, will continue to occur during the historically driest month (August), at MES S28, and be summarized within the WMG annual monitoring report.

## 4.0 Stormwater Outfall Monitoring

Stormwater outfall monitoring is intended to assess discharge water quality relative to municipal action limits (MALs) and WQBELs derived from TMDL WLAs, and evaluates the potential of outfall discharges to have caused or contributed to exceedances of RWLs derived from TMDL WLAs or receiving water quality objectives. Drainage of storm drains within the Beach Cities WMG differs between each equivalent HUC-12 subwatershed. An analysis of land uses within equivalent HUC-12 subwatersheds, jurisdictional areas represented by each outfall site, and each site's drainage area was conducted for each outfall monitoring site.

### 4.1 Program Objectives

As outlined in the MRP (Part VIII.A of the MRP), stormwater discharges from the MS4 shall be monitored at outfalls and/or alternative access points such as manholes, or in channels representative of the land uses within the Permittee's jurisdiction to support meeting the three objectives of the stormwater outfall monitoring program:

1. Determine the quality of a Permittee's discharge relative to municipal action levels, as described in Attachment G of the MS4 Permit;
2. Determine whether a Permittee's discharge is in compliance with applicable stormwater WQBELs derived from TMDL WLAs; and
3. Determine whether a Permittee's discharge causes or contributes to an exceedance of receiving water limitations.

Each stormwater outfall monitoring site was evaluated with regards to how representative they are of the surrounding land use of the overall Beach Cities WMG, the individual jurisdictions in which their drainage areas are located, and the equivalent HUC-12. Each zoning category provided by the RAA guidance manual was fit into one of the following eight land use categories:

- Agricultural;
- Industrial;
- Single Family Residential;
- Open Space;
- Commercial;
- Education;
- Multi-Family Residential; and
- Transportation.

### 4.2 Stormwater Outfall Monitoring Sites

The Permit provides monitoring site "default" requirements - one site per HUC-12 per jurisdiction - for achieving stormwater outfall monitoring objectives. The MS4 Permit also allows for an alternative approach to increase the cost efficiency and effectiveness of the monitoring program. The Beach Cities WMG has chosen the default Permit approach within the Santa Monica Bay and Dominguez Channel Watersheds. The previously approved monitoring program addressing the Machado Lake and Long Beach Harbor HUC-12 area is included as Appendix B to this CIMP; therefore, no new outfall monitoring sites in this HUC-12 have been identified in this document. Six stormwater outfall monitoring sites, as shown in **Figure 8**, were selected as part of the approach. As indicated by **Table 7** these monitoring locations together comprise about a third of the total Beach Cities WMG area.

The selected sites are representative of a combination of the “equivalent” HUC-12s, and the represented City’s jurisdictional area. The County subwatershed and equivalent HUC-12 GIS data displayed minor misalignments resulting in shifts of less than 1% between watersheds when the two sources were compared. Outfall land use characteristics were based on subwatershed data then compared to the divergent County equivalent HUC-12 data. The Beach Cities WMG stormwater outfall samples will be collected as grab samples at manholes upstream of the outfalls. One stormwater outfall monitoring site (OF-BCEG-7) will be monitored at each of the three required wet-weather events on an annual basis, while the remaining five stormwater outfall monitoring sites will be monitored on an alternating annual basis. **Table 8** provides a summary for the six stormwater outfall monitoring sites.

**Table 7 Beach Cities WMG Outfall Tributary Area Percentages (of 20,254 acre Total)**

Monitoring Site	Outfall Drainage Area	Tributary Area Percentage of WMG Total
OF-BCEG-1	1,533 Acres	7.57%
OF-BCEG-2	429 Acres	2.10%
OF-BCEG-4a	2,914 Acres	14.39%
OF-BCEG-5	365 Acres	1.80%
OF-BCEG-6	780 Acres	3.85%
OF-BCEG-7	3,314 Acres	16.34%
Total Tributary Area	9,489 Acres	46.81%

**Table 8 Summary of Stormwater Outfall-Based Monitoring Sites**

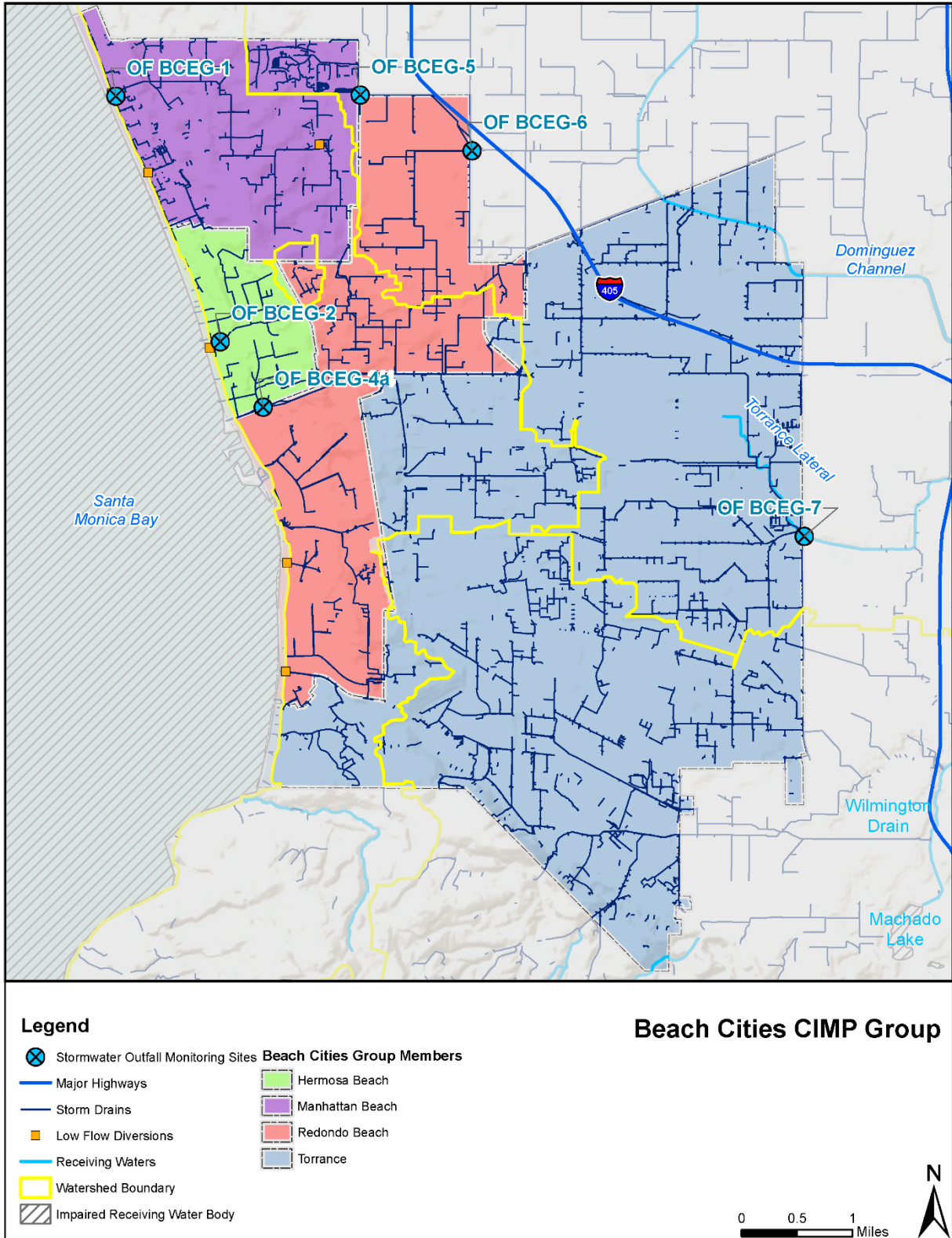
Site ID	Coordinates		Hydrologic Unit Code-12	Drainage System
	Latitude	Longitude		
<i>Alternating Sites</i>				
OF-BCEG-1	33.89430	-118.416645	Manhattan Beach Frontal SMB	28 <sup>th</sup> Street
OF-BCEG-2	33.86234	-118.400135	Manhattan Beach Frontal SMB	Hermosa Beach Pier
OF-BCEG-4a	33.853775	-118.393725	Manhattan Beach Frontal SMB	Heronado Drain
OF-BCEG-5	33.894574	-118.378438	Lower Dominguez Channel	Marine Avenue
OF-BCEG-6	33.887345	-118.360899	Lower Dominguez Channel	BI 569
<i>Fixed Site</i>				
OF-BCEG-7	33.83722	-118.30879	Lower Dominguez Channel	Torrance Carson Lateral

Three stormwater outfall monitoring sites, two along Santa Monica Bay and one in Dominguez Channel watershed, will be monitored for all wet-weather events during one year, and the remaining two stormwater outfall monitoring sites will be monitored the following year. Each group of monitoring sites will be monitored in alternating years. **Table 9** presents the preliminary rotation schedule for the five stormwater outfall monitoring sites. A synopsis of each potential outfall catchment area, along with an analysis of its land use/zoning characteristics is shown below.

**Table 9 Stormwater Outfall Monitoring Rotation Schedule**

Outfall ID	Storm Year					
	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
<i>Group 1</i>						
OF-BCEG-1	X		X		X	
OF-BCEG-2						
OF-BCEG-6						
<i>Group 2</i>						
OF-BCEG-4a		X		X		X
OF-BCEG-5						





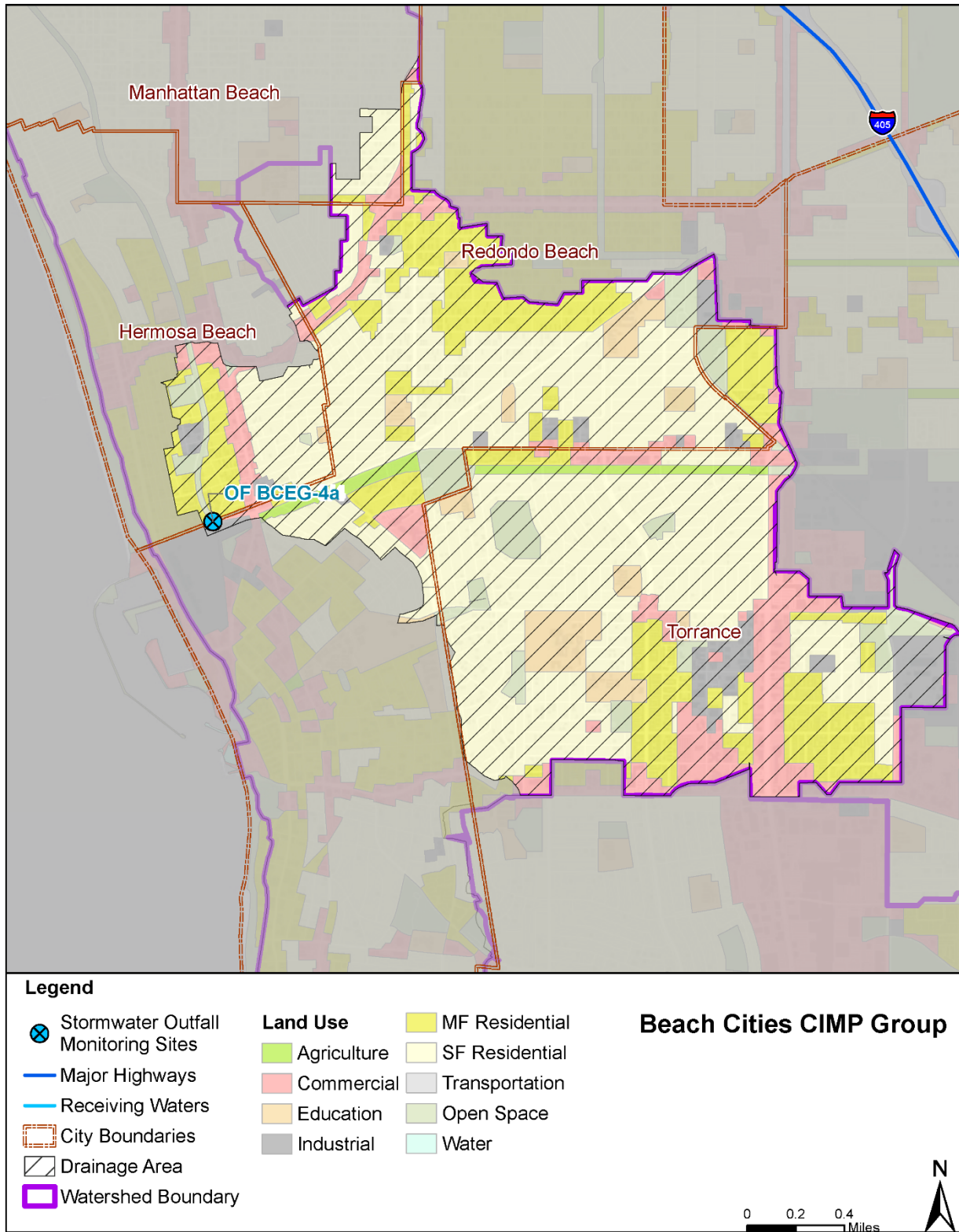
**Figure 8 Stormwater Outfalls Monitoring Site Locations**

### 4.2.3 OF-BCEG-4a

Stormwater outfall monitoring site OF-BCEG-4a is located near the downstream end of the Herondo Drain, approximately 1,800 feet from the storm drain outfall in Santa Monica Bay. The monitoring location is within the Manhattan Beach Frontal Santa Monica Bay HUC-12 area of the Beach Cities WMG. The catchment area is primarily within the cities of Redondo Beach and Torrance (36.0% Redondo Beach, 53.7% Torrance), though some area from both Hermosa Beach (8.5%) and Manhattan Beach (1.8%) also drains to this location. In total, the monitoring location accounts for approximately 38% of the Beach Cities WMG area within the SMB HUC-12 area. The drainage area for OF-BCEG-4a is shown in **Figure 11** and the land use categories are listed in **Table 12**. The tributary area is relatively representative of the cities of Redondo Beach and Torrance, as single family residential and multi-family residential land uses account for approximately 70-75% of the land use in both the watershed and cities within the SMB HUC-12.

**Table 12 Stormwater Outfall Monitoring Site OF-BCEG-4a (Redondo Beach and Torrance)**

	OF-BCEG-4a Catchment		Redondo/Torrance Portion of SMB MB HUC-12 area		Beach Cities WMG Portion of SMB MB HUC-12 area	
	Acres	Percent	Acres	Percent	Acres	Percent
<i>Land Use Category</i>						
Agriculture	50.92	1.7%	53.44	1.1%	53.44	0.7%
Commercial	359.35	12.3%	454.03	9.6%	791.58	10.4%
Education	138.91	4.8%	266.31	5.7%	392.49	5.2%
Industrial	132.57	4.5%	124.27	2.6%	150.2	2.0%
Multi-Family Residential	574.96	19.7%	946.62	20.1%	1408.82	18.5%
Open Space	185.10	6.4%	215.99	4.6%	374.98	4.9%
Single Family Residential	1,472.13	50.5%	2650	56.3%	4456.36	58.4%
Total	2,913.94	100%	4710.7	100.00%	7627.87	100%
<i>Municipal Jurisdiction</i>						
Hermosa Beach	246.80	8.5%	0	0%	844.95	11.0%
Manhattan Beach	52.91	1.8%	0	0%	2087.02	27.3%
Redondo Beach	1,049.74	36.0%	2599.6	55.2%	2606.7	34.1%
Torrance	1,564.50	53.7%	2111.1	44.8%	2115.28	27.6%
Total	2,913.94	100%	4710.7	100%	7653.95	100%



**Figure 11 Stormwater Outfall Monitoring Site OF-BCEG-4a Drainage Area**

**Table 16 List of Constituents for Stormwater Outfall Monitoring**

Constituent	Water Body		
	Santa Monica Bay	Dominguez Channel	Torrance Carson Lateral
Flow, temperature, pH, hardness, total suspended solids, dissolved oxygen, and specific conductivity	X	X	X
Table E-2 pollutants detected above relevant objectives	X	X	X
Aquatic Toxicity and Toxicity Identification Evaluation (TIE) <sup>(1)</sup>			
Total Coliform	X		
Fecal Coliform	X		
Enterococcus	X		
Arsenic	X		
Mercury	X		
Total Copper		X	X
Total Lead		X	X
Total Zinc		X	X
Diazinon		X	
<i>E. coli</i> (Indicator Bacteria)		X	X
Cyanide		X	X
pH		X	X
Selenium		X	X
Mercury		X	X
Cadmium		X	X
DDT and PCB	X		


**Table 18 List of Constituents for Non-Stormwater Outfall Monitoring**

Constituent	Water Body		
	Santa Monica Bay	Dominguez Channel	Torrance Carson Lateral
Flow, hardness, pH, dissolved oxygen, temperature, specific conductivity, and total suspended solids	X	X	X
Table E-2 pollutants detected above relevant objectives	X	X	X
Aquatic Toxicity and Toxicity Identification Evaluation (TIE) <sup>1</sup>			
Total Coliform	X		
Fecal Coliform	X		
Enterococcus	X		
Mercury	X		
Arsenic	X		
Total Copper		X	X
Total Lead		X	X
Total Zinc		X	X
Diazinon		X	
<i>E. coli</i> (Indicator Bacteria)		X	X
Cyanide		X	X
pH		X	X
Selenium		X	X
Mercury		X	X
Cadmium		X	X

1. Toxicity is only monitored from outfalls when triggered by recent receiving water toxicity monitoring where a TIE on the observed receiving water toxicity test was inconclusive. If toxicity is observed at the outfall a TIE must be conducted.

Outfalls on the monitoring list will be monitored for at least the duration of the Permit term, or until the non-stormwater discharge is eliminated. Additional analytical and monitoring procedures are discussed in the Analytical and Monitoring Procedures per **Appendix D**.

### Summary Sheet for OF-BCEG-2

<b>Site ID:</b> OF-BCEG-2		<b>Monitoring Type:</b> Rotating Stormwater Outfall				
<b>Latitude:</b> 33.86188		<b>Watershed:</b> Santa Monica Bay				
<b>Longitude:</b> -118.40155		<b>Represented Area:</b> City of Hermosa Beach				
<b>Thomas Guide Grid:</b> pg 762 G2		<b>Drainage System:</b> Hermosa Beach Pier				
<b>Outfall Shape:</b> Round		<b>HUC-12:</b> Manhattan Beach – Frontal Santa Monica Bay (180701040500)				
<b>Outfall Type:</b> Manhole		<b>Nearest Street Address:</b> 8 Pier Avenue, Hermosa Beach, CA 90254				
	<b>OF-BCEG-2 Catchment</b>		<b>Hermosa Beach Portion of SMB MB HUC-12 area</b>		<b>Beach Cities WMG Portion of SMB MB HUC-12 area</b>	
	<b>Acres</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>	<b>Acres</b>	<b>Percent</b>
<i>Land Use Category</i>						
Agricultural	0	0%	0	0%	53.44	0.70%
Commercial	95.8	22.33%	129.92	15.31%	791.58	10.36%
Education	10.62	2.48%	16.27	1.92%	403.11	5.28%
Industrial	1.7	0.40%	13.3	1.57%	150.34	1.97%
Multi-Family Residential	123.09	28.69%	254.05	29.95%	1408.86	18.44%
Open Space	24.18	5.64%	51.39	6.06%	375.10	4.91%
Single Family Residential	173.57	40.46%	383.44	45.20%	4456.40	58.34%
<b>Total</b>	<b>428.96</b>	<b>100%</b>	<b>848.37</b>	<b>100%</b>	<b>7638.83</b>	<b>100%</b>
<i>Municipal Jurisdiction</i>						
Hermosa Beach	415.52	96.87%	848.37	100%	848.37	11.11%
Manhattan Beach	13.44	3.13%	0	0%	2079.79	27.23%
Redondo Beach	0	0%	0	0%	2599.58	34.03%
Torrance	0	0%	0	0%	2111.09	27.64%
<b>Total</b>	<b>428.96</b>	<b>100%</b>	<b>848.37</b>	<b>100%</b>	<b>7638.83</b>	<b>100%</b>
<b>Site Description:</b> OF-BCEG-2 is located near the west end of Pier Plaza in Hermosa Beach, immediately east of the bike path and in front of Hennessey's Tavern (8 Pier Avenue). Vehicle traffic is prohibited in Pier Plaza, but pedestrian traffic is typically heavy. The Hermosa Strand Infiltration Trench, which is immediately downstream, diverts both dry- and wet-weather flows from the Pier Avenue storm drain. This location is subject to backflow conditions from the ocean during high tide. Such conditions will be critical to assess prior to and while sampling.						
<b>Site Location:</b> See CIMP Figure 10						
<b>Site View:</b>						
						

### Summary Sheet for OF-BCEG-4a

<b>Site ID:</b> OF-BCEG-4a	<b>Monitoring Type:</b> Rotating Stormwater Outfall
<b>Latitude:</b> 33.853775	<b>Watershed:</b> Santa Monica Bay
<b>Longitude:</b> -118.393725	<b>Represented Area:</b> City of Redondo Beach, City of Torrance
<b>Thomas Guide Grid:</b> pg 762 H3	<b>Drainage System:</b> Herondo Drain Subwatershed
<b>Outfall Shape:</b> Box	<b>HUC-12:</b> Manhattan Beach – Frontal Santa Monica Bay (180701040500)
<b>Outfall Type:</b> Manhole	<b>Nearest Street Address:</b> Valley Drive at Herondo St, Hermosa Beach, CA 90254

	OF-BCEG-4a Catchment		Redondo/Torrance Portion of SMB MB HUC-12 area		Beach Cities WMG Portion of SMB MB HUC-12 area	
	Acres	Percent	Acres	Percent	Acres	Percent

<i>Land Use Category</i>						
Agriculture	50.92	1.7%	53.44	1.13%	53.44	0.70%
Commercial	359.35	12.3%	454.03	9.64%	791.58	10.36%
Education	138.91	4.8%	266.31	5.65%	403.11	5.28%
Industrial	132.57	4.5%	124.27	2.64%	150.34	1.97%
Multi-Family Residential	574.96	19.7%	946.62	20.10%	1408.86	18.44%
Open Space	185.10	6.4%	215.99	4.59%	375.10	4.91%
Single Family Residential	1,472.13	50.5%	2650	56.25%	4456.40	58.34%
<b>Total</b>	<b>2,913.94</b>	<b>100%</b>	<b>4710.7</b>	<b>100.00%</b>	<b>7638.83</b>	<b>100%</b>

<i>Municipal Jurisdiction</i>						
Hermosa Beach	246.80	8.5%	0	0%	848.37	11.11%
Manhattan Beach	52.91	1.8%	0	0%	2079.79	27.23%
Redondo Beach	1,049.74	36.0%	2599.6	100%	2599.58	34.03%
Torrance	1,564.50	53.7%	2111.1	44.8%	2111.09	27.64%
<b>Total</b>	<b>2,913.94</b>	<b>100%</b>	<b>4710.7</b>	<b>100%</b>	<b>7638.83</b>	<b>100%</b>

**Site Description:** Located on the north side of Herondo Street, near the intersection of Valley Drive. The access manhole is not in the immediate traffic lane; however, traffic control is likely still necessary due to the general busyness of the street and the intersection.

**Site Location:** See CIMP Figure 11

**Site View:**

