

Appendix C
Santa Monica Bay Beaches Dry Weather Bacteria TMDL -
Implementation Plan for Jurisdictional Groups 2 and 3

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Santa Monica Bay Beaches Dry Weather Bacteria TMDL Implementation Plan

1.0 EXECUTIVE SUMMARY

With the exception of isolated sewage spills, dry weather urban runoff conveyed by storm drains and creeks is the primary source of elevated bacterial indicator densities to Santa Monica Bay (SMB) beaches during dry weather.

Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at many SMB beaches. Swimming in waters with indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities. Henceforth, the California Regional Water Quality Control Board (RWQCB) listed the Santa Monica Bay Beaches as impaired for Bacteria (i.e., total coliform, fecal coliform, and *eterococcus*) under Section 303(d) of the Clean Water Act.

A consent decree between the United States Environmental Protection Agency (USEPA), Heal the Bay, and Santa Monica BayKeeper, the RWQCB was ordered to expeditiously implement total maximum daily load (TMDL) requirements for the Los Angeles region. One of the first TMDLs is for bacteria to the Santa Monica Bay beaches during dry weather (RWQCB, 2002)

Joined by other municipal jurisdictions regulated under the TMDL, the County and the City of Los Angeles are well on the way of achieving compliance with the Santa Monica Bay Beaches Bacteria Dry Weather TMDL through an aggressive summer, dry weather storm drain diversion programs. These programs involved the construction of newly dry-weather low flow diversions for all problematic drains (identified in the Final Priority List of the Santa Monica Storm Drain Master Plan) discharging to Santa Monica Bay beach to be diverted to the wastewater collection system for treatment at the Hyperion Treatment Plant that provides secondary treatment.

2.0 TMDL SUMMARY

2.1 Background- TMDL Development History/TMDL Summary.

The California State Water Resources Control Board identified and approved the 1998 section 303 (d) of the Clean Water Act for the list of impaired water bodies within California. Of these, many of the beaches along Santa Monica Bay were included as impaired due to high coliform counts or because of beach closures generally associated with bacteria levels.

The beaches appeared on the 303 (d) lists because the elevated bacteria levels and beach closures prevented the full support of the beaches designated beneficial use for water contact recreation (REC-1).

The revised Los Angeles Basin Plan Bacteriological Standards for marine waters designated for Water Contact Recreation (REC-1), identified as the “Numeric Targets” in the TMDL Document, are as follows:

1. Rolling 30-day Geometric Mean Limits

- a. Total coliform density shall not exceed 1,000/100 ml.
- b. Fecal coliform density shall not exceed 200/100 ml.
- c. Enterococcus density shall not exceed 35/100 ml.

2. Single Sample Limits for water contact

- a. Total coliform density shall not exceed 10,000/100 ml.
- b. Fecal coliform density shall not exceed 400/100 ml.
- c. Enterococcus density shall not exceed 104/100 ml.
- d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-total coliform exceeds 0.1.

2.2 TMDL Waste Load Allocations/allowable exceedance days

In developing the TMDL, the Los Angeles RWQCB used a “reference system/anti-degradation approach” for implementing the TMDL. To ensure that the shoreline bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing shoreline bacteriological water quality. This anti-degradation approach was based on existing monitoring data to establish a baseline for compliance. Studying the monitoring data, the RWQCB chose the Arroyo Sequit Canyon and the beach to which it drains, Leo Carillo Beach, as the reference beach due to its primarily natural state (the most undeveloped subwatershed in the Santa Monica Bay watershed) and the availability of historical shoreline monitoring data for this system.

Waste load allocations are expressed as the number of sample days at a shoreline monitoring site that may exceed the single sample targets identified under “Numeric Target.” Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection. For each shoreline monitoring site and corresponding subwatershed, the allowable number of exceedance days is set for two time periods. These two periods are:

1. Summer dry weather (April 1 to October 31), and
2. Winter dry weather (November 1 to March 31).

All responsible jurisdictions and responsible agencies within a subwatershed are jointly responsible for complying with the allowable number of exceedance days for each

associated shoreline monitoring site as identified in the attached Table 7-4.2a of the Santa Monica Bay Beaches Bacteria TMDL Implementation Schedule (Dry Weather Only).

The allowable number of exceedance days for a shoreline monitoring site for each time period is based on the lesser of two criteria:

- (1) Exceedance days in the designated reference system and
- (2) Exceedance days based on historical bacteriological data at the monitoring site.

2.3 TMDL Compliance Schedule.

The general compliance schedule includes two phases:

Phase I: Compliance during Summer Dry Weather. Within three years of the effective date of this TMDL (*By July 15, 2006*), there may be no exceedances at any location during summer dry weather (*April 1 to October 31*).

Phase II: Compliance during Winter Dry Weather. Within six years of the effective date of this TMDL (*By July 15, 2009*), compliance with the allowable number of exceedance days during winter dry weather (*November 1 to March 31*) should be achieved.

3.0 DRY WEATHER IMPLEMENTATION PLAN

3.1 Implementation Plan Approach

The TMDL compliance target could be more achievable by diverting storm drain flows into treatment plants; eliminating illicit discharges; controlling and/or reducing sources of bacteria (including groundwater sources), or implementing “end of – pipe” treatment.

Our TMDL compliance approach would be achieved by diverting dry-weather (low flow) urban runoff from storm drains, as identified in the Final Priority List of the Santa Monica Storm Drain Master Plan (See Figure 1 for locations) to the wastewater collection system for treatment at the Hyperion Treatment Plant that provides secondary treatment.

A summary of the constructed and under design low flow diversion projects located within the JG 2/3 agencies is presented in Table 1. As shown in the referenced table, the County and the City of Los Angeles are well on the way to achieving this goal through this aggressive summer, dry weather storm drain diversion programs. Thus far ten (10) of 27 major storm drains have been diverted, seven (7) are under design or construction, yet to be diverted, and two (2) storm drains to be diverted are being planned. This leaves eight (8) major drains discharging to Santa Monica Bay beaches. These eight (8) drains will be addressed by jurisdictions J5 and J6.

Please note that under the “Design or Construction Low Flow Diversion listings” as presented in Table 1, the drains named Ashland Avenue and Rose Avenue were initially planned as one drain named “Ashland Avenue and Rose Avenue” and it was identified as

drain no. 13 (see the attached Table 14 of the Santa Monica Bay Bacteria TMDL Staff Report). Originally, one low flow diversion project was being proposed at drain no. 13 and this low flow diversion project was being designed to transport low flows from Project 46, at Rose Avenue, to Project 7401, at Ashland Avenue, and then from Project 7401 to a nearby sewer line. However, due to some design concerns, a decision was made to divide this project into two (2) separate low flow diversion projects located at Ashland Avenue and Rose Avenue, respectively. Table 1 refers to these proposed low flow projects as Ashland Avenue, with drain no. 13, and Rose Avenue, with drain no. 14. Therefore, the original 27 priority drains identified in Table 14, of the Santa Monica Bay Bacteria TMDL, has technically been increased to 28 priority drains since drain no. 13 has been split into drain no. 13 and 14.

Table 1 Low Flow Stormdrain Diversions to CIS in the Coastal Sewershed					
No.	Drain	Average Flow (MGD)	Drain Owner¹	Lead Agency¹	Construction Completion Date
Completed Projects					
1	SMURF(Treats Pico Kenter and Santa Monica Pier Drains diverted flows)	0.77	LAC	CLA, SM	1-Oct-2001
2	Playa del Rey	0.23	LAC	LAC	15-Apr-2001
3	Thornton Avenue	0.13	CLA	CLA	22-Jun-1999
4	Bay Club Drive	0.13	CLA	CLA	24-Jan-2001
5	Palisades Park	0.62	CLA	CLA	28-Nov-2000
6	Santa Monica Canyon	2.71	LAC	CLA	10-Jun-2003
7	Venice Pavilion (Windward Ave Pump Station)	0.08	LAC	CLA	10-Jun-2003
8	Temescal Canyon	0.78	LAC	CLA	23-Jun-2003
9	Imperial Highway	0.05	LAC	CLA	29-Jun-2003
10	Pulga Canyon	0.29	LAC	LAC ²	30-April-2004
Under Design or Construction					
1	Castle Rock/Parker Canyon	0.17	LAC	LAC ²	1-Sep-2004
2	North Westchester	0.29	LAC	LAC ²	1-Sep-2004
3	Santa Ynez Canyon	1.84	LAC	LAC ²	1-Dec-2004
4	Ashland Avenue	0.10	LAC	LAC ²	31-Dec-2004
5	Rose Avenue	0.29	LAC	LAC ²	31-Dec-2004
6	Brooks Avenue	0.29	LAC	LAC ²	31-Dec-2004

Table 1					
Low Flow Stormdrain Diversions to CIS in the Coastal Sewershed					
7	Marquez Avenue	0.29	CLA	CLA	30-Apr-2005
Future Projects					
1	Montana Avenue ⁴	0.1	LAC	SM ³	1-Oct-2005
2	Wilshire Boulevard ⁴	0.17	LAC	SM ³	1-Oct-2005
TOTAL DRY WEATHER FLOW DIVERTED TO CIS		9.33			
Notes:					
1. CLA = City of Los Angeles; LAC = Los Angeles County; SM = City of Santa Monica					
2. CLA will coordinate the implementation of the project(s) with LAC.					
3. 100% of the drainage areas are within SM.					
4. Average flow shown is estimated.					

4.0 OPERATION AND MAINTENANCE PROGRAM

The Agencies have developed an Operation and Maintenance Program to ensure that these completed Low Flow Diversion Structures are properly maintained, repaired, upgraded, and inspected and will develop the same Operation and Maintenance Program for the remaining planned and /or under design Low Flow Diversion Structures.

5.0 CONCLUSION AND RECOMMENDED IMPLEMENTATION PLAN

Dry weather urban runoff from the Coastal Sewershed is (or will be) diverted through low flow diversions to the Coastal Interceptor Sewer (CIS) for treatment at Hyperion. A summary of existing and planned low flow diversions within the Santa Monica Bay beaches has been presented in this report. The total flow planned for dry weather diversion to Hyperion via the CIS by the end of 2005 is 9.33 MGD. The low flow diversions are (and will be) temporarily closed during wet weather conditions.

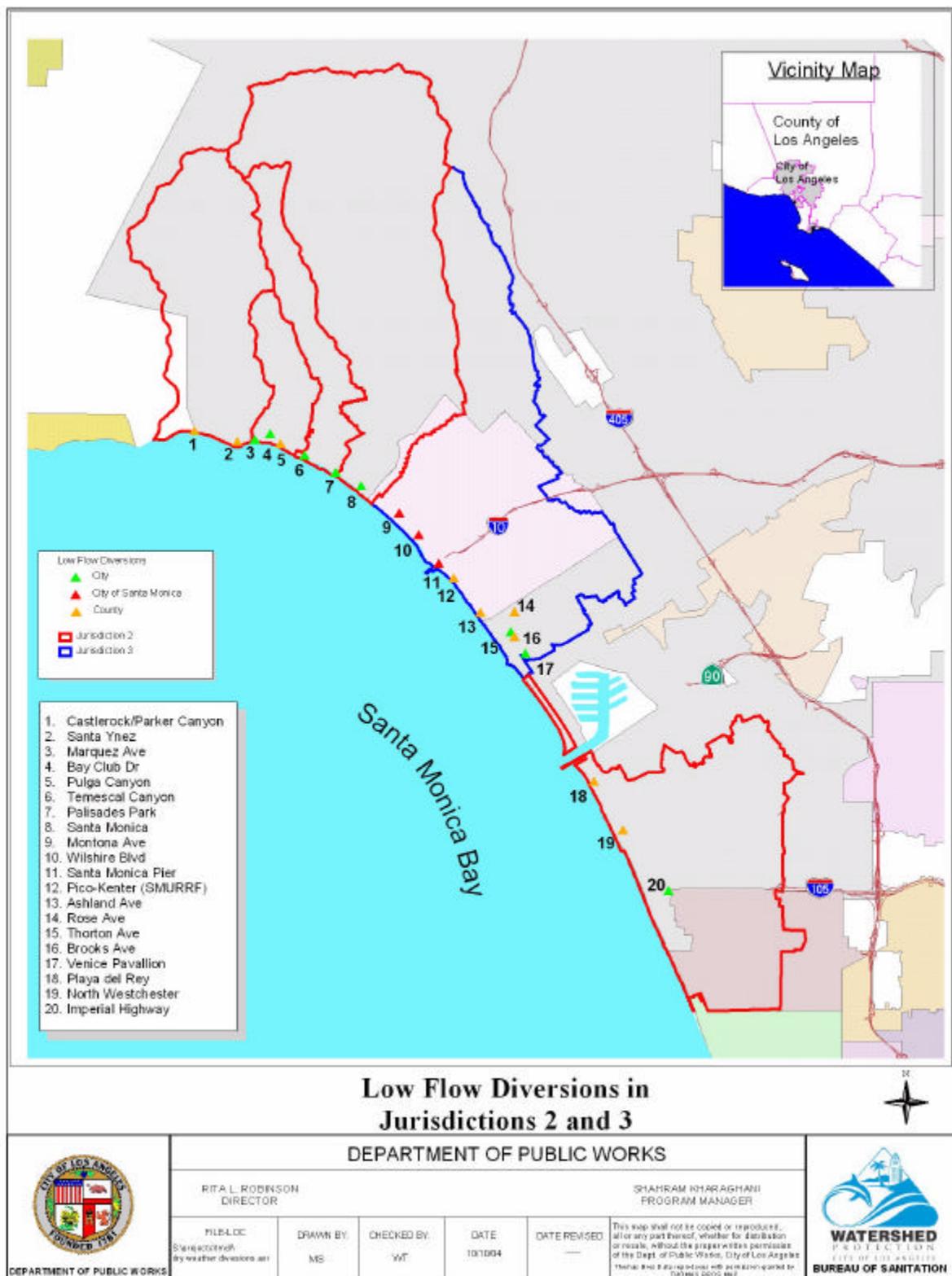


Figure 1 – Santa Monica Bay Beaches Low Flow Diversions in JG2/3

Table 7-4.2a: Santa Monica Bay Beaches Bacteria TMDL Implementation Schedule (Dry Weather Only): Allowable Number of Days that May Exceed Any Single Sample Bacterial Indicator Target for Existing Shoreline Monitoring Stations

Compliance Deadline			3 years after effective date		6 years after effective date	
Station ID	Location Name	Subwatershed	Summer Dry Weather ^a Apr. 1-Oct. 31		Winter Dry Weather ^b Nov. 1-Mar. 31	
			Daily sampling (No. days)	Weekly sampling (No. days)	Daily sampling (No. days)	Weekly sampling (No. days)
<i>City of Los Angeles, Environmental Monitoring Division Sites</i>						
S1	Surfrider Beach (breach point) - daily	Malibu Canyon	0	0	3	1
S2	Topanga State Beach	Topanga Canyon	0	0	3	1
S3	Pulga Canyon storm drain - 50 yards east (Will Rogers)	Pulga Canyon	0	0	3	1
S4	Santa Monica Canyon, Will Rogers State Beach	Santa Monica Canyon	0	0	3	1
S5	Santa Monica Municipal Pier - 50 yards southeast	Santa Monica	0	0	3	1
S6	Santa Monica Beach at Ploof/Kenter storm drain	Santa Monica	0	0	3	1
S7	Ashland Av. storm drain - 50 yards south (Venice)	Santa Monica	0	0	3	1
S8	Venice City Beach at Windward Av. - 50 yards north	Ballona	0	0	2	1
S10	Ballona Creek entrance - 50 yards south (Dockweiler)	Dockweiler	0	0	3	1
S11	Dockweiler State Beach at Culver Bl.	Dockweiler	0	0	3	1
S12	Imperial Highway storm drain - 50 yards north (Dockweiler)	Dockweiler	0	0	2	1
S13	Manhattan State Beach at 40th Street	Hermosa	0	0	1	1
S14	Manhattan Beach Pier - 50 yards south	Hermosa	0	0	1	1
S15	Hermosa Beach Pier - 50 yards south	Hermosa	0	0	2	1
S16	Redondo Municipal Pier - 50 yards south	Redondo	0	0	3	1
S17	Redondo State Beach at Avenue I	Redondo	0	0	3	1
S18	Malaga Cove, Palos Verdes Estates - daily	Palos Verdes	0	0	1	1
<i>Los Angeles County Department of Health Services Sites</i>						
DHS (010)	Leo Carlillo Beach (REFERENCE BEACH)	Arroyo Sequit Canyon	0	0	3	1
DHS (009)	Nicholas Beach	Nicholas Canyon	0	0	0	0
DHS (010a)	Broad Beach	Trancas Canyon	0	0	3	1
DHS (008)	Trancas Beach entrance	Trancas Canyon	0	0	0	0
DHS (007)	Westward Beach, SE end	Zuma Canyon	0	0	0	0
DHS (006)	Paradise Cove	Ramirez Canyon	0	0	3	1
DHS (005)	26610 Latigo Shore Drive	Latigo Canyon	0	0	3	1
DHS (005a)	Corral Beach	Latigo Canyon	0	0	3	1
DHS (004)	Pueco Beach	Corral Canyon	0	0	3	1
DHS (003)	Malibu Point, Malibu Colony Dr.	Malibu Canyon	0	0	3	1
DHS (003a)	Surfrider Beach, Malibu, 50 yds.	Malibu Canyon	0	0	3	1
DHS (002)	Malibu Pier	Malibu Canyon	0	0	3	1
DHS (001a)	Las Flores Beach	Las Flores Canyon	0	0	3	1
DHS (001)	Big Rock Beach	Piedra Gorda Canyon	0	0	3	1
DHS (101)	17200 Pacific Coast Hwy.	Santa Ynez Canyon	0	0	3	1
DHS (102)	Bel Air Bay Club, 16801 Pacific	Santa Ynez Canyon	0	0	3	1
DHS (103)	Temescal Storm Drain	Pulga Canyon	0	0	3	1
DHS (104a)	San Vicente Blvd. extended	Santa Monica	0	0	3	1
DHS (104)	Montana Ave. Storm Drain	Santa Monica	0	0	3	1
DHS (105)	Wilshire Blvd., Santa Monica	Santa Monica	0	0	3	1
DHS (106)	Strand Street extended	Santa Monica	0	0	3	1
DHS (106a)	Ashland Storm Drain	Santa Monica	0	0	3	1
DHS (107)	Venice City Beach at Brooks Av.	Ballona	0	0	3	1
DHS (108)	Venice Pier, Venice	Ballona	0	0	3	1
DHS (109)	Topsall Street extended	Ballona	0	0	3	1
DHS (110)	World Way extended	Dockweiler	0	0	3	1
DHS (111)	Opposite Hyperion Plant, 1 mile	Dockweiler	0	0	3	1
DHS (112)	Grand Avenue extended	Dockweiler	0	0	3	1
DHS (113)	26th Street extended	Hermosa	0	0	0	0
DHS (114)	Herrondo Street extended	Hermosa	0	0	3	1
DHS (115)	Topaz Street extended	Redondo	0	0	3	1
<i>County Sanitation Districts of Los Angeles County Sites</i>						
LACSD1	Long Point	Palos Verdes	0	0	1	1
LACSD2	Abalone Cove	Palos Verdes	0	0	0	0
LACSD3	Portuguese Bend Cove	Palos Verdes	0	0	1	1
LACSD5	Royal Palms	Palos Verdes	0	0	1	1
LACSD6	Wilder Annex	Palos Verdes	0	0	1	1
LACSD7	Cabrillo Beach, oceanside	Palos Verdes	0	0	1	1
LACSDMC	Malaga Cove	Palos Verdes	0	0	1	1
LACSDBC	Bluff Cove	Palos Verdes	0	0	1	1

Notes: The allowable number of exceedance days during winter dry weather is calculated based on the 10th percentile year in terms of non-rain days at the LAX meteorological station. The number of allowable exceedances during winter dry weather is based on the lesser of (1) the reference system or (2) existing levels of exceedance based on historical shoreline data. ^aDry weather days are defined as those with <0.1 inch of rain and those days not less than 3 days after a rain day. Rain days are defined as those with >=0.1 inch of rain. ^b A re-opener is scheduled for two years after the effective date of the TMDL in order to re-evaluate the allowable exceedance days during winter dry weather based on additional monitoring data.

Table 14. Capital Costs and Annual Costs for Low Flow Diversions of Major Storm Drains to Santa Monica Bay

	Major Storm Drains to SMB	Adjacent Beach	Drainage Area	Schedule	Estimated Construction Cost	Phase I O&M Costs	Phase I Treatment Costs	Phase II Sewer Facility Charge (SFC)	Phase II O&M Costs	Phase II Treatment Costs
1	Castlerock (& Parker Canyon)	Castlerock	Castlerock	not prop	800,000	25,000	14,992	600,000	17,857	4,463
2	Santa Ynez (Sunset Blvd.)	Will Rogers	Castlerock		800,000	50,000	99,420	600,000	35,714	29,595
3	Bay Club Dr.	Will Rogers	Santa Ynez	operational		17,000	6,312	600,000	12,143	1,879
4	Marquez Ave.	Will Rogers	Santa Ynez		800,000	18,000	64	600,000	12,857	19
5	Pulga	Will Rogers	Pulga		800,000	25,000	26,039	3,300,000	17,857	7,751
6	Temescal	Will Rogers	Pulga	2002		22,000	19,332	3,300,000	15,714	5,755
7	Palisades Park	Will Rogers	Pulga	operational		20,000	15,000	1,200,000	14,286	5,000
8	Santa Monica Canyon	Will Rogers	Santa Monica Canyon	2002		54,000	370,854	8,400,000	38,571	110,394
9	Montana Ave.	Santa Monica	Santa Monica		600,000	25,000	15,000	300,000	17,857	10,714
10	Wilshire Blvd.	Santa Monica	Santa Monica		600,000	25,000	15,000	300,000	17,857	5,000
11	Santa Monica Pier	Santa Monica	Santa Monica	operational		25,000	15,000	300,000	17,857	5,000
12	Pico-Kenter	Santa Monica	Santa Monica	operational		50,000	15,781	1,100,000	35,714	4,698
13	Ashland Ave. & Rose Ave.	Venice	Santa Monica	operational		28,000	15,000	180,000	20,000	5,000
14	Thornton Ave.	Venice	Santa Monica	operational		50,000	15,000	130,000	35,714	5,000
15	Brooks Ave.	Venice	Santa Monica	operational		19,000	15,000	285,000	13,571	5,000
16	Windward Ave./Venice Pavilion	Venice	Santa Monica	2002		25,000	15,000	260,000	17,857	5,000
17	Playa del Rey/Culver Blvd.	Dockweiler	Dockweiler	operational		20,000	15,000	675,000	14,286	5,000
18	North Westchester	Dockweiler	Dockweiler		800,000	50,000	15,000	500,000	35,714	5,000
19	Imperial Highway	Dockweiler	Dockweiler	2002		20,000	11,047	1,300,000	14,286	3,288
20	El Segundo Blvd./Grand Ave.	Dockweiler	Dockweiler		800,000	50,000	15,000	500,000	35,714	5,000
21	South of Dockweiler Jetty	Dockweiler	Dockweiler	operational		50,000	15,000	500,000	35,714	5,000
22	27th St., Manhattan Beach	Manhattan Beach	Hermosa	2002		20,000	15,000	500,000	14,286	5,000
23	Manhattan Beach Pier	Manhattan Beach	Hermosa	operational		50,000	15,000	500,000	35,714	5,000
24	Hermosa Beach Pier	Hermosa Beach	Hermosa		800,000	20,000	15,000	500,000	14,286	5,000
25	Heronado St.	Hermosa Beach	Redondo	operational		50,000	15,000	500,000	35,714	5,000
26	Redondo Beach Pier	Redondo Beach	Redondo		800,000	20,000	15,000	500,000	14,286	5,000
27	Avenue I/Miramar	Redondo Beach	Palos Verdes	2003		25,000	15,000	500,000	17,857	5,000
	Totals				7,600,000	853,000	833,840	27,930,000	609,286	263,555

Cost estimates are based on a report prepared by the City of Los Angeles (2001); personal communication with Mike Mullin, City of Los Angeles, Bureau of Sanitation; project proposals submitted to the Regional Board; and other sources.