VI. Assessment of Program Effectiveness

The City of Rolling Hills is a private, entirely residential community of single-family homes located on the Palos Verdes Peninsula. The City has a very small population of 1,860 residents in three square miles. There are just 684 single-family one-story homes, only 15 undeveloped lots remain with an additional 13 undevelopable lots in a landslide area. Minimum lot size is 1 acre; the average lot size is 2.7 acres. There is no public infrastructure, and no City-owned or maintained storm drains, roads, sewers, sidewalks or curb-and-gutter.

1. An assessment of your agency's compliance with permit requirements, based on your responses to the questions in this form.

Rolling Hills, as a municipality and in its geography, is unique. The City is by design a low density, low impact, rural residential community with primary drainage conveyed via natural canyons. Dry weather flows and small rainfall events are infiltrated within the natural soft-bottom canyons which are the primary drainage system. Storm water from private property drains into largely undisturbed heavily vegetated natural soft bottom canyons; there is no continuous improved storm drain system throughout the City. Source control is the primary means available to the City for maintaining and improving water quality; structural control/treatment devices are not feasible or environmentally appropriate in natural canyons nor does the City have easements in (and in many cases, access to) the canyons. The City of Rolling Hills is a hillside community and some areas of the City are prone to unstable geology and landslides, which limit onsite retention of stormwater beyond that which can be achieved by preserving pervious area and natural topography and vegetation.

There is no industrial or commercial activity within the City's jurisdiction. The City does implement development planning and development construction programs in the City, which consists entirely of single-family residential units. The City contracts for all development plan checking and inspections, including inspections for compliance with erosion control plans and SUSMP, when required. The City has adopted County codes, including NPDES-related ordinances, which are incorporated into the Building Code.

The City implements strict grading requirements. The City's Zoning Ordinance contains strict standards for development ratios on each property. Only 40% of the net lot area of a lot may be disturbed for construction. Only 35% of the net lot area may be developed with impervious surfaces, including all structures, patios and other paved areas. Given that the minimum lot size in the City is one acre, this provision promotes infiltration of storm waters into the ground instead of onto streets. The County requires that residential roof runoff be diverted to vegetated areas before discharge consistent with the requirements for single-family hillside homes.

The City encourages residents to install pervious surfaces when landscaping or installing/reconstructing driveways. Many residents have resurfaced their driveways with grass-crete and other porous material. Stable access-ways may not be entirely paved and are encouraged to be 100% gravel. The City's Zoning Ordinance precludes large impervious surfaces, i.e., driveways may not cover more than 20% of the area of the yard in which they are located;

uncovered motor courts/parking pads may not cover more than 10% of the yard in which they are located. Tennis and sports courts are encouraged to have pervious surfaces.

Some of the planting areas at City Hall are water efficient and disease-resistant so minimal fertilizer and pesticides are used in their maintenance. The City contracts for landscape services at the City Hall complex and requires that the landscaping contractor to haul away and recycle any trash and debris generated from maintenance activities. The City has adopted a Water Efficient Landscape ordinance in accordance with statewide requirements.

The City provides unlimited green waste collection to its residents through the solid waste franchise contract. The prompt removal of accumulated leaves and landscape debris is encouraged for prevention of brush fires. Manure collection and recycling service for horse owners is available through the City's franchise hauler. The City's franchise solid waste hauler collects manure at no extra charge to residents. Alternatively if a larger bin for manure storage and hauling is needed, the solid waste franchise hauler will provide a special bin for such purpose for an additional fee.

2. Descriptions of any evaluation methods that your agency uses to determine the effectiveness of your storm water management program.

Observations by City staff, input from residents, input from County of Los Angeles Department of Public Works, and reports of water quality at watershed beaches are indicative of the effectiveness of our storm water management program. The City has been implementing a trash monitoring and reporting plan to document the effectiveness of its best management practices. The cities on the Palos Verdes Peninsula have just completed the first year of a joint monthly monitoring program consistent with the Machado Lake Nutrient TMDL.

3. A summary of the strengths and weaknesses of your agency's storm water management program.

Strengths

- The City of Rolling Hills is a pristine community with strong policies and ordinances that protect natural areas; it is by design a low density, low impact community.
- The City's Public Information and Participation Program is very strong for a city of its size and resources.
- The City's small staff size affords excellent communication and responsiveness with little bureaucracy.
- The City is dedicated to preserving open space and native habitat.
- The City retains the services of an environmental consultant who works closely with City staff on the development and implementation of storm water programs tailored to the City's needs and character.
- Storm water from private property drains into largely undisturbed heavily vegetated natural soft bottom canyons where dry weather flows and small rainfall events are infiltrated.

Weaknesses

- Limited fiscal resources. With no commercial activity within the city, there is no revenue from sales tax. With no public infrastructure, the City is not typically eligible to use Federal, State or County funding.
- Limited fiscal resources. The cost of monitoring and reporting precludes the allocation of funds toward directly contributing to the improvement of water quality.
- Source control is the primary means available to the City for maintaining and improving water quality since structural control/treatment devices are not technically feasible or environmentally appropriate in natural canyons.
- CC&Rs of the community and the non-existence of public rights-of-way and easements limit the City's access and flexibility.

4. A list of specific program highlights and accomplishments.

- The City of Rolling Hills has now completed a second year of monitoring in accordance with the Trash Monitoring and Reporting Plan. The results for the second year of monitoring demonstrate that the City's current BMPs (the City's low-impact characteristics and routine maintenance practices) achieved 99.96% reduction of trash from annual trash generation rate and 99.98% load reduction when measured against the baseline waste load allocation. This additional data confirms previous results which established that the City is not now and has not previously been contributing trash to Machado Lake and that the City of Rolling Hills is not contributory to the 303d listing of Machado Lake nor the Santa Monica Bay Marine Debris listing.

- The City in cooperation with sister cities on the Palos Verdes Peninsula this year completed the first eleven months of monthly monitoring under the Palos Verdes Peninsula Coordinated Monitoring Plan consistent with the Machado Lake Nutrient TMDL. Preliminary results indicate that monthly average values calculated for both TN and TP collected during the first eleven months of monitoring have all been below the current interim concentration-based TMDL targets.

5. A description of water quality improvements or degradation in your watershed over the past fiscal year.

The following discussion summarizes available water quality monitoring information for the portions of watersheds to which the City is tributary.

Santa Monica Bay Beaches Bacteria TMDL Monitoring

The Santa Monica Bay Beaches TMDL was not incorporated into the permit during this reporting year. Although TMDL monitoring is still taking place, it is not appropriate to determine the effectiveness of the program through comparison to the TMDL standards. Other standards may be more appropriate during this time.

The current MS4 NPDES Permit defines *Water Quality Standards and Water Quality Objectives to mean: water quality criteria contained in the Basin Plan, the California Ocean Plan, the National*

Toxics Rule, the California Toxics Rule, and other state or federally approved surface water quality plans. Such plans are used by the Regional Board to regulate all discharges, including storm water discharges.[1]

The Los Angeles Basin Plan, Chapter 3 describes water quality objectives for waters in the Los Angeles Region; and with respect to ocean waters, the Los Angeles Basin Plan states that the State Board's Water Quality Control Plan for Ocean Waters of California (Ocean Plan) shall also aply to all ocean waters of the Los Angeles Region. Thus, it is the California Ocean Plan water quality standards that are applicable to the Santa Monica Bay. Water quality standards for full-body water contact recreation beneficial use (REC-1) are based on three different types of indicator bacteria densities:

30-day Geometric Mean:

- *Total coliform density shall not exceed 1,000 per 100 mL*
- *Fecal coliform density shall not exceed 200 per 100 mL*
- *Enterococcus density shall not exceed 35 per 100 mL*

Single Sample Maximum:

- *Fecal coliform density shall not exceed 400 per 100 mL*
- *Enterococcus density shall not exceed 104 per 100 mL*
- *Total coliform density shall not exceed 10,000 per 100 mL*
- *Total coliform density shall not exceed 1,000 per 100 mL when the fecal coliform/total coliform ratio exceeds 0.1*

It should be noted that although the Ocean Plan REC-1 objectives are established to describe the quality of water desirable for recreational use, natural waters do not necessarily meet these objectives at all times and so the mere occurrence of exceedances of the REC-1 objectives does not necessarily implicate storm drain discharges as the cause or even urban development as the cause. The Los Angeles Regional Board staff acknowledged this issue in selecting a "reference beach/antidegradation approach" in establishing the Santa Monica Bay Beaches Bacteria TMDLs (SMBBB TMDLs). The reference beach selected under the SMBBB TMDL is located at Leo Carillo beach (SMB 1-1) at the outlet of Arroyo Sequit Canyon which is a freshwater creek having a drainage area of approximately 12 square miles and is almost entirely undeveloped open space (98% of land use).

The Regional Board staff also acknowledged a relatively higher frequency of exceedances of the REC-1 standards during wet weather periods in comparison with dry periods in natural systems. During the period from November 2004 through October 2010, data collected under the SMBBB TMDL at the reference beach indicated a 10% exceedance rate during dry weather and a 22% exceedance rate during wet weather of the REC-1 single-sample objectives. [2]

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[1] Los Angeles Regional Water Quality Control Board. Order No. 01-182 as amended in 2001, 2006, 2007, 2009, 2010 and 2011. Part 5. Definitions

[2] Los Angeles Regional Water Quality Control Board, May 2012. Staff Report: Reconsideration of Certain Technical Matters of the Santa Monica Bay Beaches Bacteria TMDLs; the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL; and the Los Angeles Harbor Inner Cabrillo Beach and Main Ship Channel Bacteria TMDL. Table 3.

It is notable that all of the shoreline monitoring locations on the Palos Verdes Peninsula received either an A or an A+ for summer and winter dry weather and year-round wet weather on Heal the Bay's 2011-12 Annual Beach Report Card. Three of the shoreline monitoring locations on the Palos Verdes Peninsula were listed on Heal the Bay's 2011-12 Honor Roll.

Drainage from that portion of the City of Rolling Hills that drains toward the Santa Monica Bay is conveyed via natural soft bottom canyons (Klondike Canyon, Paint Brush Canyon and several smaller unnamed canyons) across significant areas of open space for a distance of ½ mile to a mile before reaching improved storm drains operated by other agencies that outlet into Portuguese Bend. The shoreline monitoring location in Portuguese Bend, also known as SMB 7-5, is an open beach shoreline monitoring location on the Palos Verdes Peninsula that is considered to be an anti-degradation monitoring location, and has historically exhibited a lower rate of exceedances than the reference monitoring location at Leo Carillo Beach (reference beach). For a weekly sampling schedule, SMB 7-5 is allocated zero (0) exceedances during summer dry weather, one (1) exceedance during winter dry weather, and one (1) exceedance during year-round wet weather of the indicator bacterial targets under the Santa Monica Bay Beaches Bacteria TMDL.

Due to technical problems with the method for calculation of the geometric mean values under the current SMBBB TMDL, and pending changes to the method of calculation of the geometric mean values as part of the reconsideration of the SMBBB TMDL by the Los Angeles Regional Board, inconsistency between the Ocean Plan and the SMBBB TMDL with respect to the method for calculating the geometric mean, geometric mean values are not presented for this reporting year. Nevertheless, by doing a rough calculation by either method (i.e., existing TMDL or proposed TMDL) it appears that during the current reporting year the SMB 7-5 shoreline monitoring location data met the year-round TMDL target for geometric mean for all three bacterial indicators.

Single-Sample Results

During the current reporting year there were two (2) summer dry weather exceedances of the single-sample bacterial targets in samples collected at SMB 7-5; these occurred on July 19, 2011 and on September 26, 2011. Accelerated follow up sampling conducted within two days of the exceedance events showed all indicator bacteria results were well below the targets, thus these appear to have been transitory and not indicative of a long term trend. Furthermore, as of June 30, 2012, there have been no summer 2012 exceedances of the indicator bacteria targets at SMB 7-5.

There were no, i.e., zero (0), winter dry weather exceedances and no, i.e., zero (0), wet weather exceedances during the reporting year at SMB 7-5.

Table 1 shows the history of summer dry and winter dry weather exceedances at SMB 7-5 in comparison with the reference beach which are both monitored once per week. Review of this data clearly shows that the shoreline monitoring location at SMB 7-5 in Portuguese Bend has maintained its historically high water quality and there has been no degradation over the past six years during either summer dry weather or winter dry weather periods and that the site continues to exhibit significantly fewer exceedances than the reference beach. From the summer of 2005 through June of 2012 there have been only three exceedances of the bacterial indicator targets at SMB 7-5 while there have been twenty-five (25) exceedances at the reference beach. Likewise

from the winter of 2005-06 through the winter of 2011-12 there has been only one (1) exceedance of the winter dry weather bacterial indicator targets at SMB 7-5 in Portuguese Bend while there have been eight (8) such exceedances at the reference site at Leo Carillo beach.

Thus monitoring at SMB 7-5 over the past seven years substantiates that the dry weather water quality in Portuguese Bend is significantly higher than the reference beach and has maintained its historically high water quality without degradation. Thus the rare dry weather exceedances of the bacterial objectives at SMB 7-5, are most likely attributed to natural background causes such as presence of ocean debris, birds, dead birds or marine mammals, heavy surf, increased wave height and wind speed.[3]

TABLE 1
SANTA MONICA BAY BEACHES BACTERIA (SMBBB) TMDL
EXCEEDANCE RATES
SMB 7-5 PORTUGUESE BEND SAMPLING STATION COMPARED WITH REFERENCE SITE

SUMMER DRY WEATHER – Apr 1-Oct 31[4]			WINTER DRY WEATHER – Nov 1- Apr 30		
Summer	**Single-Sample Exceedance Days at SMB 7-5**	**Single-Sample Exceedance Days at Reference Beach**	**Winter**	**Single-Sample Exceedance Days at SMB 7-5**	**Single-Sample Exceedance Days at Reference Beach**
2005	0	7	**2005-06**	0	1
2006	0	11	**2006-07**	0	1
2007	0	0	**2007-08**	0	2
2008	0	2	**2008-09**	1	0
2009	1	0	**2009-10**	0	0
2010	0	0	**2010-11**	0	1
2011	2	5	**2011-12**	0	3
2012[4]	0	0			
Total	3	25		1	8

Table 2 shows the history of year-round wet weather exceedances at SMB 7-5 in comparison with the reference beach (SMB 1-1). From the storm year 2004-05 through June 30th of storm year 2011-12 there were nine (9) wet weather exceedances at SMB 7-5. By comparison the reference beach (SMB 1-1) exhibited eighteen (18) wet weather exceedances during the same period. In its staff report for the reconsideration of the Santa Monica Bay Bacteria TMDL, the Regional Board staff analyzed the history of wet weather exceedances from November 2004 through October 2010 at SMB 7-5 and found that the wet weather exceedance rate was only 4% in comparison with the reference beach exceedance rate of 22%. Likewise dry weather exceedance rates over this

[3] February 2008 Los Angeles County Department of Public Works. Santa Monica Bay Beaches Bacterial Indicator TMDL Compliance Study-Final Report, prepared by Weston Solutions.
[4] Summer 2012 data shown through June 2012

same period at SMB 7-5 were 1% while the dry weather exceedance rates at the reference beach were 10%.

TABLE 2		
SANTA MONICA BAY BEACHES BACTERIA (SMBBB) TMDL YEAR-ROUND WET WEATHER [Nov 1-Oct 31] EXCEEDANCE DAYS SMB 7-5 COMPARED WITH REFERENCE SITE		
Wet Weather	**Single-Sample Exceedance Days at SMB 7-5**	**Single-Sample Exceedance Days at Reference Beach (SMB 1-1)**
2004-05[5]	4	4
2005-06	1	1
2006-07	0	0
2007-08	0	1
2008-09	1	2
2009-10	1	3
2010-11	2	4
2011-12[6]	0	3
Total	9	18

Given (1) that the City's conveyances are through natural canyons, which allow for infiltration; (2) the City is a low-density, all residential, rural community; (3) there is a long distance between the City and the monitoring site; (4) there is a lack of recurring exceedances; and (5) the natural reference beach exhibits far more exceedances than site 7-5, there is no evidence to suggest that discharges from the City caused or contributed these anomalous exceedances.

Machado Lake Trash TMDL Monitoring

The City of Rolling Hills has now completed a second year of monitoring in accordance with the Trash Monitoring and Reporting Plan. This data demonstrates that the City's current BMPs effectively achieve the functional equivalent of zero trash discharge. After calculating the trash generation and discharge rates from the data collected over the course of this study, it was concluded that the City's BMP program currently achieves a greater than 99.9% reduction of trash from its baseline WLA. Compliance is achieved through institutional and source controls based on the City's strict enforcement of litter laws and the City's ability to encourage the Rolling Hills Community Association (RHCA) to maintain its trails and roads since the City does not have any public rights-of-way or control of the roads and trails. The monitoring data showed no correlation between trash generation rates along roads and trails with trash discharge rates measured at canyon outfalls at the City's boundary. This lack of correlation between trash generation and

[5] The 2004-05 storm year was a 97th percentile year with respect to the number of days of rain (54 days of rain) and annual precipitation (26.7 inches), while it was a 77th percentile year with respect to wet days (65 wet days). By comparison the critical storm year which was used to establish the number of allowable wet weather exceedance days was 1992-93 which was a 75th percentile year with respect to the number of days of rain (41 days of rain) and a 93rd percentile rain year with respect to annual precipitation (22.9 inches) and a 92nd percentile rain year with 75 wet days. Thus it is not surprising that in 2004-05 many sites including the reference beach site exceeded the number of allowable wet weather exceedance days.

[6] 2011-2012 Wet weather data shown through June 2012

discharge demonstrates that trash that is generated along roadways and trails is not readily conveyed into drainage courses due to lack of curb-and-gutter and due to thick vegetation within the canyon drainage courses.

The objective of the City of Rolling Hills Trash Monitoring and Reporting Plan (TMRP) was to quantitatively document the rate of trash discharge during dry and wet weather to provide a basis for determining whether and to what extent the City needs to implement any additional best management practices for compliance with the Machado Lake Trash TMDL. The results for the second year of monitoring demonstrate that the City's current BMPs (its character and practices) are achieving 99.96% reduction of trash from annual trash generation rate and 99.98% load reduction when measured against its baseline waste load allocation. These results are consistent with the data presented in the first annual report which demonstrated 99.5% reduction in trash from the annual trash generation rate and 99.8% over the baseline waste load allocation. As such, no additional BMPs are warranted.

Machado Nutrient TMDL Monitoring

The incorporated cities of the Palos Verdes Peninsula have begun conducting joint monitoring to meet the requirements of the *Machado Lake Eutrophic, Algae, Ammonia, and Odors (Nutrient) Total Maximum Daily Load* (TMDL) established by the Los Angeles Regional Water Quality Control Board (LARWQCB) on May 1, 2008 (Resolution No. R08-006. This monitoring is being conducted in accordance with the *Palos Verdes Peninsula Coordinated Monitoring Plan* (CMP) (Peninsula Cities, 2011) approved by Regional Board staff. Monitoring under the CMP began in August 2011. On June 18, 2012 a preliminary monitoring report was submitted at the request of Regional Board staff to summarize progress in conducting stormwater sampling and flow measurements. This preliminary report was provided to summarize monitoring progress, stormwater analytical data, flow data, and data quality assurance/quality control (QA/QC) analysis. Based on this preliminary data, monthly average values for both Total Nitrogen and Total Phosphorus during the first eleven months of monitoring were below the current interim concentration-based TMDL targets. A complete annual monitoring report with full analysis of the data will be submitted by December 14, 2012.

6. Interagency coordination between cities to improve the storm water management program.

The City of Rolling Hills cooperated with other cities on the Palos Verdes Peninsula in a number of joint initiatives including:

- Implementation of the Palos Verdes Peninsula Cities Coordinated Monitoring Plan and Implementation Plan for the Machado Lake Nutrient TMDL
- Partnership with the City of Rolling Hills Estates in staffing a stormwater quality educational booth at the local Earth Day event with the assistance of a local Boy Scout troop
- Promotion of local household hazardous waste and electronic waste collection events.
- Participation in Jurisdictional Group 7 coordination meetings to work together to ensure that beach water quality on the Peninsula does not degrade

The City's consultant also attends the monthly Executive Advisory Committee of the Los Angeles County Municipal Permittees, the quarterly Ballona Creek WMC meetings, the quarterly

countywide public education coordination meetings to ensure that the City stays abreast of important storm water/NPDES issues.

The City is represented in the South Bay Cities Council of Governments and its committees, working groups, task forces and other special meetings including the Green Task Force of the South Bay COG which is an advisory group that serves as a clearinghouse for policies, programs and projects on energy efficiency, air quality, resource conservation and climate action.

7. Future plans to improve your agency's storm water management program.
Over the coming fiscal year the City will be working jointly with the Palos Verdes Peninsula Cities to revise the Coordinated Plan for Machado Lake Nutrient TMDL to include additional monitoring consistent with the Machado Lake Toxics TMDL.

8. Suggestions to improve the effectiveness of your program or the County model programs.

Program revisions are expected once the new MS4 permit is adopted.