CALIFORNIA
Water Boards

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MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Santa Ana Regional Water Quality Control Board

February 14, 2014

Mr. Chris Crompton
Manager, Environmental Resources
Orange County Public Works
P.O. Box 4048
Santa Ana, CA 92702-4048

COUNTY OF ORANGE SEPTEMBER 6, 2013 REQUEST FOR REVISIONS TO THE NEWPORT BAY WATERSHED SEDIMENT TMDL MRP NO. 99-74

Dear Mr. Crompton:

The County of Orange (County), in a letter dated September 6, 2013, has requested revisions to Monitoring and Reporting Program (MRP) No. 99-74 for the San Diego Creek/Newport Bay Watershed Sediment Total Maximum Daily Load (TMDL).

The Sediment TMDL was adopted by the Regional Board in 1998 (Order No. 98-69 as amended by Order No. 98-101), and approved by the US Environmental Protection Agency in 1999. The monitoring program for the TMDL was adopted by the Regional Board in 1999 (Order No. 99-74). The County of Orange is implementing the monitoring program on behalf of the Newport Bay Watershed Executive Committee.

The County requested the following specific revisions to the MRP: 1) sediment monitoring be discontinued at four of the eight TMDL compliance evaluation stations; 2) one of the seven foothill sediment trapping basin be removed from TMDL monitoring requirements; 3), the rainfall-defined scour survey frequency for the remaining six foothill sediment basins be reduced from once every three years to once every five years, and, 4) the topographic/vegetation survey frequency for Upper Newport Bay be reduced from once every three years to once every five years.

In meeting with the County over the past two years to discuss the sediment TMDL and the associated monitoring and reporting program, Board staff has been evaluating the sediment data collected in response to the MRP. While we are encouraged by the significant progress towards meeting the TMDL numeric targets, the data indicate that consistently achieving the numeric load target for sediment discharge to Newport Bay will require continued implementation of the TMDL. We are concerned about the large volume of sediment that has accumulated within San Diego Creek upstream of the

sediment basins, and the potential for mobilization of this sediment by large storm events. In addition, the rate of sediment accumulation within San Diego Creek appears to be linked to poor biological conditions within the Creek. We are also concerned about the large sediment-associated changes in habitat acreages within Upper Newport Bay that have occurred over the past ten years.

However, we agree that the TMDL monitoring program could and should be more efficient, and that it is appropriate to account for the substantial land use changes within the watershed. Therefore, we agree with most of your requested changes, and have revised the Newport Bay Watershed sediment TMDL MRP accordingly. Enclosed with this letter is a brief document that describes the rationale for the changes. Also enclosed are a strikeout and underline version of MRP No. 99-74 showing changes to the MRP, and a clean copy of the amended MRP No. 99-74.

During our meetings with you, we also expressed the need for a new monitoring station on Borrego Wash to better quantify open space sediment loading, and the need to include the Jeffrey sediment basin within the TMDL. We have determined that these two changes can be postponed pending further discussions with stakeholders.

If you have any questions concerning this letter or the changes shown in the revised Monitoring and Reporting Program, please contact Wanda Cross or Doug Shibberu at 951-782-4468 or 951-782-7959, respectively.

Sincerely,

for Kurt V. Berchtold
Executive Officer
Santa Ana Regional Water Quality Control Board

Attachments: Rationale for Changes to MRP No. 99-74
Revised MRP No. 99-74, strikeout and underline version and clean copy

Rationale for February 14, 2014 Amendments to Monitoring and Reporting Program No. 99-74
Total Maximum Daily Load for Sediment in the Newport Bay Watershed

The Newport Bay Sediment TMDL was adopted by the Regional Board in 1998 (Order No. 98-69 as amended by Order No. 98-101), and approved by the US Environmental Protection Agency in 1999. In 1999, the Regional Board adopted Monitoring and Reporting Program (MRP), Order No. 99-74 for the TMDL. The County of Orange is implementing the MRP on behalf of the Newport Bay Watershed Executive Committee.

In a letter dated September 8, 2013, the County of Orange requested the following revisions to the requirements in MRP 99-74:

1. Discontinue sediment monitoring at four of the eight TMDL compliance evaluation stations (Santa Ana Delhi, Sand Canyon, Bonita Creek, and Marshburn).

2. Remove one of the seven foothill sediment trapping basins (Marshburn Basin) from the monitoring requirements.

3. Reduce the rainfall-defined scour survey frequency for the remaining six foothill sediment basins from years with 100% of mean basin rainfall to years with 150% of mean basin rainfall, while leaving unchanged the additional requirement of a scour survey at least once every five years.

4. Reduce the topographic/vegetation survey frequency for Upper Newport Bay from at least once every three years to at least once every seven years, while leaving unchanged the additional requirement for a survey during years when the sediment load to Newport Bay from San Diego Creek exceeds 250,000 tons.

Regional Board staff has reviewed these requests and concluded that these revisions to MRP-99-74 are largely warranted, based on the twelve years of data collected, the extensive land use changes in the watershed, and the significant progress towards achieving the TMDL numeric targets. The requested changes are discussed in more detail below.

1. <u>Discontinue monitoring at four stations</u>

Regional Board staff agrees with the County's analysis that continued sediment monitoring at four of the TMDL compliance stations is not productive and should be discontinued. These four stations monitor areas that are largely urbanized and/or discharge minimal amounts of sediment to Newport Bay. The stations are:

a. Santa Ana Delhi Channel at Irvine Avenue
b. Bonita Canyon at Macarthur Boulevard

c. Marshburn Channel at Irvine Boulevard
d. Sand Canyon Channel at University Drive

The County should continue to report loads from the Santa Ana Delhi Channel and Bonita Canyon. This can be done using flow data (which will continue to be collected in support of other water quality programs) and the sediment transport curves developed for these channels. The attached revised monitoring program shows these changes in Section B, Table 2.

The Sand Canyon Wash station was intended to monitor sediment loads from the San Joaquin Hills. Development activities in the San Joaquin Hills are largely complete and sediment discharge to Sand Canyon Wash is minimal, partly as a result of the upstream Sand Canyon Dam. With the decommissioning of the Sand Canyon Wash monitoring station, monitoring of foothill open space areas, the largest remaining sediment source area, will be entirely dependent on the single station in Agua Chinon Wash. A new monitoring station targeting open space loads is needed along Borrego Wash. However, Board staff recommends deferring inclusion of a new Borrego Wash monitoring station to a future revision of the MRP in light of ongoing land use changes and the need to determine the appropriate location in light of those changes.

2. Remove Marshburn Basin from monitoring program

Board staff agrees that the Marshburn Basin no longer functions as a sediment basin and hence can be removed from MRP 99-74. The floor of the Marshburn Basin has been lowered to accommodate a constructed wetland for treating urban runoff. The watershed upstream is also now fully developed and no longer contains significant agriculture or construction land uses. The attached revised monitoring program shows this change in Section C, Table 3.

3. Reduce Foothill Basin Scour Study Frequency

Board staff agrees with the County's request to reduce the scour study frequencies in the foothill basins. Based on the data collected to date, years with average rainfall do not result in large sediment accumulation within the foothill basins. The rainfall trigger for the required scour surveys of the foothill sediment basins will be changed from years with 100 percent of mean basin rainfall to years with 150 percent of the mean basin rainfall. The requirement for a scour survey at least once every five years is unchanged. The attached revised monitoring program shows this change in Section C, Table 3.

4. Reduce Newport Bay Topographic and Vegetation Study Frequency

While the County requested a seven year interval between topographic/bathymetric surveys in Upper Newport Bay, Regional Board staff believes it is important to maintain a survey frequency of at least once every five years. The survey data are used to assess compliance with the TMDL's minimum basin depths and habitat composition numeric targets. Substantial sediment loads to the bay are associated with years with rainfall accumulation totaling 20 inches or more (150% of average or about one standard deviation above average). These years with elevated rainfall occur at an average interval of about once every six years. However, the interval varies considerably: three such years occurred within the span of six years between 1992 and 1998. A minimum survey interval of five years will better enable timely evaluation of the TMDL's in-bay numeric targets. This represents an increase in two years from the existing required survey interval of three years. The attached revised monitoring program shows this change in Section D.2.The additional requirement for a survey during years in which the sediment load to Newport Bay from San Diego Creek exceeds 250,000 tons is unchanged.

Additional Items

In-Channel Sediment Basins:
In addition to the request categorized above, the County also indicated a desire to discontinue sediment removal from the in-channel sediment basins located within Reach 1 of San Diego Creek. We disagree with the County's assessment of sediment trapping in the in-channel basins. These basins continue to be a valuable component of the sediment control strategy for the watershed. Furthermore, the Orange County Flood Control District has recently completed an Operations and Maintenance Plan (O&M Plan) for this segment of San Diego Creek. The O&M Plan includes regular removal of vegetation and sediment from Basin 2 and Basin 3.

A report prepared by the County's consultant[1] (Fehlman Study) had concluded that the TMDL's numeric target for sediment loading to Newport Bay (62,500 tons/year based on a ten-year running average) could be achieved without maintenance of the in-channel sediment basins. However, the Fehlman Study was completed using data collected before the results from the 2010-11 rainfall season were available. Storm events during the 2010-11 rainfall season resulted in discharge of 140,000 tons of sediment to Newport Bay. Inclusion of this data point raises the ten-year average load to a level where sediment removal from the in-channel basins is required in order to achieve the numeric target. (Board staff previously provided this information to the County in comments on the Fehlman Study, dated August 27, 2012).

Jeffrey Sediment Basin:
Board staff notes the existence of a fourth in-channel basin (the Jeffrey Basin) located within Reach 2 of San Diego Creek between Jeffrey Road and Sand Canyon Avenue. The Jeffrey Basin was identified as a sediment control basin by the Orange County

[1] Sediment TMDL Compliance Study, Fehlman Consulting Services, September 28, 2012

Flood Control District in a presentation to the Newport Bay Executive Committee on August 18, 2010. The Jeffrey Basin was not specifically identified in MRP No. 99-74.

The Jeffrey Basin may need to be added to the list of basins to which the 50 percent capacity requirement and the scour studies requirement in the TMDL (Attachment A to Resolution No. 98-101, Article 1a.8) apply. This would trigger the requirement for annual scour studies and 50 percent compliance reporting for this basin. In the event that the basin capacity falls below 50 percent, sediment removal would be required, consistent with Article 1.a.8 of the TMDL. The change has been delayed pending further discussions with stakeholders.

Reference Points for Newport Bay Topographic/Bathymetric and Vegetation Surveys: Board staff recommends deleting the requirement for the use of a minimum of fifty "semi-permanent' field reference points to delineate saltwater and brackish/freshwater habitats in Newport Bay. This approach proved difficult to implement during past vegetation surveys (many of the reference points were lost or destroyed between surveys) and was not used in the Army Corps' post-dredging monitoring program (2010-13). The revised monitoring program shows this change in Section D.2.

Monitoring of Phosphorus in Sediment Removed from In-channel and In-Bay Basins: Board staff recommends deleting the sediment phosphorus monitoring requirements for sediment removal projects in San Diego Creek and Newport Bay. First, adequate nutrient monitoring is performed in accordance with the nutrient TMDL. Second, the data collected to date indicate that the phosphorus load is closely correlated with the frequency and magnitude of storm events each season. The phosphorus contained in the sediment from minor removal projects is typically not a significant fraction of the annual phosphorus load. The infrequent large sediment removal projects may result in removal of a large mass of contained phosphorus but this would only be applicable to the year during which the removal took place. However, the County may continue to collect these data and subtract the phosphorus load from the measured discharge at its own initiative. The revised monitoring program shows this change with the deletion of Section E.

California Regional Water Quality Control Board
Santa Ana Region

Monitoring and Reporting Program No. 99-74 (as amended on February 14, 2014)
For
The County of Orange and the Cities of Santa Ana, Costa Mesa, Newport Beach, Orange, Lake Forest, Irvine and Tustin
(hereinafter dischargers)

Monitoring and Reporting for Compliance with
The Total Maximum Daily Load for Sediment
In the Newport Bay Watershed

A. MONITORING GUIDELINES:

1. All sampling, sample preservation, and analysis shall be performed in accordance with the latest edition of United States Geologic Survey (USGS) technical manual for water resource investigations of fluvial sediment discharges, including but not limited to "Field Methods for Measurement of Porterfield, 1972) and "Computation of Fluvial Sediment Discharge" (Guy and Norman, 1970).

2. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

3. The monitoring and reporting may be done more frequently as necessary or as specified in this order. Whenever the discharger monitors any pollutant more frequently than is required by this order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the discharge monitoring report specified by the Executive Officer.

4. Monitoring data shall be submitted in a format acceptable to the Executive Officer. Specific reporting format may include preprinted forms and/or electronic media. Unless otherwise specified, discharge flows shall be reported in terms of daily average and monthly average discharge flows.

5. The results of all monitoring required by this order shall be reported to the Board, and shall be submitted in such a format as to allow direct comparison with the Basin Plan Sediment TMDL requirements.

6. The discharger shall deliver a copy of each monitoring report in the appropriate format to:

   California Regional Water Quality Control Board, Santa Ana Region
   3737 Main Street, Suite 500
   Riverside, CA 92501-3339

7. The discharger shall assure that records of all monitoring information are maintained and accessible for a period of at least five years from the date of the sample, report, or application. This period of retention shall be extended by the request of the Board at any time. Records of monitoring information shall include:

   a. The date, exact place, and time of sampling or measurements;
   b. The individual(s) who performed the sampling and/or measurements;
   c. The date(s) analyses were performed;
   d. The individual(s) who performed the analyses;
   e. The analytical techniques or methods used;
   f. All sampling and analytical results;
   g. All monitoring equipment calibration and maintenance records;
   h. All original strip charts from continuous monitoring devices; and
   i. Copies of all reports required by this order.

8. All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy.

9. The flow measurement system shall be calibrated at least once per year or more frequently to ensure continued accuracy.

10. Weekly samples shall be collected on a representative day of each week.

11. Annual samples, surveys or studies shall be conducted by June 30, except as otherwise specified.

12. Multiple Depth Integrated Samples (MDIS) as described in the references cited in No. 1 above.

13. The Executive Officer is authorized to extend the due date for completion and submittal of all studies, surveys, and reports required by this monitoring and reporting program.

B. Sediment Monitoring Program

1. Pursuant to the Sediment TMDL, Requirement No.1.b for the determination of TMDL compliance, the discharger shall conduct sediment monitoring at each monitoring station specified in Table 1 at the specified frequency from July 1 to June 30 of each year. Figure 1 shows the locations of these monitoring stations.

Table 1: Suspended Sediment Monitoring (July 1 through June 30)

Station	Discharge/Stage (cfs/gage ht.)		Total Fluvial Sediment (mg/L)	
	Frequency	Sample Type	Frequency	Sample Type
San Diego Creek @ Culver	Weekly/Storm	Continuous	Weekly/Storm	MDIS
Peter's Canyon Wash @ Barranca	Weekly/Storm	Continuous	Weekly/Storm	MDIS
San Diego Creek @ Campus	Weekly/Storm	Continuous	Weekly/Storm	MDIS
Bonita Creek @ MacArthur**	Weekly/Storm	Instantaneous	~~Weekly/Storm~~	~~MDIS~~
Santa Ana Delhi @ Irvine Ave**	Weekly/Storm	Continuous	~~Weekly/Storm~~	~~MDIS~~

* Storm samples are to be collected only during daylight hours in rainfall events forecast to be greater than 1.0 inches.

~~**Santa Ana-Delhi will be implemented starting in 1999/00 and Bonita Creek in 2000/01 with the initial year sediment monitoring at each station conducted in storm events forecast to be greater than 0.25 inches.~~

**Sediment samples will not be collected at the Santa Ana Delhi and Bonita Creek stations. Sediment loads at these stations will be estimated using flow (discharge) data and the sediment transport curves that have been previously developed for these stations

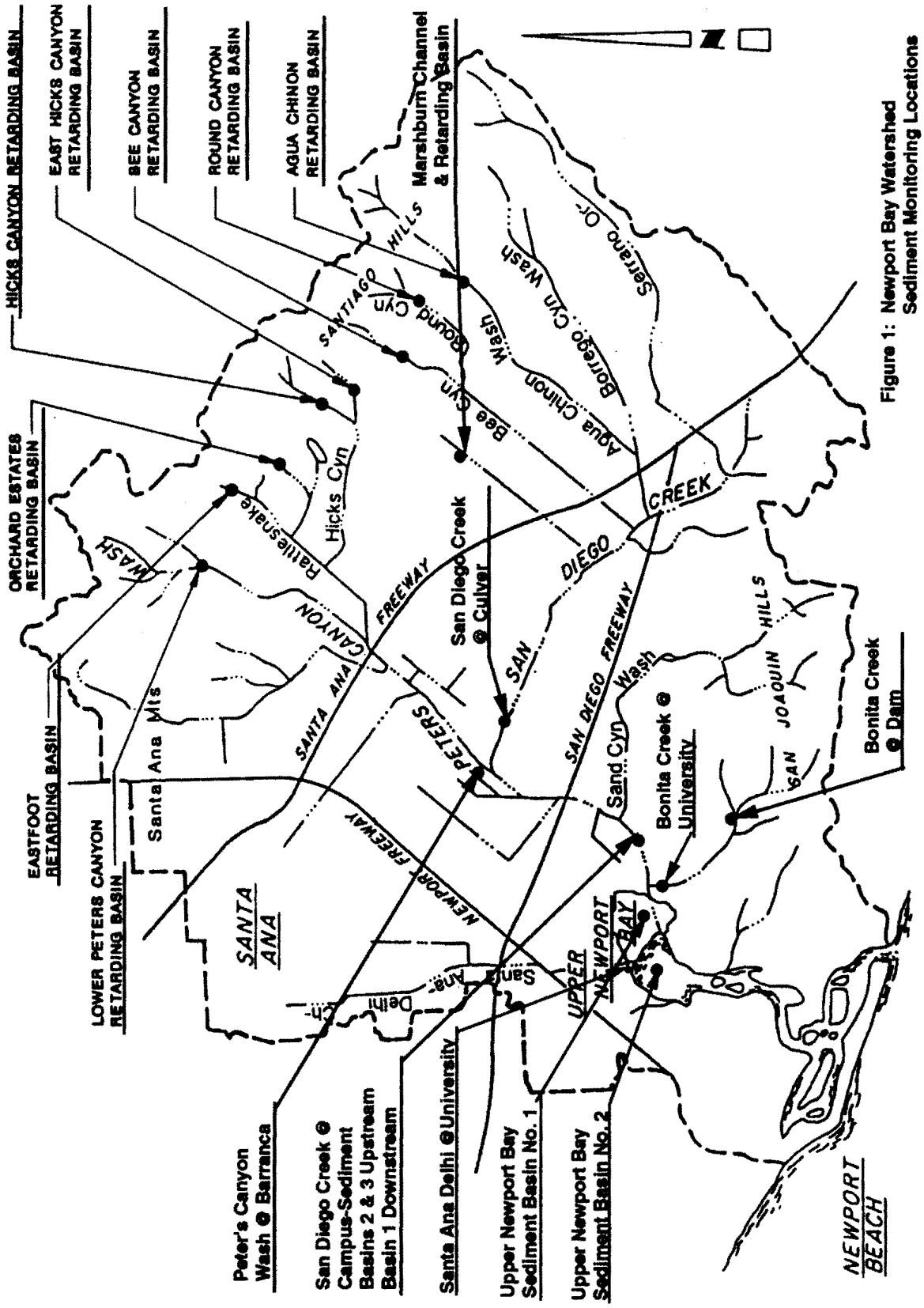

Figure 1: Newport Bay Watershed Sediment Monitoring Locations

Figure 1: Newport Bay Watershed Sediment Monitoring Locations

2. Pursuant to the Sediment TMDL, Requirement No. 1.b.1 for the determination of load allocation compliance, the discharger shall conduct total suspended sediment monitoring at each monitoring station specified in Table 2 at the specified frequency during the period of July 1 through June 30 of each year. Figure 1 shows the locations of these monitoring stations.

Table 2: Suspended Sediment Monitoring for Determining Compliance with Land Use Type Load Allocations (July 1 through June 30)

Station	Representative Land Use Type	Discharge/Stage (cfs/gage ht.)		Total Fluvial Sediment (mg/L)	
		Frequency	Sample Type	Frequency	Sample Type
Santa Ana Delhi Channel @ Irvine Ave.	Urban	Monthly /Storm**	Continuous	~~Monthly /Storm**~~	~~MDIS~~
Bonita Creek @ MacArthur Pkwy*	~~Construction~~ Open Space/Urban	Monthly /Storm**	Instantaneous	~~Monthly /Storm**~~	~~MDIS~~
~~Marshburn Channel below retarding basin*~~	~~Agriculture~~	~~Monthly /Storm**~~	~~Instantaneous~~	~~Monthly /Storm**~~	~~MDIS~~
Agua Chinon Channel below retarding basin*	Open Space	Monthly /Storm**	Instantaneous	Monthly /Storm**	MDIS
~~Sand Canyon Channel @ Culver Dr.*~~	~~Open Space~~	~~Monthly /Storm**~~	~~Instantaneous~~	~~Monthly /Storm**~~	~~MDIS~~

* Santa Ana-Delhi Channel will be implemented starting 1999/00, Bonita Creek and Sand Canyon Channel in 2000/01, Marshburn Channel and Agua Chinon Channel in 2001/02.

**Storm samples are to be collected in the initial year at each station during daylight hours in storm events forecast to be greater than 0.25 inches of rain and in subsequent years in rainfall events forecast to be greater than 1.0 inches of rain.

3. All monitoring shall be completed prior to June 30 of each year.

4. The total sediment monitoring program results shall be submitted as part of the annual report.

C. SCOUR STUDIES

1. Pursuant to the Sediment TMDL, Requirement No. 1.b.2, the discharger shall conduct sediment deposition and scour studies at each monitoring station specified in Table 3 prior to July 31 of each year where studies are specified.

Table 3: Scour Studies

Station	Sediment Deposited (tons)	Sediment Scoured (tons)
Hicks Canyon Retarding Basin	Once every 5 years or in years with ~~100~~150% of mean basin rainfall	Once every 5 years or in years with ~~100~~150% of mean basin rainfall
East Hicks Canyon Retarding Basin	Once every 5 years or in years with ~~100~~150% of mean basin rainfall	Once every 5 years or in years with ~~100~~150% of mean basin rainfall
Round Canyon Retarding Basin	Once every 5 years or in years with ~~100~~150% of mean basin rainfall	Once every 5 years or in years with ~~100~~150% of mean basin rainfall
Agua Chinon Retarding Basin	Once every 5 years or in years with ~~100~~150% of mean basin rainfall	Once every 5 years or in years with ~~100~~150% of mean basin rainfall
Bee Canyon Retarding Basin	Once every 5 years or in years with ~~100~~150% of mean basin rainfall	Once every 5 years or in years with ~~100~~150% of mean basin rainfall
~~Marshburn Retarding Basin~~	~~Once every 5 years or in years with 100% of mean basin rainfall~~	~~Once every 5 years or in years with 100% of mean basin rainfall~~
Orchard Estates Retarding Basin	Once every 5 years or in years with ~~100~~150% of mean basin rainfall	Once every 5 years or in years with ~~100~~150% of mean basin rainfall
San Diego Creek Reach 1 (Basin 1) 22 Stations Between Stations 34+00 and 76+00	Annually	Annually
San Diego Creek Reach 1 (Basin 2) 9 Stations Between Stations 82+00 and 76+00	Annually	Annually
San Diego Creek Reach 1 (Basin 3) 19 Stations Between Stations 100+00 and 135+00	Annually	Annually
San Diego Creek Reach 1 65 Stations Between Stations 10+20 and 218+00	Once every 5 years or in years with 150% of mean basin rainfall	Once every 5 years or in years with 150% of mean basin rainfall
San Diego Creek Reach 2 75 Stations Between Stations 0+00 and 143+31	Once every 5 years or in years with 150% of mean basin rainfall	Once every 5 years or in years with 150% of mean basin rainfall

2. Pursuant to the Sediment TMDL, the scour study results shall be submitted by November 15 of each year in which data is collected in order to verify at least 50% sediment basin capacity. The scour study results shall also be compared to previous data collected from these same stations by the County of Orange to estimate the amount of sediment deposited in tributaries and sediment control facilities in the Newport Bay Watershed.

D. TOPOGRAPHIC/BATHYMETRIC AND VEGETATION SURVEYS

1. Pursuant to the Sediment TMDL, Requirement No. 1.b.3, the discharger shall conduct topographic/bathymetric surveys (Horizontal Scale 1 inch = 100 feet, vertical scale 1 inch = 10 feet) of Upper Newport Bay (from Pacific Coast Highway Bridge upstream to the mouths of San Diego Creek and Santa Ana Delhi Channel and including the Upper Newport Bay Ecological Reserve) at least once every ~~three~~ five years beginning in 2000, and following any year at which the annual total suspended sediment load for San Diego Creek at Campus (Monitoring requirement B.1) is more than 250,000 tons.

2. Pursuant to the Sediment TMDL, Requirement No. 1.b.3, the discharger shall conduct vegetation surveys of Upper Newport Bay (from Pacific Coast Highway Bridge upstream to the mouths of San Diego Creek and Santa Ana Delhi Channel and including the Upper Newport Bay Ecological Reserve) at least once every ~~three~~ five years beginning in 2000, and following any year at which the annual total suspended sediment load for San Diego Creek at Campus (Monitoring requirement B.1) is more than 250,000 tons. These vegetation surveys shall map habitat boundaries using color aerial photographs, at a scale of 1 inch = 100 feet, and based on ground truthing of the dominant plant species. ~~In order to precisely record the boundary between saltwater dependent habitats (salt marsh) and brackish water and fresh water marsh habitats, a minimum of 50 vegetation reference points shall be established in the Upper Newport Bay. These vegetation reference points shall be surveyed in the field using a GPS receiver, or as part of the topographic/bathymetric surveys required above. The semi-permanent placement of these vegetation reference points shall coincide with areas that could potentially undergo fluctuations in plant community compositions.~~

3. The discharger shall compare these topographic/bathymetric and vegetation survey results to previous surveys to evaluate the following:

    a) the amount and location of sediment deposition in Upper Newport Bay and adjacent wetlands;
    b) changes to the existing beneficial uses, including aquatic, wildlife and endangered species, habitat due to sediment deposition.

4. In any year in which these surveys are required, the surveys shall be conducted by June 30. The results of these surveys shall be submitted as part of the annual report.

~~E. SEDIMENT PHOSPHOROUS MONITORING~~

~~1. A minimum of 5 sediment samples shall be collected from San Diego Creek Sediment Basins No. 1, 2 and 3 (5 samples per basin) whenever sediment is removed from these basins as part of the sediment basin maintenance program.~~

~~These 5 sediment samples per basin shall be analyzed for total and orthophosphorous and grain size. These data shall be provided in the annual sediment report for the year when sediment removal occurred.~~

~~2. In conjunction with the topographic/ bathymetric and vegetation surveys required above, a minimum of 5 sediment samples shall be collected from the two sediment basins in Upper Newport Bay (5 samples per basin). These 5 sediment samples per basin shall be analyzed for total and ortho phosphorous and grain size. These data shall be provided in the annual sediment report for the year when the surveys occurred.~~

F. REPORTING

1. The discharger shall submit a report by ~~October 30~~ November 15 of each year providing the results of the scour studies and the evaluation of sediment basin capacities for the succeeding winter season.

2. The discharger shall submit an annual report by February 27~~December 31~~ of each year providing the discharge data, total suspended solids monitoring data, the topographic/bathymetric and vegetation surveys results, and any additional sediment monitoring data collected by the discharger.

3. The annual report shall provide an assessment of compliance with the TMDL, the specified load allocations and the effectiveness of sediment control activities implemented in the Newport Bay Watershed.

~~I, Gerard J. Thibeault, Executive Officer, do hereby certify that the foregoing is a full,true, and correct copy of a monitoring and reporting program adopted by the California Regional Water Quality Control Board, Santa Ana Region, on November 19, 1999.~~

Ordered by _____
~~for~~ Kurt V. Berchtold
Executive Officer

February 14, 2014

California Regional Water Quality Control Board
Santa Ana Region

Monitoring and Reporting Program No. 99-74 (as amended on February 14, 2014)
For
The County of Orange and the Cities of Santa Ana, Costa Mesa, Newport Beach, Orange, Lake Forest, Irvine and Tustin
(hereinafter dischargers)

Monitoring and Reporting for Compliance with
The Total Maximum Daily Load for Sediment
In the Newport Bay Watershed

A. MONITORING GUIDELINES:

1. All sampling, sample preservation, and analysis shall be performed in accordance with the latest edition of United States Geologic Survey (USGS) technical manual for water resource investigations of fluvial sediment discharges, including but not limited to "Field Methods for Measurement of Porterfield, 1972) and "Computation of Fluvial Sediment Discharge" (Guy and Norman, 1970).

2. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

3. The monitoring and reporting may be done more frequently as necessary or as specified in this order. Whenever the discharger monitors any pollutant more frequently than is required by this order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the discharge monitoring report specified by the Executive Officer.

4. Monitoring data shall be submitted in a format acceptable to the Executive Officer. Specific reporting format may include preprinted forms and/or electronic media. Unless otherwise specified, discharge flows shall be reported in terms of daily average and monthly average discharge flows.

5. The results of all monitoring required by this order shall be reported to the Board, and shall be submitted in such a format as to allow direct comparison with the Basin Plan Sediment TMDL requirements.

6. The discharger shall deliver a copy of each monitoring report in the appropriate format to:

   California Regional Water Quality Control Board, Santa Ana Region
   3737 Main Street, Suite 500
   Riverside, CA 92501-3339

7. The discharger shall assure that records of all monitoring information are maintained and accessible for a period of at least five years from the date of the sample, report, or application. This period of retention shall be extended by the request of the Board at any time. Records of monitoring information shall include:

   a. The date, exact place, and time of sampling or measurements;
   b. The individual(s) who performed the sampling and/or measurements;
   c. The date(s) analyses were performed;
   d. The individual(s) who performed the analyses;
   e. The analytical techniques or methods used;
   f. All sampling and analytical results;
   g. All monitoring equipment calibration and maintenance records;
   h. All original strip charts from continuous monitoring devices; and
   i. Copies of all reports required by this order.

8. All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy.

9. The flow measurement system shall be calibrated at least once per year or more frequently to ensure continued accuracy.

10. Weekly samples shall be collected on a representative day of each week.

11. Annual samples, surveys or studies shall be conducted by June 30, except as otherwise specified.

12. Multiple Depth Integrated Samples (MDIS) as described in the references cited in No. 1 above.

13. The Executive Officer is authorized to extend the due date for completion and submittal of all studies, surveys, and reports required by this monitoring and reporting program.

B. Sediment Monitoring Program

1. Pursuant to the Sediment TMDL, Requirement No.1.b for the determination of TMDL compliance, the discharger shall conduct sediment monitoring at each monitoring station specified in Table 1 at the specified frequency from July 1 to June 30 of each year. Figure 1 shows the locations of these monitoring stations.

Table 1: Suspended Sediment Monitoring (July 1 through June 30)

Station	Discharge/Stage (cfs/gage ht.)		Total Fluvial Sediment (mg/L)	
	Frequency	Sample Type	Frequency	Sample Type
San Diego Creek @ Culver	Weekly/Storm	Continuous	Weekly/Storm	MDIS
Peter's Canyon Wash @ Barranca	Weekly/Storm	Continuous	Weekly/Storm	MDIS
San Diego Creek @ Campus	Weekly/Storm	Continuous	Weekly/Storm	MDIS
Bonita Creek @ MacArthur**	Weekly/Storm	Instantaneous		
Santa Ana Delhi @ Irvine Ave**	Weekly/Storm	Continuous		

* Storm samples are to be collected only during daylight hours in rainfall events forecast to be greater than 1.0 inches.

**Sediment samples will not be collected at the Santa Ana Delhi and Bonita Creek stations. Sediment loads at these stations will be estimated using flow (discharge) data and the sediment transport curves that have been previously developed for these stations

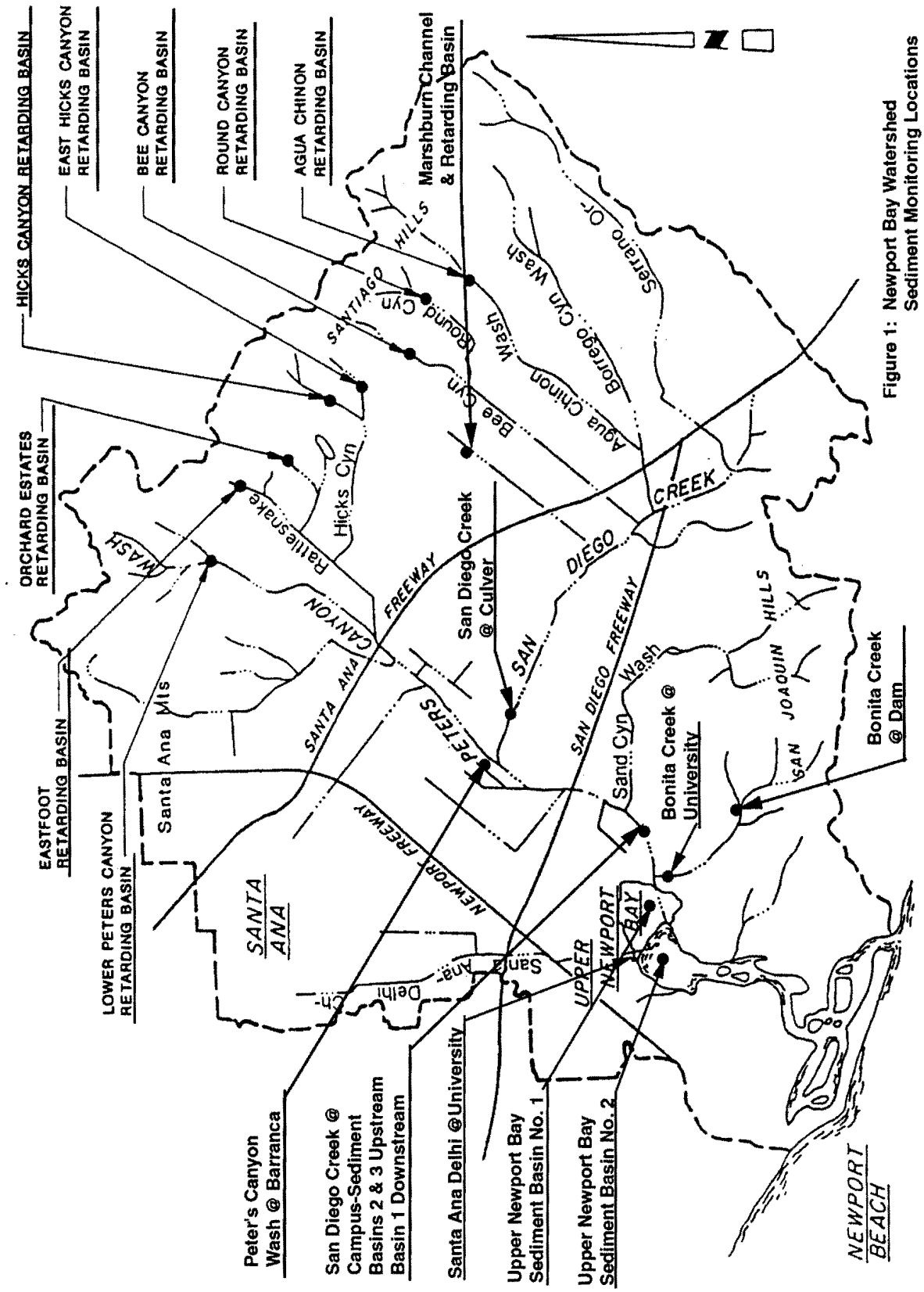

Figure 1: Newport Bay Watershed Sediment Monitoring Locations

Figure 1: Newport Bay Watershed Sediment Monitoring Locations

2. Pursuant to the Sediment TMDL, Requirement No. 1.b.1 for the determination of load allocation compliance, the discharger shall conduct total suspended sediment monitoring at each monitoring station specified in Table 2 at the specified frequency during the period of July 1 through June 30 of each year. Figure 1 shows the locations of these monitoring stations.

Table 2: Suspended Sediment Monitoring for Determining Compliance with Land Use Type Load Allocations (July 1 through June 30)

Station	Representative Land Use Type	Discharge/Stage (cfs/gage ht.)		Total Fluvial Sediment (mg/L)	
		Frequency	Sample Type	Frequency	Sample Type
Santa Ana Delhi Channel @ Irvine Ave.	Urban	Monthly /Storm**	Continuous		
Bonita Creek @ MacArthur Pkwy*	Open Space/Urban	Monthly /Storm**	Instantaneous		
Agua Chinon Channel below retarding basin*	Open Space	Monthly /Storm**	Instantaneous	Monthly /Storm**	MDIS

* Santa Ana-Delhi Channel will be implemented starting 1999/00, Bonita Creek and Sand Canyon Channel in 2000/01, Marshburn Channel and Agua Chinon Channel in 2001/02.

**Storm samples are to be collected in the initial year at each station during daylight hours in storm events forecast to be greater than 0.25 inches of rain and in subsequent years in rainfall events forecast to be greater than 1.0 inches of rain.

3. All monitoring shall be completed prior to June 30 of each year.

4. The total sediment monitoring program results shall be submitted as part of the annual report.

C. SCOUR STUDIES

1. Pursuant to the Sediment TMDL, Requirement No. 1.b.2, the discharger shall conduct sediment deposition and scour studies at each monitoring station specified in Table 3 prior to July 31 of each year where studies are specified.

Table 3: Scour Studies

Station	Sediment Deposited (tons)	Sediment Scoured (tons)
Hicks Canyon Retarding Basin	Once every 5 years or in years with 150% of mean basin rainfall	Once every 5 years or in years with 150% of mean basin rainfall
East Hicks Canyon Retarding Basin	Once every 5 years or in years with 150% of mean basin rainfall	Once every 5 years or in years with 150% of mean basin rainfall
Round Canyon Retarding Basin	Once every 5 years or in years with 150% of mean basin rainfall	Once every 5 years or in years with 150% of mean basin rainfall
Agua Chinon Retarding Basin	Once every 5 years or in years with 150% of mean basin rainfall	Once every 5 years or in years with 150% of mean basin rainfall
Bee Canyon Retarding Basin	Once every 5 years or in years with 150% of mean basin rainfall	Once every 5 years or in years with 150% of mean basin rainfall
Orchard Estates Retarding Basin	Once every 5 years or in years with 150% of mean basin rainfall	Once every 5 years or in years with 150% of mean basin rainfall
San Diego Creek Reach 1 (Basin 1) 22 Stations Between Stations 34+00 and 76+00	Annually	Annually
San Diego Creek Reach 1 (Basin 2) 9 Stations Between Stations 82+00 and 76+00	Annually	Annually
San Diego Creek Reach 1 (Basin 3) 19 Stations Between Stations 100+00 and 135+00	Annually	Annually
San Diego Creek Reach 1 65 Stations Between Stations 10+20 and 218+00	Once every 5 years or in years with 150% of mean basin rainfall	Once every 5 years or in years with 150% of mean basin rainfall
San Diego Creek Reach 2 75 Stations Between Stations 0+00 and 143+31	Once every 5 years or in years with 150% of mean basin rainfall	Once every 5 years or in years with 150% of mean basin rainfall

2. Pursuant to the Sediment TMDL, the scour study results shall be submitted by November 15 of each year in which data is collected in order to verify at least 50% sediment basin capacity. The scour study results shall also be compared to previous data collected from these same stations by the County of Orange to estimate the amount of sediment deposited in tributaries and sediment control facilities in the Newport Bay Watershed.

D. TOPOGRAPHIC/BATHYMETRIC AND VEGETATION SURVEYS

1. Pursuant to the Sediment TMDL, Requirement No. 1.b.3, the discharger shall conduct topographic/bathymetric surveys (Horizontal Scale 1 inch = 100 feet, vertical scale 1 inch = 10 feet) of Upper Newport Bay (from Pacific Coast Highway Bridge upstream to the mouths of San Diego Creek and Santa Ana Delhi Channel and including the Upper Newport Bay Ecological Reserve) at least once every five years beginning in 2000, and following any year at which the annual total suspended sediment load for San Diego Creek at Campus (Monitoring requirement B.1) is more than 250,000 tons.

2. Pursuant to the Sediment TMDL, Requirement No. 1.b.3, the discharger shall conduct vegetation surveys of Upper Newport Bay (from Pacific Coast Highway

Bridge upstream to the mouths of San Diego Creek and Santa Ana Delhi Channel and including the Upper Newport Bay Ecological Reserve) at least once every five years beginning in 2000, and following any year at which the annual total suspended sediment load for San Diego Creek at Campus (Monitoring requirement B.1) is more than 250,000 tons. These vegetation surveys shall map habitat boundaries using color aerial photographs, at a scale of 1 inch = 100 feet, and based on ground truthing of the dominant plant species.

3. The discharger shall compare these topographic/bathymetric and vegetation survey results to previous surveys to evaluate the following:

    a) the amount and location of sediment deposition in Upper Newport Bay and adjacent wetlands;
    b) changes to the existing beneficial uses, including aquatic, wildlife and endangered species, habitat due to sediment deposition.

4. In any year in which these surveys are required, the surveys shall be conducted by June 30. The results of these surveys shall be submitted as part of the annual report.

E. REPORTING

1. The discharger shall submit a report by November 15 of each year providing the results of the scour studies and the evaluation of sediment basin capacities for the succeeding winter season.

2. The discharger shall submit an annual report by February 27 of each year providing the discharge data, total suspended solids monitoring data, the topographic/bathymetric and vegetation surveys results, and any additional sediment monitoring data collected by the discharger.

3. The annual report shall provide an assessment of compliance with the TMDL, the specified load allocations and the effectiveness of sediment control activities implemented in the Newport Bay Watershed.

Ordered by _____
for Kurt V. Berchtold
Executive Officer

February 14, 2014