Ventura Countywide Stormwater Quality Management Program

Participating Agencies

Camarillo

County of Ventura

Fillmore

Moorpark

Ojai

Oxnard

Port Hueneme

San Buenaventura

Santa Paula

Simi Valley

Thousand Oaks

Ventura County Watershed Protection District

May 11, 2007

Ms. Deborah Smith
Acting Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Subject: **RESPONSE TO REQUEST FOR INFORMATION FOR MUNICIPAL STORM WATER MONITORING PROGRAM FOR THE COUNTY OF VENTURA (NPDES NO. CAS004001, ORDER NO. 01-108).**

Dear Ms. Smith:

The Ventura County Watershed Protection District and the co-permittees (hereinafter collectively referred to as "permittee") on the Ventura County Municipal Separate Storm Sewer System Permit ("MS4 Permit") are in receipt of the Regional Water Quality Control Board's ("Regional Board") letter dated March 9, 2007, and its request for a revised comprehensive Monitoring Program to be submitted by May 11, 2007. The permittees have reviewed the Regional Board's request and are concerned with the Regional Water Board's premature reliance on permit provisions contained in an administrative draft order.

The Regional Board's letter specifically requests that the Permittees "submit a revised comprehensive Monitoring Program that will enable Permittees, other interested parties, and the Los Angeles Water Board to better evaluate compliance with permit provisions contained in the draft MS4 Permit." The Permittees contend that such a request is neither appropriate nor justified until the Regional Water Board takes formal action on the draft MS4 permit. This is especially true considering the comments provided to staff at the April 5, 2007 workshop on the draft MS4 permit. At the workshop, a tremendous amount of information was conveyed from Board staff and members of the public to the Regional Board members. Based on this vast input, it appeared that the Regional Board members had many questions and reservations with regards to many of the permit provisions contained in the draft MS4 permit. Because of these concerns, Regional Board staff was directed to work with the Permittees and others to address the many questions and concerns raised. In light of this direction from the Regional Board members, most likely the draft MS4 permit, as first circulated by the Regional Board, will be revised substantially prior to Regional Board adoption. As such, we would submit that it is premature to prepare a comprehensive monitoring program that would evaluate permit compliance when the permit and its terms have yet to be adopted.

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Even though the Permittees have concerns with the monitoring request as conveyed in the Regional Board's March 9, 2007 communication, the Permittees agree that a revised monitoring program that could identify water quality problems, and provide information to the Permittees on program effectiveness is needed.

A guideline for such a plan is the 2004 report Model Monitoring Program for Municipal Separate Storm Sewer Systems (MS4) in Southern California from the Stormwater Monitoring Coalition. The management questions that need to be addressed are, "What is the relative urban runoff contribution to the receiving water problems?" and "What are the sources to urban runoff that contribute to receiving water problems?" Resources spent answering these questions would allow managers to beneficially direct limited resources to programs found to be effective in improving urban runoff water quality.

The remaining management questions regarding the water quality conditions of receiving waters also need to be addressed. Fortunately, there are many other programs already in existence in Ventura County that contribute valuable water quality data on the quality of the receiving waters. Other available data comes from high quality monitoring programs such as other NPDES permits, the irrigated lands conditional waiver, and Total Maximum Daily Loads (TMDLs) monitoring plans. Ventura County Permittees have worked cooperatively with these entities and other stakeholders to develop high quality TMDL compliance monitoring plans. Because these plans reflect a collaborative effort and are approved by Board staff, additional monitoring for TMDL compliance by the MS4 program would not be necessary. Thus, a comprehensive MS4 monitoring plan will need to take into consideration these other regional monitoring efforts to avoid unnecessary duplication.

For the reasons stated, we have prepared and are submitting the attached framework and materials as a response to your March 11, 2007 request for the Ventura Countywide monitoring program. This Monitoring Program was presented and described to Regional Board staff at our meeting on May 8, 2007.We hope that through this type of a collaborative effort we can jointly develop an appropriate monitoring program that provides the Regional Board with useful information.

Thank you for the opportunity to provide comment and we look forward to further discussions and feedback with your staff on the Monitoring Program framework. If you have any questions, please contact me at (805) 654-5051.

Sincerely,

Gerhardt Hubner, Chair
Ventura Countywide Program

Attachment: Ventura Countywide Stormwater Program's Proposed Conceptual Framework for Stormwater Monitoring

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Ventura Countywide Stormwater Program's Proposed Conceptual Framework for Stormwater Monitoring

Proposed Alternative Approach to Requirements in Draft Permit: This proposed monitoring conceptual framework is based on the 2004 Model Monitoring Program for Municipal Separate Storm Sewers Systems in Southern California (Model Program) from the Stormwater Monitoring Coalition, 2004. This document states that it "serves as the starting point for negotiating a monitoring and reporting program", and included input from both the LARWQCB and Heal the Bay.

The Model Program presents five management questions that, when addressed, use adaptive triggers to expand a monitoring program in a logical and resource-protective way to move from assessment monitoring to source identification. Unlike the static program that the Ventura Countywide program currently has, the results of monitoring efforts are used in this process to initiate more monitoring if an impact is observed, or a reduction in monitoring effort if no impact (or potential for impact) was found. The tools described in the Model Program include "triggers for toxicity identification evaluations, upstream source tracking, a prioritization scheme for special studies, and statistical evaluations for estimating sample size based on statistical power to detect trends."

Management Questions:

1. "Are conditions in the receiving waters protective, or likely to be protective, of beneficial uses?
2. "What is the extent and magnitude of the current or potential receiving water problems?"
3. "What is the relative urban runoff contribution to the receiving water problems?"
4. "What are the sources to urban runoff that contribute to receiving water problems?"
5. "Are conditions in the receiving waters getting better or worse?"

This framework aims to address each of these questions and provide the additional steps to be taken as information about the extent of receiving water quality problems are identified.

Management Question No. 1:
"Are conditions in the receiving waters protective, or likely to be protective, of beneficial uses?

Proposed Actions:

- Begin pyrethroid monitoring in lower watersheds.
- Compile countywide data that is available for analysis.
- Verify or perform statistical analysis on available data.

- Identify data gaps and modify mass emission monitoring accordingly.

Mass Emission monitoring has been conducted near the base of each watershed for four wet events a year since 2000. The Model Program suggests this monitoring be performed for three wet events a year for three years and then to modify per results of a power analysis. The Countywide program is at the stage where these monitoring data should be compiled to establish the statistical baseline.

Additionally, Federal regulation [(40 CFR § 130.7(b)(5)] states that "Each State shall assemble and evaluate all existing and readily available water quality-related data and information to develop the list required by §§ 130.7(b)(1) and 130.7(b)(2)." These lists describe the conditions of the receiving waters in the State (305(b) Report) and the list of impaired waterbodies (303(d) listing). The "existing and readily available water quality–related data" include NPDES monitoring from stormwater programs, NPDES monitoring from Publicly Owned Treatment Works (POTW), industrial discharge monitoring, Total Maximum Daily Load (TMDL) monitoring programs, and special studies performed by the municipalities and other agencies (e.g., Surface Water Assessment and Monitoring Program (SWAMP) and Southern California Coastal Water Research Project (SCCWRP).

Almost all of this monitoring has been done in the compliance approach determining if a constituent is above or below a threshold. This approach should be used in conjunction with an assessment approach. The assessment approach is based on a weight of evidence in which chemical, biological and toxicity data (Triad approach) are used to assess impacts. This has not been done on all the Ventura County watersheds by the Stormwater Program, though much of that information may be available through SWAMP or other sources.

To avoid redundancy with other monitoring programs and misusing resources, all available data should be used to answer this question. Any identified gaps in the information should be addressed by incorporating the Triad approach at appropriate watershed sites. Since there is much information in Ventura County on the current impacts to beneficial uses, any additional monitoring to answer this will support answers to other management questions as well.

Management Question No. 2:
"What is the extent and magnitude of the current or potential receiving water problems?"

Proposed Actions:

- Intense two year watershed monitoring studies of three wet and two dry events to determine spatial extent of water quality problems.
- Add monitoring points downstream of major urban areas in the Santa Clara and Ventura River watersheds.
- Bioassessment coordination with watershed chemical and toxicity analysis for eight of evidence Triad approach.

- Identify water quality problems likely associated with urban areas.

The next step is to expand on the information known about the receiving water problems by including spatial and temporal monitoring throughout the watershed. In some cases the extent of impairment is apparent from the tabular and graphic 303(d) information and from years of monitoring history on the watersheds; however, research will be needed to identify the gaps in available data. Receiving water problems that do not have sufficient information on their extent and magnitude will require additional monitoring.

The Model Program describes this monitoring "usually as shorter-term studies that are conducted once or perhaps periodically when there is reason to believe the scale of the problem has changed." This lends itself to a rotating schedule similar to the Tributary Monitoring written in the draft order. The final schedule of rotation would depend on the data gaps discovered and the severity of the problem.

The design of a monitoring plan to provide the needed information will depend on what information is already available; but for the purposes of the Countywide program it will generally reflect receiving water monitoring above and below Permittee's discharge points (see figure 1). Ideally the development of multiple lines of evidence (e.g. Triad method) to more thoroughly characterize the extent of the water quality problem.

This information should provide evidence as to whether the discharge from a Permittee is contributing to the receiving water problem. Additional monitoring will be triggered if there is a significant change in the receiving water below the Permittee's discharge outlets. The Model Program does not define what a significant change is because it depends upon the habitat and human health factors at risk and the severity of the problem as well as the relative certainty of the estimates. Each constituent and sample point will need to be evaluated individually with a t-test statistical analysis of the upstream and downstream locations to determine if there is a statistical difference between the sites.

Management Question No. 3:
"What is the relative urban runoff contribution to the receiving water problems?"

Proposed Actions:

- Direct monitoring of urban area discharge points for pollutants in the downstream station that are higher than upstream for comparison to MALs.
- Monitor urban runoff of select sites to refine and calibrate model for countywide use.
- Evaluate data from intensive watershed monitoring for likeliness of urban discharge contributing to water quality problems.
- Use modeling software and historic land use data to evaluate urban runoff proportions of receiving water problems.

While questions 1 and 2 are working upstream to provide information, the Countywide Monitoring program does not need to wait for that information to begin answering question 3. The aim of this question is to "determine when additional, more detailed and extensive, upstream source identification efforts should be conducted by a municipality, with the goal of ensuring that the full burden of source identification work not be shifted to the MS4 Permittees where action by them would not solve the larger problem."

Data made available through this process could trigger the Permittees to develop and implement pollutant/water body based water quality plans. If the municipalities are discovered to be only a small contributor to a larger problem (e.g.: DDT) then the burden of that problem should be lifted. Conversely, according to the Model Program further source identification studies at greater resolution would be required if an urban source is discovered to contribute significantly to the receiving water problem.

The Model Program states that initially only minimal resolution is needed and that in many situations aggregate estimates may be adequate. It goes on to suggest that data for this may already be available from previous characterization and monitoring studies.

Early in its development, the Ventura Municipal Stormwater Program evaluated the urban runoff component more directly by using a model (Watershed Management Model, CDM) to determine flow and pollutant contributions from drainage- and sub drainage-basins to the watersheds. This information was useful not only in answering Management Question No. 3, but also in determining appropriate best management practices for sub basins as their land uses were converted. The Countywide program proposes using the years of land use data that have been collected and updating the Watershed Management Model to determine proportional contribution of urban runoff (based on land use types, e.g. residential, industrial, etc.) The results of low resolution modeling will be used to determine where increased resolution is needed. As needed, resolution can be enhanced by increasing the complexity of the model and eventually by calibrating it with urban runoff data from discrete drainage areas. This work can begin immediately since it is initially not dependant on gathering a new data set or results from anticipated monitoring.

Data from the spatial extent and magnitude study may show a statistical likelihood of problem constituents in a receiving water below an MS4 discharge. This would be examined by monitoring urban outfalls for comparison to Municipal Action Levels. The exact outfall to monitor would be identified through the Watershed Management Model as a storm drain systems with high potential for pollutant sources.

The maps presented show detailed drainage areas for each Permittee, including urbanized areas of the unincorporated County. Selection of which drainage area to monitor will be based on the likely source of the constituent and the predominant land use of the drainage area.

Management Question No. 4:
"What are the sources to urban runoff that contribute to receiving water problems?"

Proposed Actions:

- Implementation of pollutant/water body plans by Permittees exceeding MALs.
- Conveyance system monitoring for hot spots
- Illicit discharge and illicit connection screening.

If urban runoff is identified as, or likely to be, a source to specific receiving water problems an increased focus on sources will be made. Information obtained from answering the first three questions will then be used in identifying which urban areas are shown to be contributing to receiving water problems.

Answering question 4 requires "more thorough source identification studies intended to provide information about the nature, location and quantity of inputs to the receiving water". Once a drainage area is identified as exceeding MALs (contributing to a receiving water problem) the discharger shall develop and implement a pollutant/water body based water quality plan to address the urban sources. This may have already been accomplished through a TMDL implementation plan. Permittees will use this plan to narrow the focus on sources and it could include conveyance system monitoring for hot spots and field screening for illicit discharges and connections.

Management Question No. 5:
"Are conditions in the receiving waters getting better or worse?"

Proposed Actions:

- Statistical trends analysis after each intensive watershed monitoring study.
- Development of Study Plan for areas downstream of urbanization that score *Poor* on an appropriate Index of Biological Integrity for bioassessments.
- Identification of additional POCs.
- Development of Action Plan for discernable increasing trends in POCs.

As stated earlier there are 7 years of mass emission data and many other data sources to draw from to answer this management question. Trends analysis will be performed on all constituents to determine if there are significant increases or decreases in water quality problems.

To detect if current program efforts are effective is more difficult. The Model Program acknowledges that "changes in receiving water conditions are likely to occur over several years (at the least)".

Periodic statistical analysis of program data is important to determine not only if trends are occurring, but also if the monitoring program is sufficiently robust, or if it is even possible to detect a certain change within the timeframe decision makers need information to detect trends.

Estimated Monitoring Program Timeline

Below is a proposed draft framework. The final monitoring plan will be subject to the results discovered through the data analysis phase. Presented here is a rough estimate of what monitoring is likely to occur in the first three years of revised Monitoring Program. Actual monitoring is dependent on the information made available as the monitoring program progresses through the flow chart in Figure 2.

Year One

- Continue flow weighted composite monitoring of Mass Emission for three wet and two dry events at three sites;
- Pyrethroid sediment monitoring at base of main watersheds;
- Spring bioassessment on Santa Clara River, select sites from existing SWAMP bioassessment sites;
- Begin spatial extent and magnitude studies in Santa Clara River with sites below contributions from urbanized areas to determine if a significant contribution of pollutants is likely from urbanized areas. Match sites as closely to bioassessment sites as possible;
- Monitor every 0.5" storm for TSS, concurrently monitor for turbidity;
- Analyze existing countywide data to determine whether quality, quantity, representativeness, and completeness are sufficient to answer management questions Nos. 1 and 2. Identify existing data gaps and prioritize according to severity of the problem, potential for heath risk, and biological resources at issue;
- Begin evaluation of urban runoff contributions to water quality problems by modeling analytical land use data with current land use practices in urbanized areas.

Year Two

- Monitor outfalls of urbanized areas identified through spatial extent studies as likely to be contributing to a receiving water problem;

- Continue spatial extent and magnitude studies and bioassessment monitoring for Triad approach on a watershed basis in accordance with results of data analysis;

- Expand pyrethroid monitoring to additional upstream locations if results from previous monitoring indicate a problem;

- Monitor every 0.5" storm for TSS, complete study evaluating predictive nature of TSS for other pollutant loadings, and a study evaluating turbidity as surrogate for TSS. Amend TSS monitoring as appropriate;

- Increase resolution of urban runoff contributions model if necessary by higher resolution of land use data or calibration monitoring.

- 1 Revise flow weighted composite monitoring of Mass Emission per results of statistical analysis

Year Three

- Begin spatial extent and magnitude studies in Calleguas Creek with sites below contributions from urbanized areas to determine if a significant contribution of pollutants is likely from urbanized areas. Coordinate to use same sites as SWAMP bioassessment;

- Monitor outfalls of urbanized areas identified through spatial extent studies as likely to be contributing to a receiving water problem;

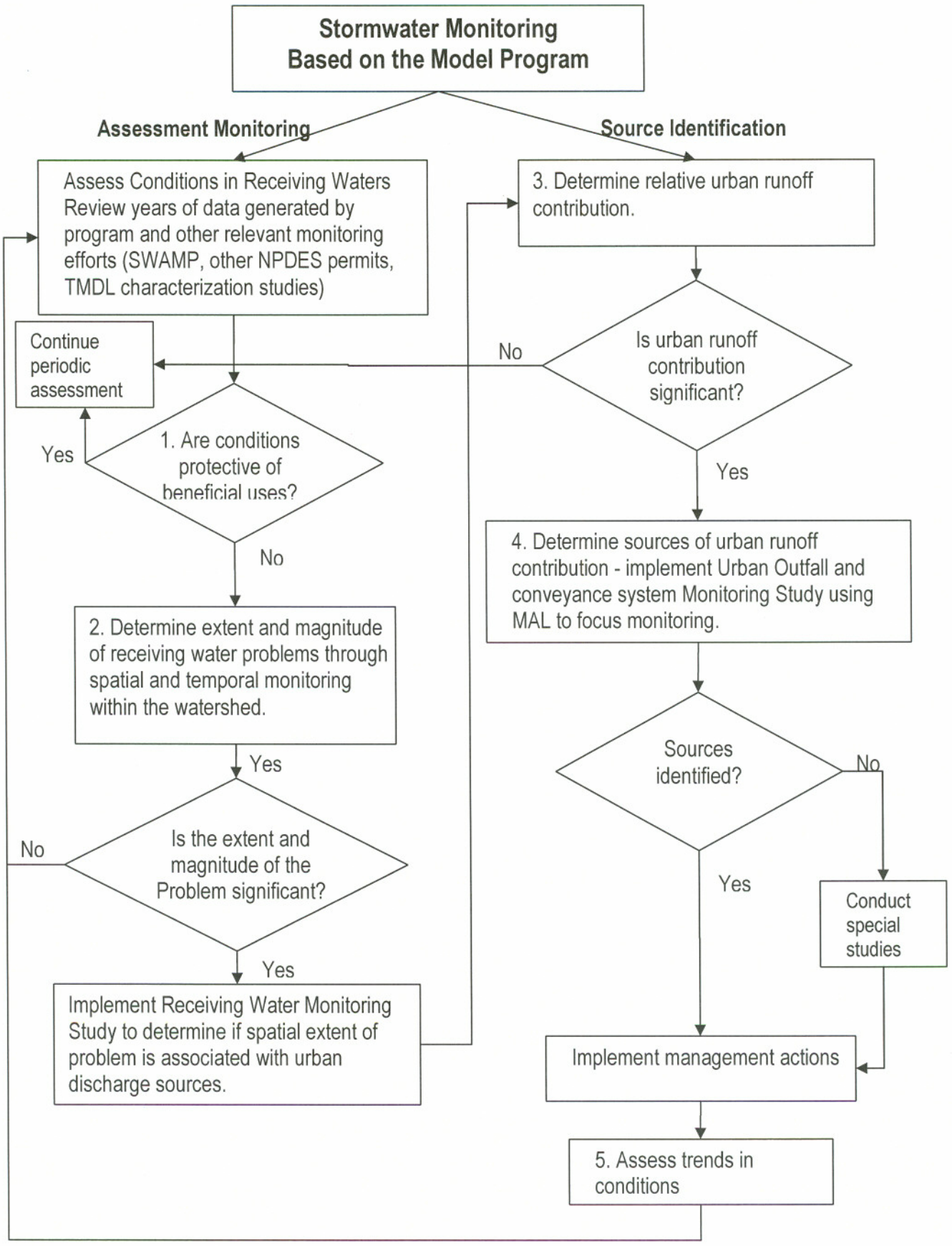
- Rotate bioassessment monitoring to new Calleguas Creek if baseline established through SWAMP and Program data;

- Continue TSS monitoring if studies prove value in the data.


Proposed NPDES Water Quality Monitoring Stations
FOR DISCUSSION ONLY
Legend
Mass Emission Monitoring & USCR Sites
Proposed Monitoring Sites
N
0 1.252.5 5 7.5 10
Miles
C:\gis\pdf\NPDES_2007_Monitoring_Sites_0507.pdf

Figure 1

Figure 2


Stormwater Monitoring Based on the Model Program
Assessment Monitoring
Source Identification
Assess Conditions in Receiving Waters Review years of data generated by program and other relevant monitoring efforts (SWAMP, other NPDES permits, TMDL characterization studies)
3. Determine relative urban runoff contribution.
Continue periodic assessment
No
Is urban runoff contribution significant?
Yes
1. Are conditions protective of beneficial uses?
Yes
No
4. Determine sources of urban runoff contribution - implement Urban Outfall and conveyance system Monitoring Study using MAL to focus monitoring.
2. Determine extent and magnitude of receiving water problems through spatial and temporal monitoring within the watershed.
Sources identified?
No
Yes
Yes
No
Is the extent and magnitude of the Problem significant?
Conduct special studies
Yes
Implement Receiving Water Monitoring Study to determine if spatial extent of problem is associated with urban discharge sources.
Implement management actions
5. Assess trends in conditions

Comparison of Monitoring Plan based on Model Monitoring Program to requirements in Draft Order

Monitoring Requirements	Draft Permit	Proposed Plan Based on Model Monitoring Program
Mass Emissions		
Objectives	Estimate mass emissions from MS4s, asses trends over time, determine if MS4 is contributing to exceedences of WQO	Determine if conditions in the receiving waters are protective, or likely to be protective, of beneficial uses. Assess trends over time.
Sites	3 stations, plus 60% Ventura and Oxnard drainage to Santa Clara River until SCR moved. May be 5 or 6 stations	3 stations, one on each watershed. Propose composite of grab samples downstream of urban areas on Ventura and Santa Clara rivers.
Events	5 total: 3 Wet, 2 Dry (May, June and August, Sept), First Flush, 0.25 inch rain.	Model Program suggests 3 wet events for three years then to modify per results of a power analysis. High likelihood that some constituents will require continued monitoring.
Constituents	Traditional ME	Initial Pyrethroid study the rest dependant on power analysis suggested by Model Program and.
TSS Monitoring	All Storms 0.25" storms	Not addressed in Model Program as a valid measure to estimate loading. Suggest evaluation after two years on the ability of this data to predict loading, and if a translator for turbidity can be used as a surrogate. Also suggest every 0.5" storm, natural bottom channels, vast open space and agriculture areas are pervious surfaces that create little increase in runoff in a 0.25" storm.
Toxicity		
Sites	3 mass emission stations and rotating tributary stations	Used as part of the Triad approach in locating the extent and magnitude of receiving water problem. See

		fig XXX for potential sites.
Test Organisms	Marine and freshwater test organisms at Mass Emission, freshwater at Tributary Sites	Freshwater
TIE	All sites: 90% or more in first year. 20% or second year.	Same 90% or more in first year. 20% or second year.
TRE	If same class in 50% in 2 samples per location	If same class in 50% in 2 samples per location and urban sources likely.
Tributary		
Objectives	Determine if MS4 is contributing to exceedences of WQO	Determine what the extent and magnitude of the current or potential receiving water problems and if urban sources are likely the cause.
Sites	2 VC, 3 SCR, 2 CC, and Malibu coordinated w/ Malibu Creek TMDL Monitoring. One watershed every two years	Dependant on information obtained in Mass Emission monitoring and historical watershed data available. Possibly six or more sites per watershed.
Sampling	First storm plus 2 others	Model Program defines as "shorter-term studies that are conducted once or perhaps periodically"
Analytes	Same as ME for first flush, 2nd all downstream 303(d) and POCs	Only constituents when "receiving water problems related to urban runoff are found or predicted"
WQO exceedences	Identify source in sub watershed, corrective action plan in 90 days	Initiate urban outfall source identification monitoring.
TMDLs	Above and beyond TMDL compliance monitoring plans	Not an appropriate part of this plan - refer to TMDL compliance monitoring plans.
Bioassessment		
Objective	Determine the need for Ecological Restoration Plans	Use with Triad method to determine if conditions in the receiving waters are protective, or likely to be protective, of beneficial uses and the extent and magnitude of the current or potential receiving water problems.
Sites	Ventura, SCR, Calleguas: rotate each year.	Selected from existing SWAMP sites in conjunction with needs analysis. Rotate each year.
event	Monitor in spring	Monitor in spring

Trash Study		
Object	Identify area impaired	Identify urban sources of trash
Areas	5 coastal waters, 6 beaches	Areas identified where urban sources likely to be source.
Pyrethroids/ Sediments		
Sites	2-6 sites in main stream of tributaries. 2 -3 sites on secondary tributaries that enter each main tributary (originate at outfall of stormdrain). Potential 30 -40 sites.	Begin at Mass Emission stations, expand monitoring as required by adaptive triggers in the Model Monitoring Program.
Sampling	Top 1cm of sediment in first storm plus 2 others, Chemical and toxicity.	Dry weather sediment only.
Receiving Water Limitations		
Monitoring Points	End-of-pipe compliance points for MAL are at pipes 36 inch or greater or default to Mass emission stations. Letter requests 60% of flows to each watershed management area.	Permittee MS4 outfalls identified as, or likely to be, a source to specific receiving water problems.
Revised Monitoring Program	If discharge is causing or contributing to exceedences of water quality, RWL Compliance Report submitted to RB. Report may require additional monitoring - compliance and investigative.	If discharge is found or suspected of exceeding MALs responsible Permittee is to develop and implement Pollutant/Water Body Based Water Quality Plan to address urban source(s).