

# Santa Monica Bay Restoration Commission Proposition 84 Project Monitoring Framework

## Section 1: Project/Monitoring Objectives

Description	Guideline	Example 1 (Rain Garden)
Overview of the Original Project	Briefly describe the purpose/goal, type, scale, and the desired outcome of the original project	The project involves construction of three rain gardens along the Liberty Creek which collect water from 10 acres of commercial and industrial properties and 20 acres of a residential neighborhood in Freedom City. The rain gardens are designed to let runoff funnel through special filters and garden swales to remove oil and grease, suspended solids, trash, metals, and bacteria, and they are designed to capture, treat, and infiltrate a minimum .75 inch/24 hour storm event
Monitoring Objectives	Describe the monitoring objectives which should be consistent with the purpose/goal of the original project. In most cases, the monitoring objectives should be to evaluate how the subject project has met its project purpose/goal. The objectives can be structured in two tiers - the overall objectives and the specific monitoring questions, and there can be one or more objectives and/or monitoring questions. (The most common types of objectives and monitoring questions are listed below.)	
Objective 1	Demonstrate the degree of pollution control or effluent quality improvement the BMPs provide under normal conditions (i.e., representative storm types)	

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Objective 2	Verify whether or not the BMP helps to achieve compliance with water quality standard	Primary Objective : Verify whether or not the constructed rain gardens helps the Liberty Creek to meet water quality standards.
Monitoring Question 1	For storm events up to the design storm, how different are the measured surface inflows and outflows in terms of peak rate and runoff volume?	
Monitoring Question 2	How does the total contaminant concentration of outflow from the BMPs compare with the values in the inflow?	
Monitoring Question 3	How does the outflow contaminant concentration from the BMPs compare with the TMDL target value?	Secondary Objective: How are the outflow contaminant concentrations from the rain gardens compare with the target values of the Liberty Creek trash, bacteria, and metal TMDLs?

## Section 2: Monitoring Approach

<b>Description</b>	<b>Guideline</b>	<b>Example 1 (Rain Garden)</b>
Project and site characteristics	<p>Characteristics to be listed include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Location and site map</li> <li>• Watershed area, watershed imperviousness and land uses</li> <li>• Soil type, slope, groundwater basin characteristics (if applicable)</li> <li>• Design characteristics of the BMP (hydrologic and hydraulic sizing, soils, vegetation, underdrains/no underdrains, etc.)</li> <li>• Stormwater runoff hydrographs at primary storm drain outlets from each watershed</li> <li>• Precipitation data rain gages in the watersheds.</li> </ul>	

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	<ul style="list-style-type: none"> <li>• Previous collected/reported water quality data from each storm drain outlets</li> </ul>	
Project Performance Criteria	List the pre-defined performance criteria of the original project, if already exist. Otherwise, describe how to decide the success of the original project, or whether the project performed appropriately based on the monitoring results. Types of performance criteria include, but are not limited to: amount or percentage of reduction between Inflow-outflow, or before-after the BMP installation, how different the outflow concentration (or mass loading) is from a mandated numerical target.	
Prioritization of objectives and data collection efforts and rationale for prioritization	<p>Criteria/questions to consider for this prioritization include:</p> <ul style="list-style-type: none"> <li>• Is any of the objectives tied to performance criteria that the project is required to meet? Is it possible to achieve the overall objective by addressing a subset of the questions?</li> <li>• Do some of the objectives have overlapping data collection requirements, making that data more “valuable” from the standpoint of addressing multiple objectives?</li> <li>• Are there some types of data that would render other types of data less useful if not collected (for example, if flow data are not collected, the utility of concentration data collected is diminished because a mass balance may not be reasonably calculated)?</li> </ul>	
Basic monitoring approach	Describe the basic monitoring approach for achieving all monitoring objectives and/or answering all monitoring questions, including general information on what, where, and when. Specify the temporal and	

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	spatial scale of the monitoring design. Also include information on the number of variables that will need to be evaluated and measurements collected.	
Justification for Substitution	Justification for substituting monitoring with estimation of parameters including the use of surrogate parameters, model estimate of rainfall and flow volume, data from like-wise projects, etc.	

### Section 3: Sampling Design

Description	Guideline	Example 1 (Rain Garden)
Sampling Location	Sampling locations should be specified and parameters for each sampling/measurement location identified.	
Sampling Unit	Define sampling unit. For water quality parameters, a table or list should be assembled with minimum sample volume requirements for laboratory analyses. Sample volume requirements to satisfy QA/QC requirements for replicate analysis, splits, spikes, etc. should also be considered to determine the sample volume required. A “go/no-go” rule should be developed for guidance when storms are partially sampled (i.e., not all stations function as intended, resulting in missed samples).	
Data collection timeframe	Specify data collection timeframe, temporal characteristics of monitoring plan and practical constraints. The duration of monitoring should be established and constraints on the ability to collect or analyze samples should be identified (i.e., non-daylight hours, weekends, and/or holidays). For project involving storm water sampling, a storm selection criteria should be established.	

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Sampling Methods	Specify the sampling equipment, collection technique, and methods. Specify the type and quality information that will be needed to meet data performance or acceptance criteria, including a listing of the required measurement accuracy, method detection limits for analytical methods, and temporal and spatial resolution of data.	

#### Section 4: Analysis and Assessment Plan

<b>Description</b>	<b>Guideline</b>	<b>Example 1 (Rain Garden)</b>
Sample lab analysis	Specify lab analysis equipment and methods. Levels of rejection or acceptance should be established.	
Statistical analysis specification	Specify methods of statistical analysis in accordance with standard reference procedures. Provide the scale for decision making or estimation and define the level of confidence in analysis. For statistical testing methods, specify the mean hypothesized difference, statistical significance level and potentially other inputs to statistical methods. For analysis involving estimation of a parameter from a data set, specify criterion using standard error or statistical intervals.	

#### Section 5: Quality Assurance and Quality Control

<b>Description</b>	<b>Guideline</b>	<b>Example 1 (Rain Garden)</b>
Data Acquisition and Analysis QAPP	Develop a QAPP for field sampling, lab analysis, and data validation in accordance with standard reference manuals.	
Data Management	Specify data entry, storage, and transfer format. Specify data management QA/QC procedure including	

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	the meta data requirement. This can be part of the project QAPP.	

## Section 6: Results Evaluation and Reporting

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Results Evaluation	Describe how data evaluation will be performed to determine whether enough information of sufficient quality has been obtained to meet the monitoring objectives. Specify plan/steps to obtain sufficient information (through additional monitoring, etc.) if the answer is no; and proceed to complete statistical analysis and/or model run if the answer is yes.	
Results Reporting	Specify information to be presented in the final report which typically include: A recap of the monitoring objectives, the monitoring approach, and accomplished monitoring activities.	
Monitoring Results	Report on the monitoring results including data summary and results of statistical analysis.	
Summary and Conclusions	Including an assessment on how well the original project perform, how effective the monitoring is in evaluating the performance of the original project, and any caveats or qualifying statements that will help the reader understand and use the reported information in the appropriate context.	
Recommendations	Include recommendations for future projects and monitoring.	