

## ***Project Assessment and Evaluation Plan (PAEP)***

### **I. Project Summary**

#### **A. Funding Program**

*The San Diego Regional Water Quality Assessment and Outreach Project (the Project) is supported by a Proposition 50 Integrated Regional Water Management Program grant, volunteer time, and in-kind contributions.*

#### **B. Project Description**

*The San Diego Regional Water Quality Assessment and Outreach Project will continue citizen based monitoring efforts by San Diego Coastkeeper to engage and educate the public on water quality issues in San Diego County watersheds. Coastkeeper will train volunteers to collect and analyze samples for multiple water quality constituents used to characterize the health of water bodies that may be impacted by pollution. The Project will also share and present this data to the public and water quality regulators on its own web page, state and other agency web sites, and in outreach materials and reports.*

#### **C. Problem Statement**

*While recent regulatory programs (i.e., MS 4 Stormwater permit R9-2007-0001) and the Surface Water Ambient Monitoring Program (SWAMP) have increased the monitoring efforts and the availability of surface water quality data in the county's watersheds, there is still insufficient information to adequately assess the status of many of the rivers and streams. Additional ambient water quality data is needed to establish a baseline of water quality conditions in San Diego County watersheds, identify impaired water bodies, and provide focus for non-point source pollution prevention efforts. This data can also be used for Clean Water Act 305(b) assessment purposes, or possibly 303(d) listings.*

##### **i. Identify or characterize baseline data**

*The Project will provide additional ambient water quality data needed to establish a baseline of water quality conditions in San Diego County watersheds, as well as identify impaired water bodies, and provide focus for non-point source pollution prevention efforts. This data can also be used for Clean Water Act 305(b) assessment purposes and to create 303(d) listings.*

##### **ii. Identify pollution source categories**

*The watersheds assessed in this project are subject to a variety of pollution sources (point [permitted discharged from treatment facilities] and non-point source [urban runoff, illegal discharges to the MS4, litter, agricultural, etc.]).*

##### **iii. Identify and describe current restoration activities; BMPs; load reduction activities; prevention activities.**

N/A

iv. Describe the manner in which the proposed best management practices or management measures will be implemented

N/A

v. Summarize how the effectiveness of the proposed practices or measures in preventing or reducing pollution will be determined

N/A

vi. Determine “changes in flow pattern” in affected water bodies.

N/A

vii. Determine economic benefits of implementing the project.

*This project leverages Coastkeeper’s existing water monitoring program to increase data availability with less incremental expense than required to start a new program. It coordinates efforts with partner organizations and improves their methodologies, reducing waste and duplication. The increased availability of high-quality data can improve the state’s overall ability to assess water quality in watersheds at marginal cost. Outreach and education reduces pollution, which in turn decreases the need for expensive cleanup and restoration, as well as costs related to the public health consequences living with pollution. By helping restore and protect coastal environmental quality, this project helps safeguard the large portion of San Diego’s economy that is based in tourism and recreation.*

**D. Project Activities or Tasks:**

Task 1: Project Administration and Quarterly Reports

Task 2: Establish Regional Water Monitoring Training and Resource Center

Task 3: Develop and Implement Public Outreach and Education Campaign

Task 4: Develop San Diego Region Water Quality ‘Watersheds Report’

Task 5: Prepare a Final Report

**E. Category of Project Activities or Tasks:**

1) *Planning, Research, Monitoring and Assessment*

Task 1: Project Administration and Quarterly Reports

Task 2: Establish Regional Water Monitoring Training and Resource Center

Task 5: Prepare a Final Report

2) *Education, Outreach, and Capacity -building*

Task 3: Develop and Implement Public Outreach and Education Campaign

Task 4: Develop San Diego Region Watersheds Water Quality ‘Watersheds Report’

## II. Project Goals & Desired Outcomes

*The goals and outcomes of San Diego Regional Water Quality Assessment and Outreach Project are:*

- A. **Assess water quality in San Diego County Watersheds using trained volunteers in sample collection:** *San Diego Coastkeeper (Coastkeeper) will conduct citizen monitoring to augment other monitoring efforts (conducted under state programs or permits). This will include:*
- i. *Continue existing efforts by San Diego Coastkeeper to educate and engage community members on how to monitor water quality in local watersheds. Conduct monitoring at regular intervals (12 times a year conditions permitting ) at locations that meet the site selection design criteria in the associated monitoring plan.*
  - ii. *Provide data to fill in the spatial and temporal data gaps (increasing the number of samples in a water body or hydrological unit for better representation). The data may also be useful in increasing the amount of surface water data for a particular constituent in order to help determine an appropriate water quality standard where none currently exists. Coastkeeper and its partners will collect samples for physical, chemical, nutrient, microbial, bio-assessment, dissolved metal, and toxicity analyses. The results from these water quality indicators will compared to water quality standards or thresholds in the San Diego Basin Plan or other state or federal standards to identify pollution impacted water bodies. Ultimately, the aim is to provide data that complies with all state quality assurance protocols to assist water quality regulators and decision makers.*
- B. **Reduce amount of gross pollutants (trash) in local waterways.** *Trash removal events will be conducted in five locations in different watersheds using volunteers coordinated through I Love a Clean San Diego. The same five sites will be visited multiple times over the course of the Project. Trash will be quantified using SWAMP comparable Rapid Trash Assessment Worksheets.*
- C. **Share data.** *Data collected through this project will be incorporated into three web-based, publicly-accessible data portals: the San Diego Stream Team web site and the water quality page on the San Diego Coastkeeper web site ([http://www.sdwatersheds.org/wiki/Main\\_Page](http://www.sdwatersheds.org/wiki/Main_Page)) and the state California Environmental Data Exchange Network (CEDEN). Using these tools, watershed management plans can be developed to address impacts and impairments throughout each of the watersheds of the county.*
- D. **Present Data Access, Analysis and Interpretation Workshops.** *Through the course of the San Diego Regional Water Quality Assessment and Outreach Project, Coastkeeper and its partners will teach a minimum of 500 members of the community – citizens, decision makers, tribal members, and stakeholders - how to access and interpret publicly available water quality data to identify water quality impacts on a watershed level. Water quality data access, analysis and interpretation workshops will run in parallel with*

*existing monthly water quality training and monitoring events. Regional Data Management Summits will be conducted in the third quarter of each project year to bring key players in the field of data management together to discuss improvements for existing knowledge management, information transfer, transparency of data collected and strategies for data sharing.*

- E. *Develop Outreach Materials to Inform the Public and address Non-Point Source Pollution.*** *Additionally, Coastkeeper will work with community members to develop the San Diego Region Water Quality Watersheds Report as a tangible product at the end of this project. The Watersheds Report will be a tool to address water quality impacts and impairments on a watershed level. The report will be based on the analysis of collected data that assesses water quality at sampling locations within a particular watershed. The report will also reference previously published data where that information would be useful. Following its publication and distribution, members of the public will be able to refer to the Report to address pollutants of concern and to propose solutions in line with fostering sustainable behavior for watershed protection, management and pollution prevention. The Report will also be disseminated at Coastkeeper events, including World Water Monitoring Day and Coastal Snapshot Day, and through its educational hands-on programs in classrooms throughout the county. Presently, Coastkeeper reaches 40,000 K-12 students annually through the implementation of Project SWELL (Stewardship: Water Education for Lifelong Leadership) curriculum. We also reach more than 26,000 community members through speaking engagements, email alerts, community outreach events, and during volunteer activities.*

### III. Project Performance Measures Tables

<b><i>Category 1) Planning, Research, Monitoring and Assessment</i></b>					
<b>Project Goals</b>	<b>Desired Outcomes</b>	<b>Output Indicators</b>	<b>Outcome Indicators</b>	<b>Measurement Tools and Methods</b>	<b>Targets</b>
<b>I. D. Task 2: Establish Regional Water Monitoring Training and Resource Center</b>	A corps of 'citizen scientists' that can collect and produce QA/QC approved data	Citizen volunteers trained by Coastkeeper to collect and analyze water quality samples per all standard operating procedures and approved QAPP	State approved QAPP for Coastkeeper Laboratory	1. # people trained every other month 2. # people who return for additional trainings and volunteer opportunities (trained volunteer retention)	1. 200 new individuals trained in WQ monitoring and analysis. 2. Increase volunteer retention by 10%

<b>Category 1) Planning, Research, Monitoring and Assessment (continued)</b>					
<b>Project Goals</b>	<b>Desired Outcomes</b>	<b>Output Indicators</b>	<b>Outcome Indicators</b>	<b>Measurement Tools and Methods</b>	<b>Targets</b>
<p><b>II. A. Assess water quality in San Diego County Watersheds using trained volunteers in sample collection:</b></p> <p>i. Continue existing efforts by San Diego Coastkeeper to educate and engage community members on how to monitor water quality in local watersheds. Conduct monitoring at regular intervals (12 times a year conditions permitting ) at locations that meet the site selection design criteria in the associated monitoring plan)</p> <p>ii. Provide data to fill in the spatial and temporal data gaps (increasing the number of samples in a water body or hydrological unit for better representation).</p>	<p>Water quality constituents/ parameters will be monitored and measured on a regular basis from sites representing inland aquatic ecosystems in the San Diego region.</p> <p>Increase the amount of data available to regulatory decision makers that meets state standards for QA/QC.</p>	<p>Two years worth of monthly sample data for the following water quality indicators:</p> <ol style="list-style-type: none"> <li>i. Temperature</li> <li>ii. Dissolved Oxygen</li> <li>iii. pH</li> <li>iv. Conductivity (fresh water) or Salinity (marine)</li> <li>v. Nitrate</li> <li>vi. Total Orthophosphate</li> <li>vii. Dissolved Metals (Cadmium, Chromium, Nickel, Lead, Copper, and Zinc)</li> <li>viii. Total Coliform bacteria</li> <li>ix. <i>E.Coli</i> bacteria</li> <li>x. <i>Enterococci</i> bacteria</li> <li>xi. Benthic macro-invertebrates</li> <li>xii. Toxicity</li> </ol> <p>The number of samples collected per watershed per year vs. the number of data points meeting QA/QC standards</p>	<p>Sufficient data to represent the health status of inland water bodies of the San Diego region.</p> <p>Improved knowledge of the baseline conditions in San Diego County watersheds</p> <p>Data uploaded to state water quality databases.</p>	<p><u>Methods to measure and analyze water quality parameters:</u></p> <ol style="list-style-type: none"> <li>i. Hach HQ40d electrometric probe</li> <li>ii. Hach HQ40d Luminescent Dissolved Oxygen</li> <li>iii. Oakton Double Junction Electrode</li> <li>iv. Hach HQ40d Conductivity probe</li> <li>v. Hach 8192 and Hach 10206 (TNT 835)</li> <li>vi. Hach 8048 and Hach 10210 (TNT 843)</li> <li>vii. Inductively Coupled Plasma Mass Spectrometer ICP-MS. EPA method 200.8</li> <li>viii. IDEXX Colisure or Colilert 18</li> <li>ix. IDEXX Colisure or Colilert 18</li> <li>x. IDEXX Enterolert</li> <li>xi. SWAMP Bio-assessment procedures</li> <li>xii. QwikLite 200 Bio-Sensor System using ASTM E1924</li> </ol> <p>Details are included in the QAPP.</p>	<p>Approximately 35 sites in 8 watersheds of San Diego hydrologic region are sampled each month. 90% of data analyzed meets data quality objectives.</p> <p>Data is available on <a href="http://www.sdwatersheds.org">www.sdwatersheds.org</a> and CEDEN (California Environmental Data Exchange Network) within 1 month of analysis</p>

<b>Category 1) Planning, Research, Monitoring and Assessment (continued)</b>					
<b>Project Goals</b>	<b>Desired Outcomes</b>	<b>Output Indicators</b>	<b>Outcome Indicators</b>	<b>Measurement Tools and Methods</b>	<b>Targets</b>
<b>II. B. Reduce amount of gross pollutants (trash) in local waterways</b>	The removal of gross pollutants (trash and litter) that negatively affect the health of our local waters and can be transported downstream to potentially affect our ocean ecosystems	Regular trash removal events and a database of the type and amount of gross pollutants removed from inland waterways.	An assessment of the types of trash polluting local waterways, and an estimate of loadings of trash avoided.	Total amount of gross pollutants at sampling sites.  SWAMP approved Rapid Trash Assessment in addition to I Love a Clean SD standard volunteer protocol.	10% reduction of trash collected at sampling sites  50 lbs. of itemized trash removed per clean –up event

<b>Category 2) Education, Outreach, and Capacity building</b>					
<b>Project Goals</b>	<b>Desired Outcomes</b>	<b>Output Indicators</b>	<b>Outcome Indicators</b>	<b>Measurement Tools and Methods</b>	<b>Targets</b>
<b>I. D. Task 3. Develop and Implement Public Outreach and Education Campaign</b>	Increase the level of public understanding of watershed water quality issues	Water quality information and sample data posted to the <a href="http://www.sdwatersheds.org">www.sdwatersheds.org</a> page  Number of people reached in direct education campaigns (Project SWELL) and indirectly via visits to the <a href="http://www.sdwatersheds.org">www.sdwatersheds.org</a> web	% increase in community participation in watershed stewardship activities.  % increase in available resources through <a href="http://sdwatersheds.org">sdwatersheds.org</a>	Sign-in sheets for monthly water monitoring events and bi-monthly water monitoring training events  Visits to the <a href="http://www.sdwatersheds.org">www.sdwatersheds.org</a>	10% increase in number of persons participating in monthly water monitoring events and bi-monthly water monitoring training events compared to pre-Prop 50 grant activity  10% increase in number of site visits to <a href="http://www.sdwatersheds.org">www.sdwatersheds.org</a> compared to pre-Prop 50 grant activity  4 new pages on <a href="http://www.sdwatersheds.org">www.sdwatersheds.org</a> with 10% increase in visits (as currently included)

<b>Category 2) Education, Outreach, and Capacity building (continued)</b>					
<b>Project Goals</b>	<b>Desired Outcomes</b>	<b>Output Indicators</b>	<b>Outcome Indicators</b>	<b>Measurement Tools and Methods</b>	<b>Targets</b>
<b>I. D. Task 4. Develop San Diego Region Water Quality 'Watersheds Report'</b>	Watersheds Report printed and on-line	Watersheds Reports distributed at outreach and education events and online resource is publicized	Increase in community participation of watershed related information	# of Watersheds Reports distributed at outreach and education events  # of individuals signed in at outreach events  # Visits to the Report on <a href="http://www.sdwatersheds.org">www.sdwatersheds.org</a>	20,000 students via classroom distribution  300 individuals at outreach events  1000 visits to the web site

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