

# **BALLONA CREEK**

## **WATERSHED MANAGEMENT PLAN**

**SEPTEMBER 2004**



*Prepared by:*

- Los Angeles County Department of Public Works, Watershed Management Division
- Ballona Creek Renaissance
- Los Angeles City Department of Public Works, Bureau of Sanitation, Watershed Protection Division
- National Park Service, Rivers, Trails & Conservation Assistance Program
- Santa Monica Bay Restoration Commission

*With the assistance of:*

- EIP Associates
- Arthur Golding & Associates
- Chambers Group
- Integrated Water Resources
- MWH

Funding for this project has been provided in full or in part through an agreement with the State Water Resources Control Board (SWRCB) pursuant to the Costa-Machado Water Act of 2000 (Proposition 13) and any amendments thereto for the implementation of California's Nonpoint Source Pollution Control Program. The contents of this document do not necessarily reflect the views and policies of the SWRCB, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

All photographs are courtesy of EIP Associates.



# contents

<b>EXECUTIVE SUMMARY .....</b>	<b>2</b>
A. Goals and Objectives .....	4
B. Methods and Mechanisms .....	6
C. Community-Based Monitoring .....	7
D. Opportunities for Stakeholder Involvement and Funding .....	7
E. Next Steps .....	8
<b>CHAPTER 1—BACKGROUND .....</b>	<b>10</b>
A. Introduction .....	10
B. Historical Context .....	13
C. Planning Context .....	15
<b>CHAPTER 2—EXISTING CONDITIONS .....</b>	<b>24</b>
A. Watershed Boundary .....	24
B. Geology and Faulting .....	24
C. Climate .....	29
D. Hydrology .....	30
E. Groundwater .....	32
F. Water Quality .....	33
G. Habitat .....	43
H. Land Use .....	51
<b>CHAPTER 3—GOALS AND OBJECTIVES .....</b>	<b>54</b>
A. Stakeholder Issues of Interest .....	54
B. Watershed Problems .....	54
C. Goals and Objectives .....	57



**CHAPTER 4—METHODS AND MECHANISMS ..... 64**

- A. Priority actions ..... 64
- B. Best Management Practices ..... 91
- C. Existing and Pending Projects ..... 116
- D. Location of Existing and Pending Projects ..... 129
- E. Demonstration Projects ..... 129
- F. Procedures for Plan Updates ..... 134

**CHAPTER 5—COMMUNITY-BASED MONITORING ..... 154**

- A. Introduction ..... 154
- B. Existing Monitoring Efforts ..... 155
- C. Data Gap Analysis ..... 170
- D. Proposed Community-Based Watershed Monitoring Program ..... 175

**CHAPTER 6—OPPORTUNITIES FOR STAKEHOLDER INVOLVEMENT AND FUNDING ..... 184**

- A. Stakeholder Commitment ..... 184
- B. Funding Opportunities ..... 195
- C. Funding for Demonstration Projects ..... 197

**CHAPTER 7—NEXT STEPS ..... 204**

- A. Introduction ..... 204

**CHAPTER 8—REFERENCES ..... 210**

**APPENDIX A—BALLONA CREEK DEMONSTRATION PROJECT CONCEPTUAL COST ESTIMATES ..... 220**



## FIGURES

Figure 1	Cities within the Watershed .....	3
Figure 1-1	Location Map .....	11
Figure 2-1	Ballona Creek Watershed .....	25
Figure 2-2	Ballona Creek Watershed Topography .....	26
Figure 2-3	Major Faults in the Watershed Vicinity .....	28
Figure 2-4	Seasonal Variation in High and Low Temperatures, Culver City .....	29
Figure 2-5	Seasonal Distribution of Rainfall .....	29
Figure 2-6	Historic Ballona Creek Watershed Drainage Area Overlay Map, 1896 and 1986.....	30
Figure 2-7	Trash Removed from Mouth of Ballona Creek, 2002 .....	39
Figure 2-8	Ballona Wetlands Acquisition .....	49
Figure 2-9	Land Use in the Ballona Watershed.....	52
Figure 4-1	Ballona Creek Watershed Projects .....	130
Figure 4-2	Ballona Creek Watershed Opportunities .....	132
Figure 5-1	Monitoring Locations .....	157

## TABLES

Table 2-1	Ballona Creek Extreme Runoff Flow Conditions .....	32
Table 2-2	Ballona Creek Watershed 2002 CWA Section 303(d) List of Water Quality Limited Segments .....	35
Table 2-3	Associated Environmental Regulatory Thresholds for Ballona Creek Watershed 303(d) Impairments .....	37
Table 2-4	Typical Wet Weather Pollutant Loading Ballona Creek Watershed .....	39
Table 2-5	Land Use within the Ballona Creek Watershed .....	51
Table 4-1	Ballona Creek Watershed Project Inventory (with Map Identifiers) .....	118
Table 5-1	Ballona Creek Watershed Community-Based Monitoring Program Objectives .....	155
Table 5-2	Summary of Existing Water Quality Monitoring Efforts: Flow .....	162
Table 5-3	Summary of Existing Water Quality Monitoring Efforts: Trash .....	163
Table 5-4	Summary of Existing Water Quality Monitoring Efforts: Conventional Analytes .....	163
Table 5-5	Summary of Existing Water Quality Monitoring Efforts: Bacteria .....	164
Table 5-6	Summary of Existing Water Quality Monitoring Efforts: Nutrients .....	164
Table 5-7	Summary of Existing Water Quality Monitoring Efforts: Metals .....	165
Table 5-8	Summary of Existing Water Quality Monitoring Efforts: Salts .....	165
Table 5-9	Summary of Existing Water Quality Monitoring Efforts: VOCs and SVOCs .....	166
Table 5-10	Summary of Existing Water Quality Monitoring Efforts: Organics .....	166
Table 5-11	Summary of Existing Water Quality Monitoring Efforts: Water Column Toxicity .....	166
Table 5-12	Summary of Existing Water Quality Monitoring Efforts: Sediments .....	167
Table 5-13	Summary of Existing Water Quality Monitoring Efforts: Bioassessment/Tissue .....	167
Table 5-14	Proposed Pilot Site Water Quality BMPs.....	170
Table 5-15	Suitability of Volunteer Efforts for Collection of Data to Fill Data Gaps .....	175
Table 5-16	Preliminary Volunteer Water Quality Sampling Schedule .....	177
Table 5-17	Potential Responsible Agencies for Community-Based Monitoring Tasks .....	180

