Baldwin Lake Sediment Investigation

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Results of Sediment Investigation

Los Angeles County Arboretum and Botanic Garden

Arboretum Drainage Area

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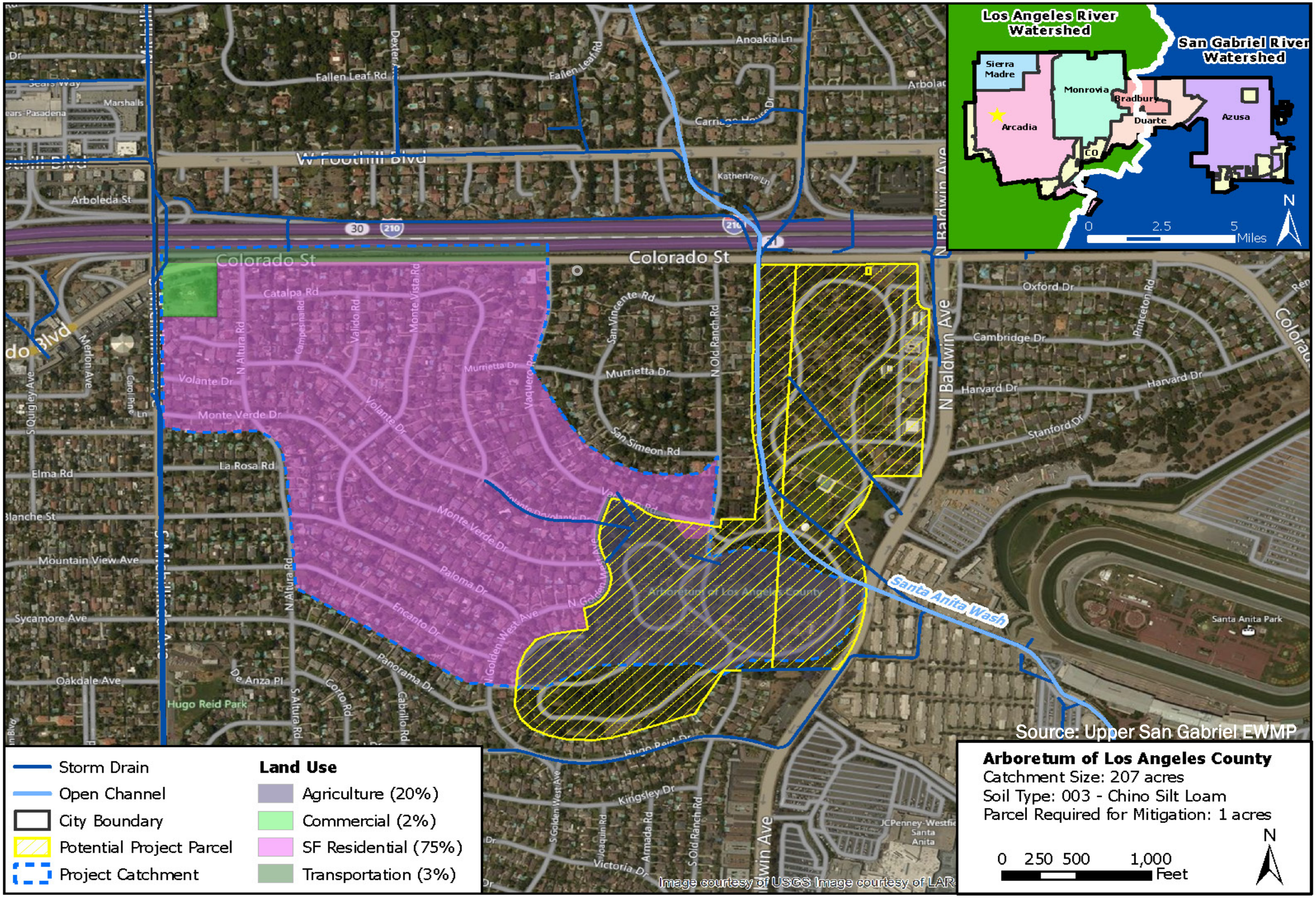


Baldwin Lake Vicinity

LEGEND

- City Boundaries
- Property Line
- Arcadia Wash
- Watershed Tributary Area*
- 1 Los Angeles Arboretum
  - a Baldwin Lake
  - b Tule Pond
- 2 Santa Anita Race Track
- 3 Santa Anita Golf Course
- 4 Westfield Santa Anita Mall

*Based on hydrology map provided by City of Arcadia

0 500' 1000'

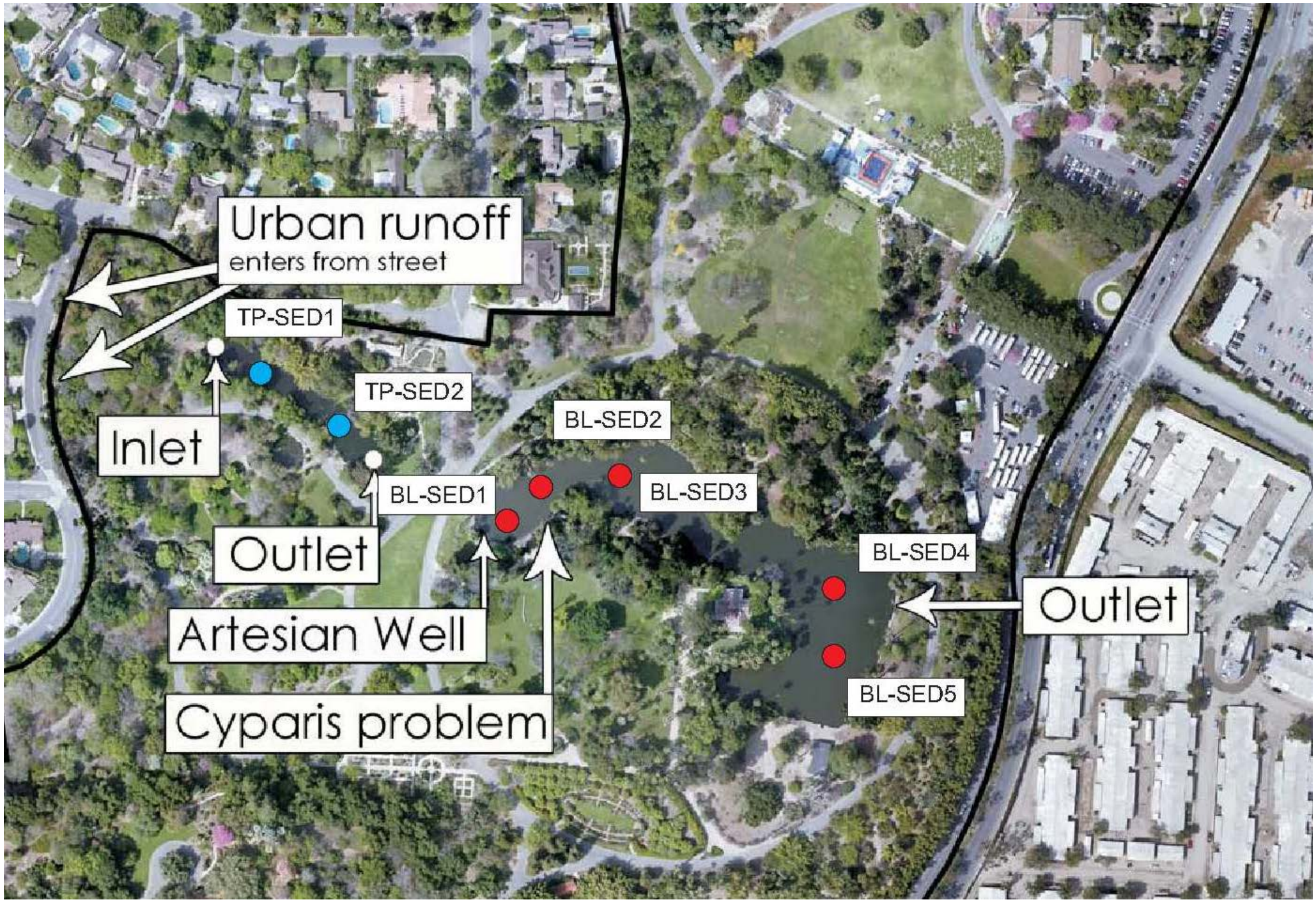
Figure 4: Baldwin Lake Vicinity Plan

From Kornrandolf 2012

Brief History of the Arboretum

- Lake site was depression along the fault Raymond
- In 1875, Lucky Baldwin acquired the land
- Developed the lake and surroundings
- Late 1880s, lake deepened to approx. 15 feet
- In 1947, Arboretum was created
- In 1950s, County constructed stormwater system
  - Collection system discharges to Tule Pond
  - Lake outlet discharges into Arcadia Wash

Sediment Sampling Locations

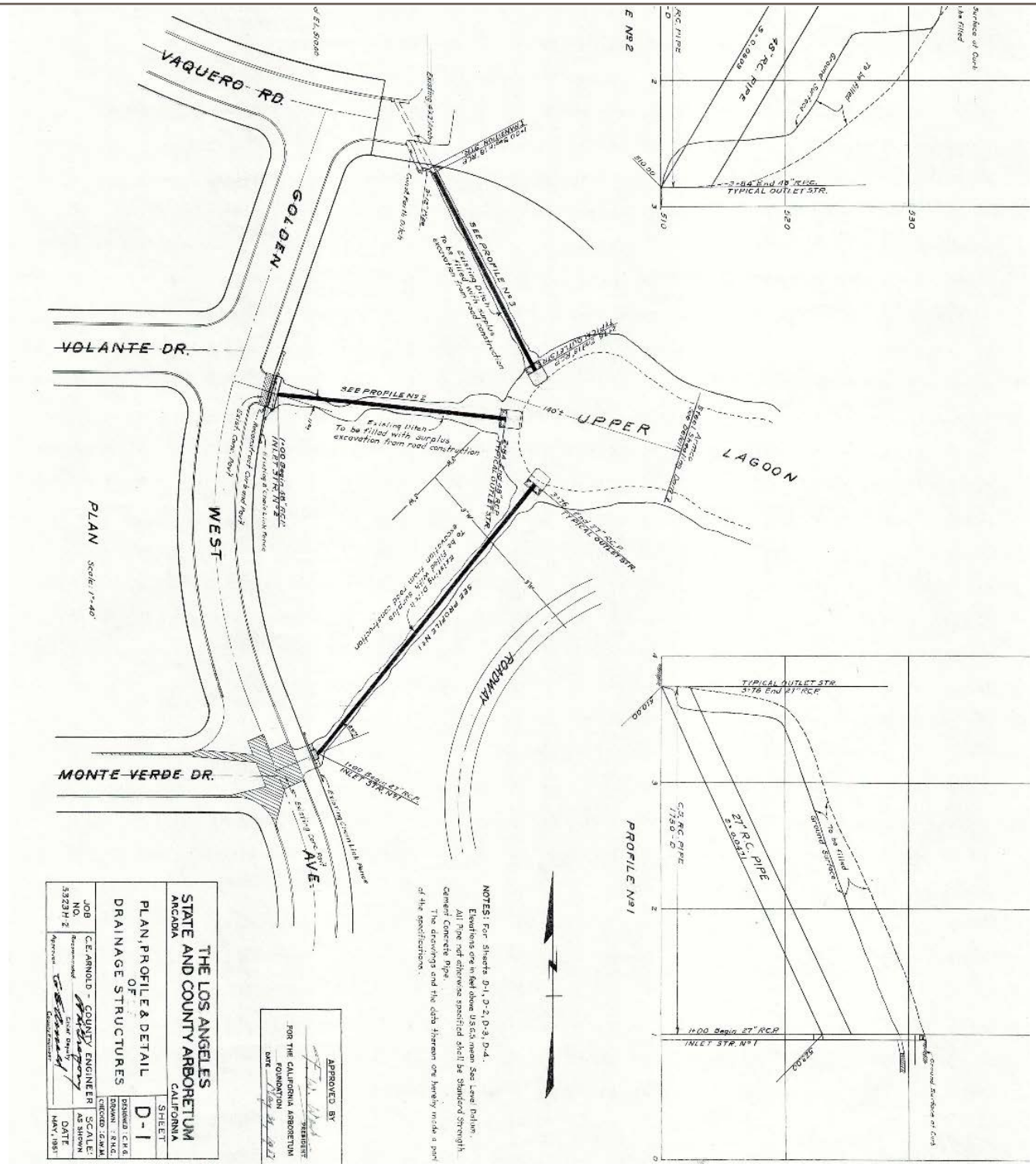


Source: Department of Parks and Recreation

Core Collection Data

Boring ID	Water Column (ft)	Core length (ft)	Sediment Recovery (ft)
		6.3	6.0
		13.0	10.9
		12.0	11.3
		15.7	13.6
		15.6	15.0
		3.9	2.8
TP-SED2	3.1	5.5	3.6

Tule Pond (Lagoon)



Sediment Sampling Results

	Metals	TPH (C8-C40)	PAHs	PCBs	Pesticides
Baldwin Lake	Elevated Pb and Cr	ND	Low levels	ND	Low levels
Tule Pond	Elevated Pb (CA hazardous) and Cr	880 mg/kg	Exceeded USEPA residential levels	Low level	Low levels

Findings

- Baldwin Lake
  - Chemical characterization- suitable for beneficial reuse
  - Clay layer present- eastern portion of lake
- Tule Pond
  - Hazardous levels of lead
    - If dredged, must be disposed of as hazardous waste
  - Highest levels of contaminants detected near stormwater inputs (upstream)
- Samples archived

Dredging Approach

- Baldwin Lake
  - 6 feet (maintainence): 38,000 CY
  - 15 feet (historical): 95,000 CY
  - Determine dredging technique- cost, environmental impacts
  - Dewater sediment
  - Monitor water quality
- Tule Pond
  - Delineate sediment impacts prior to dredging
  - Sample dredged spoils
  - Determine volumes for disposal and/or reuse
  - Evaluate engineering approach for stormwater


HONDA

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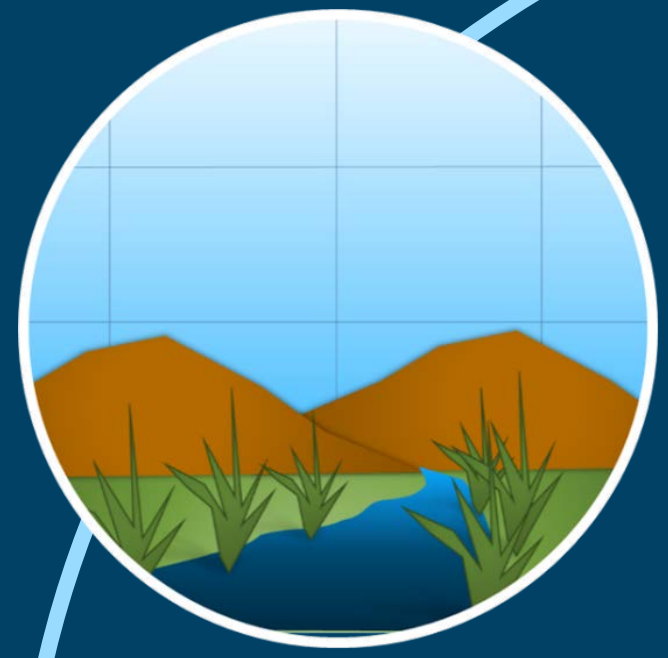
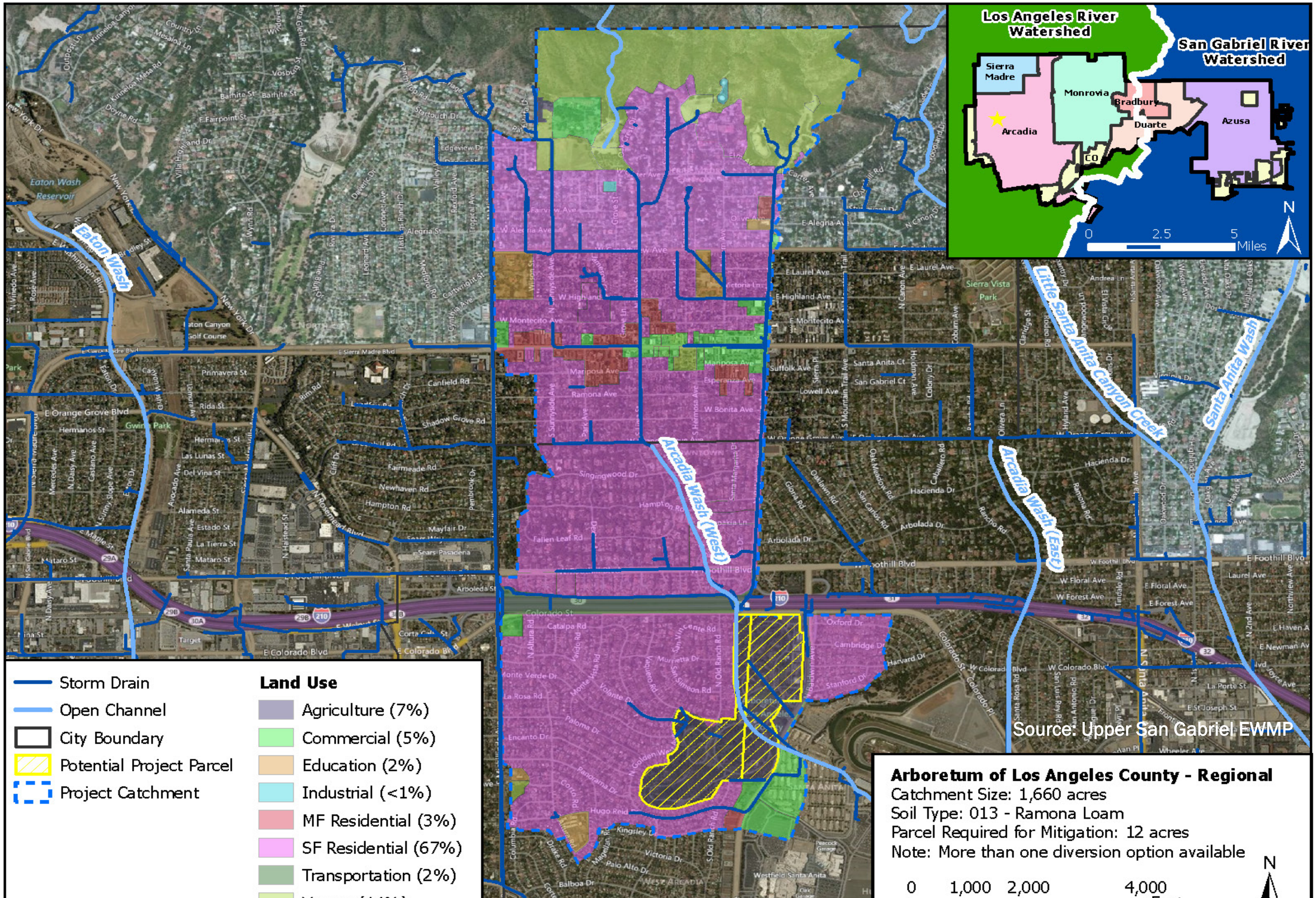


Preliminary Concepts for the Arboretum

Oliver Galang, PE ENV SP

The ARBORETUM Drainage Area



Baldwin Lake Drainage Area

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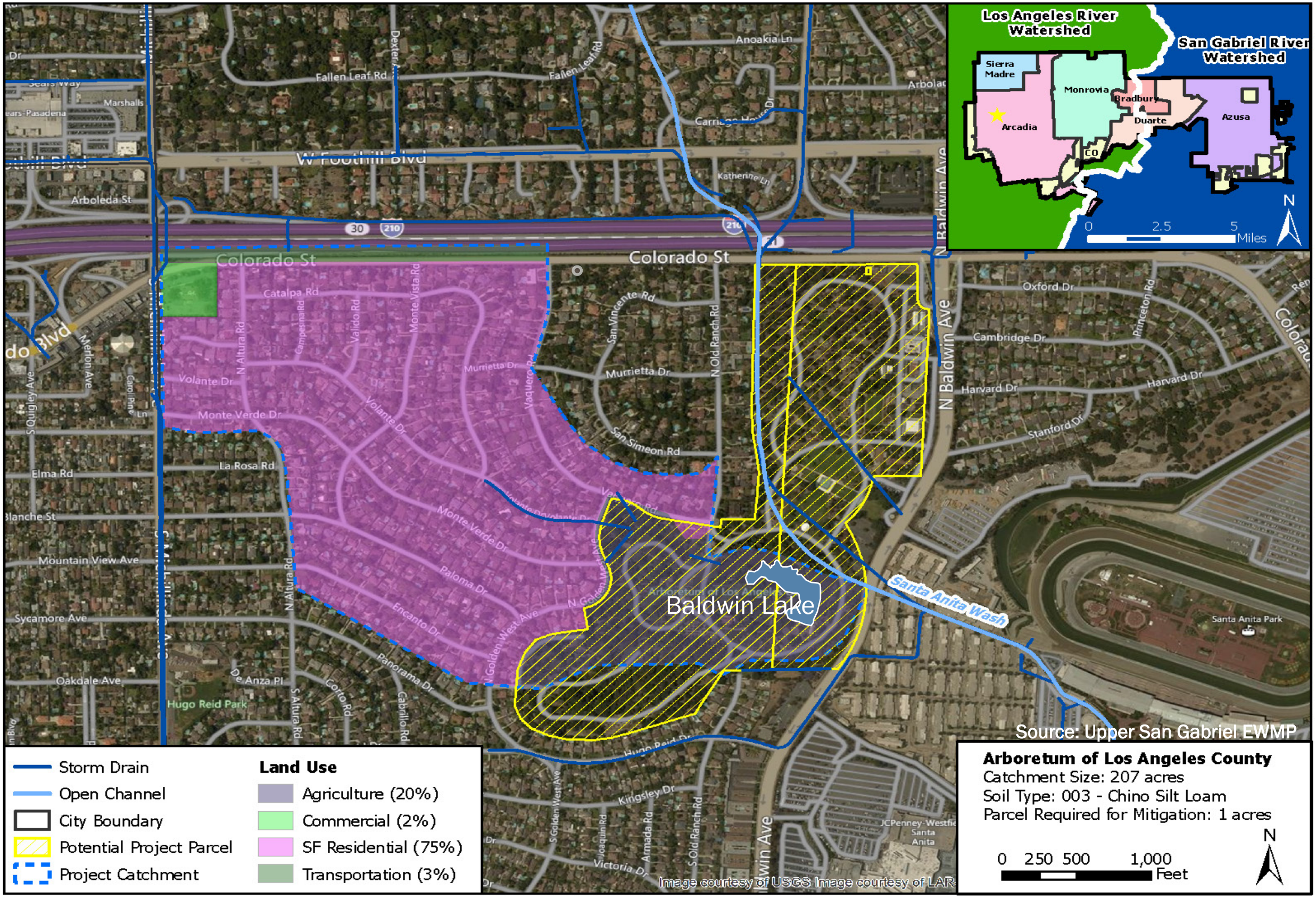
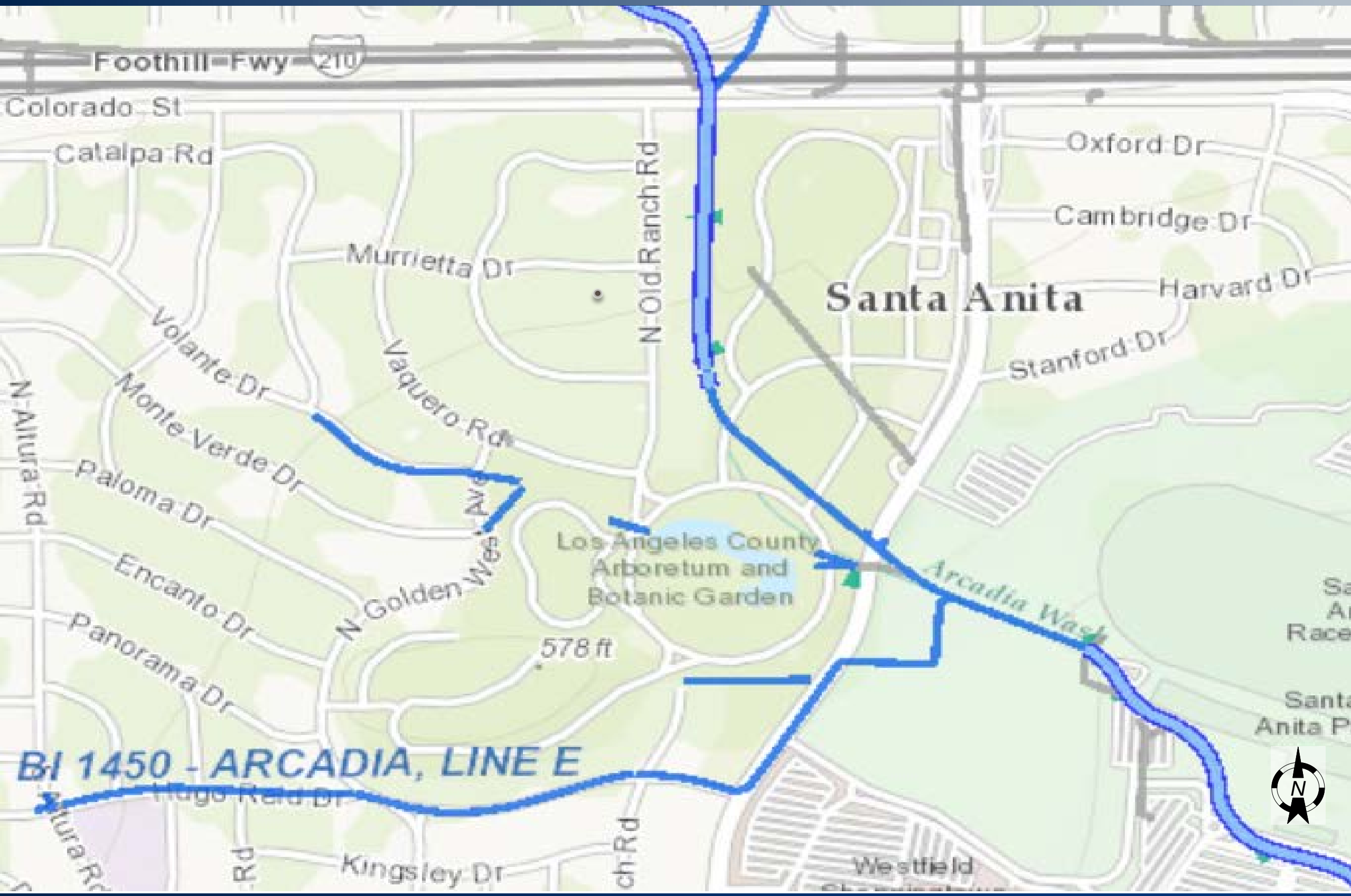


LACFCD Maintenance Responsibilities



Baldwin Lake EWMP Concept

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Old Ranch Road

Baldwin Ave

Arcadia Wash

LACFCD Storm Drain

Open SD Inlets

Flood Plain Mgt Area

Bioswale

Tule Pond

Open Creek

Dredge 6'

Baldwin Lake

LACFCD Inlet Structure

Overflow

18" RCP

48" RCP

27" RCP

48" RCP

48" RCP

N

Baldwin Lake WETLAND CONCEPT

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Old Ranch Road

LACFCD Storm Drain

LACFCD Storm Drain

Hydrodynamic separator

Detention Basin

18" RCP

48" RCP

27" RCP

Wetlands

Tule Pond

Lake Dredging

Baldwin Lake

Arcadia Wash

Baldwin Ave

Bridge/Culvert

Open Creek

48" RCP

SD Outlet

N

Baldwin Lake RESTORATION CONCEPT

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Potential Funding Programs

Caltrans Stormwater Compliance Units

- Currently developing criteria based on Priority Reaches
- Preference for Larger Projects to fund in a multi-year program
- Stormwater, Infiltration or Use Opportunities
- Caltrans funded-projects to date:
  - Lakewood Stormwater Capture
  - Skylinks Golf Course Regional BMP

State Water Resources Control Board
PROPOSITION 1 PROGRAM

Eligible Applicants:	Public agencies, nonprofit organizations, public utilities, federally recognized Indian tribes, state Indian tribes listed on Native American Heritage Commission's California Tribal Consultation List, and mutual water companies.
Eligible Project Types:	Implementation - Multibenefit storm water management projects which may include, but shall not be limited to, green infrastructure, rainwater and storm water capture projects and storm water treatment facilities. Planning - Development of Storm Water Resource Plans to meet the requirements of Water Code section 10562 and related State Water Board guidelines.
Funding Available:	$200 million.
Funding Source:	Proposition 1
Loans or Grants:	Grants
Applications:	Tentative January 2016

Rivers and Mountains Conservancy
PROPOSITION 1 PROGRAM

- The purpose of Proposition 1 is to provide funding for projects that implement the three objectives
  - more reliable water supplies
  - restoration of important species and habitat
  - more resilient and sustainably managed water infrastructure

Chapter 6 of Proposition 1 allocates $30 million to the RMC for competitive grants for multi-benefit ecosystem, watershed protection and restoration projects in accordance with statewide priorities

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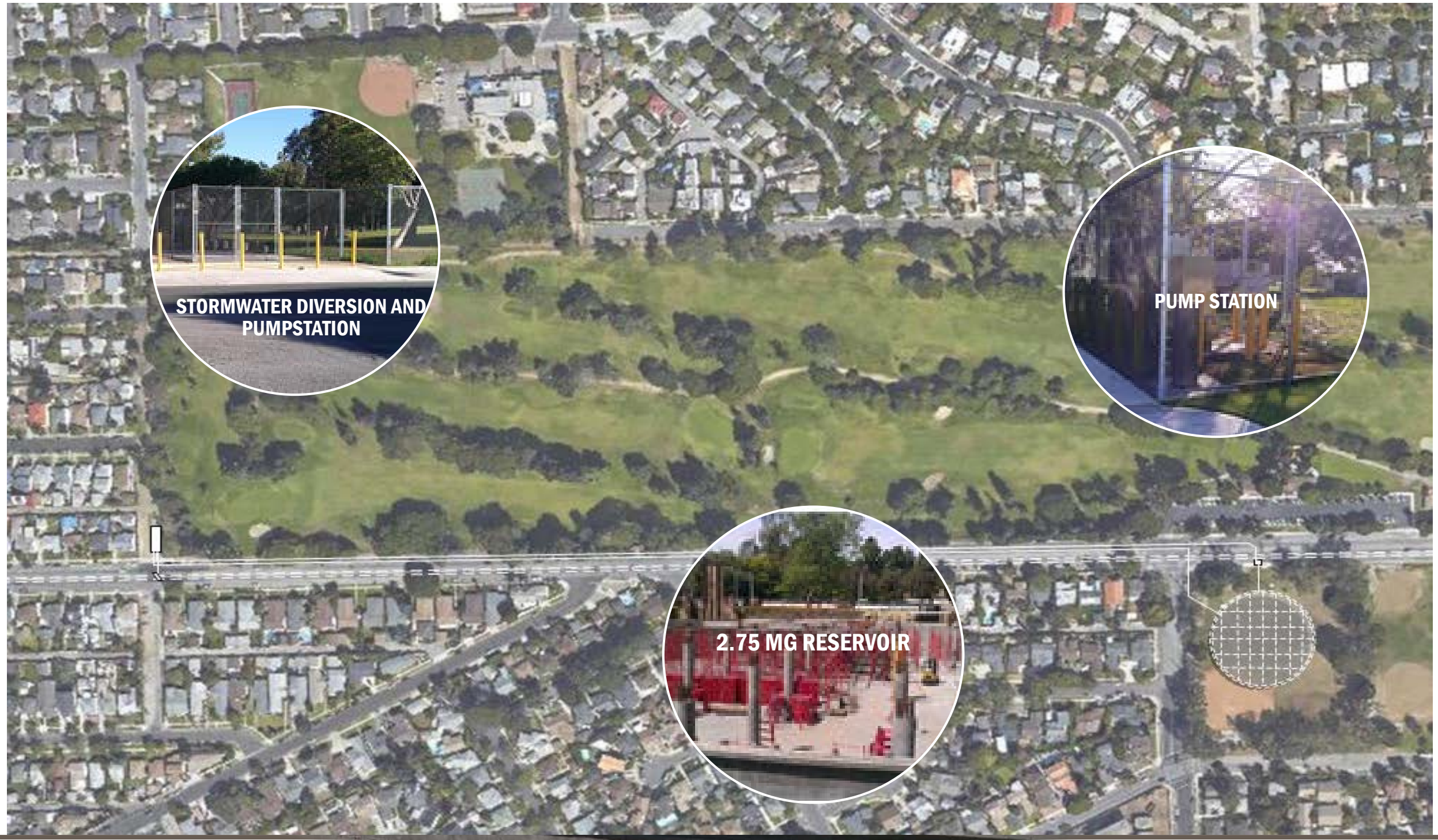
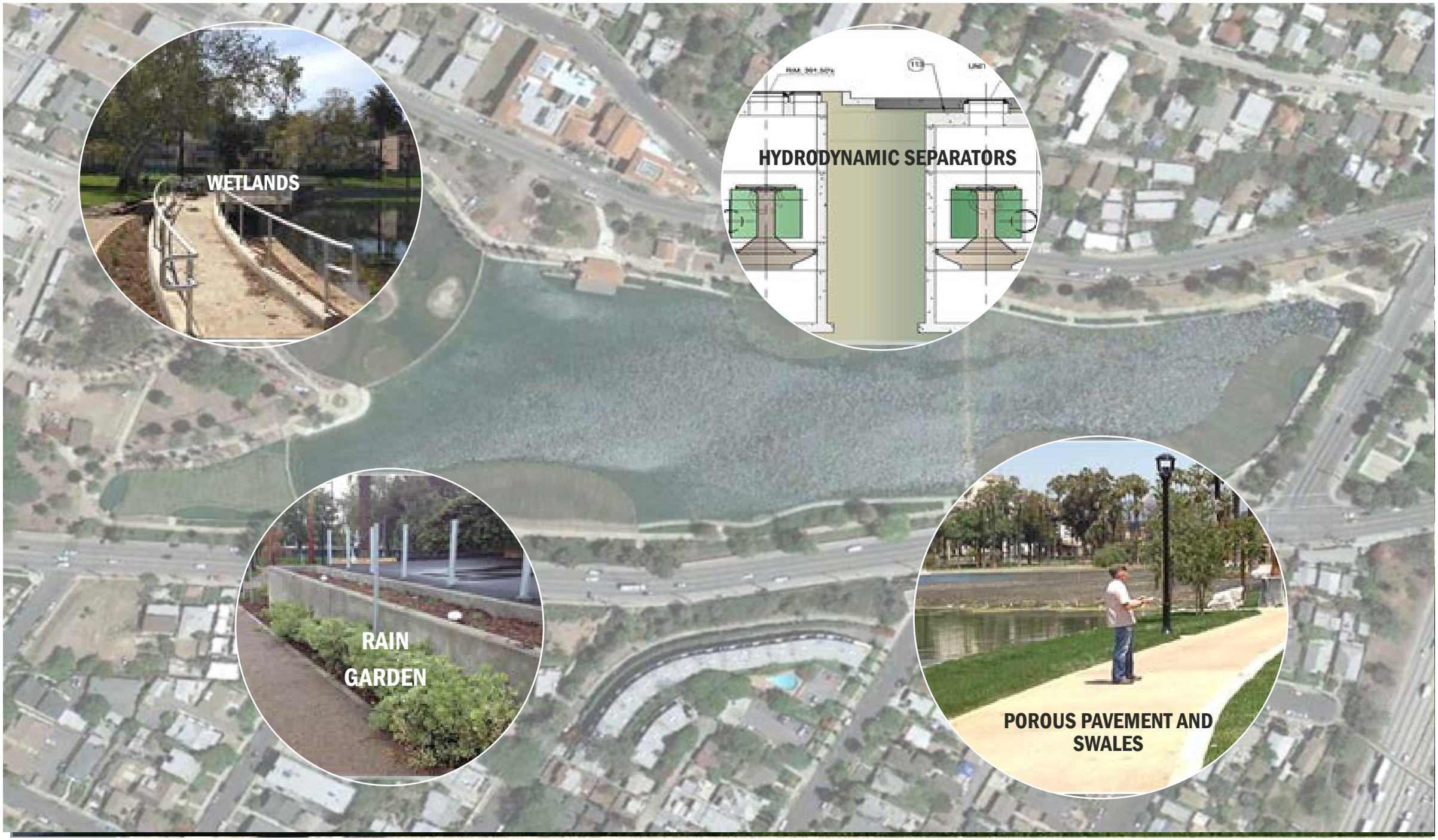
Example Projects

Penmar Water Quality Improvements, Phase 1



Echo Park Lake Rehabilitation Project



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Discussion