Los Angeles Area Lakes EPA TMDLs

"Simple" TMDLs Developed Using the NNE BATHTUB Model

February 16, 2011

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US EPA Region IX

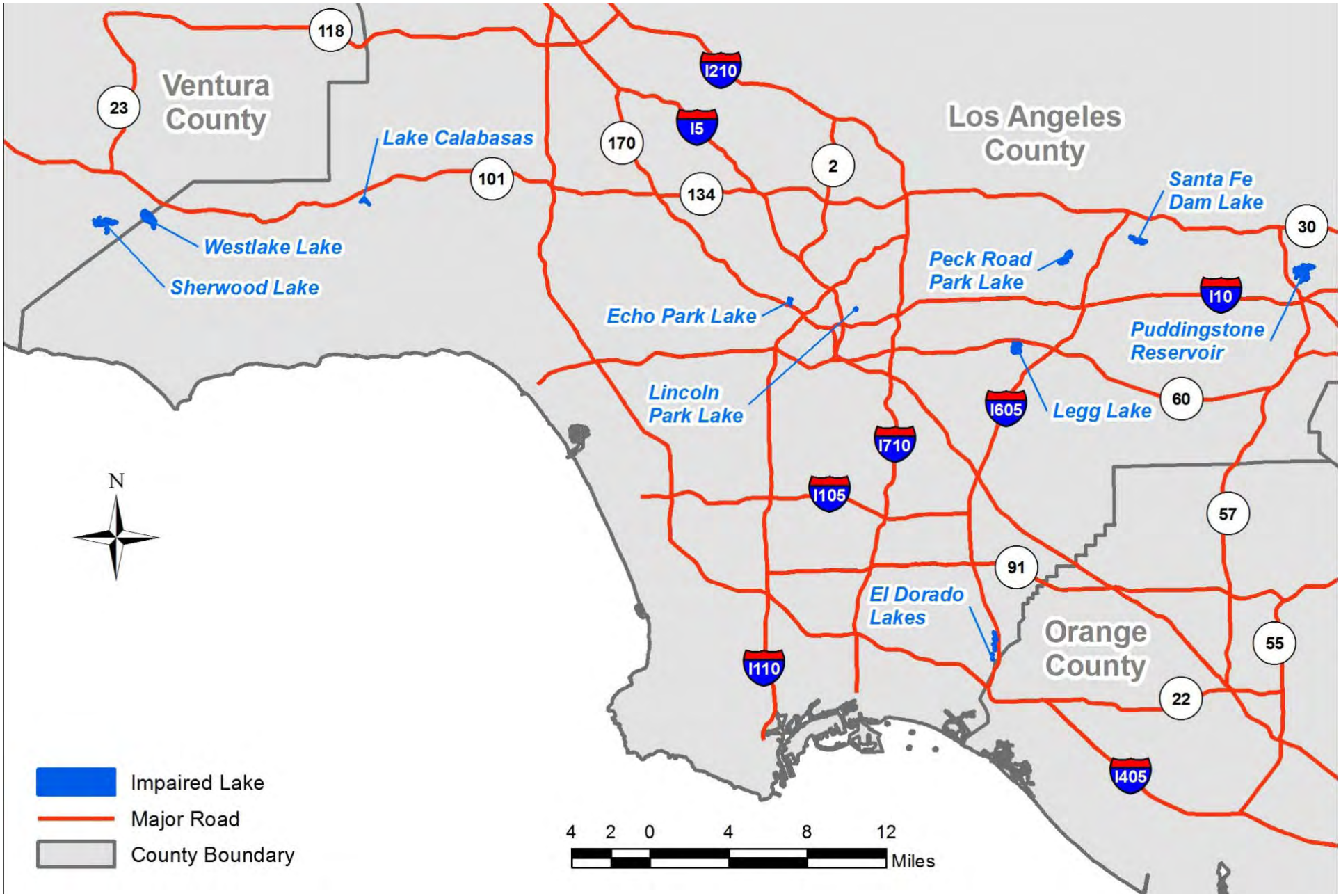
Agenda

- Background
- Quick photo tour of some of the eight lakes
- Target Selection
- Source Assessment
- NNE BATHTUB Model Results
- WLAs and Alternative WLAs
- Echo Park Lake as Poster Child

Background

- Consent Decree requires development of TMDLs for >700 waterbody pollutant combinations between 1999 and March 2013
- Data collected in summer 2009 first since 1992/3
- Draft TMDLs developed and public noticed May 13, 2010
- Additional data collected during summer 2010
- Revised Draft TMDLs public noticed January 25, 2011
- Final TMDLs anticipated by April 2011

Where are these lakes?



TMDLs included in the project:

- Peck Road Park Lake – chlordane, DDT, dieldrin, PCBs, nutrients, trash
- Lincoln Park Lake – nutrients, trash
- Echo Park Lake – chlordane, dieldrin, PCBs, nutrients, trash
- Lake Calabasas – nutrients
- El Dorado Park Lakes – nutrients, mercury
- Legg Lakes - nutrients
- Puddingstone Reservoir – nutrients, mercury, chlordane, dieldrin, DDT, PCBs
- Santa Fe Dam Park Lake – nutrients
- Lake Sherwood - mercury

Quick Photo Tour

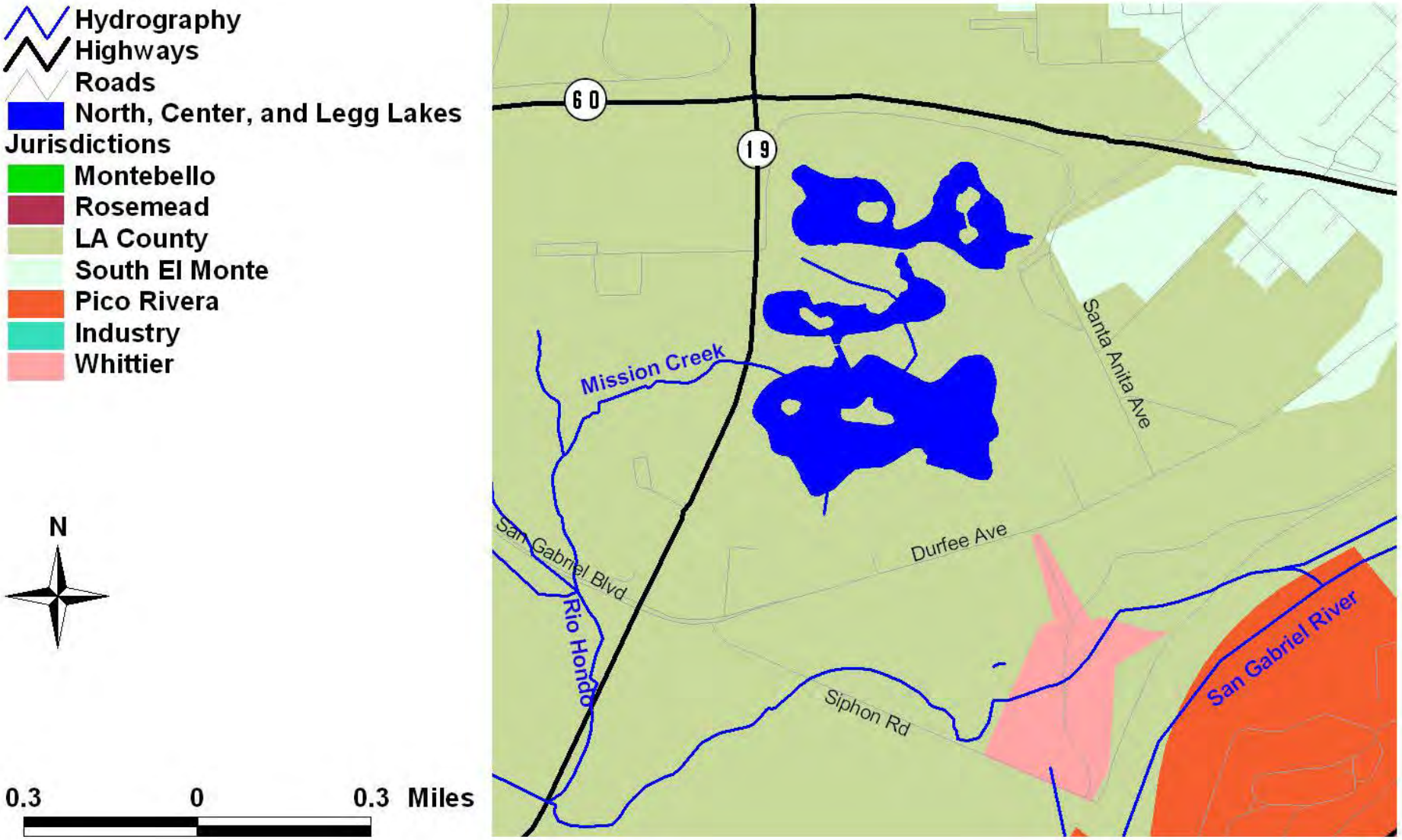
Puddingstone Reservoir

The major stormdrain
Live Oak Channel

Lincoln Park Lake

North, Center and Legg Lakes

North, Center, and Legg Lakes



One of several storm drains

Superfund shallow groundwater VOC treatment plant

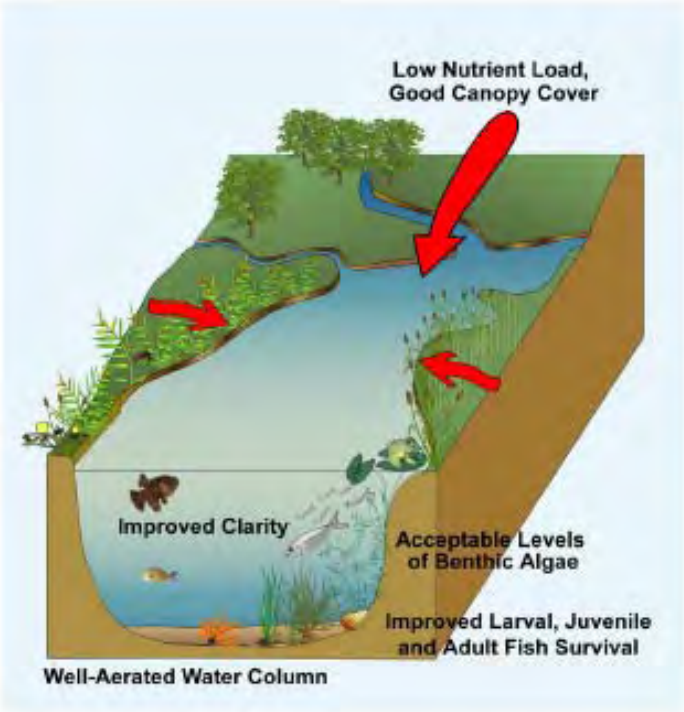
Target Selection

- Dissolved Oxygen, Ammonia, pH – set equal to the water quality standard
- Chlorophyll *a* used to interpret a narrative standard for biostimulatory substances –

  20 μg/L growing season & annual average
- Total Phosphorus and total nitrogen targets – calculated for each lake from the chlorophyll *a* target using BATHTUB

Technical Approach to Develop Nutrient Numeric Endpoints for California

July 2006



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California State Water Resource Control Board;
Planning and Standards Implementation Unit

Prepared by:
TETRA TECH, INC.
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Table 3-2
Nutrient Numeric Endpoints for Secondary Indicators - Proposed Risk Classification Category Boundaries: I & II and II & III

Beneficial Use Risk-Category I. Presumptive unimpaired (use is supported)
Beneficial Use Risk Category II. Potentially impaired (may require an impairment assessment)
Beneficial Use Risk Category III. Presumptive impaired (use is not supported or highly threatened)

RESPONSE VARIABLE	RISK – CATEGORY BOUNDARY	BENEFICIAL USE						
		COLD	WARM	REC-1	REC-2	MUN[1]	SPWN	MIGR
Benthic Algal Biomass in streams (mg chl-*a*/m^2)	I / II	100	150	C	C	100	100	B
Maximum	II / III	150	200	C	C	150	150	B
Planktonic Algal Biomass in Lakes and Reservoirs (as µg/L Chl-*a*)[2] – summer mean	I / II	5	10	10	10	5	A	B
	II / III	10	25	20	25	10	A	B
Clarity (Secchi depth, meters.)[3] – lakes summer mean	I / II	A	A	2	2	A	A	B
	II / III	A	A	1	1	A	A	B
Dissolved Oxygen (mg/l) Streams – the mean of the 7 daily minimums	I / II	9.5	6.0	A	A	A	8.0	C
	II / III	5.0	4.0	A	A	A	5.0	C
pH maximum – photosynthesis driven	I / II	9.0	9.0	A	A	A	C	C
	II / III	9.5	9.5	A	A	A	C	C
DOC (mg/l)	I / II	A	A	A	A	2	A	A
	II / III	A	A	A	A	5	A	A

A = No direct linkage
B = More research needed to quantify linkage
C = Addressed by Aquatic Life Criteria

[1] For application to zones within water bodies that include drinking water intakes.
[2] Reservoirs may be composed of zones or sections that will be assessed as individual water bodies
[3] Assumes that lake clarity is a function of algal concentrations, does not apply in waters of high non-algal turbidity

Source Assessment

The following inputs were incorporated in an estimation of existing loads:

- Atmospheric deposition of nitrogen
- Wet weather stormwater flows
- Dry weather inputs such as irrigation or any water additions to lakes used to maintain water levels

Modeled Required Concentrations

	Total Nitrogen	% Reduction Needed	Total Phosphorus	% Reduction Needed
Lincoln Park Lake	0.88 mg/L	45%	0.088 mg/L	56%
Lake Calabasas	0.66 mg/L	71%	0.066 mg/L	62%
El Dorado Northern Lake System	0.69 mg/L	62%	0.069 mg/L	52%
Legg Lakes	0.51 mg/L	71%	0.05 mg/L	23%
Puddingstone Reservoir	0.71 mg/L	53%	0.071 mg/L	34%

Existing Conditions Concentrations

	Total Nitrogen	Total Phosphorus
Peck Rd Park Lake	0.76 mg/L	0.076 mg/L
Echo Park Lake	1.2 mg/L	0.12 mg/L
El Dorado Southern Lake System	1.15 mg/L	0.12 mg/L
Santa Fe Dam Park Lake	0.63 mg/L	0.063 mg/L

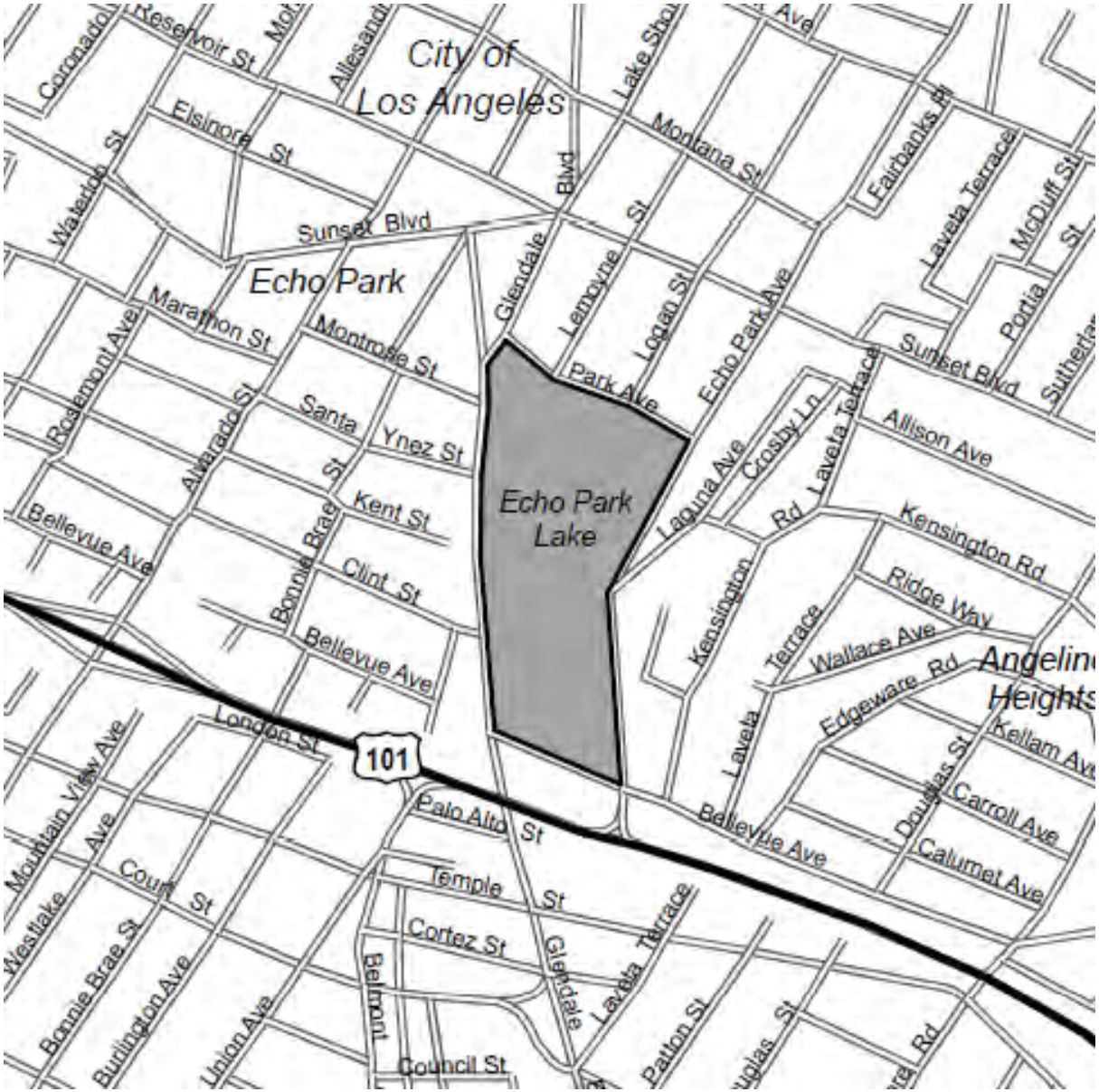
Wasteload Allocations

- WLAs and LAs are expressed as a lbs/year at the point of discharge w/ an additional max daily expression
- Reductions were assigned evenly to all sources which has cased concern for entities using potable or groundwater as supplemental water inputs to lakes

Alternative Wasteload Allocations

- Responsible jurisdictions can receive in-lake concentration based WLAs up to 1.0 and 0.1 mg/L TN and TP respectively if:
- They develop a Lake Management Plan describing the actions they will undertake to meet the ammonia, dissolved oxygen, pH and chlorophyll *a* targets as well as the alternative concentration-based WLAs

Echo Park Lake



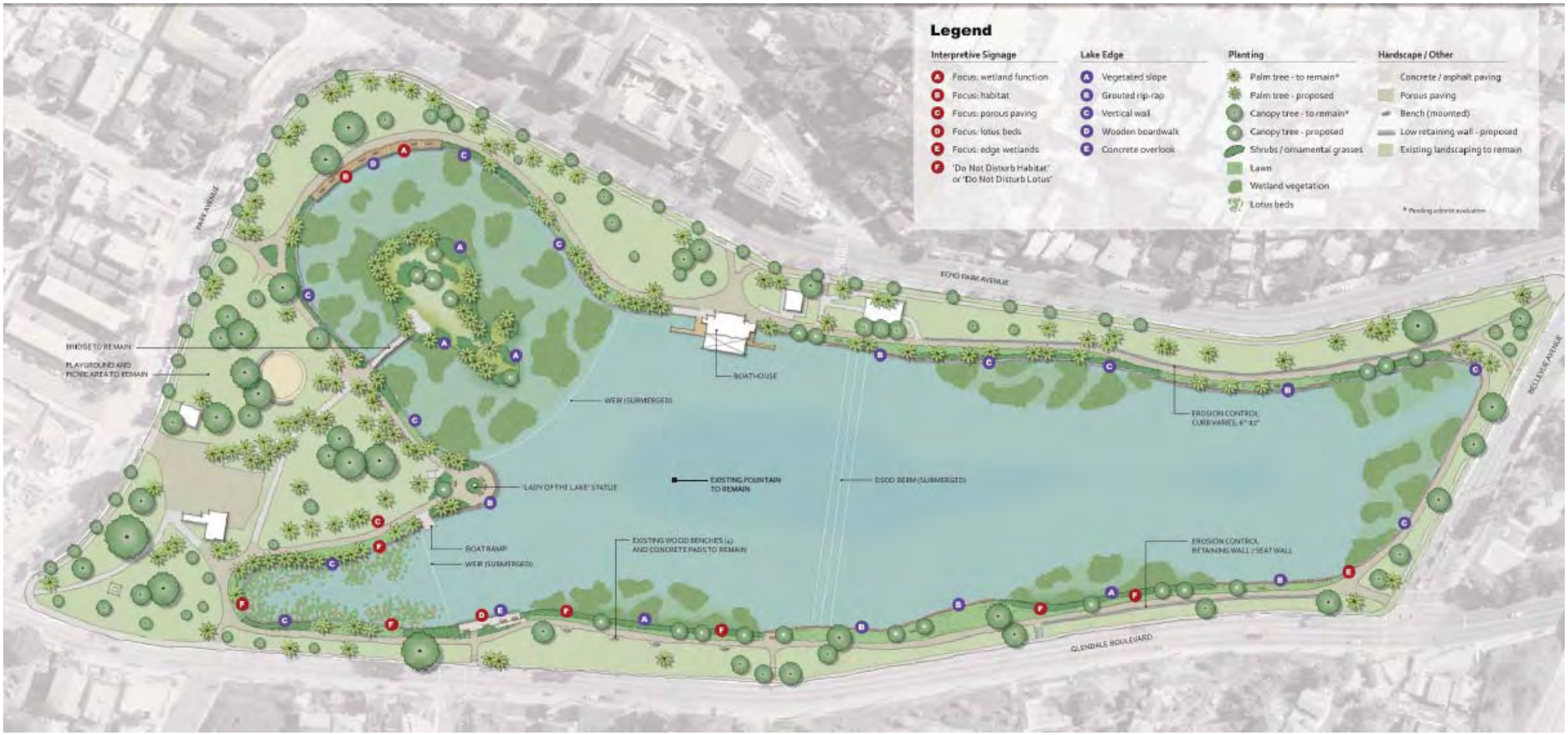
Echo Park Lake

Boating, fishing, etc

Storm drains discharge to the lake

Lots of Trash

“Prop O” Lake Rehabilitation Project Underway



Draft TMDLs Currently Out for Public Comment

Document available at:

http://www.epa.gov/region9/water/tmdl/progress.html

Comments due March 1, 2011 to:

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Questions?