Trash Total Maximum Daily Loads

for the

Los Angeles River Watershed

September 19, 2001

California Regional Water Quality Control Board
Los Angeles Region
320 West Fourth Street
Los Angeles, California 90013

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I. Introduction – Legal Background

The California Regional Water Quality Control Board, Los Angeles Region (hereinafter referred to as the "Regional Board") has developed this total maximum daily load (TMDL) designed to attain the water quality standards for trash in the Los Angeles River. The TMDL has been prepared pursuant to state and federal requirements to preserve and enhance water quality in the Los Angeles Basin River Watershed.

The California Water Quality Control Plan, Los Angeles Region, also known as the *Basin Plan*, sets standards for surface waters and groundwaters in the regions. These standards are comprised of designated beneficial uses for surface and ground water, and numeric and narrative objectives necessary to support beneficial uses and the state's antidegradation policy. Such standards are mandated for all waterbodies within the state under the Porter-Cologne Water Quality Act. In addition, the Basin Plan describes implementation programs to protect all waters in the region. The Basin Plan implements the Porter-Cologne Water Quality Act (also known as the "California Water Code") and serves as the State Water Quality Control Plan applicable to the Los Angles River, as required pursuant to the federal Clean Water Act (CWA).

Section 305(b) of the CWA mandates biennial assessment of the nation's water resources, and these water quality assessments are used to identify and list impaired waters. The resulting list is referred to as the 303(d) list. The CWA also requires states to establish a priority ranking for impaired waters and to develop and implement TMDLs. A TMDL specifies the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and allocates pollutant loadings to point and non-point sources.

The United States Environmental Protection Agency (USEPA) has oversight authority for the 303(d) program and must approve or disapprove the state's 303(d) lists and each specific TMDL. USEPA is ultimately responsible for issuing a TMDL, if the state fails to do so in a timely manner.

As part of California's 1996 and 1998 303(d) list submittals, the Regional Board identified the reaches of the Los Angeles River at the Sepulveda Flood Basin and downstream as being impaired due to trash.

A consent decree between the USEPA, the Santa Monica BayKeeper and Heal the Bay Inc., represented by the Natural Resources Defense Council (NRDC), was signed on March 22, 1999. This consent decree requires that all TMDLs for the Los Angeles Region be adopted within 13 years. The consent decree also prescribed schedules for certain TMDLs. According to this schedule, a Trash TMDL for the Los Angeles River watershed must be approved before March 2001.

This Trash TMDL is based on existing, readily available information concerning the conditions in the Los Angeles River watershed and other watersheds in Southern California, as well as TMDLs previously developed by the State and USEPA.

II. Definitions

The definitions of terms as used in this TMDL are provided as follows:

Baseline Waste Load Allocation. The Baseline Waste Load Allocation is the Waste Load Allocation assigned to a permittee before reductions are required. The progressive reductions in the Waste Load Allocations will be based on a percentage of the Baseline Waste Load Allocation. The Baseline Waste Load Allocation will be calculated based on the annual average amount of trash discharged to the storm drain system from a representative sampling of land use areas, as determined during the Baseline Monitoring Program.

Daily Generation Rate (DGR). The DGR is the average amount of litter deposited to land or surface water during a 24-hour period, as measured in a specified drainage area.

Full Capture Device. A full capture device is any device or system that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow resulting from a one-year, one-hour, storm (determined to be 0.6 inch per hour for the Los Angeles River watershed).

Monitoring Entity. The Monitoring Entity is the permittee or one of multiple permittees and/or co-permittees that has been authorized by all the other affected permittees or co-permittees to conduct baseline monitoring on their behalf.

Permittee. The term "permittee" refers to any permittee or co-permittee of a stormwater permit.

Trash. In this document, we are defining "trash" as man-made litter, as defined in California Government Code Section 68055.1(g):

> "Litter means all improperly discarded waste material, including, but not limited to, convenience food, beverage, and other product packages or containers constructed of steel, aluminum, glass, paper, plastic, and other natural and synthetic materials, thrown or deposited on the lands and waters of the state, but not including the properly discarded waste of the primary processing of agriculture, mining, logging, sawmilling or manufacturing [….]."

For purposes of this TMDL, we will consider trash to consist of litter and particles of litter that are retained by a 5-mm mesh screen. These particles of litter are referred to as "gross pollutants" in European and Australian scientific literature. This definition excludes sediments, and it also excludes oil and grease, and vegetation, except for yard waste that is illegally disposed of in the storm drain system. Additional TMDLs for sediments[1] and oil and grease may be required at a later date.

[1] Sediments which may be addressed in a separate TMDL are natural particulate matters such as silt and sand. Sediments result from erosion and are deposited at the bottom of a stream. Sediments do not refer to the decomposition of settleable litter into small particulate matters, which this TMDL is trying to prevent.

Urbanized Portion of the Watershed. For the purposes of this TMDL, the urban portion of the watershed includes the sum total area of the incorporated cities and the unincorporated portion of Los Angeles County which are located on the Los Angeles River watershed.[2] The estimated area of the "urbanized" portion of the watershed is 584 square miles[3]. The remainder of the watershed is made up of the Los Angeles National Forest and other open space.

III. Problem Statement

The problem statement consists of a description of the watershed, beneficial uses, water quality objectives, and a description of the impairment to the watershed caused by trash.

A. Description of the Watershed

The Los Angeles River flows 51 miles from the western end of the San Fernando Valley to the Queensway Bay and Pacific Ocean at Long Beach (see Figure A). The headwaters are at the confluence of Arroyo Calabasas and Bell Creek. Arroyo Calabasas drains Woodland Hills, Calabasas, and Hidden Hills in the Santa Monica Mountains. Bell Creek drains the Simi Hills and receives flows from Chatsworth Creek. From the confluence of Arroyo Calabasas and Bell Creek, the Los Angeles River flows east through the southern portion of the San Fernando Valley, bends around the Hollywood Hills before it turns south onto the broad coastal plain of the Los Angeles Basin, eventually discharging into Queensway Bay and thence into San Pedro Bay West of Long Beach Harbor. Together with its several major tributaries, notably the Tujunga Wash, Burbank Western Channel, Arroyo Seco, Rio Hondo, and Compton Creek, the Los Angeles River drains an area of about 834[4] square miles. Of this area, the incorporated cities and unincorporated portion of Los Angeles County comprise 584 square miles. The remaining acreage consists of the Los Angeles National Forest and other uses.

In the San Fernando Valley, the river flows east for approximately 16 miles along the base of the Santa Monica Mountains. Most of the Los Angeles River channel was lined with concrete between 1935 and 1959 for flood control purposes[5]. This reach is lined in concrete except for a section of the river with a soft bottom at the Sepulveda Flood Control Basin. The Sepulveda Basin is a 2,150-acre open space, located upstream of the Sepulveda Dam. It is designed to collect flood waters during major storms. Because the area is periodically inundated, it remains in natural or semi-natural conditions and supports a variety of low-intensity uses. The US Army Corps of Engineers owns the entire basin and leases most of the area to the City of Los Angeles Department of Recreation and Parks, which has developed a multi-use recreational area that includes a golf course, playing fields, hiking trails, and bicycle paths.

[2] The Regional Board recognizes that some areas within the unincorporated sections of Los Angeles County are actually suburban or rural.
[3] As determined by the Regional Board from GIS mapping. (Other minor differences in figures are due to rounding.)
[4] As determined by the Regional Board from GIS mapping.
[5] Gumprecht, Blake (1999) *The Los Angeles River: Its Life, Death, And Possible Rebirth*, p. 206.

The river is again lined in concrete for most of its course except for a seven-mile soft-bottomed segment between the confluence of the Burbank/Western Channel near Riverside Drive and north of the Arroyo Seco confluence. Three miles of this segment border Griffith Park (encompassing 4,217 acres). Four miles downstream, the river flows parallel to Elysian Park (585 acres in size). The original Pueblo de Los Angeles was founded just east of the river "to take advantage of the river's dependable supply of water."[6] Early this century, the progressive pumping of groundwater, together with major diversions of water for irrigation and other uses throughout the watershed, contributed to a decreased flow in the River. From Willow Street all the way through the estuary, the river is soft bottomed with areas of riparian vegetation. This unlined section is about three miles long. Also part of the watershed are a number of lakes including Peck Road Park Lake, Echo Park Lake, and Lincoln Park Lake.

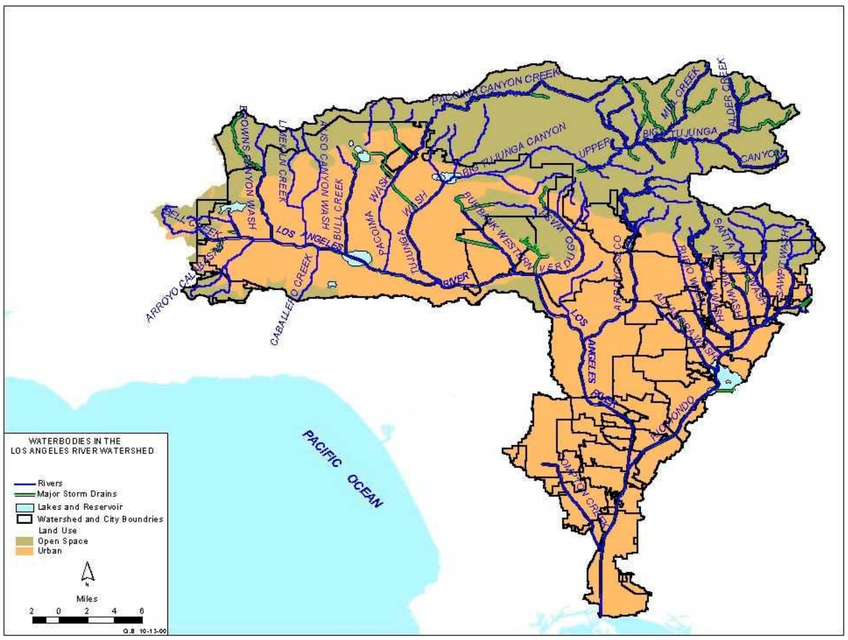

Figure A. Waterbodies in the Los Angeles River Watershed.

B. Beneficial Uses of the Watershed

A brief description of the beneficial uses most likely to be impaired due to trash in the Los Angeles River is provided in this section.

The upper reaches of the Los Angeles River include Sepulveda Basin, a soft-bottomed area that is designed as a flood control basin. Designated beneficial uses for the upper reaches are Municipal and Domestic Supply (MUN), Ground Water Recharge (GWR), Water Contact Recreation (REC1), Non-Contact Water Recreation (REC2), Warm Freshwater Habitat (WARM), Wildlife Habitat (WILD), and Wetland Habitat (WET). The arroyo chub is also found in the Sepulveda Basin area, and cannot survive on the flat surfaces on the concrete-lined portions of the Los Angeles River. The thick growth of riparian plants in this area provides habitat for a variety of wildlife. Native oaks grow along stretches of Valleyheart Drive in

[6] Los Angeles River Master Plan, June 1996, p. 211.

Studio City and Sherman Oaks. The river levees along this reach are accessible and neighborhood residents use them for walking and jogging.

Three native species of fish (the south coast minnow-sucker community) are found in Big Tujunga Creek from Big Tujunga Dam downstream to upper Hansen Dam. These are the Santa Ana sucker (Catastomus santaanae), which is listed as a federally endangered species, the Santa Ana speckled dace (Rhinichthys osculus) and the arroyo chub (Gila orcutti), both of which are State Species of Special Concern. They thrive in the moderate to fast cool or cold flows in gravelly and rocky riffles (suckers and dace), alternating with slower pools (chubs)[7].

Glendale Narrows, from Riverside Drive to Arroyo Seco (Figueroa Street), with the longest soft-bottomed segment (seven miles), supports many beneficial uses and is designated accordingly in the Basin Plan. This portion of the Los Angeles River is designated as open space in the various community general plans. Dense riparian vegetation provides habitat for wildlife including birds, ducks, frogs and turtles. Several small pocket parks are found along this section of the River, many of which were designed by North East Trees (NET), sometimes in partnership with the Mountains Recreation and Conservation Authority (MRCA), such as a small park South and North of Los Feliz Boulevard sometimes referred to as the "Los Angeles RiverWalk"[8] and Sunnynook park on the Atwater side, and Rattlesnake Park and Zanja Madre Park on the Silver Lake side. Another example of a pocket park, designed by MRCA, is Knox Park[9], at the end of Knox avenue. The riparian vegetation closely mimics the historical "willow sloughs" that once dotted the basin[10]. The relatively lush environment in this reach attracts people who enjoy many forms of recreation including walking, jogging, horseback riding, bicycling, bird watching, photography and crayfishing. There are several access points in this reach, including the pedestrian bridge over the Golden State Freeway from Griffith Park near Los Feliz Boulevard (Sunnynook Bridge). This whole section is lined with a maintained bike path, and many bicyclists use the path, which is cooled in places by the riparian trees. In addition, cut fences provide easy access for the many people who use this section of the river, including the homeless who have set up camp under some of the bridges within this reach or on the vacant land between Highway 5 and the fence to the river.

[7] Camm Swift, Emeritus Natural History Museum of Los Angeles County, California Academy of Sciences, May 20, 2000.
[8] Nishith Dhandha, North East Trees, August 24, 2000.
[9] Ibid.
[10] Dan Cooper, Audubon Society, California Academy of Sciences, May 20, 2000.

Figure B. Fletcher Drive: Great Egret, October 26, 1999.

From Figueroa Street to Washington Boulevard, the river supports several beneficial uses, including the Downtown Channel, which is used by many for recreation and bathing, in particular by homeless people who seek shelter there.

The mid-cities reach (11½ miles from Washington Boulevard to Atlantic Avenue), has several beneficial uses. The western levee is available for trail use from Atlantic Boulevard in Vernon to Firestone Boulevard in South Gate. There is a county bike path on the eastern levee (the Lario Trail) and a county equestrian and hiking trail adjacent to the levee. Continuous access to the Lario Trail is provided below each street bridge crossing. Several parks have been developed adjacent to the river on the east side, some of which provide access to the river trail (Cudahy Park). In Vernon, the channel invert is used for lunchtime soccer games, and people walk or jog on the river maintenance roads mostly during the week at lunchtime. The utility easement in Bell is used partly for small, informal vegetable gardening.[11] South of the confluence of the Los Angeles River and the Rio Hondo Channel in South Gate, increasing numbers of birds can be seen using the channel and adjacent lands.[12]

The nine-mile reach from Atlantic Avenue to the ocean supports some of the most abundant bird life found on the Los Angeles River. The parks, spreading grounds, utility easements and vacant land adjacent to the river provide roosting and feeding habitat. Many species of birds also feed in the concrete channel, where algae grow in the warm, shallow water, and in the estuary South of Willow Street, including fish-eaters like waders (herons, egrets, occidental bitterns and rails), terns, osprey (a fish-eating hawk), pelicans and cormorants. California Brown Pelican and California Least Tern are Federally Endangered Species.[13]

[11] Los Angeles River Master Plan, p. 99.

[12] At the confluence there is a ten-acre site (approx.) owned by the City of South Gate which contains an abandoned landfill which is vegetated with grasses, shrubs and trees (Los Angeles River Master Plan).

[13] Dan Cooper, California Audubon Society, December 17, 1999.

The water in the estuary pools is deep and slow enough to support an abundant fish community as well. In addition to gobies and tilapia (mostly *Tilapia mozambica*)[14], which are very abundant in the Los Angeles River, especially South of Willow Street, many species of fish are found in the estuary of the Los Angeles River. As an example, the following species have been found between the Ocean boulevard bridge and Queensway Bay bridge: California tonguefish, California halibut, specklefin midshipman, California lizardfish, diamond turbot, barcheek pipefish, and Pacific staghorn sculpin (bottom feeders), as well as white croaker, queenfish, deepbody anchovy, white seaperch, slough anchovy, barred sand bass, shiner perch, California grunion, and striped mullet (midwater feeders, often associated with bottom environment). This area also has harbored some pelagic fish, some of which will venture up an undetermined portion of the estuary: northern anchovy, Pacific sardine, Pacific pompano, Pacific barracuda, topsmelt, jacksmelt, white seabass, barred pipefish, giant kelpfish, and bay pipefish.[15]

[14] Charles Mitchell, MBC Applied Environmental Sciences, December 19, 1999.
[15] Marine Biological Baseline Study of Queensway Bay, Long Beach Harbor, MBC Applied Environmental Sciences, 1994.

Beneficial uses of the Los Angeles River watershed are summarized in Table 1, excerpted from the 1994 Basin Plan. These are the designated beneficial uses that must be protected.[16]

Table 1. Beneficial Uses of Surface Waters of the Los Angeles River.

Surface Waters	**Hydro Unit**	**MUN**	**IND**	**PROC**	**GWR**	**NAV**	**REC1**	**REC2**	**COMM**	**WARM**	**COLD**	**EST**	**MAR**	**WILD**	**RARE**	**MIGR**	**SPWN**	**SHELL**	**WET**
Los Angeles River Estuary	405.12		E			E	E	E	E			E	E	E	E	E	E	P	E
Los Angeles River to Estuary	405.12	P	P	P	E		E	E		E			E	E	E	P	P	P	
Los Angeles River	405.15	P	P		E		E	E		E				P					
Los Angeles River	405.21	P	P		E		E	E		E				E					E
Compton Creek	405.15	P			E		E	E		E				E					E
Rio Hondo downstream Spreading Grounds	405.15	P			I		P	E		P				I					
Rio Hondo	405.41	P			I		I	E		P				I	E				E
Alhambra Wash	405.41	P			I		P	I		P				P	E				
Rubio Wash	405.41	P			I		I	I		I				E	P				
Rubio Canyon	405.31	P			E		I	I		I				E	E				E
Eaton Wash	405.41	P			I		I	I		I				E					
Eaton Wash (downstream dam)	405.31	P			I		I	I		I				E					
Eaton Wash (upstream dam)	405.31	P			I		I	I		I				E					
Eaton Dam and Reservoir	405.31	P			I		P	I		I				E					
Eaton Canyon Creek	405.31	P			E		E	E		E				E	E		E		E
Arcadia Wash (lower)	405.41	P			I		P	I		P				P					
Arcadia Wash (upper)	405.33	P			I		P	I		P				P					
Santa Anita Wash (lower)	405.41	P			I		P	E		P				P	E				
Santa Anita Wash (upper)	405.33	P			E		E	E		E				E	E				
Little Santa Anita Canyon Creek	405.33	P			I		I	I		I				E					
Big Santa Anita Reservoir	405.33	P			E		P	E		E	E			E					

[16] Water Quality Control Plan, Los Angeles Region, California Regional Water Quality Control Board, Los Angeles Region, 1994, p. 2-10.

Table 1. Beneficial Uses of Surface Waters of the Los Angeles River, continued.

Surface Waters	Hydro Unit	MUN	IND	PROC	GWR	NAV	REC1	REC2	COMM	WARM	COLD	EST	MAR	WILD	RARE	MIGR	SPWN	SHELL	WET
Santa Anita Canyon Creek	405.33	E			E		E	E		E	E			E	E		E		E
Winter Creek	405.33	P			I		I	E		I				E					E
East Fork Santa Anita Canyon	405.33	P			E		E	E		E	E			E			E		E
Sawpit Wash	405.41	I			I		I	I		I				E					
Sawpit Canyon Creek	405.41	P			I		I	I		I				E	E				
Sawpit Dam and Reservoir	405.41	P			I		P	I		I				E					
Monrovia Canyon Creek	405.41	I			I		I	I		I				E					E
Arroyo Seco downstream Devil's Gate R. (L)	405.15	P					I	I		P				P					
Arroyo Seco downstream Devil's Gate R. (U)	405.31	P					I	I		P				P	E				
Devil's Gate Reservoir (L)	405.31	P			I		I	I		I				E					
Devil's Gate Reservoir (U)	405.32	I			I		I	I		I				E					
Arroyo Seco upstream Devil's Gate R.	405.32	E	E	E	E		E	E		E	E			E					E
Millard Canyon Creek	405.32	E	E	E	E		E	E		E				E	E				E
El Prieto Canyon Creek	405.32	I	I	I	I		I	I		I				E					
Little Bear Canyon Creek	405.32	P			I		I	I		I	I			E					E
Verdugo Wash	405.24	P			I		P	I		P				P					
Halls Canyon Channel	405.24	P	I	I	I		I	I		I				E					
Snover Canyon	405.32	I	I	I	I		I	I		I				E					
Pickens Canyon	405.24	I			I		I	I		I				E					
Shields Canyon	405.24	I	I	I	I		I	I		I				E					
Dunsmore Canyon Creek	405.24	I	I	I	I		I	I		I				E					

Table 1. Beneficial Uses of Surface Waters of the Los Angeles River, continued.

Surface Waters	Hydro Unit	MUN	IND	PROC	GWR	NAV	REC1	REC2	COMM	WARM	COLD	EST	MAR	WILD	RARE	MIGR	SPWN	SHELL	WET
Burbank Western Channel	405.21	P					P	I		P				P					
La Tuna Canyon Creek	405.21	P			I		I	I		I				E					
Tujunga Wash	405.21	P			I		P	I		P	P			P					
Hansen Flood Control Basin & Lakes	405.23	P			E		E	E		E	E			E	E				
Lopez Canyon Creek	405.21	P			I		I	I		I				E					
Little Tujunga Canyon Creek	405.23	P			I		I	E		I	I			E	E				
Kagel Canyon Creek	405.23	P			I		I	I		I				E					
Big Tujunga Canyon Creek	405.23	P			E		E	E		E	E			E	E		E		E
Upper Big Tujunga Canyon Creek	405.23	P			E		E	E		I	P			E					E
Haines Canyon Creek	405.23	P			I		I	I		I				E	E				
Vasquez Creek	405.23	P			E		E	E		P	P			E					E
Clear Creek	405.23	P			E		E	E		E	E			E					E
Big Tujunga Reservoir	405.23	P			E		P	E		E	P			E			E		
Mill Creek	405.23	P			E		E	E		E	E			E					E
Pacoima Wash	405.21	P			E		P	E		E				E	E				
Pacoima Reservoir	405.22	P			E		E	E		E				E					
Pacoima Canyon Creek	405.22	P			E		E	E		E	E			E	E		E		E
Stetson Canyon Creek	405.22	P			I		P	E		P				P					
Wilson Canyon Creek	405.22	P			I		E	E		I				E					
May Canyon Creek	405.22	P			I		I	E		I				E					
Sepulveda Flood Control Basin	405.21	P			E		E	E		E				E					E
Bull Creek	405.21	P			I		I	I		I				E					
Los Angeles Reservoir	405.21	E	E	E	P		P	E		E				E	E				
Lower Van Norman Reservoir	405.21	E	E	E	E		E	E		E				E	E				
Solano Reservoir	405.21	E					P			P				E					
Caballero Creek	405.21	P			I		I	I		I				E					
Aliso Canyon Wash and Creek	405.21	P			I		I	I		I				E					
Limeklin Canyon Wash	405.21	P			I		I	I		I				E					

Table 1. Beneficial Uses of Surface Waters of the Los Angeles River, concluded.

Surface Waters	Hydro Unit	MUN	IND	PROC	GWR	NAV	REC1	REC2	COMM	WARM	COLD	EST	MAR	WILD	RARE	MIGR	SPWN	SHELL	WET
Browns Canyon Wash and Creek	405.21	P			I		I	I		I				E					
Arroyo Calabasas	405.21	P					P	I		P				P					
McCoy Canyon Creek	405.21	P			I		I	I		I				E					
Dry Canyon Creek	405.21	P			I		I	I		I				E					
Bell Creek	405.21	P			I		I	I		I				E					
Chatsworth Reservoir	405.21	E	E	E			P	E		E				E					
Dayton Canyon Creek	405.21	P			I		I	I		I				E					
Echo Lake	405.15	P					P	E		P				E					
Lincoln Park Lake	405.15	P					P	E		P				E					

E: Existing beneficial use
P: Potential beneficial use
I: Intermittent beneficial use

BENEFICIAL USE CODES (see Basin Plan for more details):

MUN - Municipal and Domestic Water Supply
IND - Industrial Service Supply
PROC - Industrial Process Supply
GWR - Ground Water Recharge
REC1 - Water Contact Recreation
REC2 - Non-Contact Water Recreation
COMM - Commercial and Sport Fishing

WARM - Warm Freshwater Habitat
COLD - Cold Freshwater Habitat
EST - Estuarine Habitat
MAR - Marine Habitat
WILD - Wildlife Habitat
RARE - Rare, Threatened or Endangered Species
SPWN - Spawning, Reproduction, and/or Early Development
SHELL - Shellfish Harvesting
WET - Wetland Habitat

C. Water Quality Objectives

Water quality standards consist of a combination of beneficial uses, water quality objectives and the State's Antidegradation Policy. The narrative water quality objectives applicable to this TMDL are **floating materials***: "Waters shall not contain floating materials, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses*"[17] and **solid, suspended, or settleable materials:** "*Waters shall not contain suspended or settleable material in concentrations that cause nuisance or adversely affect beneficial uses*."[18] The States' Antidegradation Policy is formally referred to as the *Statement of Policy with Respect to Maintaining High Quality Waters in California* (State Board Resolution No. 68-16).

D. Impairment of Beneficial Uses

Existing beneficial uses impaired by trash in the Los Angeles River are contact recreation (REC 1) (contact sports: swimmers are spotted regularly in the Los Angeles River at Glendale Narrows and also at Willow Street in Long Beach) and non-contact recreation such as fishing (REC 2) (trash is aesthetically displeasing and deters recreational use and tourism); warm fresh water habitat (WARM); wildlife habitat (WILD); estuarine habitat (EST) and marine habitat (MAR); rare, threatened or endangered species (RARE); migration of aquatic organisms (MIGR) and spawning, reproduction and early development of fish (SPWN); Commercial and sport fishing (COMM); [19]Wetland Habitat (WET), and Cold freshwater habitat (COLD). These beneficial uses in the Los Angeles River are impaired by large accumulations of suspended and settled debris throughout the river system. The problem is even more acute in Long Beach where debris flushed down from the upper reaches of the river collects. Common items that have been observed by Regional Board staff include Styrofoam cups, Styrofoam food containers, glass and plastic bottles, toys, balls, motor oil containers, antifreeze containers, construction materials, plastic bags, and cans. Heavier debris can be transported during storms as well.

Reaches of the Los Angeles River that are impaired by trash, and listed on the 303(d) list for such, are Tujunga Wash (downstream Hansen Dam to Los Angeles River), Los Angeles River Reach 5 (within Sepulveda Basin), Los Angeles River Reach 4 (Sepulveda Dam to Riverside Dr.), Los Angeles River Reach 3 (Riverside Dr. to Figueroa St.), Los Angeles River Reach 2 (Figueroa St. to upstream Carson St.), Los Angeles River Reach 1 (upstream Carson St. to estuary), Burbank Western Channel, Verdugo Wash (Reaches 1 & 2), Arroyo Seco Reach 1 (downstream Devil's Gate Dam) & Reach 2 (W. Holly Ave. to Devil's Gate), and Rio Hondo Reach 1 (Santa Ana Fwy to Los Angeles River). In addition, Peck Road Lake, Echo Park Lake and Lincoln Park Lake are listed as impaired for trash.

Trash in waterways causes significant water quality problems. Small and large floatables can inhibit the growth of aquatic vegetation, decreasing spawning areas and habitats for fish and other living organisms. Wildlife living in rivers and in riparian areas can be harmed by ingesting or becoming entangled in floating trash. Except for large items such as

[17] Water Quality Control Plan ("Basin Plan"), p. 3-9.
[18] Ibid., pp. 3-16.
[19] Why did we delete this use? Shellfish harvesting is designated as potential for the estuary, and the estuary is listed for Trash. (MZ)

shopping carts, settleables are not always obvious to the eye. They include glass, cigarette butts, rubber, construction debris and more. Settleables can be a problem for bottom feeders and can contribute to sediment contamination. Some debris e.g. (diapers, medical and household waste, and chemicals) are a source of bacteria and toxic substances. Floating debris that is not trapped and removed will eventually end up on the beaches or in the open ocean, repelling visitors away from our beaches and degrading coastal waters.

A major trash problem experienced in the Los Angeles River Watershed contributes to a broader phenomena that affects ocean waters, as small pieces of plastic called "nurdles" (defined as pre-production virgin material from plastic parts manufacturers, as well as post-production discards that are occasionally recycled) float at various depths in the ocean and affect organisms at all levels of the food chain. As sunlight and UV radiation render plastic brittle, wave energy pulverizes the brittle material, with a subsequent chain of nefarious effects on the various filter feeding organisms found near the ocean's surface. Studies in the North Pacific indicate that both large floating plastic and smaller fragments are increasing. As a result of increased reports of resin pellet ingestion by aquatic wildlife and evidence that the ingested pellets are harming wildlife, the Interagency Task Force on Persistent Marine Debris (ITF) identified resin pellets, also know as plastic pellets, as a debris of special concern.[20] When released into the environment, these pellets either may float on or near the water surface, may become suspended at mid-depths, or may sink to the bottom of a water body. Whether a specific pellet floats or sinks depends on the type of polymer used to create the pellet, on additives used to modify the characteristics of the resin, and on the density of the receiving water.

A 1999 study of Marine Debris in the Mid-Pacific Gyre in an attempt to assess the potential effects of ocean particles on filter feeding marine organisms, collected plankton samples at various locations throughout the gyre. The results were stunning: the mass of plastic particles collected was six times higher than the mass of plankton (841 g/km^2), although the number of planktonic organisms (1,837,342/km^2) was five times the number of plastic pieces. The distribution of the sampling points allows one to assume that these number can be safely extrapolated to the breadth of the Mid-Pacific Gyre. A remarkable finding was that the number of particles did not increase in successively smaller size classes as expected, indicating there may be non-selective removal by mucus web-feeding jellies and salp. In this study, the most common type of identifiable particle, thin plastic film, accounted for 29% of the total. Many birds will die from ingesting this non-nutritive plastic.[21]

The prevention and removal of trash in the Los Angeles River ultimately will lead to improved water quality and protection of aquatic life and habitat, expansion of opportunities for public recreational access, enhancement of public interest in the rivers and public participation in restoration activities, and propagation of the vision of the river as a whole and enhancement of the quality of life of riparian residents.

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[20] US Environmental Protection Agency (US EPA) (1992) **Plastic Pellets in the Aquatic Environment: Sources and Recommendations.**

[21] Moore, C.J. et al. **Marine Debris in the North Pacific Gyre, 1999, with a Biomass Comparison of Neustonic Plastic and Plankton**. (in preparation)

E. Extent of the Trash Problem in the Los Angeles River

Trash is a water quality problem throughout the Los Angeles River. The Regional Board has determined that current levels of trash exceed the existing Water Quality Objectives necessary to protect the beneficial uses of the river.

For many years, Los Angeles County and other cities have recognized that trash is a problem.[22] The Los Angeles County Department of Public Works is reporting a "30% decrease in roadway trash on unincorporated County roads and a 50% decrease in trash entering catchbasins since adoption of the current National Pollutant Discharge Elimination System (NPDES) Permit".[23] However, trash in the Los Angeles River continues to be a serious problem.

Every city in the watershed agrees that the amount of trash found in the waterways is excessive, and that trash is found in all reaches of the river from Calabasas to Long Beach, and in all tributaries. Although the Regional Board has not yet received the data that the Los Angeles County Department of Public Works used for its findings, Regional Board staff regularly observe trash in the waterways of this watershed. Non-profit organizations such as Heal the Bay, Friends of the Los Angeles River (FoLAR) and others, organize volunteer clean-ups periodically, and document the amount of trash that was removed on such days, but these data do not indicate how long the trash had been accumulating at that particular site, only the amount that was picked up by the volunteers on a given day.

For example, at Coastal Clean-up Day in 1996, 26,300 lbs of trash were collected in Los Angeles County. During the September 18, 1999, California Coastal Clean up organized by Heal the Bay, a total of 60,711 lbs of trash were collected.[24]

At a clean-up organized during the Sacred Music Festival on Saturday, October 16, 1999, between Los Feliz Boulevard and Fletcher Drive over a distance of slightly under 1.5 miles, eleven shopping carts and six 40-gallon bags of trash were removed (see Figure C). However, this was not the total amount of trash on site, as Regional Board staff noticed more shopping carts and more trash on the same site the very next afternoon.[25] Meanwhile, the purpose of volunteer clean-ups is to visibly clean the river and its banks, not to quantify debris. As a result, it is likely that some of the debris collected during those events are not recorded. In addition, volunteers traditionally focus on larger, more visible debris to the exclusion of smaller debris which are commonly encountered, such as cigarette butts.

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[22]See comments from Los Angeles County, Agoura Hills, Artesia, Beverly Hills, Hermosa Beach, Hidden Hills, Carson, Diamond Bar, La Habra Heights, La Mirada, La Puente, Monrovia, Norwalk, Rancho Palos Verdes, Rolling Hills, San Fernando, San Marino, West Hollywood, Westlake Village, and the Executive Advisory Committee (Stormwater Program - Los Angeles County) on behalf of all the Los Angeles County cities, submitted in response to the first draft of this Trash TMDL for the Los Angeles River Watershed.
[23]Comment letter from County of Los Angeles, Department of Public Works, May 15, 2000, p. 1.
[24] Alix Gerosa, Heal the Bay, November 22, 1999.
[25] Trash observed by Regional Board staff on October 17, 1999, included mixed polystyrene waste (cups, plates and others), plastic bags, cement, sound boards, large clutters of cigarette butts, disposable plastic glass lids, aluminum wrappers, balloons, medications, plastic bottles, clothing, books, and aerosol paint cans.

Figure C. Trash waiting for pick-up at Los Feliz Boulevard after the Sunday, October 16, 1999 river clean-up.

Several studies which attempted to quantify trash generated from discreet areas have been completed, but they concern relatively small areas, or relatively short periods, or both. The findings of some of these studies are discussed below.

The City of Calabasas cleaned out the Continuous Deflective Separation (CDS) Unit they had installed in December of 1998, on September 28, 1999. This CDS unit, located in Calabasas at the intersection of Las Virgenes Road and Agoura Road, collects trash from the runoff of a small storm drain, as well as part of the runoff from Calabasas Park Hills (Santa Monica Mountains), and eventually empties to Las Virgenes Creek. It is assumed that this CDS unit prevented all trash from passing through. The calculated area drained by this CDS Unit, as provided to the Regional Board by Los Angeles County Department of Public Works staff, amounts to 12.8 square miles. The urbanized area was estimated by Regional Board staff to amount to 0.10 square miles of the total area. The result of this clean-out, which represents approximately half of the 1998-1999 rainy season, was 2,000 gallons of sludgy water and a 64-gallon bag about two-third full of plastic food wrappers. It is assumed that part of the trash that accumulated in the CDS unit over roughly half of the rainy season had decomposed in the unit, hence the absence of paper products. Given the CDS unit was cleaned out after slightly more than nine months of use, it was assumed that this 0.10 square mile urbanized area produced a volume of 64 gallons of trash over one year. This datum will be used as the default value for the implementation plan. Although other studies are informative, studies currently available to the Regional Board provide insufficient data and could not be applied directly to establishing trash generation rates.

The City of Los Angeles conducted an Enhanced Catch Basin Cleaning Pilot Project in compliance with a consent decree between the United States Environmental Protection Agency, the State of California, and the City of Los Angeles. The project goals were to determine debris loading rates, characterize the debris, and find an optimal cleaning schedule through enhancing catch basin cleaning. The project evaluated trash loading at two drainage basins:

-The Hollywood Basin (1,366 acres and 793 catch basins) includes much of Hancock Park and is mostly residential with some commercial and open space, and no industrial land;
-The Sawtelle Basin (2,267 acres and 502 catch basins) includes residential areas with some commercial, industrial and transportation-related uses, and some open space.

The catch basins are inlet structures without a sump below the level of the outlet pipe to capture solids and trash washed down by the stormwater.[26] These inlets also collect trash, grass clippings and animal wastes during dry weather. Catch basins were cleaned 3-4 times from March 1992 to December 1994 and yielded approximately 0.79 yd^3 (160 Gal) of debris per cleaning (Sawtelle – 1.04 yd^3 (210 Gal) and Hollywood – 0.61 yd^3 (123 Gal)), characterized as paper (26%), plastic wastes (10%), soil (33%), and yard trimmings (31%).

The study also observed that the amount of plastic waste was less in residential areas and greater in non-residential areas, that paper waste was greater in commercial areas, and that soil and yard waste was greater in residential areas and open spaces.[27]

Long Beach collects large amounts of trash at the mouth of the Los Angeles River, as much of the trash carried down the Los Angeles River ends up at the river's mouth in Long Beach. Debris tonnage at the mouth of the Los Angeles River is listed in Table 2.

Table 2. Storm Debris Collection Summary for Long Beach: Debris is measured in Tonnage.[28]

	First Quarter (July-Sept.)	Second Quarter (Oct.-Dec.)	Third Quarter (Jan.-March)	Fourth Quarter (April-June)	Total
1995-96	73[29]	344	3,100	645	4,162
1996-97	350	2,361	601	681	3,993
1997-98	647	3,650	4,016	977	9,290
1998-99	565	720	532	1,274	3,091

IV. Numeric Target

The numeric target is 0 (zero) trash in the water. The numeric target is staff's interpretation of the narrative water quality objective, including an implicit margin of safety. Although a substantial number of comments were received in response to the March 17, 2000 Draft TMDL, no information was provided to justify any other number that would fully support the designated beneficial uses. The numeric target was used to calculate the Waste Load Allocations as described in the Implementation Plan (see Section VIII.)

[26] Such structures are usually termed *catchments*, but the term *catch basin* is used throughout Southern California. The absence of flow during dry weather allows trash to collect at the inlet. (Phone conversation with Wing Tam, City of Los Angeles, November 10, 1999.)
[27] This information and all of the above concerning the City of Los Angeles Enhanced Catch Basin Cleaning was found in: City of Los Angeles Department of Public Works, Bureau of Sanitation: Consent Decree Report, Enhanced Catch Basin Cleaning, April 1999. (Unpublished report.)
[28] City of Long Beach Memorandum from Geoffrey Hall, Parks, Recreation and Marine, to Ed Putz, City Engineer.
[29] 9/95 only.

V. Source Analysis

The major source of trash in the river results from litter, which is intentionally or accidentally discarded in watershed drainage areas. Transport mechanisms include the following:

1. Storm drains: trash is deposited throughout the watershed and is carried to the various reaches of the river and its tributaries during and after significant rainstorms through storm drains.

2. Wind action: trash can also blow into the waterways directly.

3. Direct disposal: direct dumping also occurs.

Extensive research has not been done on trash generation or the precise relationship between rainfall and its deposition in waterways. However, it has been found that the amount of gross pollutants entering the stormwater system is rainfall dependent but does not necessarily depend on the source (Walker and Wong, December 1999). The amount of trash which enters the stormwater system depends on the energy available to re-mobilize and transport deposited gross pollutants on street surfaces rather than on the amount of available gross pollutants deposited on street surfaces. The exception to this finding of course would be in the event that there is zero gross pollutants deposited on the street surfaces or other drainages tributary to the storm drain. Where gross pollutants exist, a clear relationship between the gross pollutant load in the stormwater system and the magnitude of the storm event has been established. The limiting mechanism affecting the transport of gross pollutants, in the majority of cases, appears to be re-mobilization and transport processes (i.e., stormwater rates and velocities).

Several studies conclude that urban runoff is the dominant source of trash. The large amounts of trash conveyed by urban storm water to the Los Angeles River is evidenced by the amount of as trash that accumulates at the base of storm drains. The amount and type of trash that is washed into the storm drain system appears to be a function of the surrounding land use.

A number of studies (Walker and Wong, 1999, Allison, 1995), have shown that commercial land-use catchments generate more pollutants than residential land use catchments, and as much as three times the amount generated from light industrial land use catchment. It is generally accepted that commercial land uses tend to contribute larger loads of gross pollutants per area compared to residential and mixed land-use areas. This is in spite of daily street sweeping in the commercial sub-catchment compared to once every two weeks in residential and mixed land use areas.

VI. Waste Load Allocations

Storm drains have been identified as a major source of trash in the Los Angeles River. The strategy for meeting the water quality objective will focus on reducing the trash discharged via municipal storm drains.

Waste Load Allocations will be assigned to the Permittees and Co-permittees of the Los Angeles County Municipal Stormwater Permit (hereinafter referred to as Permittees) and Caltrans. In addition, Waste Load Allocations may be issued to additional facilities in the future under Phase II of the US EPA Stormwater Permitting Program. Waste Load Allocations assigned under the MS4 permit and the Caltrans permit will be based on a phased reduction from the estimated current discharge (i.e., baseline) over a 10-year period until the final Waste Load Allocation (currently set at zero) is met. The baseline allocation for the MS4 Permittees and Co-permittees (referred to hereinafter as the "Permittees") will be derived from currently available data (i.e., default baseline allocations) or refined data collected during the Baseline Monitoring Program.

Upon completion of the baseline monitoring, staff shall report to the Board the results of such baseline monitoring. The Regional Board will review the final Waste Load Allocations once a reduction of 50% has been achieved. This means that the final Waste Load Allocation will be reviewed only after substantial reductions are achieved. A review of the Waste Load Allocation will be based on the findings of future studies regarding the threshold levels needed for protecting beneficial uses. The threshold level is presumed to be specific to all categories of trash.

A. Default Baseline Waste Load Allocation

The Default Baseline Waste Load Allocation for the municipal stormwater permittees is equal to 640 gallons of uncompressed trash per square mile per year. No differentiation will be applied for different land uses in the Default Baseline Waste Load Allocation. This value is based on data provided by the City of Calabasas, as described previously. In the event that the permittees elect to rely on the Default Baseline Waste Load Allocation, they must first establish a conversion factor translating uncompressed volume to a standardized compacted volume and/or dry weight. The final Default Baseline Waste Load Allocation, as described in compressed volume and/or dry weight, will be specified in the stormwater permit.

B. Refined Baseline Waste Load Allocations

The municipal stormwater permittees may opt to seek refinement of the Default Baseline Waste Load Allocation by implementing an approved "Baseline Monitoring Plan," as described in Section VII. The goal of the Baseline Monitoring program is to derive a representative trash generation rate for various land uses from across the Los Angeles River watershed. The Baseline Waste Load Allocation for any single city will be the sum of the products of each land use area multiplied by the Waste Load Allocation for the land use area, as shown below:

$$LA = \sum for\, each\, city \left(area\, by\, land\, uses \bullet allocations\ for\, this\, land\, use \right)$$

The urban portion of the Los Angeles River watershed was divided into twelve types of land uses for every city and unincorporated area in the watershed. Similar land use classifications already exist on the land use maps used by L.A. County Department of Public

Works to assess the generation of certain pollutants by land use.[30] The land use categories are: (1) high density residential[31], (2) low density residential[32], (3) commercial and services, (4) industrial, (5) public facilities[33], (6) educational institutions[34], (7) military installations, (8) transportation[35], (9) mixed urban[36], (10) open space and recreation[37], (11) agriculture[38], and (12) water[39]. Given that the minimum mapping resolution is 2.5 acres, a non-critical land use unit may not be mapped if it is less than 2.5 acres in size[40].

The appendix contains a table which shows the square mileage for each land use for each city and unincorporated areas in the watershed, and a list of maps showing land uses for each city. Unincorporated areas include areas such as Altadena, East Compton, East Los Angeles, East Pasadena, East San Gabriel, Florence, La Crescenta, Mayflower Village, North El Monte, South San Gabriel, Walnut Park, Westmount and Willowbrook. For cities that are only partially located on the watershed, the square mileage indicated is for the part of this city that is in the watershed only.

Land uses that are not under municipal jurisdiction, such as military installations, will be dealt with through separate permits, and will thus be monitored separately.

Each permittee will be allowed 90% of their baseline Waste Load Allocation during the first year of implementation, and the allocation will be reduced from the baseline by an average 10% through every year of implementation.

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[30] The land use classification was developed by Aerial Information Systems as a modified Anderson Land Use Classification and originally included 104 categories. The land use coverages were donated for GIS library use by Southern California Association of Governments (SCAG), and show land use for 1990 and for 1993. The coverages were mapjoined into a single coverage by Teale Data Center. The Regional Board layers were aggregated from the TDC coverage into the land uses shown above.

[31] High Density Residential includes High Density Single Family Residential and all Multi Family Residential, Mobile Homes, Trailer Parks and Rural Residential High Density.

[32] Under 2 units per acre.

[33] These include government centers, police and sheriff stations, fire stations, medical health care facilities, religious facilities large enough to be distinguished on an aerial photograph, libraries, museums, community centers, public auditoriums, observatories, live indoor and outdoor theaters, convention centers which were built prior to 1990, communication facilities, and utility facilities (electrical, solid waste, liquid waste, water storage and water transfer, natural gas and petroleum).

[34] Preschools and daycare centers, elementary schools, high schools, colleges and universities, and trade schools, including police academies and fire fighting training schools.

[35] Airports, railroads, freeways and major roads (that meet the minimum mapping resolution of 2.5 acres), park and ride lots, bus terminals and yards, truck terminals, harbor facilities, mixed transportation and mixed transportation and utility.

[36] Mixed commercial, industrial and/or residential, and areas under construction or vacant in 1990.

[37] Golf courses, local and regional parks and recreation, cemeteries, wildlife preserves and sanctuaries, botanical gardens, beach parks.

[38] Orchards and vineyards, nurseries, animal intensive operations, horse ranches.

[39] Open water bodies, open reservoirs larger than 5 acres, golf course ponds, lakes, estuaries, channels, detention ponds, percolation basins, flood control and debris dams.

[40] Critical land uses were mapped regardless of resolution limits. Critical land use units below 1 acre in size were mapped as 1-acre units.

C. Baseline Waste Load Allocations for Caltrans

A Litter Management Pilot Study (LMPS)[41] was conducted to evaluate the effectiveness of several litter management practices in reducing litter that is discharged from Caltrans storm water conveyance systems. The LMPS employed four field study sites, each of which was used to test a separate BMP. Each site included three replicate testing pairs, consisting of one site designed to measure the amount of trash produced when treatment was applied, and one control with no treatment site. The LMPS averages the data collected at the control outfalls in order to obtain the annual litter loads. The average combined total loads for the three control outfalls at each site normalized by the total area of control catchments is presented in the following table, adapted from the LMPS report[42]:

Table 3. Average Combined Total Loads for Control Outfalls at 3 Litter Management Pilot Study (LMPS) Sites.

Site	Weight lbs/sq mi	Volume cu ft/sq mi
1E	10584.00	1312.97
1W	7479.36	971.73
6	7479.36	881.34
8	4374.72	404.51

A preliminary baseline Waste Load Allocation for weight and volume load generation for freeways is arrived at by averaging weight and volume columns. (see Table 4.)

Table 4. A Preliminary Baseline Waste Load Allocation for Weight and Volume for Freeways.

Weight lbs/sq mi	Volume cu ft/sq mi
7479.36	892.64

This is a default allocation which can be refined through baseline monitoring following the protocol previously indicated for baseline monitoring. It is to be noted that control site 1E already had one BMP in place before testing of the other BMPs, as it was cleaned monthly through an "Adopt a Highway" program.

Average Annual Daily Traffic (AADT) for all control sites in the study ranged from 216,000 to 238,000.[43] Considering AADT on Los Angeles County freeways may be close to 300,000 on some sections[44], the chosen sites, although typical freeway outfalls, are not distributed throughout the whole AADT range. As the purpose of the study was to assess the effectiveness of specific BMPs, not to assess a trash generation factor, sites were chosen with similar characteristics.

[41] California Department of Transportation District 7 Litter Management Pilot Study, June 2000. This study defined litter in stormwater as "manufactured items that can be retained by ¼-inch mesh made from paper, plastic, cardboard, etc.", and "that are not of natural origin (i.e. does not include sand, soil, gravel, vegetation, etc.)" (p. 1-2).
[42] Ibid., Table 6-8.
[43] Ibid., Table 6-8.
[44] Information on AADT on select freeways can be found on Caltrans' website: http://www.caltrans.ca.gov/.

D. Baseline Waste Load Allocations for Municipal Permittees

Watershed wide default allocations for the ten-year implementation period are presented in Table 5. The default annual baseline Waste Load Allocation for the municipal permittees is 49,124.6 cubic feet (expressed as uncompressed volume) and 7,944 cubic feet for Caltrans.[45] The Waste Load Allocations represent a progressive reduction in the baseline Waste Load Allocation over a period of 10 years. The volumes shown, in cubic feet, are in uncompressed volumes, but in the event that the permittees elect to rely on the default baseline Waste Load Allocations, this unit of measure will be converted to an equivalent unit expressed in cubic yards based on a standardized compaction rate or dry weight.

Table 5. Default Waste Load Allocations. (Expressed as cubic feet of uncompressed trash and % reduction.)[46]

Year of Implementation[47]	Municipal Stormwater Default Waste Load Allocation
Year One	44,212.1 or 90% of the baseline load
Year Two	39,299.7 or 80% of the baseline load
Year Three	34,387.2 or 70% of the baseline load
Year Four	29,474.8 or 60% of the baseline load
Year Five	24,562.3 or 50% of the baseline load
Year Six	19,649.8 or 40% of the baseline load
Year Seven[48]	14737.4 or 30% of the baseline load
Year Eight	9,824.9 or 20% of the baseline load
Year Nine	7 4,912.5 or 10% of the baseline load
Year Ten	0 or 0% of the baseline load

VII. Baseline Monitoring

The goal of the Baseline Monitoring Program is to collect representative data from across the watershed that can be used to refine the default Waste Load Allocations. Two Baseline Monitoring Strategies are outlined herein. The first is the program presented in the March 17, 2000, draft document. The second is an Alternative Baseline Monitoring Program based on a plan presented by the Los Angeles County, Department of Public Works, in a

45 Based on a default baseline load allocation of 86 cubic feet per square mile for the municipal permittees and 893 cubic feet per square mile for Caltrans.
46 Table has been simplified to show default watershed wide allocations for permittees only.
47 Year of implementation subsequent to the two-year baseline monitoring program.
48 A review of the current target will be allowed once a reduction of 50% has been achieved and sustained.

letter dated August 30, 2000. Baseline monitoring will be required via Section 13267 of the Porter-Cologne Water Quality Control Act (hereinafter referred to as "Porter-Cologne").

A number of permittees objected to the Baseline Monitoring Plan as presented in the March 17, 2000, Draft TMDL. Most of the objections were based on the cost of employing full-capture monitoring systems across 10% of the watershed. In addition, finding a watershed that drains a single land use also was problematic. In an effort to arrive at a less costly plan that would still provide representative data sufficient for use in deriving Baseline Waste Load Allocations, the Los Angeles County Department of Public Works convened a committee of the municipal permittees to evaluate alternative strategies. Regional Board staff met with the committee on nine occasions to establish the minimum requirements for an Alternative Baseline Monitoring Plan and to review various strategies. The minimum requirements established were:

- The plan would provide representative data from across the watershed.
- The plan would provide data in units that were easily reproduceable and would be comparable with data to be collected during the Implementation Phase (i.e., we would be comparing apples with apples).
- The permittees agreed that Baseline Waste Load Allocations would be derived from data generated from the plan.

One issue of concern was whether representative data could be collected if rainfall was below normal during the Baseline Monitoring period. Staff has addressed this concern by specifying that the Permittees may elect to continue the Baseline Monitoring for an additional two years. However, the Implementation Schedule will not be delayed as a result of the extended Baseline Monitoring.

A. Land Use Areas to be Monitored

Monitoring data will be used to establish specific trash generation rates per land use. Thus, all monitoring will be designed according to land use. Some of the land uses will be monitored by the Los Angeles County Department of Public Works (LACDPW), possibly in association with the cities located on the Los Angeles River watershed, while other land uses which are outside the jurisdiction of the municipalities, such as airports, will be monitored using similar methods by the appropriate permittees, and the resulting baseline monitoring results will then be applied as these entities are permitted under EPA Phase II Storm Water regulations. City and County streets are included in each land use as they are monitored.

The land use categories that will be monitored by the LACDPW baseline monitoring group (in order to determine land use based generation rates) are:

- High density residential,
- Low density residential,
- Commercial and services,
- Industrial, and
- Open space and recreation.

Certain land uses will be exempt from monitoring:

- public facilities,
- mixed urban,
- agriculture, and
- water.

Public facilities (except educational institutions) will not be monitored because their diversity makes it difficult to obtain a representative generation rate. Thus, their generation rate will be assumed to be the highest between residential, commercial and industrial.

Mixed urban will not be monitored, instead the generation rate for mixed urban will again be assumed to be the highest between residential, commercial and industrial.

Agricultural land uses will be exempt from monitoring because they represent such a small percentage of the total watershed. The assigned generation rate will be that of the geographically closest land use.

Water will be exempt from monitoring because it is not considered a generator of trash.

Transportation land use, as defined by the Regional Board, includes airports, railroads, freeways and major roads (that meet the minimum mapping resolution of 2.5 acres), park and ride lots, bus terminals and yards, truck terminals, harbor facilities, mixed transportation and mixed transportation and utilities. Of that land use, what is under Caltrans' jurisdiction will be covered under Caltrans' permit. Caltrans will be required to submit a monitoring plan for that land use, and will be assigned a Waste Load Allocation as well. Major boulevards that are currently under Caltrans' jurisdiction, but are affected by trash generated on municipal sites, such as Santa Monica Boulevard, will be addressed by the cities concerned. Baseline monitoring for airports will be done separately and airports will be permitted separately, so the Regional Board will require that the Burbank-Glendale-Pasadena airport submit a separate monitoring program.

Under EPA Phase II of the Storm Water Regulations, separate permits will be written for state and federal facilities. Thus, public educational institutions and military installations will be covered under separate permits under Phase II. Again, these entities covered under separate permits will have to conduct baseline monitoring as well in order to arrive at a trash generation factor. Private education facilities, however, are under cities' jurisdiction and are part of the city. Thus, private educational institutions will be assigned the rate of the geographically closest land use.

Each of the permittees and co-permittees are responsible for monitoring land uses within their jurisdiction. However, monitoring responsibilities may be delegated to a third-party monitoring entity such as LACDPW, or other permittees or co-permittees as appropriate.

B. General Baseline Monitoring Plan Requirements

The following general requirements will apply during Baseline Monitoring, regardless of the monitoring plan employed.

- Monitoring Plan. The permittee will submit a monitoring plan with the proposed monitoring sites and at least two alternate monitoring locations for each site. The plan must include maps of the drainage and storm drain data for each proposed and alternate monitoring location. The monitoring plan(s) will be submitted to the Regional Board within 30 days after receipt of the Executive Officer's letter requesting such a plan. Such a request is authorized pursuant to Section 13267 of the Porter-Cologne. The Regional Board's Executive Officer will have full authority to review the monitoring plan(s), to modify the plan, to select among the alternate monitoring sites, and to approve or disapprove the plan(s).

- Jurisdiction. While each city, and Los Angeles County for non-incorporated areas, will receive an allocation based on the trash generation factors for its land uses, the areas not regulated under municipal or industrial storm water permits may be permitted separately. For this reason, each city must provide the Regional Board with a list of entities located within their municipal boundaries that are outside of their jurisdiction including state or federal lands and facilities, within 120 days of the effective date of this TMDL. The Regional Board will review the lists of state and federal entities and issue permits as warranted.

- Data Collection. Baseline data will be collected over a period of at least two years. Although the amount of trash deposited into the waterways through the conveyance of a storm drain is dependent on rainfall patterns, and larger amounts of trash are typically deposited into the channels as a result of the first storm of the season, monitoring will include dates in both the rainy season and the dry season. The Los Angeles County Department of Public Works defines the rainy season as spanning from October 15 to April 15. In the event that precipitation during the two years of Baseline Monitoring is below average, the permittees may elect to extend the monitoring plan for another two years. However, an extension of the Baseline Monitoring program, shall not cause a delay in the commencement of the Implementation Plan as described in Section VIII.

- Unit of Measure. Data will be reported in a single unit of measure that is reproduceable and measures the amount of trash, irrespective of water content (e.g., compacted volume based on a standardized compaction rate, dry weight, etc.). The permittees may select the unit, but all permittees must use the same unit of measure. The unit of measure used during Baseline Monitoring also will be used during Implementation for determining compliance with Waste Load Allocations.

- Sampling Frequency. During wet weather, all sampling devices will be emptied within 72 hours of every precipitation event of 0.25 inch. During dry weather, sampling devices will be emptied and analyzed every three months in the absence of precipitation.

- Vegetation. The permittees may exclude vegetation from their reported discharge except where there is evidence that the vegetation is the result of the illegal discharge of yard waste. However, all monitoring data must be reported uniformly (either with or without vegetation). If the permittees include vegetation in the discharges reported during Baseline Monitoring, they will be obligated to include natural vegetation in their reports of discharge during Implementation.

- Disposal of Collected Trash. Trash captured during the monitoring program must be disposed of in accordance with all applicable laws and regulations.

A summary of the requirements and milestone dates related to the Baseline Monitoring Program are summarized in Table 6.

Table 6. Baseline Monitoring Plan Due Dates.

30 days after receipt of the Executive Officer's request as authorized by Section 13267 of Porter-Cologne.	Submit baseline monitoring plan(s).
120 days after receipt of the Executive Officer's request as authorized by Section 13267 of Porter-Cologne.	List facilities that are outside of the permittee's jurisdiction but drain to a portion of the the permittee's storm drain system, which discharges to the Los Angeles River.
First 2 years after approval of this amendment; to be extended to 4 years at the option of the Permittees	Collect Baseline Data
72 hours after each rain event	Clean out and measure trash retained
Every 3 months during dry weather	Clean out and measure trash retained

C. Baseline Monitoring Plan

During the first year of baseline monitoring, permittees or groups thereof will capture and quantify trash from an area of no less than 10% of the total land area over which they have jurisdiction and that drains to the Los Angeles River. The monitoring areas will also represent 10% of every land use the group has jurisdiction over. If storm drain configuration vs. land use make the representation of 10% of a land use unfeasible, the permittees or groups thereof can choose areas that their land uses as representatively as possible, as long as the extent of the surface being monitored represents 10%.

For the purposes of developing monitoring data for the establishment of Waste Load Allocations, the Regional Board will accept "full capture" as defined in Section II herein. This level of treatment will capture 100% of the trash mobilized by a one-year storm and nearly all of the trash generated from a more intense storm. This is because most pollutants occur in the first flush of the runoff and would thus be intercepted by a structural treatment device prior to the crest of the runoff flow resulting from a more intense storm.

D. Alternative Baseline Monitoring Plan

For each land use monitored, a minimum of ten representative sites will be sampled. For each sampling site, a minimum of five catch basins will be fitted with inserts, for a total of not less than 50 catch basin inserts per land use monitored. The existing litter removal practices that are employed by the cities will remain in place, so that baseline monitoring will evaluate how much trash is washed into the system under current practices.

In addition, the Regional Board will require a structural, full capture device downstream of at least one sampling site for each land use monitored. For this sampling site, all of the catch basins that are upstream of the full capture-monitoring device must be fitted with inserts. This configuration will provide information on the relative effectiveness of the catch basin inserts as opposed to the full capture systems in varying land uses and under varying weather conditions.

VIII. Implementation and Compliance

As required by the Clean Water Act, discharges of pollutants to surface waters from storm water are prohibited, unless the discharges are in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit. Discharge of trash to the Los Angeles River will be regulated via the Municipal NPDES Storm Water Permits and the Caltrans stormwater permit. In addition, USEPA Phase II stormwater permits, general permits, and industrial permits may also be used to regulate discharges of trash to the river.

In June 1990, the first Municipal NPDES Storm Water Permit was issued jointly to Los Angeles County and 84 cities as co-permittees. A separate NPDES Storm Water Permit was issued to the City of Long Beach on June 30, 1999. Storm water municipal permits will be one of the implementation tools of this Trash TMDL, and will include the allocations as effluent limits. Thus, future storm water permits will be modified to incorporate the Waste Load Allocations and to address monitoring and implementation of this TMDL.

A. Compliance Determination

During the Baseline Monitoring Program that occurs prior to the commencement of the Implementation Phase, cities will be deemed in compliance with the Waste Load Allocations provided that all of the trash collected during the monitoring program is disposed of in compliance with all applicable regulations. Thereafter, compliance with the Waste Load Allocations will be calculated as a running three-year average. Other measures of compliance will relate to the implementation and reporting as required under the approved Baseline Monitoring Program.

The first compliance point during the Implementation Phase will be September 30, 2006. Compliance will be evaluated based on the total load discharged to the river during the period October 1, 2003 through September 30, 2006, divided by three. Compliance thereafter will be evaluated at the end of each successive storm season and will be based on a rolling three-year average (see Table 7). This method will provide allowances for variability due to rainfall. Exceedance of the 3-year rolling average discharge will subject the permittee to enforcement action. A summary of the schedule for determining compliance with the Waste Load Allocations is presented in Table 7.

The final waste load allocation will be considered complied with when the Executive Officer finds that: Structural devices or systems and/or institutional controls have removed effectively 100% of the trash from the storm drain system discharge to Los Angeles River or its tributaries.

Table 7. Compliance Schedule.
(Default waste load allocations expressed as cubic feet of uncompressed trash and % reduction.)

Year	Baseline Monitoring/ Implementation	Waste Load Allocation	Compliance Point
1	Baseline Monitoring	No allocation specified. Trash will be reduced by levels collected during the baseline monitoring program.	Achieved through timely compliance with baseline monitoring program.
2	Baseline Monitoring	No allocation specified. Trash will be reduced by levels collected during the baseline monitoring program.	Achieved through timely compliance with baseline monitoring program.
3 10/1/03-- 9/30/04	Baseline Monitoring (optional)/ Implementation: Year 1	90% (44,212.1 for the Municipal permittees, 7150.0 for Caltrans)	No compliance point (target of 90%).
4 10/1/04-- 9/30/05	Baseline Monitoring (optional)/ Implementation: Year 2.	80% (39,299.7 for the Municipal permittees, 6,355.6 for Caltrans)	No compliance point (target of 80%).
5 10/1/05-- 9/30/06	Implementation: Year 3	70% (34,387.2 for the Municipal permittees, 5,561.1 for Caltrans)	Compliance is 80% of the baseline load calculated as a rolling 3-year annual average (39,299.7 for the Municipal permittees, 6,355.6 for Caltrans).
6 10/1/06-- 9/30/07	Implementation: Year 4	60% (29,474.8 for the Municipal permittees, 4,766.7 for Caltrans)	70% of the baseline load the baseline load calculated as a rolling 3-year annual average (34,387.2 for the Municipal permittees, 5,561.1 for Caltrans).
7 10/1/07-- 9/30/08	Implementation: Year 5	50% (24,562.3 for the Municipal permittees, 3,972.2 for Caltrans)	60% of the baseline load calculated as a rolling 3-year annual average (29,474.8 for the Municipal permittees, 4,766.7 for Caltrans).
8 10/1/08-- 9/30/09	Implementation: Year 6	40% (19,649.8 for the Municipal permittees, 3,177.8 for Caltrans)	50% of the baseline load calculated as a rolling 3-year annual average (24,562.3 for the Municipal permittees, 3,972.2 for Caltrans).
9 10/1/09-- 9/30/10	Implementation: Year 7	30% (14,737.4 for the Municipal permittees, 2,383.3 for Caltrans)	40% of the baseline load calculated as a rolling 3-year annual average (19,649.8 for the Municipal permittees, 3177.8 for Caltrans).
10 10/1/10-- 9/30/11	Implementation: Year 8	20% (9,824.9 for the Municipal permittees, 1,588.9 for Caltrans)	30% of the baseline load calculated as a rolling 3-year annual average (14,737.4 for the Municipal permittees , 2,383.3 for Caltrans).
11 10/1/11-- 9/30/12	Implementation: Year 9[49]	10% (4,912.5 for the Municipal permittees, 794.4 for Caltrans)	20% of the baseline load calculated as a rolling 3-year annual average (9,824.9 for the Municipal permittees, 1,588.9 for Caltrans).
12 10/1/12-- 9/30/13	Implementation: Year 10	0 or 0 % of the baseline load.	10% of the baseline load as determined calculated as a rolling 3-year annual average (4,912.5) for the Municipal permittees, 794.4 for Caltrans).
13 10/1/13-- 9/30/14	Implementation: Year 11	0 or 0 % of the baseline load.	3.3 % of the baseline load as determined calculated as a rolling 3-year annual average (1,621.1 for the Municipal permittees, 262.2 for Caltrans) .
14 10/1/14-- 9/30/15	Implementation: Year 12	0 or 0 % of the baseline load.	0 or 0 % of the baseline load.

[49] A review of the current target will be allowed once a reduction of 50% has been achieved and sustained.

B. Compliance Strategies

Permittees may employ a variety of strategies to meet the progressive reductions in their Waste Load Allocations. These strategies may be broadly classified as either:

- End-of-pipe full capture structural controls or
- Partial capture control systems and/or
- Institutional controls.

A permittee could comply with the successive reduction in Waste Load Allocations by installing full capture devices progressively throughout the watershed until all of the outlets to the Los Angeles River system are covered. This approach may be best suited for open space areas, where low levels of trash may accumulate over large vegetated drainage areas. However, in more urban settings, institutional controls including enforcement of litter laws and more frequent street sweeping may be preferred.

It is to be noted that ordinances that prohibit litter are already in place in most cities. For example, the Los Angeles City Code of Regulations recognizes that trash becomes a pollutant in the storm drain system when exposed to storm water or any runoff and prohibits the disposal of trash on public land:

> No person shall throw, deposit, leave, cause or permit to be thrown, deposited, placed, or left, any refuse, rubbish, garbage, or other discarded or abandoned objects, articles, and accumulations, in or upon any street, gutter, alley, sidewalk, storm drain, inlet, catch basin, conduit or other drainage structures, business place, or upon any public or private lot of land in the City so that such materials, when exposed to storm water or any runoff, become a pollutant in the storm drain system. (City Code of Regulations, §64.70.02.C.1(a).)

Institutional controls provide several advantages over structural full capture systems. Foremost, institutional controls offer other societal benefits associated with reducing litter in our city streets, parks and other public areas. The capital investment required to implement institutional controls is generally less than for full-capture systems. However, the labor costs associated with institutional controls may be higher, and institutional controls may be more costly in the long-term.

There have been a number of discussions as to how permittees may best implement the gradual reductions required by this Trash TMDL, and as to the types of devices or best management practices they should elect. The permittees will be free to implement trash reduction in any manner that they choose.

A discussion of the means for determining compliance for various implementation strategies is presented in the following subsections.

1. Full Capture Treatment Systems

The amount of trash discharged to the river by an area serviced by a full-capture system will be considered to be in compliance with the final Waste Load Allocation for the drainage area, provided that the full capture systems are adequately sized, maintained and maintenance records are available for inspection by the Regional Board. Compliance with the final Waste Load Allocation will be assumed, for full capture systems with a design treatment capacity of not less than the peak flow resulting from a one-year storm (determined to be 0.6 inch of rain per hour for the Los Angeles River Watershed).

The permittees may employ devices or systems other than the vortex separation system to meet the final Waste Load Allocations. However, such systems must be approved by the Executive Officer to attain removal credit. Before approving a full-capture system, the Executive Officer must make the following findings:

- The device or system will capture all particles retained by a 5 mm mesh screen from all runoff generated from a one-year storm (determined to be 0.6 inch per hour) and
- The device or system is designed to prevent plugging or blockage of the screening module.

2. Partial Capture Treatment Systems and Institutional Controls

Measuring the effectiveness of partial-capture systems and institutional controls is more complicated. The discharge resulting from an area addressed by partial capture and/or institutional controls will be estimated using a mass balance approach, based on the daily generation rate (DGR) for the specific area. [Note: The DGR should not be confused with the trash generation rates obtained during baseline monitoring. The baseline monitoring program is designed to obtain "typical" trash generation rates for a given land use. Those values are then used to calculate a Permittee's baseline load allocation. The DGR is the average amount of trash deposited within a specified drainage area over a 24-hour period. The DGR will be used in a mass balance equation to estimate the amount of trash discharged during a rain event.] (See Example 1.)

Annual re-calculation of the DGR will serve as a measure of the effectiveness of source reduction measures including public education, enforcement of litter laws, etc. Source reduction measures will be accredited based on an annual recalculation of the DGR to allow for progressive improvement and/or to account for backsliding.

The DGR will be determined from direct measurement of trash deposited in the drainage area during the month of July[50], and re-calculated every year thereafter. July was assumed to be a month characterized by high outdoor activity when trash is most likely to be

[50] Provided no special events are schedule that may affect the representativity of that month.

deposited on the ground. The recommended method for measuring trash during this time period is to close the catch basins in a manner that prevents trash from being swept into the catch basins and then to collect trash on the ground via street sweeping, manual pickup, or other comparable means. The DGR will be calculated as the total amount of trash collected during the month divided by 31 (the number of days in the month).

Accounting of DGR and trash removal via street sweeping, catch basin clean outs, etc. will be tracked in a central spreadsheet or database to facilitate the calculation of discharge for each rain event. The spreadsheet and/or database will be available to the Regional Board for inspection during normal working hours. The database/spreadsheet system will allow for the computation of calculated discharges and can be coordinated with enforcement. This database will be developed by cities or groups of cities.

The Executive Officer may approve alternative compliance monitoring programs other than those described above, upon finding that the program will provide a scientifically-based estimate of the amount of trash discharged from the storm drain system.

3. Examples of Implementation Strategies

Two example control strategies for municipal stormwater discharges are described in this section.

Example 1.

A permittee installs catch basin inserts and "dry weather trash door" devices of the type that maintains the catch basin shut during dry weather, and implements regular street sweeping. After each storm of 0.25 inch or greater, the catch basin inserts are emptied. In this case, the DGR was calculated during the month of July as follows:.[51]

DGR = (Volume of trash collected via street sweeping during the month of Julyg / 31 days.)

The stormwater discharge for a given rain event then would be calculated by multiplying the number of days since the last street sweeping by the DGR and subtracting the volume of trash recovered in the catch basin inserts.

Stormwater Discharge = [(Days since last street sweeping) (DGR)] –
[Volume of trash recovered from catch basin inserts]

Example 2.

City X is comprised of three land use areas (Land Uses A, B, and C). The city has adopted an implementation strategy using a combination of full capture structural and institutional controls. As of year five, the city has installed full capture structural controls in Area A and institutional controls in Area B. City X has not yet taken any action to control

[51] In the event that trash generation rates differ between weekday and weekends, a distinction in the DGRs may be warranted.

trash in Area C. The watershed-wide baseline Waste Load Allocation have been established at 100 lbs per square mile for Land Uses A and B, and at 200 lbs per square mile for land use C. The full capture treatment system is assumed to meet the final Waste Load Allocation. The city's mass balance calculations show that 100 lbs of trash was discharged from Land Use Area B. The discharge from Land Use Area C is assumed to be the base load allocation since no controls were implemented and the daily generation rate has not been established. As shown in Figure D, City X's discharge for the year was 1,100 lbs, and the 3-year rolling average discharge was less than the 5-Year Waste Load Allocation. Therefore the city was found to be in compliance with its discharge loading unit.

<table>
<tr><td rowspan="2">Land Use A:
10 sq miles treated by a full capture system

Baseline Waste Load Allocation:

100 lbs/sq mi/year</td><td>Land Use B:
5 sq miles treated via institutional controls and partial capture

Baseline Waste Load Allocation:
100 lbs/sq mi/year</td></tr>
<tr><td>Land Use C:
5 sq miles - No treatment applied

Baseline Waste Load Allocation:
200 lbs/sq mi/year</td></tr>
</table>

<u>Baseline Waste Load Allocation for each land use in City X</u>:
A=(100 lbs/sq mi/yr) (10 sq mi)=1000 lbs
B=(100 lbs/sq mi/yr) (5 sq mi)=500 lbs
C=(200 lbs/sq mi/yr) (5 sq mi)=1000 lbs
Total baseline Waste Load Allocation = 2,500 lbs
Year 5 Waste Load Allocation = 2,000 lbs*
*An 80% reduction based on a 3-year rolling average.

<u>Previous Years' Discharge:</u>
Year 3 = 2,400 lbs
Year 4 = 2,000 lbs

<u>Trash Discharge for Year 5</u>:
A=0
B=100 lbs (Determined by mass balance)
C=1,000 lbs (No reduction)
Total Discharge (Year 5) = 1,100 lbs

<u>Three-Year Rolling Average Discharge</u>
Year 3 = 2,400 lbs
Year 4 = 2,000 lbs
Year 5 = 1,100 lbs
3-year rolling average discharge = 1,833 lbs

Compliance is achieved: Discharge (1,833 lbs) < Waste Load Allocation (2,000 lbs).

Figure D. Example 2, City X After Year 5.

A summary of implementation strategies and compliance assurance methods is provided in Table 8.

Table 8. Summary of Possible Trash Reduction Implementation Measures.

Treatment Applied	Measure of Effectiveness	Compliance Determination
Source Control: Public education, enforcement of litter laws, container redemption programs, etc.	Daily Generation Rate: Amount of trash collected via street sweeping and or from catch basin inserts divided by the number of days provides a measure of source control measure effectiveness	DGR used in mass balance calculation of discharge: Discharge = [DGR (x) Days since last street sweeping] (-) [Catch basin cleanouts]
Partial Capture: (Catchbasin inserts, trash excluder doors, etc.)	Mass Balance: Discharge = [DGR (x) Days since last street sweeping] (-) [Catch basin cleanouts] OR Downstream Monitoring w/ Full Capture System	Discharge based on mass balance calculation: Discharge = [DGR (x) Days since last street sweeping] (-) [Catch basin cleanouts] OR Monitoring Results
Full Capture: Capture 100% of particles retained by a 5 mm mesh screen. from flow resulting from 0.6 inches rain/hr	Effectiveness verified by literature	Final Waste Load Allocation Achieved: Provided system is adequately sized, maintained and maintenance records are available for Regional Board inspection

IX. Cost Considerations

The Porter-Cologne Section 13241(d), requires staff to "consider costs" associated with the establishment of water quality objectives. The TMDL does not establish water quality objectives, but is merely a plan for achieving the existing water quality objective. Therefore cost considerations required in Section 13241 are not required for this TMDL.

The purpose of this cost analysis is to provide the Regional Board with information concerning the potential cost of implementing this TMDL and to addresses concerns about costs that have been raised by stakeholders. This section takes into account a reasonable range of economic factors in fulfillment of the applicable provisions of the California Environmental Quality Act (Public Resources Code Section 21159.)

An evaluation of the costs of implementing this Trash TMDL amounts to evaluating the costs of preventing trash from getting from the storm drains to the river. This brief report gives a summary overview of the costs associated with the most likely ways the permittees will achieve the required reduction in discharges to the storm drain system. Such an analysis would be incomplete if it failed to consider the existing cost that presently is transferred to "innocent" downstream communities. Approximately 1,620 tons of litter are estimated to be discharged to the Los Angeles River annually, requiring costly removal measures. In addition there is an unquantified cost to aquatic life within the River and the Ocean.

The Regional Board has some information about various facets of the costs of preventing trash from getting into the storm drains. However, exact information on infrastructure currently in place and current structural projects being undertaken is currently not available to the Board. Furthermore, lack of complete information on existing costs precludes a comparison between costs of compliance with existing costs.

A. Current Cost of Trash Clean-Ups

Cleaning up the river, its tributaries and the beaches is a costly endeavor. The Los Angeles County Department of Public Works contracts out the cleaning of over 75,000 catchments (catch basins) for a total cost of slightly over $1 million per year, billed to 42 municipalities. Each catch basin is cleaned once a year before the rainy season, except for 1,700 priority catch basins that fill faster and have to be cleaned out more frequently.

Over 4,000 tons of trash are collected from Los Angeles County beaches annually, at a cost of $3.6 million to Santa Monica Bay communities in fiscal year 1988-89 alone. In 1994 the annual cost to clean the 31 miles of beaches (19 beaches) along Los Angeles County was $4,157,388.

Long Beach bears a large part of the financial burden for cleaning up trash from the Los Angeles River watershed, which is disproportionate to the amount actually produced by this city.[52] The costs of gathering and disposing of trash at the mouth of the Los Angeles River during the rainy season are listed on Table 9.

Table 9. Storm Debris Summary for Long Beach: Billings.[53]

	First Quarter (July-Sept.)	Second Quarter (Oct.-Dec.)	Third Quarter (Jan.-March)	Fourth Quarter (April-June)	Total
1995-96	$44,152[54]	$130,986	$224,023	$126,416	$525,577
1996-97	$102,055	$187,344	$88,180	$122,416	$499,995
1997-98	$158,612	$268,594	$282,988	$169,340	$879,534
1998-99	$247,986	$198,147	$185,179	$246,950	$878,262

[52] However, the cost to the City of Long Beach is offset somewhat by an annual reimbursement from Los Angeles County in the amount of $500,000. (Written comment from The City of Los Angeles, June 23, 2000.)
[53] Memorandum from Geoffrey Hall; City of Long Beach; Parks and Recreation.
[54] 9/95 only.

B. Cost of Implementing Trash TMDL

The cost of implementing this TMDL will range widely, depending on the method that the Permittees select to meet the Waste Load Allocations. Arguably, enforcement of existing litter ordinances could be used to achieve the final Waste Load Allocations at minimal or no additional cost. The most costly approach in the short-term is the installation of full-capture structural treatment devices on all discharges to the river. However, in the long term this approach would result in lower labor costs and may be less expensive than some other approaches.

Most of the information presented herein consists of catch basin inserts, structural vortex separation devices and end of pipe nets. We are considering the costs associated with preventing the disposal of trash into the storm drain system over the whole watershed. For all calculations, the urbanized portions of the Los Angeles River watershed is assumed to span an area of 574 square miles[55].

Regardless of the method(s) used, costs associated with the gradual decrease of the amount of trash in the waterways, and the maintenance of the Los Angeles River and its tributaries free of trash include monitoring and implementation costs. Any device chosen for monitoring trash or removing trash from storm drain, regardless of its installation costs, will also be associated with labor costs.

We are looking at several methods separately, from retrofitting all the catch basins in the urbanized portion of the watershed, to using solely structural full capture methods.

1. Catch Basin Inserts

At a cost of around $800 per insert, catch basin inserts are the least expensive structural treatment device in the short term. However, because they are not a full capture method, they must be monitored frequently and must be used in conjunction with frequent street sweeping. We assumed that approximately 150,000 catch basins would have to be retrofitted with inserts to cover 574 square miles of the watershed. A summary of estimated costs for using catch basin inserts across the entire watershed is provided in Table 10.

Table 10. Costs of retrofitting the urban portion of the watershed with catch basin inserts. (amounts in millions)

Number of years into the program	1	2	3	4	5	6	7	8	9	10	11	12
Operation & Maintenance costs (yearly, cumulative)	$6	$12	$18	$24	$30	$36	$42	$48	$54	$60	$60	$60
Capital costs (yearly)	$12	$12	$12	$12	$12	$12	$12	$12	$12	$12	$00	$00
Costs per year (servicing + capital costs)	$18	$24	$30	$36	$42	$48	$54	$60	$66	$72	$60	$60

[55] Although the urbanized portion of the watershed is 584 square miles, about 10 square miles are covered with water.

The total capital costs required for retrofitting the whole watershed would be $120 million, while the yearly maintenance costs after full implementation would be $60 million.

2. Full Capture Vortex Separation Systems (VSS)

Permanent structural devices can be used to trap gross pollutants for monitoring purposes as well as implementation. Among those “litter control devices” are structural vortex separation systems (VSS), floating debris traps, end-of-pipe nets and trash racks. VSS units appear to be among the best alternatives to evaluate or remove the amount of trash generated throughout a particular drainage area.

An ideal way to capture trash deposited into a stormdrain system would be to install a VSS unit. This device diverts the incoming flow of stormwater and pollutants into a pollutant separation and containment chamber. Solids within the separation chamber are kept in continuous motion, and are prevented from blocking the screen so that water can pass through the screen and flow downstream. This is a permanent device that can be retrofitted for oil separation as well. Studies have shown that VSS systems remove virtually all of the trash contained in the treated water. The cost of installing a VSS is assumed to be high, so limited funds will place a cap on the number of units which can be installed during any single fiscal year.

Table 11 shows estimated costs associated with retrofitting the watershed with low capacity vortex separation systems progressively over ten years.

Table 11. Costs Associated with Low Capacity Vortex Gross Pollutant Separation Systems.
(amounts in millions)

Number of years into the program	1	2	3	4	5	6	7	8	9	10	11	12
Operations and Maintenance (yearly, cumulative)	$14.8	$29.5	$44.3	59.1	$73.9	$88.6	$103.4	118.2	$132.9	$147.7	$147.7	$147.7
Capital costs (yearly)	$94.5	$94.5	$94.5	$94.5	$94.5	$94.5	$94.5	$94.5	$94.5	$94.5	$0.0	$0.0
Annual costs per year (capital costs + Operation and Maintenance)	$109.3	$124.1	$138.8	$153.6	$168.4	$183.2	$197.9	$212.7	$227.5	$242.2	$147.7	$147.7

Similarly, Table 12 provides estimates of costs associated with the installation of large capacity VSS systems.

Table 12. Costs Associated with Large Capacity Vortex Gross Pollutant Separation Systems. (amounts in millions)

Number of years into the program	1	2	3	4	5	6	7	8	9	10	11	12
Operations and Maintenance (yearly, cumulative)	$0.7	$1.5	$2.2	$3.0	$3.7	$4.4	$5.2	$5.9	$6.6	$7.4	$7.4	$7.4
Capital costs (yearly)	$33.2	$33.2	$33.2	$33.2	$33.2	$33.2	$33.2	$33.2	$33.2	$33.2	$0.0	$0.0
Annual costs per year (capital costs + Operation and Maintenance)	$34.0	$34.7	$35.5	$36.2	$36.9	$37.7	$38.4	$39.1	$39.9	$40.6	$7.4	$7.4

As shown in Table 13, outfitting a large drainage with a number of large VSS systems may be less costly than using a larger number of small VSS systems. Maintenance costs decrease dramatically as the size of the system increases. Topographical and geotechnical considerations also should come into play when choosing VSS systems or other structural devices.

Table 13. Costs Associated with VSS.

Capacity	Acres (average)	Number of devices needed on urban portion of watershed	Capital costs	Yearly costs for servicing all devices
1 to 2 cfs	5	73,856	$945,356,800	$147,712,000
6 to 8 cfs	30	12,309	$553,920,000	$24,618,000
19 to 24 cfs	100	3,693	$332,352,000	$7,386,000

For this table, we have assumed the cost of yearly servicing of a VSS unit to be $2000 per year.

3. End of Pipe Nets

"Release nets" are a relatively economical way to monitor trash loads from municipal drainage systems. However, in general they can only be used to monitor or intercept trash at the end of a pipe and are considered to be partial capture systems, as the nets are usually sized at a 1/2" to 1" mesh. These nets are attached to the end of pipe systems. The nets remain in place on the end of the drains until water levels upstream of the net rise sufficiently to release a catch that holds the net in place. The water level may rise from either the bag being too full to allow sufficient water to pass, or from a disturbance during very high flows. When the nets release they are attached to the side of the pipe by a steel cable and as they are washed downstream (a yard or so) are tethered off so that no pollutants from within the bags are washed out.

Preliminary observations suggest that the nets rarely fill sufficiently to cause the bags to release. And therefore, if they are cleaned after a storm event, the entire quantity of material is captured and can be measured for monitoring purposes using two bags per trap. This makes it easy to replace the full or partially full bag with an empty one, so that the first bag can be taken to a laboratory for analysis without manual handling of the material it contains.

The net are valid devices because of the ease of maintenance and also because the devices can be relocated after a set period at one location (provided the pipe diameters are the same). With limited funding, installation could be spread over several land uses and lead to valuable monitoring results.

Because the devices require attachment to the end of a pipe, this can severely reduce the number of locations within a drainage system that can be monitored. In addition, these nets cannot be installed on very large channels (7 feet in diameter is the maximum), while the largest outlets into the Los Angeles River are 10 feet in diameter. Thus costs shown in Table 14 are given per pipe, and no drainage coverage is given.

Table 14. Sample Costs for End of Pipe Nets.

Pipe Size	Release nets (cost estimates)
End of 3 ft pipe	$10,000
End of 4 ft pipe	$15,000
End of 5 ft pipe	$20,000
In 3 ft pipe network	$40,000
In 4 ft pipe network	$60,000
In 5 ft pipe network	$80,000

4. Cost Comparison

A comparison of costs between strategies based on catch basin inserts (CBIs), low capacity VSS, high capacity VSS systems, and enforcement of litter laws is presented in Table 15.

Table 15. Cost Comparison (amounts in millions)

	CBI only	Low capacity VSS Units	Large capacity VSS Units	Enforcement of Litter Laws[56]
Cumulative capital costs over 10 years	$120	$945	$332	<$1
Cumulative maintenance and capital costs after 10 years	$450	$1,758	$373	<$1
Annual servicing costs after full implementation	$60	$148	$7.4	<$1

Trash abatement in the Los Angeles River system may be expensive; the costs will differ depending on the options selected by the permittees.

[56] Revenues from fines assessed to offset increased law enforcement cost. The cost of a database system used to calculate trash discharges estimated to be less than $250,000.

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Appendix I

This table shows the square mileage for “high density residential”, “low density residential”, “commercial and services”, “industrial”, “public facilities”, “educational institutions”, “military institutions”, “transportation and utilities”, “mixed urban”, “open space and recreation”, “agriculture” and “water” land uses for every city and incorporated areas in the watershed. The “water” land use of water is not in itself a source of trash, and will therefore not receive an allocation. For cities that are only partially located on the watershed, the square mileage indicated is for the portion located in the watershed.

SQUARE MILEAGE ESTIMATED FOR EACH LAND USE FOR CITIES IN THE WATERSHED, AND FOR UNINCORPORATED AREAS.

City	High Density Residential	Low Density Residential	Commercial Services	Industrial	Public Facilities	Educational Institutions	Military Institutions	Transportation	Mixed Urban	Open Space & Recreation	Agriculture	Water	Total for all classes
Alhambra	5.11	0.03	0.84	0.33	0.24	0.29	0.00	0.39	0.04	0.35	0.00	0.00	**7.62**
Arcadia	6.56	0.98	1.18	0.20	0.22	0.22	0.00	0.22	0.11	1.01	0.00	0.17	**10.89**
Bell	1.20	0.00	0.28	0.44	0.20	0.06	0.04	0.22	0.05	0.01	0.00	0.25	**2.74**
Bell Gardens	1.37	0.00	0.31	0.25	0.04	0.16	0.00	0.03	0.04	0.11	0.10	0.02	**2.48**
Bradbury	0.01	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.27	0.17	0.00	**0.82**
Burbank	7.97	3.69	1.31	1.59	0.33	0.34	0.01	1.20	0.26	0.58	0.01	0.06	**17.36**
Calabasas	0.94	0.08	0.14	0.01	0.01	0.12	0.00	0.03	0.22	4.66	0.01	0.03	**6.27**
Carson	0.00	0.00	0.00	0.26	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.01	**0.30**
Commerce	0.64	0.00	0.57	3.84	0.15	0.05	0.00	0.91	0.15	0.11	0.12	0.02	**6.56**
Compton	4.30	0.22	0.79	1.99	0.15	0.72	0.02	0.63	0.16	0.12	0.08	0.05	**9.37**
Cudahy	0.78	0.00	0.09	0.04	0.01	0.05	0.00	0.00	0.00	0.02	0.00	0.02	**1.12**
Downey	4.10	0.02	0.59	0.07	0.45	0.24	0.00	0.07	0.05	0.42	0.00	0.10	**6.10**
Duarte	0.64	0.00	0.15	0.13	0.24	0.05	0.00	0.08	0.06	0.67	0.00	0.01	**2.04**
El Monte	4.27	0.01	1.06	0.97	0.18	0.32	0.00	0.40	0.09	0.06	0.00	0.17	**7.56**
Glendale	12.69	6.74	1.86	0.87	1.00	0.38	0.01	0.57	0.22	6.05	0.03	0.13	**30.65**
Hidden Hills	0.02	1.14	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.25	0.01	0.00	**1.47**
Huntington Park	1.61	0.00	0.51	0.52	0.04	0.13	0.00	0.12	0.02	0.07	0.00	0.00	**3.03**
Irwindale	0.02	0.01	0.00	0.73	0.16	0.01	0.00	0.13	0.06	0.05	0.00	0.67	**1.84**

SQUARE MILEAGE ESTIMATED FOR EACH LAND USE FOR CITIES IN THE WATERSHED, AND FOR UNINCORPORATED AREAS, CONTINUED.

City	High Density Residential	Low Density Residential	Commercial Services	Industrial	Public Facilities	Educational Institutions	Military Institutions	Transportation	Mixed Urban	Open Space & Recreation	Agriculture	Water	Total for all classes
La Canada Flintridge	2.99	2.02	0.18	0.15	0.24	0.16	0.00	0.22	0.02	2.56	0.05	0.04	**8.65**
Lakewood	0.15	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	**0.17**
Long Beach	11.98	0.02	2.39	1.46	0.74	0.58	0.01	1.04	0.43	0.98	0.26	0.79	**20.70**
Los Angeles	134.12	13.04	16.84	18.69	8.45	7.97	0.13	11.66	4.28	66.02	3.07	5.06	**290.43**
Lynwood	3.00	0.00	0.51	0.44	0.10	0.20	0.00	0.48	0.06	0.07	0.00	0.00	**4.86**
Maywood	0.86	0.00	0.16	0.10	0.00	0.03	0.00	0.00	0.01	0.01	0.00	0.00	**1.17**
Monrovia	3.25	0.29	0.48	0.58	0.14	0.16	0.00	0.14	0.10	7.27	0.04	0.11	**12.55**
Montebello	3.82	0.00	0.68	1.64	0.35	0.36	0.00	0.29	0.18	0.62	0.15	0.20	**8.36**
Monterey Park	4.60	0.00	0.64	0.28	0.44	0.27	0.00	0.20	0.06	0.95	0.23	0.00	**7.67**
Paramount	1.30	0.00	0.17	0.95	0.07	0.10	0.00	0.25	0.08	0.07	0.15	0.12	**3.26**
Pasadena	11.50	1.70	2.24	0.52	0.90	0.96	0.02	0.91	0.10	4.02	0.12	0.25	**23.22**
Pico Rivera	1.03	0.00	0.23	0.51	0.05	0.03	0.00	0.10	0.03	0.10	0.01	0.91	**3.00**
Rosemead	3.32	0.00	0.73	0.13	0.14	0.26	0.00	0.17	0.08	0.15	0.15	0.01	**5.14**
San Fernando	1.43	0.00	0.41	0.28	0.09	0.10	0.00	0.01	0.01	0.04	0.00	0.04	**2.42**
San Gabriel	2.90	0.01	0.49	0.10	0.08	0.15	0.00	0.05	0.02	0.23	0.09	0.00	**4.13**
San Marino	2.02	1.05	0.07	0.00	0.09	0.11	0.00	0.09	0.00	0.32	0.00	0.00	**3.77**
Santa Clarita	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	**0.06**
Sierra Madre	1.71	0.06	0.05	0.01	0.06	0.06	0.00	0.00	0.02	0.98	0.01	0.05	**3.01**
Signal Hill	0.30	0.00	0.06	0.63	0.06	0.03	0.00	0.00	0.00	0.00	0.00	0.00	**1.10**
Simi Valley	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	**0.02**
South El Monte	0.90	0.01	0.15	1.23	0.03	0.11	0.00	0.05	0.02	0.03	0.07	0.02	**2.62**
South Gate	3.97	0.00	0.76	1.11	0.21	0.16	0.00	0.35	0.25	0.23	0.15	0.20	**7.48**
South Pasadena	2.32	0.13	0.20	0.00	0.05	0.10	0.00	0.12	0.04	0.39	0.01	0.02	**3.43**
Temple City	3.43	0.01	0.27	0.07	0.08	0.12	0.00	0.00	0.00	0.03	0.01	0.00	**4.02**
Vernon	0.00	0.00	0.00	4.03	0.09	0.00	0.00	0.67	0.08	0.00	0.00	0.19	**5.06**
Unincorporated areas	17.04	1.65	2.05	2.86	0.68	0.80	0.02	1.28	0.22	12.28	0.46	0.58	**39.92**
Total for each land use watershedwise	**270.17**	**33.29**	**39.48**	**48.00**	**16.59**	**15.99**	**0.39**	**23.10**	**7.71**	**112.24**	**5.66**	**10.36**	**584.43**

State of California
California Regional Water Quality Control Board, Los Angeles Region

RESOLUTION NO. R05-006
June 2, 2005

Amendment to the *Water Quality Control Plan for the Los Angeles Region* to Incorporate a Total Maximum Daily Load for Metals for the Los Angeles River and its Tributaries

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region, finds that:

1. The Federal Clean Water Act (CWA) requires the California Regional Water Quality Control Board, Los Angles Region (Regional Board) to develop water quality objectives, which are sufficient to protect beneficial uses for each water body found within its region. Water bodies that do not meet water quality objectives or support beneficial uses are considered impaired.

2. A consent decree between the U.S. Environmental Protection Agency (USEPA), Heal the Bay, Inc. and BayKeeper, Inc. was approved on March 22, 1999. This court order directs the USEPA to complete Total Maximum Daily Loads (TMDLs) for all impaired waters within 13 years. A schedule was established in the consent decree for the completion of the first 29 TMDLs within 7 years, including completion of a TMDL to reduce metals in the Los Angeles River and its tributaries by USEPA by March 22, 2005. The remaining TMDLs will be scheduled by Regional Board staff within the 13-year period.

3. USEPA and the consent decree plaintiffs agreed to extend the completion deadline for the Los Angeles River Metals TMDL to December 22, 2005, in order to enable the State to complete its adoption process and USEPA to approve the State-adopted TMDL.

4. The elements of a TMDL are described in 40 CFR 130.2 and 130.7 and section 303(d) of the CWA, as well as in USEPA guidance documents (Report No. EPA/440/4-91/001). A TMDL is defined as the sum of the individual waste load allocations for point sources, load allocations for nonpoint sources and natural background (40 CFR 130.2). Regulations further stipulate that TMDLs must be set at levels necessary to attain and maintain the applicable narrative and numeric water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality (40 CFR 130.7(c)(1)). The regulations in 40 CFR 130.7 also state that TMDLs shall take into account critical conditions for stream flow, loading and water quality parameters.

5. The numeric targets in this TMDL are not water quality objectives and do not create new bases for enforcement against dischargers apart from the existing, numeric water quality standards they translate. The targets merely establish the bases through which load allocations (LAs) and waste load allocations (WLAs) are calculated. WLAs are only enforced for a discharger's own discharges, and then only in the context of its National Pollutant Discharge Elimination System (NPDES) permit, which must contain effluent limits consistent with the assumptions and requirements of the WLA. (40 C.F.R. 122.44(d)(vii)(B).) The Regional

Board will develop permit requirements through subsequent permit actions that will allow all interested persons, including but not limited to municipal storm water dischargers, to provide comments on how the WLA will be translated into permit requirements.

6. As envisioned by Water Code section 13242, the TMDL contains a "description of surveillance to be undertaken to determine compliance with objectives." The Compliance Monitoring and Special Studies elements of the TMDL recognize that monitoring will be necessary to assess the on-going condition of the Los Angeles River and its tributaries and to assess the on-going effectiveness of efforts by dischargers to reduce metals loading to the Los Angeles River. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. The TMDL does not establish the requirements for these monitoring programs or reports, although it does recognize the type of information that will be necessary to secure. The Regional Board's Executive Officer will issue orders to appropriate entities to develop and to submit monitoring programs and technical reports. The Executive Officer will determine the scope of these programs and reports, taking into account any legal requirements, and issue the orders to the appropriate entities.

7. Upon establishment of TMDLs by the State or USEPA, the State is required to incorporate the TMDLs along with appropriate implementation measures into the State Water Quality Management Plan (40 CFR 130.6(c)(1), 130.7). This Water Quality Control Plan for the Los Angeles Region (Basin Plan), and applicable statewide plans, serves as the State Water Quality Management Plans governing the watersheds under the jurisdiction of the Regional Board. Attachment A to this resolution contains the Basin Planning language for this TMDL.

8. The Los Angeles River flows for 55 miles from the Santa Monica Mountains at the western end of the San Fernando Valley to Queensway Bay located between the Port of Long Beach and the City of Long Beach. The Los Angeles River drains a watershed with an area of 834 square miles. The proposed TMDL addresses impairments of water quality caused by metals in several reaches and tributaries of the Los Angeles River.

9. On May 18, 2000, the U.S. EPA promulgated numeric criteria for priority pollutants for the State of California, known as the California Toxics Rule (CTR), codified as 40 CFR section 131.38. Federal water quality standards under section 303 of the Clean Water Act consist of designated uses and criteria to protect those uses. (40 C.F.R. 131.3(i).) Designated uses are beneficial uses under state law, and criteria are water quality objectives under state law. The CTR establishes the numeric water quality objectives for various toxic pollutants. These objectives apply "without exeception" to all inland surface waters within the State of California, including the Los Angeles region. (40 C.F.R. 131.38(d)(1)-(2).)

10. "[I]t is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited." (33 U.S.C. 1251(a)(3).) Water quality standards, including the CTR, reflect this express national policy of Congress. When a pollutant is present at levels in excess of the CTR numbers, then the pollutant is present in toxic amounts. In this sense, the numeric objectives in the CTR are U.S. EPA's determination of when priority pollutants are present at toxic amounts in contravention of Congress's national policy.

11. The Regional Board's goal in establishing the Los Angeles River and Tributaries Metals TMDL is to protect the aquatic life and wildlife beneficial uses of Los Angeles River and its tributaries and to achieve the numeric water quality objectives set to protect these uses as contained in the CTR.

12. Regional Board staff have prepared a detailed technical document that analyzes and describes the specific necessity and rationale for the development of this TMDL. The technical document entitled "Total Maximum Daily Load for Metals - Los Angeles River and Tributaries" is an integral part of this Regional Board action and was reviewed, considered, and accepted by the Regional Board before acting. Further, the technical document provides the detailed factual basis and analysis supporting the problem statement, numeric targets (interpretation of the narrative and numeric water quality objectives, used to calculate the pollutant allocations), source analysis, linkage analysis, waste load allocations (for point sources), load allocation (for nonpoint sources), margin of safety, and seasonal variations and critical conditions of this TMDL.

13. On June 2, 2004, prior to the Board's action on this resolution, public hearings were conducted on the Los Angeles River and Tributaries Metals TMDL. Notice of the hearings were sent to all known interested persons and published in the Los Angeles Times on March 27, 2005 in accordance with the requirements of Water Code Section 13244.

14. The public has had reasonable opportunity to participate in review of the amendment to the Basin Plan. A draft of the Los Angeles River and Tributaries Metals TMDL was originally released for public comment on July 12, 2004. The Regional Board held a workshop to receive testimony on the proposed TMDL on September 2, 2004. Regional Board staff responded to oral and written comments received from the public on the first draft and released a revised draft TMDL for public comment on March 28, 2005. A Notice of Hearing and Notice of Filing were published and circulated 45 days preceding Board action, and Regional Board staff responded to oral and written comments received from the public on the revised draft.

15. In amending the Basin Plan, the Regional Board considered the requirements set forth in Sections 13240 and 13242 of the California Water Code.

16. Because the TMDL implements existing numeric water quality objectives (i.e., the numeric water quality criteria established by USEPA in the CTR), the Regional Board has consistently maintained (along with the State Water Resources Control Board) that adopting a TMDL does not require the water boards to consider the factors of Water Code section 13241. The consideration of the Water Code section 13241 factors, by section 13241's express terms, only applies "in establishing water quality objectives." Here the Regional Board is not establishing water quality objectives, but as required by section 303(d)(1)(C) of the Clean Water Act is adopting a TMDL that will implement the previously established objectives that have not been achieved.

17. While the Regional Board is not required to consider the factors of Water Code section 13241, it, nonetheless, has developed and received significant information pertaining to the Water Code section 13241 factors and considered that information in developing and adopting this TMDL. The past, present, and probable future beneficial uses of water have been considered in that the Los Angeles River is designated for a multitude of beneficial uses in the Basin Plan. Various living organisms (including vegetation, fish, invertebrates, and wildlife) are present in, transient through, and will be present in the Los Angeles River. The fact that some flows are intermittent or, as characterized by some commenters "effluent dominated" or "nuisance flows," does not diminish this fact. The environmental characteristics of the Los Angeles River are spelled out at length in the Basin Plan and in the technical documents supporting this Basin Plan amendment, and have been considered in

developing this TMDL. Water quality conditions that reasonably could be achieved through the coordinated control of all factors which affect water quality in the area have been considered via the discussion of likely means of compliance, and studies indicating that a mix of best management practices (BMPs), rather than advanced treatment plants, would achieve the water quality criteria established in the CTR. Authorizing certain storm water dischargers to rely on BMPs in the first instances reflects the reasonableness of the action in terms of the ability to implement the requirements, as well as a belief that the water quality conditions can reasonably be achieved in any event. Establishing a plan that will ensure the Los Angeles River is not toxic is a reasonable water quality condition. However, to the extent that there would be any conflict between the consideration of the factor in Water Code section 13241 subdivision (c), if the consideration were required, and the Clean Water Act, the Clean Water Act would prevail. Notably, national policy established by Congress prohibits the discharge of toxic pollutants in toxic amounts. Economic considerations were considered throughout the development of the TMDL. Some of these economic considerations arise in the context of Public Resources Code section 21159 and are equally applicable here. The TMDL maps out a two-decade approach to implementing national policy prohibiting toxic pollutants in toxic amounts. This implementation program recognizes the economic limitations on achieving immediate compliance—especially for municipal storm water dischargers. The TMDL also authorizes the use of BMPs, to the extent authorized by law, for various storm water dischargers. Again, these recognize the economic limitations on certain storm water dischargers, while remaining faithful to the requirement to implement existing water quality standards and national policy. As part of this economic consideration, the Regional Board considered several studies pertaining to storm water (some submitted by dischargers showing costs as high as several hundred billion to implement all water quality standards in the Basin Plan through advanced treatment plants and some developed by the State Water Resources Control Board and Regional Board through economic studies prepared by professors at the University of Southern California, the University of California at Los Angeles, California State University at Sacramento showing costs of several billion dollars to implement all water quality standards in the Basin Plan using a mix of BMPs). The former studies consist of worst-case assumptions and these studies' high-end figures assume the widespread construction of treatment facilities. Based on existing policy geared toward BMPs and the latter studies, these assumptions are unrealistic. While section 13241 of the Water Code does not require a balancing of the costs and benefits, the latter studies also conclude that any costs would be outweighed by the societal and economic benefits to Los Angeles' coastal economy. Again, these "economic considerations" were all considered and are reflected in an implementation program that is flexible and allows two decades to comply with the final WLAs. The need for housing within the region has been considered, but this TMDL is unlikely to affect housing needs. Whatever housing impacts could materialize are ameliorated by the flexible nature of this TMDL and the two-decade implementation period. Finally, the TMDL is likely to facilitate the use of recycled water, as demonstrated by the City of Los Angeles' Integrated Resources Plan.

18. The amendment is consistent with the State Antidegradation Policy (State Board Resolution No. 68-16), in that it does not authorize any lowering of water quality and is designed to implement existing water quality objectives. Likewise, the amendment is consistent with the federal Antidegradation Policy (40 CFR 131.12).

19. Pursuant to Public Resources Code section 21080.5, the Resources Agency has approved the Regional Water Boards' basin planning process as a "certified regulatory program" that adequately satisfies the California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000 et seq.) requirements for preparing environmental documents. (14 Cal.

Code Regs. § 15251(g); 23 Cal. Code Regs. § 3782.) As such, the Regional Water Board's basin planning documents together with an Environmental Checklist, are the "substitute documents" that contain the required environmental documentation under CEQA. (23 Cal Code Regs. § 3777.) The detailed technical report entitled "Total Maximum Daily Load for Metals - Los Angeles River and Tributaries," responses prepared by staff to address comments raised during the development of the TMDL, this resolution, and the Environmental Checklist serve as the substitute documents for this project. The project itself is the establishment of a TMDL for toxic metals in the Los Angeles River and its tributaries. While the Regional Board has no discretion to not establish a TMDL (the TMDL is required by federal law) or for determining the water quality standard to be applied (the CTR establishes the numeric water quality objectives that must be implemented), the Board does exercise discretion in assigning waste load allocations and load allocations, determining the program of implementation, and setting various milestones in achieving the numeric water quality standards established in the CTR.

20. A CEQA Scoping hearing was conducted on April 23, 2004 at the Los Angeles Regional Water Quality Control Board, 320 W. 4th Street, Los Angeles, CA 90013. A notice of the CEQA Scoping hearing was sent to interested parties including cities and/or counties with jurisdiction in or bordering the Los Angeles River watershed.

21. The lengthy implementation period allowed by the TMDL, will allow many compliance approaches to be pursued. In preparing the accompanying CEQA substitute documents, the Regional Board has considered the requirements of Public Resources Code section 21159 and California Code of Regulations, title 14, section 15187, and intends the substitute documents to serve as a tier 1 environmental review. Nearly all of the compliance obligations will be undertaken by public agencies that will have their own obligations under CEQA. Project level impacts will need to be considered in any subsequent environmental analysis performed by other public agencies, pursuant to Public Resources Code section 21159.2. If not properly mitigated at the project level, there could be adverse environmental impacts. The substitute documents for this TMDL, and in particular the Environmental Checklist and staff's responses to comments, identify broad mitigation approaches that should be considered at the project level. Consistent with CEQA, the substitute documents do not engage in speculation or conjecture and only consider the reasonably foreseeable environmental impacts of the methods of compliance, the reasonably foreseeable feasible mitigation measures, and the reasonably foreseeable alternative means of compliance, which would avoid or eliminate the identified impacts.

22. The proposed amendment could have a significant adverse effect on the environment. However, there are feasible alternatives, feasible mitigation measures, or both that would substantially lessen any significant adverse impact. The public agencies responsible for those parts of the project can and should incorporate such alternatives and mitigation into any subsequent projects or project approvals. Possible alternatives and mitigation are described in the CEQA substitute documents, specifically the TMDL technical report and the Environmental Checklist. To the extent the alternatives, mitigation measures, or both are not deemed feasible by those agencies, the necessity of implementing the federally required metals TMDL and removing the metals-related toxicity impairment from the Los Angeles River (an action required to achieve the express, national policy of the Clean Water Act) outweigh the unavoidable adverse environmental effects.

23. Health and Safety Code section 57004 requires external scientific peer review for certain water quality control policies. Prior to public notice of the draft TMDL, the Regional Board

submitted the scientific basis and scientific portions of the Los Angeles River Metals TMDL to the University of California for external scientific peer review. A written peer review report was received by the Regional Board. Minor modifications were made to the scientific portions of the TMDL to address concerns identified during the peer review process.

24. The regulatory action meets the "Necessity" standard of the Administrative Procedures Act, Government Code, Section 11353, Subdivision (b). As specified above, federal regulations require that TMDLs be incorporated into the water quality management plan. The Regional Board's Basin Plan is the Regional Board's component of the water quality management plan, and the Basin Plan is how the Regional Board takes quasi-legislative, planning actions. Moreover, the TMDL is a program of implementation for existing water quality objectives, and is, therefore, appropriately a component of the Basin Plan under Water Code section 13242. The necessity of developing a TMDL is established in the TMDL staff report, the section 303(d) list, and the data contained in the administrative record documenting the metals impairments of the Los Angeles River and its tributaries.

25. The Basin Plan amendment incorporating a TMDL for metals for the Los Angeles River and Tributaries must be submitted for review and approval by the State Water Resources Control Board (State Board), the State Office of Administrative Law (OAL), and the USEPA. The Basin Plan amendment will become effective upon approval by USEPA. A Notice of Decision will be filed with the Resources Agency.

26. The Regional Board has previously endorsed integrated water resources approaches to addressing Municipal Separate Storm Sewer System (MS4) implementation of TMDLs. The Regional Board believes integrated approaches require additional time for planning and development and are suitable for the 22-year implementation period discussed in this TMDL. As presently proposed, the TMDL implementation program does not distinguish between integrated and nonintegrated approaches. Further consideration of an implementation schedule incorporating and establishing incentives for an integrated water resources approach, similar to the Santa Monica Bay Beaches Bacteria TMDL, is appropriate.

THEREFORE, be it resolved that pursuant to sections 13240 and 13242 of the Water Code, the Regional Board hereby amends the Basin Plan as follows:

1. Pursuant to Sections 13240 and 13242 of the California Water Code, the Regional Board, after considering the entire record, including oral testimony at the hearing, hereby adopts the amendments to Chapter 7 of the Water Quality Control Plan for the Los Angeles Region, as set forth in Attachment A hereto, to incorporate the elements of the Los Angeles River and Tributaries Metals TMDL.

2. The Executive Officer is directed to forward copies of the Basin Plan amendment to the State Board in accordance with the requirements of section 13245 of the California Water Code.

3. The Regional Board requests that the State Board approve the Basin Plan amendment in accordance with the requirements of sections 13245 and 13246 of the California Water Code and forward it to OAL and the USEPA.

4. If during its approval process Regional Board staff, the State Board or OAL determines that minor, non-substantive corrections to the language of the amendment are needed for clarity or

consistency, the Executive Officer may make such changes, and shall inform the Board of any such changes.

5. The Executive Officer is authorized to sign a Certificate of Fee Exemption.

6. Regional Board staff are directed to explore and to propose revisions to the TMDL implementation schedule that incorporate an integrated water resources approach, similar to the implementation program in the Santa Monica Bay Beaches Bacteria TMDL. The Regional Board will consider any revisions proposed by staff, but is not committing to any particular course of action.

I, Jonathan Bishop, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on June 2, 2005.

Jonathan Bishop
Executive Officer

6/17/05
Date

Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate the Los Angeles River and Tributaries Metals TMDL

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on June 2, 2005.

Amendments:

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Chapter 7. Total Maximum Daily Loads (TMDLs) Summaries, Section 7-13 (Los Angeles River and Tributaries Metals TMDL)
Add:

This TMDL was adopted by

The Regional Water Quality Control Board on June 2, 2005.

This TMDL was approved by:

The State Water Resources Control Board on [Insert Date].
The Office of Administrative Law on [Insert Date].
The U.S. Environmental Protection Agency on [Insert Date].

The following table includes the key elements of this TMDL.

Table 7-13.1 Los Angeles River and Tributaries Metals TMDL: Elements

Element	Key Findings and Regulatory Provisions
Problem Statement	Segments of the Los Angeles River and its tributaries are on the Clean Water Act section 303(d) list of impaired waterbodies for copper, cadmium, lead, zinc, aluminum and selenium. The metals subject to this TMDL are toxic pollutants, and the existing water quality objectives for the metals reflect national policy that the discharge of toxic pollutants in toxic amounts be prohibited. When one of the metals subject to this TMDL is present at levels exceeding the existing numeric objectives, then the receiving water is toxic. The beneficial uses impaired by metals in the Los Angeles River and its tributaries are those associated with aquatic life and water supply, including wildlife habitat, rare, threatened or endangered species, warm freshwater habitat, wetlands, and groundwater recharge. TMDLs are developed for reaches on the 303(d) list and for reaches where recent data indicate additional impairments. Addressing the impairing metals throughout the Los Angeles River watershed will ensure that the metals do not contribute to an impairment elsewhere in the watershed. Metals allocations are therefore developed for upstream reaches and tributaries that drain to impaired reaches. These TMDLs address wet- and dry-weather discharges of copper, lead, zinc and selenium and wet-weather discharges of cadmium. Impairments related to cadmium only occur during wet weather. Impairments related to selenium are confined to Reach 6 and its tributaries. Dry-weather impairments related to zinc only occur in Rio Hondo Reach 1. The aluminum listing was based on water quality objectives set to support the municipal water supply beneficial use (MUN). MUN is a conditional use in the Los Angeles River watershed. The United States Environmental Protection Agency (USEPA) has determined that TMDLs are not required for impairments of conditional uses.
Numeric Target *(Interpretation of the numeric water quality objective, used to calculate the waste load allocations)*	Numeric water quality targets are based on the numeric water quality criteria established by the California Toxics Rule (CTR). The targets are expressed in terms of total recoverable metals. There are separate targets for dry and wet weather because hardness values and flow conditions in the Los Angeles River and tributaries vary between dry and wet weather. The dry-weather targets apply to days when the maximum daily flow in the River is less than 500 cfs. The wet-weather targets apply to days when the maximum daily flow in the River is equal to or greater than 500 cfs. The dry-weather targets for copper and lead are based on chronic CTR criteria. The dry-weather targets for zinc are based on acute CTR criteria. Copper, lead and zinc targets are dependent on hardness to adjust for site specific conditions and conversion factors to convert between dissolved and total recoverable metals. Copper and lead targets are based on 50th percentile hardness values. Zinc targets are based on 10th percentile hardness values. Site-specific copper conversion factors are applied immediately downstream of the Tillman and LA-Glendale

Element	Key Findings and Regulatory Provisions
	water reclamation plants (WRP). CTR default conversion factors are used for copper, lead, and zinc in all other cases. The dry-weather target for selenium is independent of hardness or conversion factors.

Dry-weather conversion factors:

	Default	Below Tillman WRP	Below LA-Glendale WRP
Copper	0.96	0.74	0.80
Lead	0.79		
Zinc	0.61		

Dry-weather numeric targets (µg total recoverable metals/L)

	Cu	Pb	Zn	Se
Reach 5, 6 and Bell Creek	30	19		5
Reach 4	26	10		
Reach 3 above LA-Glendale WRP and Verdugo	23	12		
Reach 3 below LA-Glendale WRP	26	12		
Burbank Western Channel (above WRP)	26	14		
Burbank Western Channel (below WRP)	19	9.1		
Reach 2 and Arroyo Seco	22	11		
Reach 1	23	12		
Compton Creek	19	8.9		
Rio Hondo Reach 1	13	5.0	131	
Monrovia Canyon		8.2		

The wet-weather targets for cadmium, copper, lead and zinc are based on acute CTR criteria and the 50th percentile hardness values for storm water collected at the Wardlow gage station. Conversion factors for copper, lead and zinc are based on a regression of dissolved metals values to total recoverable metals values collected at Wardlow. The CTR default conversion factor is applied to cadmium. The wet-weather target for selenium is independent of hardness or conversion factors.

Wet-weather conversion factors:

Cadmium	0.94
Copper	0.65
Lead	0.82
Zinc	0.61

Wet-weather numeric targets (µg total recoverable metals/L)

Cd	Cu	Pb	Zn	Se
3.1	17	62	159	5

Element	Key Findings and Regulatory Provisions
Source Analysis	There are significant differences in the sources of metals loadings during dry weather and wet weather. During dry weather, most of the metals loadings are in the dissolved form. The three major publicly owned treatment works (POTWs) that discharge to the river (Tillman WRP, LA-Glendale WRP, and Burbank WRP) constitute the majority of the flow and metals loadings during dry weather. The storm drains also contribute a large percentage of the loadings during dry weather because although their flows are typically low, concentrations of metals in urban runoff may be quite high. The remaining portion of the dry weather flow and metals loadings represents a combination of tributary flows, groundwater discharge, and flows from other permitted NPDES discharges within the watershed. During wet weather, most of the metals loadings are in the particulate form and are associated with wet-weather storm water flow. On an annual basis, storm water contributes about 40% of the cadmium loading, 80% of the copper loading, 95% of the lead loading and 90% of the zinc loading. This storm water flow is permitted through two municipal separate storm sewer system (MS4) permits, a separate Caltrans MS4 permit, a general construction storm water permit and a general industrial storm water permit. Nonpoint sources of metals may include tributaries that drain the open space areas of the watershed. Direct atmospheric deposition of metals on the river is also a small source. Indirect atmospheric deposition on the land surface that is washed off during storms is a larger source, which is accounted for in the estimates of storm water loadings. The sources of selenium appear to be related to natural levels of selenium in soils in the upper watershed. Separate studies are underway to evaluate whether selenium levels represent a "natural condition" for this watershed.
Loading Capacity	**Dry Weather** Dry-weather TMDLs are developed for the following pollutant waterbody combinations (allocations are developed for upstream reaches and tributaries to meet TMDLs in downstream reaches): • Copper for the Los Angeles River Reaches 1, 2, 3, 4, and 5, Burbank Channel, Compton Creek, Tujunga Wash, Rio Hondo Reach 1. • Lead for the Los Angeles River Reaches 1, 2, 3, 4, and 5, Burbank Channel, Rio Hondo Reach 1, Compton Creek, Monrovia Canyon Creek. • Zinc for Rio Hondo Reach 1. • Selenium for Reach 6, Aliso Creek, Dry Canyon Creek, McCoy Canyon Creek. For dry weather, loading capacities are equal to reach-specific numeric targets multiplied by reach-specific critical dry-weather flows.

Element	Key Findings and Regulatory Provisions
	Summing the critical flows for each reach and tributary, the critical flow for the entire river is 203 cfs, which is equal to the combined design flow of the three POTWs (169 cfs) plus the median flow from the storm drains and tributaries (34 cfs). The median storm drain and tributary flow is equal to the median flow at Wardlow (145 cfs) minus the existing median POTW flow (111 cfs). The dry-weather loading capacities for each impaired reach include the critical flows for upstream reaches. The dry-weather loading capacity for Reach 5 includes flows from Reach 6 and Bell Creek, the dry-weather loading capacity for Reach 3 includes flows from Verdugo Wash, and the dry-weather loading capacity for Reach 2 includes flows from Arroyo Seco.

Dry-weather loading capacity (total recoverable metals)

	Critical Flow (cfs)	Cu (kg/day)	Pb (kg/day)	Zn (kg/day)
LA River Reach 5	8.74	0.65	0.39	
LA River Reach 4	129.13	8.1	3.2	
LA River Reach 3	39.14	2.3	1.01	
LA River Reach 2	4.44	0.16	0.084	
LA River Reach 1	2.58	0.14	0.075	
Tujunga Wash	0.15	0.007	0.0035	
Burbank Channel	17.3	0.80	0.39	
Rio Hondo Reach 1	0.50	0.015	0.0061	0.16
Compton Creek	0.90	0.041	0.020	

No dry-weather loading capacities are calculated for lead in Monrovia Canyon Creek or selenium in Reach 6 or its tributaries. Concentration-based allocations are assigned for these metals in these reaches.

Wet Weather

Wet-weather TMDLs are calculated for cadmium, copper, lead, and zinc in Reach 1. Allocations are developed for all upstream reaches and tributaries to meet these TMDLs.

Wet-weather loading capacities are calculated by multiplying daily storm volumes by the wet-weather numeric target for each metal. The resulting curves identify the load allowance for a given flow.

Wet-weather loading capacity (total recoverable metals)

Metal	Load Duration Curve (kg/day)
Cadmium	Daily storm volume x 3.1 μg/L
Copper	Daily storm volume x 17 μg/L
Lead	Daily storm volume x 62 μg/L
Zinc	Daily storm volume x 159 μg/L

Element	Key Findings and Regulatory Provisions
***Load Allocations** (for nonpoint sources)*	**Dry Weather** Dry-weather nonpoint source load allocations (LAs) for copper and lead apply to open space and direct atmospheric deposition to the river.

Element	Key Findings and Regulatory Provisions

Dry-weather open space load allocations are equal to the critical flow for the upper portion of tributaries that drain open space, multiplied by the numeric targets for these tributaries.

Open space dry-weather LAs (total recoverable metals)

	Critical Flow	Cu (kg/day)	Pb (kg/day)
Tujunga Wash	0.12	0.0056	0.0028
Arroyo Seco	0.33	0.018	0.009

Load allocations for direct atmospheric deposition to the entire river are obtained from previous studies (3 kg/year for copper, 2 kg/year for lead and 10 kg/year for zinc.) Loads are allocated to each reach and tributary based on their length. The ratio of the length of each river segment to the total length of the river is multiplied by the estimates of direct atmospheric loading to the entire river.

Direct air deposition dry-weather LAs (total recoverable metals)

	Cu (kg/day)	Pb (kg/day)	Zn(kg/day)
LA River Reach 6	3.3×10^{-4}	2.2×10^{-4}	
LA River Reach 5	3.6×10^{-4}	2.4×10^{-4}	
LA River Reach 4	8.1×10^{-4}	5.4×10^{-4}	
LA River Reach 3	6.04×10^{-4}	4.03×10^{-4}	
LA River Reach 2	1.4×10^{-3}	9.5×10^{-4}	
LA River Reach 1	4.4×10^{-4}	2.96×10^{-4}	
Bell Creek	2.98×10^{-4}	1.99×10^{-4}	
Tujunga Wash	7.4×10^{-4}	4.9×10^{-4}	
Verdugo Wash	4.7×10^{-4}	3.2×10^{-4}	
Burbank Channel	7.1×10^{-4}	4.7×10^{-4}	
Arroyo Seco	7.3×10^{-4}	4.9×10^{-4}	
Rio Hondo Reach 1	6.4×10^{-4}	4.2×10^{-4}	2.1×10^{-3}
Compton Creek	6.5×10^{-4}	4.3×10^{-4}	

A dry-weather concentration-based load allocation for lead equal to the dry-weather numeric target (8.2 μg/L) applies to Monrovia Canyon Creek. The load allocation is not assigned to a particular nonpoint source or group of nonpoint sources.

A dry-weather concentration-based load allocation for selenium equal to the dry-weather numeric target (5 μg/L) is assigned to Reach 6 and its tributaries. The load allocation is not assigned to a particular nonpoint source or group of nonpoint sources.

Wet Weather

Wet-weather load allocations for open space are equal to the percent metals loading from open space (predicted by the wet-weather model) multiplied by the total loading capacity, then by the ratio of open space

Element	Key Findings and Regulatory Provisions
	located outside the storm drain system to the total open space area. There is no load allocation for cadmium because open space is not believed to be a source of the wet-weather cadmium impairment in Reach 1. **Wet-weather open space LAs (total recoverable metals)** **Metal** — **Load Allocation (kg/day)** Copper — 2.6×10^{-10} µg /L/day x daily storm volume(L) Lead — 2.4×10^{-10} µg /L/day x daily storm volume(L) Zinc — 1.4×10^{-9} µg /L/day x daily storm volume(L) Wet-weather load allocations for direct atmospheric deposition are equal to the percent area of the watershed comprised by surface water (0.2%) multiplied by the total loading capacity. **Wet-weather direct air deposition LAs (total recoverable metals)** **Metal** — **Load Allocation (kg/day)** Cadmium — 6.2×10^{-10} µg /L/day x daily storm volume(L) Copper — 3.4×10^{-10} µg /L/day x daily storm volume(L) Lead — 1.2×10^{-10} µg /L/day x daily storm volume(L) Zinc — 3.2×10^{-9} µg /L/day x daily storm volume(L) A wet-weather concentration-based load allocation for selenium equal to the dry-weather numeric target (5 µg/L) is assigned to Reach 6 and its tributaries. The load allocation is not assigned to a particular nonpoint source or group of nonpoint sources.
Waste Load Allocations (for point sources)	**Dry Weather** Dry-weather point source waste load allocations (WLAs) apply to the three POTWs (Tillman, Glendale, and Burbank). A grouped waste load allocation applies to the storm water permitees (Los Angeles County MS4, Long Beach MS4, Caltrans, General Industrial and General Construction), which is calculated by subtracting load allocations (and waste load allocations for reaches with POTWs) from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed. Mass- and concentration-based waste load allocations for Tillman, Los Angeles-Glendale and Burbank WRPs are developed to meet the dry-weather targets for copper and lead in Reach 4, Reach 3 and the Burbank Western Channel, respectively.

Element	Key Findings and Regulatory Provisions
	POTW dry-weather WLAs (total recoverable metals):

	Cu	Pb
Tillman		
Concentration-based (μg/L)	26	10
Mass-based (kg/day)	7.8	3.03
Glendale		
Concentration-based (μg/L)	26	12
Mass-based (kg/day)	2.0	0.88
Burbank		
Concentration-based (μg/L)	19	9.1
Mass-based (kg/day)	0.64	0.31

Dry-weather waste load allocations for storm water are equal to storm drain flows (critical flows minus median POTW flows minus median open space flows) multiplied by reach-specific numeric targets, minus the contribution from direct air deposition.

Storm water dry-weather WLAs (total recoverable metals)

	Critical Flow (cfs)	Cu (kg/day)	Pb (kg/day)	Zn (kg/day)
LA River Reach 6	7.20	0.53	0.33	
LA River Reach 5	0.75	0.05	0.03	
LA River Reach 4	5.13	0.32	0.12	
LA River Reach 3	4.84	0.06	0.03	
LA River Reach 2	3.86	0.13	0.07	
LA River Reach 1	2.58	0.14	0.07	
Bell Creek	0.79	0.06	0.04	
Tujunga Wash	0.03	0.001	0.0002	
Burbank Channel	3.3	0.15	0.07	
Verdugo Wash	3.3	0.18	0.10	
Arroyo Seco	0.25	0.01	0.01	
Rio Hondo Reach 1	0.50	0.01	0.006	0.16
Compton Creek	0.90	0.04	0.02	

A zero waste load allocation is assigned to all industrial and construction storm water permittees during dry weather. The remaining waste load allocations are shared by the MS4 permittees and Caltrans.

Other NPDES Permits

Concentration-based dry-weather waste load allocations apply to the other NPDES permits* that discharge to the reaches and tributaries in the following table.

* "Other NPDES permits" refers to minor NPDES permits, general non-storm water NDPES permits, and major permits other than the Tillman, LA-Glendale, and Burbank POTWs.

Element	Key Findings and Regulatory Provisions

Other dry-weather WLAs (µg total recoverable metals/L)

	Cu	Pb	Zn	Se
Reach 5, 6 and Bell Creek	30	19		5
Reach 4	26	10		
Reach 3 above LA-Glendale WRP and Verdugo	23	12		
Reach 3 below LA-Glendale WRP	26	12		
Burbank Western Channel(above WRP)	26	14		
Burbank Western Channel (below WRP)	19	9.1		
Reach 2 and Arroyo Seco	22	11		
Reach 1	23	12		
Compton Creek	19	8.9		
Rio Hondo Reach 1	13	5.0	131	

Wet Weather

During wet-weather, POTW allocations are based on dry-weather in-stream numeric targets because the POTWs exert the greatest influence over in-stream water quality during dry weather. During wet weather, the concentration-based dry-weather waste load allocations apply but the mass-based dry-weather allocations do not apply when influent flows exceed the design capacity of the treatment plants. Additionally, the POTWs are assigned reach-specific allocations for cadmium and zinc based on dry weather targets to meet the wet-weather TMDLs in Reach 1.

POTW wet-weather WLAs (total recoverable metals):

	Cd	Cu	Pb	Zn
Tillman				
Concentration-based (µg/L)	4.7	26	10	212
Mass-based (kg/day)	1.4	7.8	3.03	64
Glendale				
Concentration-based (µg/L)	5.3	26	12	253
Mass-based (kg/day)	0.40	2.0	0.88	19
Burbank				
Concentration-based (µg/L)	4.5	19	9.1	212
Mass-based (kg/day)	0.15	0.64	0.31	7.3

Element	Key Findings and Regulatory Provisions
	Wet-weather waste load allocations for the grouped storm water permittees are equal to the total loading capacity minus the load allocations for open space and direct air deposition and the waste load allocations for the POTWs. Wet-weather waste load allocations for the grouped storm water permittees apply to all reaches and tributaries.

Storm water wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	$3.1x10^{-9}$ x daily volume(L) – 1.95
Copper	$1.7x10^{-8}$ x daily volume (L) – 10
Lead	$6.2x10^{-8}$ x daily volume (L) – 4.2
Zinc	$1.6x10^{-7}$ x daily volume (L) – 90

The combined storm water waste load allocation is apportioned between the different storm water categories by their percent area of the portion of the watershed served by storm drains.

MS4 wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	$2.8x10^{-9}$ x daily volume(L) – 1.8
Copper	$1.5x10^{-8}$ x daily volume (L) – 9.5
Lead	$5.6x10^{-8}$ x daily volume (L) – 3.85
Zinc	$1.4x10^{-7}$ x daily volume (L) – 83

Caltrans wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	$5.3x10^{-11}$ x daily volume(L) – 0.03
Copper	$2.9x10^{-10}$ x daily volume (L) – 0.2
Lead	$1.06x10^{-9}$ x daily volume (L) – 0.07
Zinc	$2.7x10^{-9}$ x daily volume (L) – 1.6

General Industrial wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	$1.6x10^{-10}$ x daily volume(L) – 0.11
Copper	$8.8x10^{-10}$ x daily volume (L) – 0.5
Lead	$3.3x10^{-9}$ x daily volume (L) – 0.22
Zinc	$8.3x10^{-9}$ x daily volume (L) – 4.8

General Construction wet-weather WLAs (total recoverable metals):

Metal	Waste Load Allocation (kg/day)
Cadmium	$5.9x10^{-11}$ x daily volume(L) – 0.04
Copper	$3.2x10^{-10}$ x daily volume (L) – 0.2
Lead	$1.2x10^{-9}$ x daily volume (L) – 0.08
Zinc	3.01x10-9 x daily volume (L) – 4.8

Each storm water permittee under the general industrial and construction storm water permits will receive individual waste load allocations per acre based on the total acres of their facility.

Element	Key Findings and Regulatory Provisions
	Individual General Construction or Industrial Permittees WLAs (total recoverable metals): **Metal** — **Waste Load Allocation (g/day/acre)** Cadmium — $7.6\text{x}10^{-12}$ x daily volume(L) – $4.8\text{x}10^{-6}$ Copper — $4.2\text{x}10^{-11}$ x daily volume (L) – $2.6\text{x}10^{-5}$ Lead — $1.5\text{x}10^{-10}$ x daily volume (L) – $1.04\text{x}10^{-5}$ Zinc — $3.9\text{x}10^{-10}$ x daily volume (L) – $2.2\text{x}10^{-4}$ **Other NPDES Permits** Concentration-based wet-weather waste load allocations apply to the other NPDES permits* that discharge to all reaches of the Los Angeles River and its tributaries. **Wet-weather WLAs for other permits (total recoverable metals)** **Cadmium (µg /L)** — **Copper (µg /L)** — **Lead (µg /L)** — **Zinc (µg /L)** 3.1 — 17 — 62 — 159 * "Other NPDES permits" refers to minor NPDES permits, general non-storm water NDPES permits, and major permits other than the Tillman, LA-Glendale, and Burbank POTWs.
Margin of Safety	There is an implicit margin of safety that stems from the use of conservative values for the translation from total recoverable to the dissolved fraction during the dry and wet periods. In addition, the TMDL includes a margin of safety by evaluating wet-weather conditions separately from dry-weather conditions, which is in effect, assigning allocations for two distinct critical conditions. Furthermore, the use of the wet-weather model to calculate load allocations for open space can be applied to the margin of safety because it tends to overestimate loads from open spaces, thus reducing the available waste load allocations to the permitted discharges.
Implementation	The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the City of Long Beach MS4, the Caltrans storm water permit, major NPDES permits, minor NPDES permits, general NPDES permits, general industrial storm water NPDES permits, and general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in sections 13263 and 13269 of the Water Code, in conformance with the State Water Resources Control Board's Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. The Regional Board shall reconsider this TMDL in five years after the effective date of the TMDL based on additional data obtained from special studies. Table 7-13-2 presents the implementation schedule for the responsible permittees.

Element	Key Findings and Regulatory Provisions
	Non storm water NPDES permits (including POTWs, other major, minor, and general permits): Permit writers may translate applicable waste load allocations into effluent limits for the major, minor and general NPDES permits by applying the effluent limitation procedures in Section 1.4 of the State Water Resources Control Board's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) or other applicable engineering practices authorized under federal regulations. Compliance schedules may be established in individual NPDES permits, allowing up to 5 years within a permit cycle to achieve compliance. Compliance schedules may not be established in general NPDES permits. A discharger that can not comply immediately with effluent limitations specified to implement waste load allocations will be required to apply for an individual permit in order to demonstrate the need for a compliance schedule. If a POTW demonstrates that advanced treatment (necessitating long design and construction timeframes) will be required to meet final waste load allocations, the Regional Board will consider extending the implementation schedule to allow the POTW up to 10 years from the effective date of the TMDL to achieve compliance with the final WLAs. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to 10 years from the effective date of the TMDL to achieve compliance with final WLAs. **General industrial storm water permits:** The Regional Board will develop a watershed-specific general industrial storm water permit to incorporate waste load allocations. <u>Dry-weather implementation</u> Non-storm water flows authorized by Order No. 97-03 DWQ, or any successor order, are exempt from the dry-weather waste load allocation equal to zero. Instead, these authorized non-storm water flows shall meet the reach-specific concentration-based waste load allocations assigned to the "other NPDES permits". The dry-weather waste load allocation equal to zero applies to unauthorized non-storm water flows, which are prohibited by Order No. 97-03 DWQ. It is anticipated that the dry-weather waste load allocations will be implemented by requiring improved best management practices (BMPs) to eliminate the discharge of non-storm water flows. However, permit writers must provide adequate justification and documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations.

Element	Key Findings and Regulatory Provisions
	<u>Wet-weather implementation</u> General industrial storm water permittees are allowed interim wet-weather concentration-based waste load allocations based on benchmarks contained in EPA's Storm Water Multi-sector General Permit for Industrial Activities. The interim waste load allocations apply to all industry sectors and apply for a period not to exceed ten years from the effective date of the TMDL. **Interim wet-weather WLAs for general industrial storm water permittees (total recoverable metals)*** **Cd (µg/L)** — 15.9; **Cu(µg/L)** — 63.6; **Pb(µg/L)** — 81.6; **Zn(µg/L)** — 117 *Based on USEPA benchmarks for industrial storm water sector In the first five years from the effective date of the TMDL, interim waste load allocations will not be interpreted as enforceable permit conditions. If monitoring demonstrates that interim waste load allocations are being exceeded, the permittee shall evaluate existing and potential BMPs, including structural BMPs, and implement any necessary BMP improvements. It is anticipated that monitoring results and any necessary BMP improvements would occur as part of an annual reporting process. After five years from the effective date of the TMDL, interim waste load allocations shall be translated into enforceable permit conditions. Compliance with permit conditions may be demonstrated through the installation, maintenance, and monitoring of Regional Board-approved BMPs. If this method of compliance is chosen, permit writers must provide adequate justification and documentation to demonstrate that BMPs are expected to result in attainment of interim waste load allocations. The general industrial storm water permits shall achieve final wet-weather waste load allocations no later than 10 years from the effective date of the TMDL, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs if adequate justification and documentation demonstrate that BMPs are expected to result in attainment of waste load allocations. **General construction storm water permits:** Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed-specific general permit developed by the Regional Board. <u>Dry-weather implementation</u> Non-storm water flows authorized by the General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order No. 99-08 DWQ), or any successor order, are exempt from the dry-weather waste load allocation equal to zero as long as they

Element	Key Findings and Regulatory Provisions
	comply with the provisions of sections C.3.and A.9 of the Order No. 99-08 DWQ, which state that these authorized non-storm discharges shall be (1) infeasible to eliminate (2) comply with BMPs as described in the Storm Water Pollution Prevention Plan prepared by the permittee, and (3) not cause or contribute to a violation of water quality standards, or comparable provisions in any successor order. Unauthorized non-storm water flows are already prohibited by Order No. 99-08 DWQ. <u>Wet-weather implementation</u> Within seven years of the effective date of the TMDL, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the final waste load allocations assigned to construction storm water permittees. Regional Board staff will bring the recommended BMPs before the Regional Board for consideration within eight years of the effective date of the TMDL. General construction storm water permittees will be considered in compliance with final waste load allocations if they implement these Regional Board approved BMPs. All permittees must implement the approved BMPs within nine years of the effective date of the TMDL. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board within eight years of the effective date of the TMDL, each general construction storm water permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with final waste load allocations. **MS4 and Caltrans permits** Applicable CTR limits are being met most of the time during dry weather, with episodic exceedances. Due to the expense of obtaining accurate flow measurements required for calculating loads, concentration-based permit limits may apply during dry weather. These concentration-based limits would be equal to dry-weather reach-specific numeric targets. Each municipality and permittee will be required to meet the storm water waste load allocations shared by the two MS4s and Caltrans permittees at the designated TMDL effectiveness monitoring points. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the waste load allocations. The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach. The watershed is divided into five jurisdictional groups based on the subwatersheds of the tributaries that drain to each reach of the river, as presented in Table 7-13-3. Each

Element	Key Findings and Regulatory Provisions
	jurisdictional group shall achieve compliance in prescribed percentages of its subwatershed(s), with total compliance to be achieved within 22 years. Jurisdictional groups can be reorganized or subdivided upon approval by the Executive Officer.
Seasonal Variations and Critical Conditions	Seasonal variations are addressed by developing separate waste load allocations for dry weather and wet weather. For dry weather, critical flows for each reach are established from the long-term flow records (1988-2000) generated by stream gages located throughout the watershed and in selected reaches. The median dry-weather urban runoff plus the combined design capacity of the three major POTWs is selected as the critical flow since most of the flow is from effluent which results in a relatively stable dry-weather flow condition. In areas where there are no flow records, an area-weighted approach is used to assign flows to these reaches. Wet-weather allocations are developed using the load-duration curve concept. The total wet-weather waste load allocation for wet weather varies by storm. Given this variability in storm water flows, no justification was found for selecting a particular sized storm as the critical condition.
Compliance Monitoring and Special Studies	Effective monitoring will be necessary to assess the condition of the Los Angeles River and its tributaries and to assess the on-going effectiveness of efforts by dischargers to reduce metals loading to the Los Angeles River. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies. The programs, reports, and studies will be developed in response to subsequent orders issued by the Executive Officer. **Ambient Monitoring** An ambient monitoring program is necessary to assess water quality throughout the Los Angeles River and its tributaries and the progress being made to remove the metals impairments. The MS4 and Caltrans storm water NPDES permittees in each jurisdictional group are jointly responsible for implementing the ambient monitoring program. The responsible agencies shall sample for total recoverable metals, dissolved metals, including cadmium and zinc, and hardness once per month at each ambient monitoring location at least until the TMDL is re-considered at year 5. The reported detection limits shall be below the hardness adjusted CTR criteria. Eight ambient monitoring points currently exist in the Los Angeles River and its tributaries as part of the City of Los Angeles Watershed Monitoring Program. These monitoring points could be used to assess water quality.

Element	Key Findings and Regulatory Provisions
	Ambient Monitoring Points — **Reaches and Tributaries** White Oak Avenue — LA River 6, Aliso Creek, McCoy Creek, Bell Creek Sepulveda Boulevard — LA River 5, Bull Creek Tujunga Avenue — LA River 4, Tujunga Wash Colorado Boulevard — LA River 3, Burbank Western Channel, Verdugo Wash Figueroa Street — LA River 3, Arroyo Seco Washington Boulevard — LA River 2 Rosecrans Avenue — LA River 2, Rio Hondo (gage just above Rio Hondo) Willow Street — LA River 1, Compton Creek (gage at Wardlow) **TMDL Effectiveness Monitoring** The MS4 and Caltrans storm water NPDES permittees in each jurisdictional group are jointly responsible for assessing progress in reducing pollutant loads to achieve the TMDL. Each jurisdictional group is required to submit for approval by the Executive Officer a coordinated monitoring plan that will demonstrate the effectiveness of the phased implementation schedule for this TMDL (See Table 7-13.2), which requires attainment of the applicable waste load allocations in prescribed percentages of each subwatershed over a 22-year period. The monitoring locations specified for the ambient monitoring program may be used as effectiveness monitoring locations. The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting dry-weather waste load allocations if the in-stream pollutant concentration or load at the first downstream monitoring location is equal to or less than the corresponding concentration- or load-based waste load allocation. Alternatively, effectiveness of the TMDL may be assessed at the storm drain outlet based on the waste load allocation for the receiving water. For storm drains that discharge to other storm drains, the waste load allocation will be based on the waste load allocation for the ultimate receiving water for that storm drain system. The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting wet-weather waste load allocations if the loading at the downstream monitoring location is equal to or less then the wet-weather waste load allocation. The general industrial storm water permit shall contain a model monitoring and reporting program to evaluate BMP effectiveness. A permittee enrolled under the general permit shall have the choice of conducting individual monitoring based on the model program or participating in a group monitoring effort. MS4 permittees are

Element	Key Findings and Regulatory Provisions
	encouraged to take the lead in group monitoring efforts for industrial facilities within their jurisdiction because compliance with waste load allocations by these facilities will in many cases translate to reductions in metals loads to the MS4 system. The Tillman, LA-Glendale, and Burbank POTWs, and the remaining permitted discharges in the watershed will have effluent monitoring requirements to ensure compliance with waste load allocations. **Special Studies** The implementation schedule (see Table 7-13.2) allows time for special studies that may serve to refine the estimate of loading capacity, waste load and/or load allocations, and other studies that may serve to optimize implementation efforts. The Regional Board will re-consider the TMDL in the fifth year after the effective date in light of the findings of these studies. Studies may include: • Refined flow estimates for the Los Angeles River mainstem and tributaries where there presently are no flow gages and for improved gaging of low-flow conditions. • Water quality measurements, including a better assessment of hardness, water chemistry data (e.g., total suspended solids and organic carbon) that may refine the use of metals partitioning coefficients. • Effects studies designed to evaluate site-specific toxic effects of metals on the Los Angeles River and its tributaries. • Source studies designed to characterize loadings from background or natural sources • Review of water quality modeling assumptions including the relationship between metals and total suspended solids as expressed in the potency factors and buildup and washoff and transport coefficients. • Evaluation of aerial deposition and sources of aerial deposition. • POTWs that are unable to demonstrate compliance with final waste load allocations must conduct source reduction audits within two years of the effective date of the TMDL. • POTWs that will be requesting the Regional Board to extend their implementation schedule to allow for the installation of advanced treatment must prepare work plans, with time schedules to allow for the installation advanced treatment. The work plan must be submitted within four years from the effective date of the TMDL.

Table 7-13.2 Los Angeles River and Tributaries Metals TMDL: Implementation Schedule

Date	Action
Effective date of TMDL	Regional Board permit writers shall incorporate waste load allocations into NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance, renewal, or re-opener.
4 years after effective date of the TMDL	Responsible jurisdictions and agencies shall provide to the Regional Board results of the special studies. POTWs that will be requesting the Regional Board to extend their implementation schedule to allow for the installation of advanced treatment must submit work plans.
5 years after effective date of the TMDLs	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
NON-STORM WATER NPDES PERMITS (INCLUDING POTWS, OTHER MAJOR, MINOR, AND GENERAL PERMITS)	
Upon permit issuance, renewal, or re-opener	The non-storm water NPDES permits shall achieve waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Compliance schedules may allow up to 5 years in individual NPDES permits to meet permit requirements. Compliance schedules may not be established in general NPDES permits. If a POTW demonstrates that advanced treatment will be required to meet final waste load allocations, the Regional Board will consider extending the implementation schedule to allow the POTW up to 10 years from the effective date of the TMDL to achieve compliance with the final WLAs. Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to 10 years from the effective date of the TMDL to achieve compliance with final WLAs.
GENERAL INDUSTRIAL STORM WATER PERMITS	
Upon permit issuance, renewal, or re-opener	The general industrial storm water permitees shall achieve dry-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin to install and test BMPs to meet the interim wet-weather WLAs. BMP effectiveness monitoring will be implemented to determine progress in achieving interim wet-weather waste load allocations.

Date	Action
5 years after effective date of the TMDLs	The general industrial storm water permits shall achieve interim wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin an iterative BMP process including BMP effectiveness monitoring to achieve compliance with final waste load allocations.
10 years after the effective date of TMDL	The general industrial storm water permits shall achieve final wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
GENERAL CONSTRUCTION STORM WATER PERMITS	
Upon permit issuance, renewal, or re-opener	Non-storm water flows not authorized by Order No. 99-08 DWQ, or any successor order, shall achieve dry-weather waste load allocations of zero. Waste load allocations shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
Seven years from the effective date of the TMDL	The construction industry will submit the results of wet-weather BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.
Eight years from the effective date of the TMDL	The Regional Board will consider results of the wet-weather BMP effectiveness studies and consider approval of BMPs no later than eight years from the effective date of the TMDL.
Nine years from the effective date of the TMDL	All general construction storm water permittees shall implement Regional Board-approved BMPs.
MS4 AND CALTRANS STORM WATER PERMITS	
15 months after the effective date of the TMDL	In response to an order issued by the Executive Officer, each jurisdictional group must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both TMDL effectiveness monitoring and ambient monitoring. Once the coordinated monitoring plan is approved by the Executive Officer ambient monitoring shall commence.

Date	Action
48 months after effective date of TMDL (Draft Report) 54 months after effective date of TMDL (Final Report)	Each jurisdictional group shall provide a written report to the Regional Board outlining the how the subwatersheds within the jurisdictional group will achieve compliance with the waste load allocations. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan.
6 years after effective date of the TMDL	Each jurisdictional group shall demonstrate that 50% of the group's total drainage area served by the storm drain system is effectively meeting the dry-weather waste load allocations and 25% of the group's total drainage area served by the storm drain system is effectively meeting the wet-weather waste load allocations.
14 years after effective date of the TMDL	Each jurisdictional group shall demonstrate that 75% of the group's total drainage area served by the storm drain system is effectively meeting the dry-weather WLAs.
18 years after effective date of the TMDL	Each jurisdictional group shall demonstrate that 100% of the group's total drainage area served by the storm drain system is effectively meeting the dry-weather WLAs and 50% of the group's total drainage area served by the storm drain system is effectively meeting the wet-weather WLAs.
22 years after effective date of the TMDL	Each jurisdictional group shall demonstrate that 100% of the group's total drainage area served by the storm drain system is effectively meeting both the dry-weather and wet-weather WLAs.

Table 7-13.3 Los Angeles River and Tributaries Metals TMDL: Jurisdictional Groups

Jurisdictional Group	Responsible Jurisdictions & Agencies	Subwatershed(s)
1	Carson County of Los Angeles City of Los Angeles Compton Huntington Park Long Beach Lynwood Signal Hill Southgate Vernon	Los Angeles River Reach 1 and Compton Creek
2	Alhambra Arcadia Bell Bellflower Bell Gardens Bradbury Carson Commerce Compton County of Los Angeles Cudahy Downey Duarte El Monte Glendale Huntington Park Irwindale La Canada Flintridge Long Beach City of Los Angeles Lynwood Maywood Monrovia Montebello Monterey Park Paramount Pasadena Pico Rivera Rosemead San Gabriel San Marino Sierra Madre South El Monte South Pasadena Southgate Temple City Vernon	Los Angeles River Reach 2, Rio Hondo, Arroyo Seco, and all contributing sub watersheds
3	City of Los Angeles County of Los Angeles Burbank Glendale La Canada Flintridge Pasadena	Los Angeles River Reach 3, Verdugo Wash, Burbank Western Channel
4-5	Burbank Glendale City of Los Angeles County of Los Angeles San Fernando	Los Angeles River Reach 4, Reach 5, Tujunga Wash, and all contributing subwatersheds
6	Calabasas City of Los Angeles County of Los Angeles Hidden Hills	Los Angeles River Reach 6, Bell Creek, and all contributing subwatersheds

COMMON GROUND

from the Mountains to the Sea

Watershed and Open Space Plan

San Gabriel and Los Angeles Rivers

October 2001

Prepared by:

The California Resources Agency
San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy
Santa Monica Mountains Conservancy

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PREFACE

Through the California Resources Agency, the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, or Rivers and Mountains Conservancy (RMC), in conjunction with the Santa Monica Mountains Conservancy (SMMC), jointly developed this Watershed and Open Space Plan for the San Gabriel and Los Angeles Rivers.

The RMC is required by legislation to prepare the parkway and open space plan addressing the San Gabriel River watershed, the lower Los Angeles River watershed, and San Gabriel Mountains, portions of which are in the upper Los Angeles River watershed. In order to effectively plan land and water conservation measures for the lower Los Angeles River, plans for the upper Los Angeles River must be addressed. Also, the Rio Hondo sub watershed connects the rivers and is integral to the function of both. Some portions of the upper Los Angeles River are included within the territory of the SMMC. Recognizing the importance of a holistic approach, the Secretary of Resources directed the RMC and SMMC to jointly develop a coordinated plan for the entire San Gabriel and Los Angeles Rivers watersheds.

This plan is intended to support and inform planning efforts by cities, federal, state and local agencies, communities, groups and individuals in the watershed. This includes ongoing (or pending) subwatershed plans and future plans for parks, open space, and bike trails in individual cities. The State Conservancies will encourage incorporation of the concepts embodied in the guiding principles set forth in this plan into future open space, water resource, and habitat projects, to advance restoration of the watershed.

This plan aims to extend the discussion of restoring balance between human and natural systems from beyond the rivers to the entire watershed. Every community, including those without direct connections to the rivers or tributaries, has a role to play in the creation of new open space, trails, and bike paths, the enhancement of water resources, preservation of wildlife habitat, and maintenance of flood protection. This plan is intended as a tool to build consensus and reach ***common ground***.

The California Resources Agency, comprised of 27 departments, commissions, and conservancies, is responsible for the conservation, enhancement, and management of California's natural resources, including land, water, wildlife, parks, minerals, and historic sites. The Agency advises the Governor on issues related to the State's natural resources and is responsible for interpreting the California Environmental Quality Act. The RMC and SMMC both report to the Resources Agency.

The RMC was created in 1999 to preserve urban open space and habitat for the enjoyment of, and appreciation by, present and future generations. To fulfill that mission, the RMC will undertake projects that provide low-impact recreation, education, wildlife and habitat restoration, and watershed improvements, prioritizing river-related recreation, greening, aesthetic improvements, and wildlife habitat.

The SMMC was established in 1980 to acquire land and operate programs for conservation, parkland, and recreation purposes. The SMMC's objectives are guided by the goals of creating an inter-linking network of parks and trails, preserving critical wildlife habitat and ensuring open space and recreation lands in Los Angeles and Ventura counties for the future of all Southern California residents. The mission of the SMMC is to strategically buy back, preserve, protect, restore, and enhance treasured pieces of Southern California to form an interlinking system of urban, rural, and river parks; open space; trails; and wildlife habitats that are easily accessible to the general public

A number of public agencies, by virtue of their missions, are currently partners with the State Conservancies and will partner with the Conservancies throughout the life of the plan. The mission statements of these partner agencies are listed below.

- **U.S. Forest Service**

Caring for the land and serving people.

- **U.S. Army Corps of Engineers**

To provide quality, responsive engineering services to the nation including:

- Planning, designing building, operating water resources and other civil works projects
- Designing and managing the construction of military faculties for the Army and Air Force
- Providing design and construction management support for other Defense and federal agencies

U.S. National Park Service

To preserve unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

California Department of Parks and Recreation

To provide for the health, inspiration, and education of the people of California by helping to preserve the State's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation.

California Coastal Conservancy

- Improves public access to the coast and bay shores by acquiring land and easements and by building trails and stairways; it also seeks to create low-cost accommodations along the coast, including campgrounds and hostels.
- Protects and enhances coastal wetlands, streams and watersheds
- Restores urban waterfronts for public use and coastal dependent industries, especially commercial fishing
- Resolves coastal land use conflicts
- Acquires and holds environmentally valuable coastal lands for purposes that are in keeping with the Coastal Act
- Protects agricultural lands
- Accepts donations and dedications of land easements for public access, agriculture, open space, and habitat protection

California Department of Fish and Game

To manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.

California Wildlife Conservation Board

To select, authorize, and allocate funds for the purchase of land and waters suitable for the preservation, protection, and restoration of wildlife habitat.

California Department of Transportation

To improve mobility across California.

Los Angeles and Santa Ana Regional Water Quality Control Boards

To preserve and enhance California's water resources and ensure their proper allocation and efficient use for the benefit of present and future generations.

Los Angeles County Department of Public Works

To integrate natural resources, stormwater and water conservation and management of high quality stormwater to increase protection of our communities and obtain a higher quality of life for the citizens of our county.

Orange County Planning and Development Services

To provide, operate, and maintain quality public facilities and regional resources for the enjoyment, mobility, protection, and business of the people in Orange County.

EXECUTIVE SUMMARY

With more than seven million people living in the watersheds drained by the San Gabriel and Los Angeles Rivers, the effects of humans on natural ecosystems are extensive: native habitat is scarce, wildlife movement is obstructed, surface and groundwater quality is largely impaired, and ocean water quality is adversely affected. While flood protection has been a high priority and largely successful, creation of sufficient park space, a comprehensive network of trails and bike paths, and opportunities to observe nature in urban settings have been a low priority.

Los Angeles Region from Space

In recent years, cities, communities, agencies, and groups have been working to propose new solutions to these problems. To build upon these recent efforts, the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) and the Santa Monica Mountains Conservancy (SMMC) have jointly developed this Watershed and Open Space Plan.

The purpose of this plan is twofold: (1) articulate a vision for the future of the San Gabriel and Los Angeles Rivers Watersheds; and (2) provide a framework for future watershed and open space planning.

The vision for the future can be summarized simply:

Restore balance between natural and human systems in the watersheds.

Los Angeles River at Elysian Park

To achieve that vision, the central element of this plan is a set of **Guiding Principles**, which provide over-arching goals that can be used to guide open space planning in the watersheds. Cities, communities, federal, state and local agencies, groups, and individuals can use the guiding principles to develop plans and projects.

This plan discusses, but does not propose, specific projects. Subsequent plans will be necessary to determine how and where the majority of specific projects will occur. These include subwatershed plans and open space, trail and bike path plans to be developed by individual cities, agencies and organizations. This plan is intended as a living document that will evolve over time, as priorities evolve and needs dictate, based on periodic assessments of progress. As other related plans are developed, they will serve as elements of a comprehensive plan for open space.

Bosque del Rio Hondo

San Gabriel Mountains

A. GUIDING PRINCIPLES

The Guiding Principles are intended to allow jurisdictions to advance, promote, and enable the following concepts:

■ LAND: Grow a Greener Southern California

Create, Expand, and Improve Public Open Space Throughout the Region

Improve Access to Open Space and Recreation for All Communities

Improve Habitat Quality, Quantity, and Connectivity

Connect Open Space with a Network of Trails

Promote Stewardship of the Landscape

Encourage Sustainable Growth to Balance Environmental, Social, and Economic Benefits

Pan Pacific Park

■ WATER: Enhance Waters and Waterways

Maintain and Improve Flood Protection

Establish Riverfront Greenways to Cleanse Water, Hold Floodwaters and Extend Open Space

Improve Quality of Surface Water and Groundwater

Improve Flood Safety Through Restoration of River and Creek Ecosystems

Optimize Water Resources to Reduce Dependence on Imported Water

■ PLANNING: Plan Together to Make It Happen

Coordinate Watershed Planning Across Jurisdictions and Boundaries

Encourage Multi-Objective Planning and Projects

Use Science as a Basis for Planning

Involve the Public Through Education and Outreach Programs

Utilize the Plan in an On-Going Management Process

Arroyo Seco

B. STRATEGIES

To grow greener, enhance waters and waterways, and plan together, the RMC and SMMC will develop and implement strategies that translate the guiding principles into project-specific plans and work programs, from which individual projects can be identified, proposed, and developed. These strategies include:

Education: The State Conservancies will place a high priority on public education and outreach. Restoration of the watersheds will require changes in behavior, shifts in resource priorities, and decisions on how to balance environmental and economic needs. This requires local understanding of the key issues to allow the public to make informed choices.

Educating the Next Generation

Partnerships: Restoration of balance to the watersheds will require that the State Conservancies work with agencies, cities, communities, neighborhoods, interest groups and individuals to form partnerships to develop plans and implement projects.

Funding: To restore the watersheds, substantial financial resources will be needed. The State Conservancies will encourage, coordinate, and support efforts to secure additional funding from traditional sources, such as Congress, the State legislature, and government agencies, as well as corporations, private foundations, trusts and individuals.

Simi Hills

Multi-Objective Planning: All relevant federal, state and local agencies, cities, private groups and individuals will be encouraged to incorporate the guiding principles into the development of plans and projects. The Conservancies will also ask the cities to consider incorporation of the guiding principles into the next update of their General Plan.

Management: Open space should be managed consistently for the benefit of the people, wildlife, and the environment. Whenever feasible, acquisition of open space should include a plan to identify responsibility and funding for future management of open space.

Monitoring and Assessment: The State Conservancies will work to develop a joint assessment process for restoration of the watersheds, monitor progress towards meeting the goals described in this plan, and periodically revise and update the plan as appropriate.

Headwaters of the Los Angeles River

C. OPPORTUNITIES

To achieve the vision of the future for the watersheds, to encourage use of the guiding principles, and to implement the strategies described above, the State Conservancies will work with agencies, cities, and groups to identify opportunities and individual projects.

■ Land Acquisition, Connectivity, & Open Space

River Parkways: Create a continuous ribbon of open space, trails, active and passive recreation areas, and wildlife habitat along the Los Angeles, San Gabriel, and Rio Hondo Rivers. The specific treatment of each segment of the greenway should be determined by the existing conditions of the parcel, the needs and desires of the local community and

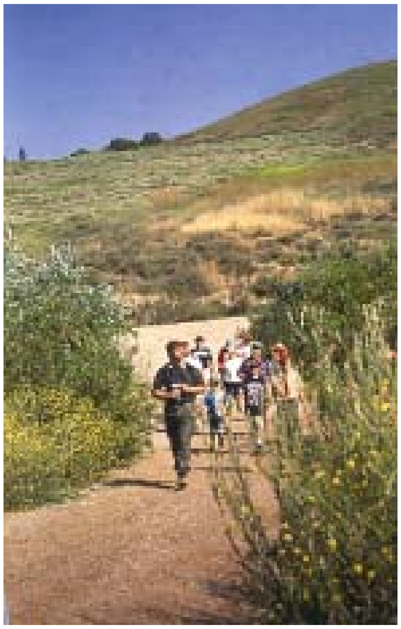
Conceptual River Parkways

the opportunities for connection and linkages presented at that location.

Urban Lands: Acquire parcels in urbanized areas where appropriate to provide open space, passive recreation, habitat restoration, and flood mitigation uses. Balance acquisition costs, including clean up of brownfields where feasible, with the value of providing additional open space.

Urban Riverfront Parcel

Mountains, Foothills and Hills: Acquire mountain and hillside open spaces that provide important wildlife habitat and open space values. The hillside open space network, in conjunction with the river network, should connect the San Gabriel Mountains with the Puente and Chino Hills and the Santa Ana Mountains, the Angeles National Forest with the Cleveland National Forest and the Santa Monica Mountains with the Santa Susana Mountains, Verdugo Hills and Simi Hills, and the San Gabriel Mountains.



Trail in the Whittier Hills

Tributaries: Provide open space along tributaries in urbanized areas to extend the river parkways and allow for pedestrian and bike paths, restoration of habitat, water quality improvement, and flood protection.

Trails and Bike Paths: Create a comprehensive network of pedestrian, bike, and equestrian trails that use existing corridors (such as rivers, tributaries and powerline rights-of-way) where available and provide new connections where needed.

Upper San Gabriel River Trail

Community Gardens: A network of community gardens, that incorporate native plants, throughout the urbanized portions of the watersheds, to provide gardening opportunities for residents that do not have access to private land.

■ Public Access

Improve and Expand Existing Facilities: The State Conservancies will work with individual cities and agencies to identify opportunities for the enhancement of existing open spaces within their jurisdictions, and assist in identifying funding sources.

Create New Facilities: The State Conservancies will work to identify opportunities to acquire land and develop new facilities, encourage donations of land parcels, and secure and maintain conservation easements where acquisition or donation is not feasible.

Confluence of the Rio Hondo and Los Angeles River

■ Water Resources

Flood Protection: Maintain and enhance flood protection using a range of flood protection methods, both structural and non-structural. Use open spaces and planted areas to filter, cleanse, and retain stormwater and enhance groundwater infiltration.

Surface Water: Improve water quality to optimize water supplies and protect beneficial uses. Encourage infiltration of urban runoff into groundwater where consistent with water quality goals, to extend the water supply and reduce reliance on imported water.

Groundwater: Expand and enhance groundwater infiltration and recharge wherever possible, and when consistent with water quality goals.

Legg Lake in Whittier Narrows

■ Native Plants and Wildlife

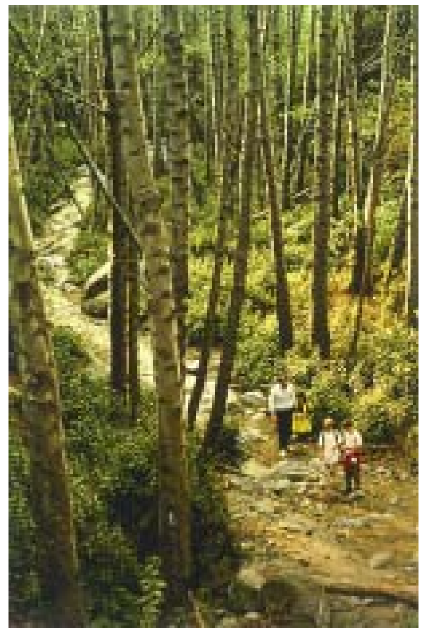
Habitat/Corridors: Preserve and protect important terrestrial, avian, and aquatic habitats in the watersheds. Preserve or establish habitat linkages and/or corridors in the Santa Susana Pass, Newhall Pass, Angeles National Forest to the Verdugo Mountains, Griffith Park to the Verdugo Mountains, the Verdugo Mountains and San Gabriel "Stepping Stones," the San Gabriel River, the Puente & Chino Hills, the Puente Hills to San Jose Hills and the San Gabriel Mountains, and the Los Angeles River.

Great Blue Heron

Wetlands: Restore and expand wetlands wherever feasible in the watersheds, and incorporate those wetlands as elements of natural systems, to treat urban run-off, improve water quality, and provide wildlife habitat.

D. NEXT STEPS

To restore balance to human and natural systems in the watersheds, plans and projects for open space, habitat, and water resources should incorporate the relevant Guiding Principles articulated in this plan. This includes the Los Angeles River Master Plan and ongoing (or pending) subwatershed plans (including Arroyo Seco Watershed Restoration Feasibility Study), the (in progress) San Gabriel River Master Plan, and future plans for parks, open space, and bike trails in the counties, and individual cities and communities.



Trail Above Monrovia

Following adoption of this plan, the RMC and SMMC will develop and propose specific projects within their territories to begin prompt implementation of the plan. These projects will be evaluated using the project evaluation criteria included in Appendix E.

The Resources Agency will work on the California Continuing Resource Investment Strategy Project (CCRISP), an initiative to help state agencies and the state's conservation partners make better decisions about how to conserve our state's precious natural resources.

The Rivers & Mountains Conservancy will, within three years, work with appropriate partners to develop the following plans: River Parkways Plan; Tributaries Plans, Trails and Bike Paths Plan; Mountains, Hills & Foothills Plan; Habitat Conservation

Plan; Cultural Landscapes Plan; and a Monitoring and Assessment program.

The Santa Monica Mountains Conservancy will develop a Watershed Work Program.

California State Parks will implement the urban park strategy for the Los Angeles area. The California Coastal Conservancy will develop wetlands restoration projects. The California Department of Fish and Game will work on habitat conservation planning. The Wildlife Conservation Board will work on acquisition of critical habitat and public access funding. Caltrans will develop bikeways and restoration projects. The Los Angeles and Santa Ana Regional Water Quality Control Boards will coordinate water quality improvements with interested parties. The US Forest Service will complete a Forest Plan Update that includes the Angeles National Forest. The US Army Corps of Engineers will continue work on wetlands restoration and flood control projects. The US National Park Service will prepare a River Parkways Study (if funded) and develop the De Anza Trail. The Los Angeles County Department of Public Works will complete the San Gabriel River Master Plan and work on river-related projects. The Orange County Office of the Chief Executive will complete a subwatershed plan for Coyote Creek (with the assistance of the Army Corps) and implement watershed related improvements. Individual Cities will identify new projects and consider incorporation of the Guiding Principles into the next update of their General Plans.

Los Angeles River

Major Plan Elements

San Gabriel & Los Angeles Rivers Watershed and Open Space Plan

Guiding Principles	*Strategies*	*Opportunities*	*Next Steps and Plans*
■ **Land: Grow Greener** *Create, Expand and Improve Public Open Space Throughout the Region* *Improve Access to Open Space and Recreation for All Communities* *Improve Habitat Quality, Quantity and Connectivity* *Connect Open Space with a Network of Trails* *Promote Stewardship of the Landscape* *Encourage Sustainable Growth to Balance Environmental, Social and Economic Benefits* ■ **Water: Enhance Waters** *Maintain and Improve Flood Protection* *Establish Riverfront Greenways to Cleanse Water, Hold Floodwaters and Extend Open Space* *Improve Quality of Surface Water and Groundwater* *Improve Flood Safety Through Restoration of River and Creek Ecosystems* *Optimize Water Resources to Reduce Dependence on Imported Water* ■ **Planning: Plan Together** *Coordinate Watershed Planning Across Jurisdictions and Boundaries* *Encourage Multiple-Objective Planning and Projects* *Use Science as a Basis for Planning* *Involve the Public Through Education and Outreach Programs* *Utilize the Plan in an Ongoing Management Process*	■ **Education** *Develop and Implement Watershed-wide Public Outreach, Education and Interpretive Programs* ■ **Partnerships** *Include Local, State, Federal and Private Partners in Project Planning and Implementation* ■ **Funding** *Secure Additional Funding from Local, State, Federal, Private and Corporate Entities* ■ **Multi-Objective Planning** *Use Guiding Principles to Maximize Projects and Minimize Costs* ■ **Management of Public Lands** *Create a Process for Consistent Management and Staff for Existing and Future Parks* ■ **Monitoring and Assessment** *Assess Progress and Adjust Plan*	■ **Land Acquisition, Connectivity & Open Space** *River Parkways* *Urban Lands* *Mountains, Foothills, and Hills* *Tributaries* *Trails & Bike Paths* *Community Gardens* ■ **Public Access** *Create New Facilities* *Expand & Improve Existing Facilities* ■ **Water Resources** *Flood Protection* *Surface Water* *Groundwater* *Private & Common Lands (Backyards)* ■ **Native Plants and Wildlife** *Habitat and Linkages* *Wetlands* *Private & Common Lands*	■ **The Resources Agency** *California Continuing Resources Investment Strategy Program* ■ **Rivers & Mountains Conservancy** *Phase II—Working with Cities on:* *River Parkways Plan* *Tributary (Subwatershed) Plans* *Trails and Bike Paths Plan* *Mountains, Hills & Foothills Plan* *Habitat Conservation Plan* *Cultural Landscapes Plan* *Monitoring & Assessment* ■ **Santa Monica Mountains Conservancy** *Watershed Work Program* ■ **California Parks and Recreation** *Implement the Urban Parks Strategy for the Los Angeles area.* ■ **California Coastal Conservancy** *Wetlands Restoration* ■ **California Fish and Game** *Habitat Conservation Planning* ■ **Wildlife Conservation Board** *Acquisition / Public Access Funding* ■ **Caltrans** *Bikeways and Restoration Projects* ■ **State and Regional Water Boards** *Water Quality Improvements* ■ **US Forest Service** *Forest Plan Update* ■ **US Army Corps of Engineers** *Wetlands Restoration & Flood Control* ■ **US National Park Service** *Parkway Study & De Anza Trail* ■ **LA County Public Works** *San Gabriel River Master Plan and River-Related Projects* ■ **Orange County** *Coyote Creek Watershed Plan* ■ **Cities** *Identify New Projects and Incorporate Guiding Principles into General Plans*

1. BACKGROUND

A. INTRODUCTION

This document is a Watershed and Open Space Plan for the San Gabriel and Los Angeles Rivers watersheds. A natural planning boundary, a watershed is the area drained by a single river and its tributaries. This plan addresses the linked watersheds of the San Gabriel and Los Angeles Rivers, which together drain 1,513 square miles from the San Gabriel Mountains to the Pacific Ocean, an area in which more than 7 million people currently live.

Transformation of the land along the San Gabriel and Los Angeles Rivers began with the arrival of settlers in the 18th Century. Densely vegetated wildlands were cleared, irrigated, and planted with grains and vegetables to feed the settlers. The arrival of the railroads and imported water facilitated a second transformation: the patchwork of farmland grew into a major urban metropolis. A third transformation is now possible. A network of open spaces, anchored by parkways along the rivers, can link sustainable communities together with trails, bike paths, and landscaped areas.

In recent years, cities, communities, groups, and agencies have worked to improve and expand open space, optimize water resources, preserve habitat, and create a network of trails and bike paths. Some of these efforts have been informally coordinated, in recognition of the potential to extend benefits beyond the borders of individual cities, create opportunities to leverage benefits, and maximize funding resources. This plan builds upon more than a decade of work and seeks to encourage broader participation in watershed planning. The concepts in this plan are intended to support and inform ongoing planning efforts, as well as provide a framework to plan future projects that are consistent with a regional vision to restore balance between human and natural systems in the watersheds.

The central element of this plan is a set of Guiding Principles intended to be used to plan and implement projects that will help restore balance to the watershed. More detailed plans at the subwatershed and local levels will be necessary to determine where specific improvements will occur. As a result, the vision of the future articulated in this document may require decades to be realized. But if cities, communities, private groups, and agencies work and plan together, the watersheds will grow greener, waters will be enhanced, and a healthier balance between human and natural systems can be achieved.

This plan utilizes information gathered in a study conducted by the Leo J. Shapiro & Associates (LJS), which studied public perceptions of, and priorities for, open space planning. The maps in this plan are primarily derived from the Geographic Information Systems database developed by Forma Systems for the RMC.

This document is organized in three major sections: (1) Background, which provides the context for the plan; (2) Current Conditions, which provides a description of the watersheds; and (3) a Vision for the Future, which contains the Guiding Principles and discussions of strategies, opportunities, next steps and subsequent plans.

B. HISTORICAL CONTEXT

Over millions of years, the San Gabriel and Los Angeles Rivers emerged from the San Gabriel Mountains and meandered towards the Pacific Ocean. As the mountains rose, they captured more rainfall, and the power of the rivers increased. Because of the steep slopes and rocky soils in the mountains, the rivers carried large amounts of sand, gravel, and rocks. Much of the water in the rivers disappeared into the sand and replenished groundwater. Due to low surface flow most of the year, the rivers appeared as meandering streams within wide beds. But when winter rains arrived, these "streams" often jumped their banks, changed course, and flowed over the land.

With abundant groundwater and the ever-changing course of the rivers, the lands along the rivers were heavily vegetated with dense stands of native trees, roses, grapes, and shrubs. Wetlands, marshes, and springs dotted the landscape. Habitats were diverse and wildlife was plentiful. The abundant water, vegetation, and wildlife supported a significant population of indigenous peoples such as the Chumash and Tongva (Gabrielino).

The earliest Spanish explorers noted the dense vegetation and the presence of surface water. The confluence of the Arroyo Seco and the Los Angeles River was noted as especially verdant. Because water was available, the *Mission San Gabriel de Arcángelo* was founded in 1771, followed in 1781 by *El Pueblo de Nuestra Señora la Reina de los Angeles de Porciuncula* (which became the City of Los Angeles).

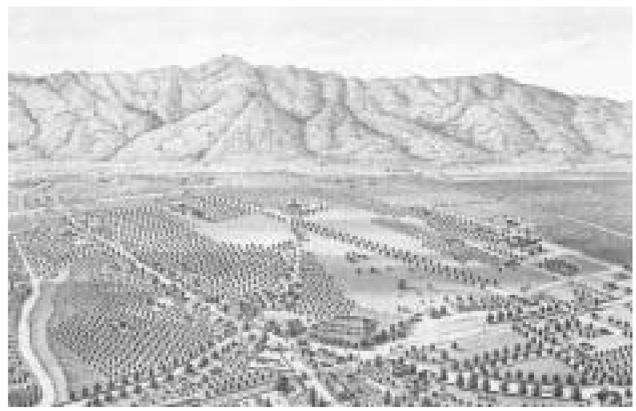
The arrival of settlers in the 18th Century began the first human-induced transformation of the double watershed. The dense vegetation surrounding the rivers was cleared to make way for farms and villages. The abundant water and favorable climate created ideal conditions for a variety of crops. Within a short time, the area became the center of agricultural production in Southern California. In little more than a century, the landscape along the rivers had changed significantly as floodplain became highly productive farmlands.

Los Angeles in 1871

From the beginning, water was diverted from the rivers for people, livestock, and crops. Before long, because so much water was diverted, the rivers no longer reached the ocean. Increased opportunities for trade—and a growing population—increased the demand for farmland and water, and the water on the surface of rivers became inadequate to meet demand. Wells were dug to reach groundwater, and groundwater levels slowly began to drop at some locations.

During this first transformation from wildlands to farmlands, proximity to the river was important. But easy access to water was coupled with danger when winter rains swelled the rivers or changed their course. The population lacked the knowledge and the means to control the rivers. Dikes and dams were often washed away by winter floods.

The arrival of the transcontinental railroads in 1876 provided access to distant markets, and agricultural production expanded greatly. The railroads also brought more people eager to share in the dream made possible by abundant sunshine, farmland, water, and business opportunities. Farmland was subdivided and homes built. The influx of people continued. Surface and groundwater sources were in high demand, and groundwater tables began to drop throughout the area. The plentiful wetlands and marshes began to disappear. Areas that were once dense with vegetation became dry grasslands. Occasional droughts became a major concern as residents, farmers, and businesses competed for the limited water supply.



San Gabriel in 1893

Because the population began to exceed available water resources, in 1913 the Los Angeles—Owens River Aqueduct was built, importing water from great distances. More and more farmland was subdivided and converted to commercial and residential uses. Once-distant farm communities began to grow towards each other. The once-vast open spaces began to disappear. Urban sprawl covered the lowlands and spread into the valleys and hillsides. The second transformation of the watershed, from farming communities to urban metropolis was just as swift as the first transformation.

During this second transformation, from farmland to urban metropolis, proximity to the river was less critical, but the danger from floods remained. Instead of crops and livestock, homes, businesses and lives were lost. A variety of measures were employed to keep the rivers in their channels (or the then-current channels), but natural forces always prevailed. After two significant floods in the 1930s, the federal government worked with the Los Angeles County Flood Control District to implement a flood control plan with three major components: (1) channelize, straighten, and deepen the rivers; (2) install debris basins in foothills to protect against debris flows during storm events; and (3) construct dams in the mountains to impound storm runoff and permit controlled release of those waters. The Los Angeles River was encased in concrete for most of its length, and the San Gabriel River was surrounded by levees. The system protects lives and property from flooding and speeds discharge of floodwaters into the Pacific Ocean.

Los Angeles River south of Downtown

The potential for a third transformation of the watersheds has emerged in the past decade, beginning with visions of "restoring" the Los Angeles River and implementing watershed management strategies. Individuals, groups, agencies, communities, and cities have developed plans to expand natural spaces along the river, establish riverfront walks or bike paths, and restore public access. These concepts have been expanded to include the San Gabriel River, as well as tributaries of both rivers, and planning on these issues is ongoing. This plan is an outgrowth of those efforts, seeks to codify and extend upon those concepts, and provide a framework for future planning by expanding the concept of restoration from the rivers to the entire watershed.

C. PLANNING CONTEXT

During the first transformation of the watersheds, planning focused on meeting the demand for water: first with surface supplies, then groundwater. During the second transformation, once water was imported from distant sources, the focus shifted to protecting farms, homes, and businesses from flooding. To achieve a third transformation of the watersheds, planning must focus on natural systems and open space.

A watershed is the area drained by a single river and its tributaries. Despite this clear spatial identity, watersheds are not the only natural planning boundary. Groundwater basins cross under watersheds, and forest ecosystems fold over ridgelines. Political and jurisdictional boundaries in the region add complexity. A sound ecological approach to planning must consider the relationships between human and natural systems, overlapping physical and biological systems, and social, economic, and political systems. And since imported water is an important element of Southern California's water supply, management of the watersheds of the San Gabriel and Los Angeles Rivers will impact remote watersheds. Actions taken in the upper and middle portions of the watershed impact the downstream areas and oceans.

Planning at watershed and subwatershed scales necessarily involves consideration of the entire water cycle, both above and below the ground. This includes the intertwined concerns of flood protection, water resources, water quality, protection and enhancement of habitat, open space for passive and active recreation, and strategies to encourage sustainable future development.

Watershed planning makes clear the interconnections between our mountainous upstream reaches and our downstream cities and beaches.

To understand the context for this plan, it is useful to provide an historical overview of some relevant plans and planning concepts related to open space in the double watershed.

In 1911, Los Angeles City Park Commissioners proposed a river parkway (that was never built) between Griffith Park and Elysian Park that would have connected with the Arroyo Seco Parkway (that was built, but without many of its originally proposed features). Other plans or concepts for parks along the rivers were developed, but none were implemented prior to the start of the major flood control projects that began in the 1930s.

The most significant and far-reaching of the early open space plans in the double watershed was proposed in 1930, by the team of Olmsted Brothers and Harland Bartholomew and Associates, who together had developed master plans for the Los Angeles County highway system and a state park system. The Olmsted-Bartholomew plan, entitled *Parks, Playgrounds and Beaches for the Los Angeles Region*, recommended a network of parkways to connect the mountains, rivers, parks, and beaches. Parkways along the river were intended to reduce the need for structural flood protection features. To remedy the deficit of park space (that existed in 1930), the plan proposed a total of 71,000 acres of parkland south of the San Gabriel Mountains. Unfortunately, due to timing (at the start of the Great Depression), cost ($231 million at that time), and other issues, the Olmsted-Bartholomew plan was shelved and largely forgotten for many years. The centerpiece of that plan, a network of open spaces connected by parkways, remains the path not taken.

Los Angeles River west of Sepulveda Dam

The Santa Monica Mountains National Recreation Area was formed in 1977. The National Park Service worked with the State of California to create a Santa Monica Mountains Comprehensive Plan, which was adopted in 1979. This led to the formation of the Santa Monica Mountains Conservancy in order to acquire lands for the Santa Monica Mountains ecosystem.

In 1980, the U.S. Army Corps of Engineers commissioned a study on recreational potential of drainage facilities on the major tributaries of the Los Angeles and San Gabriel Rivers (*LACDA System Recreation Study*, U.S. Army Corps of Engineers and DMJM, 1980), which identified opportunities for trails, linear parks, riparian areas, nature study facilities, and other passive and active recreational opportunities. In 1983, the territorial jurisdiction of the SMMC was expanded to include portions of Ventura County and portions of the western Los Angeles River watershed, and in 1990 the Rim of the Valley Trail Corridor Master Plan was adopted. In 1990, the Nature Conservancy published the *Critical Wildlife/Habitat Linkage Areas Between the Santa Susana Mountains, Simi Hills, and Santa Monica Mountains*, which identified the critical choke points for wildlife movement between those mountain ranges and the relationship to preservation of biodiversity.

In 1993, the California Coastal Conservancy completed a *Los Angeles River Park and Recreation Study* to explore beneficial uses of the river, including an assessment of the river's potential for recreation and wildlife enhancement. In 1994, the Los Angeles Regional Water Quality Control Board updated its *Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*. This plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters.

In 1996, Los Angeles County adopted a Master Plan for the Los Angeles River, which "…provides for the optimization and enhancement of aesthetic, recreational, flood control and environmental values by creating a community resource, enriching the quality of life for residents and recognizing the river's primary purpose for flood control" (*Los Angeles River Master Plan*, Los Angeles County Department of Public Works, 1996). The plan incorporated substantial stakeholder input and recommended environmental restoration, new trails and connections to existing trails, tree plantings, signage, murals, and economic development opportunities. A follow-on project, the development of landscape standards and guidelines, is currently underway.

In 1997, the Cal Poly Pomona 606 Design Studio completed a plan titled: *Puente Hills Corridor: Greenspace Connectivity for Wildlife and People.*. This report explored the recreational and habitat preservation planning issues for the Puente Hills from Whittier Narrows to the Cleveland National Forest.

In 2000, the California Coastal Conservancy documented current wetland resources in a report entitled *Wetlands of the Los Angeles River Watershed*, which identified ten sites that have potential for near-term restoration, including De Forest Park (Long Beach), Victoria Park (Torrance), Harbor

Park (San Pedro), Dominguez Gap (Long Beach), Hazard Park (Los Angeles), Taylor Yard (Los Angeles), Lower Arroyo Park (Pasadena), Cahuenga Spreading Grounds (Glendale), Sepulveda Basin (Van Nuys), and Upper Bull Creek (San Fernando).

Also in 2000, Cal Poly Pomona graduate students developed a plan for regional planning of urban wildlife movement networks in the San Gabriel Valley (*Reconnecting the San Gabriel Valley: A Planning Approach for the Creation of Interconnected Urban Wildlife Corridor Networks*, California Polytechnic University, Pomona, 2000). Although the primary purpose was to delineate a planning process to connect wildlife habitats, the plan also identified specific opportunities for improvements along the edges of the San Gabriel River.

Confluence of the Arroyo Seco and the Los Angeles River

The Southern California Studies Center of the University of Southern California published *Sprawl Hits the Wall* (2001), proposing a region-wide approach for a sustainable approach to development. The report recommends that the region grow "Smarter," "Together," "Greener," and "More Civic Minded."

Funded by the California Coastal Conservancy with support from the SMMC, the *Arroyo Seco Watershed Restoration Feasibility Study* (North East Trees and Arroyo Seco Foundation, June 2001) addresses flood and stream management, habitat restoration, water resources, and recreational opportunities along one of the main tributaries of the Los Angeles River. The goal is to restore the watercourse from its origins in the San Gabriel Mountains to its confluence with the Los Angeles River near Elysian Park.

The Los Angeles County Department of Public Works completed a *Los Angeles River Bikeway Study* (June 2001), to address how to overcome the physical obstacles that impede the course of the Los Angeles River bikeway from downtown Los Angeles, past Union Station, the Arroyo Seco, the Los Angeles River Center and into the west San Fernando Valley.

A consortium of groups and agencies, including the South Coast Wildlands Project, the Nature Conservancy of California, the California Wilderness Coalition, the Biological Resources Division of the U.S. Geological Survey, and the Center for Reproduction of Endangered Species of the Zoological Society of San Diego, jointly developed *Missing Linkages: Restoring Connectivity to the California Landscape* (August 2001). This report identified more than 300 existing and former wildlife corridors throughout California that are vital habitat linkages for species diversity. The report identifies several important wildlife linkages in the San Gabriel and Los Angeles watersheds.

Several other plans are currently underway, or are proposed to begin shortly, including:

- **Los Angeles and San Gabriel Rivers Watershed Feasibility Study**

The U.S. Army Corps of Engineers and Los Angeles County Department of Public Works have collected Geographic Information Systems data on the watersheds. The goal of the study is to be able to identify potential opportunities related to improving recreation, land use and habitat management, water conservation, flood quality and flood management and to development a framework for a future integrated basin management plan for the Los Angeles and San Gabriel River watersheds.

- **San Gabriel River Master Plan**

In 1999, Los Angeles County began the development of a master plan for the San Gabriel River, from the County-controlled dams and reservoirs in the San Gabriel Mountains to the river's outlet at the Pacific Ocean. The consensus-driven master plan process will identify project opportunities for recreation, open space, and habitat enhancements, maintenance of flood protection, preservation of natural resources, and maintenance of existing water rights. Completion of the plan is scheduled for 2003.

■ Forest Plan Update—Angeles, Cleveland, Los Padres, and San Bernardino National Forests

The U.S. Forest Service is in the process of updating its management plan for the Southern California National Forests including the Angeles, Cleveland, Los Padres, and San Bernardino National Forests. The elements of the plan are wilderness areas, timber management, range allotments, recreational options, and land acquisition. Completion of the plan and the required environmental documentation is scheduled for December 2003.

■ San Gabriel River and Rio Hondo Spreading Grounds Enhancements

The Los Angeles County Department of Public Works is working with the City of Pico Rivera to provide public access, create recreation opportunities, and improve the appearance of the existing spreading grounds (used to recharge groundwater) along the San Gabriel and Rio Hondo Rivers. This plan is intended as a prototype for multi-objective projects in the region.

■ Sun Valley Watershed Management Plan

The Los Angeles County Department of Public Works is developing a plan to address chronic flooding in the Sun Valley subwatershed. The plan proposes to develop multi-objective solutions to flooding, increase groundwater recharge, reduce stormwater pollution, and provide recreational opportunities. The project is intended to attract multiple funding partners, educate and motivate the local community to embrace these solutions, and provide a model for future watershed management projects throughout Los Angeles County.

■ Subwatershed Plans

The State Water Resources Control Board has funded subwatershed plans for Compton Creek, Coyote Creek, Rio Hondo, and the Upper San Gabriel River (including Walnut and San Jose Creeks), which are anticipated to begin in late 2001. In addition, the second phase of the Arroyo Seco Watershed Restoration Feasibility Study, has been funded by the SMMC and the California Coastal Conservancy.

2. CURRENT CONDITIONS

The watersheds of the San Gabriel and Los Angeles Rivers cover 1,513 square miles, from the San Gabriel Mountains in the north to the Pacific Ocean at Long Beach (**Figure 2-1**). The two rivers arise from springs and creeks in the mountains surrounding the Los Angeles basin, flow across the San Gabriel and San Fernando Valleys, then flow nearly parallel across the coastal plain to the Pacific Ocean.

The rivers have an engineered connection via the Rio Hondo, a major tributary of the Los Angeles River that flows, along with the San Gabriel, into the Whittier Narrows Dam and Reservoir.

The region within the watersheds is geographically diverse, particularly in terms of its topography, climate, land use, and habitat types. Urbanization during the latter half of the twentieth century has had a considerable impact on natural resources, altering the hydrology in the watersheds and significantly reducing the extent of natural habitat and biotic communities.

The purpose of this section is to provide a primer for planning in the watersheds and an atlas of the geography of the region: its physiography, climate, hydrology, water quality and quantity, recreation and open space, natural habitat and demographic characteristics.

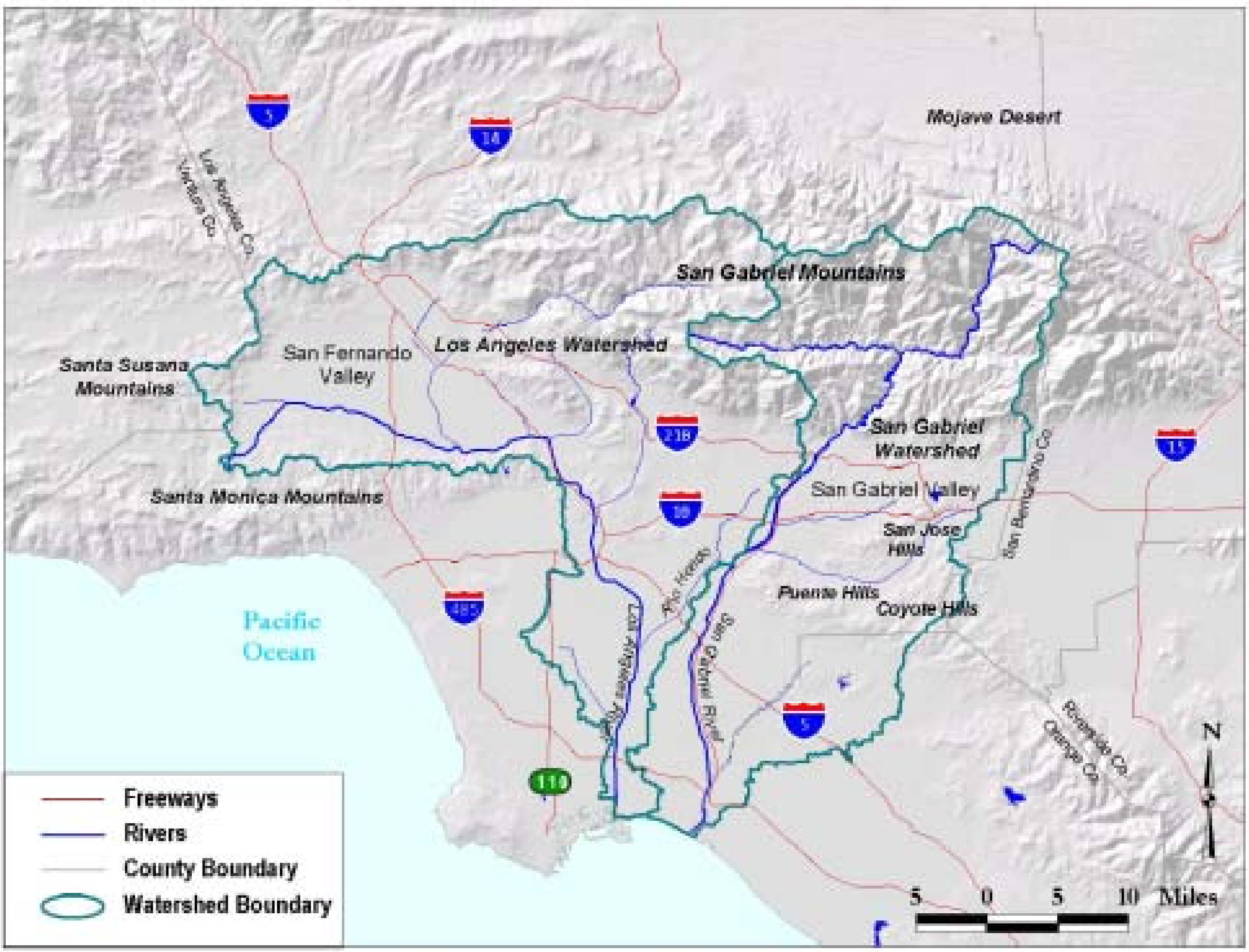


Figure 2-1. San Gabriel and Los Angeles Rivers Watersheds

A. PHYSICAL SETTING

1. Geology and Geomorphology

The mountains surrounding the San Gabriel-Los Angeles basins are part of the Transverse Ranges, which extend 350 miles east to west from the Eagle Mountains in San Bernardino County to the Pacific Ocean. To the north, the San Gabriel Mountains separate the basin from the Mojave Desert. To the west, the Santa Monica Mountains separate the watersheds from the Ventura basin. Topography in the watersheds ranges from sea level to over 10,000 feet in the San Gabriel Mountains. Most of the coastal plain is less than 1,000 feet in elevation. The foothills reach 3–4,000 feet before rising rapidly into the San Gabriels, to a height of 10,064 at Mt. San Antonio (Mt. Baldy). The grade of the mountain slopes averages 65–70 percent, some of the steepest slopes in the world.

Geology varies from Precambrian metamorphic rocks (1.7 billion years old) to alluvial deposits washed down from mountain canyons. The San Gabriel Mountains are young mountains, geologically speaking, and continue to rise at a rate of nearly three-quarters of an inch per year. Because of this instability, they are also eroding at a rapid rate. Alluvial deposits of sand, gravel, clay and silt in the coastal plain run thousands of feet thick in some areas, due in part to the erosive nature of the San Gabriel and Santa Monica Mountains.

The region is extensively faulted, with the San Andreas Fault bordering the north side of the San Gabriels and the Sierra Madre–Cucamonga fault zone on the south side. Throughout the basin are hundreds of lesser fault systems, such as the Newport-Inglewood fault that runs from Newport Beach to Beverly Hills via Long Beach and Signal Hill. The most notorious are those that have been the cause of major earthquakes during the past few decades, known not by name but by the region in which they struck: Sylmar in 1971, Whittier Narrows in 1987, and Northridge in 1994. The San Andreas Fault, which traverses California for 625 miles from the San Bernardino Mountains to Northern California, has not generated an earthquake in the Los Angeles area since the Tejon Ranch earthquake in 1857.

Fire is also an integral and necessary part of the natural environment and plays a role in shaping the landscape. Chaparral, the dominant natural vegetation type on slopes throughout the region, is extremely fire-prone. Brush fires leave the soil exposed and unprotected. These bare areas, in combination with steep slopes and erosive mountains, enable runoff from winter rains to suspend large quantities of coarse mineral debris, rocks, and vegetation and wash it downslope and into streams. These debris flows can erode the landscape, clog stream channels, damage structures, and injure inhabitants in the canyons and lower foothill areas.

2. Climate

The watersheds are within the Mediterranean climate zone, which extends from Central California to San Diego. Wet winters and long dry summers characterize this climate. The extent of this climate type is limited worldwide. Other than the central and south coast of California, it only occurs in coastal zones along the Mediterranean Sea, Western and Southern Australia, the Chilean coast and the Cape Town region of South Africa.

The geography of the Los Angeles region results in a great deal of spatial variation in the local climate. The abrupt rise of the mountains from the coast creates a barrier that traps moist ocean air against the southerly slopes and partially blocks the desert summer heat and winter cold from the interior northeast. The common perception of the region as desert is misleading. The coastal plain may be more appropriately termed "semi-arid," and the mountains receive considerable snow and rainfall most years. Average daytime summer and winter temperatures range from 76/65F° on the coast, to 90/66F° in the interior valleys and 81/56F° in the mountains.

Summers are dry, with most precipitation falling in a few major storm events between November and March (**Figure 2-2**). Long-term annual rainfall averages vary from 12.2 inches along the coast, 15.5 inches in downtown Los Angeles to 27.5 inches in the mountains (**Figures 2-3 and 2-4**). For any given storm event, rainfall totals vary significantly by region. Moisture-laden air from the ocean moves up the mountain slopes, expanding and cooling as it rises. Cooler air can hold less moisture, thus produces more precipitation. On the lee side of the

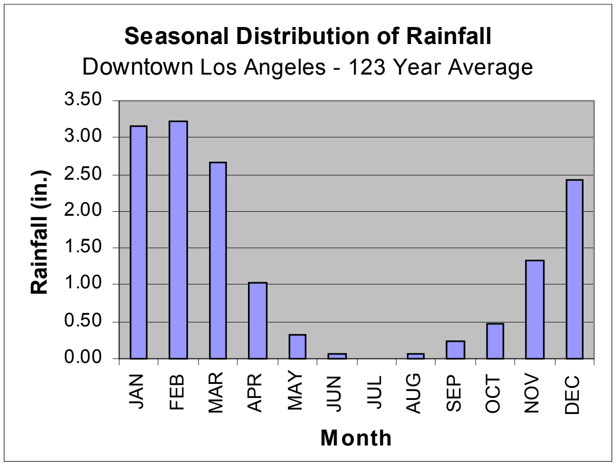


Figure 2-2. Seasonal Variation in Rainfall Amounts
Source: Western Regional Climate Center

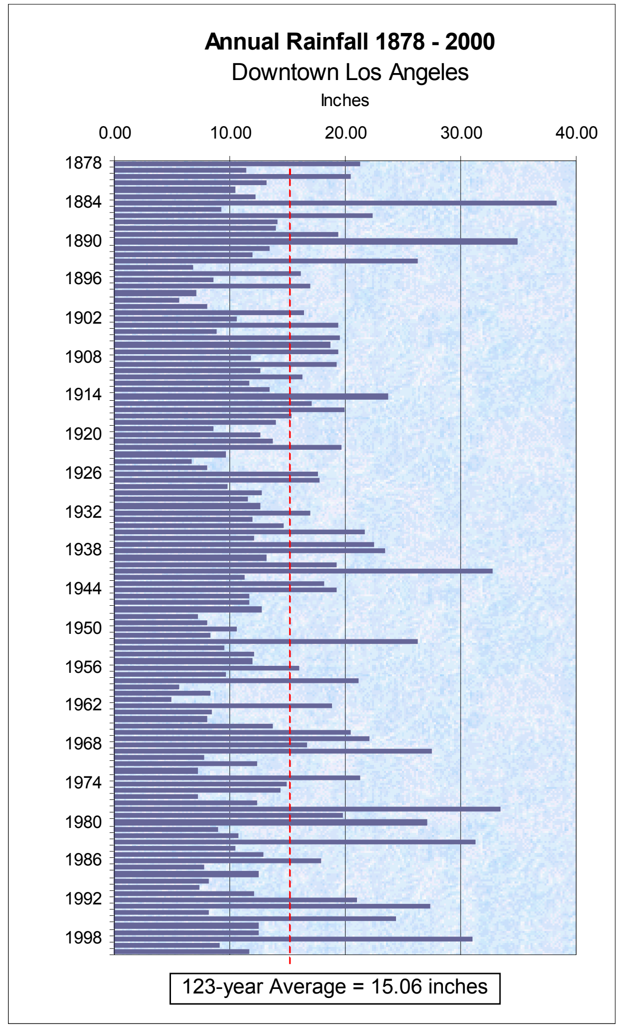


Figure 2-3. Long-term Variation in Rainfall Amounts
Source: Western Regional Climate Center

mountains, descending air mass warms as it reaches the desert, releasing any remaining moisture through evaporation. A 24-hour storm that produces one inch of rain along the coast can generate 10–20 inches of rainfall in the mountains and just a trace in the desert. The maximum-recorded 24-hour rainfall in the watersheds was 34 inches in the mountains and 9 inches on the coastal plain.

Most winter storms come from the northwest, moving across Southern California into Arizona. The closer the center of the storm is, the more rain it will bring, with snow levels frequently reaching down to 5,000 feet. These are the typical storms that occur in the basin, bringing ¾ inch or less of rainfall. Storms from the south or southwest are less common, but may bring 3–6 inches of rain in the basin and 3–6 feet of snow above 6,000 feet. These storms tend to stall off the coast, which makes their arrival difficult to predict. Storms from the west are least common but last the longest, characterized by a series of rain events each bringing 1–2 inches of rain over a period of 36–48 hours. Summer rains are rare, but when they occur they are a result of tropical thunderstorms originating in the Gulf of Mexico or late summer hurricanes off the West Coast of Mexico.

Air pressure also plays a role in the local climate. In the late spring and early summer, a low-pressure area inland draws a moist marine layer in from the ocean, resulting in coastal fog and low clouds, which moderate temperatures in the basin. The difference in air pressure between the ocean and the desert determines the extent of the marine layer. High-pressure systems off the coast also result in offshore breezes, as air moves from the ocean towards lower pressure areas in the basin.

B. WATERSHED HYDROLOGY

Most of the watersheds (93 percent) lie within Los Angeles County. The San Gabriel River flows from the San Gabriel Mountains, in the Angeles National Forest. Its tributaries drain portions of the Chino, San Jose, and Puente Hills. The Los Angeles River originates at the junction of Calabasas and Bell Creeks in the western San Fernando Valley, and is fed by other tributaries that drain the Santa Monica and Santa Susana Mountains, the Simi Hills, and the western San Gabriel Mountains. Coyote Creek, a tributary of the San Gabriel River, drains portions of both Los Angeles and Orange Counties (**Figure 2-5**).

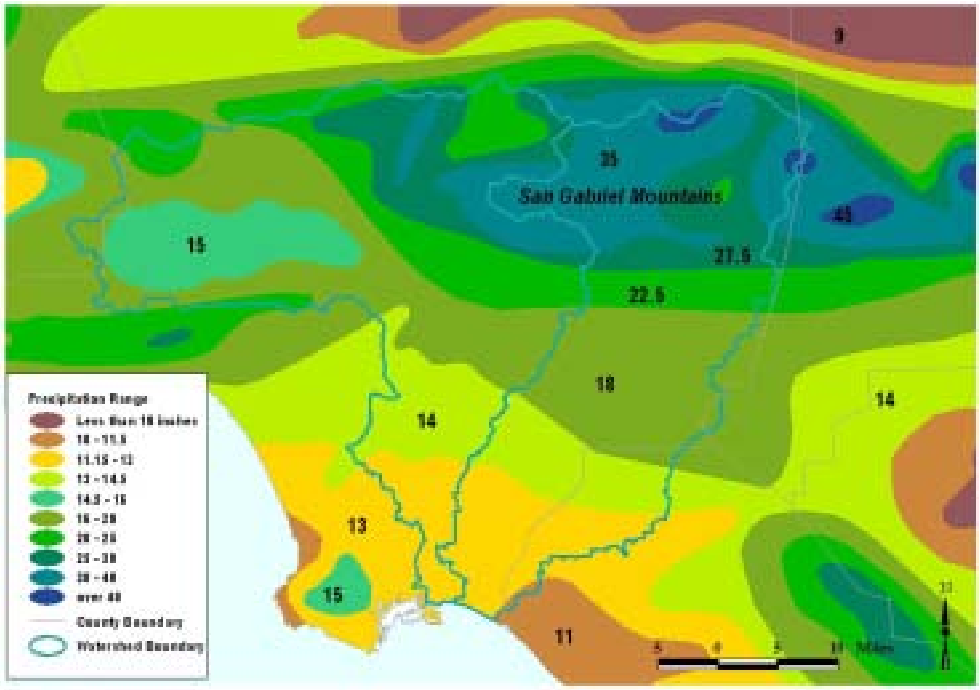


Figure 2-4. Spatial Variation of Average Precipitation in the Watersheds
Source: California Department of Fish & Game

1. Surface Water

There are twenty major sub-watersheds, shown in **Figure 2-5**. The major tributaries of the San Gabriel River include the West Fork of the San Gabriel, Walnut Creek, San Jose Creek, and Coyote Creek. For the Los Angeles River, major tributaries include the Tujunga, Pacoima and Verdugo Washes, Arroyo Seco, Rio Hondo and Compton Creek. There are nearly 2,000 stream miles in the watersheds, and one-quarter of those streams flow year-round.

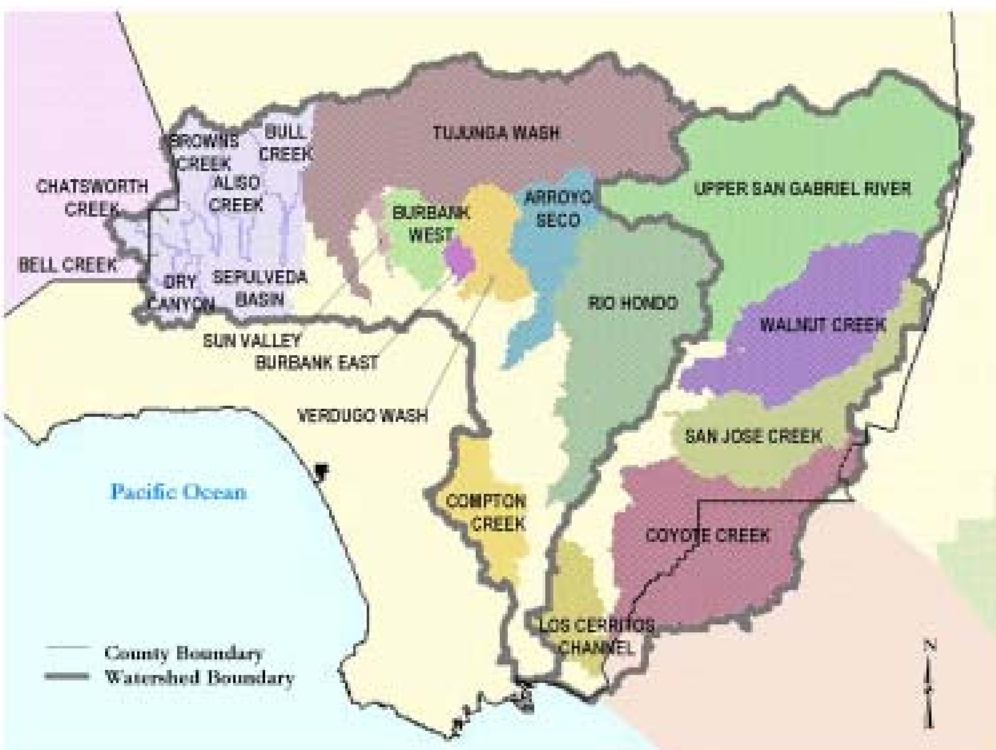


Figure 2-5. Major Sub-watersheds of the San Gabriel and Los Angeles Rivers
Adapted from L. A. County Department of Public Works

■ Lakes and Reservoirs

The coastal plain at one time supported a number of shallow lakes and ponds fed by springs and by the rivers. Many of these lakes have disappeared as the rivers have been modified. A network of reservoirs has been constructed along the rivers and major tributaries, which are managed for water supply, flood protection, groundwater recharge and in some cases recreation. In total there are 92 lakes and reservoirs within the watersheds. Twenty of these are reservoirs operated by Los Angeles County or the Army Corps of Engineers (**Figure 2-13**).

■ Wetlands

Historically, extensive wetlands existed throughout the San Gabriel and Los Angeles river basins, both fresh and saltwater. Marshes and ephemeral ponds occurred near the cities of Torrance and Long Beach, and along Compton Creek and other tributaries. Tidal marsh occurred along the coast near San Pedro and at the mouths of both rivers. The historical distribution of wetlands in Los Angeles and northern Orange County is shown in **Figure 2.6a**.

Nearly all of these historic wetland areas have been lost to urbanization, marinas, flood protection measures, or stream channelization. According to the Coastal Conservancy, within the Los Angeles River watershed overall, 100 percent of the original lower riverine and tidal marsh and 98 percent of all inland freshwater marsh and ephemeral ponds have been drained or filled. Some of these losses have been offset by constructed or restored wetlands, primarily behind flood management structures such as the Sepulveda Basin, Santa Fe Dam, and Whittier Narrows Basin. The current distribution of wetlands in Southern California is shown on **Figure 2-6b**. The most substantial remaining historic wetland areas include:

- El Dorado wetlands near the confluence of Coyote Creek and the San Gabriel River
- Los Cerritos wetlands near the mouth of the San Gabriel River (Bixby Ranch and Hellman Ranch), which are degraded from oil drilling operations
- Lower Compton Creek where the channel bottom is unlined
- Saltwater marsh along the banks at the lowest reach of the Los Angeles River below Willow Street and the Golden Shores wetland near the river's mouth in Long Beach
- Pockets of freshwater marsh in Torrance
- Seal Beach National Wildlife Refuge wetlands at the Naval Weapons Station

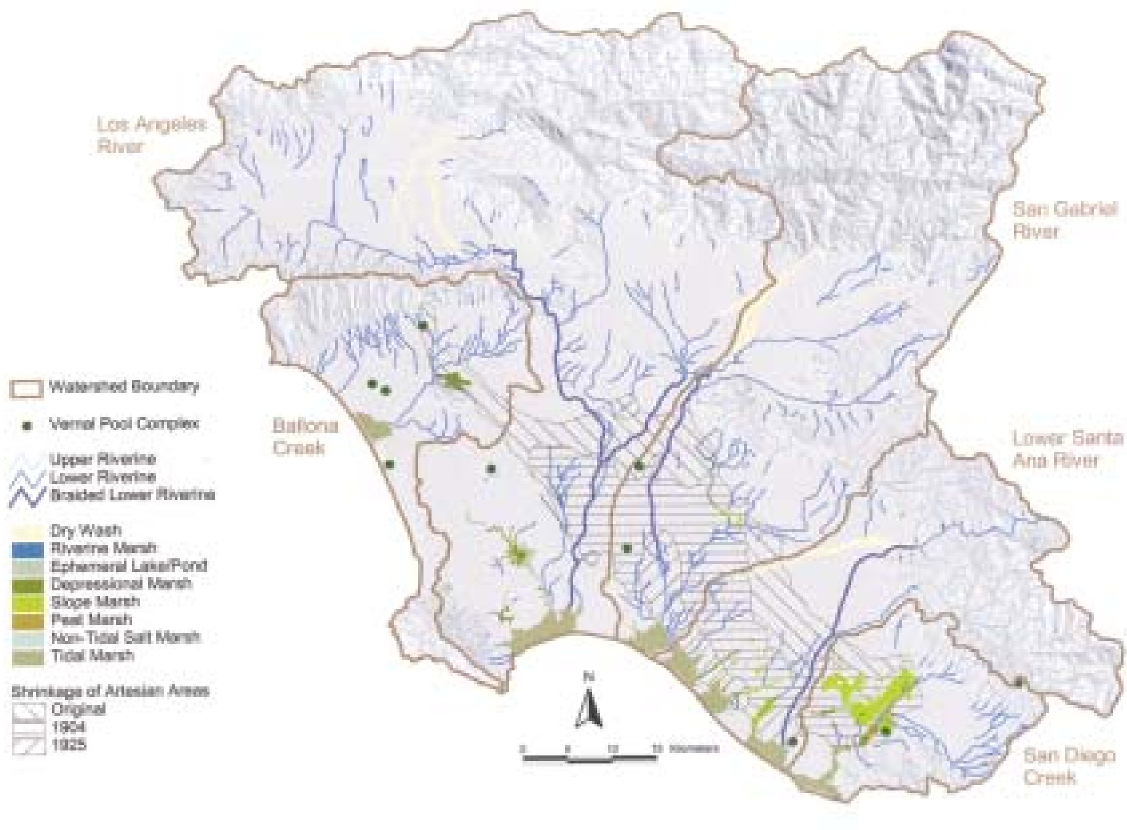


Figure 2-6a. Historical (Circa 1870) Distribution of Wetlands
Adapted from Rairdan, 1998

CURRENT CONDITIONS

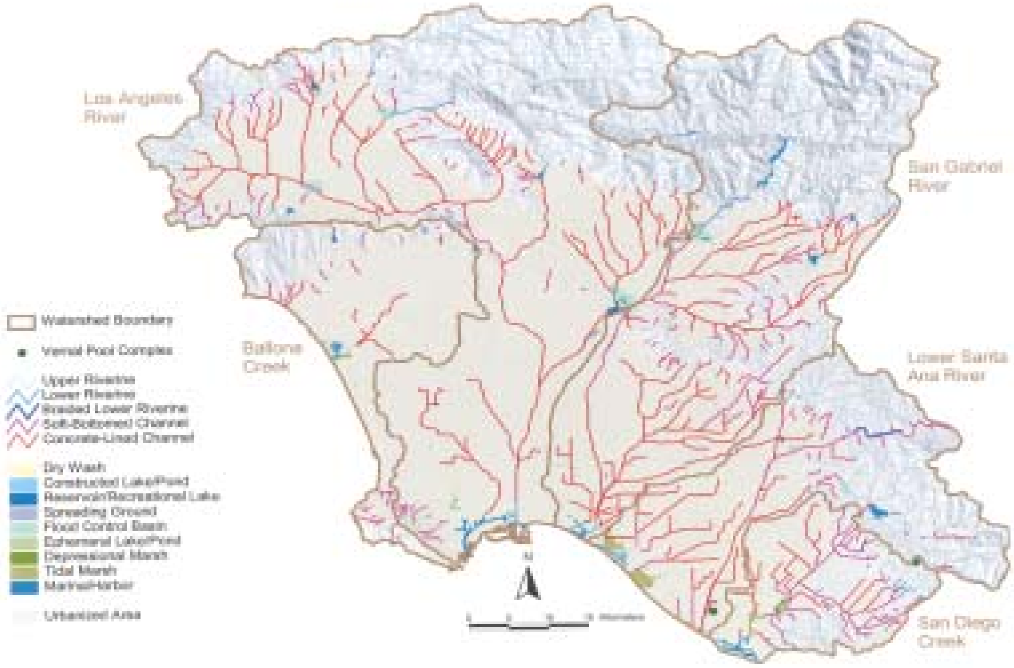


Figure 2-6b. Current Distribution of Wetlands
Adapted from Rairdan, 1998

2. Channel and Flow Conditions on the Major River Reaches

■ Historical Conditions

The flow of the San Gabriel and Los Angeles Rivers was historically dependent upon climate. The rivers derived their flow from snowmelt from the mountains, surface runoff from storms and contributions from springs and groundwater. The rivers were shallow with braided channels and wide floodplains. They frequently carved new channels in their floodplains during heavy winter storms and have altered their courses several times.

During the late eighteenth and nineteenth centuries, ranching and agriculture dominated the San Gabriel and Los Angeles River basins. Flooding in the valleys and periodic droughts made permanent settlements difficult. The Los Angeles River was the sole source of water for the developing city of Los Angeles until the Los Angeles-Owens River Aqueduct was completed in 1913. Diversions from both rivers for agricultural irrigation and drinking water reduced their natural flow, although their propensity for winter flooding was unabated.

■ Existing Conditions

Until the 1930s, both the San Gabriel and Los Angeles Rivers and their tributaries were primarily natural bottom streams. Now, over seventy-five percent of the streams are concrete-lined channels, modified for flood protection purposes. Tributaries originating in the San Gabriel and Santa Monica Mountains or the local hills, such as the Arroyo Seco and Tujunga Wash, remain natural channels in their upper reaches but have been converted to concrete channels in their lower reaches. Upper Compton Creek is channelized, but the lower Creek still has a soft-bottom stream channel.

Upper Arroyo Seco

The upper San Gabriel River and its tributaries remain in a relatively pristine state. However, the river has been extensively modified in the middle and lower reaches for flood management. The lowest reach of the river is concrete-lined channel for approximately eight miles, with riprap banks and soft-bottom channel upstream of the concrete-lined channel and near the river's mouth where it is under tidal influence.

Channelization of the Los Angeles River was completed in 1954 for most of its 51-mile length. There are a few stretches where the high water table or other conditions required that the river bottom be left unpaved. These include the six-mile reach through Glendale Narrows near Griffith Park and one and a half miles through the Sepulveda Basin. The lowest 2.6 miles of the river, which are under tidal influence, are natural streambed with riprap-lined banks.

Flood protection efforts began along the San Gabriel River in 1932 with construction beginning on three dams in the upper reaches of the river. Cogswell Dam, on the West Fork, was completed in 1934. Morris Dam was completed in 1935 and San Gabriel Dam was completed in 1939. Two dams on the coastal plain, the Santa Fe Dam and the Whittier Narrows Dam, were completed in 1949 and 1957, respectively.

Urbanization has altered the natural flow and the runoff regime in the basin, increasing both the velocity and volume of water flowing through the rivers (**Figure 2-7**). Prior to 1960, the ratio of rainfall to runoff was approximately 4:1, meaning that 80 percent of the precipitation in the basin was either evaporated or infiltrated and 20 percent was converted to surface runoff. By 1990 that ratio had increased to 2:1. Now, approximately 50 percent of all precipitation is converted to surface runoff. (This is a very rough estimate, and does not account for flow increases as a result of wastewater discharges, or diversions from the rivers for groundwater recharge.)

Sources of Base Flow

In a few reaches of the rivers, the groundwater table is high and contributes to river flows seasonally. For the most part, base flow comes from snowmelt and headwaters streams in the San Gabriel Mountains, urban and agricultural runoff, and treated wastewater discharges. During the dry season, flow is dominated by treated wastewater discharges, particularly in the lower reaches of the rivers.

C. HABITAT

Because of its varied climate and topography, Southern California is biologically diverse. Within

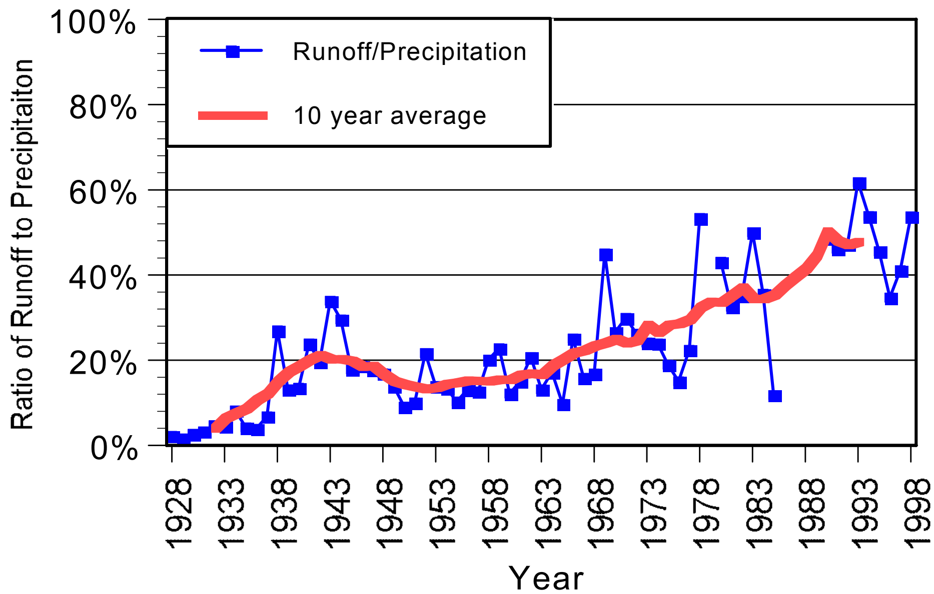


Figure 2-7. The Ratio of Annual Runoff in the Los Angeles River Measured at Firestone Blvd. to the Annual Precipitation at the Los Angeles Civic Center from 1928 to 1998
Source: Western Regional Climate Center and L.A. County Department of Public Works. Reprinted from Dallman and Piechota 1999.

California, 25 percent of all known plant species in North America can be found, and Southern California supports half of all California's habitat types (Mayer and Laudenslayer 1988). The Mediterranean ecosystem type (which predominates adjacent to the coastal mountains in Southern California) exists on only 3 percent of the earth's land surface. Worldwide, it is more threatened than the rainforest.

Historical Conditions

The major native vegetation communities in the region include chaparral, grasslands, coastal sage and alluvial scrub, oak woodland, oak savanna, riparian and conifer forest. Alluvial scrub and chaparral were the most widespread in the foothills and basin, and conifer forests dominated the higher elevations. Many mixed communities and locally unique habitats resulted from the topography and varying microclimates. These conditions allowed the development of unique species and subspecies of plants and animals, giving the region a rich biodiversity. Both the San Gabriel and Los Angeles rivers supported extensive riparian habitats containing marsh grasses, willow, cottonwood, mulefat and sycamore. The rivers provided steelhead trout habitat. The basin and surrounding hills also supported large predators, such as grizzly bear and mountain lion. Although the grizzly bear appears on the state flag and was once abundant throughout the state, the last known grizzly bear in California was killed in 1922.

Existing Conditions

The continued existence of native vegetation and plant communities in the watersheds is generally impacted by urban and suburban development. Native vegetation in much of the basin has been displaced by development, but large expanses of chaparral, oak woodland, California walnut woodland, and coastal sage scrub remain in the Santa Monica and San Gabriel Mountains and in the Verdugo Hills. Alluvial scrub is found in Big Tujunga Wash above Hansen Dam and above the Santa Fe Dam in the San Gabriel Valley. Grasslands occur in the undeveloped valleys and hillsides of northern Los Angeles County and in the Puente Hills. Conifers, primarily Big Cone Douglas Fir, White Fir, Lodgepole Pine, and Ponderosa Pines, are confined mostly to the Angeles National Forest in the San Gabriel Mountains.

Riparian corridors occur along streams in the San Gabriel Mountains and the upper and middle reaches of the San Gabriel River, including Walnut and San Jose Creeks, and upper Los Angeles River watershed, including the Santa Monica Mountains, Simi Hills, Verdugo Mountains and Santa Susana Mountains. Freshwater stream habitat also occurs in the upper San Gabriel River and streams in the San Gabriel foothills, Puente and Chino Hills, the Whittier Narrows, and the Glendale Narrows on the Los Angeles River. Wetlands occur in limited areas, mostly near the coast. The estuaries of both rivers provide habitat for fish and a variety of birds.

Urban development has also encroached upon wildlife habitat, displacing large mammal populations, particularly in the basin. The mountain and foothill areas still support important mammal species, including mountain lion, bobcat, black bear, bighorn sheep, gray fox, coyote, American badger, and mule deer. Some wildlife species, particularly deer, raccoon, and coyote, can be found in suburban areas, occasionally wandering into backyards, creating a potential for conflict between people, pets and wildlife. The rare encounters between humans and mountain lion or bear usually turn out to be deleterious to the animals. Ecosystem health depends upon preserving both large habitat blocs and linkages between those blocs, so that predator and prey species can survive in balance and so that undesirable interactions between wildlife and people are minimized.

The Effect of Exotic Species

Although the watersheds support approximately 450 species of birds, small populations of large mammals, and dozens of species of small mammals, reptiles and amphibians, agriculture and cattle grazing in the 19th century and urban development in the 20th century have significantly altered the native ecology. California's mild climate allowed the introduction of a wide range of exotic species.

Native plant species have been largely replaced in the basin by landscaping associated with urban and suburban development. In undeveloped areas, non-native plants such as arundo *(Arundo donax)*, tree tobacco (*Nicotiana glauca*), castor bean (*Ricinus communis*), salt cedar (*Tamarix ramosissima*) and *Senecio mikanioides* are out-competing native species because they are not edible to wildlife or lack natural predators such as disease and insects. Arundo, a tall bamboo-like grass that is prolific and difficult to eradicate, is probably the most invasive exotic species. In riparian areas, it takes up large amounts of water, crowds out native plants, clogs streams, and disrupts the balance for aquatic species. Along the Whittier Narrows, arundo covers about 80% of the landscape.

The alteration of the basin landscape from grasslands to urban metropolis caused a decline in larger birds such as owls and raptors, which allowed some native species such as crows and mockingbirds to flourish. These in turn have crowded out many species of songbirds. Introduced species such as the European starling have also displaced some native species. In suburban areas, domestic cats and dogs have introduced disease and contributed to reduced populations of birds and small mammals as well. In riparian areas, introduced species of fish such as mosquito fish (G*ambusia sp.*), crayfish, and bullfrogs have impacted native populations of fish and amphibians.

■ High Quality Habitat Areas

The upper San Gabriel River basin and portions of the upper Los Angeles River watershed support high quality riparian habitat and oak woodland. Riparian areas in the Whittier Narrows reach of the San Gabriel River and along the soft-bottom portions of the Los Angeles River contain freshwater marsh communities and riparian forest, although non-native species are increasingly prevalent. Lower Compton Creek, above its confluence with the Los Angeles River, includes several miles of freshwater marsh. These riparian habitats support hundreds of species of birds, dozens of native plants, and a variety of mammals and reptiles. Native fish species vary. The upper San Gabriel River and the creeks in the mountains and foothills support trout and Arroyo Chub (*Gila orcutti*). The Santa Ana sucker (*Catostomus santaanae*) and Santa Ana speckled dace (*Rhinichthys osculus*) are found in the upper reaches of the San Gabriel River and Big Tujunga Creek.

In the foothills and throughout the basin, patches of natural or nearly natural habitat of varying size remain, supporting native species of plants and animals. These are most prevalent in regional parks, recreation areas and other protected areas, but there are also significant natural areas that are not yet protected. The largest intact areas of wildlife habitat occur in the Angeles National Forest, the Santa Monica Mountains, Verdugo Mountains, San Rafael Hills, Simi Hills, Santa Susana Mountains, Santa Fe Dam floodplain, Sepulveda Basin, and Whittier Narrows recreation areas, and in the San Jose and Puente Hills.

2. Species Management

■ Threatened and Endangered Species

The Federal Endangered Species Act, passed in 1973, defined categories of "endangered" and "threatened" species and required all federal agencies to undertake programs for the conservation of endangered and threatened species, and prohibited agencies from authorizing, funding, or carrying out any action that would jeopardize a listed species or destroy or modify its "critical habitat." The California Endangered Species Act (CESA) generally parallels the main provisions of the Federal Endangered Species Act, although limited to species or subspecies native to California. Under CESA the term "endangered species" is defined as a species of plant, fish, or wildlife that is "in serious danger of becoming extinct throughout all, or a significant portion of, its range." In general, both the Federal and California laws are designed to identify and protect individual species that have already declined in number significantly.

Southern California has the second greatest number of endangered and threatened species nationwide, after Hawaii, and the majority of these species are not found outside of California. Within the watersheds, there are hundreds of endangered, threatened, and sensitive species, mostly plants (see Appendix G). Federal critical habitat designations for two animals, the threatened California gnatcatcher (*Polioptila californica*) and the endangered arroyo toad (*Bufo microscaphus californicus*), fall within the watersheds (**Figure 2-8**).

The endangered steelhead trout (*Oncorhynchus mykiss)* once traversed the entire length of the Los Angeles and San Gabriel Rivers, and other coastal streams. Although the southern boundary of its range is officially designated as Malibu Creek, steelhead have recently been found in Topanga Creek (the next drainage east) and in San Mateo Creek in San Diego

County. The National Marine Fisheries Service, the federal agency in charge of the listing, recently proposed extending the boundary to include San Mateo Creek. This would not include the intervening streams unless steelhead were found to inhabit them. Steelhead are the only native Southern California species that travel the waters from the mountains to the sea and back. If conditions are appropriate for steelhead, they are generally appropriate for many other species as well.

Steelhead Trout Caught Below Glendale in 1940

■ Exotics Removal

Because arundo's extensive root system allows it to resprout rapidly, eradication programs have increased in recent years, utilizing mechanical removal methods, hand clearing, and herbicides. The Forest Service is the lead agency for "Team Arundo," an interagency group conducting arundo eradication efforts in Southern California. Los Angeles County, local conservancies, and conservation groups have also undertaken smaller-scale eradication programs throughout the watersheds. The key to permanent eradication is to start from the top of a watershed, since arundo cleared downstream will likely re-establish itself if there are occurrences upstream. However, significant progress has been made in removing the reed and restoring native vegetation along many stream reaches.

Arundo Removal

Several other invasive plant control programs are underway to manage lesser-known species. Alligator weed (*Alternanthera philoxeroides*) and water hyacinth (*Eichhornia crassipes*), for example, occur in streambeds throughout the Los Angeles County, affecting nearly 5,800 acres. Management efforts for alligator weed have been ongoing since 1956, and coverage of the weed is fairly low and under control. A program of biological control of water hyacinth using exotic natural enemies began in 1988. The coverage of water hyacinths is high and increasing. These programs are conducted jointly by the California Department of Food & Agriculture, the U.S. Army Corps of Engineers, and Los Angeles County Department of Agriculture.

Non-native plant species occurring in grasslands and disturbed land areas are numerous, and include klamathweed (*Hypericum perforatum*), puncturevine (*Tribulus terrestris*) and yellow starthistle (*Centaurea solstitialis*). The percentage of cover is low, but they occur throughout the county. Biological control programs for these species began in 1988, conducted by Los Angeles County Department of Agriculture and California Department of Food & Agriculture. Klamathweed and puncturevine are considered to be under control but coverage of yellow starthistle is increasing. All are monitored through periodic aerial surveys.

3. Habitat Management

■ Significant Ecological Areas

Habitats that support rare or sensitive species of plants and animals occur throughout the watersheds. In 1980 Los Angeles County designated certain habitats as Significant Ecological Areas

(SEAs) in the County's General Plan (**Figure 2-8**). These include the habitat of rare, endangered and threatened plant and animal species, biotic communities that are restricted in distribution, habitat that is important to the life cycle of a species or group of species, biotic resources that are of scientific interest, are important to game species habitat or fisheries, or are relatively undisturbed. Although SEAs are not off-limits to development, they do have some restrictions, and potential development requires additional environmental review in order to protect the identified sensitive resources. SEA boundaries have been proposed for revision and expansion in 2001.

■ Natural Community Conservation Planning

The State of California's Natural Community Conservation Planning program began in 1991, with an objective to conserve natural communities at the ecosystem scale while accommodating compatible land uses. The program seeks to focus on the long-term stability of wildlife and plant communities.

The focus of the initial effort is the coastal sage scrub habitat of Southern California, home to the California gnatcatcher and approximately 100 other potentially threatened or endangered species. This much-fragmented habitat is scattered over more than 6,000 square miles in Southern California, including the southeastern corner of Los Angeles county and large areas of Orange County. Other habitats may warrant designation, delineation, and development of conservation plans, including riparian and valley oak woodland, both of which are found in the watersheds.

4. Habitat Linkages

Urban and suburban development not only reduces total habitat area, but also creates barriers to movement of wildlife between habitats, through

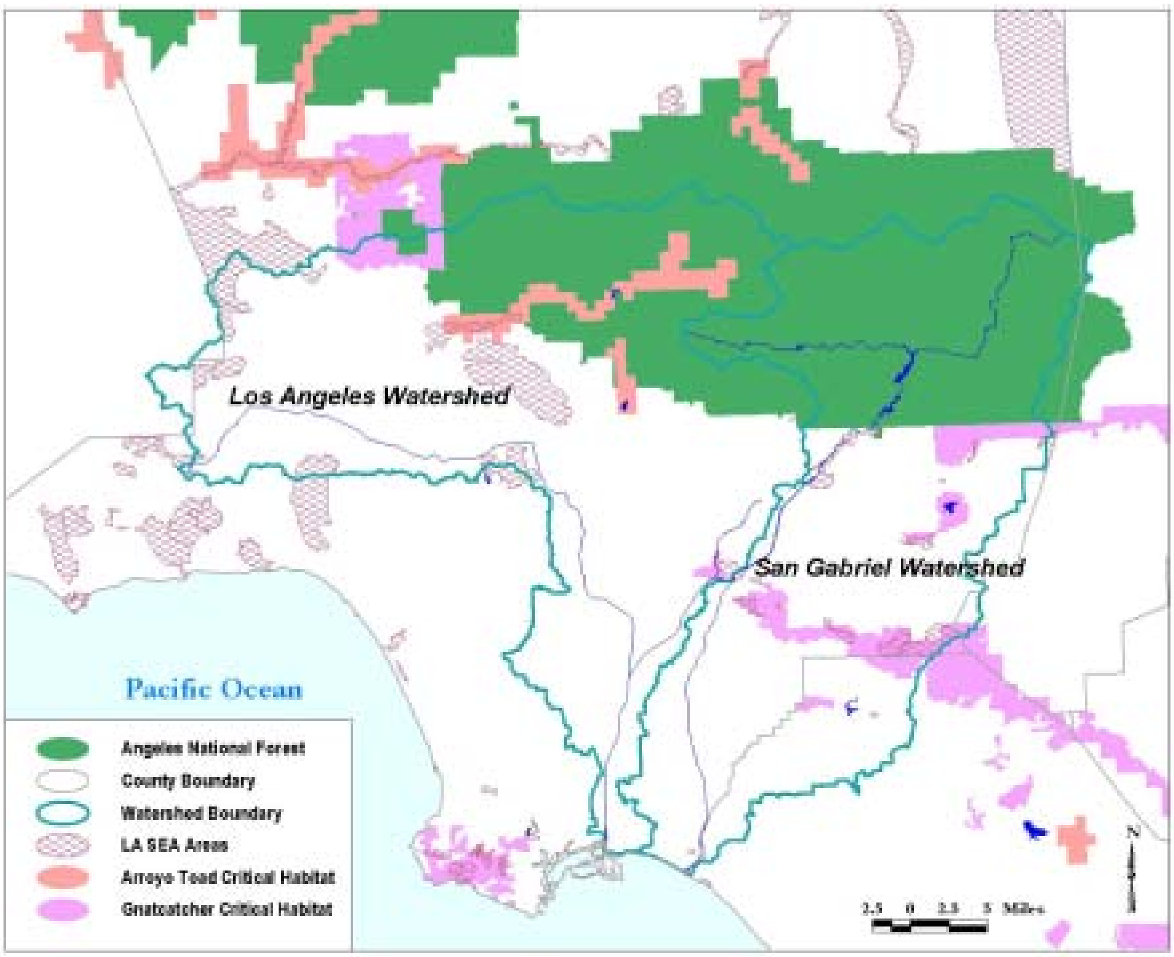


Figure 2-8. Significant Ecological Areas and Critical Habitat Designations

CURRENT CONDITIONS

installation of freeways, dams, and backyard fences. Both loss of habitat and habitat fragmentation can reduce plant and animal populations and species diversity. As large habitat areas disappear, connections between patches of habitat become increasingly important to maintaining plant and animal populations.

■ Urban Ecological Integrity

Historically, urban design has focused on aesthetics and efficiency: how to get from place to place easily and safely. Because of this focus on human systems and the built environment, natural systems, including plant communities and wildlife habitat, have typically not been considered. In recent years, the concept of ecological integrity (e.g., maintaining the integrity of an environmental system, such as an ecosystem) has begun to be considered in urban design. Using case studies in wildlands, the field of conservation biology has established principles for maintaining biodiversity and ecological integrity that can be applied to urban and suburban settings with minimal modification. These principles include:

- *Species that are well distributed across their native range are less susceptible to extinction than species confined to small portions of their range.* Maintaining multiple populations of imperiled species maintains a natural range of genetic variability and reduces the chance that environmental variability will result in species extinction. For urban settings, this means that habitat protection must have some redundancy. Species associated with a particular habitat must be represented in many places across the urban landscape, both within and among metropolitan areas, so that extinction at one location does not eliminate the species entirely from the urban setting.
- *Large blocks of habitat, containing large populations, are better than small blocks with small populations.* All else being equal, larger populations are less susceptible to extinction. This is especially true when habitat patches are isolated from each other, which is typical in urban landscapes. Many species of forest and grassland birds, for example, are progressively more likely to be found as habitat area increases. Some species are present only in large blocks of habitat. This is recognized as species-area relationship: species richness increases as habitat area increases. Therefore, larger blocks of natural or semi-natural habitat should be priorities for protection.
- *Blocks of habitat close together are better than blocks far apart.* Blocks of habitat close together may function as one larger, contiguous habitat block for those species that can move between areas. What constitutes "close together" depends on the species of concern. Habitats close together for birds might be inaccessible for animals incapable of crossing intervening barriers. For example, many small mammals, salamanders, and flightless invertebrates seldom or never cross roads.
- *Habitat in contiguous blocks is better than fragmented habitat.* Habitat fragmentation has been documented to have harmful effects in studies worldwide, although considerable regional variability exists. Natural and semi-natural habitats in urban landscapes are typically fragmented. Although the thresholds of fragmentation (where ecological integrity unravels) cannot be reliably determined, the less fragmentation, the better.
- *Interconnected blocks of habitat are better than isolated blocks.* Connectivity allows organisms to move between patches of habitat. A collection of small areas may be individually too small to maintain populations of some species. But if connected, those small areas may provide sufficient habitat for a species to maintain viable populations. The whole can be greater than the sum of its parts.

■ Urban Wildlife Connectivity

Wildlife corridors are currently a popular concept in conservation planning. However, without rigorous investigation of potential utility or consequences, linkages drawn on maps may have limited value in maintaining species diversity. Linkages and corridors must be defined in terms of functional connectivity: (1) providing for daily and seasonal movements of animals; (2) facilitating dispersal, gene flow, and rescue effects (for animals or plants); (3) allowing for range shifts of species (i.e., in response to climate change); and (4) maintaining flows of ecological processes (e.g., fire, wind, sediments, water).

Because small patches of natural and semi-natural habitat in urban areas are incapable of supporting populations of many species, maintaining connectivity is necessary to maintain a rich diversity of wildlife. Connectivity is generally species-specific and landscape-specific. What is a corridor to one species may be a barrier to another. Linkage planning efforts should focus on species that are particularly sensitive to habitat fragmentation. In order to plan effective corridors, additional research is needed about the mobility of species, and what constitutes potential barriers to their movements. The appropriate width of a corridor is highly variable and depends on the nature of the surrounding habitat, the characteristics of the species involved, the length of the corridor, and other factors. Creating effective underpasses or tunnels to allow animals to cross safely beneath or over roads poses the greatest challenge.

To gauge the success of habitat linkages, specific animal and plant species can serve as sensitive indicators of functional connectivity. A list of potential indicator species for the watersheds is provided in Appendix H.

Wildlife corridors may also constitute important habitats in their own right, particularly when they are located in riparian areas. In the arid West, riparian areas typically are the most species-rich habitats. Some 80% of vertebrate species in Arizona and New Mexico depend on riparian habitat for at least a portion of their life cycles (Johnson 1989 in G. Macintosh, ed. *Preserving Communities and Corridors*, Defenders of Wildlife). Maintaining intact riparian areas not only contributes to terrestrial ecological integrity, but may also increase aquatic biotic integrity. However, riparian protection alone may not improve stream communities.

In urban areas, most wildlife corridors will also be corridors for people. Urban greenways typically have trails and are used for recreation and other purposes, thus urban greenways must be designed with the needs of both people and wildlife in mind. A recent urban trail handbook (*Planning Trails with Wildlife in Mind*, 1998, Colorado State Parks and Hellmund Associates) includes some useful recommendations: route trails around edges of high-quality habitat patches; do not route trails continuously close to riparian areas; and balance competing wildlife and recreation needs across a landscape or region rather than trying to accommodate all uses within specific areas. These recommendations underscore the need for biologists to be involved in the early stages of greenway planning and the trail development process.

Urban to Wildland Networks

Southern California is distinctive in having major urban centers directly adjacent to wildlands (e.g., the San Gabriel and Santa Monica Mountains, and the various foothills). In the long run, many wildlife species will persist in these urban areas only if there are connections to the surrounding rural and wildland landscapes. An appropriate hierarchy of connected habitat networks would include: (1) relatively small habitat patches and narrow corridors within the densest urban zone; (2) a network of larger habitat patches and wider corridors in suburban and rural areas, as well as in a few areas within the urban matrix (e.g., Puente Hills and Griffith Park); and (3) the wildland landscape (e.g., the national forests), with large habitat patches, low road density, and greater overall connectivity.

There are two potential problems with this "network of networks" design. One, corridors leading from the more developed zones of the network might funnel exotics and other opportunistic, invasive species into wildland areas. Roads and roadsides, for example, are frequent avenues for the invasion of these pests. Well-designed corridors, especially if wide, may provide habitat for predators of some animal species (e.g., feral cats, opossums). In addition, corridor bottlenecks could be used to trap those species and limit their spread.

A potentially more serious concern is for corridors connected to wildlands or rural areas to provide a route for large mammals (such as deer) into suburban and urban areas. Many residents like to see deer near their homes, but are unhappy when deer eat their gardens. Predators may also use corridors to follow their prey. This will require careful consideration of options and consequences, to achieve an appropriate balance between the need for species mobility and the need to minimize human and animal conflicts.

Identification of potential habitat linkages within the watersheds is provided in Chapter 3, A Vision for the Future.

D. OPEN SPACE AND RECREATION

1. Definition of "Open Space" and "Recreational" Land Use

Generally speaking, open space may be any land that is not developed for urban use. This may include natural areas set aside for species protection, lands used for agriculture or natural resource extraction, recreational areas, or areas unsuitable for development either due to a potential hazard (such as slide areas or floodplains) or due to other uses such as groundwater recharge or flood protection. In this document, open space implies areas that are in a reasonably natural state and that can serve as wildlife habitat in addition to public access for passive forms of recreation.

Recreational use may be designated active, passive, or both. Passive use refers to activities that are generally low impact such as hiking, fishing, picnicking, bird watching, or non-motorized boating. Active recreational use may include facilities designed for sports such as soccer or baseball, lakes for motorboats and jet skis, bicycle trails or equestrian trails.

2. Existing Open Space and Recreational Areas in the Watersheds

The San Gabriel and Los Angeles watersheds include a variety of areas devoted to recreation in some form, often in conjunction with the preservation of natural open space. These include the federal, state, joint powers authority lands, and an assortment of regional and local parks, nature centers, and preserves. Parks and open space are not evenly distributed throughout the region, and access for those without private transportation is beginning to be addressed by several agencies.

Table 1. Agencies Administering Open Space and Recreational Areas

Type	*Agency*
Federal	U.S. Forest Service
	U.S. Army Corps of Engineers
	Bureau of Land Management
	National Park Service
State	Department of Parks and Recreation
	Santa Monica Mountains Conservancy
Joint Powers Authorities	Mountains Recreation and Conservation Authority
	Puente Hills Native Habitat Preservation Authority
Counties	Parks and Recreation
	Department of Public Works
Cities	Parks and Recreation Departments, School Districts

■ Federal Lands

The Angeles National Forest is one of the most visited forests anywhere in the country, with an estimated thirty million visitors annually (Cook 2001). Within the watersheds, the forest accounts for 23 percent of the total land area. The Forest's 691,539 total acres include 8,708 water surface acres in twenty-five lakes and reservoirs, 110 picnic areas and campgrounds, and 557 miles of hiking trails. There are also a number of special use areas in the Forest that occur within the watersheds, described in the table below.

Seal Beach National Wildlife Refuge, within the Seal Beach Naval Weapons Station, is managed by the U.S. Fish and Wildlife Service. The Refuge contains 911 acres of natural coastal habitat, including salt marsh and tidal wetlands. It is home to the California least tern (*Sterna antillarum browni*), a federally listed endangered bird, and many other seabirds. Public access is restricted to a wooden trail leading

Table 2. Special Designations within the Angeles National Forest

Name	*Area*	*Designated*	*Purpose*
San Gabriel Wilderness Area	36,118 acres	1968	Wilderness designation—no development or permanent structures
Sheep Mountain Wilderness Area	43,600 acres	1984	Wilderness designation—no development or permanent structures
San Dimas experimental forest (UNESCO Biosphere Reserve)	17,163 acres	1933	Research and pilot testing of integrated forest management techniques; access by permit only.
Fern Canyon Natural Research Area	1,360 acres	1972	No development or permanent structures; near pristine condition. Contained within San Dimas Experimental Forest

to an overlook of the area, and is open a limited number of days to reduce disturbance to the wildlife.

■ State and Regional Facilities

California Department of Parks and Recreation, the Santa Monica Mountains Conservancy, Los Angeles and Orange County parks departments and other agencies manage substantial land acreage devoted to open space reserves, nature centers, botanical gardens and recreation areas. The chart below lists some state and county facilities and large regional facilities that may be managed by cities or multiple jurisdictions. Golf courses and local city parks are not included as they are too numerous, although their total acreage watershed-wide is substantial.

3. Access along the River Fronts

In the canyons of the San Gabriel and Santa Monica Mountains and the local hills, there is ample access to streams for fishing, swimming, and picnicking. A five and a half mile stretch of the West Fork of San Gabriel River is a "catch and release" area for native rainbow trout.

Within the urban core, access to the Los Angeles River is provided via pocket parks in the community of Elysian Valley. In addition, the City and County of Los Angeles are making progress on converting the maintenance road next to the river into a bikeway. The LARIO trail provides bicycle and equestrian access along the Rio Hondo and Lower Los Angeles River, as does the bicycle trail above the San Gabriel River channel. Concerns over public safety during periods of high stream flows or potential flash-flood conditions have left much of the urban rivers inaccessible or off-limits to the public. The potential for more riverside parks, walking trails and bike paths is increasing, as evidenced by the three-year old Bosque del Rio Hondo and new parks in Bell Gardens, Paramount and Maywood.

Table 3. Major Open Space and Recreational Facilities within the Watersheds

Type	*Name and Location*	*Acreage*	*Management*
Botanical Gardens	Arboretum of Los Angeles County, Arcadia	127	LA County
	Rancho Santa Ana Botanical Garden, Claremont	106	Private
	Descanso Gardens, La Canada	160	LA County
Parks and Recreation Areas	Frank G. Bonelli Regional Park, San Jose Hills	1,980	LA County
	Griffith Park, Los Angeles	3,481	City
	El Dorado Regional Park, Long Beach	520	City
	Elysian Park, Los Angeles	584	City
	Hahamonga Watershed Park, Pasadena	836	City
	Hansen Dam, Los Angeles	1,289	City, U.S. Army Corps
	Marshall Canyon County Park, Claremont	690	LA County
	Mulholland Gateway Park	1,200	SMMC
	Ralph B. Clark Regional Park, Fullerton/Buena Park	105	Orange County
	Santa Fe Dam Recreation Area	836	LA County
	Schabarum Regional Park, Puente Hills	500	LA County
	Sepulveda Dam Recreation Area	1,040	LA City /Army Corps
	Ted Craig Regional Park, Fullerton/Brea	124	Orange County
	Whittier Narrows Recreation Area	1,400	LA County
	Verdugo Mountains State Park	251 1,101	State Parks SMMC
Nature Centers and Wilderness Parks	Eaton Canyon Natural Area	184	LA County
	Claremont Hills Wilderness Area	1,220	City/LA County
	Deukmejian Wilderness Park	720	Glendale
	Eastern Rim-of-the-Valley Open Space	1,000	SMMC
	El Dorado Nature Center	130	Long Beach
	San Dimas Canyon Nature Center	1,000	LA County
	Simi Hills/Santa Susana Open Space	4,000	SMMC
	Whittier Narrows Nature Center	419	LA County

4. Trail Systems

Trails provide access for hiking, equestrian use and bicycling. There are hundreds of miles of trails of various types throughout the watersheds.

■ Types of Trails

In the Angeles National Forest, there are several trails that are part of the National Trails System, that was established in 1968. These include 176 miles of the Pacific Crest Trail and National Scenic trails, and 73 miles of National Recreation Trails, which provide for hiking and equestrian use. Trails in the Forest are open to mountain bikes as well, except for those in the National Trails System and those in the Wilderness areas. The Rails to Trails Conservancy, which converts unused railroad right-of-way to trails, has two trails in the region: Mt. Lowe Railroad Trail and the Duarte Bike Trail.

In the urban area, there are local and regional trails for bicycle commuting and recreation, walking, hiking and equestrian use. Approximately 500 miles of bike paths and bike lanes exist in Los Angles County currently. Bikeways are under development along the Los Angeles River and Arroyo Seco. Bike trails run along the Lower Los Angeles River, Coyote Creek, the Rio Hondo, and along the San Gabriel River from the Pacific Ocean at Seal Beach to the foothills of the San Gabriel Mountains.

■ Trail Connectivity

Connectivity between cities and parks exists in some areas but there are many local trails that do not extend beyond jurisdictional borders. The five regional parks in the San Gabriel Valley—Bonelli, Whittier Narrows, Santa Fe Dam, Marshall Canyon, and Schabarum—are connected by a trail system. Bicyclists, hikers, and equestrians use this trail, maintained by Los Angeles County. In May 2001, the Metropolitan Transit Authority recommended $21.6 million in funding over the next three years for thirteen bicycle trail projects that will expand and connect existing trails and add commuter bike lanes on city streets. The 28-mile LARIO trail, recently upgraded by Los Angeles County, provides connections to eight parks along the Rio Hondo and Los Angeles River.

The Rim of the Valley Trail encircles the upper Los Angeles River watershed and aims to connect the Santa Monica and San Gabriel Mountains. The National Park Service has begun marking the Juan Bautista de Anza National Trail through the region, and markers and interpretive signs can now be seen along the Los Angeles River. The Griffith Park to El Pueblo Trail will lead visitors from the park to downtown. Additional study is needed to determine how best to further connect existing trails within the watersheds.

5. Designated Scenic Highways and Vistas

Scenic highways include the Mulholland Scenic Parkway in the eastern upper Los Angeles River watershed. Caltrans is actively working towards obtaining federal scenic byway status for the Arroyo Seco Parkway (Pasadena Freeway). Federal designation can potentially bring in planning and implementation funding for both sides of the parkway.

Vista points in the watersheds include Grand View in Elysian Park, which provides views to downtown, Montecito Heights, Mount Washington, Taylor Yard, the Los Angeles River, and the Arroyo Seco. Sites within the Kenneth Hahn County Park in the Baldwin Hills, and new adjacent areas recently purchased, provide 360-degree views including to the ocean and downtown. At the Top of Topanga, visitors can view the San Fernando Valley as well as central Los Angeles. From Mulholland Scenic Parkway, a number of places provide views of the Los Angeles River Watershed and smaller coastal watersheds. These include Hollywood Bowl Overlook, Universal City Overlook, Nancy Hoover Pohl Overlook, and Summit Overlook. Many of the turnouts along the Angeles Crest Highway and campgrounds within the Angeles National Forest also provide spectacular views.

E. WATER SUPPLY

1. Sources of Water

Early settlements in the watersheds relied on surface water from springs, rivers, creeks, and lakes for drinking water and irrigation. In the 1870s, groundwater became an important additional water source as well-drilling technology improved. Water needs of the population have exceeded the available local supply for nearly a century. The combination of population growth and extensive use of non-native plants place demands on water supplies. Current sources of water for the basin include the following:

1. imported water from the Colorado River, the Owens Valley in Eastern California via the Los Angeles Aqueduct, and Northern California via the California Aqueduct;
2. local groundwater supplies;
3. recycled water from wastewater treatment facilities; and
4. surface water from local streams and the upper San Gabriel River.

While these supplies currently sustain a population of over seventeen million people in Southern California, they are subject to both seasonal and long-term variability depending upon climatic conditions throughout the source areas. During drought periods, there may be less water available for importation so groundwater use increases. During wet years, stormwater runoff and surplus imported water may be stored in reservoirs and groundwater basins for future needs. **Figure 2-9** depicts the average amount contributed to the region's water supply by each source. The percentage of groundwater and imported water varies from year to year, depending on hydrologic conditions. Groundwater contributes from 30 to 40 percent, while imported water may range from 56 to 66 percent of the total supply.

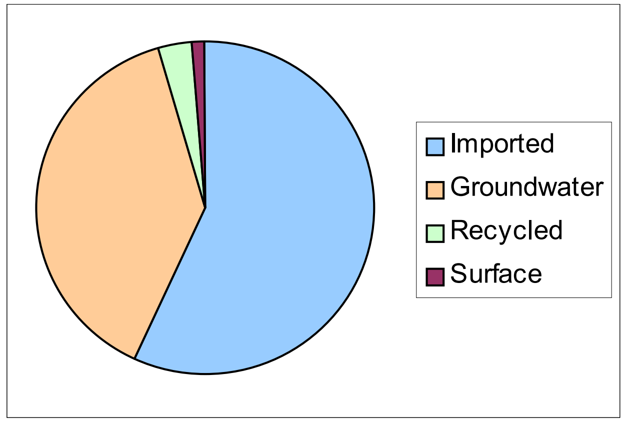


Figure 2-9. Sources of Water Supply
Source: Metropolitan Water District of Southern California (cited in Los Angeles & San Gabriel Rivers Watershed Council, in press)

2. Groundwater

The coastal plain is composed primarily of deep layers of marine sediments and eroded sediments washed down from the surrounding mountains. In some areas these sediments are over 30,000 feet thick. This geology has allowed for the storage of water in underground basins, or aquifers. Aquifers are not underground lakes, but places where the rock or soil is porous enough to trap significant amounts of water. There are eight major groundwater basins underlying the watersheds in the San Gabriel Valley, San Fernando Valley and the coastal plain (**Figure 2-10**). A cross section for the Los Angeles Coastal plain is illustrated in **Figure 2-11**. The contribution of groundwater basins to local water supply varies. The San Fernando basins represent 15–20 percent of the water supply for Burbank, Glendale, San Fernando, and Los Angeles, while the Raymond Basin provides 46 percent of the water supply for the City of Pasadena.

■ Recharge Programs

Water supply is increased through artificial or enhanced infiltration to replenish groundwater and compensate for the loss of natural permeability in the region. Surface water was "stored" in groundwater basins as early as 1895. Water is stored in facilities called spreading basins, in areas where soils

Table 4. Capacity of Local Groundwater Basins

Geographic Regions and Underlying Groundwater Basins	*Surface Area (acres)*	*Current Average Annual Yield (AF)**	*Estimated Total Capacity (AF)*
Los Angeles Coastal Plain: Central and West Coast basins	288,000	281,835**	20,300,000
Orange County Coastal Plain Basin	224,000	350,000	1,000,000
Raymond Basin	25,000	35-40,000	250,000
San Fernando Valley: San Fernando, Verdugo and Sylmar basins	327,000	105,000	500,000
Main San Gabriel Basin	106,880	200,000	8,600,000

*AF = Acre-foot, approximately 326,000 gallons of water
**Allowable under adjudication
Source: Assoc. of Ground Water Agencies, 2000

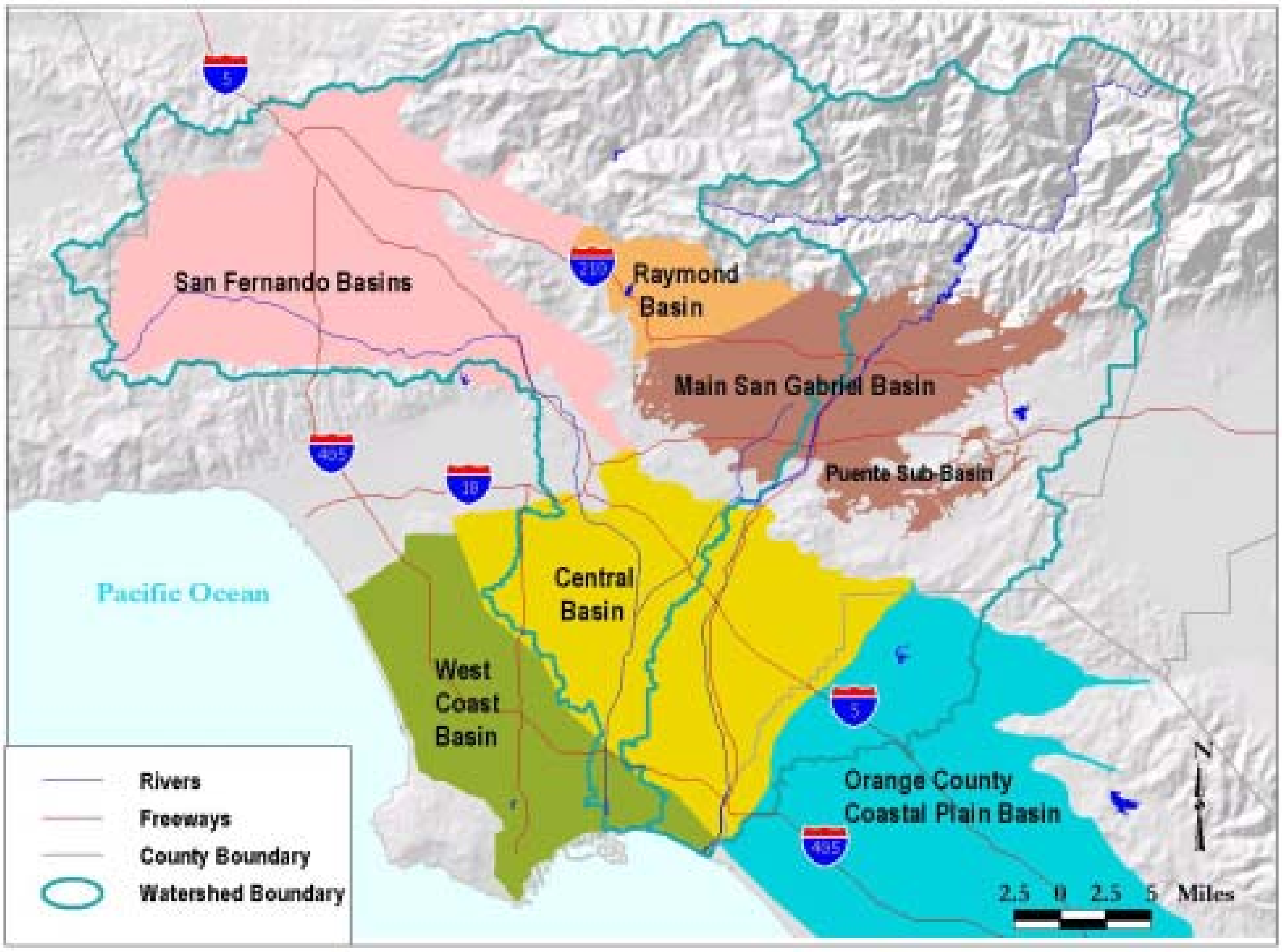


Figure 2-10. Groundwater Basins Underlying the Watersheds
Adapted from San Gabriel Watermaster and Montgomery Watson Harza

are very permeable and groundwater aquifers are connected to the surface or accessible through wells.

A total of 3,361 acres of spreading grounds exist in Los Angeles County in 32 separate locations, the majority of which are operated by the Los Angeles County Department of Public Works (LACDPW). Major facilities on the San Gabriel River include the San Gabriel Canyon spreading basin, Santa Fe Reservoir and the Montebello Forebay south of Whittier Narrows (Rio Hondo and San Gabriel spreading basins), and in unlined reaches of the

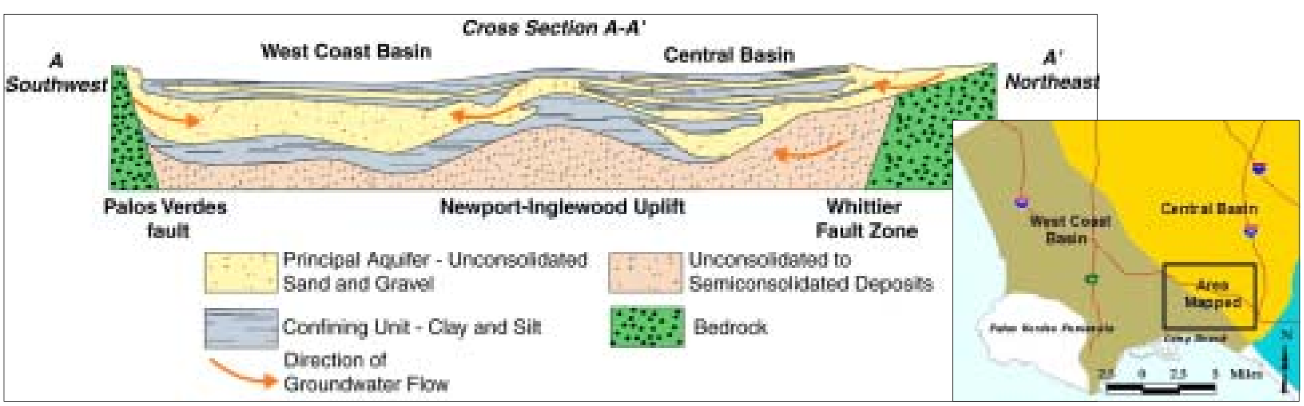


Figure 2-11. Cross-section of the Los Angeles Coastal Plain Groundwater Basin
Source: Association of Groundwater Agencies

river. Facilities in the Los Angeles River watershed include Pacoima and Tujunga Wash spreading basins, Hansen Dam in Sun Valley and Devil's Gate on the Arroyo Seco. In the 1998–99 water year, a total of 256,332 acre-feet of water were conserved through spreading grounds within the watersheds, as shown in Table 5.

Table 5. Water Recharged During the 1999–2000 Water Year (Acre-feet)

Location	*Reclaimed*	*Imported*	*Runoff*	*Other**	*Total*
San Gabriel Basin	0	50,953	76,792	5,055	132,800
SF Valley Basin	0	0	14,105		14,105
Coastal Plain	43,180	45,037	21,120		109,427
TOTAL	*43,180*	*95,990*	*112,107*	*5,055*	*256,332*

* Water owned by other local water agencies and stored in the San Gabriel Basin
Source: L.A. County Department of Public Works, Water Resources Division

■ Groundwater Management

The underlying groundwater basins are managed to ensure that water extraction from groundwater basins is in balance with water supply. Court decisions, called adjudications, have established the methods that water managers use in each basin. The court determines the groundwater rights of all the users who extract water, how much can be extracted, and appoints a manager or "watermaster." The watermaster ensures that the basin is managed according to the adjudication and reports periodically to the court.

In 1955, the Central and West Basin Water Associations were formed to manage groundwater pumping in their respective basins. By the late 1950s, groundwater pumping in the Central and West Coast Basins had reduced groundwater levels to historic lows. Saltwater from the Pacific Ocean began to increase the salinity in groundwater in the West and Central coastal basins. Many wells had to be abandoned due to seawater intrusion. Since then, the LACDPW, WRD, and other agencies have operated facilities that inject fresh water into the groundwater basins to help keep intruding saltwater out. Saltwater barrier facilities are located along the coast at Manhattan Beach, between Huntington Beach and Newport Beach, and at the mouth of the San Gabriel River at the Los Angeles and Orange County boundary.

In 1961 the Central and West Coast Basins were adjudicated to limit groundwater pumping in the basin and explore alternative water sources. While this decision had the effect of decreasing pumping, groundwater levels in many parts of the basin still remain below sea level. The Water Replenishment District of Southern California (WRD) manages the basins. The WRD is responsible for maintaining adequate groundwater supplies, reducing seawater intrusion into aquifers, and protecting groundwater quality.

Groundwater pumping in the San Gabriel groundwater basin began to exceed recharge rates in the 1950s, leading to a lengthy legal battle that was settled in 1972. This settlement established the San Gabriel River Watermaster to adjudicate water rights and manage groundwater resources in the Main San Gabriel Basin. The water resources of the groundwater basins in the Upper Los Angeles River Area (ULARA) are managed by an agreement made in 1973. This agreement balances the groundwater rights of the City of Los Angeles with the upstream cities of Glendale and Burbank. The ULARA Watermaster is responsible for managing groundwater supplies and protecting groundwater quality.

Because of groundwater extraction, seawater from the Pacific Ocean has increased the salinity in groundwater in the West and Central coastal basins. Many wells had to be abandoned in the 1940s due to seawater intrusion. Since the 1950s, the LACDPW and other agencies have operated facilities that inject fresh water into the groundwater basins to help keep intruding saltwater out. Saltwater barrier facilities are located along the coast at Manhattan Beach and at the mouth of the San Gabriel River at the Los Angeles and Orange County boundary.

3. Imported Water

Water is imported into Los Angeles County from the Owens Valley on the eastern slope of the Sierra Nevada, from Northern California and from the Colorado River.

Construction of the first Los Angeles Aqueduct from the Owens Valley began in 1908. Under the supervision of William Mulholland, this 233-mile aqueduct was constructed in five years. In 1940 the aqueduct was extended 105 miles north to Mono Basin. A second aqueduct from Owens Valley was completed in 1970 to further increase capacity. Approximately 480,000 acre-feet of water are delivered to the City of Los Angeles each year. The amount the aqueduct delivers varies from year to year due to fluctuating precipitation in the Sierra Nevada. As a result of legal restrictions on water transfers to protect the source environment, future deliveries are expected to be reduced to an average of 321,000 acre-feet annually over the next twenty years.

The 242-mile Colorado River Aqueduct, completed in 1941 to deliver water to the Southern California coastal plain, has a capacity of 1.3 million acre-feet. Annually, California is allowed 4.4 million acre-feet of Colorado River water. California has traditionally received in excess of that amount when there is excess water available, in wet years or when other states drawing from the Colorado River do not use their full allotment. Future supplies from the Colorado River may be reduced due to competing demands. The Metropolitan Water District recently completed the Eastside Reservoir project, which created Diamond Valley Lake, to store 800,000 acre feet of Colorado River water.

The State Water Project (SWP) was created in 1960 to deliver water to regions of the state where resources are scarce. The SWP brings water 444 miles from the Sacramento-San Joaquin River Delta to Southern California via the California Aqueduct. The SWP has delivered up to 3.6 million acre-feet annually, although significantly less water is available during dry-year periods. One of the goals of the CALFED Bay-Delta Program is to improve water supply reliability for the Delta, therefore the potential for future increases in water supplies from the SWP for Southern California is uncertain.

4. Surface Water

While the rivers used to be the primary source of water for the basin, they now supply only a small percentage of the total. These local supplies have a very low cost in comparison to imported water, especially when the energy costs of transporting water are considered. Water from the upper San Gabriel River is stored in Cogswell, San Gabriel, and Morris Reservoirs. A portion is treated for municipal use with the balance used for groundwater recharge. The City of Pasadena obtains 40 percent of its municipal water supply indirectly from the Arroyo Seco and Millard Stream, by diverting a portion of the total flow into spreading basins adjacent to Devils Gate Reservoir.

5. Recycled Water

Recycled or reclaimed water is treated effluent from wastewater treatment facilities. This water is used primarily for irrigation, industry, injection into barrier wells to prevent saltwater intrusion, and groundwater recharge. Currently recycled water makes up only 3 percent of the annual water supply in the Los Angeles region, although its potential is far greater.

Conservation efforts over the past thirty years have kept total water demand from increasing in tandem with population. In the City of Los Angeles, population has increased over 35 percent since 1970, while water usage increased only 7 percent. However, competing interests for imported water and sustained population growth will continue to drive the need for increased water conservation and expanded use of recycled water.

F. WATER QUALITY

1. Responsibility for Managing Water Quality

Protection of water quality in California is primarily the responsibility of the State Water Resources Control Board (SWRCB) and, on a regional basis, the nine California Regional Water Quality Control Boards. The Porter-Cologne Water Quality Control Act (California Water Code) authorizes the State Board to adopt policies for all waters of the state and directs each Regional Board to prepare a Basin Plan to protect water quality. The water quality in the watersheds is primarily under the jurisdiction of the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB). The Santa Ana Regional Board has jurisdiction over a portion of the Coyote Creek subwatershed.

The California Department of Health Services also has responsibility to protect the quality of drinking water, in accord with California's Drinking Water Source Assessment and Protection Programs, in response to the 1995 reauthorization of the Federal Clean Water Act. The Water Replenishment District of Southern California (WRD) is also authorized under the California Water Code to engage in activities to protect groundwater in the Central and West Coast groundwater basins. The Main San Gabriel Watermaster and the ULARA Watermaster also have responsibility for water quality protection for their respective basins.

The Basin Plan for the Los Angeles Region was originally prepared in the 1970s and has been updated several times. The Santa Ana River Basin Plan was first adopted in 1975, with a major update in 1995. These plans address beneficial uses for surface waters in the region, as required by the Federal Clean Water Act, water quality objectives for protection of beneficial uses, and a plan for enhancing and maintaining water quality.

2. Beneficial Uses

State Board resolution 88-63 and LARWQCB resolution 89-03 state:

> "All surface water bodies and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and will be so designated by the Regional Boards…[with certain exceptions which must be adopted by the Regional Board]." (LARWQCB 1994)

Surface waters include rivers, streams, lakes, reservoirs, and wetlands. Beneficial uses defined by the Los Angeles Regional Board for surface waters in the watersheds generally include swimmable, fishable, industrial, non-contact recreation and wildlife habitat. Water bodies not meeting the water quality standard for their designated beneficial use are to be listed as "impaired." Beneficial uses defined by the LARWQCB for groundwater include municipal, industrial, agricultural, and aquacultural.

3. Water Quality Concerns

Because of the largely urban and industrial land uses throughout the watersheds, the surface and groundwater quality has been substantially degraded at many locations. The following section provides a brief description of the major water quality concerns for surface water and groundwater.

■ Surface Water

According to the Regional Board, "uncontrolled pollutants from non-point sources are believed to be the greatest threats to rivers and streams within the watershed" (LARWQCB 1994). Urban runoff and illegal dumping are considered to be major sources of pollution in the San Gabriel and Los Angeles River Watersheds. Point sources, such as sewage treatment plants and industrial operations discharging into the rivers, also contribute to pollutant loads. As required under §303(d) of the Federal Clean Water Act, specific surface water quality concerns have been identified for surface water bodies. California's most recent 303(d) list was approved in 1998 and contains 509 water bodies designated as impaired. EPA 303(d) listed surface water constituents of concern for the watersheds are shown in the table below.

For waters on the 303(d) list, and where the US EPA administrator deems they are appropriate, the states are to develop Total Maximum Daily Loads or TMDLs. A TMDL defines the total amount of a particular pollutant that is acceptable in the water body consistent with its designated beneficial use. Federal regulations require that each TMDL account for all sources of the pollutants that caused the water to be listed, both contributions from point sources (federally permitted discharges) and contributions from non-point sources. Impaired reaches of the San Gabriel and Los Angeles Rivers and their major tributaries are illustrated in **Figure 2-12**.

Table 6. Pollutants of Concern in the Watersheds

Drainage	*Algae*	*Ammonia*	*Chlorpyrifos*	*Coliform*	*Cadmium*	*Copper*	*Lead*	*Selenium*	*Zinc*	*Odors*	*Oil*	*Pesticides*	*pH*	*Toxicity*	*Trash*	*Volatile organic compounds*
San Gabriel	x	x		x			x					x	x	x	x	
Los Angeles	x	x	x	x	x	x	x	x	x	x	x		x		x	X

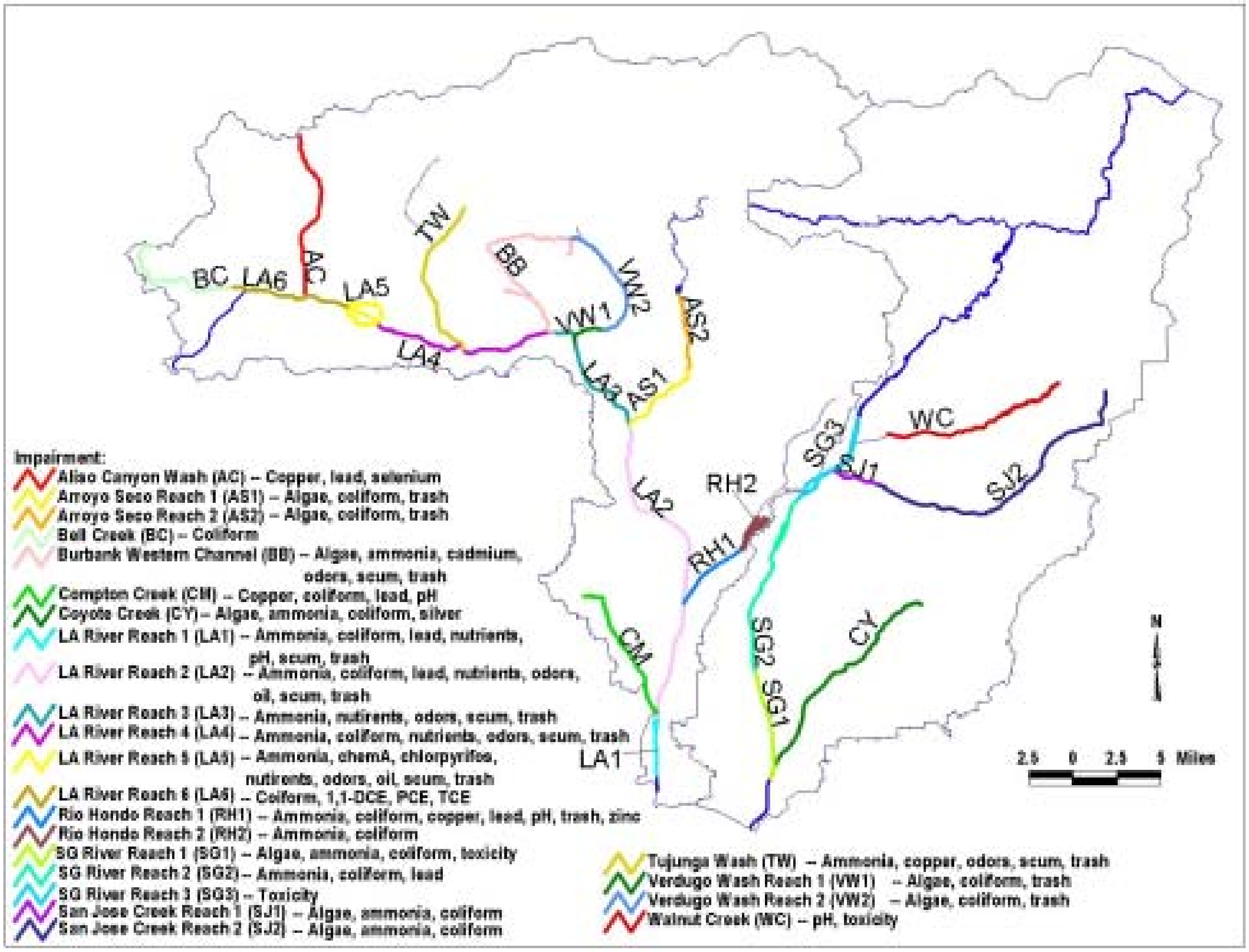


Figure 2-12. Impaired Reaches of the San Gabriel and Los Angeles Rivers and Tributaries
Source: Montgomery Watson Harza

■ Groundwater

As described earlier in this document, groundwater supplies most of the watersheds' local potable water supply. Specific groundwater quality concerns include volatile organic compounds, perchlorate, hexavalent chromium, and NDMA from industrial activities and nitrates from agricultural and septic tanks and leach fields. Low levels of hexavalent chromium have been detected in San Fernando Valley drinking water wells and in Central Basin aquifers. The United States EPA has designated portions of the San Gabriel and San Fernando basins as Superfund sites, and has initiated cleanup operations. Other Superfund sites have been identified within the watersheds, such as the Jet Propulsion Laboratory in La Cañada Flintridge, Lockheed in the San Fernando Valley and the Pemaco site in Maywood. Some water supply wells have been taken out of production where contaminant levels exceed drinking water standards. Efforts of local cities, water companies, and water agencies, such as the San Gabriel Basin Water Quality Authority, have been instrumental in developing and implementing plans to clean up many of these sites.

4. Source Controls and Remediation Efforts Planned

The Regional Boards have adopted a variety of different strategies to address water quality concerns, depending on the nature of the water quality problem. These include control of point source pollutants, control of non-point source pollutants, and remediation.

As stated in the LARWQCB's Basin Plan:

> "All discharges, whether to land or water, are subject to the California Water Code (§13263) and will be issued WDRs [Waste

CURRENT CONDITIONS

Discharge Requirements] by the Regional Board." (LARWQCB 1994)

Control of Point Source Pollutants

Pollutants from point sources are transported to water bodies in controlled flows at well-defined locations. Examples of point sources include discharges from municipal and industrial wastewater treatment facilities. The primary mechanism for point source pollutant control is either through California's Waste Discharge Permit requirements or through the Federal National Pollutant Discharge Elimination System (NPDES) Permit requirements.

Control of Non-point Source Pollutants

Pollutants from non-point sources are diffuse, both in terms of their origin and mode of transport to surface and ground waters. Non-point sources of pollution originate from activities generating surface runoff that mobilizes and transports contaminants into surface and ground waters. Sources of concern include lawn and garden chemicals transported by storm water or by water from lawn sprinklers; household and automotive care products dumped on streets and into storm drains; fertilizers, pesticides, and manure washed from agricultural fields by rain or irrigation waters; sediment that erodes from construction sites; and various pollutants resulting from atmospheric deposition.

Emphasis is placed on pollution prevention through careful management of resources, as opposed to "cleaning up" the waterbody after the fact. Through public outreach—an example of a non-regulatory program—residents are informed of threats to the quality of the waters in their communities and are encouraged to voluntarily implement Best Management Practices (BMPs) that will eliminate or reduce non-point sources of pollution. Local governments, including the Counties and individual cities are encouraged to develop and implement ordinances and public outreach programs that supplement this effort. This flexible approach can be an effective means of controlling pollutants from many non-point sources.

In addition to the general approach to non-point source pollution control, the Los Angeles Regional Board has adopted a TMDL for trash for the East Fork of the San Gabriel River and has proposed a draft TMDL for trash in the Los Angeles River. The watersheds are also subject to a NPDES permit for stormwater runoff that is designed to protect the beneficial uses of water bodies in Los Angeles County by reducing pollutants in storm water. This permit was issued in 1990 by the Regional Water Quality Control Board and renewed in 1996. The permit covers 3,100 square miles in the Los Angeles basin and spans several watersheds, with the County of Los Angeles and 85 incorporated cities as the listed permittees. Orange County's Environmental Resources department also administers a county-wide stormwater program of water quality protection initiatives backed by a 1997 water quality ordinance.

Remediation

The Regional Board oversees remediation of both ground and surface waters through the investigation of polluted groundwater and enforcement of corrective actions needed to restore water quality. These activities are managed through a variety of cleanup and remediation programs. These programs are designed to return polluted sites to productive use by identifying and eliminating the sources of pollutants, preventing the spread of pollution, and deploying various treatment methods to restore water quality.

G. FLOOD PROTECTION

Flood management in the watersheds is the responsibility of the Los Angeles Flood Control District whose responsibilities are now performed by the Los Angeles County Department of Public Works, Orange County Flood Control District, and the U.S. Army Corps of Engineers. The Los Angeles Flood Control District was formed in 1915 in response to a devastating flood in 1914. In 1936, federal legislation gave flood protection duties to the U.S. Army Corps of Engineers (Corps), and the two agencies have worked jointly in Los Angeles County since then.

Flood protection is designed to contain and control runoff in order to prevent flooding. The size of a flood that would occur without any runoff management is often expressed in terms of its expected frequency. The larger the flood, the less likely it is to occur in any given year. For example, the size of the flood that is likely to occur each year is referred to as a one-year flood. It has a 100 percent probability of occurring in any particular year. Large events, such as the 20-year flood or the 100-year flood, have a 5 percent chance or 1 percent chance, respectively, of occurring each year. These calculations are estimates based on the historical record of rainfall and flood events in the County. Steep canyons in the mountains and foothills, combined with channel design and impermeable surfaces in the urban basin, promote rapid runoff during storms. Flood flows, which follow winter storms, are characterized by high peak flows and short durations.

1. Flood Management System

■ Historical Conditions

The San Gabriel and Los Angeles Rivers were prone to winter flooding in their natural state. This was due to a number of factors: the intensity of winter storms, the unstable nature of the riverbeds, and erodability of the stream banks. While large floods were infrequent, the magnitude of their destruction was sometimes devastating. In the early part of the twentieth century, damaging floods occurred in 1914, 1934, and 1938. The 1938 flood resulted in $78 million in damages ($889 million in current dollars) and the loss of 87 lives (Gumprecht 1999).

■ Existing Conditions

Flood management measures began in earnest in the 1920s. The present system, constructed by the Corps, was completed in 1970. The flood management system, the Los Angeles County Drainage Area (LACDA) system, consists of concrete river channels designed to expedite flow, dams and reservoirs to regulate flow, debris basins to capture sediment washed down from the mountains, and hundreds of miles of channels to direct flow into spreading basins and to the ocean. In excess of 100,000 acre-feet of local stormwater runoff is conserved in the spreading grounds annually. **Figure 2-13** illustrates the LA County flood management facilities in the watersheds, summarized in Table 7.

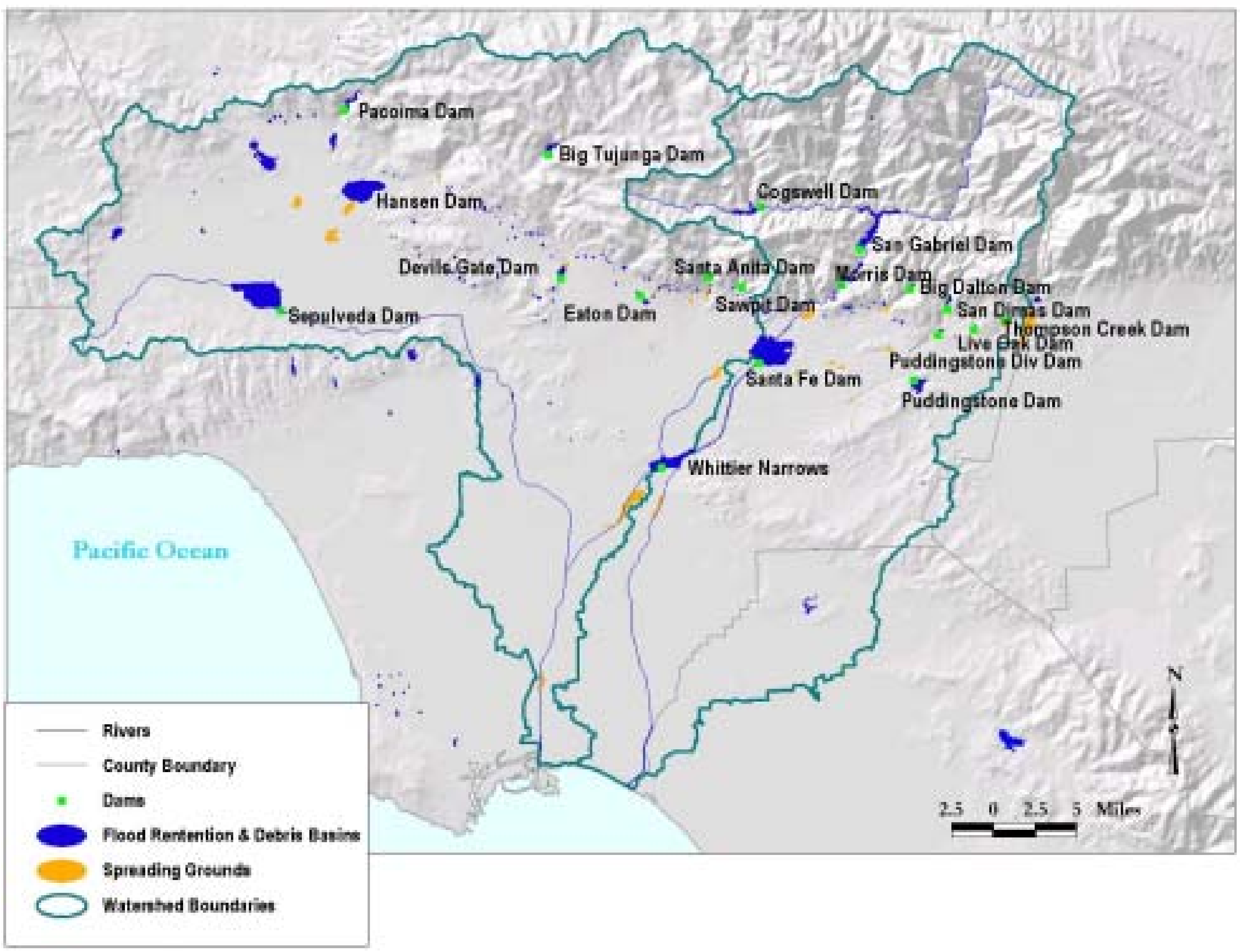


Figure 2-13. Los Angeles County Flood Management Facilities

Table 7. Los Angeles County Flood Management Facilities

Open channels	470 miles
Underground channels	2,400 miles
Flood management reservoirs	21
Rubber dams for diverting runoff	11
Groundwater recharge basins and soft-bottom channels	2,436 acres
Flood detention basins	5
Debris basins	116
Catch basins	75,000

The system developed by the U.S. Corps of Engineers was originally designed to provide flood protection for a 100-year flood. Flood events in the 1970s and 1980s indicated that perhaps the system did not have sufficient capacity. In 1991, a report prepared by the Army Corps indicated that the system was in fact not providing that level of protection, partially due to insufficient information available at the time of its design and partially due to the impacts of urbanization on runoff volumes. In some reaches along the lower mainstem of the rivers, LACDA only provided 25-year flood protection. Without further protection, damages from a 100-year flood were estimated to be as high as $2.3 billion and could affect a population of 500,000 in fourteen communities. In response, the Army Corps and the County initiated modifications to the LACDA system, known as the LACDA Project, to increase its flood capacity in the lower reaches. This project consisted primarily of increasing the height of the channel walls and reinforcing levees along the lower Los Angeles River in Long Beach, the Rio Hondo, and Compton Creek. Originally estimated to take ten years and $364 million to complete, the project is ahead of schedule due to increases in federal funding. It is expected to be completed by December 2001, at a cost of $200 million.

Steep slopes with high erosion rates and high intensity storms can result in high flows full of debris such as sediment, boulders, and vegetation. For example, San Gabriel Canyon, in the upper San Gabriel basin, generates an average of 1.3 million cubic yards of sediment annually. This situation is aggravated in areas that have burned and lost their vegetative cover. Debris basins in the foothills at the mouth of canyons are designed to trap sediment and other material carried by runoff, and help to retain channel capacity further downstream. These debris basins must be periodically cleaned out to retain their storage capacity. Excavated sediments are used as fill material, disposed in landfills, or delivered to approved sediment placement sites.

■ Role of Rivers in Flood Protection

The rivers are a major component of the flood protection systems. Flood flow is regulated with dams. The upstream tributaries of the San Gabriel River merge above the Santa Fe Dam (capacity of 32,109 acre-feet). The Whittier Narrows Dam (34,947 acre-feet) captures both the San Gabriel and Rio Hondo Rivers, but releases up to 36,500 cubic feet per second (cfs) of its flood flows into Rio Hondo diversion channel which connects to the Los Angeles River twelve miles above its outlet into the ocean. In large flood events some flow may be diverted into the San Gabriel River as well (up to 5000 cfs). The upper Los Angeles River flows into the Sepulveda Dam, a flood management facility operated by the Army Corps with a capacity of 22,493 acre-feet. Hansen Dam on the Tujunga Wash has a capacity of 25,441 acre-feet. Flood flows in the watersheds are also regulated by another 15 dams operated by the LACDPW.

2. Designated Flood Hazard Areas and "Unmet Drainage Needs"

The designated 100-year floodplain in the lower reaches of the Los Angeles River covers approximately 82 square miles, less than 6% of the two watersheds. Once the LACDA Project is completed, the extent of the hazard area will be reduced significantly and levels of protection increased to withstand a 133-year flood. There are still some small regions that are not provided with 100-year flood protection in the San Fernando Valley and below the confluence of the Arroyo Seco with the Los Angeles River.

The County tracks areas throughout the basin where flooding or drainage problems persist. Information is reported by the cities or through individual complaints, or directly to the County in unincorporated areas. Unmet drainage needs occur throughout the County but mostly in localized urban areas. If the situation requires a new drainage structure, the County will do a study to determine the best solution. The County is currently researching solutions for chronic flooding in the Sun Valley sub-watershed that will utilize alternative approaches to construction of a flood conveyance channel, such as detention basins and more permeable land cover. The goal is to retain runoff within the watersheds and provide multiple benefits beyond flood management.

H. REGIONAL DEMOGRAPHICS

1. Political Boundaries and Entities

■ Counties and Cities

While the majority of the watersheds lie within Los Angeles County, the area crosses into Ventura County to the west, San Bernardino County to the east and Orange County to the southeast. Within the boundary of the RMC, there are 66 cities in Los Angeles and Orange Counties. There are eight cities within the SMMC boundary.

2. Land Use

Within the watersheds, approximately 26 percent of the land area is urbanized and 25 percent is parks or open space, although most of that is the National Forest. Less than 30 percent of the land area is undeveloped, including vacant urban land and areas that are too steep to develop. Land use patterns in the watersheds are illustrated in **Figure 2-14**.

3. Population

The population of Los Angeles County is 9,519,338 (U.S. Census 2000). If the County were a state, it would rank ninth in the United States for population. While growth rates in the County have slowed, they are still significant: 7.4 percent over the past decade, or more than 656,000 people. By 2010, the County is expected to grow to 10,868,900, another 14 percent. **Figure 2-15** illustrates population growth in Los Angeles County. The eleven Orange county cities within the watershed contribute a total population of 770,500 people, an increase of over 100,000 since 1990. Between 1990 and 2000, Orange County's growth rate was twice that of Los Angeles County (US Census 2000).

Population is concentrated in the valleys and coastal plain (**Figure 2-16**), with lower densities along the foothills, mountains, and outlying areas. The average density in Los Angeles County is 2,345 persons per square mile, compared with an estimated 42 persons per square mile in 1900.

4. Economic Conditions

■ Regional Economies and Industry

The Los Angeles basin has a large industrial base and a diversified, growing economy. Top industries include professional services, manufacturing, wholesale trade, tourism, and entertainment. Defense-related employment has been declining since the mid-1980s, while professional services, tourism, and manufacturing in sectors such as apparel and aircraft have increased both in numbers of jobs and in productivity.

The cities in the southern portion of the watersheds, the "Gateway Cities," call themselves the "industrial heartland" of Los Angeles County (SCAG 2001). With a population of approximately two million, they represent one in seven jobs in Southern California. Home to the Port of Long Beach, the area's economy is primarily based on manufacturing technology, trade, and tourism.

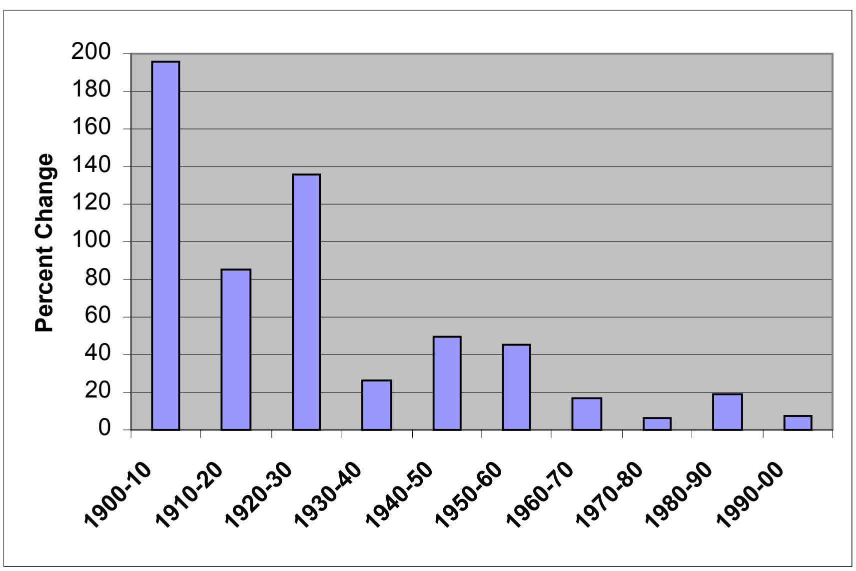


Figure 2-15. Los Angeles County Population Growth by Decade, 1900–2000
Source: Los Angeles Almanac

■ Median income

Median household income of residents within the area of the watersheds is $47,413 annually, ranging from $9,300 to well over $500,000 (1990 Census, 2000 projections). The lowest average income is found in the urban core, in the southern Gateway cities and South Los Angeles. The wealthiest households are along the coast and in the foothill communities (**Figure 2-17**).

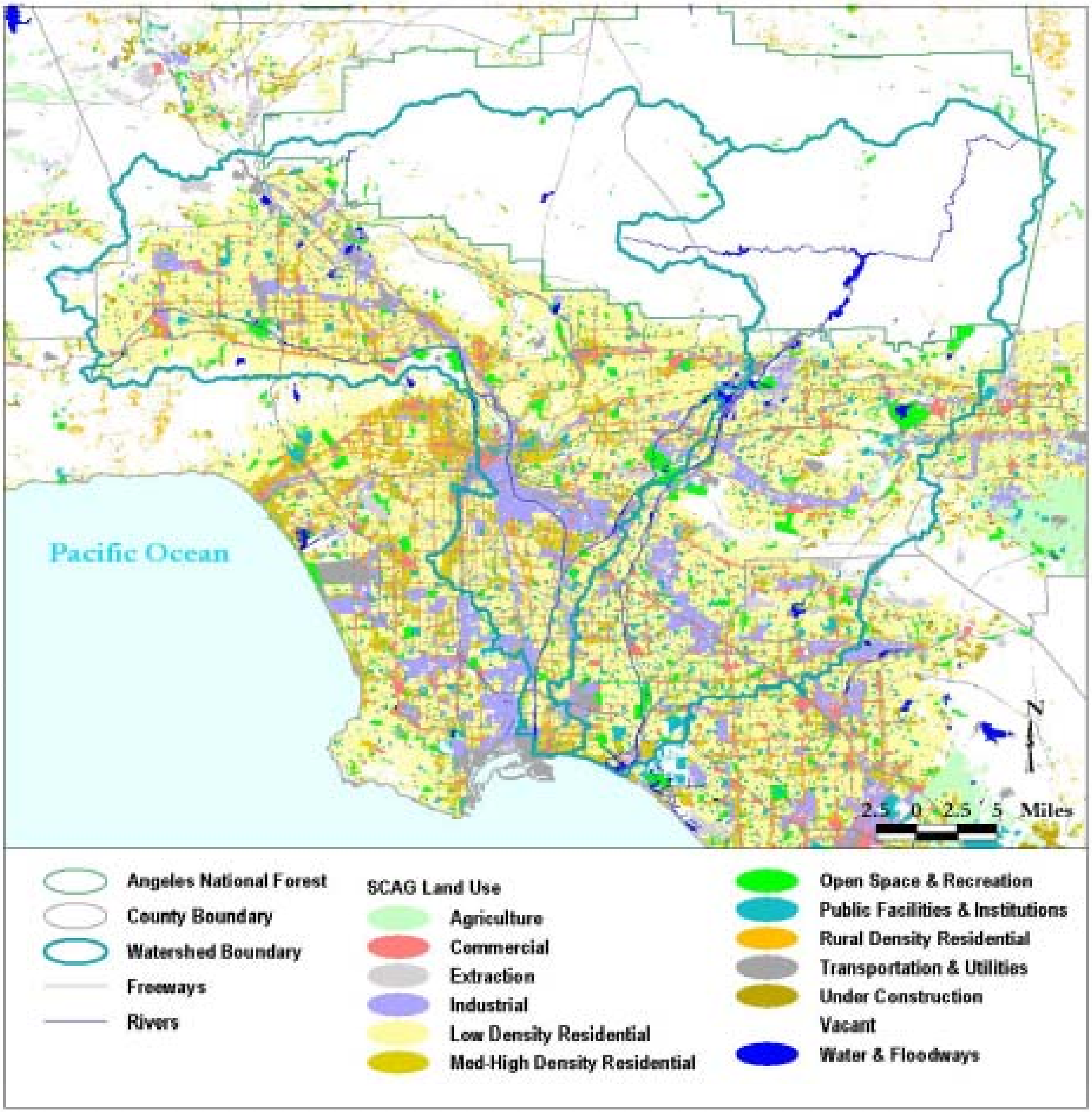


Figure 2-14. Land Use in the Watersheds
Source: Southern California Association of Governments 1993

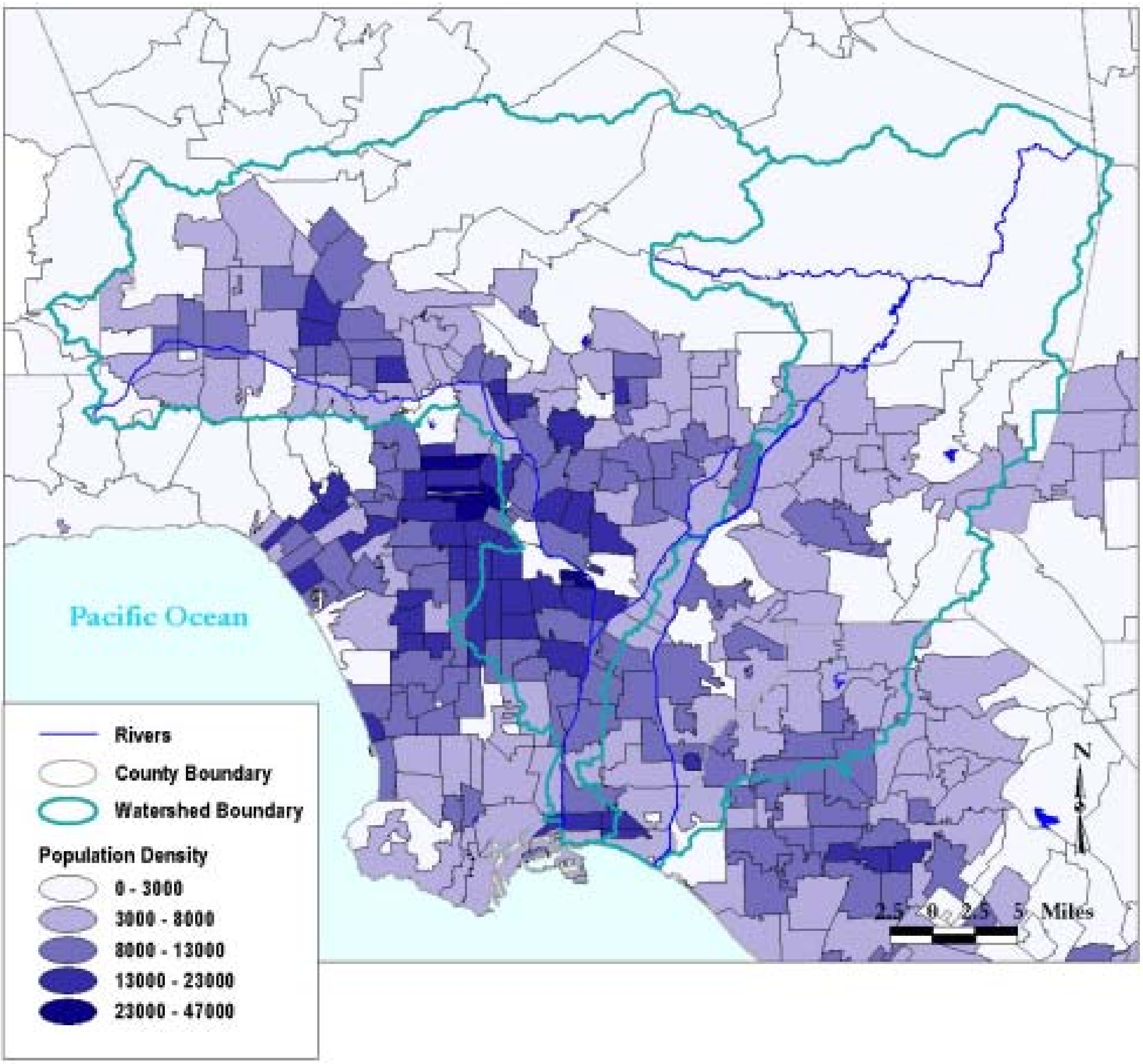


Figure 2-16. Population Density (Persons per Square Mile) by Zip Code
Source: US Census, 2000 Projected

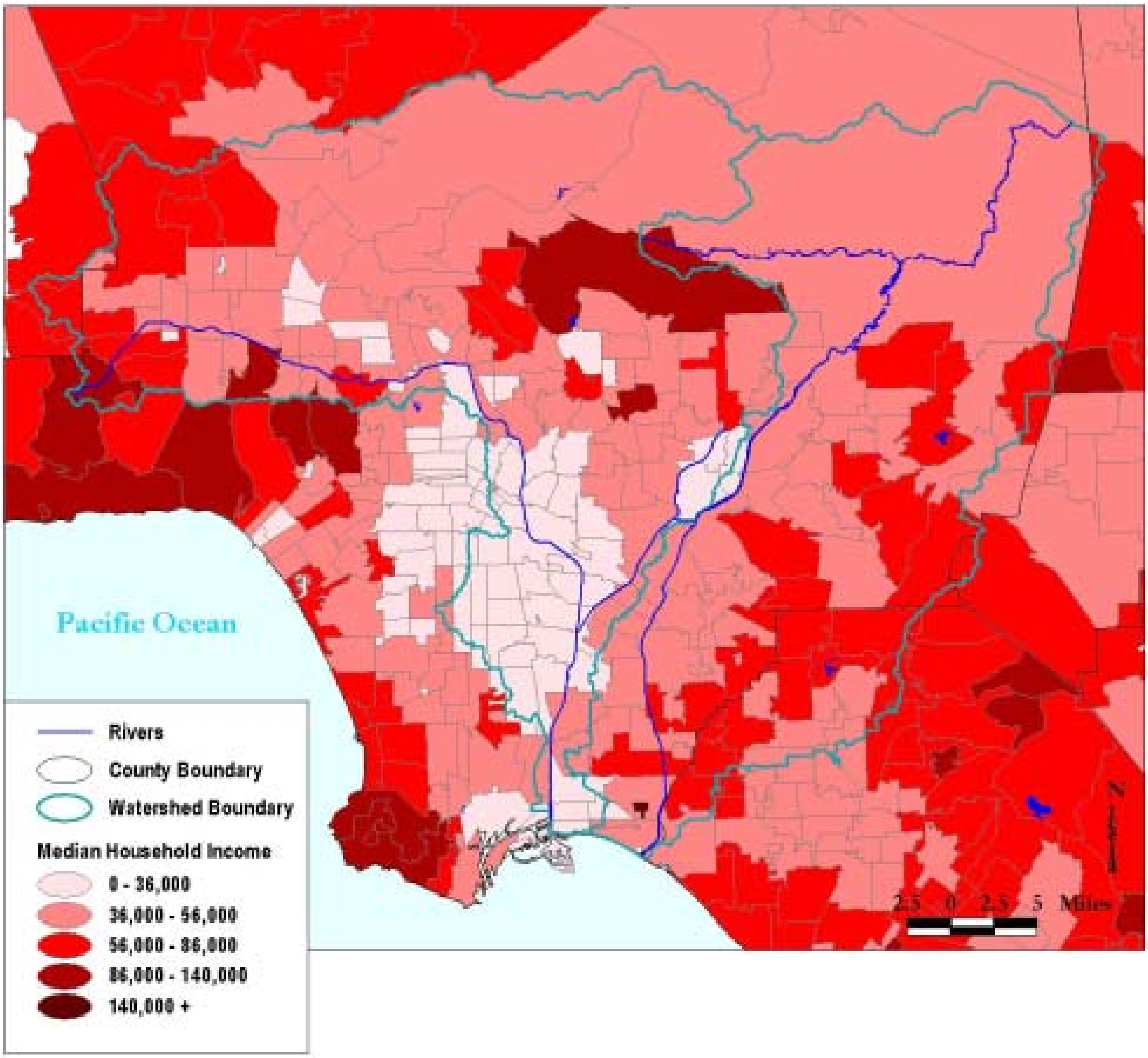


Figure 2-17. Median Household Income by Zip Code
Source: US Census, 2000 Projected

3. A VISION FOR THE FUTURE

A. VISION

The watersheds were first transformed from wildlands to farmlands. The second transformation converted farmlands to urban lands. The third transformation will create a network of livable, sustainable communities, connected by open spaces. The goal is to:

Restore balance between natural and human systems in the watersheds.

This requires that government and the public rethink the use of land and water, to better integrate human-made and natural systems. Planning must embrace multiple objectives. Economic and environmental benefits can be realized from sustainable development.

Southern California can grow greener with more open space. Open spaces can be connected with a network of trails and bike paths improving access for all residents. Habitat for wildlife can be preserved in the foothills and mountains, and restored along rivers and tributaries in urban areas. The rivers can be enhanced, surface and ground waters cleansed, local water supply improved, and dependence on imported water reduced. Flood protection can be maintained and improved.

By planning across jurisdictions and boundaries, this vision can become a reality. This vision is achievable, but not overnight. This vision is affordable, but not by "business as usual" methods. There can be a consensus for this vision, but only if citizens are educated, involved, and allowed to choose the quality of life they prefer.

With science as a basis, this plan can be used as a framework for future planning at the subwatershed and local level. This plan is intended as a living document that will evolve over time, as priorities evolve and needs dictate, based on periodic assessment of progress. This plan is a tool to create a healthier environment, build consensus, to reach common ground.

B. GUIDING PRINCIPLES

To restore the watersheds, create an open space network, enhance waters and waterways, and improve coordination of planning throughout the region, plans and projects need consistent goals. The Guiding Principles represent an over-arching set of goals that can be used to guide future projects and enhance current open space planning in the watersheds. The Guiding Principles are intended to serve as a reference or a touchstone for all concerned with watershed planning. They set forth general directions without attempting to define responsibilities for implementation. They are guides, not directives. They imply a wide perspective and a long view. The Principles were developed through a consensus-building process involving state and county agencies, cities, environmental groups, local councils of government, and individuals having a stake in the evolution of the watersheds.

The Guiding Principles are intended to allow jurisdictions, communities, and groups to advance, promote, and enable the concepts below.

■ LAND: Grow a Greener Southern California

Create, Expand, and Improve Public Open Space Throughout the Region

- Establish priorities for land acquisition
- Coordinate targeted land acquisition with regional and local land use planning
- Establish a long-term land acquisition process, including protection for current uses
- Recycle brownfields with cooperation of EPA, DTSC, and other agencies
- Coordinate public lands management policies and procedures among jurisdictions

Improve Access to Open Space and Recreation for All Communities

- Accommodate active and passive recreational uses
- Incorporate passive and low-impact recreational facilities in habitat areas
- Accumulate and record the needs for active recreation facilities

- Evaluate access by population density, distance and time for different types of open space
- Open school sites for after-hours recreational use

Improve Habitat Quality, Quantity, and Connectivity

- Protect existing high-quality habitat and ecologically significant areas
- Restore and enhance aquatic and terrestrial riparian and upland habitat
- Coordinate regional efforts to remove invasive species
- Maintain and enhance wildlife corridors as continuous linkages
- Identify indicator species, develop standards and monitoring programs

Connect Open Space with a Network of Trails

- Develop continuous bike trail, equestrian, and public access systems along riverfronts and within the watershed
- Connect river trails to mountain trails, urban trails, local parks, open spaces, and beaches
- Connect open spaces to transit access points
- Provide for public safety and security along waterways and trails

Promote Stewardship of the Landscape

- Use drought-tolerant, native, and regionally-adapted plant materials
- Identify, preserve, and restore historic sites and cultural landscapes

Encourage Sustainable Growth to Balance Environmental, Social, and Economic Benefits

- Preserve major open spaces and limit urban sprawl
- Recycle urban riverfronts as frontage for new development
- Provide incentives and streamline regulations to promote watershed sustainability
- Encourage local government actions as examples of watershed sustainability
- Provide individuals and organizations with incentives to promote natural habitat

■ WATER: Enhance Waters and Waterways

Maintain and Improve Flood Protection

- Maintain or enhance existing flood protection at all phases of implementation
- Utilize nonstructural methods for flood management where feasible
- Reduce the volume and velocity of stormwater runoff where feasible
- Develop regional and subregional networks of stormwater detention areas where feasible
- Encourage new developments to detain stormwater onsite to mitigate runoff where feasible

Establish Riverfront Greenways to Cleanse Water, Hold Floodwaters, and Extend Open Space

- Acquire land for flood management, wetlands, cleansing of water, and compatible uses
- Create a continuous network of parks along the waterways
- Develop recreational opportunities along waterways
- Connect communities to the waterways by extended greenways

Improve Quality of Surface Water and Groundwater

- Reduce dry weather urban runoff discharge into waterways and the ocean
- Coordinate local planning and opportunities for water quality improvements with the regional basin plan for water quality
- Support public/volunteer water quality monitoring programs
- Assist cities in implementing water quality regulatory requirements

Improve Flood Safety Through Restoration of River and Creek Ecosystems

- Restore the natural hydrologic functioning of subwatershed areas where feasible
- Naturalize low-flow streambeds/develop floodways for storm events where feasible
- Restore local streams to replace storm drains where feasible
- Maintain sufficient flow conditions to support riparian/riverine habitats
- Develop sediment management strategy

Optimize Water Resources to Reduce Dependence on Imported Water

- Expand groundwater recharge facilities to increase local water supplies
- Encourage onsite collection of stormwater for irrigation and percolation, where consistent with water quality goals and existing water rights
- Extend the distribution and range of uses for reclaimed water
- Expand water conservation programs
- Publish a subwatershed-level water budget and periodically monitor performance

■ PLANNING: Plan Together to Make it Happen

Coordinate Watershed Planning Across Jurisdictions and Boundaries

- Partner with all relevant agency officials, staff, and elected officials throughout the process
- Develop a coordinated regional approach to obtain federal, state, and local funding
- Plan at the subwatershed level; coordinate at the watershed level
- Encourage and facilitate public and private partnerships to implement projects
- Involve the residential, business, and professional communities in all aspects of planning

Encourage Multi-Objective Planning and Projects

- Integrate land use planning with flood management principles, water quality improvement objectives, and open space uses
- Develop demonstration open space projects with multiple watershed objectives
- Provide incentives in funding and public approvals for multiple-objective projects
- Employ comprehensive cost-benefit analysis to evaluate multiple-objective projects
- Analyze interdependence of land, water, materials, energy, economics, and ecosystems

Use Science as a Basis for Planning

- Base plans and projects on scientifically derived principles, practices, and priorities
- Incorporate review of key issues by an interdisciplinary science panel
- Develop benchmarks to assess watershed status by a regular monitoring process
- Utilize applied scientific research to guide public policy

Involve the Public Through Education and Outreach Programs

- Conduct public educational and outreach programs to promote watershed restoration
- Establish a process for project participation by stakeholder representatives and the public
- Present plans and programs in reader-friendly print and electronic versions
- Involve stakeholders and the public in project implementation and maintenance
- Recognize the significance and uniqueness of individual properties for watershed planning

Utilize the Plan in an On-going Management Process

- Secure approval of the plan by partner jurisdictions
- Assure CEQA compliance in approval of proposed projects
- Establish and periodically assess measurable objectives for all plan elements
- Establish a procedure and schedule for periodic plan review and updates

C. STRATEGIES

To grow greener, enhance waters and waterways, and plan together, the State Conservancies must develop and implement a range of strategies that translate the Guiding Principles into plans, from which individual projects can be identified, proposed, and developed.

1. Education

A high priority must be placed upon public education and outreach. Community leaders, property owners, industries, businesses, and individuals make day-to-day decisions that impact the watersheds. Restoration of the watershed will require changes in behavior, shifts in resource priorities, and decisions on how to balance environmental and economic needs. This requires local understanding of the key issues to allow the public to make informed choices.

State Conservancies and agencies will facilitate the exchange of information concerning the conditions of the watersheds, options for restoration and enhancement of natural resources, and encourage the broadest-based participation in the management and protection of the watershed. This will include development and implementation of a strategy for a watershed-wide public outreach, education, and interpretive programs.

■ Public Outreach

Because water drains from the mountains to the sea, trash thrown into a storm drain anywhere in the watersheds will end up at the beach. Discarded trash and careless human activities in the canyons and along the rivers also negatively impact our drinking water supply.

Storm Drain Stencil

Yet many residents do not understand these simple truths. Public education will make clear the linkages between the condition of the watershed and the health and well being of the population, wildlife, and the ocean.

Cleaning stormwater runoff improves water quality and could help to optimize water resources. Public service campaigns address non-point source pollution, and the reduction of trash, animal waste, organic matter, and other pollutants that wash into storm drains and then into the rivers and the ocean. Public involvement programs should also encourage residents to become involved in the cleanup of the rivers, and build upon existing programs, such as the use of volunteers in monitoring river water quality.

In addition to those issues most directly related to the condition of the watershed, outreach programs should also address broader environmental issues, including sustainability. At the simplest level, sustainability is the ability to meet current needs without compromising the ability of future generations to meet their own needs. This goal encompasses a range of concepts, such as recycling, energy, and water conservation, use of appropriate building materials, minimizing use of hazardous materials, appropriate transportation practices (such as carpooling and public transit); and the purchase of environmentally friendly products and packaging. If individuals, neighborhoods, cities, communities, and agencies reduce their impact on the environment, the benefits to the watersheds will be significant. Outreach efforts will recognize existing programs, such as the T.R.E.E.S. project, developed by Tree People and other examples of city policies and programs (e.g., the City of Santa Monica's Sustainable City Program, Cool Schools).

Outreach programs will inform the public about the connection between individual open spaces, such as community gardens and backyards, and the health and condition of the watersheds. Wildlife need more than just nature preserves to thrive. Backyards can provide essential resources for different kinds of wildlife, such as birds, butterflies, small mammals and other creatures. This could entail planting a few host plants for butterflies or creating a place that provides food, water, summer shade, winter refuge, perches, nesting sites, and hiding places for all kinds of wildlife. The public needs to understand which native plants provide the best habitat for wildlife species. The conservancies will work to publicize existing programs, such as the Backyard Wildlife Habitat program developed by the National Wildlife Foundation, Master Gardeners by University of California Cooperative Extension, and work with such organizations to advance the potential to provide amenities for wildlife in backyards where appropriate.

■ Educational Programs

Continuing education to adults is important, but educating children who currently live in the watersheds is equally important, given that decades may be required to achieve the vision articulated in this plan. Today's children are the future stewards of the watersheds, and need to understand the importance of restoring balance.

Educating the Next Generation

Scientists, educators, groups, and interested individuals can create effective educational programs and products. These activities will focus on: meeting the needs of educators; forging long-term partnerships with education institutions and professionals; encouraging a wide range of educational activities; fostering full participation of groups currently underrepresented in natural resources education; and incorporating the latest communications, dissemination and display technologies into education programs.

Education programs for children will build upon the extensive network of existing resources, such as the California Plan for Environmental Education, the California Regional Environmental Educational Center—Los Angeles (CREEC-LA), Global Learning and Observations to Benefit the Environment (GLOBE), the Global Rivers Environmental Education Network (GREEN), the EcoAcademy (of the Los Angeles Conservation Corps), the North American Association of Environmental Educators (NAAEE), the US EPA's Water Office Kid's Page, the Water Education for Teachers project.

Education programs for adults could include provision of amenities for wildlife, gardening techniques that minimize pesticide and herbicide use, natural methods of pest control, composting, organic gardening, or the planning and construction of stormwater drainage systems that promote groundwater infiltration.

The State Conservancies will encourage higher education institutions to conduct research and teaching related to the condition of the watersheds. Given the interrelationships between the physical and natural environment, this could include a variety of fields, including hydrology, biology, urban planning, civil engineering, transportation planning, atmospheric sciences, geography, education, sociology, chemical engineering, and public health. The State Conservancies will work with others such as the Los Angeles and San Gabriel Rivers Watershed Council towards establishing a clearinghouse of information that catalogs research on the watersheds, to facilitate the exchange of information and ideas.

■ Interpretive Opportunities

When people visit open space, parks, community gardens, historic sites, cultural resources, riverfront walks, bike paths, wetlands, or habitat preserves, opportunities to learn about what they see and experience should be available. This requires interpretive programs that translate information for a variety of audiences. The information presented could be scientific, environmental, cultural, or even artistic in nature. Within the watersheds, interpre-

Interpretive Signage

tive programs could include hands-on programs at nature centers and museums, docent-led nature walks, summer day-camps for families, tours of water resources or flood management facilities, bird-watching or wildlife viewing events, living history exhibits at cultural sites, or signage and informational materials at accessible locations in parks, along trails, or at wetlands or habitat preserves. These could be patterned after the El Dorado Nature Center, the Eaton Canyon Nature Center, and the Los Angeles River Visitor Center, among others.

The State Conservancies will assist existing nature centers to enhance and expand the existing programs and facilities and will work with partners in the creation of new interpretative facilities where appropriate and where needed.

2. Partnerships

Partnerships provide opportunities for agencies, cities, communities, and groups to work together for common goals. Cities can, and sometimes do, coordinate planning with adjacent jurisdictions. Agencies can work with cities and other agencies to coordinate studies and implement projects. Interest groups may band together to work on issues of common interest. Neighborhoods and associations can strive to identify consensus on broad goals. These all represent forms of partnerships, which increase the strength of individual voices, expand the influence of groups, and extend benefits beyond individual cities or jurisdictions.

Instead of a focus on single-purpose public projects, a consistent approach for multiple-objective planning is required. Just as the San Gabriel and Los Angeles Rivers are linked (via the engineered connection at the Rio Hondo) and therefore function as partners, restoration of the watersheds will require that agencies, cities, communities, neighborhoods, interest groups, and individuals work together and form partnerships to achieve a common purpose. For example, the Los Angeles and San Gabriel Rivers Watershed Council has been meeting monthly since 1996 to facilitate the formation of partnerships. The State Conservancies will support and expand such efforts.

Given the large number of agencies and cities with jurisdiction in the watersheds, and the diversity of neighborhoods and interest groups, the range of interests and issues is very diverse. Instead of differences, it is possible to focus on common themes on which virtually everyone will concur: protect the environment, protect water quality, and provide more parks and open space. It is possible to work together to plan and develop multi-purpose projects that meet both local needs and agency mandates while also helping to restore balance to the watersheds.

Strength in Partnerships

A wide variety of agencies, individuals, groups, and entities have an opportunity to participate in partnerships and play a role in restoration of the watersheds. The following list is illustrative, and is not intended to be all-inclusive.

- **Federal**

  Elected Officials—Senators and Representatives

  Agencies—Army Corps of Engineers, Bureau of Land Management, Bureau of Reclamation, Environmental Protection Agency, Fish and Wildlife Service, Geological Survey, Forest Service, National Park Service, Natural Resources Conservation Service

- **State**

  Elected Officials—Governor, Senators, and Assembly members

  Departments and Agencies—Agriculture, Caltrans, Environmental Protection Agency, Fish and Game, Forestry and Fire Protection, Health Services, Integrated Waste Management Board, Parks and Recreation, Resources Agency, State Water Resources Control Board, Toxic Substances Control, University of California Cooperative Extension, Water Resources, Wildlife Conservation Board

Conservancies—San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, Santa Monica Mountains Conservancy, Coastal Conservancy, Baldwin Hills Conservancy

- **Regional**

Los Angeles County Metropolitan Transportation Authority, Metropolitan Water District, Orange County Transportation Authority, Sanitation Districts of Los Angeles County, South Coast Air Quality Management District, Southern California Association of Governments, and the Regional Water Quality Control Board

- **Joint Powers Authorities**

Arroyo Verdugo Council of Governments, Baldwin Hills Regional Conservation Authority, Gateway City Council of Governments, Mountains Recreation and Conservation Authority, Orange County League of Cities, Puente Hills Landfill Native Habitat Preservation Authority, San Gabriel Valley Council of Governments, Whittier-Puente Hills Conservation Authority, Wildlife Corridor Conservation Authority

- **Los Angeles and Orange Counties**

Elected Officials–County Supervisors

Departments–Agriculture, Public Works, Open Space District, Parks and Recreation, Regional Planning, Sanitation Districts, Community Development Commission, Beaches and Harbors, Watershed and Environmental Programs (O.C.)

- **Cities (listed below)**

Elected Officials–City Council and Mayors

Boards/Commissions–Planning Commission and Parks Commission, for example

Department Heads–City Manager, Planning, Recreation and Parks, Public Works, Redevelopment

Los Angeles County: Alhambra, Arcadia, Artesia, Azusa, Baldwin Park, Bell, Bellflower, Bell Gardens, Bradbury, Burbank, Calabasas, Cerritos, Claremont, Commerce, Compton, Covina, Cudahy, Culver City, Diamond Bar, Downey, Duarte, El Monte, Glendale, Glendora, Hawaiian Gardens, Hawthorne, Huntington Park, Industry, La Canada Flintridge, La Habra Heights, Lakewood, La Mirada, La Puente, La Verne, Lawndale, Long Beach, Los Angeles, Lynwood, Maywood, Monrovia, Montebello, Monterey Park, Norwalk, Paramount, Pasadena, Pico Rivera, Pomona, Rosemead, San Dimas, San Fernando, San Gabriel, San Marino, Santa Fe Springs, Sierra Madre, Signal Hill, South El Monte, South Gate, South Pasadena, Temple City, Vernon, Walnut, West Covina, and Whittier

Orange County: Anaheim, Brea, Buena Park, Cypress, Fullerton, La Habra, La Palma, Los Alamitos, Placentia, and Seal Beach

- **Unincorporated Cities**

Other Entities: Non-profit organizations (trusts, foundations, conservancies, associations, societies, coalitions, alliances, councils); water agencies, districts, and associations; business and property owners; financial institutions; businesses and industry associations; Chambers of Commerce; educational institutions; civic organizations; and interested individuals

3. Funding

To restore the watersheds, additional financial resources will be needed. Traditionally, government has identified and funded acquisition of open space and other natural resource protection and conservation activities. Increasingly, cities, communities, residents, neighborhood groups, private groups, and environmental organizations identify open space and conservation opportunities and work to secure funding or find alternative solutions within and outside of the traditional governmental role.

Traditional funding sources for natural resource protection and acquisition of open space include federal, state, and local funds. Government agencies have a variety of grant programs, for water quality enhancement, wildlife protection, habitat restoration and enhancement, groundwater recharge, stormwater pollution planning, fisheries restoration, and watershed protection. Funds may also be available from state, county, and local city voter-approved bonds, such as Proposition 12 (The

Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act) and Proposition 13 (the Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Act) or assessment districts. The Los Angeles County Safe Neighborhood Parks Acts (Proposition A) of 1992 and 1996 have been responsible for most of the Los Angeles River greening and riverfront parks. These sources will likely be the primary source of funds for acquisition of lands and individual projects.

Additional Parks Will Require Additional Funds

In addition to securing funds from traditional sources, the State Conservancies will work to identify and create funding opportunities from private trusts. Trusts acquire land for transfer to a third party, when financing is organized. Private foundations should be a source of additional funding.

Funding for planning, management, and maintenance of open space, including historic and cultural sites, must also be addressed. Wherever feasible, plans for acquisition of open space should include a plan for securing the necessary funds for long-term maintenance of those spaces. Many existing facilities have suffered from inadequate maintenance and require funding to restore those facilities to acceptable conditions. To help with on-going maintenance and public services, expanded funding opportunities should be created.

Existing funding sources will not be overlooked. Currently, federal, state, and local agencies, and individual cities expend considerable resources to maintain existing parks, open space, trails, bike paths, and flood protection facilities. For example, optimization of existing water resources through improved water conservation and increased groundwater recharge could reduce the need for imported water and result in cost savings that could be used to meet other water resource needs.

Compliance with current legislative mandates, such as those related to stormwater runoff quality, will require counties, cities, local agencies, and private landowners to expend resources to develop, implement, maintain, and monitor Standard Urban Storm Water Mitigation Plans. Additional resources will be needed to implement the recently adopted requirements to eliminate trash and other contaminants from the San Gabriel and Los Angeles Rivers. Caltrans plans to expend considerable sums to mitigate stormwater pollution from State highways. The State Conservancies will encourage discussion of how best to optimize the expenditure of resources to mitigate non-point stormwater runoff pollution to accomplish multiple objectives where feasible.

The State Conservancies will encourage and support efforts to secure additional funding from traditional sources, as well as private foundations and trusts. The State Conservancies will work to identify opportunities to optimize use of existing resources, such as sharing of information and knowledge, and work towards lowering the costs of maintenance (e.g., through joint purchasing cooperatives), education and interpretive programs for existing facilities (e.g., through sharing of information and materials). State Conservancies will work to assure that available funds are allocated equitably, to address upstream and downstream, urban, and suburban needs.

4. Multiple-Objective Planning

In recent years, while maintaining focus on their primary responsibilities and missions, a number of agencies in the watersheds have been engaged in the process of discussion and have contributed to the emerging vision of integrated watershed planning, and have incorporated multiple objectives into planning.

Several cities have also incorporated these concepts into planning, and worked with other cities, sometimes through their Council of Governments, to achieve goals that extend beyond the border of individual cities.

To restore the watersheds, a consistent approach to multiple objective planning is required, in which science-based planning and several socially desirable objectives are considered together. Where feasible, parks will provide habitat and flood protection features. Passive recreation in habitat areas may be compatible with resources protection when properly managed. Flood protection features will incorporate recreation features, such as bike paths, where public safety can be assured. By integrating multiple objectives into a single project, it may also be possible to combine several funding sources into a single project, and thereby optimize resources.

Pan Pacific Park

The various concepts that could be combined to achieve multiple objectives are reflected in the Guiding Principles. The State Conservancies will encourage the use of the Principles in the development of plans and projects, and work to fund demonstration projects that illustrate that multi-purpose projects are practical and functional. The State Conservancies will encourage cities to consider incorporation the relevant Guiding Principles into their next General Plan update, so that future projects within individual cities reflect the goals embodied in the Guiding Principles.

To assist agencies, cities, communities, and groups to understand priorities for the award of funds for open space projects, the RMC and SMMC have each developed criteria to rank projects that are eligible for funding administered by those agencies. These criteria have been reviewed and discussed with state and county agencies to ensure that they are in concurrence with agency missions and funding criteria. Basin ranking categories include:

- Urban Resource Value
- Watershed Resource Value
- Partner Resource Value
- Economic Value
- Access Value
- Scenic Resource Value
- Wildlife Resource Value
- Floristic Resource Value
- Archaeological or Historic Resource Value
- Trails Resource Value
- Recreational Resource Value

In addition to the above criteria, the RMC adds an additional criterion for Open Space Plan Value. The SMMC also adopted criteria for improvement projects. The criteria, and weighting factors within each category are included in Appendix G. The State Conservancies will work with funding agencies to encourage the use of the Guiding Principles, above the criteria, and cost-benefit models (that consider economic, social and environmental costs) to prioritize funding applications for projects. The State Conservancies will encourage cities, communities, agencies, and groups to begin to incorporate these concepts into project plans, and thereby meet the goal of multiple objective planning.

5. Management of Public Lands

Public lands will be managed for the benefit of the people and to preserve, protect, and enhance natural resource values, and where appropriate, provide for multiple objectives. Acquisition of open space should include a plan to identify responsibility for future management of the space and, where feasible, identify funds for that management.

Surplus LADWP Property Along San Gabriel River

This plan recognizes the importance and the need for both active and passive recreation. Active recreation generally is within the purview of local and county jurisdictions. These jurisdictions maintain departments that address recreation needs on a local level. Low impact recreation refers to uses that have relatively low impact on the land and include such uses as hiking, strolling, picnicking, sitting, and bird watching. These uses avoid impacts to the land by designating specific routes of travel or areas of usage that allows the surrounding open space to be preserved. A management program may incorporate areas of low impact activities to enhance the sense of place and preserve what makes a particular site important. These activities allow for self-education, exercise, and contemplation to be undertaken at a user's own pace.

In developing and managing an open space, it is critical that numerous issues be addressed. These issues include: access, circulation, security, maintenance, visitor amenities such as restrooms, water, trash pick-up, along with habitat protection and enhancement and interpretive education.

Legg Lake in Whittler Narrows

The State Conservancies will work with partners to identify potential mitigation banking sites (to restore or create off-site wetlands as compensation for destruction of wetlands) and assist in funding and acquisition of these lands and sites.

6. Monitoring and Assessment

This Plan sets forth a long-term vision for restoration of the watersheds, suggests strategies to achieve that vision, and identifies plans and opportunities to implement those strategies. Since restoration of the watersheds will require decades, periodic review and assessment of progress will be required, to determine whether strategies need to be revised, alternative plans pursued, or new concepts and objectives incorporated.

The State Conservancies will work to develop a joint assessment process for restoration of the watershed, and monitor progress towards meeting the goals described herein. Critical to this process will be maintenance and updating of the Geographic Information Systems database developed by RMC. At a minimum, the periodic assessment process shall occur at ten-year intervals, or more often if deemed practical. This process shall utilize quantifiable, science-based methods wherever feasible, and shall include stakeholder involvement in the design, implementation, and review of the assessments. The RMC has received comments and guidance to create a new park system. The State Conservancies recognizes the need to coordinate its responsibilities for maintenance and security and will work with other public park and open space managers in the region.

D. OPPORTUNITIES

To achieve the vision of the future for the watersheds, to encourage use of the Guiding Principles, and to implement the strategies described above, the State Conservancies will work with agencies, cities, communities, and groups to identify opportunities and encourage development of project-specific plans that take advantage of those opportunities. The following discussion highlights some important opportunities.

1. Land Acquisition, Connectivity, and Open Space

■ River Parkways

River parkways along the banks of the Los Angeles, San Gabriel, and Rio Hondo Rivers will provide the most visible and accessible element of the proposed open space network. As illustrated in **Figure 3-1**, the parkways will extend green ribbons of open space across the urbanized length of the watersheds, from the foothills and the San Gabriel Mountains to the Pacific Ocean.

Landscaped open spaces on both sides of the rivers would provide pocket parks, passive recreation, and natural areas for wildlife habitat. These landscaped spaces could cleanse runoff, promote groundwater

Figure 3-1. Proposed River Parkways

infiltration, and enhance flood protection by serving as buffers between the rivers and adjacent land uses. They could also galvanize a sense of community, provide a unifying theme throughout our diverse region, and enhance the economic value of adjacent land.

In various forms, river parkways were first suggested more than a century ago and reiterated in the Olmsted-Bartholomew plan in 1930. A number of existing plans address the enhancement of the edges of the rivers, including the *Los Angeles River Master Plan*, the *San Gabriel River Master Plan* (in progress) and the *Reconnecting the San Gabriel Valley: A Planning Approach for the Creation of Interconnected Urban Wildlife Corridor Networks*, which addressed habitat restoration.

Elements of the riverfront parkway system already exist: bike and pedestrian trails line the length of the Rio Hondo and San Gabriel Rivers and parts of the Los Angeles River. Several major parks already front the rivers: Santa Fe Dam Recreation Area, Whittier Narrows Recreation Area, Cerritos Regional Park, Debs Regional Park, Elysian Park, Griffith Park, Sepulveda Dam Recreation Area, and El Dorado Regional Park. Various cities have existing parks along one of the river main channels, including Bell Gardens, Bellflower, Burbank, Cerritos, City of Commerce, Downey, Duarte, El Monte, Lakewood, Los Angeles, Long Beach, Montebello, Paramount, Pico Rivera, Rosemead, Santa Fe Springs, Seal Beach, and South Gate. Many schools and recreational facilities currently front the river. These individual open spaces will be connected by parkways along the entire length of the rivers, creating valuable urban amenities.

Several of the "river" cities and communities are already embracing the river as an amenity for their residents. Azusa calls itself the "Canyon City" reflecting the watercourse of the San Gabriel River as it flows from the mountains. Duarte's residents use the Puente Largo pedestrian bridge as a way to access the native environment along the river. The Whittier Narrows Recreation Area provides natural open space and a river beach for the surrounding cities. Long Beach uses the San Gabriel River parks as a connective armature for the city's extensive bicycle network. The City of Maywood is creating a park on five former industrial sites along the Los Angeles River. The riverfront parks in the Elysian Valley and as proposed along the Arroyo Seco constitute small natural parks. By adding to this impressive network, a continuous parkway can be created.

Los Angeles River at Sepulveda Basin

Goal: A continuous ribbon of trails, open space, active and passive recreation areas, and wildlife habitat along the San Gabriel, Los Angeles, and Rio Hondo Rivers. The specific treatment of each segment of the greenway should be determined by the existing conditions of the parcel, the needs and desires of the local community and the opportunities for connection and linkages presented at that location.

Actions: The State Conservancies will work with each riverfront city, community, and relevant agencies to identify potential River Parkway projects, tailored to the needs and desires of each city. This will include a list of projects, identification of potential funding and partners and a work program to accomplish the acquisition and development of each project.

The State conservancies will work with Los Angeles County Department of Public Works and local governments to implement projects identified in the Los Angeles River Master Plan and will assist in identification of projects for the in-progress San Gabriel River Master Plan.

The State Conservancies, in conjunction with the Resources Agency, will work individually and collectively with the cities, communities, local groups, and the appropriate Council of Governments along the rivers to identify individual projects that will qualify for Proposition 12 funding (by July 2002) and future fund sources.

■ Urban Lands

In the urbanized portions of the watersheds, competition for parcels of land is intense. Within the San Gabriel Valley, the San Fernando Valley, and the Los Angeles Basin, most parcels of land that become available were previously used for industrial or commercial purposes, or have been deemed surplus by public agencies. The size of parcels in urbanized areas will vary from individual lots in residential areas to large, former industrial sites or military facilities. When such parcels become available, they should be reviewed for their potential to serve as contributing elements in the developing network of open spaces.

The potential for individual parcels to be acquired and adapted as public open space that can provide recreation, wildlife habitat, mitigate flood hazard or allow infiltration of groundwater will depend upon the site of the parcel, the location of the parcel (e.g., proximity to rivers, tributaries, or other open space), and the costs of site clean-up (e.g., clearance of existing structures and/or remediation of any site contamination). The opportunity costs of acquisition must be considered in the review of any parcels, and be balanced against the value of the parcel as part of the evolving open space network.

Much of the frontage along the Los Angeles and San Gabriel Rivers has been developed as industrial property. At some locations, properties are abandoned, idled, or underused because of known or perceived environmental contamination from previous uses. Those properties, termed brownfields, pose a major challenge to the expansion of public open space along the rivers, because of their potential value as component of a river parkway, and the potentially high cost of the complete remediation of the site contamination that is required to accommodate public use.

For properties where acquisition and clean-up costs are prohibitive, those sites may be adapted for a variety of uses, including commercial, industrial, or retail. The potential future use will depend upon a variety of factors, including cost of acquisition, the extent of contamination, the zoning and general plan designation of the site, and the objectives of the cities and communities in which the site is located. To the extent feasible, the Guiding Principles should be used to guide future site planning (e.g., to maximize open space).

Existing Quarry in Irwindale

Large parcels of land that may become available over time include the gravel pits located in the upper San Gabriel River watershed, under-utilized or vacant industrial properties along both rivers, hillside properties that, due to geological or other natural conditions, preclude normal types of development, and flood plain lands. Powerline easements belonging to the City of Los Angeles Department of Water and Power and Southern California Edison may provide opportunities for open space uses. Throughout much of the length of the Los Angeles and Rio Hondo Rivers, powerline easements follow the river course. With the continuing evolution of rail operations, additional rail yards and linear rail rights-of-way may become available.

Examples of large parcels that have been converted to public use include the Whittier Narrows Nature Center, the Industry Hills Recreation complex (former landfill), Los Angeles River Center and Gardens (former corporate headquarters), and a park in Maywood (former industrial site). The Chinatown/Cornfield Yard area (a former rail yard) and Taylor Yard (another former rail yard) may become state parks.

Public agencies, including cities, counties, special districts, state government and institutions, and the federal government own a significant amount of land throughout the watershed, for use as maintenance yards, storage sites, and sites of office and other facilities. Some parcels of land may no longer be needed for their original purpose, may be declared surplus, and disposed of in the manner prescribed by law for each agency or jurisdiction. One example of public land that has been converted to public use is the Augustus F. Hawkins Natural Park, a former pipe storage yard for the Los Angeles Department of Water and Power.

A variety of lands may, over time, be considered "surplus" including major military facilities, such as the Seal Beach Naval Weapons Depot or local reserve training facilities. State agencies such as Caltrans own the lands under and around freeway interchanges and under river bridges. Cities and agencies own and maintain corporate or work yards, some of which have frontage along the rivers and tributaries.

Goal: Consider acquisition of parcels in urbanized areas to provide open space, passive recreation, habitat, water quality, and flood mitigation uses. Balance acquisition costs, including site clean up if necessary, with the value of providing additional open space at that location.

Maywood Riverfront Park

Actions: The State conservancies will work with individual cities to identify and evaluate parcels that may become available in the next 10 years. If deemed appropriate, the cities and the conservancies will work together to develop a purchase, development, operation, and maintenance strategy for each identified parcel. Where appropriate, the conservancies will work with the State Department of Toxic Substances Control and other relevant agencies to identify opportunities and incentives to expedite and streamline remediation of brownfields. The conservancies will work with local, county, regional, state, and federal agencies and institutions to identify potential surplus government lands and develop a strategy and program for acquiring, operating, and managing those lands. The State Conservancies will work with willing municipalities and public agencies to develop a program that grants and defines the State Conservancies the right of first refusal for surplus governmental lands. The State Conservancies will work with local power distributors, railroads, legislators, agencies, and communities to gain ground access to the linear rights-of-way that crisscross the watersheds and would contribute to the goals of the plan.

■ Mountains, Foothills, and Hills

Development of the flatlands within the watershed began more than two centuries ago, and continues. Because of the limited remaining land, development has pushed into the foothills, and in some locations, into the San Gabriel, Santa Monica, and Santa Susana Mountains. Because large areas of the foothills and mountains remain undeveloped, preservation of special places must be pursued before critical opportunities are lost.

San Gabriel Mountains

The preservation of the ridge tops and hillsides ringing the Los Angeles basin was also a goal of the 1930 Olmsted-Bartholomew Plan. That plan specifically called for the creation of parkways along the rivers and large parks in the San Gabriel and Santa Monica Mountains, the Puente Hills, and the Whittier Narrows.

Much progress has been made towards the preservation of the area's hillside habitat and open space. For instance, the majority of the San Gabriel Mountains are within the Angeles National Forest, under the jurisdiction of the U.S. Forest Service.

Several non-profit, community-based land conservancies have been created along the south-facing foothill slopes of the San Gabriel Mountains to preserve undeveloped hillside lands. These conservancies utilize time-honored, locally based fundraising techniques and local support to acquire and protect important parcels of land so they may continue to be open space and habitat.

Significant portions of the Santa Monica Mountains, the Simi Hills, Verdugo Mountains and the Santa Susana Mountains have been preserved as park and open space by the Santa Monica Mountains Conservancy and the Mountains Recreation Conservation Authority, in coordination with the California Department of Parks and Recreation, the County of Los Angeles, the City of Los Angeles, and the National Park Service.

The Puente and Whittier Hills, Chino Hills, San Jose Hills, Verdugo Mountains, and the San Rafael Hills all have existing preserved open space. There are nature centers in the Puente Hills (Whittier Narrows Nature Center), the Verdugo Mountains, Eaton Canyon, Monrovia, and San Dimas Canyon Park in the San Gabriel Mountains. The Audubon Society is planning a nature center on the slopes of Debs Park along the Arroyo Seco.

The State Conservancies are working with and through the U.S. Forest Service, National Park Service, California Department of Parks and Recreation, the California Department of Fish and Game, Wildlife Conservation Board, Caltrans, Whittier/Puente Hills Conservation Authority, Wildlife Corridor Conservation Authority, Puente Hills Landfill Native Habitat Preservation Authority, and several land trusts on research studies and land acquisition and preservation programs.

Several major public open spaces are located in the hills and mountains. Besides the Angeles National

Forest in the San Gabriel Mountains, there are the Chino Hills State Park, Debs Regional Park, Deukmejian Regional Park, Elysian Park, Griffith Park, Industry Hills Recreation Center, Schabarum Regional Park, Frank G. Bonelli Regional County Park, Claremont Hills Regional Park, Glendora Wilderness Park, and Marshall Canyon County Park.

The potential for lands in the mountains, foothills, or hills to be acquired and adapted as public open space will depend upon the size of the parcel, the location of the parcel (e.g., proximity to rivers or other open space), and the potential costs of providing public access if appropriate.

Acquisition of land has been the traditional means of protecting land resources, but securing public funding for acquisition may be a lengthy process. Because the window of opportunity to acquire lands may be short, other options may need to be considered.

The most common form of open space acquisition is through the outright purchase of property. The standard purchase is a fee simple transaction where money is exchanged for property. Other alternatives include a lease with a future option to purchase or an installment purchase. Both options may allow for immediate occupancy and transfer of final payment(s) in the future. This may be an important consideration when available resources are low but can be secured in the future. Funding for outright purchases typically comes from local, state and federal grants and bonds and from grants or donations from private individuals and foundations.

The State Conservancies, in conjunction with agencies, cities, communities, and private groups, may be able to identify critical parcels of land that have value for open space, habitat, or water resources. If the owner is willing, it may be possible to secure a right of first refusal that can be exercised when the property is put on the market. It may also be possible to negotiate with the property owner to secure an agreement to donate or dedicate the property in the future. Property owners may have a valid reason (usually tax-related) to donate the property or sell it at a reduced rate, and may be willing if they know it will be used and maintained for the public good. Occasionally, land can be traded among owners, if multiple needs can be met simultaneously by trading parcels.

For some parcels, the owner may be unwilling to sell the property but may be willing to grant the right of use to another party. A conservation easement is a voluntary agreement that allows a landowner to limit the type or amount of development on their property (in exchange for a fee or other considerations) while retaining private ownership of the land. In California, agricultural lands are often protected by the use of a conservation easement. Lands with conservation easements may have limited public access and serve as visual open space. Funding for easements typically comes from state and federal grants and from grants and bonds and donations from private individuals and foundations.

Arroyo Seco

Goal: Acquisition of mountain and hillside open spaces that provide important wildlife habitat and open space values. The hillside open space network, in conjunction with the river network, should connect the San Gabriel Mountains with the Santa Ana Mountains, the Angeles National Forest with the Cleveland National Forest, and the Santa Monica Mountains with the Santa Susana Mountains.

Actions: The State Conservancies will work with the foothill communities of the San Gabriel Mountains, agencies, local land trusts, and the Councils of Government to establish a common strategy and comprehensive plan for the preservation of foothill open space. Figure 3-2 illustrates the areas of opportunity for the continued preservation of mountains, hills, and foothills.

The State Conservancies will work with the communities, local conservancies and groups, and the

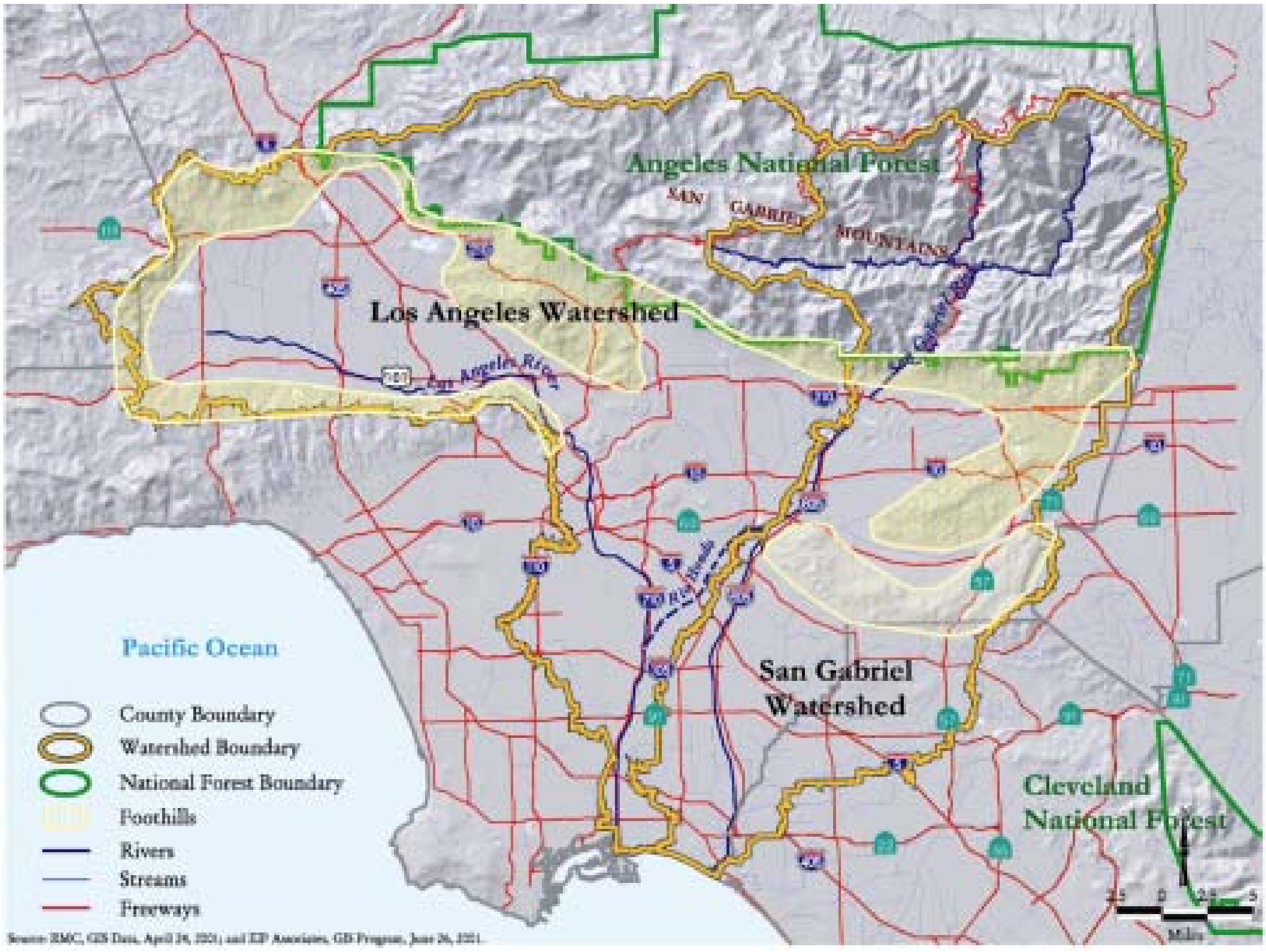


Figure 3-2. Preservation Opportunities in the Mountains, Foothills, and Hills

Councils of Government surrounding and within the Whittier/Puente/Chino/San Jose Hills complex to establish a common strategy and comprehensive plan for the preservation of open space in this area.

The State Conservancies will also work with the communities surrounding the San Rafael Hills, the hills surrounding the Glendale Narrows, and the Verdugo Mountains to establish a common strategy and comprehensive plan for the preservation of open space in this area.

■ Tributaries

There are nearly 2,000 stream miles in the watersheds, and one-quarter of those streams flow year-round.

Similar to river parkways, open spaces along tributaries provide an opportunity to extend further green ribbons throughout the watersheds, connecting those communities not located directly on the rivers, and expanding the network of trails and bike paths.

As discussed in Chapter 2 and illustrated in **Figure 2-4**, there are eleven major sub-watersheds that create the San Gabriel and Los Angeles Rivers. The major tributaries of the San Gabriel River include the East and West Forks of the San Gabriel, Walnut Creek, San Jose Creek, and Coyote Creek. For the Los Angeles River, major tributaries include the Tujunga, Pacoima and Verdugo Washes, Arroyo Seco, Rio Hondo, and Compton Creek.

River tributaries can provide access to and from the river from all areas of the watersheds. From a circulation perspective, bike and pedestrian paths along the tributaries provide access to alternative transportation modes. From a natural systems perspective, tributary greenways allow for the reestablishment and protection of continuous natural corridors from hill and mountainous environments to coastal environments. From a flood protection perspective, the

Figure 3-3. Open Space Opportunities Along Tributaries

tributary parkways could create opportunities for development of smaller detention facilities that incrementally reduce the threat of flooding downstream. From a recreation perspective, they create local recreation and educational opportunities.

The idea that parks and open space are located along tributaries is prevalent throughout Southern California. Various cities already have public parks and public open space along tributaries, including Alhambra, Anaheim, Arcadia, Azusa, Baldwin Park, Brea, Calabasas, Cerritos, Claremont, Compton, Covina, Diamond Bar, Fullerton, Glendale, Glendora, Hawaiian Gardens, La Habra, La Mirada, La Verne, Lakewood, Long Beach, Los Angeles, Pasadena, Pomona, San Dimas, San Gabriel, Seal Beach, South Pasadena, Walnut, and West Covina.

The challenge is not only to create a continuous open space ribbon along the tributaries but also to increase regional access and create a closer relationship among the existing parks and open spaces within these linear greenways. Large existing parks and open spaces along these tributaries include: Hahamonga Watershed Park, Lower Arroyo Seco Park, Debs Regional Park, Bosque del Rio Hondo, and Eaton Canyon Park.

Goal: All tributaries in urbanized areas of the watersheds are envisioned as open space ribbons that allow for pedestrian and bike paths, restoration of habitat, and provide opportunities for water quality improvement and flood protection. See **Figure 3-3**.

Actions: The State Conservancies will work individually and collectively within the communities, local groups, and the appropriate Councils of Government along each of the major tributaries to develop sub-watershed plans that will identify individual projects within each city.

Trails and Bike Paths

The linearity and length of the rivers make them perfect conduits for connecting the northern mountainous areas, the populous interior plains, and the coastal margins of the watersheds. The tributaries provide opportunities to create an extensive network of additional corridors that would extend throughout the urbanized areas of the watersheds. With connections to existing trails and bike paths along those natural corridors, a vast network of alternative transportation corridors will become a reality, creating inter- and intra-city commuter routes and providing connections to a range of recreational opportunities from mountain trails to beachfront promenades. The Rim-of-the-Valley Trail is an example of an opportunity to create regional connections to local trails.

San Gabriel River Trail

Large segments of riverfront bike paths are already in place. The LARIO trail currently follows the Los Angeles River from Long Beach to Maywood and the Rio Hondo from the Los Angeles River to the Santa Fe Dam. A San Gabriel River trail system runs from the mountains to the sea. A trail program for the entire Los Angeles River is depicted in the Los Angeles River Master Plan.

The dozen or so major tributaries create perpendicular linkages to the major spines and allow for a region-wide network of alternative transportation modes. Currently, trail segments are in place along the Coyote Creek, Thompson Creek, La Mirada Creek, and the Arroyo Seco. Existing power line rights-of-way may also provide opportunities to create and extend bike paths and trails along linear corridors.

Beyond the rivers and tributaries, bike paths exist in various locations throughout the watersheds. Caltrans has made development of additional bike paths a priority, and the Metropolitan Transit Authority's long-range transportation plan proposes to extend and expand the network with an additional 1,800 miles of bike paths. The Orange County Transportation Authority is currently updating the County's Strategic Bicycle Plan. Various cities have proposals to extend existing paths, or create new paths.

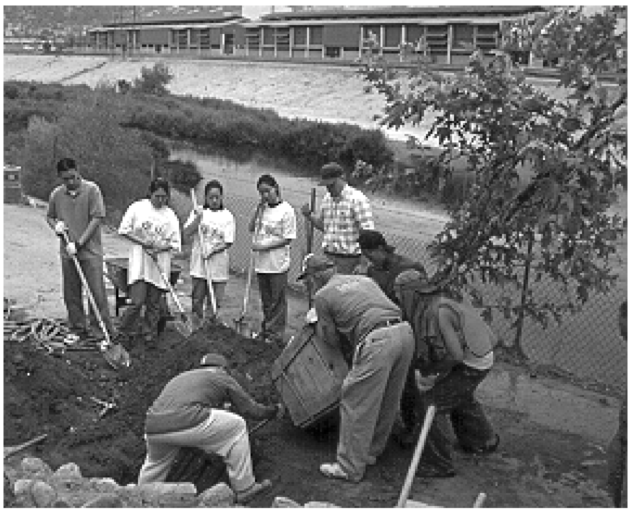
Goal: A comprehensive network of pedestrian, bike, and equestrian trails that uses existing corridors (such as rivers, tributaries, and power line rights-of-way) where available and new connections where needed.

Actions: The State Conservancies will work with the California Department of Transportation, regional transportation agencies, Councils of Government, cities and local agencies, communities, state legislators, and community groups such as the Los Angeles (and Orange County) Bicycle Coalition, to identify local and regional connections and develop funding strategies for acquisition or development of regional bike, pedestrian, and equestrian trail linkages.

Community Gardens

In the urban portions of the watersheds, community gardens provide gardening opportunities, in a communal setting, for those who do not otherwise have space for gardening. The patchwork of urban community gardens provides opportunities for passive recreation and attraction of wildlife (such as birds and butterflies), demonstrates the value of using open space, landscaping, and mulch-covered spaces to contain runoff and reduce water waste, provides opportunities to learn about how composting can reduce the volume of green waste deposited in landfills and how native plants can be incorporated into urban settings.

Many communities throughout Southern California have established community gardens for their residents, and including native plant demonstration gardens. A number of organizations assist communities in the development, organization, and operations of community gardens. The University of California Cooperative Extension has established the Common Ground (no relation to this project) Gardening Program that makes gardening possible for residents of all ages. Common Ground is comprised of Master Gardeners (who present seasonal workshops), Master Food Preservers (to show how to store and preserve a garden's bounty) and the Gardening Angels school garden program (which works with teachers to provide hands-on gardening activities to complement curricula and create gardens on school grounds).



Tree Planting Along Los Angeles River

The Los Angeles Community Garden Council is an umbrella organization providing assistance to community gardens in Southern California. Together with the Los Angeles Conservation Corps, they established the Green Bank to provide opportunities for residents to participate in community gardens. Long Beach Organic helps turn vacant lots into beneficial green zones, maintained by local residents. This gives families interested in gardening an opportunity to work together, and to link their urban experience with the natural environment.

Goal: In the urbanized portions of the watersheds, create a network of community native plant gardens to provide opportunities for residents that do not have access to private land.

Actions: The State Conservancies will work with cities, educational organizations, and non-profit groups to increase funding opportunities to maintain, expand, and develop additional community gardens that incorporate native plant materials.

2. Public Access

■ Improve and Expand Existing Facilities

As the initial phase of this Plan, the RMC engaged the LJS Group to conduct a survey in the San Gabriel and Lower Los Angeles River watershed in which residents were asked to suggest priorities for RMC activities. One of the highest priorities was improvement of existing parks. Enhanced recreational facilities and increased security were specifically mentioned.

Over the years, for a variety of reasons, many parks in Southern California have not been adequately maintained. Local, state, and federal budgets have not kept pace with the need. Beyond addressing deferred maintenance needs, existing parks and open space could be redesigned to accommodate multiple uses serving a wider variety of users. Parks and open spaces located along river or tributary margins may provide opportunities for low-impact recreation, habitat, flood protection, education and interpretation, trails and connections, water quality and ground water recharge, as well as for active recreational uses.

Goal: Upgraded open space and other facilities that provide amenities commensurate with use and meet applicable standards.

El Dorado Park in Long Beach

Actions: The State Conservancies will work with cities, communities, counties, regional park districts, and local non-profit groups to identify opportunities for the enhancement of existing open spaces, cultural resources, and historic sites within their jurisdictions. The Conservancies will assist the cities in identifying sources of funding, including park and open space bonds, and will advise cities, communities, counties, and park districts on how to best meet application requirements.

■ Create New Facilities

Some existing open space resources, cultural resources, and historic sites in the watershed may lack appropriate amenities that allow for maximum public benefit and use. This may include the need for adequate access and parking, interpretive facilities, maintenance and security features, or trails or bike path connections.

Goal: Open space facilities that provide an appropriate range of amenities to maximize public enjoyment of those facilities.

Actions: The State Conservancies will work with cities, communities, counties, and local non-profit groups to identify opportunities for the creation of new facilities, cultural resources, and historic sites within their jurisdictions.

3. Native Plants and Wildlife

■ Habitat and Linkages

Habitats that support rare or sensitive species of plants and animals occur throughout the watersheds. Los Angeles County has identified Significant Ecological Areas for various habitats within Los Angeles County. The US Fish and Wildlife Service has designated critical habitat for two animals, the threatened California gnatcatcher (*Polioptila californica*), and the endangered arroyo toad (*Bufo microscaphus californicus*). The State of California has delineated a Natural Community Conservation Planning area for the Southern California coastal sage scrub habitat that includes the southeastern corner of Los Angeles county and large areas of Orange County. As urban and suburban development continues to reduce and fragment open space throughout the watersheds, identification of habitat that warrants protection will become increasingly important.

Habitat fragmentation can reduce plant and animal populations and species diversity. Therefore, maintaining or establishing linkages between patches of habitat is important to maintain biodiversity and ecological integrity. Linkages and corridors must be defined in terms of functional connectivity: daily and seasonal movements; dispersal, and gene flow; range shifts; and maintenance of ecological processes. To gauge the success of habitat linkages, specific animal and plant species can serve as sensitive indicators of functional connectivity. A list of potential indicator species for the watersheds is provided in Appendix H.

San Gabriel Mountains

A number of important wildlife corridors were identified in *Missing Linkages: Restoring Connectivity to the California Landscape* (2001). These linkages were subsequently evaluated (Noss 2001) in terms of how well the proposed corridors correspond to actual habitat conditions and patterns in the landscape, based on review of aerial photography and a flyover of the region.

Figure 3-4 indicates potential linkages in the watersheds, mostly as revised from the seven linkages identified by the numbers used in the *Missing Linkages* report (Nos. 21, 24, 27, 28, 29, 30, and 31), but with some possible new linkage zones also indicated. The linkages on the map are shown as broad zones within which connectivity might be achieved through linear wildlife corridors; through specific enhancement features, such as bridges or tunnels; through "stepping stone" habitat patches within the linkage zone (e.g., disconnected patches that provide mobility for birds and some animals); or through some combination of these approaches. Each linkage is designated as High, Moderate, or Low Priority based on existing data; although these preliminary rankings may change as more information becomes available. Additional study is necessary to delineate the specific habitat protec-

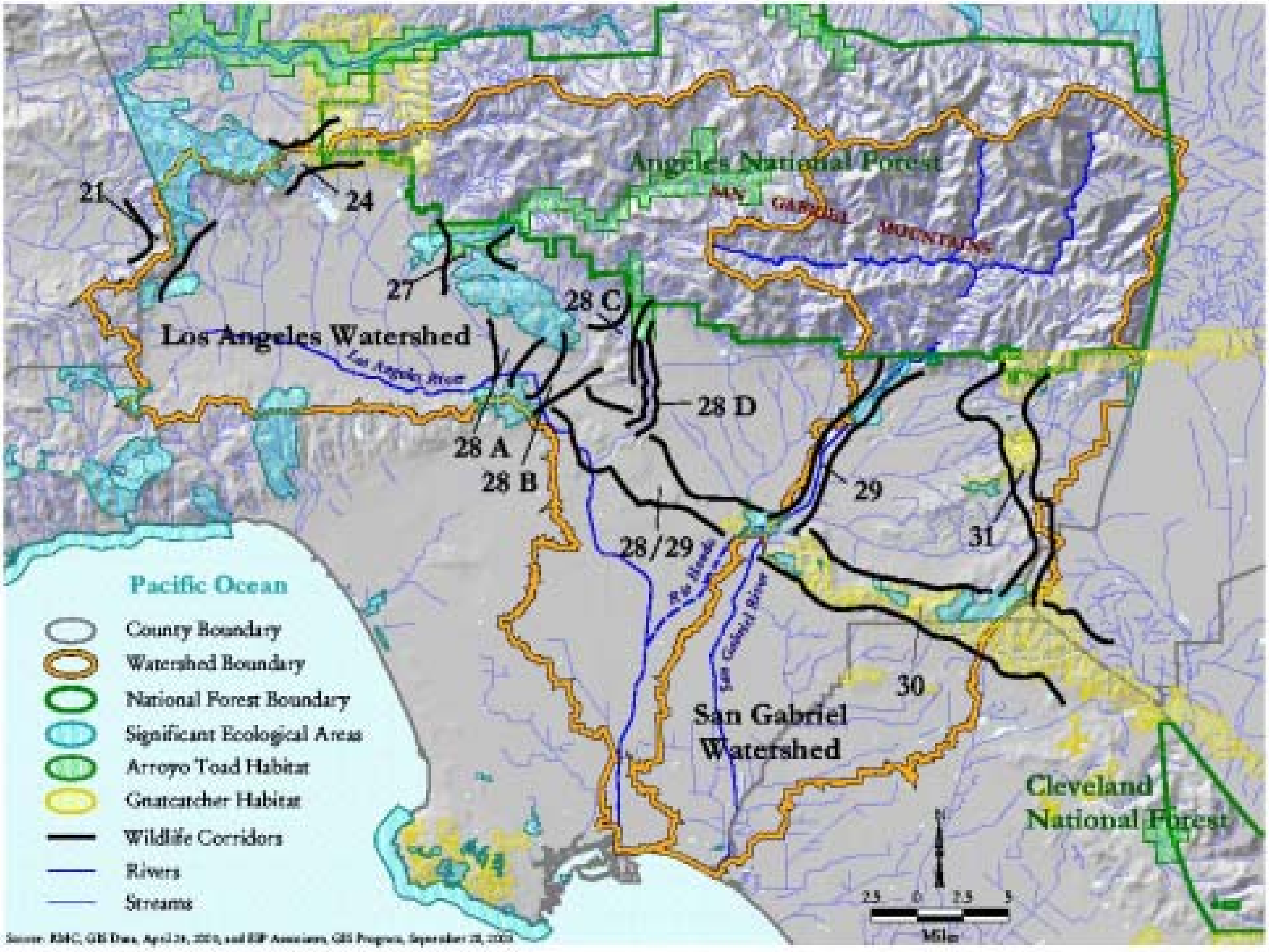


Figure 3-4. Habitat Linkages
Source: Dr. Reed Noss, California Dept. of Fish and Game

tion, restoration, and enhancement needs within these zones.

■ **Linkage #21: Santa Susana Pass—High Priority**

This proposed linkage is the easternmost of a series of linkages proposed by Missing Linkages, which would connect the Santa Susana Mountains with the Simi Hills (which, together, constitute a proposed Significant Ecological Area). The Simi Hills would, in turn, be connected by other linkages (outside the study region) to the Santa Monica Mountains, another proposed Significant Ecological Area. This locations was designated by Missing Linkages as a Landscape Linkage and Connectivity Choke-Point. The south end of this proposed linkage, in the Simi Hills, is high-quality oak woodland that is being reduced by development. Maintaining a connection to the west of the south end of the linkage will be important. To the north, the Porter Ranch development is spreading westward and could soon jeopardize the viability of this linkage. Wildlife use of this linkage should be documented as soon as possible.

■ **Linkage #24: I-5–Newhall Pass—High Priority**

Missing Linkages identifies this as a Landscape Linkage and Connectivity Choke-Point. This linkage would connect the Santa Susana Mountains with the San Gabriel Mountains, specifically linking two proposed Significant Ecological Areas: Santa Susana Mountains/Simi Hills and Santa Clara River. Two roads, SR 14 and I-5 both pass through this area, with interchanges. A highway tunnel or high bridge would be necessary to make this a secure linkage.

■ **Linkage #27: Angeles–Verdugo Mountains—Moderate Priority**

This linkage would connect the Verdugo Mountains to the San Gabriel Mountains in Angeles National Forest. Missing Linkages describes this as a Missing

Link, because the existing connection is tenuous at best. There is some undeveloped private land and islands of public land. Highway 210 crosses the Big Tujunga Wash here, but an underpass is needed for wildlife movement, accompanied by a secure corridor south to the Verdugo Hills.

- **Linkage #28: Griffith Park–Verdugo Hills—Low to Moderate Priority**

This linkage is correctly identified as a Missing Link. Furthermore, as drawn in Missing Linkages, the proposed linkage passes through a wide (2-3 mile) swath of highly developed land. Verdugo Wash, upon which the linkage appears to be centered, is a possible path, but needs revegetation. "Development removal," as recommended on the Linkage Description Log, is probably not likely. Judging from aerial photographs, and as indicated on the map overlay, connections to the east and west of the previously identified linkage might be more viable, but are still tenuous at present. To the east of this linkage zone, the Arroyo Seco may offer a superior alternative.

- **Linkage #28/29: Verdugo–San Gabriel Stepping Stones—Low Priority**

Although not identified by Missing Linkages, aerial photography shows a patchwork of potential stepping stone habitats between the San Gabriel River (in the vicinity of the Puente Hills) northwest to the Arroyo Seco and, tenuously, to the Verdugo Wash. These stepping stones, largely occupying hills, might be used for travel by birds, and some of the more mobile terrestrial mammals (e.g., coyote) and could also be the basis for a trail system.

- **Linkage #29: San Gabriel River—Moderate to High Priority**

The San Gabriel River, identified as a Missing Link by Missing Linkages, nevertheless has considerable potential for restoration, as noted on the Linkage Description Form. Habitat for the least Bell's vireo and other focal species still exists in several areas. Restoration of native riparian vegetation along the river would greatly enhance habitat availability for the vireo and other native species. Gravel mines along the river are ending their leases and provide good opportunities for restoration. The San Gabriel River in this area, if adequately restored, would functionally link two proposed Significant Ecological Areas: Puente Hills and San Gabriel Canyon.

- **Linkage #30: Puente Chino Hills—Moderate to High Priority**

Although identified as a Connectivity Choke-Point by Missing Linkages, this could also be a Landscape Linkage. Considerable undeveloped habitat remains in the Puente Hills, which are proposed as a Significant Ecological Area. The Puente Hills could be linked to the San Gabriel Mountains (including the San Gabriel Canyon Significant Ecological Area) through the San Gabriel River corridor. Although this connection may currently be tenuous, it could be a very important linkage.

- **Linkage #31: Puente–San Jose–San Gabriels—Moderate Priority**

As drawn in Missing Linkages, this linkage crosses widely developed areas. An alternative linkage zone may be more feasible to the east, because of a higher density of stepping stone habitats, which might be used by birds, and mobile mammals (e.g., coyote). Importantly, it would link three proposed Significant Ecological Areas: Puente Hills, East San Gabriel Valley, and San Dimas Canyon/San Antonio Wash.

In addition to the linkages shown on Figure 3-4, the Los Angeles River has considerable potential for restoration along much of its course, and if pursued aggressively, the river and its riparian zone could someday constitute a viable linkage and important habitat.

Goal: Preserve important terrestrial, avian, and aquatic habitats, and protect native plants and wildlife in the watersheds.

Preserve or establish habitat linkages and/or corridors in the Santa Susana Pass, Newhall Pass, Angeles National Forest to the Verdugo Mountains, Griffith Park to the Verdugo Mountains, the Verdugo Mountains and San Gabriel "Stepping Stones," the San Gabriel River, the Puente & Chino Hills, the Puente Hills to San Jose Hills and the San Gabriel Mountains, and the Los Angeles River.

Actions: The State Conservancies will work with federal, state, and local agencies and private groups to pursue: 1) detailed study and monitoring of potential habitat linkages in the watersheds; 2) comprehensive mapping of potential conservation sites; 3) ranking of potential sites according to their conservation value and vulnerability; 4) analyses of aquatic and wetland habitats and species, which have generally received less study than terrestrial habitats and species.

■ Wetlands

Before the arrival of settlers in the 1700s, the rivers and tributaries, combined with abundant groundwater, created an extensive network of wetlands throughout the watersheds. The vast majority of these wetlands were lost, but some wetlands do still exist. In its *Wetlands of the Los Angeles River Watershed*, the California Coastal Conservancy documented current wetland resources in the watershed and identified 10 sites that have potential for near-term restoration. These sites were chosen because they "represent a range of wetland and riparian habitats that historically occurred in the watershed and are distributed with the overall objective of improving the geographic balance of such habitat types and promoting greater regional biodiversity."

Riparian Habitat Along Los Angeles River

These sites are located at De Forest Park (Long Beach), Victoria Park (Torrance), Harbor Park (San Pedro), Dominguez Gap (Long Beach), Hazard Park (Los Angeles), Taylor Yard (Los Angeles), Lower Arroyo Park (Pasadena), Cahuenga Spreading Grounds (Glendale), Sepulveda Basin (Van Nuys), and Upper Bull Creek (San Fernando).

For the upper San Gabriel River in the San Gabriel Valley, *Reconnecting the San Gabriel Valley* has proposed a series of actions to create a wildlife corridor along the San Gabriel River. This network includes wetland creation throughout the wildlife corridor. Although not as detailed as the Coastal Conservancy work on the Los Angeles River, this study presents a long term, multi-objective, and accomplishable vision for this reach of the river.

For the Los Angeles River, the authors of *Wetlands of the Los Angeles River Watershed* state that "many other—in most cases more extensive—restoration opportunities exist or could be created…through such landscape-scale efforts as restoring former hydrologic regimes, more effective stormwater management practices, and non-structural solutions to flood control". Examples of long-term restoration opportunities include the creation of large-scale, off-channel wetlands and riparian habitats in auxiliary flood ways and utility corridors adjacent to the major tributaries and mainstem channel of the Los Angeles River. These long-term restoration opportunities are also applicable for the San Gabriel River. These opportunities can capitalize on the potential for wetlands to serve as natural filters that trap sediments and contaminants and improve water quality.

Goal: Restore and expand wetlands wherever feasible in the watersheds, and incorporate those wetlands as elements of natural systems, to treat urban run-off, improve water quality, and provide wildlife habitat.

Actions: The State Conservancies will work with appropriate agencies to create a mitigation bank for the restoration and establishment of wetlands within the watersheds. This mitigation bank will provide mitigation for the loss of jurisdictional wetlands and other waters of the United States, as defined by Section 404 of the federal Clean Water Act. The Wildlife Conservation Board and the California Coastal Conservancy are currently working to acquire and restore the Los Cerritos wetlands in Long Beach and Seal Beach. The Resources Agency, the SMMC, and the RMC will utilize available funds (including Propositions 12 and 13) to fund projects that restore riparian and wetland habitats along the rivers and tributaries. The State Conservancies will develop partnerships with agencies and land groups to enhance, create, rehabilitate, manage, and monitor these wetlands.

Private and Common Lands

Residents and individuals can play a part in watershed protection and enhancement activities. According to the LJS survey, referred to earlier in this report, many of those surveyed reported that their own backyards were their favorite open spaces. Many of the survey respondents also wanted more information on how to care for their own land. More than 50% were interested in information that makes it more attractive and useful for wildlife such as birds and butterflies and how to absorb, retain and use more of the water that naturally falls or flows over their land.

Watershed restoration can begin in backyards. While a backyard cannot take the place of a large wilderness area or nature preserve, it can play host to the wildlife typically found within our urban areas. A backyard (or front yard) can provide food, water, shelter, and space.

Suburban Backyard

A backyard, when considered as part of the vast neighborhood network in the watershed, can contribute greatly to the health of a watershed. Organizations such as the National Wildlife Federation, the Natural Resources Conservation Service, the National Association of Conservation Districts, and the American Gardening Association provide educational programs on backyard landscaping. The California Native Plant Society provides guidance on incorporation of native plants into private gardens. Tree People have demonstration programs on gardening design, tree planting, and ways to incorporate sustainability concepts into home and garden design. The Los Angeles County Department of Public Works maintains the Smart Gardening website to provide information on gardening, composting, building healthy soil, and integrated pest management.

In addition to privately owned spaces, businesses, organizations and institutions own large parcels of land that could provide opportunities for open space. These include hospitals, corporations, and educational institutions, including school districts. These entities should be encouraged to adopt programs and policies which introduce landscaped open space into large expanses of concrete and asphalt where feasible, to provide amenities for employees, visitors and students.

Goal: An informed public that understands how private lands, including backyards, comprise open space in urban and suburban settings to provide passive recreation for residents and amenities for beneficial wildlife. Business, industries, school districts, and institutions that value open space as amenities for employees, patients, students, visitors, and as habitat.

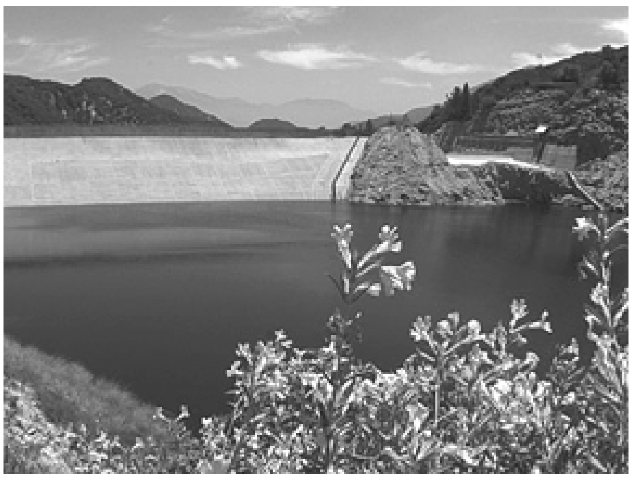
Actions: The State Conservancies will work with local agencies and environmental organizations to provide educational support for use of native and regionally adapted plants in landscaping. The Conservancies will work with area businesses to develop incentive programs (e.g., such as sale of native plants at reduced prices) to encourage residents to utilize native plant materials.

4. Water Resources

Flood Protection

The variability of flood flows in the Los Angeles and San Gabriel Rivers led to the extensive network of constructed flood protection facilities, including reservoirs, debris basins, and concrete channels. The system has been largely successful in protecting lives and property and speeding the discharge of floodwaters into the Pacific Ocean. Maintenance of adequate flood protection for all residents of the watershed will remain a vital priority.

Alternative means of achieving flood protection have been suggested for many years, including the use of non-structural methods, such as using open spaces to reduce runoff velocity and encourage groundwater infiltration. The introduction of such features must not compromise the basic functionality of the system, and therefore may have limited application at some locations. The Los Angeles Regional Water Quality Control Board recently adopted requirements for development, implementation and monitoring of Standard Urban Stormwater Mitigation Programs for certain types of new developments and redevelopments, which will require treatment or retention of stormwater. As model programs for retention and treatment of portions of stormwater runoff are developed, retrofit of existing facilities may become practical and feasible.



Cogswell Dam

In the upper watershed, open space projects may have the opportunity to retain runoff so as to actually decrease the amount of water in the rivers during peak flows. If stormwater is retained on site, there is an opportunity to use the retention facility as a recreation and or open space amenity during the dry months. Centralized retention facilities serving several parcels provide larger facilities that accommodate more uses.

Goal: Utilize a range of flood protection methods, including non-structural; maintain and enhance flood protection, while utilizing open spaces and landscaped areas to filter, cleanse and retain stormwater and enhance groundwater infiltration.

Actions: The State Conservancies will participate in flood protection planning activities with the Departments of Public Works in Los Angeles and Orange County, and the U.S. Army Corps of Engineers and encourage incorporation of non-structural flood protection measures as part of comprehensive flood protection programs.

Surface Water

Since adoption of the federal Clean Water Act, water quality in the rivers and tributaries has improved significantly, although many reaches of the rivers are still identified as having impaired water quality. A variety of problems remain to be addressed to assure that surface water quality meets applicable standards. The most notable of these problems is urban runoff, including stormwater runoff.

Los Angeles and Orange Counties have been granted permits for municipal separate storm drain systems, which cover the discharge of floodwaters into the regional drainage network, and then into the Pacific Ocean. The Los Angeles permittees have filed a Report of Waste Discharge (dated February 1, 2001), and applied for renewal of the waste discharge requirements and a NPDES permit. The LARWQCB is expected to adopt a new permit for those discharges later this year. As a result, most storm drain systems in the urbanized areas of the watersheds are covered by NPDES requirements, which requires development, implementation, and monitoring of Stormwater Pollution Prevention Programs. A major component of those programs is the use of Best Management Practices (BMPs) during planning, construction, operation and maintenance of facilities.

Los Angeles River

In addition, the Los Angeles Regional Water Quality Control Board recently adopted requirements for implementation and monitoring of Standard Urban Stormwater Mitigation Plans for certain types of new developments. Model programs for retention and treatment of stormwater runoff will be developed as a result of these requirements, and those model programs are to be adopted by cities, which will review plans for new development and determine compliance with the model programs.

Beyond BMPs applicable to existing and future development, public education and outreach will be critical to reducing urban stormwater pollution. Cities and both counties have existing outreach programs, to eliminate the misuse of storm drains as trash receptacles, create an understanding of the connection between animal and yard waste and the quality of water in the rivers and at the beaches, and underscore the need for personal commitment to improve the quality of stormwater runoff. For example, the City of Los Angeles has an exemplary stormwater program, has trained thousands of city employees for BMPs, and maintains a website for public outreach and education.

Goal: Improve stormwater runoff quality to assure protection of surface and ground water. Encourage infiltration of urban runoff into groundwater where feasible and without having a negative impact on groundwater quality, to extend the water supply, thereby reducing reliance on imported water.

Actions: The State Conservancies will work with the LARWQCB, the counties, and relevant local agencies to encourage development of model programs related to urban stormwater runoff mitigation and encourage agencies and cities to adopt and implement those programs. The State Conservancies will encourage expansions of existing urban stormwater runoff education and outreach programs.

■ Groundwater

In the early stages of development of the watersheds, groundwater played an important role as the source of the majority of water for farms, homes, and businesses. Regionally, over-pumping of groundwater aquifers declined as imported water became available. Today, the continued and even increased infiltration of surface water into our underground aquifers is essential to the water supply. Poor quality of groundwater, or contamination from prior land uses, limits or precludes use of groundwater for domestic purposes. Enhancing groundwater infiltration could expand the availability of this valuable resource, and reduce reliance on imported water.

Los Angeles County Department of Public Works (LACDPW) undertakes substantial groundwater recharge throughout Los Angeles County. LACDPW operates 27 water-spreading areas where water infiltrates to replenish the County's underground water supply (LACDA Study, 1994). Over 250,000 acre-feet of water runoff was conserved in the 1999-2000 water year. The conserved water percolates into the ground water and is pumped for use by the residents of the watersheds.

Tujunga Wash

The Los Angeles County Department of Public Works is undertaking a demonstration project along the San Gabriel and Rio Hondo Rivers in the City of Pico Rivera. The project is a multi-purpose, multi-phase plan to allow public access to the open space provided by the spreading grounds. Planned elements include perimeter landscaping, wildlife habitat, and public access to the spreading grounds. This partnership between Public Works and the City of Pico Rivera is model of cooperation and enlightened multi-use policies.

The City of Los Angeles Department of Water and Power is planning a spreading ground/ habitat/education/passive recreation area at the Headworks Spreading Grounds along the Los Angeles River, north of Griffith Park.

The City of Long Beach, with other stakeholders such as County Public Works and the Water Replenishment District of Southern California are working to develop a multi-use approach to expansion and improvement to the Dominguez Gap Spreading Grounds in the northern part of Long Beach.

Goal: Expand and enhance groundwater infiltration and recharge wherever possible, and when consistent with water quality goals.

Actions: The Conservancies will work with LACDPW and the Los Angeles Regional Water Quality Control Board, water districts, communities, and cities to develop and fund projects that protect and enhance groundwater quality and enhance groundwater recharge.

■ Private and Common Lands

Watershed restoration can begin in backyards. While a backyard cannot take the place of a groundwater recharge basin or stormwater detention facility, it can be designed to detain stormwater and promote groundwater infiltration. The Tree People's TREES demonstration project involved retrofit of a single-family home in South Central to capture, cleanse, and store rainwater that falls onto the property. The water is then reused for landscaping on the site. This project demonstrates how sustainable watershed management—stormwater capture, water conservation, and groundwater recharge—can be implemented on a typical urban lot. In addition, large parcels owned by businesses, organizations and institutions provide opportunities to retrofit these open spaces to detain stormwater and promote groundwater infiltration.

Stormwater Retention Structure at the TREES Demonstration Site

Goal: An informed public that understands how private and common lands, including backyards, provide opportunities to retain stormwater and promote groundwater infiltration.

Actions: The State Conservancies will work with local agencies, cities, communities, and environmental organizations to encourage residents, businesses, and organizations to promote stormwater detention and groundwater infiltration.

E. NEXT STEPS

To restore balance to the watershed, multi-objective plans and projects for open space, habitat, and water resources should incorporate the Guiding Principles articulated in this plan. This includes ongoing (or pending) subwatershed plans, the (in progress) San Gabriel River Master Plan, and future plans for parks, open space, and bike trails in individual cities and communities. The State Conservancies will encourage cities and local agencies to consider incorporation of the concepts embodied in the Guiding Principles into current and future plans, to advance the goal of restoring balance to the watersheds.

The State Conservancies will encourage cities to consider incorporation of the relevant Guiding Principles into their next General Plan update, so that future projects within individual cities reflect the concepts embodied in the Guiding Principles.

Because this plan discusses, but does not propose specific projects, following adoption of this plan, the RMC and SMMC will develop and propose projects consistent with the goals of the plan. The conservancies will also evaluate funding applications for projects submitted by cities, communities, agencies, and local groups, using the project evaluation criteria included in Appendix F.

1. San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy

Because the RMC is relatively new, it is still developing detailed plans and programs. The concepts embodied in this plan are intended to guide the activities of the RMC for both the short- and long-term, as described below

■ Short-Term (One to Three Years)

The RMC will work with individual cities, communities, and agencies to identify projects that are consistent with the plan, and to develop and implement a list of projects for current funding opportunities (including Proposition 12). The initial focus will be on projects that are located along the rivers and tributaries, including: (1) acquisition of individual parcels; (2) installation of trails, bike paths and passive recreation space, (3) creation of parks; (4) development of community gardens (with the assistance of the UC Cooperative Extension Community Gardens Program), and (5) improvement or expansion of existing facilities.

The RMC will also develop a master list of projects that will be reviewed as future funding sources are identified or become available (including future bond issues). The project evaluation criteria used by the RMC may be adjusted for individual funding sources to better match projects with funding sources.

The RMC will develop project evaluation software, which will allow individual projects to be quickly and easily ranked (using the project evaluation criteria in Appendix E), and linked to available information in the RMC GIS database.

The RMC will work with the Tree People, the County of Los Angeles, CALFED, the Los Angeles and San Gabriel Rivers Watershed Council, and others to support and implement watershed-related educational programs.

The RMC will seek funds to develop a restoration strategy for quarry pits along the San Gabriel River to restore native vegetation, protect and enhance groundwater, and incorporate recreation where feasible and consistent with water quality goals.

Upper San Gabriel River

Additionally, to fully develop some of the concepts described in this plan, the RMC will undertake a second phase of this open space plan process, to develop, within three years of the adoption of this plan, the following subsequent plans:.

Rivers Parkway Plan: To create a continuous ribbon of open space along the San Gabriel River, the lower Los Angeles River and the Rio Hondo, a Rivers Parkway Plan should be developed. A proposed study by the National Park Service to create a National Recreation Area along the rivers could inform this process. Partners in the development of the Rivers Parkway Plan may include the National Park Service, the U.S. Forest Service, the California State Parks and Recreation Department, the Los Angles County Department of Public Works, the Los Angeles County Parks and Recreation Department, and each riverfront city. The Rivers Parkway Plan shall outline a prioritized list of projects, identify potential funding, and include a work program to accomplish the acquisition and development of each project. This will include projects designated in the Los Angeles River Master Plan and the in-progress San Gabriel River Master Plan.

Tributary Plans: To extend the network of open space, trails and bike paths along tributaries, the RMC will encourage the relevant agencies engaged in subwatershed plans to address open space, habitat and passive recreation along the major tributaries of the rivers, including the Compton Creek, Coyote Creek, Rio Hondo, and the Upper San Gabriel River (including Walnut and San Jose Creeks). Potential partners in this process include the Los Angeles Regional Water Quality Control Board, the Los Angeles County Department of Public Works, the Los Angeles County Parks and Recreation Department, Orange County Watershed and Environmental Programs, the U.S. Army Corps of Engineers, the San Gabriel Regional Mountains Conservancy the Los Angeles and San Gabriel Rivers Watershed Council, the San Gabriel Valley Council of Governments, the tributary-fronting cities and stakeholders involved in subwatershed plans.

Trails and Bike Paths Plan: To establish a comprehensive network of trails and bike paths, existing plans need to be reviewed to determine whether those plans should be revised to incorporate trails and paths along the river tributaries. Gaps in existing trails and bike paths must be identified and addressed. Potential partners in this effort include: Caltrans, the Metropolitan Transit Authority, the

Orange County Transportation Authority, the California Department of Parks and Recreation, the Los Angeles County Parks and Recreation Department, individual cities and communities, and advocacy groups such as the Los Angeles (and Orange County) Bicycle Coalitions.

The State Conservancies will work with the State Department of Transportation, regional transportation agencies, Councils of Government, cities and local agencies, communities, state and legislators, and community groups, to identify local and regional connections and develop funding strategies for acquisition or development of pedestrian and equestrian trail linkages.

Mountains, Foothills and Hills Plan(s): To identify parcels and areas of land within the mountains, foothills, hills that should be preserved and protected, comprehensive plan(s) are needed to identify priorities, funding and implementation strategies. Potential partners include: the foothill communities of the San Gabriel Mountains, and the San Gabriel Valley Council of Governments; the communities; local conservancies, agencies, and groups; and the Councils of Government surrounding and encompassing the Whittier/Puente/Chino/San Jose Hills complex; and the communities surrounding the Glendale Narrows and the Verdugo Mountains.

Habitat Conservation Plan: To preserve critical habitat, preserve, and establish habitat linkages and/or corridors, and to preserve, restore, and create wetlands, a comprehensive habitat plan for the watersheds is needed. This would include (1) detailed study and monitoring of potential habitat linkages in the watersheds; (2) comprehensive mapping of potential conservation sites; (3) ranking of potential sites according to their conservation value and vulnerability; and (4) analyses of aquatic and wetland habitats and species, which have generally received less study than terrestrial habitats and species. Potential partners in these efforts include the U.S. Forest Service, U.S. Fish and Wildlife Service, the California Department of Fish and Game, the Wildlife Conservation Board, the California Coastal Conservancy, the Puente Hills Landfill Native Habitat Preservation Authority, the Wildlife Corridor Conservation Authority, counties, cities, and habitat and resource conservation organizations.

The RMC will also retain a conservation resource biologist to conduct a second phase of analysis and research of habitat linkages and corridors in the watersheds, to identify problems and opportunities related to species conservation in urban settings and provide for input from local experts.

The RMC will also look for partners to fund vegetation mapping for the watersheds. Vegetation mapping would improve understanding existing habitats and the extent of fragmentation, inform planning, and development of strategies for protection of habitats and the establishment and preservation of habitat linkages and corridors.

Historic and Cultural Landscape Survey: In order to preserve our rich cultural and agricultural heritage, the RMC, in conjunction with university, professional, civic, and community organizations, State Parks, the National Park Service, and local agencies, will work to create a comprehensive survey of historic and cultural landscapes throughout the watersheds.

Monitoring and Assessment Plan: The RMC, with partners, will work to develop an assessment process for restoration of the watersheds, and monitor progress towards meeting the goals described herein. Critical to this process will be maintenance and updating of the Geographic Information Systems database developed by the RMC. At a minimum, the periodic assessment process shall occur at ten-year intervals, or more often if deemed practical. This process shall utilize quantifiable methods wherever feasible and input from a technical advisory committee, and shall include stakeholder involvement in the design, implementation, and review of the assessments.

A timeline reflecting the development of these plans is included as **Figure 3-5**.

Long-Term (Twenty to Fifty Years)

The following are the long-term goals of the RMC:

- To create, expand, and improve public open space, the RMC will work with the federal government, the state legislature, the counties, cities, and non-profit groups to identify funding to provide five acres of park space per 1,000 residents. This will include a strategy for land acquisition

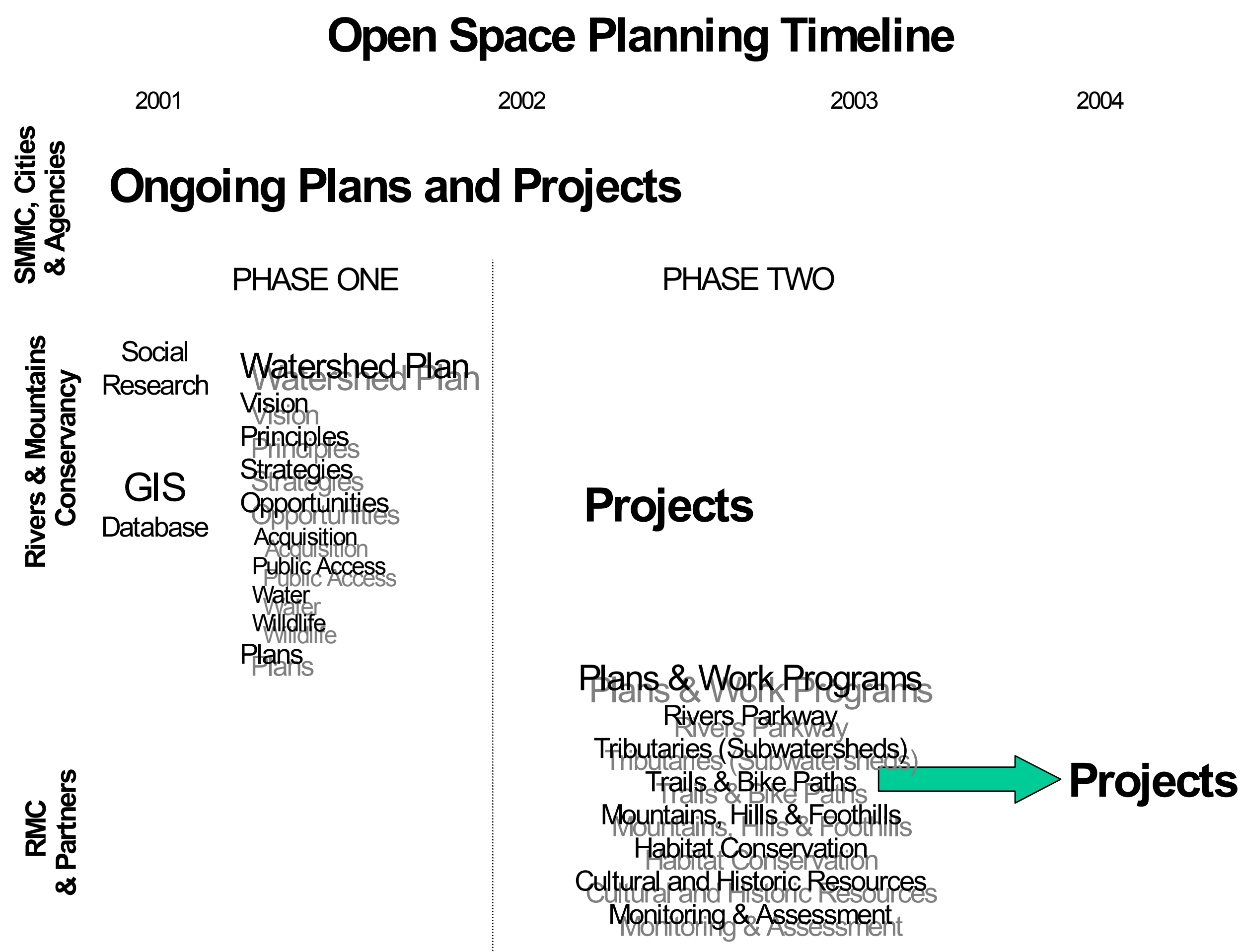


Figure 3-5. Open Space Planning Timeline

and preservation to create parkways along the rivers and tributaries.

- To improve habitat quality, quantity, and connectivity, the RMC will work with resource conservation agencies and other appropriate partners to plan and implement a hierarchy of habitat networks that will connect small habitat patches and narrow corridors within the densest urban areas, larger habitat patches and wider corridors in suburban and rural areas, and extensive open spaces in the mountains and the national forests.

- To build a regional systems of trails, bike paths, equestrian trails, and public access systems the RMC will work with federal, state, regional and local agencies, the counties, cities, and advocacy groups to develop a comprehensive network that will connect river trails to mountain trails, urban trails to centers of commerce, and parks and significant open spaces to the beaches.

2. Santa Monica Mountains Conservancy

Because the SMMC has been established for more than 20 years, it already has a variety of plans and programs related to acquisition and preservation of open space, establishment of parks, installation of trails, restoration of habitat, and other resource conservation activities. The SMMC will use the concepts in this plan to develop and implement a Watershed Work Program.

3. Other Agencies and Cities

California Resources Agency: Implement development of the California Continuing Resource

Investment Strategy Project (CCRISP), to create an analytical tool to help prioritize areas that contain natural resources that are important to biodiversity, working landscapes, watersheds, natural recreational lands, and urban open space.

California Parks and Recreation: Implement the Urban Strategy for the Los Angeles area to acquire, develop and operate parks, provide interpretative, educational, and recreational programs and events; and to plan, coordinate and provide technical assistance for park and recreation opportunities.

California Coastal Commission: Develop wetland restoration projects and protect coastal resources.

California Fish and Game: Develop habitat and conservation projects.

Wildlife Conservation Board: Facilitate land acquisitions and public access funding.

Caltrans: Develop bikeway and restoration projects.

State and Regional Water Quality Boards: Coordinate local planning for, and implementation of, water quality improvements with the Los Angeles and Santa Ana Regional Water Quality Control Boards and other interested parties.

Arroyo Seco

US Forest Service: Complete the Forest Plan Update that includes the Angeles National Forest.

US Army Corps of Engineers: Continue wetland restoration and flood protection projects.

US National Park Service: Prepare a River Parkways Study and continue work on the De Anza Trail.

Los Angeles County Department of Public Works: Complete the San Gabriel River Master Plan and continue to work with partners to implement projects consistent with the Los Angeles River Master Plan. Continue to work with partners on river-related project within the Los Angeles and San Gabriel River Watersheds.

Orange County Office of the Chief Executive: Undertake the Coyote Creek Watershed Plan (in conjunction with the U.S. Army Corps of Engineers) and implement watershed-related projects.

Cities: Identify projects and consider incorporating the Guiding Principles into the next update of their general plans.

Approval of individual projects will require consideration of potential environmental effects, in accord with the California Environmental Quality Act (CEQA) (Public Resources Code, §§21000–21178) and the CEQA Guidelines (California Code of Regulations, Title 4, Chapter 14, §§15000–15387). The lead agency responsible for approving or implementing the proposed project will be responsible for determining the appropriate level of environmental review.

This plan is intended as a living document that will evolve over time, as priorities evolve and needs dictate, based on periodic assessment of progress. As subwatershed, river, and city open space plans are developed, those plans will be appended to this document, to extend and expand upon this plan.

APPENDIX A
Photo Credits

Cover

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Los Angeles River (at Long Beach): Courtesy of Trust for Public Land, Tom Lamb, 1996

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Executive Summary

Los Angeles Satellite Image: Spaceshots, 1989

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Chapter 1—Background

Los Angeles in 1873: Courtesy of Nevada Historical Society

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Los Angeles River west of Sepulveda Dam: Courtesy of Trust for Public Land, Tom Lamb, 1996

Confluence of Arroyo Seco and Los Angeles River: Courtesy of Trust for Public Land, Tom Lamb, 1996

Chapter 2—Current Conditions

Upper Arroyo Seco: Courtesy of David Van Norman

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Chapter 3—A Vision for the Future

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Existing Quarry in Irwindale: Courtesy of Arthur Golding

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Tujunga Wash: Courtesy of Trust for Public Land

Stormwater Retention Structure: Courtesy of Tree People

Upper San Gabriel River Canyon: Courtesy of Trust for Public Land, J. Danza

Arroyo Seco: Courtesy of Arthur Golding

APPENDIX B
Acronyms

BMPs	Best Management Practices
CREEC-LA	California Regional Environmental Educational Center—Los Angeles
CEQA	California Environmental Quality Act
EPA	United States Environmental Protection Agency
DTSC	Department of Toxic Substances Control
GIS	Geographic Information Systems
GLOBE	Global Learning and Observations to Benefit the Environment
GREEN	Global Rivers Environmental Education Network
LACDA	Los Angeles County Drainage Area
LACDPW	Los Angeles County Department of Public Works
LARWQCB	Los Angeles Regional Water Quality Control Board
MRCA	Mountains Recreation Conservation Authority
NAAEE	North American Association of Environmental Educators
NPDES	National Pollutant Discharge Elimination System
RMC	Lower Los Angeles and San Gabriel Rivers and Mountains Conservancy
SEAs	Significant Ecological Areas
SMMC	Santa Monica Mountains Conservancy
SWRCB	State Water Resources Control Board
TMDL	Total Maximum Daily Load
TPL	Trust for Public Lands
TREES	Trans-agency Resources for Economic and Environmental Sustainability
ULARA	Upper Los Angeles River Area
WDR	Waste Discharge Requirements
WET	Water Education for Teachers

APPENDIX C
Glossary of Useful Terms

(Derived from the *Second Nature* report prepared by Tree People,
and *Stormwater: Asset Not Liability*, by Dallman and Piechota)

50-year storm—The L.A. County Department of Public Works capital flood hydrology is based on design storm derived from 50-year return frequency, based on historical weather data in the Los Angeles region. This design event occurs over a four-day period, with the maximum rainfall falling on the fourth day.

133-year storm—The storm intensity used by the Army Corps of Engineers for calculating flood likelihood. Presumably a storm of this intensity occurs once every 133 years on average.

Aeration—A process whereby air voids are introduced into soil for improved fertility and water holding capability.

Base flow of streams—Water slowly percolates underground and then spreads laterally until it reaches the surface (not pumped up) becoming part of the natural flow in rivers and streams, its base flow. This seeping ground water is what maintains the flow in a river due to the return flow of groundwater.

Bio-remediate—Bio-remediation uses biological processes to repair pollution damage. For example, a grass swale can bio-remediate much of the pollution caused by automobile use by holding heavy metals in the soil at harmless concentrations as well as by the action of soil bacteria, which gradually breaks down hydrocarbon waste such as crankcase oil.

Beneficial uses—historical, existing or potential uses of a body of water. The Regional Water Quality Control Boards designate uses for individual bodies of water, with the intent of preserving or restoring those uses. There are 24 beneficial uses designations in California, including wildlife habitat, industrial processes, agricultural supply, and ground water recharge.

Catchment planter—A planting bed that has been specially designed to hold and absorb storm flows from adjacent areas, usually from parking lots.

Cistern—Storage tank built either above or below ground or on a roof to store water for later use: for irrigation, fire fighting, and in some countries, for drinking and bathing.

Compost—Decaying vegetation. Can be used as ground cover or mulch, and as fertilizer.

Design storm—The size of a storm, defined by duration, intensity, and amount of precipitation, that storm drain systems are designed to accommodate. As development paves over the land, increasing the volume of runoff, the design capacity of built storm drains can become inadequate.

Detention basin—Temporary storage to reduce the peak flow, but not the total volume of storm water during a storm.

Debris basin—Facility constructed to contain debris flows (water, rocks, mud, sediment vegetation and other debris) that occur during major storm events, particularly in areas that have been subject to wildfires.

Drainage chimney—Holes drilled into the ground sufficiently deep to allow rainwater to quickly flow back into the ground. Also known as a dry well.

Drainage flow deflector—A ridge and/or a depression in a flat paved surface for the purpose of re-directing sheet flow into a channel, thus changing the destination of storm water.

Dry flow—The continuous flow in a storm drain system that occurs even during extended periods without rain.

Dry well—A constructed well designed to receive water for groundwater recharge.

Evapotranspiration—The loss of water from the soil both by evaporation and by transpiration from the plants growing thereon.

Filter medium—Any item or substance that is used for filtering impurities. Soil, sand, and mulch are used as a filter media.

First-flush rain—In the Los Angeles area, many months can pass between one rainstorm and the next. During this time, pollution and grime build up on all of the city's outdoor surfaces, and in particular, on its streets. When the next rainstorm finally comes, it washes the accumulated grime and pollution off of the streets and into the underground storm drain system. This is the "first flush rain." As you might expect, it carries a very large amount of suspended and dissolved pollutants.

Flood plain—The lands next to rivers and streams that flood naturally during large storm events. The flood plain's function is to store sediment and flood flows.

Grass filter strips—A grassy edge or swale that filters storm water in the root layer before percolating the water into the soil below or discharging the water overland.

Graywater—Water drained from household sinks, washers, tubs, and showers—that is, all water not coming from toilets. This water carries relatively few suspended or dissolved solids. Consequently, it can often be used for such purposes as landscape irrigation.

Green filter islands—A grassy or planted landscaped island, usually in a parking lot, that filters storm water in the root layer before percolating the water into the soil below or discharging the water overland.

Green link—Green links connect various locations via generously planted "park- like" linear corridors.

Groundwater—The water that collects and is stored underground into basins defined by the underlying geology. The level of groundwater or "water table" varies according to the type of soil and underlying geologic formations, and from season to season. In rare instances, and on particular sites, the groundwater table comes up to the surface. This results in standing water on the surface of the ground. More often, the groundwater table is located many feet below the surface.

Groundwater mounding—In certain instances, where stormwater is returned to the soil in one location at a faster rate than in adjacent locations, groundwater mounding can occur. This means that the water table (where the soil is saturated) can be higher under a recharge basin than in adjacent locations. Occasionally this can create problems. Often it is benign.

Groundwater recharge—Surface water that filters into the ground and reaches underground reservoirs, providing replenishment and/or increased storage for groundwater basins. This occurs naturally during and after rainstorms, in creek beds with flowing water, or can be accomplished purposefully by directing storm water into specially prepared recharge areas for infiltration.

Heat gain—Heat can slowly build up in an object over time. This is called heat gain. In a building, heat gain is most often the consequence of many hours of sunshine striking and warming the exterior walls and roof.

Heat island effect—Many urban areas lack shade trees. In these areas the sun strikes pavement and rooftops, heating them to very high temperatures. These surfaces re-radiate heat back into the air, raising air temperatures by five or more degrees. Urban areas that contain dense tree canopy avoid the heat island effect because trees absorb virtually all of the sun's energy without radiating heat back into the air.

High crowns—Virtually all roads and parking areas have some kind of crown, or high point, to insure that water flows off promptly. Usually this high point is a ridge along the center line of the road or parking bay. This ridge is ordinarily only a few inches higher than the edges. "High crown" suggests a condition where this crown is made artificially higher to allow the road or bay to hold more water than it otherwise could.

Holding pond—A depression where rainwater is directed and held temporarily. Holding ponds function to slow the rate at which water is discharged from a site to the rate more typical of undeveloped natural sites.

Humus layer—The top layer of soil where there is the most organic activity, fibrous root material, and recycling detritus from the plants above.

Hundred-year storm—There is a 1 in 100 chance of a storm of this magnitude happening in any one year. Flood flow rates from hundred year storms are recalculated over time due to changes in the landscape (e.g., increased urbanization).

Hydrology—The occurrence, distribution, movement, and properties of water above and below the earth's surface. The natural hydrology of an area may be significantly altered by catastrophic events (earthquakes, landslides) and by human development (agriculture, urbanization).

Impervious or impermeable—A surface that does not allow the passage of water and thus potentially facilitates the generation of runoff.

Infiltration—The process by which water moves downward through the earth's surface, replenishing soil moisture and groundwater basins. The ability of the soil to infiltrate water depends on many factors, including the nature of the surface cover, and soil characteristics such as texture and depth.

Infiltration zone—An area particularly well suited and/or altered for directing storm water back into the soil.

Mulch—Organic material placed on the ground, sometimes many inches thick, used as a ground cover to cool the soil, discourage weeds and erosion, aid in the infiltration of water, minimize the heat island effect of the city, and reduce the costs of green waste disposal.

Natural flood plain—Every river or stream naturally overflows its low flow or non-storm capacity channel during major storm events. Flood plains consist of those areas that would naturally flood during major storms. Their function is to disperse sediments and to infiltrate water underground.

Percolation—The act of water soaking into the ground. This term is used most frequently in conjunction with spreading grounds, where water is purposefully allowed to percolate through the soil to the groundwater.

Percolation basin—An above ground storage place—retention basin—built so as to encourage the percolation of water contained therein underground.

Percolation rate—The rate at which water filters into the soil. Some soil types, such as sand, have a very high percolation rate; other soils types, such as clay, have a very slow percolation rate.

Permeable pavement—Permeable pavement is honeycombed with voids, or air pockets. These voids allow water to migrate down through the pavement into the soil below.

Pervious or permeable surfaces—Surfaces that allow water or other liquids to penetrate and potentially reach the ground (depending on the thickness of the surface, how porous it is, and the amount of water.

Porosity—A measure of the ability of water to pass through a material, which is dependent upon how much empty space occurs between the particles that make up the substance. For example, sand is much more porous than clay**.**

Potable water—Water that is fit to drink.

Precipitation—Rain, hail or snow that falls from the atmosphere.

Recharge areas—Certain zones in the landscape can accept water back into the soil at higher than average rates. Such areas are often referred to as recharge areas.

Residential density—The number of family units to be found on an average acre of land in a residential area is referred to as its density. These densities range from low (1-2 units per acre) to high (40 + units per acre).

Retention basin or infiltration basin—Stores water with the purpose of reducing the volume of runoff by capturing precipitation and surface runoff for recharge to groundwater. These basins do not return captured runoff to storm water channels.

Return period—The average recurrence of a storm of a particular size and duration.

Riparian habitat—Habitat next to rivers or streams and dependent on the additional moisture in the river. Its function is to provide food and shelter for many creatures, to reduce the volume and velocity of runoff, and increase infiltration.

Riparian retention and treatment area—A retention or recharge area where plants native to rivers or lakes are installed to consume and clean the water therein.

Riprap—A rock lining used to stabilize sloping stream banks.

River corridor—Includes the river, the flood plain, the riparian trees, and plants that grow in the high groundwater and most soils along the way.

Runoff—Stormwater that flows off of one surface or site onto another.

Sheet flow—Stormwater that flows in even sheets across a flat surface, such as a parking lot.

Spreading grounds—A land area specifically designed to be flooded so that the water will percolate or soak into the ground, recharging the ground water.

Stormwater—Refers to all rainwater that hits the surface of the ground. Stormwater either percolates back into the soil or flows on the surface to the nearest storm drain inlet, stream, or other wetland area.

Subsoil—the soil layer below the "topsoil" layer.

Subsurface—Below the surface of the ground.

Sustainability—The ability to meet current needs without compromising the ability of future generations to do the same. Also, the goal of securing life, liberty, and social well-being within the means of nature.

Swale—A v-shaped depression in the land, usually lined with grass, designed as a channel for moving storm water from one place to another.

Velocity of flow—How quickly the stormwater flows over the surface or through the storm drain system to the ocean. Velocity is determined by the design of the conveyance system: how wide, how smooth or rough, and the slope of the conveyance.

Water conservation—Means different things in different contexts. Usually, it means using less (consumer or farmer or landscape) due to hardware or management strategies. In the storm water management context, it means storing water in retention basins or behind a dam for infiltration to the ground water, making the water available as an addition to the drinking water supply.

Watershed—A region or area bound peripherally by a divide or ridge, all of which drains to a particular watercourse or body of water. Most urban sites are now mini-watersheds, with the property line constituting the "ridge" and the storm drain system located in the street constituting the "watercourse" to which it discharges.

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APPENDIX E
RMC Project Authority

Attorney General's Office Opinion

Draft Approval Resolution

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July 1, 2001

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RE: Request for Informal Advice re Open Space Plan

Dear Executive Officer Angle:

In a letter dated April 13, 2001, you requested that the Office of the Attorney General provide informal advice regarding the impact of the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy's ("RMC") adoption of a San Gabriel and Lower Los Angeles Parkway and Open Space Plan ("OSP"). (Pub. Resources Code, § 32604 (d).) The purpose of this letter is to provide that informal advice.

ISSUES PRESENTED

Specifically, you asked the following two questions: first, you inquired whether it is necessary to comply with the provisions of the California Environmental Quality Act ("CEQA") in the process of developing and adopting the OSP. Second, you asked our office to evaluate the effect of the adoption of the OSP, on the region, individual cities and affected landowners. In particular, you inquire whether approval of the OSP will require the member cities to amend their general plans to conform to the OSP, and/or give the RMC regulatory or governing authority over its member cities or over any ordinance, general or specific plan enacted by any local jurisdiction within its territory.

SUMMARY OF CONCLUSIONS

1. As discussed below, while we conclude that the RMC must comply with CEQA in adopting the OSP, CEQA does not require the preparation of an environmental impact report or a negative declaration. Under CEQA, an agency must first determine whether the proposed activity is exempt or not a project within the meaning of CEQA. If it is determined that the action is exempt or a "non-project," no further review under CEQA is necessary. The OSP, as proposed, is not a "project" within the meaning of CEQA and therefore is not subject to further environmental review. We caution that implementation or amendment of the OSP may require additional review under CEQA including preparation of an environmental impact report.

2. The legislation establishing the RMC was enacted in response to the interest of the member cities in creating a multi-jurisdictional agency that would be authorized to acquire land,

and conduct watershed management, flood control, and recreational projects within the lower Los Angeles River and its tributaries, the San Gabriel River watershed and the San Gabriel Mountains. The cities, however, expressed concern that the new state agency not be empowered to usurp regulatory or governing control from the local entities. The legislation addresses that concern. First, the RMC does not possess the power of eminent domain. (See Public Res. Code, §§ 32612 (b), 32613 (b).) Second, the RMC has no regulatory or governing authority over any ordinance, general plan or other laws adopted by the local jurisdictions within its territory. (See Pub. Resources Code, § 32613 (b).) Finally, we note that there is no explicit requirement in the legislation that the member cities amend their general or regional plans to conform to the OSP. Certainly, if the Legislature had intended to impose such a significant requirement upon the affected cities it would have made it explicit, particularly where such a requirement is inconsistent with the principal directive that local entities retain authority over their own general and specific plans. Therefore, it is our view that adoption of the OSP will not require the individual cities or regional agencies to amend or alter their general or regional plans. Nor will the OSP give the RMC governing authority over its member cities or over any land use regulation or ordinance enacted by any local jurisdiction within its territory.

THE RMC AND APPROVAL OF THE OPEN SPACE PLAN

In 1999, the Legislature enacted the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy Act (Act), which added Division 22.8 to the Public Resources Code, beginning with section 32600. The Act created the RMC and specified that its principal purposes are to "acquire and manage public lands within the Lower Los Angeles River and San Gabriel River watersheds, and to provide open space, low impact recreational and educational uses, water conservation, water shed improvement, wildlife and habitat restoration and protection, and watershed improvement within the territory," and to provide for public enjoyment in these watersheds and the San Gabriel Mountains. (Pub. Resources Code, § 32602 (a) and (d).)

Under Public Resources Code section 32604(d), the RMC "shall" prepare an OSP which must be approved by a "majority of the cities representing a majority of the population, the Board of Supervisors of Los Angeles County and by the Central Basin Water Association and the San Gabriel Valley Watermaster." The plan "shall include, but not be limited to," the following:

> "(1) A determination of the policies and priorities for the conservation of the San Gabriel River and its watershed, the Lower Los Angeles River, and the San Gabriel Mountains, in accordance with the purposes of the conservancy as set forth in section 32602.
>
> "(2) A plan for incorporating, as relevant, the principles and planning work contained within the Los Angeles River Master Plan prepared by the County of Los Angeles.
>
> "(3) An identification of underused existing public open spaces and recommendations for providing better public use and enjoyment in areas identified in the plan.
>
> "(4) An identification of, and a priority program for implementing, those additional low-impact recreational and open space needs, including additional or upgraded facilities and parks that may be necessary or desirable." (Ibid.)

Although the OSP, as set forth in section 32604 subsection (d), subdivisions (1-4), is conceived principally as a planning document, it does not have to be limited in scope to that function alone. The Legislature, by including the phrase, "**but not be limited to**," intended that the RMC have the discretion to determine the scope of the plan and its level of specificity, consistent with the "purposes set forth in Section 32602." (See Pub. Resources Code, §32604(a).) For example, section 32612 (c), provides that the RMC, prior to entering into an agreement to acquire an interest in real property, must notify the affected local agency if "such a project" was not included in the OSP.[1] This provision contemplates that the RMC has the authority to include project specific elements in the OSP.

Counsel for the Gateway Council of Governments, however, citing sections 32612 (c) and 32614 (c), has expressed concern that the RMC may be required to adopt a project specific open space plan, or at a minimum, include project specific elements in the plan such as the identification of parcels for acquisition. This requirement is not reflected in the Act. There is nothing in section 32604(d) that requires the RMC to prepare a project specific OSP, or to include project specific elements in the plan. Rather, the focus is on the adoption of general "policies and priorities" and the identification of underused existing public open space and recommendations for providing better public use. . ." (Ibid.) The only mandatory elements of the OSP are those that are set forth in section 30604 subsection (d), subdivisions one through four. All other elements, as discussed above, are subject to the discretion of the RMC. This understanding of the RMC's authority is implicit in sections 32612 (c) and 32614 (c). These sections specifically provide that the RMC may proceed with future projects, subject to notice requirements, even if they are not mentioned in the OSP. They do not require the RMC to adopt a project specific OSP.

Here, the RMC, in consultation with the public entities that must approve the OSP, is in the process of preparing the OSP. The stated purpose of the plan, as proposed, is "to provide a comprehensive framework for watershed and open space planning within the RMC's jurisdiction." (See OSP In Progress Draft, p. 1.) It is intended to serve as a "basis for future detailed planning at subwatershed levels as well as to guide the policies and programs of the RMC." (Ibid.) Given the practical and inherent difficulties of developing a plan involving over 60 different jurisdictions, the OSP, initially, will establish a set of general guiding principles, identify existing resources and land use management within the RMC's jurisdiction, and address potential projects types consistent with the purposes and objectives of the RMC. The OSP will not target specific expenditure of funds, identify specific parcels for acquisition or commit the agency to follow a course of action with respect to any particular aspect of the OSP. In short, the RMC Board and Executive Officer envision the OSP as a long-range planning guide.[2]

THE OSP AND CEQA PROCESS

The initial issue you have raised is whether it is necessary to comply with the provisions of CEQA in the development and adoption of the OSP. The short answer is yes. However, as noted above, compliance with CEQA does not necessarily compel the preparation of an envi-

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[1]Public Resources Code, section 32614 (c), includes an identical notice requirement with respect to leases, rentals, sales, exchanges or other transfers of real property or interest by the RMC to qualified public agencies or non-profit entities.

[2]Our understanding regarding the nature and scope of the proposed OSP is based on representations made by the Executive Officer and the consultant retained by the RMC to prepare the OSP. To the extent the final OSP differs from the In Progress Draft it may be necessary to revise our informal advice.

ronmental impact report (EIR) or negative declaration. Under CEQA, an agency must first determine whether the proposed activity is exempt or not a project within the meaning of CEQA. If it is determined that the action is exempt or a "non-project," no further review under CEQA is necessary. It is our view that the OSP, as proposed, is not a "project" within the meaning of CEQA, and therefore is not subject to further environmental review. In addition, the OSP, as proposed, is exempt from the need to prepare an environmental impact report.

Under CEQA, state agencies must prepare an environmental impact report on any "project" they propose to carry out or approve that may have a significant effect on the environment. (Pub. Resources Code, § 21100.) A "project" is defined as the "whole of an action which has a potential for resulting in either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment." (Pub. Resources Code, § 21065; CEQA Guidelines, §15378.[3])

Not all governmental activities, however, are "projects" within the meaning of CEQA. CEQA specifically excludes from the definition of a "project" continuing administrative activities such as personnel-related actions, the purchase of supplies, as well as general policy and procedure making, except as related to specific development projects or implementation activities. (CEQA Guidelines, §15378 (b).)

The courts in exploring the definition of "project" have focused on whether the state action is a "necessary step in a chain of events which would culminate in physical impact on the environment." (Fullerton Joint Union High School District v. State Board of Education (1982) 32 Cal.3d 779, 795.) For example, in Kaufman & Broad-South Bay v. Morgan Hill Unified School District (1992) 9 Cal.App.3d 464, the Court of Appeal concluded that the establishment of a Mello-Roos district for the purposes of raising revenue for future school construction was not a "project" within the meaning of CEQA because such action did not "commit the District to any definite action . . . dictate how funds will be spent, or in any way narrow the field of options and alternatives available to the District." (Id. at 476; also see Bozung v. Local Agency Formation Commission (1975) 13 Cal.3d 263.)

Certain start-up activities, although "projects" within the meaning of CEQA, may be exempt from additional CEQA review. (See CEQA Guidelines, §§15260–15285 and 15300–15329.) For example, a project involving only feasibility or planning studies for possible future actions which the agency had not approved, adopted or funded, does not require the preparation of an environmental impact report or negative declaration. (CEQA Guidelines, § 15262.)[4]

Additionally, the broad definition of project is tempered by the requirement that CEQA applies only to those activities which may have a "significant effect on the environment." (Id. at section 15061(b)(3).) Thus, even if a "project" does not fit into an exemption, it may nonetheless not be subject to further CEQA review, including the preparation of an environmental impact report, if it can be shown with certainty that there is no possibility that the activity in question will have a significant effect on the environment. "Significant effect" is defined under CEQA as a "substantial, or potentially substantial adverse change" in the environment. (CEQA Guidelines, § 15382.)

[3]All references to "CEQA Guidelines" refer to title 14 of the California Code of Regulations, section 15000 et seq.

[4]This section "does not apply to the adoption of a plan that will have a legally binding effect on later activities." (See CEQA Guidelines, § 15262.)

Here, the OSP, as proposed, will contain general principles, goals and policies with respect to watershed and open space planning for the watershed areas of the San Gabriel and lower Los Angeles Rivers. These general criteria are intended to assist the RMC and member cities in setting priorities and guiding the review of future proposals to acquire, to develop and to manage lands in the RMC's territory. Essentially, it is an interim policy document. (See OSP In Progress Draft, p. 1 ["The plan is intended to serve as a basis for more detailed planning . . ."].) The OSP does not target the specific expenditure of funds, identify specific parcels for acquisition, commit the agency to follow a definite course of action with respect to any particular aspect of the OSP, nor is it intended to have a legally binding effect on later activities. As such, the document constitutes "general policy and procedure making" and is, therefore, not a project under CEQA. (See CEQA Guidelines, § 15378(b)(2); also see Northwood Homes, Inc. v. Moraga (1989) 216 Cal.App.3d 1197 [held, guidelines implementing open space ordinance adopted by initiative is not a "project" but is a "continuing administrative activity such as general policy and procedure making which is expressly excluded from definition of project under CEQA."].) This is in contrast to a "general plan" which identifies specific land uses and has a legally binding effect on later activities. (See CEQA Guidelines, §§ 15262 [see Office of Planning and Research (OPR) "Discussion"]; 15378 (a)(1).) General plans, unlike the open space plan required of the RMC, are expressly defined as "project[s]" under CEQA. (Ibid.) [5]

Further, we conclude that the OSP, as proposed, is exempt under section 15262 of the CEQA Guidelines, which provides that a project involving only feasibility or planning studies for possible future action does not require the preparation of an environmental impact report or negative declaration. Finally, because the OSP is only a planning guide, it can reasonably be argued that it falls under the "common sense" exemption which applies "where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment." (CEQA Guidelines, § 15061 (b) (3).)

Our conclusion that the adoption of the OSP will not, by itself, have a significant effect on the environment is consistent with the large number of categorical exemptions in the CEQA Guidelines for projects that preserve natural resources, open space or parks. (See e.g., CEQA Guidelines, §§ 15307 [actions to protect natural resources], 15308 [actions protecting the environment], 15313 [acquisition of land for wildlife conservation purposes], 15316 [transfer of ownership in order to create a park], and 15325 [transfers of ownership to preserve open space].) Even if these sections are not specifically applicable to the OSP, the existence of these exemptions, which will likely apply to many of the future activities contemplated by the RMC, supports the conclusion that the mere adoption of an open space plan will not have a significant effect on the environment.

We caution that while the OSP, as proposed, is not subject to further CEQA review, activities related to implementation of the plan or future revisions of the OSP may require the preparation of an environmental impact report. Such activities include but are not limited to, adoption of a specific facilities construction plan, site improvement projects, rehabilitation of degraded areas, identification of specific projects to be considered and acted on by the RMC, and/or designation of specific parcels for acquisition. (See Pub. Resources Code, §32614 (g).) As set forth above, any activity which commits the RMC to any definite course of action and is

[5]Similarly, the OSP also meets the definition of a "non-project" under section 15378 (b)(5) of the CEQA Guidelines, which provides that "organizational or administrative activities of governments which are . . . not physical changes in the environment" are not "projects" for purposes of triggering CEQA review.

an essential step culminating in action which may affect the environment will require additional review under CEQA. (Kaufman & Broad, supra, 9 Cal.App.4th at 474-476.) The OSP, as proposed, however, is not such an action.

Procedurally, the RMC, as the lead agency[6] under CEQA, should it adopt the OSP, must make specific findings that the OSP is not a "project" within the meaning of CEQA and identify the legal basis for its determination (i.e., CEQA Guidelines, §§15061 (b)(3), 15378(b)(2) & (5). Should the RMC also conclude that the OSP is exempt, it must also adopt findings that the OSP is exempt under CEQA Guidelines, section 15262, and file a Notice of Exemption with the Office of Planning and Research.

THE IMPACT OF THE OSP ON THE RMC'S MEMBER CITIES

You have also asked us to evaluate the effect of the adoption of the OSP on the region, individual cities and affected landowners. Specifically, you have asked whether approval of the OSP will give the RMC regulatory or governing authority over its member cities or over any ordinance, general or specific plan enacted by any local jurisdiction within its territory, or whether the member cities, by approving the OSP, are surrendering any regulatory authority or power that they currently possess. In addressing this issue we must look to the legislation creating the RMC.

The San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy Act ("Act") (e.g., Pub. Resources Code, § 32660 et seq.), was introduced and enacted, in part, in response to the interest of the Gateway Cities Council of Governments (COG) (27 cities including Long Beach and Downey) and the San Gabriel Valley COG (another 29 cities). These groups supported the creation of a multi-jurisdictional agency authorized to acquire land, and conduct watershed management, flood control, and recreational projects within the lower Los Angeles River and San Gabriel River watersheds. (See bill analysis, AB 1355 (Stats. 1999, ch. 788), April 19, 1999, p. 3.)

The authors of the legislation envisioned that the RMC and member cities would be equal partners in the planning, development and management of the watershed areas. (Id.) The member cities, although in principle in favor of the creation of the RMC, wanted assurances that the new state agency would not be empowered with eminent domain authority and that the cities would retain control over their own land use regulations, ordinances, general and regional plans.
To that end, the Act places restrictions on the powers and rights of the RMC in deference to the authority of the member cities. For example, section 32620 of the Act, provides that "[n]othing in this division shall be interpreted to grant the [RMC] board any regulatory or governing authority over any ordinance or regulatory measure adopted by a city, county, or special district that pertains to land use, water rights or environmental quality." The general directive that local entities shall retain control over land use and water matters is reiterated in other provisions of the Act. In section 32613 (b), the RMC is expressly "subject to all laws, regulations, and general and specific plans of the legislative body of any city in which the conservancy proposes to take action." In section 32621, the RMC is prohibited from interfering or engaging in activities which conflict with the powers and duties of any local entity responsible for water management. Similarly, in exercising its right of first refusal for surplus public agency property located within

[6]The "lead agency" is the public agency which has the principal responsibility for carrying out or approving a project. (CEQA Guidelines, § 15367.)

its jurisdiction, the RMC must "conform to all relevant general and specific plans and zoning regulations of local agencies within the territory of the conservancy." (Pub. Resources Code, §32612(b).)

Further, neither the RMC nor the State Public Works Board is authorized to exercise the power of eminent domain pursuant to the Act. (Pub. Resources Code, §32612 (a); also see section 32613(b) ["(T)he conservancy may not levy a tax, exercise the power of eminent domain or regulate land use except on lands its owns, manages or controls"].)

Finally, the RMC is required to provide notification before it takes an action that might have an impact on a member city. For example, prior to engaging in activities that are not included in the OSP, the RMC must provide written notice to the legislative body of the affected local agency. (Pub. Resources Code, §32614(c).) Similarly, when the RMC proposes any action that may affect any water right or delivery system, it must provide written notice to every water association in the jurisdiction of the RMC. (Pub. Resources Code, §32621(b).)

In short, the Act contemplates that notwithstanding approval of the OSP by the member cities, local entities will still retain existing control over local land use and water management issues. In light of the above, we do not believe that the member cities can be compelled to amend their general plans to conform to the OSP, nor do we believe that member approval of the OSP will "trigger" RMC control over local land use and water management matters. An interpretation to the contrary would render virtually the entire Act null and void. Statutes are to be given a reasonable and common sense interpretation consistent with the apparent legislative purpose. (Dyna-Med v. Fair Employment & Housing Commission (1987) 43 Cal.3d 1379, 1392.) Here, of course, it was the intent of the Legislature that the member cities retain existing regulatory control over local land use and water issues. Therefore, we conclude that, notwithstanding approval of the OSP, the powers of the RMC are limited to those expressly set forth in the Act.[7]

Finally, we note that there is no explicit requirement in the legislation that the member cities amend their general or regional plans to conform to the OSP or that the member cities by approving the OSP, cede control over local land use issues. Certainly, if the Legislature had intended to require the member cities to amend their general plans it would have directly addressed that issue in the Act, particularly where such a requirement is inconsistent with the Act's principal directive that local entities retain authority over their own general and specific plans. (See Dyna-Med, supra, 43 Cal.3d at 1392.) In the absence of ambiguity in the statute and lack of extrinsic sources to the contrary, the "plain meaning" of the statute governs. (Ibid.)

CONCLUSION

In summary, because the OSP, as proposed, is a "general policy making" document, CEQA does not compel the preparation of an environment impact report. We note that subse-

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[7] The RMC has also asked that we address the effect of the adoption of the OSP on adjacent landowners within the RMC's jurisdiction. Because the OSP is only a long-range planning guide, it should have no legally significant impact on adjacent landowners. Further, the RMC does not have eminent domain authority so there is no threat of condemnation. (Pub. Resources Code, §§32612(a) and 32613(b).) Finally, we note that under the Act, the overall "objective" of the land acquisition program "shall be to assist in accomplishing land transactions that are mutually beneficial to the landowner and the conservancy . . ." (Pub. Resources Code, § 32612 (a).) Thus, to the extent there is any impact on the adjacent landowner it is likely to be a favorable one.

quent activities related to the implementation or amendment of the OSP may require further CEQA review including the preparation of a negative declaration or an environmental impact report. Finally, it is our view that approval of the OSP by a majority of the cities representing a majority of the population within the RMC's jurisdiction will not require the member cities to amend their general plans to conform to the OSP or trigger state control of local regulatory and governing authority. It was the intent of the Legislature in creating the RMC, that the cities would retain their existing control over local land use and water management concerns. Please let us know if you have any questions or comments about this letter.

Sincerely,

TERRY T. FUJIMOTO
Deputy Attorney General

For BILL LOCKYER
Attorney General

cc: Magret Kim
Richard M. Frank
J. Matthew Rodriquez
John A. Saurenman

CITY OF __________________
RESOLUTION NO. _________
RESOLUTION APPROVING THE SAN GABRIEL AND LOWER

LOS ANGELES PARKWAY AND OPEN SPACE PLAN

WHEREAS, the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy Act (the “ACT”), Public Resources Code, Division 22.8, commencing at § 32600 (Stats. 1998, Ch. 788 (AB 1355)), created the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (the “RMC”) for the purpose of acquiring and managing public lands within the Lower Los Angeles River and San Gabriel River watersheds, and to provide open-space, low impact recreational and educational uses, water conservation, watershed improvement, wildlife and habitat restoration and protection, and water quality within the territory;

WHEREAS, the territory of the RMC extends across the city boundaries of over sixty cities, as set forth in section 32603 (c)(2)(A), as well as the unincorporated areas of Los Angeles County and Orange County adjacent to the San Gabriel River and its tributaries, the lower Los Angeles River and its tributaries, the San Gabriel Mountains, the Foothill Mountains, the Puente Hills, and the San Jose Hills area including but not limited to, East Los Angeles;

WHEREAS, the RMC was created, in part, in response to the interest of the Gateway Cities Council of Governments (COG) and the San Gabriel Valley COG, and other local public entities, in creating a multi-jurisdictional agency that would be authorized to acquire land, and conduct watershed management, flood control, and recreational projects within the Lower Los Angeles River and San Gabriel River watersheds;

WHEREAS, the RMC board is composed of voting members who represent the County of Los Angeles, the Gateway Cities Council of Governments and the San Gabriel Valley Council of Governments, Orange County Division of the League of California Cities, San Gabriel Valley Water Association, Central Basin Water Association, as well as state agencies including, the Resources Agency, the Environmental Protection Agency and Department of Finance;

WHEREAS, it was intent of the State Legislature in creating the RMC, that the RMC and member cities would be equal partners in the planning, development and management of mountain and watershed areas within the RMC’s territory, and to that end, the Legislature provides in the ACT that member cities shall retain control over their own land use regulations, ordinances, general and regional plans;

WHEREAS, under the ACT, the RMC shall be subject to all laws, regulations, and general and specific plans of the legislative body of any city in which the RMC proposes to take action;

WHEREAS, nothing in the ACT shall be interpreted to grant the RMC any regulatory or governing authority over any ordinance or regulatory measure adopted by a city, county or special district that pertains to land use, water rights, or environmental quality;

WHEREAS, section 32604 (d) of the Public Resources Code directs the RMC to prepare a San Gabriel and Lower Los Angeles Parkway and Open Space Plan (the “OSP”) to be approved by a majority of the cities representing a majority of the population, the Board of Supervisors of Los Angeles County, and by the Central Basis Water Association and San Gabriel Water Watermaster;

WHEREAS, the RMC, in consultation with representatives of the Gateway COG, San Gabriel COG, the County of Los Angeles, Orange County, the San Gabriel Water Association and Central Basis Water Association, has prepared a draft OSP;

WHEREAS, the RMC has conducted public meetings for public review and for receipt of public comments on the draft OSP;

WHEREAS, on or about ______ __, 2001, the RMC Board, at the conclusion of its public meeting and review of all the documentary and oral evidence related to the OSP, adopted the draft OSP and made the following findings; (1) that the OSP complies with all applicable requirements of law; (2) that the OSP is consistent with the purposes of the RMC as set forth in section 32602 of the Public Resources Code; (3) that the OSP contains all the required elements set forth in section 32604 (d) (1-4); (4) that the OSP is not a "project" within the meaning of the California Environmental Quality Act ("CEQA") (e.g., CEQA Guidelines, §15378(b)(2)); (5) that, alternatively, the OSP, as an activity involving only feasibility or planning studies for future actions, is exempt from the environmental impact report requirements of CEQA review; and (6) that the OSP is a long range planning guide or interim policy document and does not commit the RMC to follow a definite course of action with respect to any particular aspect of the OSP, nor is it intended to have a legally binding effect on later activities.

WHEREAS, following adoption of the OSP by the RMC Board, the OSP was referred to the member cities for their review and approval pursuant to section 32604(d) of the Public Resources Code;

WHEREAS, the City has conducted public meetings for public review and for receipt of public comments relating to the OSP;

WHEREAS, City Staff has reviewed the OSP, public comments as well as documentary evidence relating to the OSP;

NOW, THEREFORE, BE IT RESOLVED, THAT THE CITY OF ______ HEREBY:

1. FINDS that the OSP complies with the requirements of section 32604(d) of the Public Resources Code and includes all the mandatory elements set forth in section 32604(d)(1–4) of the Public Resources Code;

2. FINDS that the OSP is not a "project" within the meaning of the California Environmental Quality Act ("CEQA") (e.g., CEQA Guidelines, §15378(b)(2));

3. FINDS that approval of the OSP by the City will not require the City to modify, amend, or revise in any way its specific or general plan, ordinances or regulations, or effect in any way the City's regulatory or governing authority over land use or water rights and management issues within its jurisdiction;

4. FINDS that approval by the City of the OSP does not constitute agreement with the policies, principles and statements set forth in the OSP,

5. FINDS that approval by the City of the OSP does not constitute a waiver of the City's regulatory or governing authority over land use, water rights or environments issues within its jurisdiction or territory;

6. FINDS that approval by the City of the OSP does not constitute adoption or incorporation of the OSP as part of the general plan, specific plan or any ordinance, law or regulation of this City;

7. FINDS that the OSP is an interim policy document or long range planning guide, that it does not commit the RMC or the City to follow a definite course of action with respect to any aspect of the OSP, and that it is not intended to have a legally binding effect on later activities of the RMC or the City;

8. FINDS that the OSP is, in principle, consistent with the general and specific plan and with ordinances, laws and regulations that pertain to land use, water rights, or environmental quality of this City;

9. APPROVES the San Gabriel and Lower Los Angeles Parkway and Open Space Plan (OSP), in accordance with section 32604 (d) of the Public Resources Code.

--End of Resolution--

I HEREBY CERTIFY that the foregoing resolution was adopted at a regular meeting of the City Council for the City of _________, held on the ___ day of _____, 2001.

DATED:

____
Mayor of the City of _______

ATTEST:_____________
City Attorney

APPENDIX F
Project Evaluation Criteria

State of California
The Resources Agency
SAN GABRIEL & LOWER LOS ANGELES
RIVERS AND MOUNTAINS CONSERVANCY

PROJECT
EVALUATION CRITERIA

April 6, 2001

SAN GABRIEL & LOWER LOS ANGELES RIVERS AND MOUNTAINS CONSERVANCY PROJECT EVALUATION CRITERIA

Select only one criterion that best fits the attributes of the site for each value. The rating number assigned to the criterion is then multiplied by the weight assigned to the value. The scores for each value can be compared and evaluated in total, by grouping, or individually.

OPEN SPACE PLAN VALUE	WEIGHT
CRITERION	RATING
• The site is specifically referred to as a project in the Open Space Plan.	4
• The site meets the criteria for inclusion in the Open Space Plan.	2
• The site does not meet the criteria as outlined in the Open Space Plan.	0

URBAN RESOURCE VALUE	WEIGHT
CRITERION	RATING
• The site has natural geologic contours and/or vegetation and is surrounded by urban development.	4
• The site contributes to an existing or proposed park, natural area, corridor or greenway in an urbanized area.	4
• The site is located in an under-served or park-poor community.	3
• The site provides linkage to open space in an adjacent urban area.	2
• The site is located in an industrialized area.	1
• The site is not located in an urban setting.	0

WATERSHED RESOURCE VALUE	WEIGHT
CRITERION	RATING
• The site is located within a county-designated ecologically sensitive watershed or significant ecological area.	4
• The site contains natural riparian habitat.	4
• The site would enhance flood control measures if developed for open space use.	4
• The site would provide quality storm water runoff.	4
• The site contributes to the persistence of ecosystem processes which may pose a hazard to life and property if the site were developed.	3
• The site contains groundwater recharge capabilities.	3
• The site supports substantial upland vegetative cover in a watercourse.	3
• The site has the potential for hazard-reduction/mitigation credits if preserved verses developed.	3

• The site has opportunities for non-point source water pollution reduction.	2
• The site provides access to an existing or planned watershed resource.	1
• The site has no watershed resource value.	0

TRAIL RESOURCE VALUE	WEIGHT
CRITERION	RATING
• The site is identified as the path of a major existing or planned trail.	4
• The site would provide connection within and/or between communities and major existing or planned trails.	4
• The site would provide urban walkways.	3
• The site would provide amenities that would enhance public use of a trail.	3
• The site would accommodate a new trail into an inaccessible area.	2
• The site would provide a scenic buffer for an existing or planned trail.	1
• The site would not support a trail or walkway.	0

RECREATIONAL RESOURCE VALUE	WEIGHT
CRITERION	RATING
• The site contains a suitable area for a recreational facility – educational center, picnic area, useable open space, campground, or interpretive center.	4
• The site could provide an access point, parking, &/or interpretive display for an adjacent protected area or overlook.	3
• The site could support recreational development ancillary to the primary value of an adjacent protected area.	2
• The site could provide additional access to an adjacent protected area.	1
• The site can not support recreational use due to configuration or potential natural or cultural resource degradation.	0

WILDLIFE RESOURCE VALUE	WEIGHT
CRITERION	RATING
• The site is used by state or federally-listed fauna species.	4
• The site contributes to the connection of existing protected core areas by serving as a habitat linkage or movement corridor for wildlife.	4
• The site contains fresh water habitat and/or a perennial natural water source.	4
• The site is used by fauna that are candidate(s) for state or federal listing.	3
• The site increases the effective size of a protected area.	3
• The site largely contains undisturbed habitat with moderate to high species diversity.	3

• The habitat is degraded but conditions are suitable for regeneration or restoration.	2
• The habitat is unsuitable for candidate or listed species but provides a buffer between protected sites & incompatible uses.	1
• The site is degraded & habitat restoration is not economically justifiable.	0

<u>FLORISTIC RESOURCE VALUE WEIGHT</u>

CRITERION	RATING
• The site contains a state or federally-listed flora species or habitat.	4
• The site largely contains undisturbed communities with moderate to high species diversity.	4
• The site contains a flora species that is candidate for state or federally listing.	3
• The habitat is degraded but conditions are suitable for regeneration or restoration of native species & communities.	2
• The habitat is unsuitable for sensitive species but provides a buffer between protected lands & incompatible uses.	1
• The site is degraded & habitat restoration is not economically justifiable.	0

<u>ARCHAEOLOGICAL OR HISTORIC RESOURCE VALUE WEIGHT</u>

CRITERION	RATING
• The site contains a registered archaeological or historical resource of national or statewide significance.	4
• The site contains a registered archaeological or historical resource of regional significance.	3
• The site contains a registered archaeological or historical resource of local significance.	2
• The site contains an archaeological or historic resource that is damaged.	1
• It is unknown if the site contains archaeological or historic resources.	0

<u>ACCESS VALUE WEIGHT</u>

CRITERION	RATING
• The site would be easily accessible by the public with full right-of-way.	4
• The site is located in a residential area with limited signage opportunities.	3
• The site is within walking distance from public transportation.	3
• The site has features making it easily accessible to people with limited mobility or other disabilities.	3
• The site would be accessible via an adjacent protected area.	2
• The site has adequate space for on site parking or available street parking, but is located in an area where neighborhood conflicts may arise.	1

- The site is constrained from public access by lack of right-of-way. 1
- A public right-of-way for the site is currently unobtainable. 0

SCENIC RESOURCE VALUE WEIGHT

CRITERION RATING

- The site is part of an area of exceptional scenic value and/or has been so identified in a government agency plan. 4
- The site contains a significant overlook of the surrounding area. 3
- The site contains unique scenic natural resources such as waterfalls, wildflower displays, geologic formations, vistas of scenic grandeur. 3
- The site contains viewshed of an open space area, river or public use area. 2
- The site contains scenic resources that are representative of the area. 1
- The site is obscured from view of the general public and does not have overlook value. 0

PARTNER RESOURCE VALUE WEIGHT

- The site is of significance to one or more partner government agencies and/or non-government organization's that have funds available for the acquisition. 4
- The site is of significance to a partner agency that would undertake ownership and/or management responsibilities. 3
- Acquisition of the site would assist a government agency to fulfill its master land protection or recreation plan but matching funds are not available. 2
- The site is of significance to a local citizen group but does not fulfill a governing agency land protection or recreation plan. 1
- The site is of no current or known significance to a partner. 0

ECONOMIC VALUE WEIGHT

CRITERION RATING

- Funding has been specifically allocated by a government entity. 4
- Development threat of the site is imminent that would preclude future park use and the site is available for sale. 4
- Site holds potential to clean up an identified brownfield 4
- The site is available under bargain or opportunity sale conditions. 3
- The owner of the site is willing to sell at appraised value to the government. 3
- The site is subject to substantial, but less than imminent, threat of development, with unmitigable impacts. 2
- The owner of the site is willing to sell but at an inflated value. 1
- The owner of the site is currently an unwilling seller. 0

CONCEPTUAL AREA PROTECTION PLAN

A Program Area can span across several geographic regions, but projects within an area share a similar goal. Program Areas allow the Conservancy to evaluate properties and/or projects in relation to existing protected areas and programs, comparing both with the projected biological and recreational needs of the area. Borders of these programs bleed into each other and may overlap in some areas. Connectivity is necessary when looking at the entire region that is included in the Conservancy's mission.

A Program Area Structure serves as a planning tool for the region to protect large blocks of habitat and provide for appropriate recreational needs. The criteria used for evaluation is a set format, but will eventually be applied with different weights depending on the projected biological and recreational needs of each Program Area. A Program Area Structure is a long-term planning instrument with properties grouped in three tiers according to funding priority.

TABLE 1
SAN GABRIEL & LOWER LOS ANGELES
RIVERS AND MOUNTAINS CONSERVANCY
LISTING OF PROGRAM AREAS

1. Greenways along the San Gabriel and Los Angeles Rivers
2. Conservation of Lands in the Foothills of the San Gabriel Mountains
3. Conservation of Lands in the San Jose, Puente, and Chino Hills
4. Connected Urban Trails System
5. Parks for "park poor" Urban Areas
6. Community Programs (i.e. Education, Community Gardens, etc.)
7. Renovation of Existing Parks

SANTA MONICA MOUNTAINS CONSERVANCY
PROJECT EVALUATION CRITERIA

Wildlife Resource Value

	CRITERION	RATING
WR1	The site lies wholly within a large block of undisturbed core habitat.	4
WR2	The site is used by state or federally-listed animal species.	4
WR3	The site directly contributes to the connection of two core habitat areas by serving as a habitat linkage or movement corridor for wildlife.	4
WR4	The site contains important fresh water habitat and/or a perennial natural water source.	4
WR5	The site directly contributes to the connection of two substantially-sized (but not core) habitat areas.	3
WR6	The site is used by an animal that is a candidate for state or federal listing	3
WR7	The site directly abuts and increases the effective size of a protected habitat area.	3
WR8	The site contains largely undisturbed habitat with a substantial section of riparian habitat.	3
WR9	The site contains largely undisturbed habitat but without a substantial section of riparian habitat.	2
WR10	The site is known to be used by state-designated sensitive animal species.	2
WR11	The site supplies habitat for only the most human-tolerant native species.	1
WR12	The site is severely degraded and habitat restoration is not feasible or economically justifiable.	0

Floristic Resource Value

	CRITERION	RATING
FR1	The site contains a state or federally-listed plant species.	4
FR2	The site contains a high percent (>25%) cover of full canopy forest and/or oak woodland.	4
FR3	The site contains 10-25% cover of full canopy forest and/or oak woodland.	3
FR4	The site contains a plant species that is a candidate for state or federally listing.	3
FR5	The site largely contains largely undisturbed communities with moderate to high species diversity.	3
FR6	The site contains a plant community that is rare or unusual in the region.	3
FR7	The site contains either a state or cnps-designated sensitive plant species.	2
FR8	The site contains largely undisturbed plant communities with low species diversity.	2
FR9	The habitat is partially degraded but conditions are suitable for natural regeneration or restoration.	1
FR10	The site provides virtually no habitat for native species.	0

Trail Resource Value

	CRITERION	RATING
TR1	The site contains a significant, irreplaceable link in a major existing or planned trail. (i.e., "irreplaceable" means topography or other considerations would not permit realignment onto another parcel).	4
TR2	The site contains a portion of a less-than-major existing or planned trail.	3
TR3	The site contains a trailhead location with adequate parking for a major existing or planned trail.	3
TR4	The site provides critical viewshed within a major trail corridor.	3
TR5	The site could accommodate a new trail or provide a connection from a populated area or an accessible trailhead to an existing trail.	2
TR6	The site contains easy, level trail opportunities through scenic and natural areas that are accessible to trail users of many ages and physical conditions.	2
TR7	The site contains a trailhead location with adequate parking only for a less-than-major existing or planned trail.	2
TR8	The site does not provide critical viewshed within a major trail corridor, but does offer substantial scenic buffer for an existing or planned trail.	2
TR9	The site provides urban walkways.	1
TR10	The site would not support a trail or walkway.	0

Scenic Resource Value

	CRITERION	RATING
SR1	The site is part of an area of exceptional scenic value or has been so identified in an official planning document (e.g., a county area plan, NPS plan, scenic highway element).	4
SR2	The site contains critical viewshed of a major public park/public use area or from a designated primary scenic roadway.	4
SR3	The site contains unique scenic elements; e.g. waterfalls; spectacular wildflower displays; geologic formations; vistas of scenic grandeur.	3
SR4	The site contains important, but less than critical, viewshed of a major park/public use area.	3
SR5	The site contains important viewshed but not to a major public use area or park.	2
SR6	The site provides a significant (accessible) viewpoint or overlook of surrounding areas.	2
SR7	The site contains natural terrain with just average scenic qualities.	1
SR8	The site contains no natural terrain or little or no scenic value.	0

Other Recreational Resource Value

	CRITERION	RATING
ORR1	The site contains a suitable area for a planned major recreational facility—campground, picnic area, or interpretive center; with road access.	4
ORR2	The site provides area just for a smaller-scale recreational facility.	3

ORR3	The site contains moderate potential for development of parkland access or other recreational facilities.	2
ORR4	The site provides buffer for any non-trail related recreational facility.	1
ORR5	The site provides additional parking potential for an existing or potential recreation facility	1
ORR6	The site cannot support any recreational use because of physical constraints or potential natural or cultural resource degradation.	0

Archaeological or Historic Resource Value

	CRITERION	RATING
AHR1	The site contains a registered archaeological or historic resource of national or statewide significance.	4
AHR2	The site contains a registered federal or state historic resource.	3
AHR3	The site contains a registered archaeological resource of regional significance.	3
AHR4	The site contains a registered archaeological or historic resource of local importance.	2
AHR5	The site is directly adjacent to a known historic or archaeologically significant site, and may be reasonably expected to have significant resources but is presently not surveyed.	2
AHR6	The site is a local community landmark.	1
AHR7	The site contains an archaeological or historic resource of limited importance.	1
AHR8	The site contains no known archaeological or historic resources, with minimal potential for same.	0

Urban Resource Value

	CRITERION	RATING
UR1	The site provides a significant contribution to an existing or proposed natural corridor or greenway.	4
UR2	The site contains substantial-sized or representative sample of a native plant community surrounded by dense urban development and/or disadvantaged populations.	4
UR3	The site provides a moderate contribution to an existing or proposed natural corridor or greenway.	3
UR4	The site is located in an extremely park-poor community.	3
UR5	The site provides a minor component of an existing or proposed natural corridor or greenway.	2
UR6	The site contains a less-than-substantial-sized or representative sample of a native plant community surrounded by dense urban development and/or disadvantaged populations.	2
UR7	The site contains substantial potential for restoration of natural vegetation.	2
UR8	The site contains limited potential for restoration of natural vegetation.	1
UR9	The site has opportunities for active recreation.	1
UR10	The site is not proximate to dense urban development.	0
UR11	The site has expected environmental contamination problems.	-1

Watershed Resource Value

	CRITERION	RATING
WSR1	Over two-thirds of the site is located within a county-designated ecologically sensitive watershed or significant ecological area.	4
WSR2	The majority of the site is part of a watershed draining directly into an ecologically sensitive part of a state or federal park.	4
WSR3	The site supports substantial upland vegetative cover in a predominately natural watershed.	3
WSR4	At least one fourth of the site is located within a designated ecologically-sensitive watershed or significant ecological area.	3
WSR5	The site contains a substantial area (greater than 0.5 acre) of riparian or wetland habitat that integrates with a block of upland habitat.	3
WSR6	The site provides a location for a substantial-sized (>0.2 acre) or environmentally-significant riparian or wetland restoration project.	2
WSR7	The site contains good riparian or wetland habitat, >0.2 acre, but which is poorly integrated with upland habitat.	2
WSR8	The site contains between 0.05 to 0.19 acres of good riparian or wetland habitat but which is poorly integrated with upland habitat.	1
WSR9	The site provides a location for a less than substantial-sized (<0.2 acres) riparian or wetland restoration project.	1
WSR10	The site has little or no riparian habitat, watershed protection, or restoration value.	0

Access Value

	CRITERION	RATING
A1	The site is easily accessible from urban communities and provides adequate parking.	4
A2	The site is within walking distance from public transportation.	4
A3	The site has features making it easily accessible to people with limited mobility or other disabilities.	4
A4	The site has good potential for improving or developing substantial ADA accessibility.	3
A5	The site has adequate space for onsite parking or available street parking that will not conflict with neighborhood needs or sentiment.	2
A6	The site has adequate space for on site parking or available street parking, but is located in an area where neighborhood conflicts may arise.	1
A7	The site has good public access, but with limited ada potential.	1
A8	Access is not feasible except through additional acquisitions or easements.	0

Partnership Value

	CRITERION	RATING
P1	The site is of great significance to one or more partner government agencies	4

	and/or non-profit organizations with substantial matching funding.	
P2	Acquisition of the site would fulfill a large component of a government agency master land protection or recreation plan.	3
P3	A partner agency would undertake ownership or management responsibilities.	2
P4	The site is of significance to a local citizen group but does not fulfill a publically-adopted land protection or recreation plan.	1
P5	The site is of no current or known significance to a partner.	0
	Economic Opportunity Value	
	CRITERION	RATING
EO1	The site is available under extraordinary bargain or opportunity sale conditions.	4
EO2	The site is subject to imminent threat of development, with unmitigable impacts, that would preclude future park use.	4
EO3	Funding has been specifically allocated in the State Budget as a line item or legislative intent.	4
EO4	The site is subject to substantial, but less than imminent, threat of development, with unmitigable impacts.	3
EO5	The site is available under less than extraordinary bargain or opportunity sale conditions.	2
EO6	Current appraisal has been done or is under review by Department of General Services.	1
EO7	The owner of the site is a known willing seller.	1
EO8	The owner of the site is currently an unwilling seller.	0

SANTA MONICA MOUNTAINS CONSERVANCY

PARK IMPROVEMENT AND DEVELOPMENT PROJECTS EVALUATION CRITERIA

Adopted May 14, 2001

The Park Improvement and Development Projects Evaluation Criteria have been developed for the assessment of projects nominated for the Conservancy's Workprogram 2000 to provide park improvement, trails, historical restoration, habitat restoration, interpretive programs, and planning for park enhancement projects. Land Acquisition Evaluation Criteria were previously adopted by the Santa Monica Mountains Conservancy for evaluation of properties nominated for purchase, with the Workprogram for Land Acquisition adopted by the Conservancy on September 28, 2000. Both evaluation processes provide guidelines for the Conservancy in its review of current projects and potential new projects. The Conservancy explicitly reserves the right to amend its Workprogram at any time to reflect the overall objective to protect, maintain, and enhance regional habitat and linkages, trail linkages; urban, river, and open space park projects.

GOAL TO ENCOURAGE REGIONALLY SIGNIFICANT PARK AND TRAIL PROJECTS

Through the Improvement Projects Evaluation Criteria, the Conservancy seeks to encourage regionally significant park, trail, and restoration projects. Projects are scored accordingly, and typically a project with the highest numeric scores in the largest number of Values categories, will rank above a project scoring high in only one or two categories. However, in project rankings, the Conservancy Board can apply a multiplier weight to the numeric score of a particular value or set of values, such as Urban Park Value, to provide geographic balance. Or, after all scores are totaled, the board may review a subset of projects (*e.g.* all urban projects or all river projects) and assign a subset priority ranking within those categories. A deciding weight for all projects will also be the degree to which Conservancy funds stimulate outside participation in funding a project.

Conservancy and MRCA Projects

The Santa Monica Mountains Conservancy and Mountains Recreation and Conservation Authority have a primary responsibility for funding improvements on SMMC/MRCA owned or managed parklands in fulfillment of the Conservancy's mission. Therefore, the first priorities for funding are *Santa Monica Mountains Conservancy/Mountains Recreation and Conservation Authority projects that are required by or which manifestly enhance the Santa Monica Mountains Conservancy=s statutory mission to provide resource protection, safety, access, visitor services, and educational interpretation.* These include the following categories:

SMMC/MRCA Lands Resource Protection Projects: Projects which facilitate protection of wildlife, habitat, and historical/archaeological resources on agency-managed parklands, including habitat restoration projects in urban or rural parks.

SMMC/MRCA Lands Vegetation Management and Fire Safety: Projects which facilitate fire safety and any required fuel modification zones on Conservancy and/or MRCA owned or managed parklands.

SMMC/MRCA Visitor-Serving Projects: Projects which provide for enhanced visitation, urban accessibility, and safety to SMMC/MRCA owned or managed parks (including signage, restrooms, parking, trail building or repairs, etc.). This includes new projects to implement statutory requirements to provide better accessibility under the Americans with Disabilities Act (ADA).

SMMC/MRCA Education and Interpretation Projects: Projects which are required to achieve or expand the outreach mission of the agency and which provide interpretive programs and materials to substantially enhance knowledge, appreciation, and enjoyment of the natural environment, open space, parklands, and rivers.

PARK IMPROVEMENT AND DEVELOPMENT PROJECTS CRITERIA FOR NOMINATED PROJECTS:

PUBLIC RECREATION VALUE (other than trails)

PR1: The project implements a major component of an existing plan (such as the Rim of the Valley Trail Corridor Master Plan, county or city plans) related to a major recreational public use facility (*e.g.,* nature park, campground, picnic area, visitor center, or educational interpretive center). 4

PR2: The project provides improvements to a park site that currently serves, or is expected to serve, a visitor base in a regional or greater geographic area. 4

PR3: The project adds visitor-serving amenities and public safety improvements to public parkland (*e.g.,* signage, restroooms, lighting, etc.). 3

PR 4: The project provides a high quality access point or parking area for adjacent open space or parkland. 2

ACCESSIBILITY VALUE

A1: The project improvements exceed legal standards for accessibility. 4

ENVIRONMENTAL EDUCATION/INTERPRETATION VALUE

EE1: The project provides educational/interpretive displays that will significantly enhance appreciation and enjoyment of a resource. 4

EE2: The project will provide park information materials and educational/ interpretive information, available to a large number of visitors of all ages. 3

EE3: The project provides informational materials but to more limited audience. 2

NATURAL RESOURCES ENHANCEMENT VALUE

NR1: The project substantially restores riparian or wetland habitat (>0.2 acres). 4

NR2: The project improves or supports regeneration of important native vegetative cover on slopes near a stream or river, which if substantially disturbed may contribute to flood, erosion, creek sedimentation, or reduced groundwater recharge. 4

NR3: The project significantly enhances the potential for wildlife movement in an identified movement corridor chokepoint. 4

NR4: The project substantially restores a site by removal of exotic species and reestablishment of native species. 3

NR5: The project provides substantial tree planting of appropriate native species. 2

NR6: The site provides a small scale (0.05 to 0.19 acres) riparian or wetland restoration project. 2

TRAIL PROJECT RESOURCE VALUE

TP1: The project builds a significant link in a major regional trail. 4

TP2: The project repairs a critical link on an existing major regional trail. 4

TP3: The project builds an important trailhead with parking for a major regional trail. 3

TP4: The project builds a new trail or repairs a trail which provides a connection from a populated area or trailhead to an existing trail. 3

TP5: The project builds or improves trail accessibility for trail users of a wide range of ability levels and physical conditions. 3

TP6: The project provides or enhances trail conditions for multi-use by equestrians, mountain bicyclists, and hikers. 2

TP7: The project provides or enhances a riverfront walking and bikeway trail. 2

SCENIC AND AESTHETIC VALUE

SA1: The project provides aesthetic features (*e.g.*, outstanding design, art elements) to a park project that greatly enhance the park and visitor experience. 4

SA2: The project provides park or trail improvements located in an especially scenic area. 2

SA3: The project provides a vista point or scenic overlook over a significant viewshed. 2

HISTORIC /CULTURAL RESTORATION VALUE

HC1: The project restores or enhances a federal or state-designated or eligible historic site, such as a National Register of Historic Places. 4

HC2: The restoration project provides a significant and unique aspect to public parkland (historical interest, cultural appreciation, educational interest). 4

HC3: The project restores or enhances a designated local community historic resource. 3

HC4: The historic/cultural restoration project is an integrated component of a larger park improvement project. 2

URBAN PARK VALUE

UP1: The project will improve or significantly enhance open space parkland in a densely urban and/or park-poor community. 5

UP2: The project substantially improves a park site by eliminating or significantly remediating environmental contamination, such as that from urban runoff or onsite conditions 4

UP3: The project enhances or restores a substantial -sized (>2.0 acres) sample of a native ecosystem/plant community surrounded by an otherwise natural-resource-deficient urban area. 4

UP4: The project restores natural vegetation in smaller sized (<1.9 acres) park location in an otherwise natural-resource- deficient urban area. 3

SUSTAINABILITY VALUE

S1: Project provides substantial energy conservation measures and/or innovative power generation. 3

S2: Project provides state of the art design for wastewater and/or other innovative and substantial water conservation techniques 3

S3: Project provides innovative use of recycled materials in construction. 2

S4: The project reduces runoff and increases percolation on site with use of permeable surfaces. 2

PARTNERSHIP/ECONOMIC OPPORTUNITY VALUE

PEO1: The project is significant to one or more partner government agencies and/or non-government organizations with funds available. 4

PEO2: Funding has been specifically allocated in the State Budget as a line item or legislative intent. 4

PEO3: Completion of the project would assist a government agency in fulfilling its master land protection or recreation plan. 3

PEO4: The project provides a plan or feasibility study that enhances cooperative land protection and recreation important to two or more governmental agencies or non-governmental organizations. 3

PEO5: A partner agency would provide maintenance of the improvements. 3

MATCHING FUNDS WEIGHTING

Scores for improvement projects that are matched with other funding sources can be given an extra weighted value:

Funding match on a one to one basis: **Multiply total score X 2**

Funding match on a two to one basis: **Multiply total score X 3**

APPENDIX G
Threatened and Endangered Species

Threatened and Endangered Species and Species of Concern
Los Angeles County—Plants

Common Name	Scientific Name	Federal Status	State Status
Alkali Mariposa Lily	*Calochortus striatus*	Species of concern	None
Aphanisma	*Aphanisma blitoides*	Species of concern	None
Ballona Cinquefoil	*Potentilla multijuga*	Species of concern	None
Beach Spectaclepod	*Dithyrea maritime*	Species of concern	Threatened
Big Bear Valley Woollypod	*Astragalus leucolobus*	Species of concern	None
Blair's Stephanomeria	*Stephanomeria blairii*	Species of concern	None
Blochman's Dudleya	*Dudleya blochmaniae ssp blochmaniae*	Species of concern	None
Braunton's Milk-Vetch	*Astragalus brauntonii*	Endangered	None
Bright Green Dudleya	*Dudleya virens*	Species of concern	None
California Dissanthelium	*Dissanthelium californicum*	Species of concern	None
California Orcutt Grass	*Orcuttia californica*	Endangered	Endangered
Catalina Island Mountain-Mahogany	*Cercocarpus traskiae*	Endangered	Endangered
Coulter's Goldfields	*Lasthenia glabrata ssp coulteri*	Species of concern	None
Davidson's Bush Mallow	*Malacothamnus davidsonii*	Species of concern	None
Desert Cymopterus	*Cymopterus deserticola*	Species of concern	None
Guadalupe Island Lupine	*Lupinus guadalupensis*	Species of concern	None
Hall's Monardella	*Monardella macrantha ssp hallii*	None	None
Intermediate Mariposa Lily	*Calochortus weedii var intermedius*	Species of concern	None
Island Rush-Rose	*Helianthemum greenei*	Threatened	None
Island Snapdragon	*Galvezia speciosa*	Species of concern	None
Island Tree Poppy	*Dendromecon harfordii var rhamnoides*	Species of concern	None
Johnston's Buckwheat	*Eriogonum microthecum var johnstonii*	Species of concern	None
Lemon Lily	*Lilium parryi*	Species of concern	None
Los Angeles Sunflower	*Helianthus nuttallii ssp parishii*	Species of concern	None
Lyon's Pentachaeta	*Pentachaeta lyonii*	Endangered	Endangered
Many-Flowered Phacelia	*Phacelia floribunda*	Species of concern	None
Many-Stemmed Dudleya	*Dudleya multicaulis*	Species of concern	None
Marcescent Dudleya	*Dudleya cymosa ssp marcescens*	Threatened	Rare
Mason's Neststraw	*Stylocline masonii*	Species of concern	None
Mexican Flannelbush	*Fremontodendron mexicanum*	Endangered	Rare
Mt. Gleason Indian Paintbrush	*Castilleja gleasonii*	Species of concern	Rare
Nevin's Barberry	*Berberis nevinii*	Endangered	Endangered
Nevin's Woolly Sunflower	*Eriophyllum nevinii*	Species of concern	None
Palmer's Grapplinghook	*Harpagonella palmeri*	Species of concern	None
Palmer's Mariposa Lily	*Calochortus palmeri var palmeri*	Species of concern	None
Parish's Brittlescale	*Atriplex parishii*	Species of concern	None
Parish's Gooseberry	*Ribes divaricatum var parishii*	Species of concern	None
Parry's Spineflower	*Chorizanthe parryi var parryi*	Species of concern	None
Peirson's Morning-Glory	*Calystegia peirsonii*	Species of concern	None
Plummer's Mariposa Lily	*Calochortus plummerae*	Species of concern	None
Rock Creek Broomrape	*Orobanche valida ssp valida*	Species of concern	None

Threatened and Endangered Species and Species of Concern
Los Angeles County—Plants

Common Name	Scientific Name	Federal Status	State Status
Salt Marsh Bird's-Beak	*Cordylanthus maritimus ssp maritimus*	Endangered	Endangered
San Antonio Milk-Vetch	*Astragalus lentiginosus var antonius*	Species of concern	None
San Clemente Island Bed-straw	*Galium catalinense ssp acrispum*	Species of concern	Endangered
San Clemente Island Bird's-Foot Trefoil	*Lotus argophyllus var adsurgens*	Species of concern	Endangered
San Clemente Island Brodiaea	*Brodiaea kinkiensis*	Species of concern	None
San Clemente Island Buck-wheat	*Eriogonum giganteum var formosum*	Species of concern	None
San Clemente Island Bush Mallow	*Malacothamnus clementinus*	Endangered	Endangered
San Clemente Island Evening-Primrose	*Camissonia guadalupensis ssp clementina*	Species of concern	None
San Clemente Island Hazardia	*Hazardia cana*	Species of concern	None
San Clemente Island Indian Paintbrush	*Castilleja grisea*	Endangered	Endangered
San Clemente Island Larkspur	*Delphinium variegatum ssp kinkiense*	Endangered	Endangered
San Clemente Island Lotus	*Lotus dendroideus var traskiae*	Endangered	Endangered
San Clemente Island Milk-Vetch	*Astragalus nevinii*	Species of concern	None
San Clemente Island Triteleia	*Triteleia clementina*	Species of concern	None
San Clemente Island Wood-land Star	*Lithophragma maximum*	Endangered	Endangered
San Fernando Valley Spine-flower	*Chorizanthe parryi var Fernandina*	Species of concern	None
San Gabriel Bedstraw	*Galium grande*	Species of concern	None
San Gabriel Linanthus	*Linanthus concinnus*	Species of concern	None
San Gabriel Manzanita	*Arctostaphylos gabrielensis*	Species of concern	None
San Gabriel Mountains Dudleya	*Dudleya densiflora*	Species of concern	None
San Gabriel River Dudleya	*Dudleya cymosa ssp crebrifolia*	Species of concern	None
San Nicolas Island Lomatium	*Lomatium insulare*	Species of concern	None
Santa Barbara Morning-Glory	*Calystegia sepium ssp binghamiae*	None	None
Santa Catalina Figwort	*Scrophularia villosa*	Species of concern	None
Santa Catalina Island Iron-wood	*Lyonothamnus floribundus ssp floribundus*	Species of concern	None
Santa Catalina Island Manzanita	*Arctostaphylos catalinae*	Species of concern	None
Santa Catalina Island Monkeyflower	*Mimulus traskiae*	Species of concern	None
Santa Cruz Island Ironwood	*Lyonothamnus floribundus ssp aspleniifolius*	Species of concern	None
Santa Cruz Island Rock Cress	*Sibara filifolia*	Endangered	None
Santa Monica Mountains Dudleya	*Dudleya cymosa ssp ovatifolia*	Threatened	None
Santa Susana Tarplant	*Hemizonia minthornii*	Species of concern	Rare
Scalloped Moonwort	*Botrychium crenulatum*	Species of concern	None

Threatened and Endangered Species and Species of Concern
Los Angeles County—Plants

Common Name	***Scientific Name***	***Federal Status***	***State Status***
Short-Joint Beavertail	*Opuntia basilaris var brachyclada*	Species of concern	None
Short-Lobed Broom-Rape	*Orobanche parishii ssp brachyloba*	Species of concern	None
Slender Mariposa Lily	*Calochortus clavatus var gracilis*	Species of concern	None
Slender-Horned Spineflower	*Dodecahema leptoceras*	Endangered	Endangered
South Coast Saltscale	*Atriplex pacifica*	Species of concern	None
Southern Island Mallow	*Lavatera assurgentiflora ssp glabra*	Species of concern	None
Southern Tarplant	*Hemizonia parryi ssp australis*	Species of concern	None
Spreading Navarretia	*Navarretia fossalis*	Threatened	None
Thorne's Royal Larkspur	*Delphinium variegatum ssp thornei*	Species of concern	None
Thread-Leaved Brodiaea	*Brodiaea filifolia*	Threatened	Endangered
Trask's Cryptantha	*Cryptantha traskiae*	Species of concern	None
Ventura Marsh Milk-Vetch	*Astragalus pycnostachyus var lanosissimus*	Species of Concern	Candidate

Threatened and Endangered Species and Species of Concern
Los Angeles County—Animals

Common Name	***Scientific Name***	***Federal Status***	***State Status***
Snails and Slugs			
Catalina Mountainsnail	*Radiocentrum (=oreohelix) avalonense*	Species of concern	None
Mimic Tryonia (=California Brackishwater Snail)	*Tryonia imitator*	Species of concern	None
San Clemente Island snail	*Micrarionta gabbi*	Species of concern	None
Grasshoppers, Katydids, and Crickets			
Santa Monica Shieldback Katydid	*Neduba longipennis*	Species of concern	None
Beetles			
Dorothy's El Segundo Dune Weevil	*Trigonoscuta dorothea dorothea*	Species of concern	None
Globose Dune Beetle	*Coelus globosus*	Species of concern	None
Lange's El Segundo Dune Weevil	*Onychobaris langei*	Species of concern	None
Sandy Beach Tiger Beetle	*Cicindela hirticollis gravida*	Species of concern	None
Butterflies and Moths			
El Segundo Blue Butterfly	*Euphilotes battoides allyni*	Endangered	None
Henne's Eucosman Moth	*Eucosma hennei*	Species of concern	None
Palos Verdes Blue Butterfly	*Glaucopsyche lygdamus palosverdesensis*	Endangered	None
Wandering (=Saltmarsh) Skipper	*Panoquina errans*	Species of concern	None
Fish			
Arroyo Chub	*Gila orcutti*	Species of concern	None
Mohave Tui Chub	*Gila bicolor mohavensis*	Endangered	Endangered
Santa Ana Sucker	*Catostomus santaanae*	Proposed Threatened	None
Southern Steelhead	*Oncorhynchus mykiss irideus*	Endangered	None
Tidewater Goby	*Eucyclogobius newberryi*	Endangered	None
Unarmored Threespine Stickleback	*Gasterosteus aculeatus williamsoni*	Endangered	Endangered

Threatened and Endangered Species and Species of Concern
Los Angeles County—Animals

Common Name	***Scientific Name***	***Federal Status***	***State Status***
	Amphibians		
Arroyo Toad	*Bufo microscaphus californicus*	Endangered	None
California Red-Legged Frog	*Rana aurora draytonii*	Threatened	None
Mountain Yellow-Legged Frog	*Rana muscosa*	Species of concern	None
Western Spadefoot	*Scaphiopus hammondii*	Species of concern	None
	Reptiles		
California Horned Lizard	*Phrynosoma coronatum frontale*	Species of concern	None
Coastal Western Whiptail	*Cnemidophorus tigris multiscutatus*	Species of concern	None
Desert Tortoise	*Xerobates agassizii*	Threatened	Threatened
Island Night Lizard	*Xantusia riversiana*	Threatened	None
Orange-Throated Whiptail	*Cnemidophorus hyperythrus*	Species of concern	None
San Diego Horned Lizard	*Phrynosoma coronatum blainvillei*	Species of concern	None
San Diego Mountain Kingsnake	*Lampropeltis zonata pulchra*	Species of concern	None
Silvery Legless Lizard	*Anniella pulchra pulchra*	Species of concern	None
Southwestern Pond Turtle	*Clemmys marmorata pallida*	Species of concern	None
Two-Striped Garter Snake	*Thamnophis hammondii*	Species of concern	None
	Birds		
Belding's Savannah Sparrow	*Passerculus sandwichensis beldingi*	Species of concern	Endangered
Burrowing Owl	*Athene cunicularia (burrow sites)*	Species of concern	None
California Black Rail	*Laterallus jamaicensis coturniculus*	Species of concern	Threatened
California Condor	*Gymnogyps californianus*	Endangered	Endangered
California Gnatcatcher	*Polioptila californica*	Threatened	None
California Least Tern	*Sterna antillarum browni (nesting colony)*	Endangered	Endangered
Least Bell's Vireo	*Vireo bellii pusillus (nesting)*	Endangered	Endangered
San Clemente Loggerhead Shrike	*Lanius ludovicianus mearnsi*	Endangered	None
San Clemente Sage Sparrow	*Amphispiza belli clementeae*	Threatened	None
Swainson's Hawk	*Buteo swainsoni (nesting)*	None	Threatened
Tricolored Blackbird	*Agelaius tricolor (nesting colony)*	Species of concern	None
Western Snowy Plover	*Charadrius alexandrinus nivosus (nesting)*	Threatened	None
Western Yellow-Billed Cuckoo	*Coccyzus americanus occidentalis (nesting)*	None	Endangered
	Mammals		
Island Fox	*Urocyon littoralis*	Species of concern	Threatened
Mohave Ground Squirrel	*Spermophilus mohavensis*	Species of concern	Threatened
Pacific Pocket Mouse	*Perognathus longimembris pacificus*	Endangered	None
San Diego Desert Woodrat	*Neotoma lepida intermedia*	Species of concern	None
San Joaquin Pocket Mouse	*Perognathus inornatus inornatus*	Species of concern	None
Santa Catalina Shrew	*Sorex ornatus willetti*	Species of concern	None
Tehachapi Pocket Mouse	*Perognathus alticola inexpectatus*	Species of concern	None

Threatened and Endangered Species and Species of Concern
Los Angeles County—Animals

Common Name	*Scientific Name*	*Federal Status*	*State Status*

Source: California Dept. of Fish & Game and Los Angeles Almanac

The only known populations of Unarmored Threespine Stickleback, a fish, are in the Santa Clara River's drainage to the Los Angeles River and in San Diego County.
The Palos Verdes Blue Butterfly, originally found only in Palos Verdes Peninsula, was thought extinct until it was rediscovered in San Pedro in 1994.
The El Segundo Blue Butterfly is found only on two acres on a Chevron Oil Refinery and at the western end of LAX.
The Gray Whale migrates along the west coasts of Mexico, the U.S., and Canada. It is federally protected.

APPENDIX H
Potential Indicator Species

To gauge the success of habitat linkages, it is possible to identify species that can serve as sensitive indicators of functional connectivity. Using the approach of Noss (1991; pp. 227-246 in K. Kohm, ed. *Balancing on the Brink of Extinction*, Island Press) and Caro and O'Doherty (1999; *Conservation Biology* 13:805-814) species can be described with the following categories:

1) *Umbrellas*—species whose habitat area and quality requirements encapsulate the needs of an array of other species.
2) *Flagships*—charismatic species that attract the attention and imagination of the general public.
3) *Ecosystem Health Indicators*—species sensitive to and indicative of anthropogenic disturbances to ecological functions.
4) *Population Health Indicators*—predators whose population health provides a measure of the health of populations of their prey and of associated ecological functions.
5) *Keystone Species*—species whose impact on the ecosystem is large and disproportionately large for their abundance.

Using these categories, the following species have been identified[1] as useful indicators for conservation planning at the landscape and regional scales within the watersheds:

1) Steelhead (wild rainbow trout): Flagship and umbrella; encompasses requirements for Pacific lamprey and for lower elevation fish species.
2) Unarmored three-spine stickleback: Umbrella; encompasses requirements for lower elevation arroyo chub, Santa Ana sucker, and Santa Ana speckled dace.
3) Arroyo toad: Ecosystem health indicator for "fluctuating hydrological, geological, and ecological processes operating in riparian ecosystems and adjacent uplands" (USFWS 1999, Arroyo Toad Recovery Plan).
4) California red-legged frog: Ecosystem health indicator for riparian habitats and adjacent aquatic and upland systems.
5) Southwestern pond turtle: Ecosystem health indicator for upper watershed tributaries.
6) Yellow warbler: Umbrella species for high quality riparian habitat, shaped by natural fluvial processes.
7) Least Bell's vireo: Ecosystem health indicator and possible umbrella species for riparian habitats with well-developed overstories, understories, and low densities of aquatic and herbaceous cover (USFWS 2000, Biological Opinion on the Effects of Ongoing Forest Activities that May Affect Listed Riparian Species on the Cleveland National Forest, the Los Padres National Forest, the San Bernardino National Forest, and Angeles National Forest in Southern California).
8) Southwestern willow flycatcher: Ecosystem health indicator of riparian habitat with dense growths of willows, *Baccharis*, arrowweed, buttonbush, or other plants of similar structure. Although overlapping, significant differences in habitat requirements with least Bell's vireo are probable (USFWS 2000, Ibid.).
9) Arboreal salamander: Umbrella for high quality oak, walnut, and sycamore woodland habitats, including connectivity to riparian areas.

1 Noss, Reed, *Task 2: Assessment of the Feasibility of Wildlife Corridors, List of Species to be Addressed, Recommendations of Habitat Enhancement Opportunities for Migratory Birds and for Additional Information to be Collected, and Map of Corridor Opportunities. Report to the Los Angeles and San Gabriel Rivers Watershed Council*, September 3, 2001

10) Oak titmouse: Umbrella for woodlands that may be somewhat fragmented, but still offer significant habitat value for species less affected by loss of terrestrial connectivity.
11) Coast horned lizard: Ecosystem health indicator for certain aspects of alluvial fan and coastal sage scrubs.
12) Lesser nighthawk: Umbrella for certain aspects of alluvial fan sage scrub, especially areal extent.
13) Plummer's mariposa lily: Ecosystem health indicator and tentative flagship for alluvial fan sage scrub and chaparral.
14) Cactus wren: Flagship for alluvial fan and coastal sage scrub with stands of *Opuntia* cactus.
15) Greater roadrunner: Flagship for coastal and alluvial fan sage scrub and grassland habitat connectivity.
16) California gnatcatcher: Tentative umbrella for restoration of coastal sage scrub quantity, quality, and connectivity.
17) Grasshopper sparrow: Umbrella for grassland habitats.
18) California quail: Flagship for upland habitat connectivity.
19) Great blue heron: Flagship and potential ecosystem health indicator for mature forest (riparian and otherwise, for rookeries) and aquatic habitats.
20) Bobcat: Population health indicator for prey species; flagship and potential umbrella for landscape-scale connectivity.
21) Gray fox: Population health indicator for prey species; flagship and potential umbrella for landscape-scale connectivity.
22) Coyote: Population health indicator for prey species; flagship and potential umbrella for landscape-scale connectivity; documented keystone species for controlling opportunistic mesopredators (e.g., feral cat, raccoon, opossum, gray fox) and thereby increasing songbird nesting success (see Crooks and Soulé 1999, *Nature* 400:563-566).
23) Black bear: Flagship and potential umbrella for landscape-scale connectivity; possible ecosystem health indicator for forests.
24) Mountain lion: Population health indicator for prey species and possible keystone species; flagship and umbrella for regional-scale connectivity.

It may not be possible, given foreseeable funding scenarios, to conduct detailed population censuses, habitat modeling, and population viability modeling for all 24 of these species. Nevertheless, some level of effort should be devoted to determining the distribution and population trends of these species and opportunities for more intensive research should be seized whenever possible.

In addition, a comprehensive conservation strategy for the study region should protect sites occupied by species ranked as critically imperiled globally (G1) or imperiled globally (G2) by The Nature Conservancy and the Association for Biodiversity Information. Examples of G1 species in the study region are Munz's onion (*Allium munzii*), slender-horned spineflower (*Dodecahema leptoceras*), Laguna beach dudleya (*Dudleya stolonifera*), Lyon's pentachaeta (*Pentachaeta lyonii*), and Lange's El Segundo dune weevil (*Onychobaris langei*).

The occurrences of these and other imperiled species are mapped in California by the California Natural Diversity Data Base. These are local-scale species (Poiani et al. 2000, Ibid.) and many of their habitats are isolated; hence, they would be neglected by a conservation plan focused largely on riparian networks or wildlife corridors. Importantly, because these species are mostly narrow endemics, their global survival depends on conservation actions taken in the watersheds. In addition, many narrowly restricted G1 and G2 plant communities—for example, walnut forest and valley needlegrass grassland—occur in the watersheds and require protection.

Open Space Plan, Phase II Final Report

Errata

The list of Working Group participants (on pages 30 and 31) should include the following:

> "Dr. Ann Croissant represented the San Gabriel Regional Mountains Conservancy. Dr. Croissant is a former Professor of Landscape Architecture at Cal Poly Pomona and has extensive knowledge concerning habitat issues, the San Gabriel Mountains and the preservation of open space."

The Monitoring and Assessment matrix (on pages 104 and 105) should read as follows:

<u>Monitoring and Assessment</u>

Agencies:	Lead Entity with primary responsibility for subsequent plans, and the RMC for implementation of *Common Ground* within the RMC territory.
Potential Resource Partners:	Lead Entity for subsequent plans, and RMC for *Common Ground*.
Stakeholders:	Groups involved in each subsequent plan.
Conceptual Scope:	The RMC, with partners, will work to develop an assessment process for restoration of the watersheds, and monitor progress towards meeting the goals described herein. At a minimum, the periodic assessment process shall occur at ten-year intervals, or more often if deemed practical. This process shall utilize quantifiable methods wherever feasible and input from a technical advisory committee, and shall include stakeholder involvement in the design, implementation, and review of the assessments.
Issues:	Should monitoring and assessment be a requirement for each subsequent plan? Does this only relate to *Common Ground?*

San Gabriel & Lower Los Angeles
Rivers and Mountains Conservancy

OPEN SPACE PLAN, PHASE II

FINAL REPORT

June 2002

Prepared by:

EIP Associates
MWH
Arthur Golding and Associates
Calvin R. Abe and Associates
TreePeople
FORMA Systems

CONTENTS

TABLES

APPENDICES (Separate Volumes)

1. INTRODUCTION

With assistance from the California Resources Agency, the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, or Rivers and Mountains Conservancy (RMC), in conjunction with the Santa Monica Mountains Conservancy (SMMC), jointly developed a Watershed and Open Space Plan for the San Gabriel and Los Angeles Rivers entitled *Common Ground*, from the Mountains to the Sea. The RMC and SMMC adopted the Watershed and Open Space Plan at a joint meeting on October 17, 2001.

As part of Phase II of the Open Space Plan process, the RMC retained a consultant team of EIP Associates, Montgomery Watson Harza (MWH), Arthur Golding and Associates, TreePeople, and FORMA Systems, in addition to Calvin R. Abe and Associates, to (1) support and facilitate meetings of a Working Group to advise the RMC on issues raised in *Common Ground*; (2) clarify and expand the scope of the subsequent plans proposed in *Common Ground*; (3) expand outreach to cities, agencies, nonprofit groups and community-based organizations; (4) track approval of *Common Ground* by cities, the Board of Supervisors and certain water entities; (5) augment or clarify information in *Common Ground* and extend the Plan to those portions of the RMC territory outside of the watersheds of the San Gabriel and Los Angeles Rivers; and (6) provide the RMC with project evaluation software and enhance the RMC's Geographic Information Systems (GIS) database developed during Phase I.

This document is the Final Report of the Phase II activities described above. Detailed back-up materials (including agendas, minutes and background papers for the Working Group) are provided in a separate appendix to this report.

2. APPROVAL OF *COMMON GROUND*

Public Resources Code Section 32504(d) of RMC's enabling legislation specifies that the RMC must:

> Prepare a San Gabriel and Lower Los Angeles Parkway and Open Space Plan to be approved by a majority of the cities representing a majority of the population, the Board of Supervisors of Los Angeles County, and by the Central Basin Water Association and the San Gabriel Valley Watermaster.

Phase II of the Open Space Plan included tracking approval of the approval of the Plan by this various entities, as described below.

A. CITIES

To assist the RMC in tracking approval of Common Ground by cities, the consultant team developed an Excel spreadsheet with contact information for each city. RMC staff used the spreadsheet to keep track of which cities had received the plan, had been contacted regarding approval, and which had approved the plan. As each city approved the plan, the spreadsheet tallied the number of cities that had approved the plan, and the total population of those cities, to determine when the RMC had received approval from both a majority of the cities, and a majority of the cities representing a majority of the population (based on 2000 census data). For an overview of outreach efforts related to Common Ground approval, refer to section V.A of this report.

As of As of June 1, 2001, 54 cities (of the 68 cities in the RMC territory) representing 3,310,302 people have adopted Common Ground, including Alhambra, Anaheim, Artesia, Azusa, Baldwin Park, Bell, Bell Gardens, Bellflower, Bradbury, Brea, Buena Park, Cerritos, Claremont, Commerce, Cudahy, Duarte, El Monte, Fullerton, Hawaiian Gardens, Huntington Park, Irwindale, La Habra Heights, La Mirada, La Palma, La Puente, La Verne, Lakewood, Long Beach, Los Alamitos, Lynwood, Maywood, Monrovia, Montebello, Monterey Park, Norwalk, Paramount, Pasadena, Pico Rivera, Placentia, Pomona, Rosemead, San Dimas, San Gabriel, Santa Fe Springs, Seal Beach, Sierra Madre, Signal Hill, South El Monte, South Gate, South Pasadena, Vernon, Walnut, West Covina, and Whittier.

Twelve cities have adoption of the plan under consideration. The City of Diamond Bar voted not to adopt the plan, and the City of Industry voted to rescind its earlier approval of the Plan.

B. BOARD OF SUPERVISORS

On Tuesday, May 14, 2000 the Board of Supervisors of Los Angeles County approved Common Ground with one abstention. The Orange County Board of Supervisors is currently reviewing the Plan, and may consider adoption during the month of July.

C. WATER ENTITIES

The San Gabriel Valley Water Association, the Main San Gabriel Basin Watermaster, and the Central Basin Water Association are currently reviewing the Plan, as modified by the proposed Water Addendum, (discussed below in Section 6).

3. OUTREACH ACTIVITIES

A. CITIES

Outreach to cities during Phase II generally focused on three general topics: (1) approval of *Common Ground*; (2) encouraging cities to develop City-Specific Appendices to *Common Ground* (described more fully in Section VI.B of this report); and (3) encouraging cities to attend the RMC's first Project Development Workshop (described more fully in Section 5.C below). To serve as primary liaison between the RMC and the cities, EIP Associates team hired Bobby Cochran, former RMC Executive Secretary to conduct outreach to the cities.

In order to secure approval of *Common Ground* by the cities, eight copies of the plan were distributed to each city at meetings of the Gateway Cities Council of Governments (on December 11, 2001); the San Gabriel Valley Council of Governments (on December 11, 2001) and the Orange County League of Cities (on December 12, 2001). Copies of the report were sent directly to those cities that did not attend the COG or League of Cities meetings. The eight copies were intended for each City Council member, the City Manager, the City Attorney, and the RMC's contact. (*Common Ground* copies were also distributed to stakeholders who had commented on the Draft version of the Plan, the stakeholder list of the Los Angeles and San Gabriel Rivers Watershed Council, and other interested groups.)

RMC staff then began a series of contacts via e-mail, phone, and in-person to discuss the approval process for the plan. At meetings with city staff, the RMC contact was provided a sample staff report and resolution (which were developed by the Gateway Council of Governments). A total of thirty-six meetings were held with the cities (and the County of Los Angeles, the Main San Gabriel Watermaster and the Central Basin Water Association). These meetings were combined with numerous phone follow-ups and conversations. On average, each City received three phone calls before the Open Space Plan was adopted. In addition, some cities requested that an RMC representative attend a city (parks or planning) commission meeting, or the city council meeting where the plan was considered. In total, RMC staff attended four city commission meetings and seventeen city council meetings.

Following the announcement of the Project Development Workshop (described below), RMC staff followed up with a phone call to each of the City representatives to encourage their participation.

Following transmittal of the template for City-Specific Appendices (described below) RMC staff followed up with each City to assist with the completion and comprehension of what content should be included in a City Appendix. As of June 1, 2002, twelve cities had submitted City Appendices and several others have indicated their intent to develop an appendix for their city. Once the appendices were received, the Project Identification Forms included were entered into the RMC's project database (both in Access and ArcView GIS).

B. RMC BROCHURE

The Phase II scope included a task to "design and print 2,000 copies of a pamphlet that has a customized map of the RMC territory and clear, concise language of the mission, near term and long term projects." The consultant team discussed the concept of the pamphlet (or brochure) with the RMC staff and developed a concept for the content and layout of the document. Eventually, it was decided to discuss the past, present and future of the watersheds as the basic concept, with a map of the RMC territory that would show city boundaries and illustrate conceptual projects.

After an augment to the Phase II contract was approved, it was determined that insufficient funds were available to cover the augment. The RMC proposed that printing of the brochure be deferred, and the funds allocated for printing be allocated to other Phase II tasks. The final version of the brochure (which is illustrated with photos from *Common Ground*) is included in the Appendix. The text of the brochure is provided below.

Past

Before the arrival of European settlers, the San Gabriel and Los Angeles rivers flowed free, and the land next to the rivers was crowded with trees, wild grapes, and native plants. Animals and fish thrived, and steelhead trout grew up to two feet in length. The land near the Los Angeles River was so lush and green, a farming village was founded. That village prospered and became the City of Los Angeles.

But things changed. More settlers arrived and built more farms, homes, and businesses and diverted water from the rivers. As the population grew, so did the demand for more land and water. The rivers were drained and wells were dug to reach groundwater. People built too close to the rivers, and when heavy winter rains turned the rivers into raging torrents, homes and businesses were flooded. To protect people and property from flooding, the rivers were lined with concrete and hidden behind walls. The rivers became polluted and in some areas, groundwater became contaminated. Litter tossed on the streets was washed down storm drains and ended up on the beaches. Our rivers have been abused and forgotten.

Present

The rivers are no longer functioning as healthy natural systems. Urban development has reduced pervious open space. Existing parks are overcrowded and poorly maintained, habitat for wildlife is scarce, and water quality remains a concern in the rivers, groundwater and at our beaches. We need new solutions to these problems.

Future

What Can Be Done?

Additional open space must be acquired along the rivers and tributaries, in the mountains, hills and foothills, and especially in urban areas. Parkways must be created along the rivers, to create a green ribbon of open space from the mountains to the sea. Critical habitat must be preserved; habitat linkages and/or corridors preserved or established; and wetlands must be preserved, restored, and created. A comprehensive network of trails and bike paths must be established that connects our cities, and provides access to the mountains, the beaches, and urban open spaces. Public lands must be managed for the benefit of the people and to preserve, protect, and enhance natural resources.

Who Can Respond?

The San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, or Rivers and Mountains Conservancy (RMC) was created in 1999 to preserve urban open space and habitat for the enjoyment of, and appreciation by, present and future generations. To fulfill that mission, the RMC will undertake projects that provide low-impact recreation, education, wildlife and habitat restoration, and watershed improvements, prioritizing river-related recreation, greening, aesthetic improvements, and wildlife habitat.

Inside Panel

What Can the RMC Do?

To preserve urban open space for present and future generations, the Rivers and Mountains Conservancy (RMC) will undertake a wide range of projects along the rivers, the tributaries, in the mountains, hills, and foothills, and throughout the urbanized areas of the RMC's territory. The RMC will also assist counties, cities, public agencies, non-profit groups and community-based organizations in developing projects that promote watershed restoration, provide for low-impact recreation, educate the public about the rivers and our watersheds, protect and conserve habitat, restore and create wetlands, and provide for other watershed improvements.

What Type of Projects Does the RMC Encourage?

River Parkways

A continuous ribbon of open space can be created from the mountains to the sea along the San Gabriel River, the Lower Los Angeles River, and the Rio Hondo, by acquiring land along the rivers, redeveloping sites to serve multiple purposes, and expanding existing pockets of open space. Landscaped areas on both sides of the rivers could provide parks with passive recreation and natural areas with native plants and habitat for wildlife and migratory birds. These green spaces promote groundwater infiltration and enhance flood protection by serving as buffers between the rivers and adjacent land uses. Trails and bike paths could provide opportunities for recreation and an alternative to congested streets.

Tributaries

Similar to river parkways, open spaces along tributaries provide an opportunity to extend ribbons of green space throughout the watersheds, connecting those communities not located directly on the rivers, and expanding the network of trails and bike paths. Restoration of riparian (or streamside) vegetation would provide much-needed habitat for plants, animals, birds, and aquatic species.

Habitat Conservation

Important habitat areas need to be protected, and the native plants and wildlife preserved. Linkages between patches of habitat must be maintained or established to maintain biodiversity and ecological integrity. Wetlands need to be restored or expanded to treat urban run-off, improve water quality, and provide wildlife habitat.

Mountains, Hills, and Foothills

The Angeles National Forest provides protection to vast amounts of open space in the RMC territory. But large portions of the mountains, foothills, and hills have no such protection. Pressure for urban development will continue to push subdivisions into these areas, therefore preservation of these open spaces are important to preserve open space, conserve habitat and promote groundwater infiltration.

Trails and Bike Paths

Bike paths and trails provide opportunities for recreation and a viable alternative to the use of an automobile. Gaps in existing trails and paths need to be identified and addressed. Trails and bike paths must be included in river parkways and along tributaries. Trails and bike paths can knit together parks, open spaces, and our communities.

Cultural and Historic Sites

Our region has a rich and diverse collection of cultural and historic sites and buildings. Many of these facilities are in need of preservation or conservation, and lack interpretive information that can teach residents about indigenous peoples and the historical development of our watersheds. Historic and cultural sites need to be preserved, protected, and integrated into parks and open spaces as valued amenities.

What Can You Do?

Call, write or talk to your federal, state, and local elected representatives and tell them we need more regional parks, open space, and wildlife habitat. Implementing the plan will require more funding. Our elected representatives must work together to get the necessary funds so we can improve our quality of life.

Adopt a lifestyle that is kind to our rivers, watersheds, and the planet:

- Don't litter. Clean up after your pets.
- Use "green" products that are friendly to the environment.
- Recycle and reuse products whenever possible.
- Use fertilizers and pesticides with care.
- Plant trees and plants that provide habitat for birds, butterflies and wildlife.
- Reduce energy consumption and conserve water.
- Carpool or take the bus to work. Walk to the store or ride a bicycle.
- Collect rainwater for your plants.
- Teach your children to care for the environment.

We're All in This Together

Each of us can make a difference. We all deserve to live in a cleaner, greener, and healthier region.

"*The task ahead of us is never as great as the power behind us.*"
—Ralph Waldo Emerson

C. PROJECT DEVELOPMENT WORKSHOP

The Working Group's Project Technical Assistance/Education and Outreach subcommittee recommended that the RMC conduct a project development workshop to inform cities, nonprofits and community-based organizations about the type of projects that the RMC encourage, highlight the benefits of multi-objective projects, and provide an opportunity for the Resources Agency to provide information concerning information on the Los Angeles River Parkway and the San Gabriel River Watershed, San Gabriel Mountains and Lower Los Angeles River grant programs funded by Proposition 12.

The Phase II consultant team developed a draft curriculum for the workshop, which was revised with the assistance of the subcommittee. The agenda included an overview of the RMC (including a summary of Common Ground), discussion of project opportunities along the rivers and tributaries; presentation on project success stories, a panel discussion on project funding opportunities, and a presentation on the Proposition 12 grant programs.

The RMC's contact database was sorted to identify city representatives, nonprofit groups, and community-based organizations. A list of nonprofit groups was reviewed with the subcommittee to identify other potential contacts. This list of contacts was expanded to include the mailing lists for the RMC Board and the Working Group. Altogether, a list of approximately 450 cities, nonprofits, community-based organizations, and individuals was developed.

Notice of the workshop was sent to the contact lists (via e-mail, or mail when no e-mail address could be identified), including a fact sheet on the workshop, a project identification form (to encourage these groups to identify potential projects), and a workshop flyer. In addition, a press release for the workshop was sent to eighteen media outlets. Approximately eighty-five individuals confirmed their attendance in advance of the workshop.

The workshop was held on April 19, 2002 (at the Los Angeles County Public Works building in Alhambra), and was attended by ninety-eight individuals from cities, agencies, nonprofit groups and community-based organizations. Workshop materials (which are included in the Appendix to this report) distributed at the meeting included:

- Workshop Agenda
- RMC Fact Sheet

- Map of the Los Angeles and San Gabriel Watersheds
- Summary of Proposition 40 funding
- List of Water Related Funding Sources (including Proposition 13)
- Reference List of Watershed Restoration Action Strategies in Southern California
- List Other Potential Funding Sources

The agenda for the workshop, and the participating speakers are listed below. (A copy of the PowerPoint presentations is included in the Appendix to this report.)

I. Welcome
   - Belinda Faustinos, RMC Interim Executive Office—Welcome and Moderator

II. RMC Overview
   - Frank Colonna, RMC Board Chair—Welcome and RMC Overview
   - Mark Horne, EIP Associates—*Common Ground* Overview, and Facilitator

III. Project Opportunities
   - Suzanne Avila, City of Azusa—Azusa Riverfront Wilderness Park
   - Eileen Takata, Northeast Trees—San Jose Creek Restoration
   - Jessica Hall, Northeast Trees—South Gate Restoration
   - Michael Drennan, MWH—Multiple-Objective Projects, the LA County Public Works watershed project in Sun Valley and TreePeople's work at Broadus Elementary School

IV. Project Success Stories
   - Carrie Sutkin, 1st Supervisorial District—El Bosque del Rio Hondo
   - Julia Gonzales, City of Maywood—Maywood Riverfront Park
   - Vince Torres, City of Paramount—Ralph Dills Park Expansion
   - Melanie Winter, The River Project—Valley Heart Greenway

V. Project Funding Opportunities
   - Rick Harter, LA/SG Watershed Council—Prop 12 & 13 Funds
   - Shirley Birosik, LA Regional Water Quality Board—Other Funding Opportunities
   - Joan Hartman, Wetlands Recovery Project—Other Funding Opportunities

VI. Proposition 12 River Grant Programs
   - Susan Ross, Resources Agency—Prop 12 Grant Guidelines and Application Process

Following the workshop, letters of thanks went out to the speakers and participants. In addition, the contact list was sent out to attendees in an effort to continue one of the themes of the workshop: "creating partnerships." Workshop materials have also been made available on the RMC website.

While the first Project Development Workshop focused on project development related to rivers and tributaries, a subsequent RMC workshop has being suggested to discuss projects throughout the watershed, possibly during fall 2002.

D. PROJECT IDENTIFICATION FORM

As requested by the Project Technical Assistance/Education and Outreach Subcommittee, a Project Identification Form was developed and transmitted to the cities in the RMC territory (as part of the City-

Specific Appendix template) and to non-profit groups and community-based organizations (in conjunction with the announcement of the Project Development Workshop, described above).

The introduction to the form includes the following text:

> "The San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, or Rivers and Mountains Conservancy (RMC) was created in 1999 to preserve urban open space and habitat for the enjoyment of, and appreciation by, present and future generations. To meet this charge, RMC will undertake a wide range of projects along the rivers, the tributaries, in the mountains, hills and foothills, and throughout the urbanized areas of the RMC's territory. The RMC will also assist the counties, cities, public agencies, non-profit groups and community-based organizations in developing projects that promote watershed restoration, provide for low-impact recreation, educate the public about the rivers and our watersheds, protect and conserve habitat, restore and create wetlands, and expand open space.
>
> The attached Project Identification Form is intended to encourage the development and identification of potential projects within the RMC territory, and to help the RMC assess the need for open space and watershed-related projects. The counties, cities, public agencies, non-profit groups and community-based organizations are encouraged to fill out the form and return it to the RMC…"

Attached to the form (which is reproduced on the following page) is a "key" that explains how to fill it out.

As of June 7, 2002, seventy three project locations have been entered in to the Project Map (developed in conjunction with the work of the Rivers, Tributaries, Parkways, and Corridors Subcommitee) and entered in the Access database (developed as part of the Phase II scope, and described in Section 7 below). The map of proposed projects was displayed to the RMC Board at their meeting on June 7, 2002. As future projects are submitted, the map will be updated to display all pending and potential projects.

San Gabriel & Lower Los Angeles Rivers and Mountains Conservancy
"Rivers and Mountains Conservancy" (RMC)

Project Identification Form

City/Organization: ______________________________

Project Title: ______________________________

Project Location/Jurisdiction: ______________________________

(Provide a street address, jurisdiction and/or identify Thomas Bros. map page and attach copy of map page with site clearly indicated)

Project Type (check all those that apply):

______	River Parkway	______	Tributaries
______	Mountains, Hills & Foothills	______	Urban Lands
______	Trails/Bike Paths	______	Habitat
______	Creation of New Open Space	______	Existing Open Space
______	Wetlands	______	Flood Protection
______	Water Quality	______	Water Recharge
______	Other: ______________		

Site Description

Size (acres): ______________ Trail Miles: ______________

Current use and condition: ______________________________

____

____

Single or multiple owners (if known): ______________________________

Project Description: (Briefly describe what is proposed, whether any previous plans or studies have been completed, and the current status of the project.)

____

____

____

____

____

____

____

____

____

Estimated Project Cost:

Acquisition: ______________

Development: ______________

Total: ______________

Contact Information:

Name: ______________________________

Title: ______________________________

Phone: ______________________________

E-mail: ______________________________

E. GIS CONSORTIUM

The Phase II scope included a requirement to "…facilitate at least three GIS data gathering and communication meetings between government entities and universities…"

Outreach efforts to create a GIS Consortium were conducted in December and January to public agencies, educational institutions, and other potentially interested parties. Based upon discussions with RMC staff, the RMC's GIS project manager (in the Department of Fish and Game) the following goals for the GIS Consortium were identified:

- Facilitate a discussion of existing and potential uses of GIS in the greater San Gabriel and Los Angeles River watershed area;
- Assemble an inventory of data sets available for sharing;
- Identify gaps in existing data and develop a strategy for obtaining or creating those data;
- Establish a framework for continuing the work of the Consortium

The initial invitation to participate in the Consortium was sent to approximately 75 people. The GIS Consortium was convened for three meetings: January 24, March 14, and May 23,2002. Attendance at the first meeting was 43 participants; the other two meetings drew about 20 participants.

At the first meeting, the discussion included an overview of the RMC Mission, background on Phase II of the Open Space Plan and the goals of the consortium, examples of GIS applications, a demonstration of the RMC GIS database and catalog and a discussion of the potential for data sharing. The second meeting included presentations on the GIS programs at Rio Hondo College, the University of Southern California, and the Central Coast Joint Data Committee (which had developed a Memorandum of Understanding that facilitated sharing of GIS data). In addition, the potential for an information clearinghouse (as an alternative to data sharing was discussed, along with identification of data that the participants would most like to see developed. At the third meeting, presentations included the Neighborhood Knowledge Los Angeles (and the in-development Neighborhood Knowledge California) by the UCLA School of Public Policy, the Stream Habitat Assessment on Malibu Creek by Heal the Bay and discussion of the proposal to form State and Regional GIS Councils, by the Southern California Association of Governments.

Although there was a positive response to the idea of a Consortium, participants were generally reluctant at this early stage to commit to sharing data or to any particular structure for the group. There is definite interest in continuing the exchange of ideas. The Los Angeles & San Gabriel Rivers Watershed Council has offered to take on the role of coordinating future Consortium activities. Agendas and meeting summaries are included in the Appendix.

4. EXPANSION OF *COMMON GROUND*

A. ADDENDA

The Phase II scope for the Open Space Plan included the development of an addendum, or addenda, to augment or clarify information in *Common Ground* and extend the Plan to those portions of the RMC territory outside of the watersheds of the San Gabriel and Los Angeles Rivers. Two addenda were developed as part of the Phase II process, to address the Northern Slope of the San Gabriel Mountains, and to address concerns of the San Gabriel Valley Water Association, the Main San Gabriel Basin Watermaster, and the Central Basin Water Association related to how Water Resources were addressed in *Common Ground*.

It is the intent to incorporate the Addenda as supplements to *Common Ground*, and upon the next printing, to incorporate the information in the Addenda into the main body of the document. As additional relevant information is developed (e.g., from other Addenda, or from detailed planning related to specific issues, such as River Parkways or habitat), that information would also be incorporated into the Plan, so that the document continues to evolve and expand over time, to better inform the Conservancy's activities and projects.

Although portions of RMC's territory within Orange County are outside of the San Gabriel Watershed, because the cities of Buena Park and Anaheim adopted Common Ground (and thereby extended the concepts embodied in the plan to include their entire jurisdictions), development of a separate addendum to address the southeastern portion of the RMC territory was not required. The RMC Board will be asked at a future meeting to administratively extend Common Ground to the entirety of that portion of the RMC's territory in Orange County.

1. Northern Slope of the San Gabriel Mountains

To address the northern portion of the RMC territory, an addendum was developed to address the northern slope of the San Gabriel Mountains, including (1) the southernmost portions of the upper Santa Clara River watershed, including the city of Santa Clarita and the town of Acton; (2) the land within the Angeles National Forest that drains towards the Antelope and Fremont Valleys; and (3) the northern foothills of the San Gabriel Mountains, which form the southern boundary of the Antelope Valley, including a portion of the City of Palmdale, and the eastern portion of the community of Wrightwood. The Addendum was developed with input from the County of Los Angeles, the Cities of Santa Clarita and Palmdale, and the community of Acton, and is intended to advance a model for regional coordination in watershed planning.

The format of the Addendum follows that of *Common Ground*, with (1) an introduction that provides background and context, (2) a description of physical setting and conditions, and (3) a Vision for the Future, which describes relevant guiding principles, describes strategies and opportunities, and discusses next steps.

The introduction address background and acknowledges the planning context, which includes the Santa Clara River Park Project (developed by the City of Santa Clarita Parks, Recreation and Community Services Department), the Santa Clarita Valleywide General Plan Update (a joint project of the City of Santa Clarita and the County of Los Angeles to address the entire valley) and the Santa Clara River Enhancement and Management Plan (which describes riverwide and reach-by-reach recommendations for the river floodplain).

The description of Current Conditions acknowledges differences in the area's topography, climate, watershed hydrology (as the area drains via the Santa Clara River to the sea, or via various streams into the Antelope Valley), habitat (including several endangered species), open space, water supply (which includes substantial reliance on groundwater), water quality, flood protection, and regional demographics.

The discussion of the Vision for the Future focuses on guiding principles and their consistency with the guiding principles included in the Vision statement developed for One Valley One Vision (OVOV). The

Vision and Guiding Principles of *Common Ground* support and are applicable to the entire Northern Slope and are consistent with many of the OVOV Vision and Guiding Principles. OVOV relates to the General Plan process and as such has a broader scope than Common Ground; thus not all OVOV principles correspond directly to watershed planning. The discussion of Strategies, Opportunities, and Next Steps recognizes that these concepts are relevant to the Northern Slope, and that preservation of the Santa Clara River is a worthy goal for the RMC to incorporate into future river-related planning.

On June 25, 2002, the City of Santa Clarita adopted Common Ground. As of June 30th 2002, the City of Palmdale is considering adoption.

2. Water

In response to concerns expressed by the San Gabriel Valley Water Association, the Main San Gabriel Basin Watermaster and the Central Basin Water Association, a second addendum was developed to provide additional information and clarify certain issues related to water quality, supply and rights, and the conditions under which the RMC can undertake projects.

The format of the Draft Water Addendum follows that of Common Ground, with (1) an introduction that provides background, (2) a description of physical setting and conditions, and (3) a Vision for the Future, which describes guiding principles, opportunities, and next steps. Only those sections of Common Ground that are proposed to be revised via this Addendum are included in the document.

The Introduction provides an overview of the RMC's mission, and acknowledges that because of the broad mandate of the conservancy *Common Ground* addressed a wide range of issues related to the concept of watershed improvement, including some that are beyond the jurisdiction or abilities of the RMC to implement. The inclusion of these concepts was an attempt to broaden the discussion of these issues and to encourage public agencies, counties, cities, communities, neighborhoods, non-profit groups and community-based organizations to build partnerships and forge relationships that seek solutions to the problem associated with watershed restoration.

The discussion of Current Conditions included discussion of the variability of water supplies, an introduction to the groundwater section that more fully described infiltration, clarification of the issue of groundwater management in the San Gabriel Valley, expanded discussion of issues that may impact sources of imported water, clarification of responsibilities for managing water quality, included infiltration of stormwater runoff in the list of potential concerns related to groundwater recharge, augmented a statement concerning development of Total Maximum Daily Loads for the Los Angeles and San Gabriel Rivers, and acknowledged the requirement for development of Standard Urban Stormwater Mitigation Plans.

The discussion of the Vision for the Future proposed the modifications of the following Guiding Principles:

- Consistent with water quality standards, develop regional and subregional networks of stormwater detention areas where feasible
- Consistent with water quality standards, encourage new developments to detain stormwater onsite to mitigate runoff where feasible
- Consistent with water quality standards and water rights, restore the natural hydrologic functioning of subwatershed areas
- Consistent with water quality standards and water rights, maintain sufficient flow conditions to support riparian/riverine habitats
- Consistent with water quality standards and water rights, encourage onsite collection of stormwater for irrigation and percolation~~, where consistent with water quality goals and existing water rights~~
- Consistent with water quality standards, extend the distribution and range of uses for reclaimed water

Under the discussion of strategies, a new introductory paragraph for Water Resources is added, which acknowledges that the RMC may not undertake projects which (1) interferes with the duties of any watermaster, public agency, or other body or entity responsible for groundwater or surface water management or groundwater replenishment; (2) interferes or conflicts with any provision of any judgment or court order issued, or rule or regulation adopted, pursuant to any adjudication affecting water or water management in the San Gabriel River watershed and basin; (3) impedes or adversely impacts any previously adopted Los Angeles County Drainage Area project; (4) results in the degradation of water quality; or (5) interferes with, obstructs, hinders, or delays the exercise of, any water right by the owner of a public water system. The discussion of Next Steps is modified to acknowledge that water agencies and associations will continue to implement policies, programs and projects that enhance water supplies and protect water quality.

As of June 30, 2002, the San Gabriel Valley Water Association, the Main San Gabriel Basin Watermaster and the Central Basin Water Association, were still considering adoption of *Common Ground*.

B. CITY-SPECIFIC APPENDICES

The Phase II scope included a requirement to "create a template for the cities to develop appendixes to the Plan that include specific projects that accomplish the strategies as outlined in the Plan. Encourage the cities to individualize their appendixes."

The consultant team developed a template for the City-Specific Appendices that covered four basic topics: (1) identification of open space resources within each city, (2) discussion of any current plans to develop additional open space resources, (3) an overview of policies, programs or ordinances generally related to the concept of sustainability; and (4) identification of project.

The following sections provide the text included in the City-Specific Appendix Template

Open Space Resources

Common Ground included a description of the San Gabriel and Los Angeles Rivers watersheds and listed major open space resources (Table 3, on page 31), however that list was limited to open space resources greater than 100 acres in size. In order to develop a more complete catalog of existing open space resources in the RMC territory, please identify all open space features in your community. Examples may include:

- Aquatic centers
- Beaches
- Bike paths
- Community gardens
- Habitat preserves
- Golf courses
- Marinas
- Nature centers
- Open space preserves
- Parks
- Playgrounds
- Recreation Centers
- Skate parks
- Sports fields
- Trails
- Wetlands

Provide the street addresses of each facility and if possible, provide a map (or maps) that clearly identifies the location of those facilities.

Current Plans

Common Ground advocates expansion of open space, preservation of habitat, and optimization of water resources. Please identify any adopted plans for provision of additional Open Space features (using the same examples provided above), including those features that may be under construction or that have been funded.

Common Ground includes a range of guiding principles that are intended to help restore balance between human and natural systems, and thereby promote watershed restoration. These concepts generally fall under the topic of sustainability, which has been defined as "*meeting the needs of the present generation without compromising the ability of future generations to meet their needs*" (United Nations Brundtland Commission, 1987*)*. Portland, Oregon is an good example of city with comprehensive policies and programs that promote sustainability (http://www.sustainableportland.org/). Please identify any policies, programs, or ordinances that promote watershed restoration. Individual cities may not have defined specific sustainability policies, but may have a range of policies, programs, or ordinances that promote sustainability. Examples may include:

- Cultural resource preservation
- Energy conservation
- Environmental education and outreach
- Flood mitigation
- Greenbelt maintenance
- Green buildings
- Green-waste management (including composting)
- Groundwater recharge
- Hazardous substances management
- Mixed-use development
- Recreation
- Solid waste management (including recycling)
- Street-tree or other public-space greening projects
- Sustainable landscapes
- Transportation (e.g., pedestrian mobility, bikeways and alternative transportation)
- Urban runoff control
- Water conservation

Please provide a list and short description of any adopted policies, programs, or ordinances that promote watershed restoration or sustainability.

Project Identification

To assist the RMC in identifying the total need for open space projects within the RMC's territory, please identify future projects within your city (not already included above), using the format provided on the Project Identification Form.

The City-Specific Appendix Template was distributed to the cities in the RMC territory on March 26. Bobby Cochran then followed up with each City to assist with comprehension of what content should be included in a City Appendix and to encourage preparation of an Appendix. As of June 1, 2002, twelve cities had submitted City Appendices and several others have indicated their intent to file an appendix. Once the appendices were received, the Project ID forms included were entered into the RMC's project database (both in Access and ArcView GIS).

As of June 26th, 16 cities have completed Appendices, including

- Bellflower
- Claremont
- El Monte
- Fullerton
- Glendora
- La Habra
- La Habra Heights

- La Verne
- Pico Rivera
- San Dimas
- San Gabriel
- Santa Fe Springs
- Seal Beach
- Signal Hill
- South Gate

The main body of these City-Specific Appendices is included at the end of this report.

5. RMC TOOLS

A. PROJECT EVALUATION SOFTWARE

The scope for Phase II indicated that the consultant team should "create computer programs to input, analyze, evaluate, and track projects." To clarify the objectives for the software, determine input parameters and desired output, the consultant team met with RMC staff on January 8 and February 14. As a result of those meetings, the following goals, input parameters, and program linkages for the software were identified.

- **Program Goals**
  - Track, identify, query and view information about projects for the purpose of tracking progress and/or providing supporting information for evaluating projects for funding.
  - Share this information and methodology with other state agencies.

- **Information to Track**
  - Property information: who owns the parcel(s), assessor's parcel number, name of the property, location (city, county, and legislative district).
  - Project description: project type (as per page 111 in *Common Ground*), location, ecosystem type, acreage of project, text description.
  - Quantifiable amenities: length of trail/corridor/river front, distance to river, etc.
  - Tracking progress, project advocate or initiator, appraisal status, Phase I or II analysis, CEQA process/approvals/status, funding sources and status, estimated completion dates, sunset on spending, partners.

- **Linkages to GIS**
  - New data tables would be stored in ArcView to allow linkage to existing data.
  - Queries could be made across existing data to determine ecosystem/habitat type, vegetation, endangered species, adjacent land uses, natural hazards, etc.
  - Future acquisition of parcel maps in GIS format from LA/Orange County for project area could be integrated into an existing "projects" data layer.

- **Entry of Evaluation Criteria**
  - Projects would be rated by RMC staff according to the RMC's evaluation criteria, and the points awarded would be entered into the project database.
  - Ranking should be computed numerically for all criteria or for specific criteria, for all projects or selected projects.

- **Program Output**
  - Maps should identify project location, relation to the river(s), adjacent land use, Thomas Guide or topographic data; or group projects categorized by status.
  - Reports could include a project profile showing selected data on file for selected project(s), project status (sorted by geographic area and/or status and/or project type) and a narrative summary of project status.

- **Interface**
  - Have a customized interface to assist in data entry, mapping, and reporting.
  - Interface should be kept to a minimum to reduce the need for future modifications should requirements change.

After considering potential software options, a customized Project Tracking and Evaluation software was developed as a Microsoft Access database with a link to ArcView for mapping and spatial analysis. The software provides three basic data input forms, the first based upon the Project Identification Form (including in Section 3.D above), the second to provide information useful for RMC purposes and the third to input rankings from the RMC's current project evaluation criteria.

As of June 7, the system contained seventy-three proposed or in process projects. The project information sources include Proposition A and Proposition 13 grant applications, Working Group members, and the Project Identification Forms sent to the cities. A list of projects developed by June 15, 2002 is provided in the below.

Projects in the Project Tracking and Evaluation System

	Location	*Status*	*Project Name*
1	Azusa	E	Regional bike path extension
2	Azusa	P	Landscaping Spreading Basins
3	Azusa	P	Forest Gateway Park
4	Azusa	E	River Wilderness Park
5	Bassett	E	Woodland (Duck) Farm
6	Bell	P	River Dr Beautification Project
7	Bell Gardens	P	Hannon/Scout park expansion
8	Bell Gardens	E	Park & bike trail
9	Bellflower	P	Byron Zing Park improvement
10	Bradbury	P	Bodkin Property
11	Bradbury	P	Bradbury Estates
12	Brea	P	Brea/Tonner Crk Watershed
13	Cerritos	E	Liberty Park Improvement
14	Claremont	P	Johnson's Pasture
15	Claremont	P	E. of Johnson's Pasture
16	Claremont	E	Padua Ave. Park
17	Claremont	P	Johnson's Pasture Expansion
18	Commerce	P	City of Commerce Sports Fields
19	Commerce	P	Veterans Park Basketball Crts
20	Covina	E	City of Riverine Erosion
21	El Monte	E	Durfee Sch. Recreation Area
22	El Monte	P	Lashbrook Park
23	Fullerton	P	West Coyote Hills
24	Fullerton	E	Laguna Lake Enhancement
25	Glendora	P	Big Dalton Creek Restoration
26	Huntington Park	E	Westside Park Expansion
27	La Mirada	E	La Mirada Creek Park Restoration
28	La Verne	P	Citrus Regional Bike Trail
29	La Verne	P	Stephens Ranch Rd Trail
30	La Verne	P	Valley Rancho Park
31	Lakewood	P	W San Gabriel River park
32	Long Beach	P	Los Cerritos Wetlands
33	Long Beach	P	Chavez
34	Long Beach	P	L.A. Co. DPW Horse Leases
35	Long Beach	P	Mobile Home Park
36	Long Beach	P	67th Street Park
37	Long Beach	P	Boy Scout Camp
38	Long Beach	P	Public Service Maint Yard
39	Long Beach	P	LA River Greenbelt

Projects in the Project Tracking and Evaluation System

	Location	*Status*	*Project Name*
40	Long Beach	P	19th and San Francisco
41	Long Beach	E	DeForest Wetlands
42	Long Beach	P	Wrigley Heights Parkway
43	Long Beach	P	Chavez-Drake Greenway
44	Long Beach	P	6th Street Tidal Wetlands
45	Long Beach	P	Dominguez Gap Wetlands
46	Lynwood	P	Lynwood Nature Park
47	Maywood	E	Maywood Riverfront Park
48	Monrovia	P	Clamshell Canyon
49	NE Los Angeles	E	Audubon Center in Debs Park
50	Paramount	E	Ralph Dills Park expansion
51	Pasadena	P	Flint Wash Bridge Crossing
52	Pasadena	E	N Arroyo Seco Restoration
53	Pasadena	E	S Arroyo Seco Restoration
54	Pico Rivera	P	Paseo del Rio
55	Pico Rivera	P	Paseo del Rio (SG)
56	San Dimas	E	Horsethief Cyn Park Plan
57	San Dimas	E	San Dimas Cyn Golf Course
58	Santa Fe Springs	P	Rio San Gabriel Nature Sanctuary
59	Seal Beach	E	SG River Trail North
60	Seal Beach	E	SG River Trail South
61	Sierra Madre	P	Thomas/Wadell Tracts
62	Sierra Madre	P	Willis Tract
63	Signal Hill	P	Cha'wot Nature Preserve
64	South El Monte	E	Rio Vista Park restoration
65	South El Monte	E	Restoration & greening
66	South El Monte	E	Restoration & greening
67	South Gate	E	Hollydale Park improvement
68	South Gate	P	Southern Ave. Greenbelt
69	Walnut	E	Lemon Creek Restoration
70	Walnut	E	Snow Creek Restoration
71	West Covina	P	Galster Park Trails
72	Whittier Narrows	P	San Gabriel River Center
73	Whittier Narrows	P	Lario Creek Corridor Restoration

* E = Existing/Underway; P = Proposed

The final version of the Project Evaluation Software was installed at the RMC's office on May 28, 2002. Complete system documentation is included in the Appendix.

B. GIS DATABASE

The scope for Phase II indicated that the consultant team should "employ GIS technical assistance to update and add to the RMC GIS database." To clarify the objectives for this task, the consultant team had discussions with the RMC staff, and Mr. Paul Veisze, of the California Department of Fish and Game, who had been identified at the RMC's project manager for the GIS component of Phase II. As a result of those discussions, the following scope of work (dated January 8, 2002) was identified.

GIS SCOPE

1. Reconcile the differences between the data files on the RMC internal Gateway computer system hard drive and the external hard drive delivered by FORMA Systems to the RMC in July 2001.
   - A. FORMA Systems will conduct an on-site review, identify, and resolve data file differences between the internal and external hard drives.
   - B. FORMA Systems will copy data files between the external and internal drives to resolve differences and create identical content both drives.
   - C. Coordination of scope item through email and telephone correspondence, and project management.

2. RMC GIS Database Core Documentation Integration
   - A. Archive the report data spreadsheets from Phase I
   - B. FORMA Systems will integrate records within the following documents providing the RMC with a means to navigate, and communicate its contents to the public.
     - 1) New report data spreadsheets (from FORMA Systems Final Report Appendices from Phase I)
     - 2) The road map documentation
     - 3) RMC CERES online catalog
   - C. The documentation integration tasks will include:
     - 1. Adding and editing records within the three documents named above to make them contain records with the same descriptive information.
     - 2. Adding the CERES online OID number to the pertinent report spreadsheet appendices only making the online catalog and report spreadsheet appendices contain identical OID numbers for proper linking.
       - a) Tasks within this scope item are limited to existing records and a maximum of 5 new records collected during Phase II being integrated. Additional new records above the maximum amount will be integrated on a time and materials basis.
       - b) Coordination of scope item through email and telephone correspondence, and project management.

3. Review and begin work on follow-up items dated 5/7/2001 as listed by Gordon Robinson, of FORMA Systems, and updates received since July 2001.
   - A. Contact, collect, catalog into CERES and create GIS system metadata for current Orange County bike trail data.
   - B. Contact, collect, catalog one record into CERES using given GIS system metadata for current San Gabriel Watermaster individual GIS data sets collected via the Internet.
     - 1) FORMA Systems will collect a total of 16 available GIS data sets and metadata information and catalog as one record into the CERES catalog.
     - 2) FORMA Systems will import the 16 data sets into ArcInfo and coverages will be created. The coverages will then be projected into the correct ALBERS projection.
     - 3) The metadata will also be copied into the GIS system in the current condition and format.
   - C. Integrate USFS Incident Management metadata into CERES and GIS system as collected from Marilyn Porter.
     - 1) Review and update, if needed, CERES catalog record for USFS Incident Management Data.
     - 2) Update GIS system metadata by adding metadata to GIS system in its present condition.
     - 3) Contact Marilyn Porter asking for individual and detailed GIS data set metadata.
   - D. Update the RMC CERES online catalog records to include correct and current up-to-date information.

1). Records within the RMC CERES online catalog that need updating will be identified, recorded, and updated. Records that need updating will be identified through random searches, and concentrated searches within the CERES catalog search forms. Errors that have already been identified will be correctly first.
2) The OID numbers for each record that is identified will be recorded in a document for easy review by the RMC staff.
3) Records will be updated within the RMC CERES online catalog via the Internet with the correct information.
4) At the end of the update process, a brief review of the updates will be completed for quality control purposes.

E. Coordination of scope item through email and telephone correspondence, and project management.

4. Make recommendations for future management of database with respect to software and data updates. Develop protocol for adding new data to the RMC database.
   A. Provide the RMC with a manual stating protocol for incorporating future data sources into the GIS system.
      1) Manual will include data documentation instructions and one sample for each subtask below:
         a) Documenting the data set record into the online RMC CERES catalog
         b) Documenting the data set record within the RMC internal GIS system hard drive
         c) Documenting the new report data spreadsheets (from FORMA Systems Final Report Appendices from Phase I)
         d) Documenting the road map file
      2) Manual will include step-by-step geographic projection samples for projecting ArcInfo coverages and ArcView shape files into the ALBERS projected coordinate system.
         a) One sample each of projecting an ArcInfo coverage from UTM NAD27 Zone 11 Meters, and California State Plane Zone V NAD83 US Survey Feet and US Feet projected coordinate systems to the ALBERS projection system. A total of three samples showing step-by-step methodology will be provided.
         b). One sample each of projecting an ArcView shape file from UTM NAD27 Zone 11 Meters, and California State Plane Zone V NAD83 US Survey Feet and US Feet projected coordinate systems to the ALBERS projection system. A total of three samples showing step-by-step methodology will be provided. (Manual will include step-by-step data backup instructions for backing up the RMC internal GIS system hard drive.)
   B. Within the manual, provide the RMC with the appropriate GIS contact and reseller information for receiving software updates from ESRI.
      1. Includes costs of ArcView software upgrades and software ordering instructions.
   C. Coordination of scope item through email and telephone correspondence, and project management.

5. Prepare 10 maps, 5 at 11"x17" size, and 5 at 34"x44" size in support of Phase II working group meetings.
   A. Maps will contain specific data related to working group needs and requests.
   B. Maps will be created using ArcView 3.2 software to meet the software compatibility requirements with the RMC.
   C. Coordination of scope item through email and telephone correspondence, and project management.

6. Data acquisition to cover areas within the RMC approved boundary that were not covered in Phase I.
   A. Identify, collect, and clip a maximum of 12 data sets using the newly approved RMC project bounding area. It will be necessary to redefine the project boundary area before beginning. Task 8a will need to be completed before beginning this step.
   B. Paul Veisze from the California Department of Fish and Game will be responsible for correcting the data sets collected during Phase I.

C. Project data sets, if required, into correct ALBERS projection.
D. Update metadata in GIS system and RMC online CERES catalog.
E. Coordination of scope item through email and telephone correspondence, and project management.

7. Analysis of the geographic data requirements implied by RMC Project Evaluation Criteria.
A. Analyze missing geographic data requirements in the RMC GIS database.
B. Create a report summary page identifying data sources, availability, and acquisition.
C. Review report summary page with the RMC and provide direction with action items for the RMC to coordinate future collection efforts.
D. One revision to the report summary page is included as part of this task.
E. Coordination of scope item through email and telephone correspondence, and project management.

8. Develop conservancy-wide map template. Add base data layers, and base annotation.
A. Construct project boundary rectangle surrounding the RMC boundary.
B. Develop template project file (.apr) within ArcView 3.2 adding base data layers and base annotation.
C. The base data layers will include and is limited to: RMC boundary, TBM freeways, TBM major roads, community boundaries, major channels, major rivers, and lakes.
D. The base annotation will include and is limited to: TBM major road names, freeway symbols, community names, RMC boundary, and Pacific Ocean label.
E. Add legend items and symbolize layers.
F. Coordination of scope item through email and telephone correspondence, and project management.

9. Develop detailed map template at city project level. Add base layers and annotation sources to fit higher resolution display.
A. Develop template project file (.apr) within ArcView 3.2 adding base data layers and base annotation. This template will be used to map the individual city projects.
B. The base data layers will include and is limited to: RMC boundary, TBM freeways, TBM major roads, TBM secondary and local roads, community boundaries, major channels, minor channels, major rivers, streams, and lakes.
C. The base annotation will include and is limited to: TBM major road names, TBM secondary road names, freeway symbols, and TBM community names.
E. Add legend items and symbolize layers on map.
F. Coordination of scope item through email and telephone correspondence, and project management.

10. GIS Consortium support
A. Provide support to the RMC, working with project team, for tasks related to contacting organizations, follow-up with contacts, and documenting contacted individuals in GIS contact spreadsheets in preparation for 3 meetings.
B. Report findings through phone conferences, email messages, and meetings to the RMC and project team in order to acquire information for GIS Consortium meetings.
C. GIS Consortium meeting facilitation and attendance (3 meetings).

Phase II Priorities

Because this broad scope was identified well after the remainder of the Phase II activities had been scoped, in recognition that the scope described above could not be accommodated within the Phase II budget for GIS support, the following work priorities were established.

Priority One

#1. Reconcile the differences between the data files on the RMC internal Gateway computer system hard drive and the external hard drive delivered by FORMA Systems to the RMC in July 2001.

#2. RMC GIS Database Core Documentation Integration

#3. Review and begin work on follow-up items dated 5/7/2001 as listed by Gordon Robinson, of FORMA Systems, and updates received since July 2001 (Items A through C only)

#4. Make recommendations for future management of database with respect to software and data updates. Develop protocol for adding new data to the RMC database.

#8. Develop conservancy-wide map template. Add base data layers, and base annotation.

#9. Develop detailed map template at city project level. Add base layers and annotation sources to fit higher resolution display.

Priority 2

#5. Prepare 10 maps, 5 at 11"x17" size, and 5 at 34"x44" size in support of Phase II working group meetings.

#6. Data acquisition to cover areas within the RMC approved boundary that were not covered in Phase I.

#7. Analysis of the geographic data requirements implied by RMC Project Evaluation Criteria.

In addition, it was recognized that item 10 (GIS Consortium support) was required by the Phase II scope.

FINAL STATUS

- **Task 1: Complete**

a. FORMA Systems reviewed, identified and resolved data file differences between RMC's internal and external drives.

b. FORMA Systems created identical drives by copying data between the two drives to make the drives identical.

c. FORMA Systems managed this production with Frank Simpson.

- **Task 2: Complete**

a. Frank Simpson, on FORMA Systems direction, archived the report data spreadsheets from Phase I into the archive directory located in the previous directory location of the original file.

b & c. FORMA Systems integrated all the documents to contain exact description information for each dataset, and exact matches for the OID numbers for appendix A and online catalog.

d. All the records that were collected for the GIS of the RMC were analyzed. No new datasets were collected before the initiation of Phase II.

e. FORMA Systems coordinated these efforts.

- **Task 3: Complete**

a. FORMA Systems coordinated delivery of the bike trail data to the RMC from the Orange County Transportation Authority, and Frank Simpson documented the datasets delivered, reprojected the data and added to the RMC database.

b. Frank Simpson collected, cataloged, and projected the sixteen datasets available from the San Gabriel Watermaster website.

c. Frank Simpson, contacted Marilyn Porter of the USFS Incident Management department to get more specific metadata. The USFS Incident Management department did not have any additional metadata regarding the USFS data we collected during Phase I. Frank will continue to try other departments for metadata regarding these datasets.

d. Frank Simpson, on direction from FORMA Systems, has updated the CERES catalog, the final report Appendix A, metadata files, and the road map file with the most current information.

- **Task 4: Complete**

a. FORMA Systems with Frank Simpson have completed instructional manuals for RMC users to document the CERES catalog, individual metadata files, new report data spreadsheets, and the road map files.

b. FORMA Systems have provided two step-by-step instructional manuals that help RMC users project shapefiles and ArcInfo Coverage datasets into the RMC Standard of Albers Conic Equal Area projection.

c. FORMA Systems have completed a resale manual that provides RMC users with instructions to order software from FORMA Systems.

- **Task 5: Complete**

a. Frank Simpson and FORMA Systems have provided 10 maps to support the RMC working group meetings.

- **Task 6: Pending**

- **Task 7: Pending**

- **Task 8: Complete**

a. Frank Simpson and FORMA Systems created new rectangle boundary that surrounds the RMC Boundary.

b. Frank Simpson with FORMA Systems developed a conservancy-wide template project file within ArcView 3.2.

c. All base layers are included, RMC boundary, TBM freeways, TBM major roads, community boundaries, major channels, major rivers, and lakes.

d. The base annotation layers within templates are TBM major road names, freeway symbols, community names, RMC Boundary, and Pacific Ocean labels.

e. Legends were created for each template file that describes datasets that are displayed on the map.

f. FORMA Systems coordinated this effort with RMC and Frank Simpson.

- **Task 9: Complete**

a. FORMA Systems and Frank Simpson developed template arc view shape (.apr) files within ArcView 3.2 for city project level detail.

b. RMC Boundary, TBM freeways, TBM major roads, TBM secondary and local roads, community boundaries, major channels, minor channels, major rivers, streams and lakes were included as base layers.

c. The annotation within each template is the RMC Boundary, freeway symbols, TBM major roads names, TBM secondary road names, and community boundaries.

d. Legends were created for each template file that describes datasets that are displayed on the map.

- **Task 10: Complete**

a. Frank Simpson and FORMA Systems provided support to the RMC by contacting organizations, follow-up with contacts, and documented the contacted individuals in the GIS contact spreadsheet for the 3 meetings.

b. FORMA Systems and Frank Simpson reported findings through phone conferences, email messages, and meeting to the RMC and project team in order to acquire information for GIS consortium meetings.

c. GIS consortium meeting facilitation and attendance by FORMA Systems and Frank Simpson.

6. WORKING GROUP

A. CHARGE

At their meetings on December 14, 2001 and January 11, 2002, the RMC Board approved establishment of a Working Group to research, identify, and make recommendations to the Board concerning implementation of the plans and concepts described in *Common Ground*. The Board approved the following list of tasks for the Working Group to consider, with the assistance of the Phase II consultant team:

1. Project Development Strategy
   A. Project Identification
   - Strategies for identifying project
   - Prioritization of projects
   - Identification of targets
   - Process to consider opportunities

   B. RMC Projects
   - Acquire land
   - Plan projects
   - Implement project design
   - Management plan

   C. City Projects
   - Project Generation
     - City-specific appendices to Common Group
     - Coaching
     - Workshops
     - Greening Institute
     - Design Guides
     - Project Development Template
   - Evaluation/Selection
   - Grant Administration
   - Support and Coordination

2. Open Space Management Strategy
   - Operating model (e.g., East Bay Regional Parks)
   - Maintenance
   - Security
   - Liability
   - Visitor Services

3. Subsequent Plans Strategy
   A. Habitat
   B. Rivers Parkway
   C. Mountains, Hills, and Foothills
   D. Trails and Bike Paths

E. Tributaries
F. Cultural Landscapes

4. Education and Outreach Strategy
   - Public Communication
     - Brochure
     - Website
   - Targeted Outreach
   - Youth/Adult Education
   - Educational/Interpretive Facilities
5. Long-Term Funding Strategy
   - Government
   - Private
   - Foundation & Nonprofit

B. MEMBERSHIP

At their meeting on January 11, 2002, the RMC Board also approved a list of individuals for Executive Officer to invite as participants in the Working Group, and provided the Executive Officer with the authority to invite additional members to participate, which could include additions suggested by members of the Board.

Working Group participants included:

Ms. Karen Bane of the California Coastal Conservancy, staff to the Wetlands Recovery Project, and is interested using in constructed wetlands to meet water quality mandates. Ms. Bane has experience with wetland restoration in Long Beach and is also interested in habitat issues.

Mr. Jim Bickhart represented the Southern California Transportation and Land Use Coalition, a nonprofit organization recently formed to promote more sustainable development. Mr. Bickhart has worked on watershed management issues, including the Ballona Creek watershed, and assisted in development of the legislation that resulted Proposition 12 and the creation of the RMC.

Ms. Shirley Birosik is staff to the Los Angeles Regional Water Quality Control Board, where she serves as watershed coordinator, and oversees the various subwatershed plans funded by Proposition 13.

Ms. Jane Bray is a Management and Community Relations consultant that brings many years of experience working with water agencies. Ms. Bray is former General Manager of the San Gabriel Municipal Water District and has served with the Watermaster and the Regional Water Board. Ms. Bray brings knowledge of the history of water rights decisions on the San Gabriel River and related water basins.

Mr. Bill Brown represented the US Forest Service with experience as the senior biologist of the Angeles National Forest. Mr. Brown noted that the Forest Service manages 20 to 25 percent of the open space in Los Angeles County, and indicated a desire for the Forest Service to act as a conduit between the upper and lower watersheds.

Mr. Mark Buehler of the Metropolitan Water District brought his expertise as an Environmental Engineer. He is Chair of the technical committee of the Water Augmentation Study currently being conducted by the Los Angeles and San Gabriel Rivers Watershed Council.

Mr. Mike Egan represented the Gateway Cities C.O.G., and the City of Bellflower. Mr. Egan is interested in cooperating with the RMC to create much-needed parks and open space in the cities he represents. Mr. Egan was represented at some meetings by Deborah Chankan, who is from the City of Long Beach and currently on loan to the Gateway Cities C.O.G.

Mr. Mike Gold represents the Orange County Division of League of Cities and the Orange County C.O.G., and has a background in landscape planning. Mr. Gold participated in the group to represent the cities and carry the message of the RMC back to the community.

Ms. Joan Greenwood represented the Friends of the Los Angeles River, and has extensive knowledge of the lower Los Angeles River. Ms. Greenwood is an engineer with broad knowledge issues related to water quality groundwater, and site remediation.

Ms. Joan Hartman is Outreach Director of the Wetlands Recovery Project, which works on a wide variety of coastal enhancement projects. Ms. Hartman has been working with the Environment Now group to hire watershed coordinators (funded by a Proposition 13 grant) for each of the five counties in the region, to identify data gaps and watershed projects. Ms. Hartman is also working to form a coastal caucus of local legislators, to attract more watershed funding to Southern California.

Mr. David Jallo, staff from the Los Angeles County Parks, oversees the Whittier Narrows Nature Center. Mr. Jallo is a biologist interested in expansion of open space and the provision of interpretive experiences for visitors.

Mr. Christopher Kroll, California Coastal Conservancy staff, brought knowledge of habitat restoration and public access along the Los Angeles River. The Conservancy has funded a habitat restoration study in the on LA River habitat restoration in the Long Beach area. Mr. Kroll expressed interest determining how his organization can work with the RMC.

Ms. Jaqueline Lambrichts is a founder of the Friend of the San Gabriel River, which has received funding by CalFed to develop a citizen monitoring program for the river. Ms. Lambrichts would like to assist the RMC with citizen monitoring efforts, and in finding ways to attract the community to the rivers.

Ms. Yvette Martinez represented the office of Congresswoman Hilda Solis, and has experience in working with the federal government. Ms. Martinez noted the composition of the Working Group, and expressed a hope that the membership could reflect the diversity of the watershed. Ms. Martinez indicated a willingness to bring resources and staff time to the group.

Mr. Steve Miller represented the Foothill Wildlife Conservancy, which worked with the voters in the City of Monrovia to approve a tax increase to fund a wildlife preserve in their community. Mr. Miller would like to assist the RMC in identifying wildlife corridors.

Mr. Joseph Perez represented Solution Strategies and has extensive experienced with public outreach and education, and in issues related to the rivers and the watersheds. Mr. Perez indicated that his firm looks forward to assisting the RMC.

Ms. Claire Schlotterbeck, represented Hills for Everyone, has experience working in land preservation issues in the Whittier and Chino Hills. Ms. Schlotterbeck would like to learn from the Working Group and to provide assistance as needed.

Ms. Carrie Sutkin, represented the First Supervisorial District, worked on the LA River Master Plan, and helped develop a "Greening Institute" to assist cities and nonprofits in development of projects. Ms. Sutkin would like to assist the RMC in creating a system to fund projects and to conduct outreach to cities, and indicated that her office could provide resources for conducting community meetings.

Ms. Melanie Winter represented The River Project and has experience working with communities to create river enhancement projects. Ms. Winter has participated in habitat studies and is involved the Taylor Yard project. Ms. Winter wants to ensure that communities are involved in the design of projects that affect them, to create a sense of ownership.

Mr. Don Wolfe is Assistant Director of the Los Angeles County Department of Public Works, which operates most of the tributaries of the rivers as flood control channels. Mr. Wolfe acknowledged the Department's recent change in philosophy with the creation of a Watershed Management Division. Mr. Wolfe would brings knowledge, skills and resources to the Group, and ensure that the RMC's planning efforts complement the in-progress development of the San Gabriel River Master Plan.

Mr. Jeff Yann represented the Sierra Club, is member of the Wildlife Corridor Conservation Authority, and has a civil engineering background. Mr. Yann has been active in wildlife corridor work, and is especially interested in the Whittier Narrow. Recognizing the RMC's limited staffing, Mr. Yann would like to provide support to the organization.

In addition, RMC Board members Margaret Clark and Kathie Matsuyama attended and participated in several meetings of the Working Group and subcommittees.

C. SCHEDULE AND STRUCTURE

Because of the size of the group and the scope of their charge, the consultant team developed a two-tiered strategy for discussion of issues: some topics would be referred to subcommittees, while others would be discussed by the entire Working Group. In general, those topics that were the subject of "subsequent plans" (as suggested by *Common Ground*) were referred to subcommittees, while discussion of the other topics would be discussed by the entire Working Group. A conceptual action plan that reflected this strategy was developed and subsequently revised to reflect the status of discussions in early April. The revised action plan is presented on the following page.

In general, for those topics that would be discussed by the entire Working Group, the discussion was informed by a background paper (developed by the consultant team) distributed with the meeting agenda. Following the discussion of the topic, the consultant team would then draft a recommendation to reflect the general intent of the discussion. The draft recommendation was then distributed with the agenda for the subsequent meeting, at which time the proposed recommendation would be discussed, and if the Working Group was amenable, action on the recommendation would occur.

Five subcommittees were formed: Rivers, Tributaries, Parkways and Corridors; Project Technical Assistance/Education and Outreach; the (Woodland) Duck Farm project, Habitat, and Mountains, Hills and Foothills. For subcommittees, it was suggested that a subcommittee would report on it's deliberations at one meeting, and action on a recommendation would occur at a subsequent meeting. However, because of the short timeframe of the Working Group (six months), only the recommendations from the Duck Farm subcommittees were discussed at two meetings. The remainder of the subcommittee recommendations was discussed at the final meeting of the Working Group.

The Working Group met on January 30, February 15, March 8, April 12, May 10, and May 31. The Rivers, Tributaries, Parkways, and Corridors subcommittee met on February 15, March 8 and 22, and April 5. The Project Technical Assistance/Education and Outreach subcommittee met on February 15, March 8 and 22, April 12, and May 10. The Duck Farm project subcommittee met on February 12, March 6 and 21, and April 11. The Habitat subcommittee met on March 6 and 21, April 11 and 25, and May 9 and 30. The Mountains, Hills, and Foothills subcommittee met on March 8 and 21, April 11 and 25, and May 9 and 30.

Parkway and Open Space Plan Working Group
Revised Action Plan
(4/12/02)

Month	*Topics*				
	Project Development	*Open Space Management*	*Subsequent Plans*	*Education and Outreach*	*Long-Term Funding*
January	Working Group discussion and formation of Subcommittees				
February	Subcommittee Meetings	Working Group discussion	Formation of Subcommittees		
March	Subcommittee Meetings	Continued discussion of recommendations to RMC Board	Subcommittee Meetings	Working Group discussion	
April	Subcommittee Meetings Project Development Workshop	Possible Action: Recommendations to RMC Board	Subcommittee Meetings	Discussion in Education and Outreach	Working Group discussion
May	Possible action: Recommendations on Project Development Strategy	Present WG Recommendations to RMC Board	Working Group discussion of Subcommittee recommendations	Possible Action: Recommendations to RMC Board	Possible Action: Recommendations to RMC Board
June	Possible WG action: Recommendations to RMC Board regarding the Duck Farm. Present Recommendations on Project Development to RMC Board		Possible Action: Recommendations to RMC Board	Present WG Recommendations to RMC Board	Present WG Recommendations to RMC Board
			Present WG Recommendations to RMC Board		

D. SUBCOMMITTEES

Five Subcommittees were formed: Rivers, Tributaries, Parkways and Corridors; Project Technical Assistance/Education and Outreach; the (Woodland) Duck Farm project, Habitat, and Mountains, Hills and Foothills. A synopsis of the issues discussed by each subcommittee follows.

1. Rivers, Tributaries, Corridors and Parkways

At their meeting on January 30, 2002 the Working Group established a Rivers and Tributaries Subcommittee, which was later renamed the Rivers, Tributaries, Parkways and Corridors Subcommittee (RTPC Subcommittee): to identify opportunities for acquisition or projects along the rivers and tributaries (including adjacent wetlands or estuaries) which are not currently planned.

The RTPC Subcommittee met on five occasions between February 15 and April 12 to discuss issues relative to development of a River Parkway Plan as identified in the OSP and make recommendations to the Board. The Subcommittee agreed at their initial meeting that it was important to identify opportunities for river related projects that could begin soon and in parallel with a more comprehensive planning effort. This agreement was based on the understanding that the RMC should demonstrate progress with early projects to educate the public about its mission while also developing a more long-range plan that helped support sound decisions for accomplishing that mission. The Subcommittee also agreed at one of their early meetings that it was important to acknowledge the RMC's guiding legislation which directed that priority be given to river related projects as excerpted below:

Whereas Section 32604 directed the conservancy shall do the following:

(a) Establish policies and priorities for the conservancy regarding the San Gabriel River and the Lower Los Angeles River, and their watersheds, and conduct any necessary planning activities, in accordance with the purposes set forth in Section 32602.

(b) Give priority to river related projects that create expanded opportunities for recreation, greening, aesthetic improvement, and wildlife habitat along the corridor of the river, and in parts of the river channel that can be improved for the above purposes without infringing on water quality, water supply, and necessary flood control;

As a result the Subcommittee directed the consultant team to develop the following products in support of this strategy:

- Begin working on a map showing existing and proposed projects.
- Develop draft criteria for strategizing which projects to pursue.
- Begin the scope of work for the Parkway Plan.
- Develop a draft recommendation from the Working Group to the RMC Board regarding funding allocations.

Following is a brief summary on each of the items:

Project Map

As of June 7, a project map has been created which delineates seventy-three projects either proposed or in process. The project information sources include Proposition A and Proposition 13 grant applications, Working Group members, and the Project Identification Forms sent to the cities. A list of the project locations is included below. The map shows the beginning of a river corridor forming along the lower Los Angeles River. (A larger scale map is included in the Appendix.)

Draft Criteria

The subcommittee agreed to recommend that the RMC Board modify their existing project evaluation criteria to give additional priority to river related projects during the next three years. The following criteria were developed and recommended as the basis for modifying the existing project evaluation criteria:

<u>Location</u>

- Is located adjacent to existing or proposed open space
- Visible and/or easily accessible to the public

<u>Linkages</u>

- Provides a direct physical linkage to other open space, trails, or bike paths.
- Fills in a gap along the river corridor between existing or proposed open space

<u>Land Use</u>

- For land that is publicly owned, the proposed use is consistent with current public functions (e.g., flood control, or recharge)
- Is proposed to occur on land that is currently underutilized

<u>Readiness</u>

- Project is either supported or requested by the underlying jurisdiction
- Project is well defined and can proceed expeditiously

<u>Multiple Uses</u>

- Project accomplishes multiple objectives consistent with the San Gabriel and Los Angeles Rivers Watershed and Open Space Plan

Additionally, the Subcommittee developed specific definitions for unique terms such as "river related" project to provide more detailed guidance to the RMC Board and staff on how to apply the suggested revisions to the project selection criteria described above.

Scope of Work

The consultant team developed a draft outline for a future River Parkway Plan (included in Section IV.A above), which includes a specific series of tasks or next steps that was developed with input from the Subcommittee.

Develop Draft Recommendation

The RTPC Subcommittee of the Working Group spent the majority of its meetings discussing the advantages and disadvantages of *(a)* recommending river related projects be prioritized and *(b)* developing criteria for river related projects. A summary is included below:

Prioritize River Related Projects During Next Three Years

Advantages	Disadvantages
RMC Legislation directs that river related projects should be given priority.	Prioritization of river related projects may alienate or disenfranchise communities not located adjacent to the river.
RMC would benefit from establishing a clear symbol to the public and outside funding sources of the mission of the RMC in its initial years of operation.	May lose opportunities to acquire habitat and/or undeveloped areas not located on the river.
The RMC has a limited budget and it is important to focus these limited resources in the early years on actions consistent with its mission.	Setting RMC policy to prioritize river related projects may reduce flexibility of RMC to allocate funds in the future.
Failure to prioritize projects could dilute the limited RMC funds such that little impact would be made throughout the entire watershed.	
River restoration projects throughout the Country have been successful when they focused their fiscal resources in their early years on demonstration projects that helped build public and private financial support.	
The RMC has already developed project evaluation criteria, but those criteria don't give strategic importance to river related projects.	
RMC would benefit from demonstrating to State and Federal funding sources that a strong consensus for the RMC's mission has been established among local agencies and community organizations throughout the RMC territory.	

The Subcommittee concluded that the best approach for addressing the disadvantages was by recommending that the RMC Board strive to allocate a portion (60%) of the RMC's discretionary funding for river related projects. This would allow other projects to be funded to address the concerns described above. They also suggested that the recommendation be worded such that it provide the RMC Board and staff with flexibility.

The RTPC Subcommittee prepared a draft recommendation, which was adopted by the Working Group with minor changes at their May 31 meeting.

2. Project Technical Assistance/ Education and Outreach

The Project Technical Assistance Subcommittee was formed at the January 30, 2002, meeting of the Working Group, with an intent to (1) Assist in the organization of a project development workshop for Proposition 12 projects; (2) discuss the need for future workshops; and (3) to provide technical assistance in the development of Proposition 12 Grant Applications. The Subcommittee was later renamed the Project Technical Assistance/Education and Outreach Subcommittee.

Participants in the Subcommittee included: Candace David (representing Nick Conway, San Gabriel Valley Council of Governments), Deborah Chankan (representing Mike Egan, Gateway Cities Council of Governments), Joan Hartman (Southern California Wetlands Recovery Project), Jaqueline Lambrichts (Friends of the San Gabriel River), Joseph Perez (Solution Strategies), Carrie Sutkin (First District, Los Angeles County Board of Supervisors), Don Wolfe (from Los Angeles County Public Works) and Melanie Winter (The River Project). Meeting facilitators included Belinda Faustinos (RMC Interim Executive Officer), Rebecca Drayse (TreePeople) Mark Horne (EIP Associates).

The Subcommittee first met on February 15. Ms. Faustinos explained that it would not be appropriate for the RMC to give direct technical assistance of Proposition 12 applications because the RMC would also participate in the ranking of applications. It was decided that the Subcommittee would focus on workshop development and not provide direct assistance for Proposition 12 projects. The desired number and potential location of workshops was discussed, including the pros and cons of having separate workshops for geographic areas. It was decided that because there are different timelines for Proposition 12 and Proposition 40, the RMC should plan for two types of workshops: one in April focused on river and tributary projects (which would be after release of the funding applications for Proposition 12—approximately mid-March), and a later workshop on wider watershed issues (e.g., prior to the availability of the RMC's Proposition 40 funding). The consultant team was asked to develop an agenda for the first workshop that the group could discuss in subsequent meetings. In addition, it was suggested that the RMC should conduct a call for projects, and requested that a Project Identification Form be developed.

At its March 8 meeting, the Subcommittee discussed the timing, audience, and logistics of the first workshop, which was scheduled for April 19, and the content of the Project Identification Form. The targeted audience for the workshop would be city representatives, community-based organizations, and non-profit groups. The workshop would begin with project opportunities including an overview of project types and information about the importance of multiple objective projects. A variety of success stories would be presented to inform the workshop participants. A brief overview of funding opportunities would then be discussed. The afternoon portion of the workshop would include discussion of the City Specific Appendix to *Common Ground,* with encouragement to complete the appendixes. The remainder of the day would focus on Proposition 12 funding and River and Tributary projects. The consultant team was asked to refine the agenda based on comments from the Subcommittee.

During the discussion of the Education and Outreach strategy at the March 8 meeting of the Working Group, it was suggested that an education framework be developed, and the subject referred to the Project Technical Assistance/Education and Outreach Subcommittee. The consultant team developed a draft framework, which was discussed, revised, and augmented by the Subcommittee at their meetings on March 22, April 12, and May 10, along with the development of the draft recommendations to the RMC

Board. The educational framework and recommendations regarding an education and outreach strategy were adopted by the Working Group with minor modifications at its May 31 meeting.

3. Duck Farm

At their meeting of December 14, 2001, the RMC Board adopted a resolution which found that purchase of the (Woodland) Duck Farm would be consistent with the purposes of the RMC and authorized the Executive Officer to initiate negotiations with representatives of the Trust for Public Land to determine the feasibility of acquiring the Duck Farm. To explore this extraordinary opportunity, the Duck Farm subcommittee was formed by the Working Group at their meeting on January 30, 2002, to consider the issues and opportunities presented by the prospective purchase by the RMC of the 57-acre Woodland Farms (Duck Farm) site along the San Gabriel River from the Trust for Public Land.

The subcommittee met four times, on February 12, March 6, March 21 and April 11, 2002. The March 6 meeting was preceded by a tour of the site. The subcommittee reached an early consensus at its first meeting that its role would not be to prepare a plan for the site, but rather to develop recommendations that the Working Group could pass on to the RMC Board to assist the Board in their future development of a plan.

Initially, the subcommittee members received briefings on the status of the proposed acquisition, and on the characteristics of the property. They learned that an appraisal is in preparation and the Attorney General is in the process of due diligence. They toured the site and reviewed maps, aerial photos and diagrams of the site and surrounding area.

The subcommittee identified stakeholders who will need to be involved in the planning process, and identified a number of opportunities for site development. The subcommittee also had two presentations from master of architecture students in the 606 Landscape Architecture Studio of Cal Poly Pomona, which was simultaneously studying the site and its surroundings.

Once the complexities of the site configuration and ownership, as well as other site development issues, became clear to the subcommittee, the group concluded that they did not have enough information to recommend purchasing the site, and that their recommendations would be conditional: given the RMC Board's announced intent to purchase the property. If RMC does decide to acquire the property (following the appropriate due diligence), the recommendations provide guidance about how to proceed.

A significant issue that arose at the first meeting and claimed the subcommittee's attention throughout was short-term management of the site, including interim security and prevention of vandalism. In general, the subcommittee concluded that it is important to implement a plan for maintenance and security, and to be sure that the responsible party, TPL at present, perhaps RMC later, follows through. The subcommittee recognized that the interim period between identification of a site and the start of construction for site development may be several years, and that, if the site is first acquired by a third party like TPL, RMC must communicate its criteria for interim management of the site.

The configuration and ownership of the site, of which 12 acres is on the east side of the 605 Freeway and 45 acres on the west, with the western portion divided into several parcels, not all contiguous, and with Southern California Edison parcels interspersed, was a concern. The utility easements over the proposed acquisition parcels were also an issue, as the easements specifically limit the uses of the site and require maintenance access for the four rows of electric power towers and lines that run through the site. The site is in two jurisdictions, the southern portion in the City of Industry and the northern portion in unincorporated Los Angeles County, which could add additional complexity to site planning.

Site access was another significant issue. There is no public access on the west side of the 605 Freeway. Access through a residential neighborhood south of Valley Boulevard leads to the eastern portion of the site, which is linked to the western portion via a tunnel under the freeway. North of Valley, there is an access point that leads, under the interchange of the freeway and Valley, to the far northern point of the site adjacent to the river, but that access depends on other ownerships to connect to the site. As the public access issues were discussed, emergency vehicle access also emerged as a concern. Once the river-adjacent open space becomes a public space, fire and other emergency vehicles will likely need access. The tunnel may not be large enough for a fire truck. The northern entrance does accommodate trucks - it is where the trucks that service the present nursery tenant access the site - but a second means of emergency vehicle access may be needed.

Contamination of groundwater and soil was also understood to be a potentially significant issue. While an assessment of site toxics has been performed, the results were not available to the subcommittee, and the issue was not addressed in detail. It was noted that the existing wells onsite have been closed.

The subcommittee also addressed issues of RMC's role, if it acquires the property, concluding that RMC should plan and develop the site, and retain ownership of all or part of the property. Considering the fragmented ownership and the restrictions on development due to the existing easements, the subcommittee concluded that RMC might want the option of selling a portion of the property, perhaps using the proceeds for maintenance. The subcommittee also considered interim uses, like the existing nursery and billboards, as revenue generators.

The subcommittee considered possible uses for the site, concluding that active recreation, such as sports fields, is not appropriate, and proposing a menu of possible uses for evaluation during the planning phase.

The subcommittee recognized that to resolve many of the issues identified will require significant efforts of data collection, analysis and planning studies. Subcommittee members expressed the concern that, in the absence of this information, it is premature to recommend purchase of the site. Accordingly, the subcommittee, after discussion, adopted six recommendations to provide guidance to RMC, if RMC should decide to proceed with the purchase of the Duck Farm site.

4. Habitat

(Note: the following report was provided by Calvin R. Abe Associates.)

This report is the final product of the Habitat Subcommittee of the Working Group of the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC). A number of Working Group Members, RMC Staff and Volunteers, and members of the public met six times with a consultant to discuss issues pertaining to habitat and wildlife within RMC territory. The Subcommittee meetings, which took place between March 6 and May 29, 2002, were between two and three hours long.

The original charge to the Subcommittee was to assist the RMC in the development of a Habitat Plan for RMC territory. The Subcommittee determined early on, that in addition to a habitat plan scope, the Subcommittee could also develop an inventory of potential resource partners that might assist the RMC with a comprehensive habitat plan, as well as begin the process of cataloging the vast, but widely scattered information potentially useful to RMC work pertaining to habitat.

During initial meetings of the Habitat Subcommittee, Members discussed general issues related to habitat, and habitat planning. Next, the Subcommittee studied different approaches to habitat planning, reviewed several other habitat conservation plans, and read critiques about habitat planning efforts. A matrix was developed identifying components of the habitat plans that had been studied, and the Subcommittee discussed which plan components would be applicable to an RMC Habitat Plan. Once plan components were identified, the Consultant to the Subcommittee began producing draft plan scopes, which were reviewed, discussed and revised.

In addition to a plan scope and the inventories of potential resource partners and other plans and studies, the Subcommittee also decided to develop recommendations to the RMC Board. The Subcommittee developed a total of three recommendations. The first Habitat Recommendation is a general policy recommendation for consideration of habitat issues in all RMC work. The second Habitat Recommendation is to take immediate steps to commence a territory-wide RMC Habitat Plan. The third Habitat Recommendation is to establish a permanent Habitat and Science Advisory Panel to assist the RMC in the development and implementation of a Habitat Plan, and to inform RMC work with regard to habitat, wildlife and other natural resources decisions prior to completion of the Habitat Plan.

It should be noted at the onset, that the process followed by the Habitat Subcommittee was closely paralleled by the Mountains, Hills and Foothills Subcommittee because the actively participating memberships of the Subcommittees were identical. Working Group Members most interested in habitat were also interested in the mountains and hills, where most RMC habitat is located. The result is that the reports from the Habitat and Mountains, Hills and Foothills Subcommittees are similar in many respects. While acknowledging their similarities, both Subcommittees are adamant that neither planning effort is to be considered a substitute for the other. Both Subcommittees agree that an RMC Habitat Plan should precede an RMC Mountains, Hills and Foothills Plan, with the advantage that many sections of the Mountains, Hills and Foothills Inventory and Analysis section could draw directly from the Habitat Plan. The Mountains, Hills and Foothills Plan Scope presently includes significant habitat components in the event the RMC does not execute the Habitat Plan first. If indeed the Mountains, Hills and Foothills Plan is done first, a full territory-wide RMC Habitat Plan must still be developed, because many important habitat opportunities exist outside of the mountains and hills.

(The Subcommittee's recommendation regarding the importance of habitat and the scope of a subsequent habitat plan is provided in Section 3B below.)

5. Mountains, Hills, and Foothills

(Note: the following report was provided by Calvin R. Abe Associates.)

The report is the final product of the Mountains, Hills and Foothills Subcommittee of the Working Group of the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC). A number of Working Group Members, RMC Staff and Volunteers, and members of the public met six times with a consultant to discuss issues pertaining to the hills and mountains within RMC territory. The Subcommittee meetings, which took place between March 8 and May 29, 2002, were between one and three hours long.

The original charge to the Subcommittee was to assist the RMC in the development of a Mountains, Hills and Foothills Plan for the hills and mountains in RMC territory. This document would analyze and plan the unique resources abundant in the region's hills and mountains, which include the San Gabriel and Verdugo Mountains and Foothills, the San Jose and Montebello Hills and the Puente-Chino Hills complex.

The Subcommittee determined early on, that in addition to a Mountains, Hills and Foothills Plan scope, the Subcommittee could also develop an inventory of potential resource partners that might assist the RMC with a comprehensive Mountains, Hills and Foothills Plan, as well as begin the process of cataloging the vast, but widely scattered information potentially useful to RMC work in the hills and mountains.

From the first meeting onward, the Mountains, Hills and Foothills Subcommittee agreed that for RMC projects in the hills and mountains, highest priority should be given to habitat and wildlife issues. In fact, every Member of the Mountains, Hills and Foothills Subcommittee was also a Member of the Habitat Subcommittee. During the initial meetings of the Mountains, Hills and Foothills Subcommittee, Members discussed general issues related to habitat, wildlife, human impacts on natural resources and Mountains, Hills and Foothills Planning. Next, the Subcommittee studied different approaches to planning, reviewed several other plans with significant habitat conservation components, and read critiques about other planning efforts. A matrix was developed identifying components of the plans that had been studied, and the Subcommittee discussed which plan components would be applicable to an RMC Mountains, Hills and Foothills Plan. Once plan components were identified, the Consultant to the Subcommittee began producing draft plan scopes, which were reviewed, discussed and revised.

In addition to a plan scope and the inventories of potential resource partners and other plans and studies, the Subcommittee also decided to develop recommendations to the RMC Board. The Subcommittee developed two recommendations, a general policy recommendation for prioritization of projects located in the hills and mountains of RMC territory, and a second recommendation suggesting a percentage of discretionary funding to be allocated to projects located in the mountains, hills and foothills during the next three years.

It should be noted at the onset, that the process followed by the Mountains, Hills and Foothills Subcommittee closely paralleled the process followed by the Habitat Subcommittee because the actively participating memberships of Subcommittees were identical. Working Group Members most interested in habitat were also interested in the mountains and hills, where most RMC habitat is located. The result is that the reports from the Habitat and Mountains, Hills and Foothills Subcommittees are similar in many respects. While acknowledging their similarities, both Subcommittees are adamant that neither planning effort is to be considered a substitute for the other. Both Subcommittees agree that an RMC Habitat Plan should precede an RMC Mountains, Hills and Foothills Plan, with the advantage that many sections of the Mountains, Hills and Foothills Inventory and Analysis section could draw directly from the Habitat Plan. The Mountains, Hills and Foothills Plan Scope presently includes significant habitat components in the event the RMC does not execute the Habitat Plan first. If indeed the Mountains, Hills and Foothills Plan is done first, a full territory-wide RMC Habitat Plan must still be developed, because many important habitat opportunities exist outside of the mountains and hills.

(The Subcommittee's recommendation regarding the scope of a subsequent Mountains, Hills and Foothills plan is provided in Section 3C below.)

E. RECOMMENDATIONS

The Working Group adopted seven recommendations to the RMC Board, which are presented on the following pages in the order they were adopted.

- Open Space Management
- Duck Farm
- Education and Outreach
- River-Related Projects
- Mountains, Hills and Foothills
- Long-Term Funding
- Habitat

The Working Group elected not address the scope of subsequent plans for Trails and Bike Paths, Cultural and Historic Landscapes, or Monitoring and Assessment, recommending instead that the subsequent plans for River Parkways, Habitat, and Mountains, Hills, & Foothills each include these elements within the scope of those plans. The scope of these subsequent plans is addressed in Section 6 above.

1. Open Space Management

Parkway and Open Space Plan Working Group

May 10, 2002

Recommendation to the RMC Board regarding an
Open Space Management Strategy

Recommended Strategies

To expand open space in the RMC territory:

a) The RMC should facilitate acquisition of open space by others; to the extent the intended purpose is consistent with the RMC's mission

b) Within the constraints of its enabling legislation and with the concurrence of the local jurisdiction, the RMC should pursue acquisition of open space and assume responsibility to plan projects consistent with the RMC's mission

c) The RMC should develop staff capacity to assist in planning and development of open space projects consistent with the RMC's mission

d) The RMC should seek assistance from other entities (e.g., those with experience in project development) to develop open space projects consistent with the RMC's mission

e) The RMC should generally pass through ownership of open space projects to other entities that can provide for operations, maintenance, and security consistent with the RMC's mission

f) The RMC where appropriate may retain ownership of open space projects and retain site control through partnerships or contracts with appropriate entities for operations, maintenance and security consistent with the RMC's mission"

Working Group Recommendation

The RMC should facilitate acquisition of open space by other entities, to the extent that the proposed use is consistent with the RMC's mission (as set forth in the enabling legislation). If the RMC elects to acquire open space, it must also assume responsibility to plan the site. The RMC should develop staff to assist in planning and development, and rely upon assistance of other entities to develop projects. Retaining ownership of open space projects should be limited to situations in which the RMC can identify resources that can fund operations, maintenance, and security by another entity.

Background

At their meetings of December 14, 2001 and January 11, 2002, the RMC Board approved establishment of a Working Group to research, identify, and make recommendations to the Board concerning five topics, including an Open Space Management Strategy for the RMC. The consultant team developed an Open Space Management Matrix, which described potential management models, a list of pros and cons for these models, and potential recommendations to the RMC Board, which were discussed with the Working Group on February 15, March 8, April 12, and May 10.

Open space management generally implies operations, maintenance, and security. However, the Working Group identified a range of activities that relate to the identification, acquisition, planning, development of open space that also warrant consideration. These various tasks and responsibilities are described below.

Tasks and Responsibilities

Identification

Prior to any decision about acquiring a property, RMC must identify the opportunity for a purchase from a willing seller or a transfer from another agency, since RMC does not have power of eminent domain. Candidate sites may be identified by means of a strategy that targets in advance properties that may become available, or by responding to opportunities as they arise. RMC must notify and coordinate with the underlying jurisdiction. Once a property is identified, RMC must decide whether to pursue the acquisition directly, to cooperate with another agency or nonprofit (as the conservancy is doing with the Trust for Public Land in the case of the Duck Farm), or to facilitate the acquisition by another agency, local, state or federal.

Acquisition

The acquisition process itself is complex, and requires a number of skills. RMC as an acquiring agency would either have to develop sufficient staff with these skills in-house, use the services of a sister agency, or contract for the necessary services with specialist consultants. Due diligence must be performed in connection with acquiring real estate. This involves obtaining maps, a survey, legal description, an appraisal, and analyzing the status of ownership, easements, restrictions, jurisdictions, liabilities and other considerations that may affect the viability of the site for public use and the cost of developing it. Due diligence on most river-adjacent sites and many other sites in RMC's territory will involve at least an initial assessment of soil and groundwater to establish the extent of contamination and cleanup costs and responsibilities. Most river-adjacent sites also serve as rights-of-way for power lines and other utilities. Those sites not owned by the utility companies are likely to have easements involving significant restrictions on the use of the sites. A business deal must be negotiated for the purchase, involving real estate acumen and legal skills. Funding must be secured and disbursed in a timely manner, and the acquisition agreement must be finalized and executed. Prior to closing the acquisition, RMC would need to assure that the seller's responsibilities, including toxics cleanup, have been accomplished.

Planning

If it decides to plan for the development of a property, RMC would need to develop a process for planning, including consultant selection, community participation, and coordination with local jurisdictions. RMC would need to manage the planning effort and give direction. Planning studies, including CEQA review and preparation of CEQA documentation as applicable, would need to be performed, either in-house or by consultant(s). A planning program—setting forth desired uses and design parameters—would need to be developed, mainly by RMC if it takes responsibility for planning, in cooperation with the communities to be served. Community participation and coordination with user groups and local jurisdictions will be required. A project-specific plan would need to be adopted by RMC.

Additional Remediation

Generally, remediation of site contamination is the responsibility of the seller, and as such it is part of the acquisition process. A seller of property zoned for industrial use and/or historically used for industrial purposes may be liable to clean the site only to industrial standards. To the extent that remediation to standards appropriate for the intended public use of the site has not been performed prior to acquisition, if it assumes some responsibility for cleanup, RMC would need to manage the remediation process, including assessment and cleanup of toxic soil and groundwater. RMC would need to contract with specialist consultants for assessment and remediation planning. RMC would need to contract for remediation work. RMC would need to obtain approvals from the Regional Water Quality Control Board, from the Department of Toxic Substances Control, and the South Coast Regional Air Quality Control Board, for groundwater remediation, soil remediation, and air quality remediation as applicable, and for follow-up monitoring where necessary.

Development

If it assumes responsibility for the development and construction of a site, RMC would need to manage the process of design and construction, including consultant selection and project management. Assuming that the planning process has resulted in a general direction for development of the site, but not detailed construction drawings, RMC would need either to prepare in-house or contract with consultants such as landscape architects, civil engineers, architects, graphic designers and other specialists for design. RMC would need to coordinate approvals of the construction drawings with local or state jurisdictions as applicable. RMC would need to develop a bidding/contractor selection process. RMC would need to select a contractor, negotiate and execute a contract for construction, and manage the project through completion.

Retention of Ownership

Ownership is not just passively holding title. It implies managing all of the other responsibilities discussed below, either by developing the appropriate staff and skills in-house, or by contracting for them. If RMC retains ownership, using the services of a sister agency to address the responsibilities of ownership seems unlikely, since these responsibilities are extensive in time and staffing demands.

Operations

If it elects to operate a property, RMC would need to provide visitor services, including educational programs and coordination with other agencies and nonprofit organizations as appropriate. It would need to manage the property. It would need to assure that utilities such as water, sewer, power, and telephone are available as appropriate, and that lighting is provided for facilities used after dark.

Maintenance

To the extent that it retains maintenance responsibility, RMC would need to provide trash collection, toilet facilities and utilities maintenance, regular maintenance of buildings, grounds, and plantings, and periodic major maintenance of plantings and water features and such systems as biofiltration installations. RMC would either need to develop staff capability for maintenance, contract with another agency or with a private business to provide maintenance, or a combination.

Security and Public Safety

If it maintains ownership of a property, RMC would need to provide for public safety and security of property, both its own facilities and visitors' vehicles and personal effects. RMC may elect to contract with another agency or to develop staff to provide ranger services to visitors, including guidance and emergency assistance. RMC would also need to provide the appropriate level of fire protection services, most likely by contracting with a recognized firefighting agency such as the LA County Fire Department.

Liability

In general, state agencies are self-insured, backed by the full faith and credit of the State of California. In cases where RMC does not maintain ownership, the RMC will need to assure that liabilities are addressed.

■ Open Space Management Models

With the above list of tasks and responsibilities, a range of conceptual open space management models can be derived, which includes (1) facilitate acquisition by others; (2) acquire and pass through; (3) acquire, plan, and pass through; (4) acquire, plan, develop, and pass through; (4) acquire, own, and do not operate; (5) acquire, own, and partially manage; and (6) acquire, own, and manage. The tasks and responsibilities implied by each of these conceptual models is identified in the following matrix, which includes examples of agencies which employ that model, and key issues associated with each of these models.

Open Space (Acquisition, Ownership, Planning, Development, and) Management Models

	Open Space Management Options	*Identification*	*Acquisition*	*Planning*	*Additional Remediation, If Applies*	*Development*	*Retention of Ownership*	*Operations*	*Maintenance*	*Security and Public Safety*	*Liability*	*Example Agency or Organization that Uses this Model*	*Issues*
0	Facilitate Acquisition by Others											LASGWCncl	Minimal Control, Need New Owner
1	Acquire & Pass Through											TPL	Very Little Control, Need New Owner
2	Acquire, Plan, & Pass Through											Coastal Cnsvcy	Limited Control, Need New Owner
3	Acquire, Plan, Develop, & Pass											Coastal Cnsvcy	Need New Owner
4	Acquire, Own, & Do not Operate										?	LA County Beaches (State Parks)	Need Operating Agency, O&M Funding
5	Acquire, Own, & Partially Manage											Mtns Rest Trust	Need Security Agency, O&M Funding
6	Acquire, Own, & Manage											E Bay Reg OSD	Need O&M Funding, Staff

Abbreviations

Coastal Cnsvcy = California State Coastal Conservancy
E Bay Reg OSD = East Bay Regional Open Space District
LASGWCncl = Los Angeles and San Gabriel Rivers Watershed Council
Mtns Rest Trust = Mountains Restoration Trust (Cold Creek)
O&M = Operations and Maintenance
TPL = Trust for Public Land

Pros and Cons of Conceptual Management Models

In addition to the issues identified in the matrix, a list of specific pros and cons for each of these models has been identified.

Model 0—Facilitate Acquisition by Others

Pro: Requires least RMC staff development.
Requires no RMC funding for acquisition, planning, development, or operations.

Con: Provides minimal control over planning, development, and operations.
Requires identification of an appropriate owner to fund, acquire, plan, develop and operate the site and provide security.

Model 1—Acquire & Pass Through

Pro: Requires RMC staff development only of acquisition expertise.
Requires no RMC funding for planning, development, or operations.

Con: Provides very little control over planning, development, and operations.
Requires identification of an appropriate owner to fund, acquire, plan, develop and operate the site and provide security.

Model 2—Acquire, Plan, & Pass Through

Pro: Provides control over planning.
Requires no RMC funding for development or operations.

Con: Requires RMC funding for acquisition and planning.
Requires identification of an appropriate owner to acquire, develop and operate the site and provide security.

Model 3—Acquire, Plan, Develop, & Pass Through

Pro: Provides control over planning and development.
Requires no RMC staffing for operations.

Con: Requires RMC funding for acquisition, planning, and development.
Requires identification of an appropriate owner to acquire and operate the site and provide security.

Model 4—Acquire, Own, & Do not Operate

Pro: Provides control over planning and development.
Requires no RMC staffing for operations.

Con: Requires RMC funding for acquisition, planning, and development.
Requires identification of an appropriate operating agency to manage the site and provide security, and funding for operations and security.

Model 5—Acquire, Own, & Partially Manage

Pro: Provides control over planning, development, and operations.
Requires no RMC staffing for security.

Con: Requires RMC funding for acquisition, planning and development and operations.
Requires RMC staffing for operations.

Requires identification of an appropriate security agency to provide security, and funding for security.

Model 6—Acquire, Own, & Manage

Pro: Provides control over planning, development, and operations.

Con: Requires RMC funding for acquisition, planning and development and operations.
Requires RMC staffing for operations and security.

■ Conceptual Management Scenarios

Given the pros and cons listed above, conceptual scenarios can be developed to suggest ways in which the RMC could provide flexibility for open space management (as conditions dictate), or could identify a specific long-term management strategy. These conceptual scenarios are presented in ascending order, with Scenario A calling for RMC to facilitate acquisition by other agencies where possible rather than acquire properties, and Scenario F, at the other extreme, calling for RMC to develop the resources and staff needed for operations, maintenance and security.

These alternative scenarios all incorporate some degree of flexibility to respond to particular conditions over time, and all recognize a difference between the immediate situation presented by the potential Duck Farm acquisition and future situations. Except for Recommendation A, the short-term component of each recommendation is identical. A range of options for owning and at least partially managing properties are included in Scenarios C, D and E. Scenario F defines a particular management strategy and a suggests the need for transition plan to implement it.

Scenario A

In the short term, the RMC should be considered the owner and operator of last resort. The RMC Board should seek to identify appropriate agencies to assume ownership, planning, development, and operations responsibilities. Longer term, the Board should remain flexible, choosing among management models 0 to 3 on a case-by-case basis, and should minimize RMC's involvement in operations and security,

Scenario B

In the short term, RMC should consider acquisition, planning, and development of sites, but should identify other agencies to retain ownership and provide operations, maintenance, and security. Longer term, the Board should remain flexible, choosing among management models 0 to 3 on a case-by-case basis, and should minimize RMC's involvement in operations and security,

Scenario C

In the short term, RMC should consider acquisition, planning, and development of sites, but should identify other agencies to provide operations, maintenance, and security. Longer term, the Board should remain flexible, choosing among management models 0 to 4 on a case-by-case basis, and should minimize RMC's involvement in operations and security,

Scenario D

In the short term, RMC should consider acquisition, planning, and development of sites, but should identify other agencies to provide operations, maintenance, and security. Longer term, the Board should remain flexible, choosing among management models 0 to 5 on a case-by-case basis, gradually developing staff capabilities in the area of operations, but not developing a ranger force.

Scenario E

In the short term, RMC should consider acquisition, planning, and development of sites, but should identify other agencies to provide operations, maintenance, and security. Longer term, the Board should remain flexible, choosing among management models 0 to 6 on a case-by-case basis, gradually developing staff capabilities in the area of operations and a ranger force.

Scenario F

In the short term, RMC should consider acquisition, planning, and development of sites, but should identify other agencies to provide operations, maintenance, and security. Longer term, the Board should decide on a management model, either models 5 or 6, and adopt a timetable and a transition plan to develop the funding and staff required.

2. Duck Farm

Parkway and Open Space Plan Working Group

May 10, 2002

Recommendation to the RMC Board regarding
the Woodland Farms (Duck Farm) Property

Recommendations

The RMC Board has expressed its intention to pursue acquisition of the Duck Farm site, subject to statutory requirements, funding availability, and performance of due diligence. Recognizing that the acquisition is a matter of considerable complexity, uncertainty, and constraints, the Working Group recommends—if RMC proceeds with the acquisition—as follows:

1. Provide for Short-Term Management of the Site

   Recognizing that the proposed acquisition will not be completed for several months, the Working Group recommends that RMC coordinate immediately with the current owner, the Trust for Public Land (TPL), to assure that issues of public safety and security are addressed, including provision of electric power for lighting and water pumps, and continuing supervision of the property to minimize vandalism and assure security and protection of the site. The Working Group recommends that, during the interim period from acquisition to the completion of construction, RMC contract for utilities, maintenance, and security to address the same issues. The Working Group recommends that RMC evaluate, together with TPL, the feasibility of early demolition of some structures, excluding those that may be of value in the development of the site, to minimize the danger of fire and vandalism. To contribute to site security by maintaining activity onsite, the Working Group recommends that RMC consider interim uses of the site, including revenue-generating uses and limited public uses appropriate for the interim period.

   Discussion: TPL has arranged for a caretaker, Mr. Steve Musick, and he and his assistant have improved the security of the site. There is presently no electric service, and, since the water supply is pumped from a well, no water. TPL is presently responsible for the site, so coordination with them is essential to maintain site security and public safety. The process of planning, design, remediation, and construction will likely last several years. RMC will be responsible for maintenance and security once it acquires the property. Prior to site development, with no public access, maintenance and security needs are minimal, but nonetheless critical. Contracting for the appropriate services during the interim period seems the most straightforward way to address the needs. Once the general outlines of a plan have been developed, interim public uses can be implemented onsite, assuming such uses would not conflict with cleanup and construction requirements. Existing revenue-generating uses onsite can be maintained and perhaps augmented. Once a site development schedule has been developed, RMC will be able to negotiate leases and other revenue-generating arrangements consistent with the implementation of a site development plan.

2. Plan and Implement Development of the Woodland Farms Property

   The Working Group recommends that the RMC assume responsibility for the planning and development of the site, including contracting as necessary for planning, design, and related services. The Working Group recommends that RMC work cooperatively with adjacent landowners including Cal Trans, Los Angeles County Department of Public Works, and the City of Industry to plan for the site area as a whole. The Working Group recommends that RMC work cooperatively with the two utility companies that have easements across the property and ownership of adjacent parcels, Southern California Edison (SCE) and the City of Los Angeles Department of Water and Power (DWP), to assure an integrated plan for the site area as a whole, and that RMC enter into agreements as necessary with the utilities to implement the plan. The Working Group recommends that the planning process include participation of stakeholders, including local, regional, state, and federal agencies and elected officials, community and environmental organizations, educational institutions, owners of adjacent properties, and interested businesses.

Discussion: The site consists of a number of parcels, not all contiguous. There are several parcels on both sides of the 605 Freeway, there are four rows of power transmission lines through the site, three SCE and one DWP, and SCE owns three parcels within the site area, including about half of the river frontage between Valley Boulevard and San Jose Creek. Part of the site area lies within the City of Industry part within the unincorporated area of Los Angeles County. Caltrans and the City of Industry both own parcels within the overall site area. Planning the site will require forming partnerships and working with a diverse group of interests. While RMC does not have staff to conduct the planning process in-house, it is well positioned to coordinate the effort and assure that the outcome is a site development consistent with its objectives.

3. Exclude Active Recreational Facilities from the Plan for the Site

   Recognizing that there are nearby schools and County parks with extensive sports facilities, the Working Group recommends that RMC exclude active recreational facilities, such as sports fields, from its plan for the site.

   Discussion: The site area and its linear and fragmented configuration, together with the presence of the utility towers, limit its ability to accommodate active recreation. Additionally, active recreation is not included within RMC's mission. Active recreational needs are being met by nearby existing facilities.

4. Include Multiple Uses in the Plan for the Site

   The Working Group recommends that RMC evaluate the following uses in its plan for the site:

   - Habitat Restoration
   - Low-Impact, Passive Recreation
   - Bicycle Trail(s)
   - Hiking Trail(s)
   - Equestrian Trail(s) and Facilities
   - Education and Interpretation
   - Flood Mitigation
   - Groundwater Recharge
   - Groundwater Treatment
   - Surface Water Treatment

   Discussion: The uses listed are a menu of all uses that have been suggested during the two Duck Farm Subcommittee meetings to date, for review and selection by the Subcommittee. The word "include" in the first sentence of the recommendation could be replaced with the word "evaluate", implying that the final menu of uses would result from analysis and review during the participatory planning process.

5. Retain Ownership of All or Part of the Woodland Farms Property

   To the extent that the property can be developed and operated for public benefits consistent with RMC's objectives, the Working Group recommends that the RMC retain ownership of all or part of the property at least through the planning and development process. The Working Group further recommends that the RMC consider options of joint ownership with other entities.

Discussion: Retaining ownership provides control and maintains flexibility. Acquisition is categorically exempt from California Environmental Quality Act review; site planning will trigger it. The planning and environmental review processes can move ahead while the RMC explores partnerships and long term uses for the site.

6. Provide for Long-Term Management of the Site

   The RMC does not presently have maintenance or security staff, and it is not feasible for the conservancy to develop staff capability within the next few years. The Working Group recommends that, during the planning process, the RMC identify an appropriate entity or entities to assume management and/or ownership and form a partnership and/or contract with the entity or entities to provide ongoing maintenance, visitor services, and security for the property when it opens to the public.

   Discussion: RMC is not in the park management business, and not likely to develop such capability soon, even if it should decide to pursue that direction in future. Maintenance, visitor services, public safety and fire protection each require specific capabilities, and each incurs costs. RMC will need to make arrangements to provide these services, perhaps by means of an operating agreement with a single agency or perhaps by means of separate arrangements with agencies and/or contractors to provide the services. The interim period from acquisition to completion of construction will allow ample time to explore the potential partnerships or contractual relationships and to pursue funding options.

Recommendation not Adopted

Acquire the Woodland Farms Property

To take advantage of an extraordinary opportunity to protect and restore river-adjacent land, to assure that the planning and development of the property for public benefit is consistent with RMC's objectives, and to maintain flexibility in the planning and development process, the Working Group recommends that the RMC acquire the property, subject to performance of due diligence to assure that the acquisition costs are consistent with fair market value, and that RMC is not exposed to unknown liability for future toxics cleanup of the site.

Discussion: RMC's enabling legislation authorizes the conservancy "to acquire and manage public lands." While it generally defines the purposes for which RMC may acquire land, the legislation does not specify the planning process. Due diligence, in accordance with standard State of California procedures for acquisition of property must be performed, including obtaining and reviewing an independent appraisal. It is important that the extent of toxic contamination and the responsibility for cleanup to appropriate levels be determined. It is particularly important that RMC have good information about the potential costs for any cleanup, to levels beyond what the seller will provide, which it may have to perform in order for the property to be used for public benefit.

3. Education and Outreach

Parkway and Open Space Plan Working Group

May 31, 2002

Recommendation to the RMC Board regarding an
Education and Outreach Strategy

Recommended Strategies

The working group recommends that the RMC:

- Priority Goal #1: Use Projects as Educational Tools
  - Give priority to projects with strong education and outreach components.
  - Use future Project Development Workshops to provide information on how education and outreach should be incorporated into projects.
  - Identify strategic partners and work to develop and issue guidelines for inclusion of education and outreach elements in projects.
  - Promote inclusion of nearby academic institutions (from K-12 to Universities) in project planning.
  - Include permanent educational signage at project sites to highlight watershed components, connectivity to other projects, and cultural and historical information.
- Priority Goal #2: Increase Awareness of the RMC and the Importance of Watershed Planning
  - Conduct a subsequent Project Development Workshop focused on Proposition 40 funding and watershed-wide projects.
  - Conduct additional future workshops in partnership with other agencies, particularly in urban neighborhoods.
  - Develop an RMC logo for use on RMC printed materials, the RMC website, and banners or signage for all projects funded by the RMC
  - Develop a homeowner brochure explaining the RMC's mission and the importance of watershed management and planning.
- Priority #3: Communicate the Value of Multi-Objective Projects
  - Use Project Development Workshops in partnership with other agencies and groups to provide technical assistance.
  - Partner with other agencies and groups to develop and promote guidelines for multi-objective projects
  - Provide information about, and links to, examples of successful multi-objective projects available on RMC website.

Other Goals

- Promote Watershed-Compatible Landscaping
  - Partner with groups and agencies (included in the educational framework) to develop and issue guidelines concerning appropriate plant materials and landscaping practices.
  - Provide information about, and links to, landscaping resources and practices on the RMC website.
- Promote the Importance of Citizen Monitoring

    - RMC should facilitate partnerships with organizations (listed in the framework) to promote uniform monitoring protocols and information sharing between groups.
- Expand Watershed Education for Elementary School Children
    - Promote partnerships and resource sharing between groups with existing programs.
    - Include age-appropriate educational signage and interactive displays at RMC project sites.
    - If allowed by the funding source, earmark a percentage of funds for development of educational programs by project proponents.
- Connect Potential Funders with Projects
    - Support partnerships between entities facing mitigation requirements and cities or agencies seeking funding for multi-objective projects.

Working Group Recommendation

The RMC should (1) use projects as educational tools, and give priority to projects with strong education and outreach components; (2) build awareness of the RMC and the importance of watershed planning; (3) communicate the value of multi-objective projects; (4) promote watershed-compliant landscaping; (5) facilitate partnerships with organizations to promote uniform monitoring protocols for citizen monitoring programs; and (6) support partnerships between entities facing mitigation requirements and cities or agencies seeking funding for multi-objective projects.

Background

At their meetings of December 14, 2001, and January 11, 2002, the RMC Board approved establishment of a Working Group to research, identify, and make recommendations to the Board concerning five topics, including an Education and Outreach Strategy for the RMC. The consultant team developed an Education and Outreach background paper and facilitated a discussion with the Working Group on March 8, 2002, at which it was suggested that an education framework be developed, and the subject referred to the Project Technical Assistance/Education and Outreach Subcommittee. The consultant team developed a draft matrix, which was discussed by the subcommittee at meetings on March 22, April 12, and May 10 along with draft recommendations.

Common Ground emphasized that a high priority must be placed upon public education and outreach. Community leaders, agencies, property owners, industries, businesses, and individuals make day-to-day decisions that impact the watersheds. Restoration of the watershed will require changes in behavior, shifts in resource priorities, and decisions on how to balance environmental and economic needs. This requires local understanding of the key issues to allow the public, agencies, and policymakers to make informed choices.

The Working Group acknowledged that the RMC has limited staff capacity and resources to allocate to the important task of education. The Working Group recognized the RMC's need to define education priorities and form partnerships with other groups to implement the RMC's educational goals. The Project Technical Assistance and Education and Outreach Subcommittee was given the task of determining priorities, defining implementation strategies and identifying potential partners. The attached Education Framework and the recommendations are the work product of this subcommittee.

EDUCATION FRAMEWORK

The attached framework is designed as a guide for the RMC in designing its education program. The first column identifies the educational goal, or what we want our audience to learn. The second column indicates what audience(s) we are trying to reach. The third column recommends the type of programs or outreach materials that would be most efficient and useful in reaching the desired audience. The fourth column provides examples of successful, environmentally responsible watershed projects or programs. The final column defines an implementation strategy, or suggested next steps for the RMC. The framework was designed to reach as many audiences as possible through strategic partnerships. The goals or educational outcomes are listed in descending order of recommended priority for the RMC with most immediate concerns listed first.

Within each educational goal, the implementation strategies believed simplest to accomplish without additional RMC staff or resources are listed first. The framework is designed as a living document. As additional partners, resources, or successful examples are identified, they should be added to the framework. The programs or strategies suggested in the framework should be evaluated for effectiveness with necessary course corrections made.

San Gabriel & Lower Los Angeles Rivers and Mountains Conservancy Education Framework

Goal/Educational Outcome	*The Audience*	*Recommended Type of Program: Curriculum, Outreach, PSAs, Direct Mail, Newspaper etc.*	*Examples of Implemented Projects or Programs*	*RMC Implementation Strategy*
Use projects as educational tools	All	Public participation in the selection and design of RMC projects. Permanent educational signage at project sites to highlight watershed components, connectivity, and cultural and historical information. Takeaway educational brochures explaining project elements (habitat enhancement, native plant use, water BMPs, etc.). Docent-led tours of sites, Press conferences, and other publicity. Newsletter, kiosks.	Santa Monica SMURRF facility, Tillman reclamation plant Japanese Gardens, Chino Basin WCD demonstration gardens, Broadous Elementary School, The River Project's Valleyheart Greenway, El Bosque del Rio Hondo Kiosk, Whittier Narrows Nature Center, El Dorado Nature Center, Monrovia Canyon; Santa Fe Dam Visitors Center, LA River Center, Upper Newport Bay Ecological Reserve; Augustus Hawkins Natural Park, Friends of the San Gabriel River—Thienes Avenue River Access to San Gabriel River and Garvey Avenue Pocket Park, San Gabriel Mountains Regional Conservancy and its planned watershed education center..	RMC Priority: RMC to issue guidelines for educational component in projects, and will favor projects with strong educational components. RMC will identify other partners including LA County and City Rec and Parks, State Parks and NPS. RMC will coordinate with academic institutions in promoting projects as educational tools (example Studio 606). RMC will include information about how to incorporate educational elements into projects as a component of future workshops.
Increase awareness of the RMC and the importance of watershed planning.	General Public, Agencies and Policy Makers	PSAs, workshops, articles in community newspapers and newsletters, informational banners with branding logo on signs and relevant signs (parks, river crossings, etc) throughout the watershed; local, call-in radio show interviews of park planners, mailings, homeowner brochures	Watershed Council, Wetlands Recovery Project (WRP), TreePeople, N.E. Trees. City and County of LA pollution prevention education materials, LADPW, Watershed Management Division, Aquatic Outreach Institute in Bay area, Friend of the San Gabriel River, The River Project, LA River Master Plan, State Parks Dept.	RMC Priority: RMC to Partner with the LA and San Gabriel Rivers Watershed Council, and LA County DPW. RMC will conduct additional workshops with some to be held in urban neighborhoods. RMC will develop homeowner brochure.
Communicate importance of multi-objective projects and need to identify linkages in project planning	City and County Parks and Recreation Staff, Planning Staff, Community Organizations, Non-Profits, Agencies	City Appendix, Multi-agency Workshops, Website postings of RMC projects in pipeline and materials or links to examples multi-purpose projects already completed.	Northeast Trees, County Public Works Watershed Management Division, DWP Sustainable Schools Program, The River Project, NRDC Stormwater Strategies Case Studies, TreePeople	RMC Priority: RMC to provide technical assistance for project development in the form of workshops and make information about multi-objective projects available on RMC website. RMC to develop guidelines for multi-objective partners with the assistance of partners.
Promote watershed compatible landscaping: including how to: mulch, and design runoff infiltrating gardens. Teach appropriate species planting including removal of invasive non-native species. Provide information on pollution prevention BMPs.	General Public, Business Owners City and County Recreation & Parks and Landscape and Maintenance Staff, Planning Departments, Non-profits, Building Industry, Community-based organizations, Public Agencies	Manual, Workshop, Mailings, regular updates on plant palettes used in new projects available on RMC web site – including requests for suggestions. Curriculum for landscape students as future planners.	Theodore Payne Foundation, Native Plant Society, TreePeople, DWP Water-wise materials; FOLAR; The River Project; Northeast Trees, LA Conservation Corp, Friends of San Gabriel River, Los Angeles Agricultural Commission, Weed Management Area.	RMC to partner with other groups (e.g. MWD, LADWP, Watershed Council and non-profit groups), to develop guidelines and will include general information and links to groups on RMC Website.

San Gabriel & Lower Los Angeles Rivers and Mountains Conservancy Education Framework

Goal/Educational Outcome	*The Audience*	*Recommended Type of Program: Curriculum, Outreach, PSAs, Direct Mail, Newspaper etc.*	*Examples of Implemented Projects or Programs*	*RMC Implementation Strategy*
Teach importance of citizen monitoring. Educate about levels, sources, and impacts of pollution on river ecosystems.	General Public, Agencies	Outreach efforts to promote the programs and secure volunteers. Training Workshops on proper monitoring techniques. Coordinate with the State Water Resource Control Board – Clean Water Team, Regional Water Quality Control Board, signage at riverside parks and restoration projects.	Friends of San Gabriel River, Friends of the Los Angeles River, SCWRP, Regional Water Quality Control Board; Orange County Coast Keeper, Surfrider Foundation, Baykeeper, Heal the Bay	RMC to partner with State Water Resources Control Board – Clean Water Team, Regional Water Quality Control Board, SCWRP, Friends of San Gabriel River, and Friends of the Los Angeles River.
Increase awareness of: What is a watershed, what watershed do I live in, how does it function, how can I help it, who else lives in my watershed (flora and fauna), how can I help them or hurt them, what is an aquifer?	Elementary School Children	Age appropriate educational signage at watershed restoration projects including schools, and park projects. School curriculum, presentations, field trips that illustrate principles, problems and solutions offered by new park projects, school yard exercises, tree planting or habitat restoration activities, project-specific study materials in print and on web site that request students' input for design solutions; poster and essay contests; 'speakers bureau' in which students present info to other classrooms	TreePeople has created and received State certification for an award-winning urban watershed curriculum called "School Yard Explorers" that enables students to use science and math skills to analyze their campus watershed, prescribe, plan and execute a campus restoration. CREEC-LA network provides educational resources and networking opportunities for educators around Southern California. The Wetlands Recovery Project provides similar information sharing and networking opportunities. Additional resources include: The Globe program, the Global Rivers Environmental Education Network (GREEN), the EcoAcademy (of the Los Angeles Conservation Corps), the North American Association of Environmental Educators (NAAEE), the US EPA's Water Office Kid's Page, and the Water Education for Teachers project.	RMC to facilitate partnerships between groups who have existing programs. RMC will include educational signage and interactive displays at RMC funded project sites. In the future, RMC could fund others to develop programs by earmarking a % of funds for educational programs
To connect those who have projects but little or no funding with other partners who may need to set aside land for mitigation measures	Building Industry, Land Owners, Agencies, Community	Project planning workshops or other forums to connect parties.	Legacy Partners	RMC to support partnerships between entities facing mitigation requirements and cities or agencies seeking funding for multi-objective projects.

4. River-Related Projects

Parkway and Open Space Working Group

May 31, 2002

Recommendation to the RMC Board Regarding
Allocation of Discretionary Funds for River Related Projects

■ Requested Actions

The Working Group recommends:

1. For the next three years, the RMC Board reserve a majority of discretionary capital funds for river-related projects as the most effective manner of focusing project development in a manner that will create a clear identify for the Conservancy, develop a unified work plan, create a visible and accessible parkway, initiate a series of demonstration projects, and meet the intent of the enabling legislation
2. For the next three years, the RMC Board strive to allocate at least 60 percent of its available discretionary funds to river related projects recognizing that other key opportunities may take precedence in any given year.
3. RMC Board direct staff to develop guidelines that recognize the importance of the following types of river-related projects: Strategic River Parkway Projects, Geographically Distributed River Parkway Projects, and Opportunity Projects.
4. RMC Board direct staff to recommend modification of existing RMC project evaluation criteria to give additional priority to river related projects.

Working Group Recommendation

Because of the size and complexity of the RMC territory and the magnitude of open space, habitat and watershed restoration needs, the Working Group recommends that the RMC Board consider initially focusing the Conservancy's discretionary capital funds in a manner that establishes a clear identity for the RMC. As the enabling legislation [PRC Code Section 32605(b)] requires that the RMC "[g]ive priority to river related projects that create expanded opportunities for recreation, greening, aesthetic improvement, and wildlife habitat along the corridor of the river…" the Working Group recommends that the RMC Board reserve a majority of discretionary capital funds for the next three years for river-related projects as the most effective manner of focusing project development in a manner that will create a clear identify for the Conservancy, develop a unified work plan, create a visible and accessible parkway, initiate a series of demonstration projects, and meet the intent of the enabling legislation.

Background

The RMC Board established at their meeting on January 11, 2002 a Working Group to discuss issues, refine concepts, identify options, and forward recommendations to the Board on how to implement the strategies and subsequent plans identified in the RMC's planning document: "San Gabriel and Los Angeles Rivers Watershed and Open Space Plan (OSP)." The Working Group subsequently established at their meeting on January 30, 2002 a Rivers, Tributaries, Parkways and Corridors Subcommittee (RTPC Subcommittee): to identify opportunities for acquisition or projects along the rivers and tributaries which are not currently planned.

The RTPC Subcommittee met on five occasions between February 15 and April 12 to discuss issues relative to development of a River Parkway Plan as identified in the OSP and make recommendations to the Board. The Subcommittee agreed at their initial meeting that it was important to identify opportunities for river related projects that could begin soon and in parallel with a more comprehensive planning effort. This agreement was based on the understanding that the RMC should demonstrate progress with early projects to educate the public about its mission while also developing a more long-range plan that helped support sound decisions for accomplishing that mission. The Subcommittee also agreed at one of their early meetings that it was important to acknowledge the RMC's guiding legislation which directed that priority be given to river related projects as excerpted below:

> Whereas Section 32604 directed the conservancy shall do the following:
>
> (a) Establish policies and priorities for the conservancy regarding the San Gabriel River and the Lower Los Angeles River, and their watersheds, and conduct any necessary planning activities, in accordance with the purposes set forth in Section 32602.
>
> (b) Give priority to river related projects that create expanded opportunities for recreation, greening, aesthetic improvement, and wildlife habitat along the corridor of the river, and in parts of the river channel that can be improved for the above purposes without infringing on water quality, water supply, and necessary flood control…

The Subcommittee also agreed it would be helpful to provide guidance to the RMC Board about the scope and content of a River Parkway Plan, as well as begin to provide tools for future progress in implementation of a River Parkway. As a result the Subcommittee directed the consultant team to

1). Suggest modification of existing RMC project evaluation criteria to give additional priority to river related projects,

2). Provide definitions of the key terms used in this recommendation and the project evaluation criteria,

3). Develop the proposed recommendation on reserving a portion of capital funds for river-related projects,

4). Prepare a map which delineated existing and proposed projects along the river, and

5). Develop a draft outline of a River Parkway Plan and a draft scope of work that would identify important "next steps."

Draft evaluation criteria and definitions follow, as well as a summary of the Subcommittee's discussion leading to the proposed recommendation. The map and scope of work for the River Parkway Plan will be included in the final work products submitted by the consultant team to the RMC Board (as part of the Phase II Open Space Plan contract).

Draft Evaluation Criteria

The requested actions of the RMC Board include a recommendation that the Board direct staff to modify existing RMC project evaluation criteria to give additional priority to river related projects during the next three years. The following criteria have been developed by the Working Group, and are recommended as the basis for modifying the existing criteria:

<u>Location</u>

- Is located adjacent to existing or proposed open space
- Visible and/or easily accessible to the public

<u>Linkages</u>

- Provides a direct physical linkage to other open space, trails, or bike paths.
- Fills in a gap along the river corridor between existing or proposed open space

<u>Land Use</u>

- For land that is publicly owned, the proposed use is consistent with current public functions (e.g., flood control, or recharge)
- Is proposed to occur on land that is currently underutilized

Readiness

- Project is either supported or requested by the underlying jurisdiction
- Project is well defined and can proceed expeditiously

Multiple Uses

- Project accomplishes multiple objectives consistent with the San Gabriel and Los Angeles Rivers Watershed and Open Space Plan

Definitions

The Working Group recognizes that the requested actions rely upon various terms that require definition. The following draft definitions are suggested for inclusion in any draft project guidelines or supplemental project evaluation criteria:

River Related Project: Projects that create expanded opportunities for recreation, greening, aesthetic improvement, and wildlife habitat along the urbanized portion of the corridor of the river and/or its tributaries (i.e. adjacent to or within ¼-mile of the river or its open channel tributaries), and in parts of the river or tributary channel that can be improved for the above purposes without infringing, and where possible, improving on water quality, water supply, and necessary flood protection.

Strategic River Parkway Project: River related projects along the corridor of the main stem only of the San Gabriel, Lower Los Angeles River, or Rio Hondo which are consistent with the RMC's legislation to give priority to: "…river related projects…along the corridor of the river…".

Geographically Distributed Projects: River related projects that would provide equitable distribution of projects geographically throughout the entire length of the San Gabriel and Lower Los Angeles Rivers and their tributaries.

Opportunity Projects: River related projects that may occur as opportunities during the normal fiscal year, which require quick response.

Open Space: Areas designated Open Space provide recreational opportunities, preservation of scenic and environmental values, protection of resources (water reclamation and conservation), protection of public safety and preservation of animal life. This designation also includes lands which may have been restricted to open space by map restriction, deed (dedication, condition, covenant and/or restriction), by an Open Space Easement pursuant to California Government Code Section 51070 *et seq*. and Section 64499 *et seq*.

Link: A link or linkage is any open space that creates a physical connection between two or more parcels of open space.

City: City, or for unincorporated areas, County

Because the RTPC Subcommittee of the Working Group recognizes the potential for concerns about the value of recommending river related projects be prioritized and developing criteria for river related projects, a summary of the potential advantages and disadvantages is provided below:

Prioritize River Related Projects During Next Three Years

Advantages

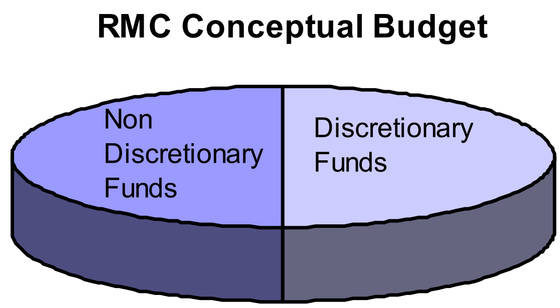
- RMC Legislation directs that river related projects should be given priority.
- RMC would benefit from establishing a clear symbol to the public and outside funding sources of the mission of the RMC in its initial years of operation.
- The RMC has a limited budget and it is important to focus these limited resources in the early years on actions consistent with its mission.
- Failure to prioritize projects could dilute the limited RMC funds such that little impact would be made throughout the entire watershed.
- River restoration projects throughout the country have been successful when they focused their fiscal resources in their early years on demonstration projects that helped build public and private financial support.
- RMC would benefit from demonstrating to State and federal funding sources that a strong consensus for the RMC's mission has been established among local agencies and community organizations throughout the RMC territory.
- The RMC has already developed project evaluation criteria, but those criteria don't give strategic importance to river related projects.

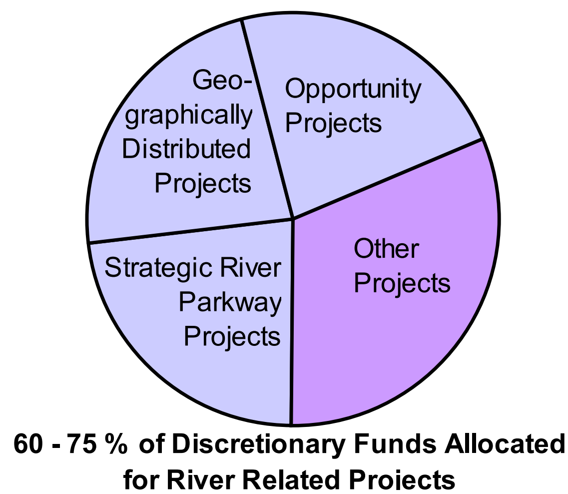
Disadvantages

- Prioritization of river related projects may alienate or disenfranchise communities not located adjacent to the river.
- May lose opportunities to acquire habitat and/or undeveloped areas not located on the river.
- Setting RMC policy to prioritize river-related projects may reduce flexibility of RMC to allocate funds in the future.

The Subcommittee concluded that the best approach for addressing the disadvantages was by recommending that the RMC Board strive to allocate only a portion (60 percent) of the RMC's discretionary funding for river related projects (see figure below). This would allow other projects to be funded to address the concerns described above. They also suggested that the budget for river related projects be divided into three distinct categories for the following reasons:

- **Strategic River Parkway Projects**: These projects would focus attention on the main stem of the San Gabriel, Lower Los Angeles, and Rio Hondo Rivers and help establish a clear identity for the RMC in its initial years of operation.
- **Geographically Distributed Projects**: The Subcommittee agreed that it was important to designate a portion of the discretionary funds for projects to allow for equitable distribution of projects throughout the San Gabriel and Lower Los Angeles Rivers and their tributaries.
- **Opportunity Projects**: The Subcommittee also agreed that reserving a portion of the discretionary budget for unforeseen opportunities would provide the RMC with flexibility with respect to funding decisions.


RMC Conceptual Budget
Non Discretionary Funds
Discretionary Funds


Geo-graphically Distributed Projects
Opportunity Projects
Other Projects
Strategic River Parkway Projects
60 - 75 % of Discretionary Funds Allocated for River Related Projects

5. Mountains, Hills, and Foothills

Parkway and Open Space Working Group

May 31, 2002

Allocation of Discretionary Funds
for Mountains, Hills, and Foothills

Requested Actions

1. The RMC Board reserve a substantial portion of discretionary capital funds for the next three years for projects in the mountains, hills and foothills which contain critical habitats and serve as the headwaters of the watershed, affecting water supply, flood management, and water quality.
2. The RMC Board strive to allocate 40 percent of its discretionary expenditures, in the first three years, on planning and projects located within the mountains, hills and foothills, recognizing that other key opportunities may take precedence in any given year.

Background

The Working Group believes that this is necessary and appropriate because

- Most of RMC's existing native habitat and wildlife are located in the mountains and hills situated throughout RMC territory
- Most of the current destruction of natural resources within RMC territory takes place in the mountains and hills
- Habitat in the mountains and hills is usually easier to link to larger habitat patches and core wildlife populations than in other areas in RMC territory
- Many of RMC's opportunities for passive recreation and natural resources education exist in the mountains and hills
- Generally, preservation of quality habitat is more cost effective and successful than habitat restoration attempts
- Quality habitat areas and open space located in RMC mountains and hills can be acquired and opened to the public almost immediately
- The open space visible in the region's mountains and hills are critical to regional viewsheds, sense of place and quality of life

The Working Group believes that it is critical that RMC work focus on the big picture and all that can be accomplished across a broad territory, such as creation of critical linkages between significant habitat areas. The Working Group observes that many of the projects with the greatest potential to provide quality habitat for wildlife and for passive recreation and education will be conservation projects located in the hills and mountains scattered throughout RMC territory.

The Working Group further recommends that RMC activities in the mountains and hills emphasize habitat and wildlife considerations in coordination with the RMC mission and other goals, including watershed management. The Working Group recommends that public access as well as educational and recreational amenities be included in RMC projects located in the mountains and hills wherever their sensitive inclusion will not reduce the habitat and wildlife potential of these or surrounding areas.

6. Long-Term Funding

Parkway and Open Space Plan Working Group

May 31, 2002

Recommendations to the RMC Board
Regarding Long-Term Funding Strategy

Recommended Actions

1. Obtain Legislative Authorization to Fund Core Operations

   In the near term, the Working Group recommends that the RMC Board actively pursue efforts to inform and educate state and federal legislators about the Conservancy's mission, status and operational funding needs, including authorization of basic personnel positions and appropriate consultant services. The Legislature created the RMC with a clear mission and should be encouraged to provide the funding necessary for the RMC to operate in support of that mission.

2. Pursue Partnerships with Appropriate Agencies/Organizations

   Recognizing that there are a number of federal, state, regional, local agencies and organizations which either have funding for open space projects or may be eligible for such funding, that some such funding requires matching funds, and that many of these same entities are anticipating substantial capital program investments in connection with regulatory compliance, such as for Standard Urban Stormwater Mitigation Plan (SUSMP) and Total Maximum Daily Load (TMDL) requirements, the Working Group recommends that the RMC actively pursue partnership opportunities, both traditional and innovative, with appropriate agencies and organizations throughout its territory.

3. Facilitate Formation of a Regional Caucus

   To pursue major capital projects and operating funds over the long term, the Working Group recommends that RMC facilitate the formation of a regional legislative caucus. Beginning with those state and federal legislators already familiar with the RMC and its mission and the open space needs of the region, the caucus could grow to include all of the relevant Southern California legislators. The Working Group recommends that RMC Board and staff members initiate a series of meetings and briefings with legislators and their senior staff to familiarize them with the issues and cooperative opportunities and explore future program, project, and funding options.

4. Strengthen RMC's Role in Grants Programs

   To implement RMC's mission within existing and projected grant programs, the Working Group recommends that the RMC Board seek legislative and administrative opportunities for the Conservancy to act as the granting agency for state and federal funding for such programs.

5. Identify Funding Options for Operations and Maintenance of RMC Properties

   Recognizing that RMC will need to provide funding support for operations and maintenance of any properties it acquires, although the operations and maintenance tasks may be performed by other agencies or contractors, the Working Group recommends that RMC identify sources of funding, such as leases, concessions or easements, sales of portions of acquired properties, formation of a nonprofit support group which could develop an endowment fund, and legislative efforts to include operations and maintenance funding in future capital programs.

6. Develop a Strategy to Create a Stable Long-Term Revenue Stream

   To develop stable long term sources of funding for both capital and operating needs, the Working Group recommends that the RMC develop, working with regional partners, a strategy to seek, at a future date, voter authorization of a regional or local revenue generation measure(s) to support ongoing capital and operating funds for open space. Recognizing that state and private funding may not be forthcoming, that there are models and precedents for voter approved local and regional funding of open space and that there exist a variety of entities in and near the RMC territory with open space needs who may be natural partners in such a cooperative undertaking, the Working Group recommends that the RMC develop a strategy that includes a review of relevant models, fostering partnerships and alliances, public outreach, coordination with elected officials, and evaluation of the process and timing for such revenue generation measure(s).

Background and Discussion

Definition

Long-Term can be defined as the period from two to twenty years from now. This implies some attention to the RMC's Proposition 40 funding (which is anticipated to be allocated over the next four years), in addition to Proposition 40 funds that are not specifically targeted to RMC, but the main focus is post-Proposition 40 strategy.

Context

RMC's enabling legislation (Public Resources Code 32602) identifies the purposes of the RMC to include acquisition and management of public lands, but it does not provide long-term funding to support these purposes. *Common Ground* acknowledged that additional financial resources will be needed to restore the watersheds, for natural resource protection and acquisition and maintenance of open space.

Excerpt from Common Ground*: Funding*

> To restore the watersheds, additional financial resources will be needed. Traditionally, government has identified and funded acquisition of open space and other natural resource protection and conservation activities. Increasingly, cities, communities, residents, neighborhood groups, private groups, and environmental organizations identify open space and conservation opportunities and work to secure funding or find alternative solutions within and outside of the traditional governmental role.
>
> Traditional funding sources for natural resource protection and acquisition of open space include federal, state, and local funds. Government agencies have a variety of grant programs, for water quality enhancement, wildlife protection, habitat restoration and enhancement, groundwater recharge, stormwater pollution planning, fisheries restoration, and watershed protection. Funds may also be available from state, county, and local city voter-approved bonds, such as Proposition 12 (The Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act) and Proposition 13 (the Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Bond Act) or assessment districts. The Los Angeles County Safe Neighborhood Parks Acts (Proposition A) of 1992 and 1996 have been responsible for most of the Los Angeles River greening and riverfront parks. These sources will likely be the primary source of funds for acquisition of lands and individual projects.
>
> In addition to securing funds from traditional sources, the State Conservancies will work to identify and create funding opportunities from private trusts. Trusts acquire land for transfer to a third party, when financing is organized. Private foundations should be a source of additional funding.
>
> Funding for planning, management, and maintenance of open space, including historic and cultural sites, must also be addressed. Wherever feasible, plans for acquisition of open space should include a plan for securing the necessary funds for long-term maintenance of those spaces. Many existing facilities have suffered from inadequate maintenance and require funding to restore those facilities to acceptable conditions. To help with on-going maintenance and public services, expanded funding opportunities should be created.
>
> Existing funding sources will not be overlooked. Currently, federal, state, and local agencies, and individual cities expend considerable resources to maintain existing parks, open space, trails, bike paths, and flood protection facilities. For example, optimization of existing water resources through improved water conservation and increased groundwater

recharge could reduce the need for imported water and result in cost savings that could be used to meet other water resource needs.

Compliance with current legislative mandates, such as those related to stormwater runoff quality, will require counties, cities, local agencies, and private landowners to expend resources to develop, implement, maintain, and monitor Standard Urban Storm Water Mitigation Plans. Additional resources will be needed to implement the recently adopted requirements to eliminate trash and other contaminants from the San Gabriel and Los Angeles Rivers. Caltrans plans to expend considerable sums to mitigate stormwater pollution from State highways. The State Conservancies will encourage discussion of how best to optimize the expenditure of resources to mitigate non-point stormwater runoff pollution to accomplish multiple objectives where feasible.

Discussion

The following outline describes needs for Long-Term Funding and Potential Sources of Long-Term Funding.

Needs for Long-Term Funding

RMC Core Operations: Management, Board Support, and Planning

- Annual Operating Budget for Office Operations
- Staff: Personnel Positions for Acquisition Services (Legal), Grants Administration, Project Management, and Administrative Support
- Consultant Services (and/or Additional Staffing) Associated with Land Acquisition, Planning, and Development.

Grants Programs: Grants to Cities, Other Local Agencies, and Organizations for both acquisition and development

Capital Programs: Acquisition and Development of Public Lands

- Preacquisition Real Estate, Legal, Due Diligence and Planning
- Acquisition of Fee Title and/or Easements
- Interim Carrying Costs of Properties Prior to Completion of Development
- Project Planning and Design, Public Involvement, and Coordination with Local Jurisdictions
- Remediation for Site Contamination (portion not covered by seller, where applicable)
- Property Development and Construction

Partnerships with Other Agencies

- Matching Funds or Portion of Capital Costs

Operations and Maintenance

(The Working Group is pursuing a separate consideration of O & M policy. However RMC may elect to provide for operations and maintenance, whether by staff, contract or partnership with other agencies, or by various combinations, the costs will need to be addressed in any case.)

- Maintenance, Interim and Ongoing.
- Security and Fire Protection, Interim and Ongoing.
- Visitor Services
- Liability

Potential Sources of Long-Term Funding

Annual State Budget

- Authorization for Personnel Positions
- Annual Appropriations for Core Operations
- Specific Appropriations for Grant Programs and Capital Programs via Member Requests and/or Legislation

State Bonds

Proposition 40: Joint Projects with Other Agencies; Competitive Grants

"Son" and "Grandson" of Proposition 40: Assuming Californians will continue to vote to invest in open space and environmental protection and enhancement, future state bond issues may well be larger than Propositions 12, 13, and 40. RMC could participate in generating and shaping the bond issue proposals to assure the region of an equitable share of the resources to be generated.

State Programs

Existing Grant Programs: State Parks, Wildlife Conservation Board, Regional Water Quality Control Board, Caltrans

Federal Programs

Existing Grant Programs: US Army Corps of Engineers, National Park Service, Soil Conservation Service, Department of Transportation, Others.

Legislative Programs: Solis NPS Bill, Specific Corps Appropriation (See Caucus below)

Partnerships

Joint Capital Projects with Federal, State, Regional and Local Agencies

Cooperative Projects with Agencies to Leverage Their Investments to Achieve Regulatory Compliance (TMDL and SUSMP Compliance)

Nongovernmental Partners

Land Trusts

Foundations, National and Local

Corporate and Individual Gifts

Bequests

Project-Generated Revenues

Leases, Concessions, Easements

Sales of Portions of Acquired Properties

Local Voters

Regional and/or Local funds (possibly through bonds) for Acquisition and/or Maintenance of Public Open Space, Financed by Countywide Property Tax Assessment or Local Assessment District

Endowment or Nonprofit Support Group

While it may not be appropriate for a public agency to set up an endowment fund directly, such a fund could be a useful vehicle to assure future funding for operations and maintenance. RMC could consider facilitating a quasi-public endowment or a tightly structured nonprofit for this purpose. Examples of nonprofits that support public facilities include the Greater Los Angeles Zoo Association and the Golden Gate National Park Association.

Caucus

Following the example set by the Lake Tahoe and Santa Ana regions, RMC could play a central role in facilitating a regional caucus, building a political consensus that involves all the relevant agencies. The influence such a caucus can have is indicated by the federal and State funding for Lake Tahoe and the large portion of Proposition 13 allocated to the Santa Ana Watershed Project Authority (SAWPA). When the regional agencies and elected officials are able to speak with one voice, legislation and budget allocations at federal and State levels, will follow.

7. Habitat

Parkway and Open Space Working Group

June 7, 2002

Habitat Recommendations
Consideration of Habitat Issues and Creation of a Habitat and Science Advisory Panel

Requested Actions

1. That the RMC Board incorporate, as a matter of policy, habitat considerations into all RMC work.
2. That the RMC Board initiate a territory-wide RMC Habitat Plan.
3. That the RMC Board establish a Habitat and Science Advisory Panel.

Working Group Recommendation

The Working Group recommends that the RMC Board incorporate, as a matter of policy, habitat considerations into all aspects of RMC work, including: acquisition decisions, project plan development, project implementation, management of RMC projects, and monitoring and assessment of RMC projects. When considering habitat, the RMC should consider existing habitat, historical habitat, and potential habitat. The Working Group Recommends that the RMC:

- Take immediate steps towards the commencement of a territory-wide RMC Habitat Plan
- Consider habitat issues territory-wide and on a project-by-project basis prior to completion of an RMC Habitat Plan
- Utilize existing studies and plans relevant to habitat issues within RMC territory. Existing information should also be utilized after completion of an RMC Habitat Plan, but is especially critical to RMC work prior to the completion of this Plan.
- Consider the urgency of threats to existing habitat in preservation and restoration decisions

The Working Group also recommends that the RMC Board create a Habitat and Science Advisory Panel. This committee would become a permanent panel of scientists and experts assembled to function as an advisory committee to the Board. The Habitat and Science Advisory Panel should be devoted exclusively to issues pertaining to habitat, wildlife, and other natural processes and as such should consist solely of scientists or other persons possessing demonstrated expertise in issues relating to habitat, wildlife, or natural processes. The panel should represent a broad range of scientific expertise including:

- Scientists or other experts familiar with regional natural processes such as hydrology, fluvial geomorphology, sediment transport, and fire cycle
- Scientists or other experts familiar with the full range of issues pertaining to native vegetation such as native plant communities, species composition, exotic species management, and rare and endanger plant species and communities
- Scientists or other experts familiar with the full range of issues pertaining to native wildlife, such as: wildlife communities, species composition, rare and endangered wildlife species, exotic species management, and wildlife movement

The panel could appropriately be drawn from a range of sources, such as United States Department of Fish and Wildlife, National Forest Service, California, Department of Fish and Game, California Coastal Conservancy, Resources Agencies, University Faculty, Scientists and Other Practitioners. Although the panel is envisioned to be permanent, membership on the panel could change, as RMC's needs dictate. RMC Staff would generate a recommended list of Habitat and Science Advisory Panel Members, but power of Panel appointment would remain with the RMC Board. Meetings of the Habitat Advisory Panel should be open to the public to ensure the integrity of the Panel. Public participation can be limited to an official comment period.

The overall mission of a Habitat and Science Advisory Panel would be the maximization of habitat, wildlife, and other natural resources within RMC territory. Although the Advisory Panel would greatly strengthen all future RMC work with regard to habitat, wildlife, and management of natural resources, the Panel is critical to RMC work in advance of an RMC Habitat Plan. The Working Group recommends that the RMC Habitat and Science Advisory Panel

- Participate in all RMC planning work, including territory-wide planning such as the RMC Habitat Plan, and planning for specific RMC parcels and projects
- Assist the RMC Board and Staff in all relevant aspects of their work including the application of a detailed Habitat Plan, once completed; other RMC planning work; acquisition choices; project planning; project development; project implementation; project management; and monitoring and assessment activities
- Evaluate and compare potential RMC projects to assist the RMC board in making acquisition choices that maximize habitat, wildlife, and natural processes both within the confines of project boundaries, and across RMC territory
- Develop strategies for preservation, restoration, and creation of habitat in a variety of settings, including: mountains, hills, and foothills, riparian corridors along the rivers and tributaries, as well as the more urbanized areas within RMC territory
- Develop a Strategic Habitat Priorities Map based upon existing information to guide future RMC planning efforts and assist RMC activities in advance of the RMC Habitat Plan
- Review other habitat plans and studies relevant to RMC territory to identify information gaps, and propose future research and planning

Background

The Working Group believes that the requested actions are necessary and appropriate because

- Regionally native habitat is one of the scarcest resources within RMC territory
- Both the quantity and quality of habitat within RMC territory are presently experiencing steep decline
- The declining quantity and quality of habitat within RMC territory is causing numerous, significant negative impacts on the region's wildlife populations
- Large-scale habitat conservation and restoration efforts are required to sustain many of the region's plant and animal species and communities presently threatened with further decline, local extirpation, or extinction
- The RMC's legislative charge and vast territory uniquely position it to execute large-scale habitat conservation and restoration beyond the scope of the more numerous, but more localized conservation and restoration efforts. Few entities are involved with large-scale habitat conservation, restoration, and reconnection within RMC territory.
- Without careful consideration of habitat and wildlife issues, RMC activities could result in harm to existing or potential habitat areas, further imperiling plant communities and wildlife populations
- Proper consideration of the complex issues pertaining to habitat, wildlife, and natural processes requires a broad range of scientific expertise
- Many valuable educational and recreational opportunities in RMC territory cannot be realized unless habitat is preserved, restored, and created

7. SCOPE OF SUBSEQUENT PLANS

Common Ground suggested that to fully develop some of the concepts described in the plan, the RMC would need to undertake a second phase of this open space plan process, and to develop, within three years of the adoption of this plan, several subsequent plans, which are discussed in more detail below.

A. RIVER PARKWAYS AND TRIBUTARIES

Common Ground provided the following direction:

> **Rivers Parkway Plan**: To create a continuous ribbon of open space along the San Gabriel River, the lower Los Angeles River and the Rio Hondo, a Rivers Parkway Plan should be developed. A proposed study by the National Park Service to create a National Recreation Area along the rivers could inform this process. Partners in the development of the Rivers Parkway Plan may include the National Park Service, the U.S. Forest Service, the California State Parks and Recreation Department, the Los Angles County Department of Public Works, the Los Angeles County Parks and Recreation Department, and each riverfront city. The Rivers Parkway Plan shall outline a prioritized list of projects, identify potential funding, and include a work program to accomplish the acquisition and development of each project. This will include projects designated in the Los Angeles River Master Plan and the in-progress San Gabriel River Master Plan.
>
> **Tributary Plans**: To extend the network of open space, trails and bike paths along tributaries, the RMC will encourage the relevant agencies engaged in subwatershed plans to address open space, habitat and passive recreation along the major tributaries of the rivers, including the Compton Creek, Coyote Creek, Rio Hondo, and the Upper San Gabriel River (including Walnut and San Jose Creeks). Potential partners in this process include the Los Angeles Regional Water Quality Control Board, the Los Angeles County Department of Public Works, the Los Angeles County Parks and Recreation Department, Orange County Watershed and Environmental Programs, the U.S. Army Corps of Engineers, the San Gabriel Regional Mountains Conservancy the Los Angeles and San Gabriel Rivers Watershed Council, the San Gabriel Valley Council of Governments, the tributary-fronting cities and stakeholders involved in subwatershed plans.

To assist the Working Group in their consideration of this topic, the consultant team developed the following matrix, which was provided to the Working Group at their first meeting (on January 30, 2001).

<u>River Parkways</u>

Agencies:	U.S. National Park Service, U.S. Forest Service, State Parks, L.A. County Public Works, L.A. County Parks
Potential Resource Partners:	TBD
Stakeholders:	Each riverfront city
Conceptual Scope:	Outline a prioritized list of projects, identify potential funding, and include a work program to accomplish the acquisition and development of each project. This will include projects designated in the Los Angeles River Master Plan and the in-progress San Gabriel River Master Plan.
Issues:	How to anticipate and complement the proposed study of a National Recreation Area along the San Gabriel and lower Los Angeles Rivers (as proposed in pending federal legislation)? Can the RMC prepare a plan for a Rivers Parkway in advance of the completion of the San Gabriel River Master Plan (currently scheduled for 12/03)?

Tributaries

Agencies: LA Regional Water Quality Control Board, U.S. Army Corps of Engineers, LA County Public Works, LA County Parks & Recreation, OC Watershed and Environmental Programs, S.G. Regional Mountains Conservancy, LA and SG Rivers Watershed Council, San Gabriel Valley Council of Governments

Potential Resource Partners: TBD

Stakeholders: Tributary-fronting cities and stakeholders involved in subwatershed plans

Conceptual Scope: To extend the network of open space, trails and bike paths along tributaries, the RMC will encourage the relevant agencies engaged in preparing subwatershed plans to address open space, habitat and passive recreation along the major tributaries of the rivers, including the Compton Creek, Coyote Creek, Rio Hondo, and the Upper San Gabriel River (including Walnut and San Jose Creeks). (Also Arroyo Seco and Sun Valley watersheds.)

Issues: Since the scope of work for subwatershed plans is already established, what substantive activities are needed or appropriate?

What can/should be done for tributaries where there is no sub-watershed plan?

- Los Cerritos Channel
- Verdugo Wash
- Burbank West
- Tujunga Wash
- Upper L.A. River

River Parkway Plan Outline and Next Steps

Based upon discussions with the Rivers, Tributaries, Parkways and Corridors Subcommittee, the consultant team developed the following description and outline for a River Parkways Plan.

A Vision for River Parkways

River parkways provide a potential to establish a clear identify for the Rivers and Mountains Conservancy and serve as a tangible linkage between many of the RMC's programs and initiatives. Greenbelts along the rivers and major tributaries will create ribbons of open space from the mountains to the sea, provide pocket parks and passive recreation, and expand access to open space across the urbanized portions of the territory. These landscaped spaces will provide natural areas for wildlife habitat, cleanse stormwater runoff, promote groundwater infiltration, and enhance flood protection by serving as buffers between the rivers and adjacent land uses. Wetlands adjacent to the rivers and tributaries, and estuaries at the mouths of the rivers will provide vital habitat for native plants, animals and migratory birds. Greenbelts through the heart of the watershed will become valued aesthetic amenities that link neighborhoods, create a sense of community, increase property values and encourage economic development in adjacent neighborhoods. Bike paths and trails will connect community parks and other regional open space resources and create viable routes for bicycle commuters. Interpretive signage and exhibits will provide information about the plant and animal species that occur in the vicinity, the natural and cultural history of the area, and the context of the site within the larger watershed.

Thus, river parkways not only have the potential to create valued open space amenities, they also could provide linear habitat corridors, create links between urban areas and the mountains, hills and foothills, serve as the backbone of a regional system of bike paths and trails, and provide interpretive opportunities for cultural and historic sites. These parkways could serve as an outdoor classroom for nearby schools and a research laboratory for local colleges and universities to monitor water quality, habitat diversity and progress towards restoration of a balance between human and natural systems in the watersheds. The River Parkways plan also provides an opportunity to put into practice many of the Guiding Principles established in *Common Ground*.

■ Purpose

The proposed River Parkway Plan will provide a framework for open space planning along the rivers and tributaries and create linkages between the other subsequent plans proposed in *Common Ground*, including habitat, mountains, hills, and foothills, trails and bike paths, and cultural landscapes. The Plan will also serve as the backbone and provide a common unifying theme for current and future planning efforts such as the Los Angeles County Department of Public Works San Gabriel River Master Plan, the subwatershed plans funded by the State Water Resources Control Board, and the proposed study to include the rivers, major tributaries and the San Gabriel Mountains as a collective unit of the National Park Service. Plan development must acknowledge that these parallel planning efforts will proceed according to their own schedules, but will benefit from input from, and the regional focus of, a River Parkway Plan.

■ Importance

Public Resources Code Section 32604 directed the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy shall do the following:

> (a) Establish policies and priorities for the conservancy regarding the San Gabriel River and the Lower Los Angeles River, and their watersheds, and conduct any necessary planning activities, in accordance with the purposes set forth in Section 32602.
>
> (b) Give priority to river related projects that create expanded opportunities for recreation, greening, aesthetic improvement, and wildlife habitat along the corridor of the river, and in parts of the river channel that can be improved for the above purposes without infringing on water quality, water supply, and necessary flood control;

To meet this mandate, the River Parkways plan must address the provision of open space along the rivers, which must recognize the existing urbanized character of the lands adjacent to the rivers, particularly along the lower Los Angeles River. Unlike the Los Angeles River, much of the San Gabriel River is still lined with open space. Although significant constraints exist with much of this land use (such as power line easements), many of the opportunities described above may be realized along the San Gabriel River within a time frame much shorter than other parts of the region. It is therefore important that actions be defined now to take advantage of current opportunities before they are lost.

Recognizing that a number of planning efforts are underway at various scales within the territory, the RMC's River Parkway Plan can provide an important unifying theme to assure each of these plans are consistent with the Guiding Principles established in *Common Ground*. The rivers and major tributaries are the links between each of the subwatersheds and the River Parkway Plan can serve as the link between each of the subwatershed planning efforts.

Within the RMC's planning goals outlined in Common Ground there is a recognition of the need for developing plans for other specific objectives such as natural habitat protection and restoration, and the preservation and enhancement of open space in the mountains, hills, and foothills. The River Parkway Plan must incorporate and complement the goals and objectives described in these parallel planning efforts to assure the most efficient progress towards the RMC's overall mission. The proposed outline below for the scope of the Plan therefore acknowledges that portions of the work for these other planning efforts should be developed concurrently.

- **River Parkway Plan Outline**

I. EXECUTIVE SUMMARY

II. INTRODUCTION
- A. Background/Overview
- B. Regulatory Framework
- C. Plan Purpose
- D. Vision
- E. Goals/Objectives
- F. Plan Area

III. CURRENT/PRIOR PLANS
- A. RMC Plans
  1. Habitat
  2. Mountains, Hills and Foothills
  3. Trails and Bike Paths
  4. Cultural Landscapes
  5. Monitoring and Assessment
- B. Other Agency Plans

IV. STAKEHOLDERS/COMMUNITY PARTICIPATION
- A. Community Outreach Efforts
- B. Stakeholders
- C. Potential Funding Partners
- D. Community Participation/Results

V. POLICIES AND PRIORITIES
- A. Definitions
- B. Project Evaluation Criteria
- C. Funding Priorities

VI. INVENTORY OF EXISTING CONDITIONS/ANALYSIS
- A. Natural Resources & Processes Inventory & Analysis
  1. Hydrology/Fluvial Geomorphology
  2. Vegetation
  3. Wildlife
- B. Human Dimensions
  1. Land use
  2. Access
  3. Trails
- C. Existing Projects Inventory
  1. Flood Management Facilities
  2. Spreading Grounds
  3. Parks
  4. Habitat

5. Wetlands
6. Trails

D. Opportunities and Constraints Analysis
1. Mountains/Foothills
2. Valley Floor
3. Coastal Plain

VII. IMPLEMENTATION PLAN/RECOMMENDED ACTIONS

A. Define Potential Projects
1. Mountains/Foothills
2. Valley Floor
3. Coastal Plain

B. Prepare Alternatives Analysis
1. Regional
2. Local
3. Site Specific

C. Prioritize Alternatives

D. Develop Implementation Plan
1. Strategies
2. Schedule
3. Costs
4. Benefits

VIII. IMPACTS/CEQA/EIR

A. Affected Environments and Impacts

B. Compliance

C. Changed Circumstances

D. Clarifications

IX. MANAGEMENT/MONITORING/RESEARCH

A. Management Plan

B. Monitoring Plan

C. Data Gap Identification and Future Research Needs Plan

X. FUNDING STRATEGY/SOURCES

A. Financial Assurance

B. Financing Strategy

C. Funding Sources

XI. GLOSSARY

Explanation of Plan Scope

Introduction/Background/Purpose

This section should describe the purpose of the Plan, the guiding legislation, its history and intent. This section should also introduce the reader to the following topics: the geography, topography, prehistory, and history of the region, specifically as it relates to the proposed River Parkway; the significance of the region's resources--natural, cultural, and social; existing conditions; current issues; and efforts to improve the river corridor. It should also prepare the reader for the recommended future actions.

Vision/Goals and Objectives

A clear vision for the River Parkway should be defined to assure consensus among stakeholders and to provide guidance to proposed projects. A clear vision helps stakeholders understand, relate to, and support protection and restoration efforts. A vision can rally individuals to take action and to focus their efforts on specific goals. In addition to a vision, groups usually develop goals, objectives and action items. Each of these are defined below:

Vision: Descriptive statement of what the watershed will look like after a given time span (usually 5 to 10+ years). A vision should be comprehensive enough to capture the thrust of the efforts of the overall mission.

Mission statement: General statement about what and how the vision is going to be accomplished.

Goals: More specific than the mission statement, describe what is needed to accomplish the mission and obtain the vision, refer to components of overall effort, sometimes quantifiable.

Objectives: Elaboration of goals, describe types of management or activities and are mostly quantifiable.

Action Items: Explain who is going to do what, where, and when; they generally articulate how to implement the objectives and should be quantified; benchmarks of existing conditions and/or measurable indicators should be developed for action items.

The acronym "SMART" has been developed to assist with development of goals. This acronym reminds those setting the goal that each goal should be Specific, Measurable, Attainable, Relevant to the mission, and Time-bound.

Goals and objectives should be defined temporally recognizing that development of a River Parkway may take decades to accomplish and that phases will be required.

Goals and objectives should also be defined spatially recognizing that the rivers include specific reaches and each reach may require a specific set of goals. For example the goal for River Parkways identified in *Common Ground*: a continuous ribbon of trails, open space, active and passive recreation areas, and wildlife habitat along the San Gabriel, Los Angeles, and Rio Hondo Rivers. The specific treatment of each segment of the Parkway should be determined by the existing conditions of the parcel, the needs and desires of the local community and the opportunities for connection and linkages presented at that location.

■ CURRENT/PRIOR PLANS

The River Parkway plan should also be consistent with other planning goals such as the Los Angeles River Master Plan and any relevant Orange County planning efforts. This section should provide a summary discussion of each of those plans, and their relevance. Recommendations for interface with other relevant plans should be included to assure synergy, consensus building, and leveraging of fiscal resources. At a minimum the Plan should coordinate with the San Gabriel River Master Plan currently underway by the Los Angeles County Department of Public Works which has identified the following goals:

- Preserve & enhance habitat systems through public education, connectivity, and balance with other uses;
- Encourage & enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance, and multi-purpose uses;
- Enhance & protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses;
- Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration with recreation, open space, and habitat systems;

- Maintain existing water and other rights while enhancing water quality, water supply, groundwater recharge, and water conservation through the integration with recreation, open space, and habitat systems.
- The River Parkway Plan should include a detailed background discussion of existing plans that are relevant to its mission. Following is an example of the type of discussion that should be included for these plans:

Prior Plans (adapted from Common Ground)

1930: The Olmsted-Bartholomew plan, entitled *Parks, Playgrounds and Beaches for the Los Angeles Region*, recommended a network of parkways to connect the mountains, rivers, parks, and beaches. Parkways along the river were intended to reduce the need for structural flood protection features. The centerpiece of that plan, a network of open spaces connected by parkways, remains the path not taken.

1996: Los Angeles County Department of Public Works prepared a Master Plan for the Los Angeles River, which recommended environmental restoration, new trails and connections to existing trails, tree plantings, signage, murals, and economic development opportunities. A follow-on project, the development of landscape standards and guidelines, is currently underway.

1997: Cal Poly Pomona 606 Design Studio completed a plan titled: *Puente Hills Corridor: Greenspace Connectivity for Wildlife and People*.. This report explored the recreational and habitat preservation planning issues for the Puente Hills from Whittier Narrows to the Cleveland National Forest.

2000: Cal Poly Pomona graduate students developed the plan entitled *Reconnecting the San Gabriel Valley: A Planning Approach for the Creation of Interconnected Urban Wildlife Corridor Networks*, which delineated a planning process to connect wildlife habitats and identified specific opportunities for improvements along the edges of the San Gabriel River.

Current Plans (adapted from Common Ground)

The Los Angeles County Department of Public Works is currently developing a *San Gabriel River Master Plan*, a consensus-driven process to identify project opportunities for recreation, open space, and habitat enhancements, maintenance of flood protection, preservation of natural resources, and maintenance of existing water rights. Completion of the plan is scheduled for 2003.

The Los Angeles County Department of Public Works is working with the City of Pico Rivera on a plan for *San Gabriel River and Rio Hondo Spreading Grounds Enhancements*, to provide public access, create recreation opportunities, and improve the appearance of the existing spreading grounds (used to recharge groundwater) along the San Gabriel and Rio Hondo Rivers. This plan is intended as a prototype for multi-objective projects in the region.

The State Water Resources Control Board has funded subwatershed plans for Compton Creek, Coyote Creek, Rio Hondo, and the Upper San Gabriel River (including Walnut and San Jose Creeks), which are anticipated to begin in late 2001.

■ STAKEHOLDERS/COMMUNITY OUTREACH

This section should describe the community outreach effort undertaken to develop the vision for and content of the Plan. The process of creating the Plan is probably more valuable than the actual final document because it is the process that creates trust, momentum, drive, enthusiasm, and the relationships necessary to implement recommended actions.

This section should also identify the stakeholders who participated in the development of the Plan including:

- **Each Riverfront City**: Include a list of riverfront cities along the San Gabriel River, the Lower Los Angeles River, the Rio Hondo, and their tributaries.
- **Non-Profit Groups and Community-Based Organizations**: Identify other stakeholders who may benefit from the objectives of the Plan or who may be impacted by the Plan.
- **Partners**: Identify partners who can offer assistance in accomplishing the mission. Potential partners already identified include: U.S. National Park Service, U.S. Forest Service, California State Parks, Los Angeles County Public Works, Los Angeles County Parks, Orange County agencies.

POLICIES AND PRIORITIES

The River Parkway Plan should include a set of policies and priorities to guide actions towards its mission. The RMC Board established at their meeting on January 11, 2002 a Working Group to make recommendations to the Board on how to implement the strategies and subsequent plans such as this River Parkway Plan. The Working Group subsequently established at their meeting on January 30, 2002 a Rivers, Tributaries, Parkways and Corridors Subcommittee (RTPC Subcommittee): to identify opportunities for acquisition or projects along the rivers and tributaries which are not currently planned.

Because of the size and complexity of the RMC territory and the magnitude of open space, habitat and watershed restoration needs, the Working Group recommended that the RMC Board consider initially focusing the Conservancy's discretionary capital funds in a manner that establishes a clear identity for the RMC. As the enabling legislation [PRC Code Section 32605(b)] requires that the RMC "[g]ive priority to river related projects that create expanded opportunities for recreation, greening, aesthetic improvement, and wildlife habitat along the corridor of the river…" the Working Group recommended to the RMC Board the following:

1. For the next three years, the RMC Board reserve a majority of discretionary capital funds for river-related projects as the most effective manner of focusing project development in a manner that will create a clear identify for the Conservancy, develop a unified work plan, create a visible and accessible parkway, initiate a series of demonstration projects, and meet the intent of the enabling legislation.

2. For the next three years, the RMC Board strive to allocate at least 60 percent of its available discretionary funds to river related projects, recognizing that other key opportunities may take precedence in any given year.

3. RMC Board direct staff to develop guidelines that recognize the importance of the following types of river-related projects: Strategic River Parkway Projects, Geographically Distributed River Parkway Projects, and Opportunity Projects.

4. RMC Board direct staff to recommend modification of existing RMC project evaluation criteria to give additional priority to river related projects.

In addition the Working Group developed draft evaluation criteria which give greater priority to river related projects, and proposed definitions for specfic terms such as "river related projects" in support of the recommendations outlined above.

INVENTORY OF EXISTING CONDITIONS/ANALYSIS

This section should describe the significance of the area's resources--natural, cultural, and social; existing conditions; current issues; and efforts to date to improve the river parkway corridor.

The Working Group has recommended that the River Parkway be defined as ¼ mile on either side of the existing river channel. An inventory of existing land use, property owners, property boundaries and opportunities and constraints is essential to develop a foundation on which to move forward. The RMC staff have made initial progress on this task through the solicitation of information on existing and proposed projects along the river (see attached list of projects and project map). Additionally, the staff has created a project tracking and evaluation software for maintaining, updating and prioritizing projects as they are defined.

This section should also include an inventory of project opportunities and constraints throughout the river corridor by reach: mountains/hills region, valley floor, and coastal plain.

IMPLEMENTATION PLAN/RECOMMENDED ACTIONS

The purpose of any plan is to organize and create action. The purpose of the River Parkway Plan is to organize and create action which will result in a River Parkway. Alternatives and potential projects should be defined in this section based on the project evaluation criteria and other policies and priorities established by the RMC. Alternatives should be evaluated against objectives of other plans by the RMC (particularly the Habitat Plan) and other agencies. Tools such as stakeholder input, hydrologic models, cost benefit analysis, GIS and other analytical methods should be employed to provide useful information to assist decision makers. Alternatives should then be prioritized and a plan for implementation developed. The implementation plan should include a recommended alternative or strategy for achieving the goals and objectives of the River Parkway Plan, costs as well as benefits, and an implementation time schedule.

IMPACTS/CEQA/EIR

The River Parkway Plan may or may not require a CEQA process depending on the contents of the final plan scope. As the RMC staff prepares a Request for Proposal for the RMC Habitat Plan, legal counsel will need to advise on the necessity of CEQA based upon the final plan scope.

MANAGEMENT/MONITORING/RESEARCH

Any plan for action must include a monitoring component to assess progress towards its goals. RMC projects should undergo both implementation monitoring and effectiveness monitoring. Implementation monitoring will examine projects to insure that they were developed according to the Habitat Plan and the site-scale plan developed for the specific project under review. Effectiveness monitoring will be ongoing and will attempt to determine if the project is helping to achieve RMC goals for habitat or whether it is having any negative impacts. Develop a monitoring plan based on measurable goals established for the River Parkway. Monitor and report progress towards the goals in an annual report.

FUNDING STRATEGY/SOURCES

The River Parkway Plan should include potential funding sources and partners to assist with implementation as well as long term maintenance of projects. The Working Group has developed a recommendation for a Long Term Funding Strategy which will be considered by the RMC Board at their July 2002 meeting. This strategy should be considered as the basis for developing funding for River Parkway Projects.

Some existing funding sources have already been identified and include the following:

- Proposition 12 and 13
- Proposition 40
- Caltrans: Environmental Enhancement & Mitigation program
- California Department of Water Resources: Urban Streams Restoration Program
- Los Angeles County: Excess Proposition A funds
- State Parks: Habitat Conservation funds
- Wildlife Conservation Board: California Riparian Habitat Conservation Program, Habitat Conservation Fund; Wildlife Restoration Fund and Oak Woodlands Conservation Fund
- National Park Service: Rivers &Trails Program; Land & Water Conservation Fund; National Trails Program, Urban Park & Recreation Recovery

- U.S. Army Corps of Engineers: Section 1135 Habitat Restoration program
- Existing property assessments or utility fees

IMMEDIATE NEXT STEPS:

- Recognizing the importance of large landowners (such as the Los Angeles County Department of Public Works, Southern California Edison and Orange County Public Facility and Resource Department), begin developing agreements with these agencies to secure the use of their land in a manner consistent with their goals and the goals of the River Parkway Plan.
- Recognizing the importance of close coordination with the Los Angeles County San Gabriel River Master Plan, the RMC should request a role on the multi-agency Executive Committee established to guide that planning process.
- The RMC should seek to be appointed to any other Executive Committee which may be responsible for future regional planning in the San Gabriel and Lower Los Angeles River watershed such as the National Park Service's proposed feasibility study planning effort.
- The RMC should also be actively involved in any future sub-regional planning in the San Gabriel and Lower Los Angeles River (such as the subwatershed plans funded by the State Water Resources Control Board from Coyote Creek in the south to the Upper San Gabriel River in the north).
- The RMC should also participate in other relevant planning efforts throughout their territory such as bike and trail planning, landscape design standards, and/or wetlands conservation and enhancement.

ADDITIONAL RECOMMENDED NEXT STEPS:

- Convene a series of workshops of the RMC Board for the purpose of defining and then formally adopting goals and objectives for the River Parkway Plan consistent with the RMC's mission and the existing goals and objectives established in related plans.
- Describe long term planning efforts (10 to 50 year time frames) developed by agencies such as the U. S. Forest Service and National Park Service to help provide guidance to this long-term plan.
- Develop and maintain an electronic database of stakeholders
- Maintain communication with stakeholder community through distribution of meeting minutes, agendas, notices of upcoming action items
- Engage stakeholder community in decision-making regarding potential projects, funding opportunities, partnership opportunities, and grant competition
- Begin to implement projects consistent with the policies and priorities adopted above.
- Review policies and priorities of other conservancies to take advantage of their operating experience.
- Regularly review policies and priorities to reflect current Board sentiment.
- The River Parkway Plan should include a strategy for developing specific partnerships with relevant agencies (e.g. Los Angeles County Department of Public Works, Southern California Edison and Orange County Public Facility and Resource Department) to assist with accomplishment of the mission.
- Develop a complete inventory of existing land use, property ownership, and property boundaries within the defined boundary of the River Parkway.
- Develop a prioritized list of projects consistent with local land use planning, local general plan guidance, and selection criteria developed by the RMC.
- Regularly update project list as projects are implemented, additional projects are proposed, and additional funding becomes available.
- Develop relationships with local agencies for specific grant programs:
- Explore developing a program with Los Angeles County Department of Public Works and Orange County Public Facility and Resource Department for a channel beautification program (e.g. Consider

a program where the County would provide 50% of the funds for construction, and 50% for ongoing maintenance; Non profit organization, foundation, donation or city would provide the other 50%.

- Explore a grant program with various watershed organizations such as the Los Angeles and San Gabriel Rivers Watershed Council, Los Angeles County Department of Public Works Watershed Management Division, and Orange County Public Facility and Resource Department for restoration projects in the public right of way and/or information about other designs for private property owners.
- Coordinate with State Resources Agency in managing funds earmarked for Los Angeles County Drainage Area (LACDA) projects and any future San Gabriel and Lower Los Angeles River watershed programs administered by the Resources Agency
- Target mitigation funding for watershed restoration, and river related projects.

B. HABITAT

Common Ground provided the following direction:

> **Habitat Conservation Plan**: To preserve critical habitat, preserve, and establish habitat linkages and/or corridors, and to preserve, restore, and create wetlands, a comprehensive habitat plan for the watersheds is needed. This would include (1) detailed study and monitoring of potential habitat linkages in the watersheds; (2) comprehensive mapping of potential conservation sites; (3) ranking of potential sites according to their conservation value and vulnerability; and (4) analyses of aquatic and wetland habitats and species, which have generally received less study than terrestrial habitats and species. Potential partners in these efforts include the U.S. Forest Service, U.S. Fish and Wildlife Service, the California Department of Fish and Game, the Wildlife Conservation Board, the California Coastal Conservancy, the Puente Hills Landfill Native Habitat Preservation Authority, the Wildlife Corridor Conservation Authority, counties, cities, and habitat and resource conservation organizations.
>
> The RMC will also retain a conservation resource biologist to conduct a second phase of analysis and research of habitat linkages and corridors in the watersheds, to identify problems and opportunities related to species conservation in urban settings and provide for input from local experts.
>
> The RMC will also look for partners to fund vegetation mapping for the watersheds. Vegetation mapping would improve understanding existing habitats and the extent of fragmentation, inform planning, and development of strategies for protection of habitats and the establishment and preservation of habitat linkages and corridors.

To assist the Working Group in their consideration of this topic, the consultant team developed the following matrix, which was provided to the Working Group at their first meeting (on January 30, 2001).

<u>Habitat</u>

Agencies:	U.S. Forest Service, U.S. Fish and Wildlife Service, California Fish and Game, Wildlife Conservation Board, California Coastal Conservancy, Puente Hills Landfill Native Habitat Preservation Authority, Wildlife Corridor Conservation Authority, Los Angeles and Orange Counties
Potential Resource Partners:	TBD
Stakeholders:	Cities and habitat and resource conservation organizations
Conceptual Scope:	To preserve critical habitat, preserve, and establish habitat linkages and/or corridors, and to preserve, restore, and create wetlands, a comprehensive habitat plan for the watersheds is needed. This would include (1) detailed study and monitoring of potential habitat linkages in the

watersheds; (2) comprehensive mapping of potential conservation sites; (3) ranking of potential sites according to their conservation value and vulnerability; and (4) analyses of aquatic and wetland habitats and species, which have generally received less study than terrestrial habitats and species.

Issues: What studies or information are needed to permit development of a comprehensive habitat plan (e.g., vegetative mapping)?

Who should lead habitat planning?

What is the priority of this plan, relative to the other subsequent plans?

(The following report from the Habitat Subcommittee was provided by Calvin R. Abe Associates.)

Habitat Subcommittee's Vision for RMC Habitat

The Habitat Subcommittee envisions large, diverse, well-connected habitat areas. These habitats will contain the full spectrum of native vegetation types, plant species, wildlife communities and wildlife species in a self-sustaining balance. RMC habitat will contain the highest degree of natural function possible requiring minimal maintenance. Habitat, containing rich and diverse wildlife, will become the crown jewel in RMC territory. Unique educational and recreational amenities for the public and additional features designed to enhance regional water quality, and conservation and flood management will be sensitively incorporated into the RMC habitat network, to prevent compromising the integrity of RMC habitat and the abundant and diverse wildlife that prospers there.

Purpose

The purpose of an RMC Habitat Plan is to create a blueprint for the development of the territory-wide network of functioning habitats described in the vision above. It is critical that RMC activities incorporate habitat objectives into all projects. A well crafted Habitat Plan can guide not only the large scale creation of the habitat network that is envisioned, but can also provide a project scale process for maximization of habitat components of each RMC project. An objective, scientifically credible plan can also provide leadership to the myriad other entities involved with habitat conservation and restoration throughout the region.

Importance

The San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy Act directs the Conservancy (RMC) to "…acquire and manage public lands…to provide open-space, low-impact recreational and educational uses, water conservation, watershed improvement, wildlife and habitat restoration and protection…" Of all the tasks assigned to the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) the most unique potential contribution by the RMC would be regional preservation, restoration and reconnection of the region's abundant, but fragile and imperiled natural resources. It is also by far the most difficult of all of the RMC's aspirations for the lands within its territory.

The Habitat Subcommittee urges the RMC to consider habitat issues first, in all its work, and strive to constantly embrace a territory-wide perspective with regard to habitat issues, since survival of so many animal species depends on this sort of regional approach. The RMC must strive to embrace a territory-wide perspective with regard to habitat issues, which must be carefully considered in all RMC work. Preservation and restoration of the region's biodiversity and survival of many plant and animal species depends on this sort of regional approach. In most cases, RMC projects will have many opportunities to plan for and sensitively incorporate recreational and educational amenities. If habitat issues are not addressed first, however, many opportunities for habitat and wildlife will be lost, and RMC projects will be little more than city parks with recreation opportunities indistinguishable from other city parks, and with minimal educational value. If habitat is effectively preserved, educational and interpretive materials about RMC open space can tout RMC success stories about RMC habitat and wildlife preservation, restoration and recovery. Inadequately addressed, RMC activities might introduce recreational features that increase human impacts on habitat areas, further damaging RMC habitat and hastening the demise of fragile species struggling for survival.

Many governmental entities work full time on water related issues such at water conservation, flood management and water quality. The County and every city within RMC territory engages in recreational and education programs. Numerous organizations and conservancies, as well as county and city governments actively work to preserve and restore natural resources, but the RMC is uniquely qualified to embark upon the ambitious task of *regional* preservation and restoration of natural resources so vital to the survival of many plant and animal species and communities. A territory-wide network of functioning habitats should be RMC's first and highest priority. Properly planned and implemented, preservation and restoration of habitat and wildlife populations can enhance each of the RMC's other goals: public open space, low-impact recreation and education, water conservation and watershed improvement.

Unfortunately, habitat conservation and restoration are complicated endeavors. Nature is a web of interconnected systems and processes. It simply is not enough to randomly purchase and preserve lands as they surface for sale in the real estate market. Current research indicates that human development in and around natural areas has altered habitats in ways that systematically favor some species at the expense of others. Saving imperiled species will involve restoring balance in the populations of many other species as well. Some of the species whose populations must be increased require large, well-connected habitats that can only be preserved or restored through careful, scientifically informed, regional planning. The territory-wide network of connected, functioning habitats envisioned for the RMC may be the only way to secure survival for region's rich natural resources and biodiversity. Many entities are actively pursuing preservation and restoration activities, but no entity has embarked upon this ambitious, yet urgently needed science-based, regional planning effort. This can be the legacy of the RMC.

■ Urgency

The stakes are very high in RMC decisions with regard to habitat. Careful consideration of habitat issues is urgently needed in RMC work for two reasons. First, RMC has started doing actual on-the-ground projects, which must address habitat issues. Second, several plant communities and plant and animal species that currently exist within RMC territory are teetering on the brink of extinction, and many additional communities and species are suffering dramatic decline as human development continues to devour the unprotected natural habitats that remain. Although U.S. Fish and Wildlife is chiefly responsible for species recovery, the RMC has many opportunities to assist in this critical effort. All RMC goals are aimed at urgent needs, such as education and recreation, but no goal is more urgent than the conservation and preservation of habitats needed by imperiled species. A recreational facility can potentially wait five years to be built, but in five years time an endangered species can easily slide into extinction.

Once a species becomes extinct, it is gone forever.

■ Habitat Subcommittee Report

In the remaining sections of this report, the Habitat Subcommittee offers the RMC a Plan Scope for a future RMC Habitat Plan. In the section that follows, scope items are described. Although the purpose of many scope items will be obvious, the purpose of other items may not be as clear. The Habitat Subcommittee debated several of these topics extensively, and the substance of these discussions will greatly enhance the reader's understanding and appreciation of the Habitat Plan Scope.

The appendices contain the final Habitat Recommendations as approved by the Working Group, a description of the information database effort initiated jointly by the Habitat and Mountains, Hills and Foothills Subcommittees, and two inventories developed as informational tools designed to assist the RMC planning efforts, as well as other RMC activities—especially prior to completion of the planning work. The first of these two inventories presents plans and studies relevant to habitat and mountains, hills and foothills issues. The subsequent section presents an inventory of potential resource partners, which are entities that might potentially contribute funding, expertise or other assistance to RMC activities, especially commencement of the Habitat and Mountains, Hills and Foothills planning efforts. Although these inventories were developed jointly with the Mountains, Hills and Foothills Subcommittee, they are presented only once, in the appendices to this report, in order to avoid duplication.

■ Recommended RMC Habitat Plan Scope

Plan Outline

I. EXECUTIVE SUMMARY

II. INTRODUCTION
- A. Background/Overview
- B. Regulatory Framework
- C. Plan Purpose
- D. Community Participation
- E. Vision
- F. Goals/Objectives
- G. Plan Area

III. INVENTORY/ANALYSIS
- A. Natural Resources & Processes Inventory & Analysis
  1. Hydrology/Fluvial Geomorphology
     - a. water supply/conservation
     - b. flood management
     - c. water quality
     - d. sediment transport
  2. Vegetation
     - a. historic vegetation—species and plant communities, species composition/biodiversity
     - b. existing vegetation— species and plant communities, species composition/biodiversity
     - c. potential vegetation— species and plant communities, species composition/biodiversity
     - d. plan plant species and communities
     - f. critical existing and potential habitat areas
  3. Wildlife
     - a. historic species and species composition
     - b. existing species and species composition
     - c. protected species
     - d. exotic species
     - e. plan wildlife species
     - f. critical existing and potential wildlife patches
     - g. habitat fragmentation
     - h. critical wildlife movement corridors
  4. Natural Processes and their Impacts on Habitat and Wildlife

            a. climate
            b. erosion and sediment transport
            c. fire cycle
            d. flood cycle
            e. seismic activity
        5. Interface and Human Impacts Analysis
            a. human-wildlife interface
            b. hydrologic modifications
            c. sediment management practices
            d. fire suppression
            e. adjacent landscaping
            f. adjacent land uses
    B. Human Dimensions
        1. Political Jurisdictions
        2. Analysis of Existing Land Use
            a. residential
            b. recreation
            c. commercial/industrial
            d. infrastructure

IV. Plan
    A. Plan Scales
        1. Territory-Wide
        2. Patch-Corridor Network
        3. Site-scale
    B. Natural Processes, Habitat and Wildlife
        1. Hydrology, Fluvial Geomorphology and Natural Processes
            a. water supply/conservation
            b. flood management
            c. water quality
            d. sediment transport
        2. Vegetation
            a. vegetation plan—species and plant communities
            b. protected species and plant communities strategies
            c. vegetation patches and linkages
            d. exotic species management
            f. project-scale vegetation planning process
        3. Wildlife
            a. wildlife plan—species and species composition
            b. protected species strategies
            c. wildlife patches and linkages
            d. mortality sink analysis
            d. exotic species management
            f. project-scale wildlife planning process
        4. Interface and Human Impacts Management
            a. human-wildlife interface
            b. hydrologic modifications plan
            c. sediment management practices
            d. fire suppression policy
    C. Adaptive Management and Habitat Plan Update and Modification Process
        1. Monitoring and Assessment Program

2. Plan Evaluation Process
3. Plan Update and Modification Process

V. IMPLEMENTATION PLAN

A. Implementation Scales
1. Territory-Wide
2. Patch-Corridor Network
3. Site-scale

B. Implementation Strategies

C. Implementation Cost

D. Phasing Options
1. Inventory and Analysis
2. Plan
3. Plan Implementation

VI. IMPACTS/CEQA/EIR

A. Affected Environments and Impacts

B. Compliance

C. Changed Circumstances

D. Clarifications

VII. MANAGEMENT/MONITORING/RESEARCH

A. Adaptive Management Plan
1. Territory-Wide
2. Project-Scale

B. Monitoring Plan
1. Scales
   a. territory-wide
   b. project-scale
2. Implementation Monitoring Plan
3. Effectiveness Monitoring Plan

C. Evaluation Parameters
1. Vegetation
   a. evaluation of changes in vegetation—plant species and plant communities abundance and composition
   b. evaluation of changes in plan plant species and communities abundance and composition
   c. evaluation of changes in exotic plant species diversity and abundance
   d. evaluation of changes in critical existing and potential habitat areas
   e. evaluation of changes in habitat patch number, size, configuration, distribution and connectivity
2. Wildlife
   a. evaluation of changes in animal species abundance and composition
   b. evaluation of changes in plan wildlife species abundance and composition
   c. mortality sink analysis
   d. evaluation of changes in exotic species diversity and abundance
   e. evaluation of wildlife movement corridors
   f. evaluation of human-wildlife interface issues

D. Data Gap Identification and Future Research Needs Plan

VIII. FUNDING

A. Financial Assurance

B. Financing Strategy

IX. GLOSSARY

Explanation of Plan Scope

Executive Summary

The executive summary should be a concise and convenient description of the final Habitat Plan.

Introduction

Due to the breadth and complexity of a territory wide Habitat Plan for the RMC, a thorough introductory section is needed.

Background/Plan Purpose

It would be very helpful to include a section at the beginning of the Plan explaining the circumstances that served as the impetus for an RMC Habitat Plan. This would also be an ideal location for a concise description of the Plan purpose that would be more fully described in vision and goals and objectives.

Regulatory Framework

The RMC Habitat Plan should describe, early in the document, the complex regulatory framework in which the RMC operates. This section should describe how implementation of an RMC plan will fit into the existing regulatory framework, and clarify what RMC can and cannot do inside city boundaries or unincorporated County land. Since wording in the authoring legislation for the RMC greatly limits the RMC's authority within city boundaries, this section can reassure cities that RMC activities will not interfere with the activities of the cities within RMC territory.

The Regulatory Framework section should also describe how RMC work would coordinate with other entities involved in similar or related work, such as U.S. Fish and Wildlife, Angeles National Forest, U.S. Army Corps of Engineers, California Department of Fish and Game, as well as the various departments of Los Angeles and Orange Counties.

Plan Area

A map and a text description should identify all areas addressed by the RMC Habitat Plan.

Community Participation

Any large-scale plan for a region as politically diverse as RMC territory should incorporate stakeholder participation. A community participation process can provide an invaluable venue for the distillation of a common vision for the region that will be addressed by a plan. Such participation also provides a crucial opportunity to generate support for a plan under development, and minimize potential lawsuits in opposition of a plan or planning process. The RMC Habitat Plan should describe in some detail the community participation process that will have been incorporated into development of the plan.

Vision

The vision section of a plan is one of the most important sections, because it describes the final end result to be realized at the conclusion of the implementation of a plan. A vision statement differs from goals and objectives. Rather than describing tasks that must be accomplished, a vision statement illustrates a dream, paints a picture of transformed landscapes. A strong vision statement has great potential to sell the plan purpose to future readers of the plan.

Goals/Objectives

All plans contain goals and objectives. Goals describe quantifiable accomplishments needed to realize a vision. Objectives are quantifiable tasks needed to achieve goals. Together, the goals and objectives form the skeleton of the work plan that will transform the region.

Inventory/Analysis

Each section of the RMC Habitat Plan should be substantiated by thoroughly researched, inventoried and analyzed material embodied in the inventory and analysis section of the Plan. It is difficult to overstate the importance of the inventory and analysis section. A growing body of research indicates that many habitat conservation plans have failed because of inadequate or incomplete basic research. Because habitat plans usually deal with habitats containing rare or endangered species, the stakes involved with these plans can be very high—sometimes failure of a plan can mean extinction or local extirpation of a species. A thorough inventory and analysis process is also important because it will assemble and distill vital information that can be utilized in RMC work prior to completion of the Habitat Plan itself.

Natural Resources & Processes Inventory & Analysis

In its discussions, the Habitat Subcommittee concluded that the most effective way to restore healthy, self-sustaining habitat would be to restore the natural processes required by natural habitats. Otherwise, RMC will be creating a vast resource-consuming garden network containing native plants. The inventory and analysis sections of the RMC Plan should examine historic and existing hydrology, fluvial geomorphology, vegetation, wildlife and other natural processes that impact the region's habitats, such as climate, erosion, sediment transport, flood cycles, fire cycles, and tectonic activity. Human Impacts on natural resources and processes must also be studied and understood, because conservation and restoration cannot succeed unless impacts caused by human development and use are successfully anticipated and managed.

Human Dimensions

The RMC Habitat Plan must inventory and analyze certain human dimensions in order to effectively plan habitat. Due to the complex regulatory framework in which RMC operates, myriad political jurisdictions must be identified and mapped. Development of the Habitat Plan must then consider the legal parameters associated with different counties, cities and special districts to ensure that the completed RMC Habitat Plan is politically feasible.

Existing land uses must also be mapped and analyzed because most land uses impact adjacent natural resources. Planning and site design offer many opportunities to minimize impacts associated with surrounding land uses once they have been identified and mapped.

Plan

The plan section of the RMC Habitat plan should describe the mix of actions and corrective measures to be undertaken by the RMC to accomplish the goals and objectives that were developed to achieve the RMC's vision for habitat and wildlife resources within its territory. Each plan component must be substantiated by information contained in the inventory and analysis section.

Plan Scales

The RMC Habitat Plan must operate on several scales because natural processes operate at different scales. The Plan should address large-scale phenomena, such as wildlife movement patterns, on a territory wide scale. The building blocks of a territory wide habitat network are the patches and corridors that comprise and link RMC habitat areas. An overarching goal, for example, may be to enable movement of mammal species between Angeles National Forest and Cleveland National Forest, but on a patch-corridor scale the work involves incremental linkages. At a patch-corridor network scale, the plan must determine how to facilitate movement of wildlife from San Gabriel Canyon, to Santa Fe Dam, to Whittier Narrows, the Puente Hills, the Chino Hills and then into Cleveland National Forest. The final scale at which the RMC Habitat Plan must operate is the site-scale. Although site planning will be an incremental parcel-by-parcel process, the plan should describe a systematic method for inventory and analysis of the natural resources. The Plan should also describe a site-scale plan development process. In this way, individual projects can be harmonized with the Habitat Plan's larger vision for the territory as a whole and insure continuity among RMC projects.

Natural Processes, Habitat and Wildlife

This section embodies the heart of the RMC Habitat Plan. It is worth mentioning again, that natural processes are included in this section, because RMC habitat can and should be more than high-maintenance gardens of native plants. If natural processes can be restored, RMC habitat can be largely self-sustaining. The Natural Processes, Habitat and Wildlife section should describe which natural processes will be preserved and restored, and what tasks must be accomplished to achieve those objectives. One of the most significant processes that will be addressed is hydrology, since habitat and wildlife require water. The plan must address how water will reach the vegetation and wildlife that will comprise RMC habitat.

In the vegetation section the plan should draw upon the inventory and analysis sections to identify the range of vegetation types that originally existed within RMC territory. The plan should then describe a strategy for the preservation, restoration or creation of historic vegetation types within RMC territory. The plan may go further, planning and mapping the locations where RMC intends to establish or maintain the various vegetation types. The vegetation section must also address connectivity—since many wildlife species will not travel through unvegetated areas between habitat patches—and the removal and management of invasive exotic plant species. Finally, the vegetation section must address interface issues associated with human impacts on sustainable natural vegetation, such as fire suppression, which ultimately renders habitat areas unproductive and of little value to wildlife.

Habitat without wildlife is merely vegetation. In the wildlife section, the RMC Habitat Plan must identify plan species, meaning the animal species that the RMC habitat plan will attempt to benefit. Typically, design species include rare and endangered species, other species whose relative populations impact rare and endangered species, and species whose populations play an important role in species composition within wildlife communities. The wildlife section of the Plan must then describe a strategy for the preservation or recovery of each of the design species. The wildlife section must analyze habitat connectivity with regard to each plan species, examine exotic animal species management, and mortality sink potential. The mortality sink issue is especially critical in urban scenarios, since attractive habitat in urban places has greater potential to function as a death trap for wildlife than habitat located in more remote areas. The wildlife section of the Plan should also address the human-wildlife interface, presenting strategies to protect both the animals and humans that visit or live near the natural areas in the hills and mountains of RMC territory.

Adaptive Management and Habitat Plan Update and Modification Process

The RMC Habitat Plan must be a living document. It is well known that the best research will contain errors and omissions, and that even perfectly executed research becomes obsolete with time, as conditions continue to change. The Habitat Plan must, therefore, be modified and updated based upon the results of a rigorous monitoring program. This process, know as Adaptive Management, is currently the soundest approach for planning efforts that contain a significant habitat conservation element. All plans require updating, but a habitat plan typically requires more frequent and more rigorous updating because there is often so little existing data verifying the effectiveness of current habitat planning work. This is especially true in urban areas like RMC territory, where wildlife conservation planning is still in its infancy. There is genuine concern that habitat created in urban areas will become mortality sinks—successfully attracting design species, but possessing an elevated mortality rate due to unforeseen circumstances. The end result of a mortality sink is that well-intentioned habitat further imperils already fragile wildlife populations. At the present time, habitat conservation planning must proceed with the newest and best available information, and then carefully monitor the impacts each project has on wildlife.

Implementation Plan

Plan implementation is the critical nexus between a habitat plan and habitat. The RMC Habitat Plan should carefully chart a realistic course for its implementation, or the plan will be of little ultimate use. Because land ownership and land use designations can change rapidly, the Implementation Plan will likely require more frequent updating than the rest of the Habitat Plan, possibly every 3-5 years.

The Implementation Plan should describe a project-by-project process for the achievement of RMC's vision for habitat within its territory. This process should weave habitat objectives into all RMC projects. The Implementation Plan should also identify priorities for RMC habitat, while recognizing the need for the RMC to retain the flexibility to consider other opportunities that may arise.

Implementation Scales

As with the plan itself, implementation must take place at different scales. Although implementation focuses on the project-by-project site-scale work, care must be taken to observe the plan objectives relating to RMC territory as a whole, and patch-corridor network development. The larger scale considerations must be manifested in acquisition decisions and site planning and design.

Implementation Strategies

This section should describe a sequential course of action for the conservation, restoration, creation and connection of RMC habitat.

Implementation Cost

The RMC Habitat Plan may attempt to determine implementation costs. Since the Habitat Plan will likely take decades to fully implement, an implementation cost section may not be feasible.

Phasing Options

Due to budgetary considerations, especially with regard to planning activity, RMC might need to develop its Habitat Plan in phases. The first phase would be the regional inventory and analysis phase. This phase is needed as soon as possible in order to inform RMC work already underway. A Plan could easily be developed at a later date, provided that it is not executed so much later that the inventory and analysis sections are not longer relevant. A Plan Implementation Strategy and Management/Monitoring and Research Plan could also be developed at a later date. However, even in the absence of a Management/Monitoring and Research Plan, monitoring and research should begin as soon as RMC completes its first project to ensure that negative impacts to habitat and wildlife caused by new RMC projects are detected and corrected at the earliest possible time.

Impacts/CEQA/EIR

The RMC Habitat Plan may or may not require a CEQA process depending on the contents of the final plan scope that is sent out to bid. As the RMC Staff prepares a Request for Proposal for the RMC Habitat Plan, legal council will need to advise on the necessity of CEQA based upon the final plan scope.

Management/Monitoring/Research

As discussed earlier, the RMC Habitat Plan should incorporate an Adaptive Management Procedure that will utilize a standardized monitoring plan for all RMC projects. Impacts to habitat, adjacent habitat, and wildlife populations contained in them must be recorded, and analyzed. When negative impacts or insubstantial positive impacts are recorded, either the Plan must be modified, or the site-scale planning process must be modified, or both.

RMC projects should undergo both implementation monitoring and effectiveness monitoring. Implementation monitoring will examine projects to insure that they were developed according to the Habitat Plan and the site-scale plan developed for the specific project under review. Effectiveness monitoring will be ongoing and will attempt to determine if the project is helping to achieve RMC goals for habitat or whether it is having any negative impacts.

Effectiveness monitoring of RMC projects should consider, at a minimum, changes in vegetation—plant species and plant communities abundance and composition, changes in plan plant species and communities abundance and composition, changes in exotic plant species diversity and abundance, evaluation of changes in critical existing and potential habitat areas, changes in habitat patch number, size, configuration, distribution and connectivity, changes in animal species abundance and composition, evaluation of changes in plan wildlife species abundance and composition, mortality sink analysis, evaluation of changes in exotic animal species diversity and abundance, and evaluation of wildlife movement corridors.

Because of the quantity of vital information that is currently unavailable, especially information relevant specifically to RMC territory, a Data Gap Identification and Future Research Needs Plan might be a very helpful additional tool to guide ongoing monitoring efforts, and Habitat Plan updates. Many information gaps are known, such as the dimensions of wildlife movement corridors that are required by different native wildlife species. Other information gaps should be identified, and a plan for future research should seek to develop this important information.

Funding

RMC may elect to include in its Habitat Plan a section about funding strategies for Plan Implementation. This strategy can also be developed internally by RMC Staff.

Glossary

A glossary of terms used in the Plan will be an invaluable tool for the future audience of the Plan.

■ Future of RMC Habitat

The RMC has a great opportunity to emerge as the leader in regional habitat conservation, through the creation of an objective, scientifically credible plan and consensus-building leadership. The RMC can unite and coordinate the myriad other entities involved with habitat conservation and restoration throughout the region, and lead a transformation of the region's natural resources and open space. To succeed, the RMC should carefully consider, in all its work, the rich, but fragile natural resources abundant in the habitats within RMC territory. Through dedicated, scientifically based habitat conservation and restoration work, the RMC can create a territory-wide network of functioning habitats that can preserve and restore the unique features of the region's natural heritage. The RMC will have few other opportunities to make equally significant or unique contributions. The RMC must embark upon its habitat conservation and restoration activities as soon as possible, however. Degraded and precarious natural resources continue to experience decline throughout RMC territory. Unless immediate action is taken, preservation and restoration efforts will come too late for some of RMC's most imperiled species and resources.

(The appendices from the report of the Habitat Subcommittee are contained in the Appendix to this Final Report.)

C. MOUNTAINS, HILLS, AND FOOTHILLS

Common Ground provided the following direction:

> Mountains, Foothills and Hills Plan(s): To identify parcels and areas of land within the mountains, foothills, hills that should be preserved and protected, comprehensive plan(s) are needed to identify priorities, funding and implementation strategies. Potential partners include: the foothill communities of the San Gabriel Mountains, and the San Gabriel Valley Council of Governments; the communities; local conservancies, agencies, and groups; and the Councils of Government surrounding and encompassing the Whittier/Puente/Chino/ San Jose Hills complex; and the communities surrounding the Glendale Narrows and the Verdugo Mountains.

As part of the preparatory work for the Working Group, the consultant team developed the following matrix to assist the Working Group in their consideration of this topic.

<u>Mountains, Hills, and Foothills</u>

Agencies:	California State Parks, LA and OC County Parks, Wildlife Conservation Board, Coastal Conservancy
Potential Resource Partners:	TBD
Stakeholders:	Foothill communities of the San Gabriel Mountains; the San Gabriel Valley Council of Governments; local conservancies; agencies; and groups; and the Councils of Government near Whittier/Puente/ Chino/San Jose Hills complex, the Glendale Narrows and the Verdugo Mountains
Conceptual Scope:	To identify parcels and areas of land within the mountains, foothills, hills that should be preserved and protected, comprehensive plan(s) are needed to identify priorities, funding and implementation strategies.
Issues:	What factors must be considered in developing priorities for acquisition? Is habitat planning a prerequisite to development of priorities?

(The following report from the Habitat Subcommittee was provided by Calvin R. Abe Associates.)

■ Mountains, Hills and Foothills Subcommittee's vision for RMC Habitat

The Mountains, Hills and Foothills Subcommittee envisions large, diverse, well-connected habitat areas throughout the hills and mountains in RMC territory. These habitats will contain the full spectrum of native vegetation types, plant species, wildlife communities and wildlife species in a self-sustaining balance. RMC habitat will contain the highest degree of natural function possible requiring minimal maintenance. The Habitat in the hills and mountains, containing rich and diverse wildlife, will become a treasured feature in RMC territory. Unique educational and recreational amenities for the public and additional features designed to enhance regional water quality, and conservation and flood management will be sensitively incorporated into the RMC mountains, hills and foothills open space network. Abundant native vegetation and wildlife can function as an outdoor laboratory and classroom for students of all ages and the community at large. Bikeways and networks of hiking and equestrian trails can provide rich recreational experiences, linking RMC lands in the mountains, hills and foothills, in elsewhere in RMC territory. Since the desire to experience open space and natural areas is chiefly responsible for the desire to recreate in the hills and mountains, all amenities provided for human education and recreation will be incorporated with the highest degree of care to prevent compromising the integrity of these natural features.

Purpose

The purpose of an RMC Mountains, Hills and Foothills Plan is to create a blueprint for the development of the territory-wide network of open space described in the vision above. A well crafted Mountains, Hills and Foothills Plan can guide not only the large-scale creation of the open space network that is envisioned, but can also provide a project scale process for maximization of habitat, watershed management, education and recreation components of each RMC project. An objective, scientifically credible plan can also provide leadership to the myriad other entities involved with these components of open space conservation and restoration, and can describe how these efforts might be coordinated.

Importance

The San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy Act directs the Conservancy (RMC) to "…acquire and manage public lands…to provide open-space, low-impact recreational and educational uses, water conservation, watershed improvement, wildlife and habitat restoration and protection…" Of all the tasks assigned to the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) the most unique potential contribution by the RMC would be regional preservation, restoration and reconnection of the region's abundant, but fragile and imperiled natural resources. It is also by far the most difficult of all of the RMC's aspirations for the lands within its territory.

The Mountains, Hills and Foothills Subcommittee believes that habitat, more than any other asset, is the resource that distinguishes the hills and mountains of RMC territory from other areas. RMC work in other locations will involve significant land use conversion, remediation, and restoration. Many lands in the hills and mountains will involve little more than acquisition, and preservation, because many lands in the hills and mountains already contain high quality habitat. The Mountains, Hills and Foothills Subcommittee agrees with the Habitat Subcommittee that habitat issues must always be among the primary considerations in RMC work. The natural areas located in the hills and mountains of RMC territory are especially important for several reasons. Beyond providing vital habitat to the region's diverse, but declining wildlife species, the natural hillsides clean our air, provide one third of our water, provide vast recreational and educational opportunities, and provide the Los Angeles basin its famous mountainous backdrop, outstanding viewsheds and sense of place. The natural hills and mountains can only provide these many valuable resources if the natural habitats that remain are preserved.

The Mountains, Hills and Foothills Subcommittee urges the RMC to consider habitat issues first, in all its work, and strive to constantly embrace a territory-wide perspective with regard to habitat issues, since survival of so many animal species depends on this sort of regional approach. The Subcommittee also encourages the RMC to evaluate possible advantages conservation activities may have over restoration work. The state of a parcel of land in need of dramatic restoration is not likely to deteriorate to a great extent in a matter of a few years. In that same period of time, hundreds of acres of unpreserved high quality habitat can be transformed into hillside housing developments, creating many new miles of interface between natural areas and human development, and generating impacts that penetrate up to a mile inside of adjacent areas that might have been nearly pristine. It is also generally recognized that even the best restoration efforts cannot equal the degree of natural function and biodiversity found on effectively preserved habitat. RMC projects will have many opportunities to plan for and sensitively incorporate recreational and educational amenities. If habitat issues are not addressed first, however, many opportunities for habitat and wildlife will be lost, and RMC projects will be little more than city parks with recreation opportunities indistinguishable from other city parks, and with minimal educational value. If habitat is effectively preserved, educational and interpretive materials about RMC open space can tout RMC success stories about RMC habitat and wildlife preservation, restoration and recovery. Inadequately addressed, RMC activities might introduce recreational features that increase human impacts on habitat areas and actually hasten the demise of fragile species struggling for survival.

Many governmental entities work full time on water related issues such as water conservation, flood management and water quality. The County and every city within RMC territory engages in recreational and education programs. Numerous organizations and conservancies, as well as county and city governments actively work to preserve and restore natural resources. Local conservancies in particular have been very active within their territories in conservation and restoration work. The RMC, however, is uniquely qualified to embark upon the ambitious task of regional preservation and restoration of open space and natural resources so vital to the survival of many plant and animal species, and to the accomplishment of regional goals for watershed management, and quality of life for the region's dense human population. A territory-wide network of open space should be RMC's first and highest priority for the mountains, hills and foothills in RMC territory. Habitat issues must be addressed first, because the requirements of plant and animal species are more exacting than requirements for educational and recreational amenities for humans. Properly planned and implemented, preservation and restoration of habitat and wildlife populations can enhance each of the RMC's other goals: public open space, low-impact recreation, education, water conservation and watershed improvement. If not prioritized and carefully planned first, however, achievement of each of the other RMC goals can potentially damage existing habitat and wildlife, limit future potential preservation and restoration efforts, and greatly reduce the value of RMC lands for watershed management, education and recreation. Many entities are actively pursuing preservation and restoration of open space, but no entity has embarked upon the ambitious, yet urgently needed task of regional open space planning. RMC can play a key leadership role in regional open space planning, preservation and restoration, unifying and coordinating other preservation and restoration efforts.

■ Urgency

RMC conservation and preservation efforts in the hills and mountains are urgently needed. Nearly all of RMC goals require open space that can be planned, developed and maintained as RMC lands; and nearly all of the open space in RMC territory is located in these upland areas. The most pressing issue in the hills and mountains is the preservation and restoration of the habitat, which is home to many wildlife species. Careful consideration of habitat issues is urgently needed in RMC work for two reasons. First, RMC has started doing actual on-the-ground projects, which must address habitat issues. Second, several plant communities and plant and animal species that currently exist within RMC territory are teetering on the brink of extinction, and many additional communities and species are suffering dramatic decline as human development continues to devour the unprotected hillsides that remain. Although U.S. Fish and Wildlife is chiefly responsible for species recovery, the RMC has many opportunities to assist in this critical effort. Preservation and restoration of habitat is also critical to RMC aspirations for watershed management, education and recreation, since all of these goals depend to some extent upon RMC's success in preserving open space that contains native habitat.

■ Mountains, Hills and Foothills Subcommittee Report

In the remaining sections of this report, the Mountains, Hills and Foothills Subcommittee offers the RMC a Plan Scope for a future RMC Mountains, Hills and Foothills Plan. In the section that follows, scope items are described. Although the purpose of many scope items will be obvious, the purpose of other items may not be as clear. The Mountains, Hills and Foothills Subcommittee debated several of these topics extensively, and the substance of these discussions will greatly enhance the reader's understanding and appreciation of the Mountains, Hills and Foothills Plan Scope.

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■ Recommended RMC Mountains, Hills and Foothills Plan Scope

Plan Scope

It should be noted that, in the event that the RMC completes its Habitat Plan prior to the commencement of a Mountains, Hills and Foothills Plan, many portions in the Mountains, Hills and Foothills Plan's inventory and analysis section pertaining to natural resources would already have been done in the Habitat Plan.

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   - e. adjacent landscaping
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B. Human Dimensions
1. Political Jurisdictions
2. Demographic Profile and Analysis
3. Community Needs Assessment
4. Analysis of Existing Land Use
   - a. residential
   - b. recreation
   - c. commercial/industrial
   - d. infrastructure

C. Open Space Inventory
1. Inventory of Open Spaces
2. Inventory of key existing and potential connections and linkages
3. Inventory of river and tributary related open spaces in the hills and mountains

IV. Plan

A. Plan Scales
1. Territory-Wide
2. Patch-Corridor Network
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3. Wildlife
   - a. wildlife plan—species and species composition
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     e. evaluation of changes in habitat patch number, size, configuration, distribution and connectivity
  2. Wildlife
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IX. GLOSSARY

■ Explanation of Plan Scope

Executive Summary

The executive summary should be a concise and convenient description of the final Mountains, Hills and Foothills Plan.

Introduction

Due to the breadth and complexity of a territory-wide Mountains, Hills and Foothills Plan for the RMC, a thorough introductory section is needed.

Background/Plan Purpose

It would be very helpful to include a section at the beginning of the Plan explaining the circumstances that served as the impetus for an RMC Mountains, Hills and Foothills Plan. This would also be an ideal location for a concise description of the Plan purpose that would be more fully described in vision and goals and objectives.

Regulatory Framework

The RMC Mountains, Hills and Foothills Plan should describe, early in the document, the complex regulatory framework in which the RMC operates. This section should describe how implementation of an RMC plan will fit into the existing regulatory framework, and clarify what RMC can and cannot do inside city boundaries or unincorporated County land. Since wording in the authoring legislation for the RMC greatly limits the RMC's authority within city boundaries, this section can reassure cities that RMC activities will not interfere with the activities of the cities within RMC territory.

The Regulatory Framework section should also describe how RMC work will coordinate with other entities involved in similar or related work, such as U.S. Fish and Wildlife, Angeles National Forest, U.S. Army Corps of Engineers, California Department of Fish and Game, as well as the various departments of Los Angeles and Orange Counties.

Plan Area

A map and a text description should identify all areas addressed by the RMC Mountains, Hills and Foothills Plan.

Community Participation

Any large-scale plan for a region as politically diverse as RMC territory should incorporate stakeholder participation. A community participation process can provide an invaluable venue for the distillation of a common vision for the region that will be addressed by a plan. Such participation also provides a crucial opportunity to generate support for a plan under development, and minimize potential lawsuits in opposition of a plan or planning process. The Mountains, Hills and Foothills Plan should describe in some detail the community participation process that will have been incorporated into development of the plan.

Vision

The vision section of a plan is one of the most important sections, because it describes the final end result to be realized at the conclusion of the implementation of a plan. A vision statement differs from goals and objectives. Rather than describing tasks that must be accomplished, a vision statement illustrates a dream, paints a picture of transformed landscapes. A strong vision statement has great potential to sell the plan purpose to future readers of the plan.

Goals/Objectives

All plans contain goals and objectives. Goals describe quantifiable accomplishments needed to realize a vision. Objectives are quantifiable tasks needed to achieve goals. Together, the goals and objectives form the skeleton of the work plan that will transform the region.

Inventory/Analysis

Each section of the RMC Mountains, Hills and Foothills Plan should be substantiated by thoroughly researched, inventoried and analyzed material embodied in the inventory and analysis section of the Plan. It is difficult to overstate the importance of the inventory and analysis section. A growing body of research indicates that many planning efforts have failed because of inadequate or incomplete basic research. Because Plans with significant habitat components often deal with habitats containing rare or endangered species, the stakes involved with these plans can be very high—sometimes failure of a plan can mean extinction or local extirpation of a species. A thorough inventory and analysis process is also important because it will assemble and distill vital information that can be utilized in RMC work prior to completion of the Mountains, Hills and Foothills Plan itself. It should be noted: if a Habitat Plan is completed prior to the commencement of a Mountains, Hills and Foothills Plan, many portions of the inventory and analysis from the Habitat Plan can be directly incorporated into the Mountains, Hills and Foothills Plan.

Natural Resources & Processes Inventory & Analysis

In its discussions, the Mountains, Hills and Foothills Subcommittee concluded that habitat was the most valuable resource in the hills and mountains of RMC territory in terms of RMC conservation and restoration activity. The Subcommittee also concluded that the most effective way to restore healthy, self-sustaining habitat would be to restore the natural processes required by natural habitats. Otherwise, RMC will be creating a vast resource-consuming garden network containing native plants. The inventory and analysis sections of the RMC Plan should examine historic and existing hydrology, fluvial geomorphology, vegetation, wildlife and other natural processes that impact the region's habitats, such as climate, erosion, sediment transport, flood cycles, fire cycles, and tectonic activity. Human Impacts on natural resources and processes must also be studied and understood, because conservation and restoration cannot succeed unless impacts caused by human development and use are successfully anticipated and managed. The human-wildlife interface must also be studied both to protect wildlife from adjacent human development and to protect residents from potentially dangerous wayward animals that can enter urban areas adjacent to natural habitats. In addition to studying impacts of surrounding land uses, the Mountains, Hills and Foothills Plan must also address impacts associated with on-site human use. Many of the natural landscapes in the mountains and hills are used by hikers, mountains bikers, equestrians and residents jogging or walking their dogs. Impacts of all uses must be identified and analyzed.

Human Dimensions

In order to create an effective Mountains, Hills and Foothills Plan, the RMC must inventory and analyze certain human dimensions. Due to the complex regulatory framework in which RMC operates, myriad political jurisdictions must be identified and mapped. Development of the Mountains, Hills and Foothills Plan must then consider the legal parameters associated with different counties, cities and special districts to ensure that the completed RMC Mountains, Hills and Foothills Plan is politically feasible.

Existing land uses must also be mapped and analyzed because most land uses impact adjacent natural resources. Planning and site design offer many opportunities to minimize impacts associated with surrounding land uses once they have been identified and mapped.

A Mountains, Hills and Foothills Plan should also develop a demographic profile and conduct a community needs assessment to try to determine the mix of educational and recreational amenities that would be appropriate for incorporation into RMC projects located in the hills and mountains.

Plan

The plan section of the RMC Mountains, Hills and Foothills Plan should describe the mix of actions and corrective measures to be undertaken by the RMC to accomplish the goals and objectives that were developed to achieve the RMC's vision for the hills and mountains within its territory. Each plan component must be substantiated by information contained in the inventory and analysis section.

Plan Scales

The RMC Mountains, Hills and Foothills Plan should operate on several scales because the natural processes at work in the hills and mountains operate at differing scales. Amenities that might be provided to the public in the hills and mountains would also likely be developed at different scales as well. The Plan should address large-scale phenomena and amenities, such as wildlife movement patterns or regional bikeway networks, on a territory wide scale. The building blocks of a territory wide Mountains, Hills and Foothills open space network are the patches and corridors that comprise and link RMC habitat areas, and parks and linkages that make up the parkway and trails networks. The final scale at which the RMC Mountains, Hills and Foothills Plan must operate is the site-scale. Although site planning will be an incremental parcel-by-parcel process, the plan should describe a systematic method for inventory and analysis of the natural resources and human dimensions. The Plan should also describe a site-scale plan development process. In this way, individual projects can be harmonized with the Mountains, Hills and Foothills Plan's larger vision for the territory as a whole and insure continuity among RMC projects.

Natural Processes, Habitat and Wildlife

The Mountains, Hills and Foothills Subcommittee feels strongly that conservation, restoration and reconnection off habitat should be RMC's highest priority in the hills and mountains within its territory. The Subcommittee also believes that most RMC projects in the hills and mountains can accommodate educational and recreation facilities, but strenuously urges RMC to address the habitat and wildlife issues first. It is well known in habitat conservation planning that it is easier to sensitively incorporate educational and recreational facilities into natural areas than it is to create quality wildlife sustaining habitat around additional facilities that have been randomly located or designed without consideration of the habitat potential of the property.

The first section of the Mountains, Hills and Foothills Plan should focus on habitat and habitat related issues. This section is intended to embody the heart of the RMC Mountains, Hills and Foothills Plan. It is worth mentioning again, that natural processes are included in this section, because RMC habitat can and should be more than high-maintenance gardens of native plants. If natural processes can be restored, RMC habitat can be largely self-sustaining. Wildlife is mentioned in this section because habitat without wildlife is merely vegetation. Habitat containing rich, diverse wildlife will also be a far more valuable recreational and education asset to the region. The Natural Processes, Habitat and Wildlife section should describe which natural processes will be preserved and restored, and what tasks must be accomplished to achieve those objectives. One of the most significant processes that will be addressed is hydrology, since habitat and wildlife require water. The plan must address how water will reach the vegetation and wildlife that will comprise RMC habitat.

In the vegetation section the plan should draw upon the inventory and analysis sections to identify the range of vegetation types that originally existed within the hills and mountains of RMC territory. The plan should then describe a strategy for the preservation, restoration or creation of these historic vegetation types. The plan may go further, planning and mapping the locations where RMC intends to establish or maintain the various vegetation types. The vegetation section must also address connectivity—since many wildlife species will not travel through unvegetated areas between habitat patches—and the removal and management of invasive exotic plant species. Finally, the vegetation section must address interface issues associated with human impacts on sustainable natural vegetation, such as fire suppression, which ultimately renders habitat areas unproductive and of little value to wildlife. Interface issues associated with human encroachment on natural areas are more acute in the hills and mountains than anywhere else in RMC territory.

Habitat without wildlife is merely vegetation. In the wildlife section, the RMC Mountains, Hills and Foothills Plan must identify plan species, meaning the animal species that the RMC Mountains, Hills and Foothills Planning efforts will attempt to benefit. Typically, design species include rare and endangered species, other species whose relative populations impact rare and endangered species, and species whose populations play an important role in species composition within wildlife communities. The wildlife section of the Plan must then describe a strategy for the preservation or recovery of each of the design species. The wildlife section must analyze habitat connectivity with regard to each plan species, examine exotic animal species management, and mortality sink potential. The mortality sink issue is especially critical in urban scenarios, since attractive habitat in urban places has greater potential to function as a death trap for wildlife than habitat located in more remote areas. The wildlife section of the Plan should also address the human-wildlife interface, presenting strategies to protect both the animals and humans that visit or live near the natural areas in the hills and mountains of RMC territory.

Human Uses

The next section off the Mountains, Hills and Foothills Plan must address human use of RMC lands located in the hills and mountains. Once the habitat issues have been resolved by the plan, appropriate access points will become obvious. Access points are nodes of heavy human use and activity, which must be located away from sensitive habitat areas like nesting habitats for endangered birds. In a similar fashion, other human uses, such as education and recreation can be sited according to the magnitude of the anticipated impacts associated with that use. Low impact uses, such as hiking trails, might potentially skirt sensitive areas and include viewing platforms carefully located and designed for unobtrusive wildlife observation. Parking lots might alternatively be placed adjacent to a busy neighboring land uses like transportation corridors to function as a type of buffer zone.

Mountains, Hills and Foothills Education Program

The Mountains, Hills and Foothills Subcommittee identified a great need to educate residents and visitors to the hills and mountains within RMC territory. Since many of the amenities RMC might make available to the public in the hills and mountains will likely be regional amenities, some of the educational efforts might need to be territory wide.

School children are an obvious educational target, because environmental education can readily be integrated into existing curricula. Education efforts can also target visitors to RMC lands. At a minimum, most, if not all RMC lands opened to the public should contain an information kiosk presenting information about how to appreciate the land with minimal impact. The information should be appealing, easy to understand and presented in at least two languages, English and Spanish. Additional signage within a site could reinforce these important messages, reminding visitors to stay on trails, to stay out of revegetation areas, or not to pick endangered flowers.

A final educational program could be aimed at businesses and residences that exist in or near natural areas. Many conflicts between human development and natural systems occur within these interface zones. Business and residences should be urged to landscape their properties appropriately, avoiding invasive exotic species, and selecting less flammable local native plants instead. Residents especially must be taught to keep pets and small children indoors, unless well supervised, due to the potential dangers associated with wildlife located in or near natural areas. Pets should also be kept inside to prevent them from predating upon smaller wildlife species, such as native birds.

Adaptive Management and Mountains, Hills and Foothills Plan Update and Modification Process

The RMC Mountains, Hills and Foothills Plan must be a living document. It is well known that the best research will contain errors and omissions, and that even perfectly executed research becomes obsolete with time as conditions continue to change. The Mountains, Hills and Foothills Plan must, therefore, be modified and updated based upon the results of a rigorous monitoring program. This process, know as Adaptive Management, is currently the soundest approach for planning efforts that contain a significant habitat conservation element. All plans require updating, but a Mountains, Hills and Foothills Plan may require more frequent and more rigorous updating because there is so little existing data verifying the effectiveness of current habitat planning work. This is especially true in urban areas like RMC territory, where wildlife conservation planning is still in its infancy. There is genuine concern that habitat created in urban areas will become mortality sinks—successfully attracting design species, but possessing an elevated mortality rate due to unforeseen circumstance. The end result of a mortality sink is that well-intentioned habitat further imperils already fragile wildlife populations. At the present time, habitat conservation planning must proceed with the newest and best available information, and then carefully monitor the impacts each project has on wildlife. Since RMC lands in the hills and mountains will most often contain other uses, it will be very important to document impacts associated with these other uses so that site design modifications can be made, and so that future RMC projects can be planned and designed differently.

Implementation Plan

Plan implementation is the critical nexus between a Mountains, Hills and Foothills Plan and well planned and designed RMC projects in the hills and mountains of RMC territory. The RMC Mountains, Hills and Foothills Plan should carefully chart a realistic course for its implementation, or the plan will be of little ultimate use. Because land ownership and land use designations can change rapidly, the Implementation Plan will likely require more frequent updating than the rest of the Mountains, Hills and Foothills Plan, possibly every 3-5 years.

The Implementation Plan should describe a project-by-project process for the achievement of RMC's vision for open space in the mountains, hills and foothills within its territory. The Implementation Plan should also identify priorities for RMC open space in the mountains, hills and foothills, while recognizing the need for the RMC to retain the flexibility to consider other opportunities that may arise.

Implementation Scales

As with the plan itself, implementation must take place at different scales. Although implementation focuses on the project-by-project site-scale work, care must be taken to observe the plan objectives relating to RMC territory as a whole, and patch-corridor network development. The larger scale considerations must be manifested in acquisition decisions and site planning and design.

Implementation Strategies

This section should describe a sequential course of action for the conservation, restoration, creation and connection of RMC habitat, and for the sensitive incorporation of access, recreation, education and other uses and amenities.

Implementation Cost

The RMC Mountains, Hills and Foothills Plan may attempt to determine implementation costs. Since the Mountains, Hills and Foothills Plan will likely take decades to fully implement, an implementation cost section may not be feasible.

Phasing Options

Due to budgetary considerations, especially with regard to planning activity, RMC might need to develop its Mountains, Hills and Foothills Plan in phases. The first phase would be the regional inventory and analysis phase. This phase is needed as soon as possible in order to inform RMC work already underway. A Plan could easily be developed at a later date, provided that it is not executed so much later that the inventory and analysis sections are not longer relevant. A Plan Implementation Strategy and Management/Monitoring and Research Plan could also be developed at a later date. However, even in the absence of a Management/Monitoring and Research Plan, monitoring and research should begin as soon as RMC completes its first project in the hills and mountains, to ensure that negative impacts to habitat and wildlife caused by new RMC projects are detected and corrected at the earliest possible time.

Impacts/CEQA/EIR

The RMC Mountains, Hills and Foothills Plan may or may not require a CEQA process depending on the contents of the final plan scope that is sent out to bid. As the RMC Staff prepares a Request for Proposal for the RMC Mountains, Hills and Foothills Plan, legal council will need to advise on the necessity of CEQA based upon the final plan scope.

Management/Monitoring/Research

As discussed earlier, the RMC Mountains, Hills and Foothills Plan should incorporate an Adaptive Management Procedure that will utilize a standardized monitoring plan for all RMC projects. Impacts to habitat, adjacent habitat, and wildlife populations contained in them must be recorded, and analyzed. When negative impacts or insubstantial positive impacts are recorded, either the Plan must be modified, or the site-scale planning process must be modified, or both.

RMC projects should undergo both implementation monitoring and effectiveness monitoring. Implementation monitoring will examine projects to insure that they were developed according to the Mountains, Hills and Foothills Plan and the site-scale plan developed for the specific project under review. Effectiveness monitoring will be ongoing and will attempt to determine if the project is helping to achieve RMC goals for the mountains, hills and foothills or whether it is having any negative impacts.

Effectiveness monitoring of RMC projects should consider, at a minimum, changes in plant species and plant communities abundance and composition, changes in plan plant species and communities abundance and composition, changes in exotic plant species diversity and abundance, evaluation of changes in critical existing and potential habitat areas, changes in habitat patch number, size, configuration, distribution and connectivity, changes in animal species abundance and composition, evaluation of changes in plan wildlife species abundance and composition, mortality sink analysis, evaluation of changes in exotic animal species diversity and abundance, and evaluation of wildlife movement corridors. In the hills and mountains, special care should be taken to monitor impacts to natural systems caused by human use of RMC lands. Lands in the hills and mountains are different than other lands in RMC territory in that projects in the hills and mountains will often focus on conservation of existing functioning habitats, with a relatively minor restoration component. This means natural lands opened to the public by the RMC might actually deteriorate due to human use, harming the natural resources that made the land attractive to the RMC and to the public in the first place.

Because of the quantity of vital information that is currently unavailable, especially information relevant specifically to RMC territory, a Data Gap Identification and Future Research Needs Plan might be a very helpful additional tool to guide ongoing monitoring efforts, and Mountains, Hills and Foothills Plan updates. Many information gaps are known, such as the dimensions of wildlife movement corridors that are required by different native wildlife species. Other information gaps should be identified, and a plan for future research should seek to develop this important information.

Funding

RMC may elect to include in its Mountains, Hills and Foothills Plan a section about funding strategies for Plan Implementation. This strategy can also be developed internally by RMC Staff.

Glossary

A glossary of terms used in the Plan will be an invaluable tool for the future audience of the Plan.

■ Future of RMC's Mountains, Hills and Foothills

The RMC should carefully consider the lands located in the mountains, hills and foothills within its territory because most of RMC's habitat and open space are located in these areas. Many of RMC's most significant watershed management, education and recreation opportunities exist in the hills and mountains as well. The RMC must embark upon its conservation and restoration activities as soon as possible, however, as development is rapidly advancing up the natural hillsides that remain. The RMC has a great opportunity to emerge as the leader in regional open space conservation, through the creation of an objective, scientifically credible plan and consensus-building leadership. The RMC can unite and coordinate the myriad other entities involved with open space conservation and restoration throughout the region and transform the region, realizing a shared vision for the open space and natural resources abundant throughout RMC territory.

D. TRAILS AND BIKE PATHS

Common Ground provided the following direction:

> Trails and Bike Paths Plan: To establish a comprehensive network of trails and bike paths, existing plans need to be reviewed to determine whether those plans should be revised to incorporate trails and paths along the river tributaries. Gaps in existing trails and bike paths must be identified and addressed. Potential partners in this effort include: Caltrans, the Metropolitan Transit Authority, the Orange County Transportation Authority, the California Department of Parks and Recreation, the Los Angeles County Parks and Recreation Department, individual cities and communities, and advocacy groups such as the Los Angeles (and Orange County) Bicycle Coalitions.
>
> The State Conservancies will work with the State Department of Transportation, regional transportation agencies, Councils of Government, cities and local agencies, communities, state and legislators, and community groups, to identify local and regional connections and develop funding strategies for acquisition or development of pedestrian and equestrian trail linkages.

As part of the preparatory work for the Working Group, the consultant team developed the following matrix to assist the Working Group in their consideration of this topic.

Trails and Bike Paths

Agencies:	National Park Service River and Trails Division, Caltrans, MTA, OCTA, California State Parks, L.A. and O.C. County Parks
Potential Resource Partners:	TBD
Stakeholders:	Individual cities and communities, Los Angeles and Orange County Bicycle Coalitions, equestrian groups, trail associations, hiking groups
Conceptual Scope:	To establish a comprehensive network of trails and bike paths, existing plans need to be reviewed to determine whether those plans should be revised to incorporate trails and paths along the river tributaries. Gaps in existing trails and bike paths and equestrian trail linkages must be identified and addressed.
Issues:	How to identify funding sources recreational bike paths (as most funding for bike paths is intended to create alternative commute modes)? Is there a single lead agency for trail planning?

The Working Group elected not form a subcommittee on this topic, and instead suggested that other subsequent plans (e.g., River Parkways, Mountains, Hills and Foothills) should address inclusion of trails and bike paths within the scope of those plans.

E. CULTURAL LANDSCAPES

Common Ground provided the following direction:

> Historic and Cultural Landscape Survey: In order to preserve our rich cultural and agricultural heritage, the RMC, in conjunction with university, professional, civic, and community organizations, State Parks, the National Park Service, and local agencies, will work to create a comprehensive survey of historic and cultural landscapes throughout the watersheds.

To assist the Working Group in their consideration of this topic, the consultant team developed the following matrix, which was provided to the Working Group at their first meeting (on January 30, 2001).

<u>Cultural and Historic Landscapes</u>

Agencies:	State Parks, National Park Service, State Historic Preservation Officer and local cultural agencies and commissions
Potential Resource Partners:	TBD
Stakeholders:	Cities, university, professional, civic, and community organizations
Conceptual Scope:	In order to preserve the rich cultural and agricultural heritage of the area, the RMC (with others) will work to create a comprehensive survey of historic and cultural landscapes throughout the watersheds.
Issues:	How to identify a lead agency (and resources) for cultural and historic resource identification?

The Working Group elected not form a subcommittee on this topic and did not address specifically address the scope of this proposed subsequent plan. However, as part of their recommendation on Education and Outreach, the Working Group recommended that the RMC encourage development of education and outreach components for all RMC projects (included those funded by the RMC) that would relate the project to the natural and cultural history of the site, and the overall context of the watershed.

F. MONITORING AND ASSESSMENT

Common Ground provided the following direction:

> Monitoring and Assessment Plan: The RMC, with partners, will work to develop an assessment process for restoration of the watersheds, and monitor progress towards meeting the goals described herein. Critical to this process will be maintenance and updating of the Geographic Information Systems database developed by the RMC. At a minimum, the periodic assessment process shall occur at ten-year intervals, or more often if deemed practical. This process shall utilize quantifiable methods wherever feasible and input from a technical advisory committee, and shall include stakeholder involvement in the design, implementation, and review of the assessments.

As part of the preparatory work for the Working Group, the consultant team developed the following matrix to assist the Working Group in their consideration of this topic.

<u>Monitoring and Assessment</u>

Agencies:	National Park Service River and Trails Division, Caltrans, MTA, OCTA, California State Parks, L.A. and O.C. County Parks

Potential Resource Partners:	TBD
Stakeholders:	Individual cities and communities, Los Angeles and Orange County Bicycle Coalitions, equestrian groups, trail associations, hiking groups
Conceptual Scope:	To establish a comprehensive network of trails and bike paths, existing plans need to be reviewed to determine whether those plans should be revised to incorporate trails and paths along the river tributaries. Gaps in existing trails and bike paths and equestrian trail linkages must be identified and addressed.
Issues:	How to identify funding sources recreational bike paths (as most funding for bike paths is intended to create alternative commute modes)? Is there a single lead agency for trail planning?

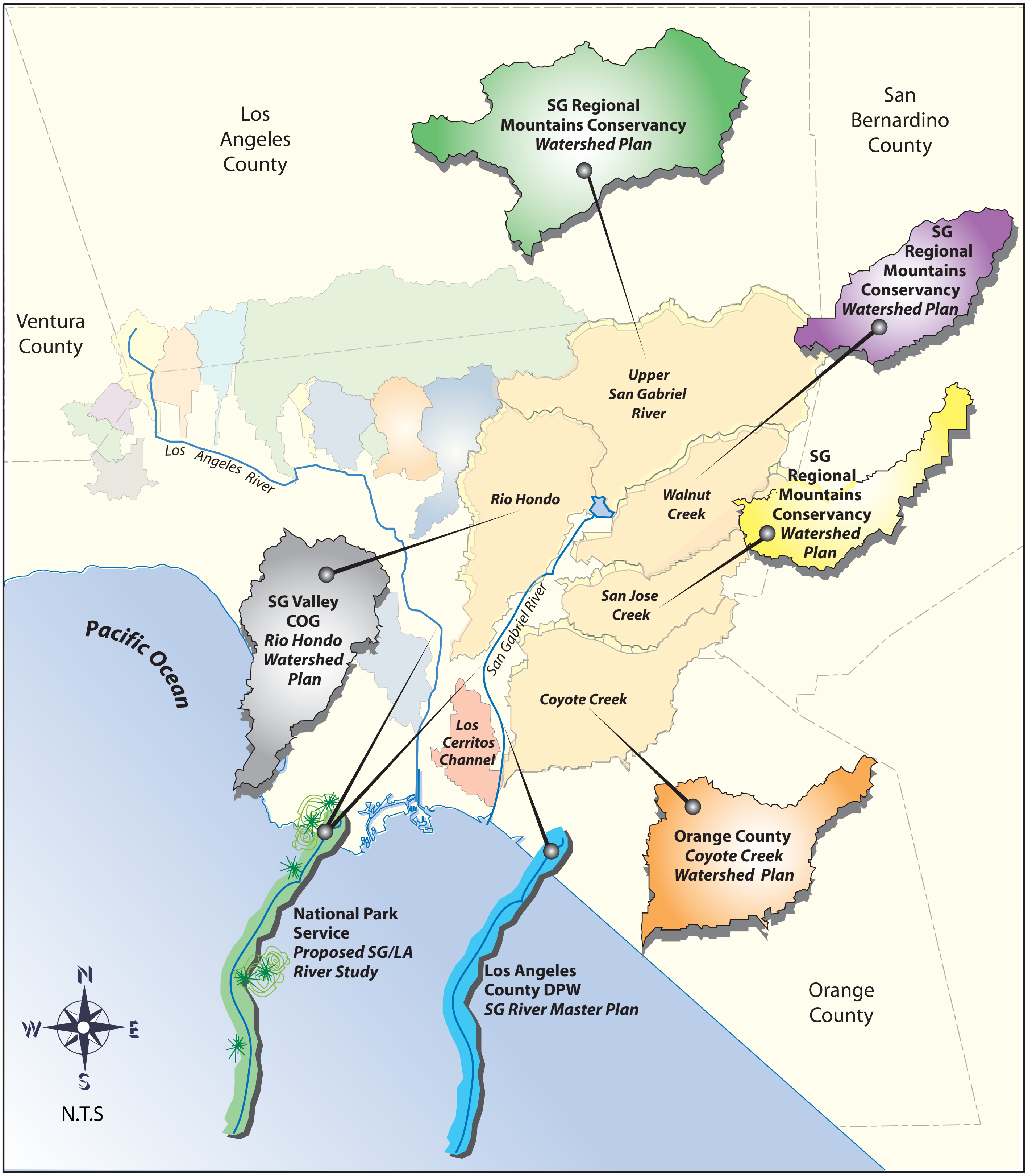
The Working Group did not specifically address the scope of this subsequent plan, however it was suggested that monitoring and assessment should be included in the scope of each subsequent plan.

CITY-SPECIFIC APPENDICES

The following cities submitted a City-Specific Appendix to Common Ground.

- Bellflower
- Claremont
- El Monte
- Fullerton
- Glendora
- La Habra
- La Habra Heights
- La Verne
- Pico Rivera
- San Dimas
- San Gabriel
- Santa Fe Springs
- Seal Beach
- Signal Hill
- South Gate

The main body of each City-Specific Appendices follows. Additional supporting information (e.g., maps or other documents) provided by each city are included within the separately-bound appendices to this final report



The RMC's River Parkway Plan will provide a framework for other planning efforts

COMMON GROUND

from the Mountains to the Sea

NORTH FACING SLOPE ADDENDUM

August 2002

Prepared by:

San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy

With the assistance of:

EIP Associates

CONTENTS

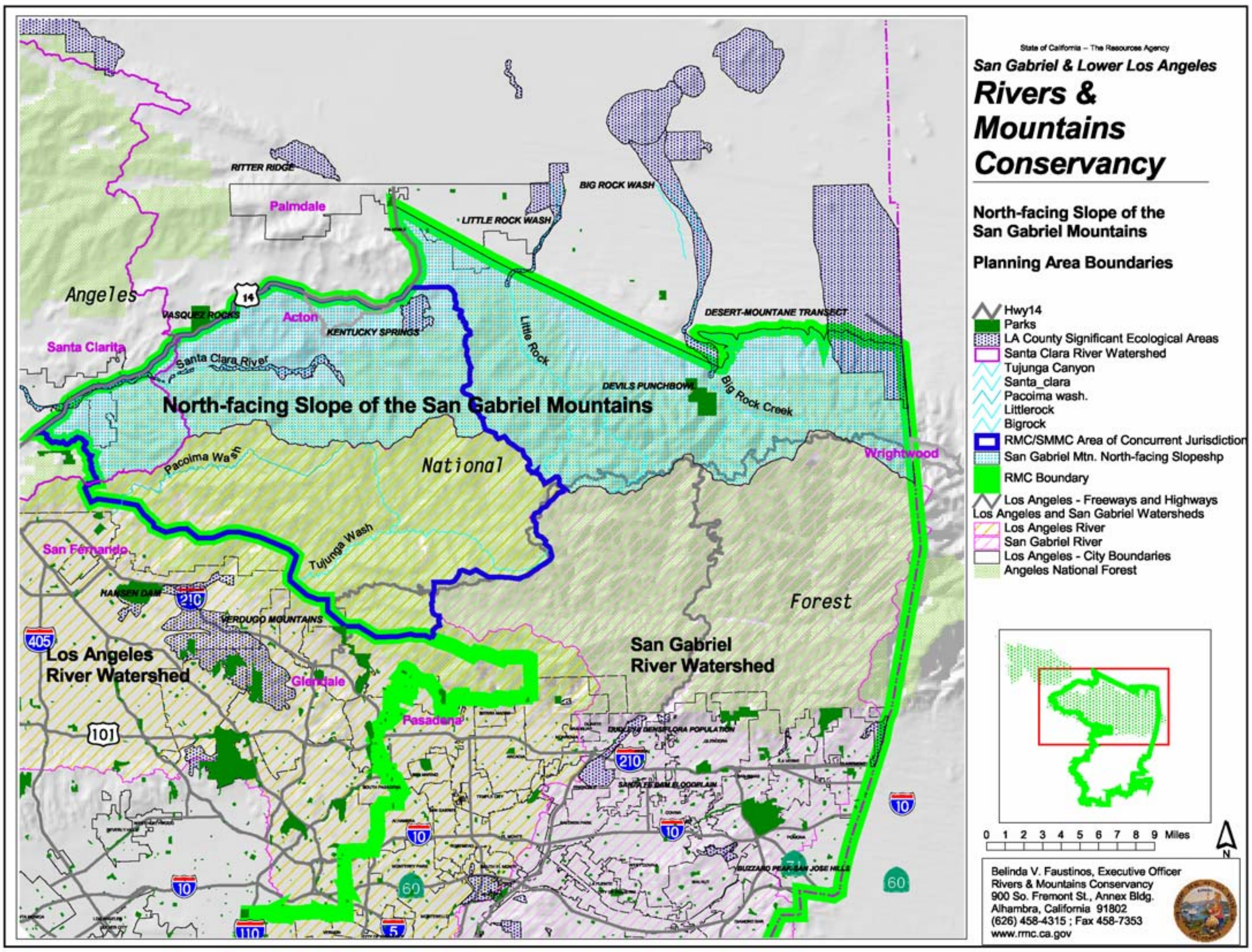
PREFACE

With assistance from the California Resources Agency, the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, or Rivers and Mountains Conservancy (RMC), in conjunction with the Santa Monica Mountains Conservancy (SMMC), jointly developed a Watershed and Open Space Plan for the San Gabriel and Los Angeles Rivers entitled ***Common Ground***, *from the Mountains to the Sea*. The RMC and SMMC adopted the Watershed and Open Space Plan at a joint meeting on October 17, 2001.

As part of Phase II of the Open Space Plan process, the RMC has been engaged in outreach to cities, agencies, non-profit groups and community-based organizations to secure approval of Common Ground, and working with those entities to expand upon or amplify the information included in the plan, and extend Common Ground beyond the watersheds of the San Gabriel and Los Angeles Rivers.

This Addendum addresses the north-facing slope of the San Gabriel Mountains as defined by the US Forest Service in their 1997 description of the Ecological Subregions of California, including 1) the easternmost portions of the upper Santa Clara River watershed, including a portion of the city of Santa Clarita and the town of Acton, 2) the land within the Angeles National Forest that drains toward the Antelope Valleys; and 3) the northern foothills of the San Gabriel Mountains, which form the southern boundary of the Antelope Valley, including a portion of the City of Palmdale, and the eastern portion of the community of Wrightwood. The term "North-facing Slope" is used throughout this document to indicate the areas described above and is illustrated in Figure X. The Addendum is intended to extend the influence of the concepts described in ***Common Ground*** and sustain its aim to "extend the discussion of restoring balance between human and natural systems from beyond the rivers to the entire watershed." As an addendum to Common Ground, this document advances a model for regional coordination in watershed planning. Groups such as the Los Angeles and San Gabriel Rivers Watershed Council are driving new efforts to address a diversity of issues relating to watershed management in a collaborative forum. Common Ground is meant to build on and support these efforts within the watersheds of the Los Angeles, San Gabriel, and Santa Clara Rivers and along the North-facing Slope of the San Gabriel Mountains.

FIGURE X: North-Facing Slope



The format of this Addendum follows that of ***Common Ground***, with (1) an introduction that provides background and context, (2) a description of physical setting and conditions, and (3) a Vision for the Future, which describes relevant guiding principles, describes strategies and opportunities, and discusses next steps.

It is the intent to incorporate this Addendum as a supplement to ***Common Ground***, and upon the next printing, to incorporate this information into the main body of the document. As additional relevant information is developed (e.g., from other Addenda, or from detailed planning related to specific issues, such as River Parkways or habitat), that information will also be incorporated into the Plan, so that the document continues to evolve and expand over time, to better inform the Conservancy's activities and projects.

1. BACKGROUND

A. INTRODUCTION

The first and second paragraph on page 11 is modified as follows:

> "This document is a Watershed and Open Space Plan for the San Gabriel and Los Angeles Rivers watersheds, and the north-facing slope of the San Gabriel Mountains (the North-facing Slope). A natural planning boundary, a watershed is the area drained by a single river and its tributaries. This plan addresses the linked watersheds of the San Gabriel and Los Angeles Rivers, which together drain 1,513 square miles from the San Gabriel Mountains to the Pacific Ocean, an area in which more than 7 million people currently live. In addition, this plan addresses portions of the upper Santa Clara River watershed, and those portions of the San Gabriel Mountains (within Los Angeles County) that drain to the Antelope Valley.
>
> Transformation of the land along the San Gabriel, Los Angeles, and Santa Clara Rivers began with the arrival of settlers in the 18th Century."

B. HISTORICAL CONTEXT

The first paragraph under item B (on page 11) is modified as follows:

> "Over millions of years, the San Gabriel, Los Angeles, and Santa Clara Rivers emerged from the San Gabriel Mountains and meandered towards the Pacific Ocean."

The second paragraph on page 12 is modified as follows:

> "The arrival of settlers in the 18th Century began the first human-induced transformation of the ~~double~~ watersheds."

The first full paragraph on page 13 is modified as follows:

> "The potential for a third transformation of the watersheds has emerged in the past decade, beginning with visions of "restoring" the Los Angeles River and implementing watershed management strategies. Individuals, groups, agencies, communities, and cities have developed plans to expand natural spaces along the river, establish riverfront walks or bike paths, and restore public access. These concepts have been expanded to include the San Gabriel and portions of the Santa Clara Rivers, as well as tributaries of ~~both~~ the rivers, and planning on these issues is ongoing. This plan is an outgrowth of those efforts, seeks to codify and extend upon those concepts, and provide a framework for future planning by ex-

panding the concepts of restoration and preservation from the rivers to the ~~entire~~ watersheds within each conservancy's respective territory."

C. PLANNING CONTEXT

Augment the list of plans (on pages 15 and 16) to add the following:

■ Santa Clara River Park Project

The Santa Clara River Park Project, published in 1995, by the City of Santa Clarita Parks, Recreation and Community Services Department proposes a plan to develop open space parkland along the Santa Clara River. The plan identifies sites for park acquisition and describes design concepts and guidelines for open space "rooted in the understanding of the natural process and functions that shape the landscape."

■ Santa Clarita Valleywide General Plan Update

In 2001, the City of Santa Clarita and the County of Los Angeles commenced a multi-year planning effort to jointly plan for the Santa Clarita Valley (SCV) area, which includes the upper Santa Clara River Watershed. This process of creating a new comprehensive General Plan for the entire region is titled *One Valley, One Vision (OVOV)*. At the time of this writing, OVOV had completed its first phases of public outreach and visioning. The visioning phases culminated in the development of a Vision and Guiding Principles for the Santa Clarita Valley. The Vision and Guiding Principles, developed through an extensive public involvement process including a community-wide survey, stakeholder interviews, a series of neighborhood workshops, student activities and a Valley Congress, identify the desired future for the Santa Clarita Valley. The Guiding Principles provide a framework for policy direction for topics ranging from land use and growth management, environment and sustainability, economy, housing, public services, to recreation and open space, transportation and schools. The Principles reflect the community mandate for responsible planning in the Valley balancing the needs of residents with the management of natural resources. OVOV is currently in the data collection phase for preparation of the General Plan document, anticipated to be adopted in late 2003.

■ Santa Clara River Enhancement and Mitigation Plan (SCREMP)

Development of a management plan for the Santa Clara River and its many resources has been in development since 1991, with funding provided by the State of California Coastal Conservancy (Coastal Conservancy), the State Wildlife Conservation Board, the U. S. Fish and Wildlife Service, the cities of Santa Clarita and San Buenaventura, and the Ventura and Los Angeles County Flood Control Districts. The Plan preparation is directed by a 26-member Project Steering Committee consisting of representatives of the counties, communities, state and federal agencies, property owners, aggregate producers, water agencies and Friends of the Santa Clara River. Subcommittees developed reports on biology, water resources, flood control, agriculture, aggregate mining, and recreation that provide background information, goals and recommendations. A series of Geographic Information Systems maps have also produced to identify conflicts and opportunities and to facilitate decisions regarding uses of the river floodplain. In 1999, the Steering Committee, approved a set of riverwide and reach-by-reach recommendations that have been incorporated into the Draft Plan which will now be the subject of an Environmental Impact Report to determine the potential environmental impact of Plan implementation.

- **Santa Clarita Open Space Acquisition Plan**

The City of Santa Clarita developed the Open Space Acquisition Plan to "systematically prioritize available open space for acquisition and preservation throughout the Santa Clarita Valley." The plan will provide the City with an opportunity to acquire the most valuable open space properties, while maximizing available funding resources. The plan addresses four recognized needs of the Valley: 1) need for an open space plan; 2) recognized value of open space by community members; 3) current park deficit in the City; and 4) dynamic development environment in the Santa Clarita Valley.

- **Santa Clarita Sustainability Plan**

A Sustainability Plan is being developed by the City of Santa Clarita for incorporation into the City's General Plan. The Sustainability Plan will focus on protection of the environment and conservation of natural resources, including land, air, water, and wildlife. In addition, the Plan will highlight methods by which sustainable communities provide equal opportunities for community members and exhibit value in the diversity of community members' ages, perspectives and backgrounds.

- **Significant Ecological Area Update Study**

Los Angeles County has designated certain habitats as Significant Ecological Areas (SEAs) in the County's General Plan. These include the habitat of rare, endangered and threatened plant and animal species, biotic communities that are restricted in distribution, biotic resources that are of scientific interest, are important to game species habitat or fisheries, or are relatively undisturbed. Five SEAs have been identified in the Santa Clarita Valley. The County is currently reviewing SEA boundaries and considering expansion of existing, or creation of new SEAs.

2. CURRENT CONDITIONS

A. PHYSICAL SETTING

1. Geology and Geomorphology

The San Gabriel Mountains are the predominant topographic feature, which includes a portion of the head-waters of the Santa Clara River, and is the source of many streams that drain into the Antelope Valley. The San Gabriel Mountains rise 7,000 ft. from the Antelope and Santa Clarita Valleys, and exert considerable influence on the climate, hydrology, and the ecology of the lands around them. The San Gabriel Mountains continue to grow at a rate of one millimeter/yr. or 1000 m/million years. The San Andreas and other numerous faults have fractured the San Gabriel Mountains so that they erode at a rapid rate, about 350m/million years. The dynamic geology of the region has created a hydrologic landscape characterized by steep headwaters transitioning into sloping alluvial beds on the adjacent flatlands.

2. Climate

Because of the distance from the sea and the intervening mountains, the climate of the North-facing Slope is not tempered by the Pacific Ocean. As a result, temperatures are more extreme than in the southern portions of the San Gabriel Mountains. Temperatures range from highs in the 85° - 100° range in the summer in the Santa Clarita and Palmdale areas, to lows in the 25° - 35° range in the Palmdale area in the winter, with much colder temperatures at higher elevations. Annual precipitation ranges considerably, from 5 to 10 inches in the Antelope Valley, 15 to 18 inches in Santa Clarita, and upwards of 20 inches in the northern San Gabriel Mountains, with 80 percent of rainfall occurring primarily between November and March, often occurring in intense storms. Summer thunderstorms can also bring short bursts of rainfall and lightening to the area. A single winter storm can drop as much as 17 inches of rain contributing to severe flooding.

B. WATERSHED HYDROLOGY

The North-facing Slope includes easternmost portions of the Santa Clara River watershed, the Antelope Valley watershed, and the Los Angeles County portion of the Mojave River watershed. The Santa Clara River is the largest river system in southern California that remains undammed and in a relatively natural state. The river originates in the north-facing slopes of the San Gabriel Mountains, traverses in a westerly direction into Ventura County, and discharges into the Pacific Ocean. The river runs approximately 100 miles from its headwaters near Acton, to its outlet south of the City of Ventura, and drains an area of approximately 1,200 square miles. The Antelope Valley watershed is a system of independent streams that drain approximately 1,200 square miles in North Los Angeles County from the San Gabriel Mountains and Kern County into the valley floor. Due to the surrounding topography, these streams do not drain to the sea, but into dry lakebeds on the valley floor, with most surface flows infiltrating into groundwater basins or evaporating into the air. The Mojave River begins to flow out of the San Gabriels near Wrightwood through Swarthout, Buford, and Flume Canyons and toward the Victor Valley and into the groundwater basins along its stretch. The alluvial soils in the region contribute to a high rate of groundwater infiltration, but because of the area's arid climate, a large volume of water is lost to evaporation. The watersheds of the North-facing Slope are shown in Figure Y.

1. Surface Water

The Santa Clara River is fed by five major tributaries, including Sand Canyon, Mint Canyon, Bouquet Canyon, South Fork, and San Francisquito Canyon. Further toward the sea, Castaic, Piru, Sespe, and Santa Paula Creeks join the main trunk of the Santa Clara. For the Antelope Valley watershed, Little Rock, Big Rock, and other small streams all flow from the San Gabriels onto the valley floor.

Surface water in streams and the rivers along the North-facing Slope is generally only present during the winter and spring, in particular after storm events. Many storms do not generate sufficient runoff to sustain surface flow in all streams, although subsurface flow is often present. Particularly intense storms can result in flash floods or debris flows which carry large amounts of sediment, rocks and debris, which are deposited in the valleys below. Several reservoirs, such as Littlerock Reservoir catch and retain flows from these streams to provide drinking water to the area and recreation for local residents.

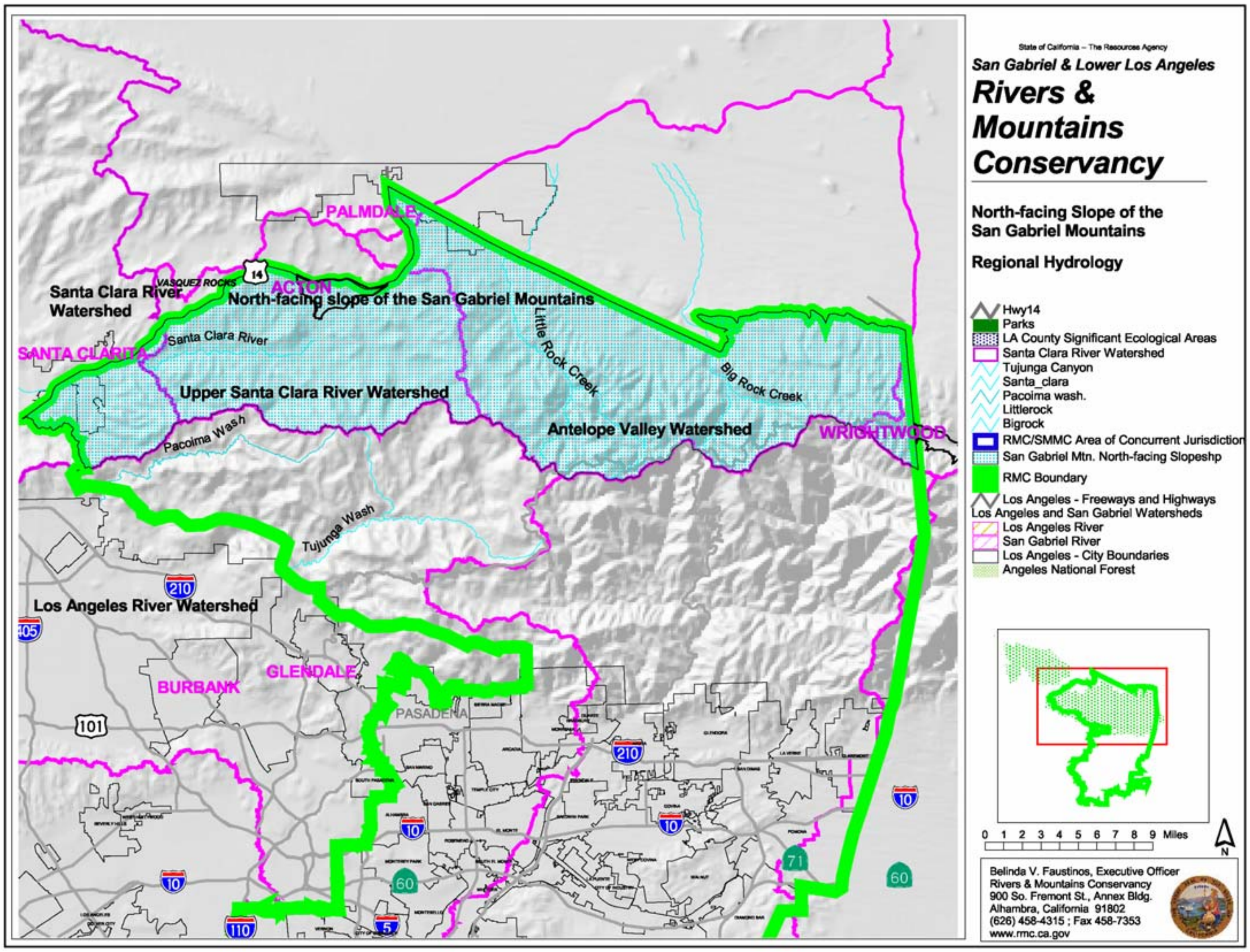
2. Channel and Flow Conditions on the Major River Reaches

Most of the rivers and streams along the North-facing Slope remain largely unchannelized and in their natural state. The Santa Clara River is largely allowed to flow through its flood plain, contained only by some publicly and privately maintained earth levees, rip-rap, and a few concrete levees. Historically, streams along the North-facing Slope have flowed freely across their alluvial floodplains, and only recently have urban and suburban development begun to constrain their free flow at some locations. Surface flows in the streams are ephemeral and diminish rapidly. The annual mean flow of the Santa Clara River in 1988 at the LA/Ventura County line was 35,360 acre-feet. In some areas on the Santa Clara River, flows have been supplemented with reclaimed water and agricultural and urban runoff.

C. HABITAT

Because of its varied climate and topography, Southern California is biologically diverse, as are the Santa Clara River and Antelope Valley watersheds. The Santa Clara watershed serves as a transitional zone between the Angeles National Forest, the Santa Susanna Mountains, and the Los Padres National Forest. The

FIGURE Y: Regional Hydrology



northern foothills of the San Gabriel Mountains serve as a transitional zone between the Angeles National Forest and the Antelope Valley.

Of 355 habitat communities listed in the California Department of Fish and Game's Natural Diversity Database, nine exist in the City of Santa Clarita alone. They represent the spectrum of mountain conifer forests, to coastal sage scrub, to willow and juniper woodlands. The species living on the North-facing Slope have adapted to the specific niches offered by the transitional habitats between coastal, mountain and desert areas.

The North-facing Slope supports a set of sensitive or endangered species that require a variety of habitat types. Three endangered species are known to inhabit the Santa Clara River watershed,

- Unarmored Threespine Stickleback (*Gasterosteus aculeatus williamsoni*): Needs weedy pools and backwaters with sandy bottoms and mud where the water stays below 23-24 degrees Centigrade.
- Least Bell's Vireo (*Vireo bellii*): Requires riparian habitat, usually with dense willow-dominated thickets.
- Arroyo Southwestern Toad (*Bufo microscaphus*): Restricted to rivers with shallow, gravelly pools adjacent to sandy terraces.

The North-facing Slope also supports a diversity of sensitive plant species, including Nevin's barberry, short-joint beavertail, Peirson's morning-glory, and the slender-horned spineflower. Altogether, eighteen Federal Species of Concern are found within the North-facing Slope.

The natural communities in the North-facing Slope are shaped by the actions of both water and fire. Wildfire burns thousands of acres each year and release nutrients for plants, and sediments to be washed into the streams and valleys below. In riparian ecosystems, habitat is shaped by the continual fluctuations in stream-bed, sandbars, and the flow of surface and sub-surface waters. The Southern Cottonwood-Willow Riparian Forest grows rapidly in areas repeatedly inundated by floods. The species colonize sandbars in the middle of channels and within the floodplain. Their health depends on a natural cycle of flood and drought.

The North-facing Slope is the western most boundary of Big Sagebrush Scrub, which occurs in well-drained slopes to fine valley soils with high water tables. Rabbitbrush (*Crysothamnus nauseosus*) and stipa grasses are common species in this habitat. Southern Coast Live Oak riparian forest also appears in the Santa Clarita Valley. It was once abundant in the region, but has since dwindled to small islands of habitat. The action of the San Andreas Fault has also created a series of fault-sag wetlands along the North-facing Slope. These ponds are enclosed depressions that trap water to provide wetland habitat in an otherwise arid climates. These ponds include, but are not limited to, Una Lake, Barrel Springs, and Lake Palmdale.

The diverse habitats of the North-facing Slope are connected via the region's riparian corridors. Tributaries and streams connect willow and cottonwood forest with upland chaparral communities. The Santa Clara River Enhancement and Mitigation Plan (SCREMP), a joint project of the State Coastal Conservancy, Ventura and Los Angeles Counties, and other partners, has identified the stream corridors connecting the Angeles National Forest directly with lowland valleys as high conservation priorities.

The SCREMP Study identifies three priorities for habitat conservation in the region. SCREMP calls for the preservation of a continuous riparian corridor, restoration of degraded resources, and management of the river to maintain existing and restored resource values. SCREMP will ultimately set criteria and priorities for habitat and species conservation in the Santa Clara River corridor.

D. OPEN SPACE AND RECREATION

Most of the lands within the North-facing Slope remain largely undeveloped. The Angeles National Forest composes the largest share of open lands, but there are several major parks both within and immediately adjacent to the area. They include Devil's Punchbowl State Park, Tejon Park, and Pelona Vista Park. Many of the regions open space goals rely on the preservation of uninterrupted corridors of open space, river, and trail networks. For example, the corridor connecting the San Gabriel Mountains with the Sierra Pelona Mountains and other corridors provide unique opportunities for trail and open space connectivity. The City of Palmdale has developed 209.64 acres of parkland and 171.5 new park acres are currently in various stages of planning. Palmdale has adopted a multi-purpose trail plan within its General Plan to accommodate the needs of hikers, equestrians, and mountain bikers. The multi purpose trails within the City boundary connects open spaces with LA County and Angeles National Forest trails and open space. The City of Santa Clarita maintains 149 acres of developed park lands and recreation facilities and 19.3 miles of trails. The majority of Santa Clarita's trails follow directly along the Santa Clara River and its tributaries. The Santa Clara River Trail is a State-recognized trail. The City plans to add 15.9 miles of new trails and 150 acres of new open space as funds become available.

E. WATER SUPPLY

1. Sources of Water

Groundwater has been an important source of water since the Spaniards first settled in the region. Groundwater supplies 50-90 percent of the water in the Antelope Valley and together with imported water from the State Water Project supply 90 percent of the water in the Valley. The remaining 10 percent of drinking water supply comes from surface water flows from perennial stretches of creeks in the San Gabriel Mountains. The United States Geological Survey projects that water demand in the Antelope Valley will be larger than water supplies by 2004, which could require the import of additional water. The Palmdale Water District maintains two interconnections to the Antelope Valley East-Kern Water Agency and Littlerock Creek Irrigation District, which can be used to transfer water from one system to another. In the Santa Clarita Valley, 57 percent of the water supply comes from local groundwater sources and the balance of 43 percent is supplied by the State Water Project. Total demand in the Santa Clarita Valley is expected to increase 3 percent from 2000 to 2010. Overall, growing demands on the water supply both locally and statewide have raised concerns about protecting existing local sources. In a region reliant on natural percolation into groundwater aquifers, comprehensive watershed management and implementation of water conservation measures becomes paramount. The cities of Santa Clarita and Palmdale, and the County of Los Angeles have implemented a range of water conservation measures to reduce water demand.

2. Groundwater

Groundwater has been the principle source of water in most of the North-facing Slope, except for those areas adjacent to streams with reliable surface flow. Surface flows percolate naturally into two levels of groundwater basins, an alluvial basin and an underlying terrace deposit. The alluvial aquifers are recharged by percolation of direct rainfall and infiltration of surface flows. These upper aquifers follow closely with the channels of tributaries and rivers. The underlying aquifers are much larger and generally recharged through percolation and overflow when the alluvial aquifers become saturated. When rain falls in the area, it is absorbed quickly into these groundwater basins. Any surface flow that makes it to the tight and clayey soils of the Antelope Valley floor is lost to evaporation. Unlike basins in the Los Angeles metropolitan area, LA County Department of Public Works does not operate any recharge facilities in the Santa Clarita or Antelope Valleys.

The Antelope Valley lies on top of 12 connected subbasins that can store water up to 5,000 feet down. These basins are recharged by creeks flowing out of the San Gabriel Mountains at a rate of 31,300 to 59,100 acre-feet each year. The Santa Clarita Valley draws groundwater primarily from the Eastern Groundwater Basin, which is composed of an alluvial aquifer and the underlying Saugus formation. The alluvial aquifer generates 90 percent of the total groundwater supply to the Santa Clarita Valley and is rapidly recharged during winter storms and can yield 31,600 to 32,600 acre-feet each year without an overall decrease in basin level. The Saugus formation has a capacity of 1.4 million acre-feet and can safely yield 7,500 to 15,000 acre-feet each year. The Acton area draws groundwater from the Acton Valley Groundwater Basin, which can hold as much as 45,000 acre-feet of water.

Up until the 1960s, agriculture was the largest user of groundwater. Between 1952 and 1968, groundwater overdraft caused land in the Antelope Valley to subside up to 6 feet. In 1970 groundwater levels in the Antelope Valley were dropping at a rate of 5 feet/year. As the basins were drained, pumping costs increased and the number of irrigated acres began to drop. The Regional Water Quality Control Board estimates that agricultural use of groundwater in the region will continue to drop, but that rapidly growing urban centers in Santa Clarita, Palmdale, Lancaster, and Victor Valley will increase pressure on groundwater supplies. In 1991, ground-water pumping exceeded, by nearly two-fold, the estimated mean natural recharge to Antelope Valley.

Unlike the San Gabriel and other groundwater basins, the Antelope Valley and the Eastern groundwater basins are not adjudicated basins. Water rights have been voluntarily determined and managed by private landowners and other water purveyors. Several cooperative water management efforts have emerged in response to growing pressure on groundwater resources. The Antelope Valley Water Group (AVWG) formed as an ad hoc group of cities, water purveyors, and other stakeholders to address the future of the Antelope Valley's water resources. In 1995, the group recommended to improve use of existing supplies, decrease demand, implement groundwater management, protect groundwater quality, improve State Water Project reliability, and acquire new imported water supplies. The Palmdale Water District, the Castaic Lake Water Agency, LA County Waterworks District #36, Newhall County Water Districts, and Valencia Water Company have developed an Urban Water Management Plan for Santa Clarita Valley to reduce pressure on groundwater supplies through reclamation programs, conservation, groundwater storage, and short-term water transfers.

3. Imported Water

In 1972, the State Water Project began delivering water from the Sacramento/Bay Delta to communities along the north-facing slope of the San Gabriel Mountains via the California Aqueduct. The Castaic Lake Water Agency, the Palmdale Water District and the Antelope Valley-East Kern Water Agency each receive State water for the region and supply it to customers. Existing entitlements are not guaranteed amount and can, and have been reduced in years of drought and limited supply. Further, increased urbanization in Northern and Central California and by ecological requirements of the Sacramento/Bay Delta may further constrain supplies.

4. Surface Water

Creeks flowing from the San Gabriel Mountains supply only a small percentage of water to homes and purveyors in the North-facing Slope, with Littlerock Reservoir, which serves the Palmdale area, being the most significant source of surface water.

5. Recycled Water

The Regional Board, in its Lahontan Basin Plan, has identified recycled water as a potential source of irrigation water for the region, however use of recycled water remains limited. The Castaic Lake Water Agency is developing a reclaimed water system that would provide up to 17,000 acre-feet of water per year to the Santa Clarita Valley. The project currently reclaims 1,700 acre-feet per year.

F. WATER QUALITY

1. Responsibility for Managing Water Quality

In the North-facing Slope the bulk of water quality management and enforcement is done by the Los Angeles Regional Water Quality Control Board (Region 4) for the Santa Clara River and the Lahontan Regional Water Quality Control Board (Region 6b) for the Antelope and Mojave River watersheds. The State Department of Health Services and local water purveyors also monitor and regulate drinking water quality.

2. Beneficial Uses

Beneficial uses have been designated for the Santa Clara and Antelope Valley watersheds by the respective Regional Boards, and include: municipal, agricultural, industrial, groundwater, water contact recreation, non-contact recreation, commercial and sport fishing, cold water habitat, warm water habitat, wildlife, spawning, water quality enhancement, freshwater replenishment, and floodwater storage

3. Water Quality Concerns

As of 1998, portions of the Santa Clara River had been listed as an impaired waterbody on the State's 303(d) list (for chloride, coliform, and nitrates). Until recently, agricultural runoff was the primary source of water quality impairments in the Antelope Valley. Irrigation runoff has increased the mineral and nitrate levels in groundwater. The area near Little Rock Creek is identified by the Regional Board as an example of where overapplication of fertilizer has impacted groundwater resources. In the last 15 years, urban development has grown rapidly in the region, increasing concerns that nonpoint source pollution and urban runoff will further impair water quality. The Lahontan Regional Board has prohibited discharge of any waste into streams above 3,500 ft to protect the upper reaches of streams and rivers.

In 1997, ammonium perchlorate was discovered in four groundwater wells in the Eastern Groundwater Basin below the Whittaker-Bermite facility. These wells were shut down and local providers are developing a plan to remediate the contamination and have filed suit against the Whittaker-Bermite Company. The implication of this contamination is that future groundwater supplies are potentially threatened, which would lead to greater reliance on imported water.

4. Source Controls and Remediation Efforts Planned

Although some former industrial sites and mines represent sources of potential contamination, large scale contamination of groundwater (as occurs in various locations in the urbanized portions of the territory) are not a major issue in the North-facing Slope.

G. FLOOD PROTECTION

The Santa Clara River and portions of the Antelope Valley watersheds fall under the jurisdiction of the Los Angeles County Flood Control District. The District serves the entire North-facing Slope of the San Gabriel Mountains, but stakeholders in the Antelope Valley, North of Avenue S , elected to remain outside of the District. The areas outside of the District are subject to the Antelope Valley Comprehensive Drainage Plan. The northern foothills of the San Gabriel Mountains are subject to severe flooding, debris flows, and flash floods during periods of sustained rainfall. Flood hazard generally increases as the duration of rainfall increases, not necessarily as intensity increases. The streams along the North-facing Slope are unchannelized and hence floodwaters can traverse the landscape relatively unconstrained. The 100-yr floodplain of the Santa Clara River extends as wide as 2000 ft. in some areas and as narrow as 500ft in others. The Santa Clara River is the only major river flowing out of the San Gabriel Mountains that has not been extensively channelized. In order to fully protect the natural hydrologic and habitat functions of the River, many groups are looking at preserving lands within the 500-yr floodplain. The LA Flood Control District has constructed levees at some locations and along some channels adjacent to commercial and residential developments. It is estimated that urbanization in the region will result in a 10% increase in peak flood discharges within the next few years. Current plans are being developed to preserve the natural floodplain and account for increased runoff. The ongoing One Valley One Vision plan for the Santa Clarita Valley calls for new developments to plan for adequate drainage in a way that preserves the natural status of the Santa Clara River.

H. REGIONAL DEMOGRAPHICS

1. Political Boundaries and Entities

Although the North-facing Slope area described in this Addendum lies within Los Angeles County, the rivers and streams that begin in the San Gabriel Mountains flow through Ventura County and San Bernardino County as well. Portions of the cities of Santa Clarita and Palmdale lie within the North-facing Slope, along with the unincorporated Town of Acton and several small communities off of Hwy. 138 in the northern foothills of the San Gabriel Mountains, including Wrightwood.

2. Land Use

Except for the areas within city or town boundaries, most of the land in the North-facing Slope is vacant open space. However, land uses are rapidly changing. Open spaces are being converted for residential and commercial uses, particularly in the areas around the cities of Santa Clarita and Palmdale. Other land uses include low-density residential, rural density residential, agriculture, extraction, transportation and utilities, and public facilities and institutions. Agricultural lands are divided mostly into small family-owned farms. Los Angeles County Regional Planning Commission has approved one in-river and two out-of-river mining permits for gravel extraction in the Santa Clara watershed and is currently processing four out-of-river permits. Currently, one out-of-river site is operating.

3. Population

The demographics of the North-facing Slope are changing rapidly. More affordable housing prices and growing commercial and industrial sectors are spurring rapid growth in the region. Palmdale and Santa Clarita are two of the four fastest growing cities in Los Angeles County with annual growth rates of 3.1 percent and 2.2 percent respectively. In comparison, the statewide average was 1.8 percent in 2001. The total population of the City of Santa Clarita, City of Palmdale, and the Town of Acton was 270,148 people in 2000. This represents an average population density of about 1 person per 1000 square feet. The population is growing quickly in response to land scarcity and rising home prices in the Los Angeles metro region. From 1990 to 2000, Santa Clarita, Palmdale, and Acton added an additional 19,749 housing units, an increase of 23 percent.. The approximate median household income in the region ranges on average from $63,011 in Palmdale to $75,774 in Santa Clarita. The median age is approximately 33 years old for the area.

4. Economic Conditions

The North-facing Slope communities are the gateway between Northern California and Southern California and the desert and coastal communities. Cheaper land prices, an increasing workforce, and close proximity to Interstate 5 have made the North-facing Slope an attractive location for manufacturing and retail firms.

3. A VISION FOR THE FUTURE

A. VISION

To create a network of livable, sustainable communities, connected by trails and open spaces, the goal articulated in Common Ground remains relevant:

Restore balance between natural and human systems in the watersheds.

The Vision and Guiding Principles of Common Ground support and are applicable to the entire North-facing Slope and are consistent with many of the OVOV Vision and Guiding Principles. OVOV relates to the General Plan process and as such has a broader scope than Common Ground; not all OVOV principles correspond directly to watershed planning. Common Ground focuses on watershed planning and some principles are not directly supported by OVOV principles. Those OVOV principles that address topics outside of the scope of watershed planning, such as affordable housing are not discussed in the Watershed and Open Space Plan.

B. GUIDING PRINCIPLES

The following describes the consistency between the guiding principles in Common Ground and OVOV principles. OVOV principles are listed in italics below their corresponding Common Ground Principles. Common Ground guiding principles that do not have a corresponding OVOV principle are listed below as underlined text, however those principles may have applicability in the OVOV area.

■ LAND: Grow a Greener Southern California

Create, Expand, and Improve Public Open Space Throughout the Region

- Establish priorities for land acquisition
- Coordinate targeted land acquisition with regional and local land use planning
- Establish a long-term land acquisition process, including protection for current uses

  The natural buffer area surrounding the entire Valley, which includes the Angeles National Forest, Santa Susana, San Gabriel, Sierra Pelona, and Del Sur mountains, shall be preserved as a regional, ecological and aesthetic resource. (P5)

- Recycle brownfields with cooperation of EPA, DTSC, and other agencies
- Coordinate public lands management policies and procedures among jurisdictions

  The City and County shall recognize that trails are an important recreational asset…(P34)

NORTH FACING SLOPE ADDENDUM

A continuous and unified hiking and equestrian trail network for a variety of users and developed according to common standards shall connect and unify Santa Clarita Valley Communities and be interconnected with the regional and statewide system (e.g., Pacific Crest Trail). (P35)

Improve Access to Open Space and Recreation for All Communities

- Accommodate active and passive recreational uses
- Incorporate passive and low-impact recreational facilities in habitat areas
- Accumulate and record the needs for active recreation facilities

New parklands will be developed throughout the Santa Clarita Valley, with priority on locations not now adequately served. These shall encompass a diversity of park types and functions, including passive and active areas, in consideration of the recreational needs of the residents to be served. (P36)

- Evaluate access by population density, distance and time for different types of open space
- Open school sites for after-hours recreational use

Improve Habitat Quality, Quantity, and Connectivity

- Protect existing high-quality habitat and ecologically significant areas

Biological resources in the designated Significant Ecological Areas (SEAs) shall be protected through the siting and design of development to account for and be highly compatible with their resources... the principle shall be to minimize the intrusion and impacts of development in these areas with sufficient setbacks, or buffers to adequately protect the resources. (P10)

- Restore and enhance aquatic and terrestrial riparian and upland habitat
- Coordinate regional efforts to remove invasive species
- Maintain and enhance wildlife corridors as continuous linkages

The natural buffer surrounding the entire Valley, which includes the Angeles National Forest, Santa Susana, San Gabriel, Sierra Pelona, and Del Sur mountains, shall be preserved as a regional, ecological and aesthetic resource. (P5)

- Identify habitat indicator species, develop standards and monitoring programs

Connect Open Space with a Network of Trails

- Develop continuous bike trail, equestrian, and public access systems along riverfronts and within the watershed
- Connect river trails to mountain trails, urban trails, local parks, open spaces, and beaches

Development on properties adjacent to, but outside of the defined primary river corridor, shall be: designed to maximize the full range of river amenities, including views and recreational access, while minimizing adverse impacts to the River. (P6b)

A unified and well-maintained network of highways, streets, truck routes, bikeways and pedestrian paths will provide access among Valley communities and to regional centers outside of the Valley. (P24)

A continuous bikeway network shall provide circulation within each community, connect the various Santa Clarita Valley communities, and provide access to surrounding open spaces. (P26)

A continuous and unified hiking and equestrian trail network for a variety of users and developed according to common standards shall connect and unify Santa Clarita Valley Communities and be interconnected with the regional and statewide system (e.g., Pacific Crest Trail). (P35)

- Connect open spaces to transit access points

Housing developments located in the more urbanized communities of the Valley shall be designed to create a sense of neighborhood by including pedestrian linkages, landscaped parkways and green corridors, and separated trails (pedestrian, bicycle or equestrian) where appropriate and feasible. (P20e)

The City and County shall recognize that trails are an important recreation asset that, when integrated with transportation systems, contribute to mobility throughout the Santa Clarita Valley. (P34)

- Provide for public safety and security along waterways and trails

Promote Stewardship of the Landscape

- Use drought-tolerant, native, and regionally-adapted plant materials

New development shall be designed to improve energy efficiency, reducing energy and natural resource consumption by such techniques as the use of solar generators, recycling of treated wastewater, capture of storm runoff on-site, and use of recycled materials in building construction, native and drought-tolerant landscape, and energy and water efficient appliances and systems. (P11)

- Identify, preserve, and restore historic sites and cultural landscapes

…where appropriate, redeveloped uses and buildings shall reflect the area's important architectural and cultural history. (P23)

Encourage Sustainable Growth to Balance Environmental, Social, and Economic Benefits

- Preserve major open spaces and limit urban sprawl

Growth shall occur within and on the periphery of previously developed areas, rather than as "leapfrog" development or in areas of critical environmental habitat or natural hazards, and taking into consideration accessibility to infrastructure and public services. (P2)

The Santa Clara River Corridor and its major tributaries shall be preserved as open space to accommodate storm water flows and protect critical plant and animal species (riparian vegetation, fish, etc.) (P6)

- Recycle urban riverfronts as frontage for new development

Development on properties adjacent to, but outside of the defined primary river corridor, shall: designed to maximize the full range of river amenities, including views and recreational access, while minimizing adverse impacts to the River. (P6b)

- Provide incentives and streamline regulations to promote watershed sustainability
- Encourage local government actions as examples of watershed sustainability
- Provide individuals and organizations with incentives to promote natural habitat

■ WATER: Enhance Waters and Waterways

Maintain and Improve Flood Protection

- Maintain or enhance existing flood protection at all phases of implementation
- Utilize nonstructural methods for flood management where feasible
- Reduce the volume and velocity of stormwater runoff where feasible
- Consistent with water quality standards and water rights, develop regional and subregional networks of stormwater detention areas where feasible
- Consistent with water quality standards and water rights, encourage new developments to detain stormwater onsite to mitigate runoff where feasible

New development shall be designed to improve energy efficiency, reducing energy and natural resource consumption by such techniques as the use of solar generators, recycling of treated wastewater, capture of storm runoff on-site, and use of recycled materials in building construction, native and drought-tolerant landscape, and energy and water efficient appliances and systems. (P11)

Establish Riverfront Greenways to Cleanse Water, Hold Floodwaters, and Extend Open Space

- Acquire land for flood management, wetlands, cleansing of water, and compatible uses
- Create a continuous network of parks along the waterways
- Develop recreational opportunities along waterways

Uses and improvements within the corridor shall be limited to those that benefit the community's use of the river in its natural state. (P6a)

Development on properties adjacent to, but outside of the defined primary river corridor, shall be: designed to maximize the full range of river amenities, including views and recreational access, while minimizing adverse impacts to the River. (P6b)

- Connect communities to the waterways by extended greenways

Improve Quality of Surface Water and Groundwater

- Reduce dry weather urban runoff discharge into waterways and the ocean
- Coordinate local planning and opportunities for water quality improvements with the regional basin plan for water quality

New development shall be designed to improve energy efficiency, reducing energy and natural resource consumption by such techniques as the use of solar generators, recycling of treated wastewater, capture of storm runoff on-site, and use of recycled materials in building construction, native and drought-tolerant landscape, and energy and water efficient appliances and systems. (P11)

Common standards for providing utility infrastructure (flood control channels, energy transmission, telecommunications, and so on) shall be developed and applied throughout the Valley, in consideration of the character of each community. (P30)

- Support public/volunteer water quality monitoring programs
- Assist cities in implementing water quality regulatory requirements

Improve Flood Safety Through Restoration of River and Creek Ecosystems

- Consistent with water quality standards and water rights, restore the natural hydrologic functioning of subwatershed areas where feasible
- Naturalize low-flow streambeds/develop floodways for storm events where feasible
- Restore local streams to replace storm drains where feasible
- Consistent with water quality standards and water rights, maintain sufficient flow conditions to support riparian/riverine habitats
- Develop sediment management strategy

Optimize Water Resources to Reduce Dependence on Imported Water

- Expand groundwater recharge facilities to increase local water supplies
- Consistent with water quality standards and water rights, encourage onsite collection of stormwater for irrigation and percolation, where consistent with water quality goals and existing water rights
- Consistent with water quality standards, extend the distribution and range of uses for reclaimed water
- Expand water conservation programs

New development shall be designed to improve energy efficiency, reducing energy and natural resource consumption by such techniques as the use of solar generators, recycling of treated wastewater, capture of storm runoff on-site, and use of recycled materials in building construction, native and drought-tolerant landscape, and energy and water efficient appliances and systems. (P11)

- Publish a subwatershed-level water budget and periodically monitor performance

PLANNING: Plan Together to Make it Happen

Coordinate Watershed Planning Across Jurisdictions and Boundaries

- Partner with all relevant agency officials, staff, and elected officials throughout the process

Development in the Santa Clarita Valley shall be consistent with these guiding principles as agreed upon by the City of Santa Clarita and the County of Los Angeles. The principles will be carried out with the application of common standards for land use development, infrastructure and resource management, as appropriate or applicable. (Intro)

- Develop a coordinated regional approach to obtain federal, state, and local funding

- Plan at the subwatershed level; coordinate at the watershed level
- Encourage and facilitate public and private partnerships to implement projects

  The Valley upholds the importance of partnerships in working together to address community issues and needs. (Vision)

- Involve the residential, business, and professional communities in all aspects of planning

  Premise of OVOV, a public process to develop a joint General Plan for the SCV.

Encourage Multi-Objective Planning and Projects

- Integrate land use planning with flood management principles, water quality improvement objectives, and open space uses

  Growth in the Santa Clarita Valley shall account for the visions and objectives for each community and must be consistent with principles, as subsequently defined in this document, for the protection of the Valley's significant environmental resources. (P1)

  The Santa Clara River corridor and its major tributaries shall be preserved as open space to accommodate storm water flows and protect critical plant and animal species (riparian vegetation, fish, etc.) Uses and improvements within the corridor shall be limited to those that benefit the community's use of the river in its natural state. (P6a)

  Development on properties adjacent to, but outside of the defined primary river corridor, shall be: designed to maximize the full range of river amenities, including views and recreational access, while minimizing adverse impacts to the River. (P6b)

  Multi-family housing developments shall contain adequate recreational and open space amenities on-site and be designed to ensure a high quality living environment. (P18)

- Develop demonstration open space projects with multiple watershed objectives
- Provide incentives in funding and public approvals for multiple-objective projects
- Employ comprehensive cost-benefit analysis to evaluate multiple-objective projects
- Analyze interdependence of land, water, materials, energy, economics, and ecosystems

  Santa Clarita Valley balances environmental protection of its abundant open space, ridgelines, hillsides, rivers, and woodland resources with an expanding economic base that offers its residents a broad range of quality employment opportunities. (Vision)

Use Science as a Basis for Planning

- Base plans and projects on scientifically derived principles, practices, and priorities
- Incorporate review of key issues by an interdisciplinary science panel
- Develop benchmarks to assess watershed status by a regular monitoring process
- Utilize applied scientific research to guide public policy

Involve the Public Through Education and Outreach Programs

- Conduct public educational and outreach programs to promote watershed restoration
- Establish a process for project participation by stakeholder representatives and the public

- Present plans and programs in reader-friendly print and electronic versions
- Involve stakeholders and the public in project implementation and maintenance

  Premise of OVOV, a public process to develop a joint General Plan for the SCV.

- Recognize the significance and uniqueness of individual properties for watershed planning

Utilize the Plan in an On-going Management Process

- Secure approval of the plan by partner jurisdictions

  Premise of OVOV, for City of Santa Clarita and County of Los Angeles to partner in planning for the Valley's future.

- Assure CEQA compliance in approval of proposed projects
- Establish and periodically assess measurable objectives for all plan elements
- Establish a procedure and schedule for periodic plan review and updates

C. STRATEGIES

Strategies described in Common Ground are appropriate and applicable to the North-facing Slope.

On page 53, modify list of Cities to include:

Santa Clarita, and Palmdale

D. OPPORTUNITIES

The first sentence on page 56, under River Parkways should be modified as follows:

> "River parkways along the banks of the Los Angeles, San Gabriel, Santa Clara, and Rio Hondo Rivers will provide the most visible and accessible element of the proposed open space network."

Add "Santa Clara River Park Project" to list of existing plans addressing the enhancement of the edges of the rivers on page 57.

Add Parks along Santa Clara River to list on page 57.

A new sentence to paragraph four on page 64 should be added as follows:

> "In northern facing slope area there will be opportunities for new linkages to the Sierra Pelona Range through the City of Palmdale."

Add a new sentence to paragraph two on page 69.

> "Additional wetlands opportunities exist in the north facing slope area such as Una Lake, Barrel Springs, and Lake Palmdale."

E. NEXT STEPS

The last sentence under **Rivers Parkway Plan** on page 74 is modified as follows:

> "This will include projects designated in the Los Angeles River, the Santa Clara River Park Plan, and the in-progress San Gabriel River Master Plan."

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WATER ISSUES ADDENDUM

TO

COMMON GROUND

from the Mountains to the Sea

August 2002

Prepared by:

San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy

With the assistance of:

EIP Associates

PREFACE

Through the California Resources Agency, the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, or Rivers and Mountains Conservancy (RMC), in conjunction with the Santa Monica Mountains Conservancy (SMMC), jointly developed a Watershed and Open Space Plan for the San Gabriel and Los Angeles Rivers entitled Common Ground, from the Mountains to the Sea. The RMC and SMMC adopted the Watershed and Open Space Plan at a joint meeting on October 17, 2001.

As part of Phase II of the Open Space Plan process, the RMC has been engaged in outreach to cities, agencies, non-profit groups and community-based organizations to secure approval of Common Ground, and work with those entities to expand upon or amplify the information included in the plan and extend Common Ground to those portions of the RMC territory which are outside of the watersheds of the San Gabriel and Los Angeles Rivers. This Addendum provides additional information and clarifies certain issues related to water quality, supply and rights, and the conditions under which the RMC can undertake projects.

The format of this Addendum follows that of Common Ground, with (1) an introduction that provides background, (2) a description of physical setting and conditions, and (3) a Vision for the Future, which describes guiding principles, opportunities, and next steps. Only those sections of Common Ground that are being revised via this Addendum are included herein.

It is the intent of the RMC to adopt this Addendum as a supplement to Common Ground, and upon the next printing of Common Ground, to incorporate this information into the main body of the document. As additional relevant information is developed (e.g., from other Addenda, or from detailed planning related to specific issues, such as River Parkways or habitat), that information will also be incorporated into Common Ground, so that Plan continues to evolve and expand over time, to better inform the Conservancy's activities and projects.

EXECUTIVE SUMMARY

The Executive Summary of Common Ground provided an overview of the concepts and principles included in the main body of the document. This Addendum provides an opportunity to reflect changes in the body of the Common Ground, which are described more fully in the subsequent sections of this Addendum.

C. OPPORTUNITIES

The discussion of Water Resources on page 5 of Common Ground is modified as follows:

> **"Surface Water:** Improve water quality to optimize water supplies and protect beneficial uses. Where consistent with regulatory requirements, water quality protection standards, plans, and policies, encourage infiltration of urban runoff into groundwater to extend the water supply and reduce reliance on imported water.
>
> **Groundwater:** When consistent with local water management policies, plans and regulatory requirements, expand and enhance groundwater infiltration and recharge wherever possible.

D. NEXT STEPS

The 2nd full paragraph on page 7 is modified as follows:

> "California State Parks will implement the urban park strategy for the Los Angeles area. The California Coastal Conservancy will develop wetlands restoration projects. The California Department of Fish and Game will work on habitat conservation planning. The Wildlife Conservation Board will work on acquisition of critical habitat and public access funding. CalTrans will develop bikeways and restoration projects. The Los Angeles and Santa Ana Regional Water Quality Control Boards will coordinate water quality improvements with interested parties. The US Forest Service will complete a Forest Plan Update that includes the Angeles National Forest. The US Army Corps of Engineers will continue work on wetlands restoration and flood control projects. The US National Park Service will prepare a River Parkways Study (if funded) and develop the De Anza Trail. The Los Angeles County Department of Public Works will complete the San Gabriel River Master Plan and work on river-related projects. The Orange County Office of the Chief Executive will complete a subwatershed plan for Coyote Creek (with the assistance of the Army Corps) and implement watershed related improvements. Water entities, in cooperation with LACDPW and other appropriate agencies, will implement policies, programs and projects that enhance water supplies and protect and improve water quality. Individual Cities will identify new projects and consider incorporation of the Guiding Principles into the next update of their General Plans."

1. INTRODUCTION

Common Ground was prepared and adopted to assist the Rivers and Mountains Conservancy in meeting the statutory requirement [of Public Resources Code Section 32604(d)] to prepare a "San Gabriel and Lower Los Angeles Parkway and Open Space Plan" that includes "policies and priorities for the conservation of the San Gabriel River and its watershed, the Lower Los Angeles River, and the San Gabriel Mountains, in accordance with the purposes of the conservancy." Per Section 32602 of the PRC, the purpose of the Conservancy is as follows:

(a) To acquire and manage public lands within the Lower Los Angeles River and San Gabriel River watersheds, and to provide open-space, low-impact recreational and educational uses, water conservation, watershed improvement, wildlife and habitat restoration and protection, and watershed improvement within the territory.

(b) To preserve the San Gabriel River and the Lower Los Angeles River consistent with existing and adopted river and flood control projects for the protection of life and property.

(c) To acquire open-space lands within the territory of the conservancy.

(d) To provide for the public's enjoyment and enhancement of recreational and educational experiences on public lands in the San Gabriel Watershed and Lower Los Angeles River, and the San Gabriel Mountains in a manner consistent with the protection of lands and resources in those watersheds.

Because of the broad mandate of the conservancy (open space, low-impact recreation, education uses, water conservation, watershed improvement, and wildlife and habitat restoration and protection) Common Ground was developed to address a wide range of issues related to the concept of watershed improvement. These include expansion of open space, improving access to open space, improving habitat quality and connectivity, a network of trails, landscape stewardship, sustainable growth, flood protection, water quality, water resources, coordination of planning, multi-objective planning, science as a basis for planning, education and outreach, and plan review and assessment. Many of these issues are beyond the jurisdiction or abilities of the RMC to implement. Inclusion of these issues in Common Ground was not intended to suggest that the RMC intends to assert any authority or expertise beyond those specific activities that the Conservancy is authorized by statute to perform. Rather, the inclusion of these concepts was an attempt to broaden the discussion of these issues and recognize the interrelationship of each of topics on the conditions of the watersheds in which the RMC is authorized to operate. By encouraging multiple-objective planning and projects, the RMC seeks to encourage public agencies, counties, cities, communities, neighborhoods, non-profit groups and community-based organizations to build partnerships and forge relationships that seek solutions to the myriad of urban problems that also respect the natural and biological systems that were in place before our cities and infrastructure were developed.

Because of the range of concepts covered by the Guiding Principles, the adoption of Common Ground resulted in some confusion about the role and authority of the RMC to provide open space, low-impact recreation and educational uses, water conservation, watershed improvement, and wildlife and habitat restoration and protection. Per the Conservancy's enabling legislation (Public Resources Code Section 32600 to 32621), the conservancy may acquire and manage land, undertake projects, or fund projects to the extent those projects are consistent with the RMC's purpose (described above).

To undertake projects, the RMC must provide prior notice to the legislative body of the affected local agency (e.g., the city or county in which the project or property is located) as follows: (1) 30 days if the RMC proposes to acquire land (or an interest in property) for open space or conservation purposes, or proposes to lease, rent, sell, exchange, or otherwise transfer any real property, the RMC must provide 30 days written notice; and (2) prior notification for a project to upgrade deteriorating facilities or construct new facilities as needed for outdoor recreation, nature appreciation and interpretation, and natural resources protection.

In addition, for any proposed action, policy, or project that may affect any water right or water delivery system, the RMC must provide 45-day notice to every water association in the conservancy territory. The RMC may not engage in activities which infringe upon water quality, supply or rights (described more fully in Section 3.4.C of this Addendum). In addition, the RMC may not levy a tax, exercise the power of eminent domain, or regulate land use except on lands it owns, manages or controls. The RMC is subject to all laws, regulations, and general and specific plans of the legislative body of any city (or county, for unincorporated areas) in which the conservancy proposes to take action. Further, nothing in the RMC's enabling legislation was intended to grant the RMC board any regulatory or governing authority over any ordinance or regulatory measure adopted by a city, county, or special district that pertains to land use, water rights, or environmental quality.

The inclusion of a wide range of concepts and principles in Common Ground was not intended to suggest that the RMC intends to implement any projects that contain features or program elements within the statutory jurisdiction of another agency or entity, without adequate consultation with that agency or entity. It is the intent of the RMC to involve relevant agencies and entities in the planning, development and implementation of any project that would impact flood protection, surface water quality or supply, or groundwater recharge or quality. The RMC recognizes that because of the interrelationship of the environmental issues described in Common Ground, coordination, consultation and notification of affected public agencies, cities, counties, communities, and stakeholders is vital to assuring positive outcomes for all projects undertaken by the RMC.

2. CURRENT CONDITIONS

Section 2 of Common Ground included a discussion of the physical setting of the San Gabriel and Los Angeles watersheds. This Addendum provides an opportunity expand and clarify the discussion of water supply and water quality provided in Common Ground.

E. WATER SUPPLY

1. Sources of Water

Common Ground noted (on page 33) the primary sources of water supply for the watersheds (which include imported water, local groundwater supplies; recycled water; and surface water from local streams and the upper San Gabriel River), and noted the potential for variability of those supplies. The first full paragraph on page 33 is modified as follows:

> "While these supplies currently sustain a population of over seventeen million people in Southern California, they are subject to both seasonal and long-term variability depending upon climatic conditions throughout the source areas. <u>In addition to climatic variability, the availability of existing water sources to continue providing water in the future may also be impacted by court decisions related to water rights (including adjudication of those rights), the development of cooperative agreements related to water supplies, and the need to maintain water quality to meet applicable water quality standards,</u> plans, and policies<u>.</u> During drought periods, there may be less water available for importation so groundwater use may increase in some areas. During wet years, stormwater runoff and surplus imported water may be stored in reservoirs and groundwater basins for future needs. **Figure 2-9** depicts the average amount contributed to the region's water supply by each source. The percentage of groundwater and imported water varies from year to year, depending on hydrologic conditions. Groundwater contributes from 30 to 40 percent, while imported water may range from 56 to 66 percent of the total supply.

2. Groundwater

The following introductory paragraph is inserted (on page 35) to provide a brief explanation of groundwater infiltration:

> "<u>Rainfall that lands on undeveloped land (e.g., pervious surfaces) has an opportunity to infiltrate into the ground and collect in areas where the underlying rock or soil is porous enough to trap significant amounts of water. Urban and suburban development in the watersheds has reduced the amount of pervious surfaces (as the land is covered with buildings, roads, parking lots and other impervious surfaces), which has the effect of reducing the potential for natural infiltration and percolation to replenish groundwater</u>."

Groundwater Management

The 4th paragraph on Page 35 of *Common Ground* related to groundwater management is modified as follows:

> "~~Groundwater pumping in the San Gabriel groundwater basin began to exceed recharge rates in the 1950s, leading to a lengthy legal battle that was settled in 1972. This settlement established the San Gabriel River Watermaster to adjudicate water rights and manage groundwater resources in the Main San Gabriel Basin. The water resources of the groundwater basins in the Upper Los Angeles River Area (ULARA) are managed by an agreement made in 1973. This agreement balances the groundwater rights of the City of Los Angeles with the upstream cities of Glendale and Burbank. The ULARA Watermaster is responsible for managing groundwater supplies and protecting groundwater~~

WATER ADDEDNDUM

~~quality.~~ Groundwater pumping in the Main San Gabriel Valley Groundwater basin began to exceed recharge rates in the 1950's, reducing the amount of water from the San Gabriel River system available to downstream users in the Central Basin, south of Whittier Narrows (Lower Area). The Lower Area parties filed a lawsuit on May 12, 1959. The dispute was settled in 1965 by entry of the "Long Beach Judgment," which allocated the available water between the Upper and Lower Areas, developed an accounting system for all water passing through Whittier Narrows, and created a three-person watermaster (the San Gabriel River Watermaster) to administer the Judgment.

Another lawsuit was filed on January 2, 1968, seeking the adjudication of all water rights in the Main San Gabriel Basin. Those rights are mainly groundwater rights, although surface water rights in the Basin were included. That Judgement was entered on January 4, 1973, and is administered by a nine-person watermaster comprised of six water producer members and three public water district representatives. The Main San Gabriel Basin Watermaster administers basin water rights, manages basin replenishment, and regulates pumping for water quality improvement.

The water resources of the groundwater basins in the Upper Los Angeles River Area (ULARA) are managed by an agreement made in 1973. This agreement balances the groundwater rights of the City of Los Angeles with the upstream cities of Glendale and Burbank. The ULARA Watermaster is responsible for managing groundwater supplies and protecting groundwater quality."

3. Imported Water

The last paragraph on page 35 (which continues to page 36) is modified as follows:

"Construction of the first Los Angeles Aqueduct from the Owens Valley began in 1908. Under the supervision of William Mulholland, this 233-mile aqueduct was constructed in five years. In 1940 the aqueduct was extended 105 miles north to Mono Basin. A second aqueduct from Owens Valley was completed in 1970 to further increase capacity. Approximately 480,000 acre-feet of water are delivered to the City of Los Angeles each year. The amount the aqueduct delivers varies from year to year due to fluctuating precipitation in the Sierra Nevada. In addition, the diversion of water from Mono Lake has been reduced by a decision of the State Water Resources Control Board and export of water from the Owens Valley limited by the Inyo-LA Long Term Water Agreement (and related Memorandum of Understanding) and an additional Memorandum of Understanding between the Great Basin Air Pollution Control District and the City of Los Angeles (to reduce particulate matter air pollution from the Owens Lake bed). As a result of these ~~legal~~ restrictions on water transfers ~~to protect the source environment~~, future deliveries are expected to be reduced to an average of 321,000 acre-feet annually over the next twenty years."

The first full paragraph on page 36 is modified as follows:

"The 242-mile Colorado River Aqueduct, completed in 1941 to deliver water to the Southern California coastal plain, has a capacity of 1.3 million acre-feet. Annually, California is ~~allowed~~ allotted 4.4 million acre-feet of Colorado River water. California has traditionally received in excess of that amount when there is excess water available, in wet years or when other states drawing from the Colorado River do not use their full allotment. Future water allotments to California ~~supplies~~ from the Colorado River may be reduced ~~due to competing demands~~ as other states increase their diversions in accord with their authorized allotments. The Metropolitan Water District recently completed the Eastside Reservoir project, which created Diamond Valley Lake, to store 800,000 acre feet of Colorado River water.

The second full paragraph on page 36 is modified as follows:

The State Water Project (SWP) was created in 1960 to deliver water to regions of the state where resources are scarce. The SWP brings water 444 miles from the Sacramento-San Joaquin River Delta to Southern California via the California Aqueduct. The SWP has delivered up to 3.6 million acre-feet annually, although significantly less water is available during dry-year periods. ~~One of the goals of the CALFED Bay-Delta Program is to improve water supply reliability for the Delta, therefore the potential for future increases in water supplies from the SWP for Southern California is uncertain.~~ The CALFED Bay-Delta Record of Decision (in August 2000) established a framework to protect water quality, ecosystem quality, water supply and vulnerability of natural delta functions in the delta of the Sacramento, San Joaquin and Mokelumne Rivers. Future actions necessary to implement that decision could reduce the amount of bay-delta water that can be diverted via the State Water Project for delivery to Southern California. The growing demand for water could result in additional water transfers (the movement of water from willing sellers to buyers in water-short areas) which may become available to augment urban water supplies."

B. WATER QUALITY

1. Responsibility for Managing Water Quality

The discussion of water quality management on pages 36 and 37 is modified as follows:

"As noted above, the principle sources of water supply in the watersheds are imported water and groundwater, with recycled and surface water providing relatively small amounts. Thus, the majority of water utilized in the watersheds is potable water which must meet drinking water standards. The federal Safe Drinking Water Act (SDWA), passed by Congress in 1974, requires the U.S. Environmental Protection Agency (EPA) to develop drinking water standards that must be implemented nationwide. In California, EPA has delegated implementation of drinking water regulations to the State. The California Department of Health Services has responsibility to protect the quality of drinking water, in accord with California's Drinking Water Source Assessment and Protection Programs, which were developed in response to the 1995 reauthorization of the Federal Clean Water Act. Drinking water standards for the State of California are specified in the Health and Safety Code (Division 20, Chapter 6.75, Sections 25299.57 to 25299.99.3, and Division 104, Part 12, Sections 116270-117130).

Protection of water quality in California is primarily the responsibility of the State Water Resources Control Board (SWRCB) and, on a regional basis, the nine California Regional Water Quality Control Boards. The Porter-Cologne Water Quality Control Act (California Water Code) authorizes the State Board to adopt policies for all waters of the state and directs each Regional Board to prepare a Basin Plan to protect water quality. The water quality in the watersheds is primarily under the jurisdiction of the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB). The Santa Ana Regional Board has jurisdiction over a portion of the Coyote Creek subwatershed.

~~The California Department of Health Services also has responsibility to protect the quality of drinking water, in accord with California's Drinking Water Source Assessment and Protection Programs, in response to the 1995 reauthorization of the Federal Clean Water Act.~~ The Water Replenishment District of Southern California (WRD) is also authorized under the California Water Code to engage in activities to protect groundwater in the Central and West Coast groundwater basins. The Main San Gabriel Basin Watermaster and the ULARA Watermaster also have responsibility for water quality protection for their respective basins. In addition, the San Gabriel Basin Water Quality Authority was established to develop, finance and implement groundwater cleanup programs in the San Gabriel Basin.

The Basin Plan for the Los Angeles Region was originally prepared in the 1970s and has been updated several times with the latest comprehensive update occurring in 1994 (several TMDL Basin Plan amendments have been adopted since). The Santa Ana River Basin Plan was first adopted in 1975, with a major update in 1995. These plans ~~address beneficial uses for surface waters in the re-~~

~~gion, as required by the Federal Clean Water Act, water quality objectives for protection of beneficial uses, and a plan for enhancing and maintaining water quality.~~ designate beneficial uses for surface and ground waters, set narrative and numerical objectives that must be attained or maintained to protect designated beneficial uses and describe implementation programs to protect all regional waters."

3. Water Quality Concerns

Surface Water

The last sentence of the first paragraph is modified as follows:

EPA 303(d) listed surface water constituent of concern, including lakes, are shown in the table below.

A corrected table for page 37 is as follows:

Drainage	Alage	Ammonia	Arsenic	Chlorpyrifos	Coliform	Cadmium	Copper	Lead	Mercury	Selenium	Silver	Zinc	Odors	Oil	Historic Pesticides	pH	Toxicity	Trash	Volatile Organic Compounds
San Gabriel	X	X	X		X		X*	X	X*				X*		X*	X	X	X	
Los Angeles	X	X		X	X	X	X	X		X		X	X	X	X	X		X	X

*Lakes only

The figure at the top of page 38 will be updated to include some of the same pollutants of concern as the table, the San Gabriel River Estuary will be listed separately, and major lakes will be listed with their impairments.

Second full paragraph on Page 37 under Water Quality Concerns – Surface Water: The entire paragraph (which is talking about remediation), except for last sentence, will be moved to Page 39, at end of "Source Control and Remediation Efforts Planned" header section but before the subsection "Control of Point Source Pollutants" – TMDLs apply to both point and nonpoint sources and so should precede the more specific discussions.

Groundwater

The 1st paragraph related to groundwater quality concerns on page 38 is modified as follows:

"As described earlier in this document, groundwater supplies most of the watersheds' local potable water supply. Specific groundwater quality concerns include volatile organic compounds, perchlorate, hexavalent chromium, and NDMA from industrial activities, ~~and~~ nitrates from agricultural practices, septic tanks and leach fields, and potential contaminants associated with infiltration of stormwater runoff. The infiltration of contaminated stormwater runoff, if not properly treated and regularly monitored, could result in additional groundwater contamination. Low levels of hexavalent chromium have been detected in San Fernando Valley drinking water wells and in Central Basin aquifers. The United States EPA has designated portions of the San Gabriel and San Fernando basins as Superfund sites, and has initiated cleanup operations. Other Superfund sites have been identified within the watersheds, such as the Jet Propulsion Laboratory in La Cañada Flintridge, Lockheed in the San Fernando Valley and the Pemaco site in Maywood. Some water supply wells have been taken out of production where contaminant levels exceed drinking water standards. Efforts of local cities, water companies, ~~and~~ water agencies, watermasters, water associations and special-purpose entities such as the San Gabriel Basin Water Quality Authority have been instrumental in protecting groundwater quality and developing and implementing plans to clean up ~~many of these sites~~ existing contamination."

4. Source Controls and Remediation Efforts Planned

For waters on the 303(d) list, and where the US EPA administrator deems they are appropriate, the states are to develop Total Maximum Daily Loads or TMDLs. A TMDL defines the total amount of a particular pollutant that is acceptable in the waterbody consistent with its designated beneficial use. Federal regulations require that each TMDL account for all sources of the pollutants that caused the water to be listed, both contributions from point sources (federally permitted discharges) and contributions from non-point sources. The Los Angeles Regional Board has adopted a schedule for development of a wide range of TMDLs to address 303(d) listed waters throughout the watersheds

Control of Non-point Source Pollutants

The 4th paragraph on page 39 is modified as follows:

In addition to the general approach to non-point source pollution control, the Los Angeles Regional Board has adopted a TMDL for trash for the East Fork of the San Gabriel River and ~~has proposed a draft TMDL for trash in~~ the Los Angeles River and adopted a schedule for adoption of a wide range of TMDLs to address 303(d) listed waters throughout the watersheds. The watersheds are also subject to a NPDES permit for stormwater runoff that are designed to protect the beneficial uses of water bodies in Los Angeles County by reducing pollutants in storm water. The Los Angeles County permit was issued in 1990 by the Regional Water Quality Control Board and renewed in 1996 and 2002. The permit covers 3,100 square miles in the Los Angeles basin and spans several watersheds, with the County of Los Angeles and 85 incorporated cities as the listed permittees. The Board also adopted a requirement for development of a Standard Urban Stormwater Mitigation Plan (SUSMP) for construction and operational BMPs for certain types of projects which mandates the collection and treatment the first ¾ inch of stormwater runoff from the site. The City of Long Beach was issued a permit in 1999 by the Regional Water Quality Control Board. Approximately 44% of the approximately 50 square miles area covered by the permit drains to the Los Angeles River ,while 7% drains to the San Gabriel River. Orange County's Environmental Resources department also administers a countywide stormwater program of water quality protection initiatives backed by a 1997 water quality ordinance.

3. A VISION FOR THE FUTURE

Section 3 of Common Ground included the Guiding Principles, and a discussion of strategies, opportunities, and next steps. This Addendum provides an opportunity to modify the guiding principles related to water, clarify the discussion of opportunities related to water resources and insert an additional statement related to next steps.

B. GUIDING PRINCIPLES

The 6th paragraph on page 47 is modified as follows:

> "To restore the watersheds, create an open space network, enhance waters and waterways, and improve coordination of planning throughout the region, plans and projects need consistent goals. The Guiding Principles represent an over-arching set of goals that can be used to guide future projects and enhance current open space planning in the watersheds. The Guiding Principles are intended to serve as a reference or a touchstone for all concerned with watershed planning. They set forth general directions without attempting to define responsibilities for implementation. They are guides, not directives. They imply a wide perspective and a long view. <u>They are not intended to suggest that the RMC has any authority to implement projects beyond those specific activities that the Conservancy is authorized by statute to perform.</u> The Principles were developed through a consensus-building process involving state and county agencies, cities, environmental groups, local councils of government, and individuals having a stake in the evolution of the watersheds.

The water-related Guiding Principles are modified as follows:

WATER: Enhance Waters and Waterways

Maintain and Improve Flood Protection

- Maintain or enhance existing flood protection at all phases of implementation
- Utilize nonstructural methods for flood management where feasible
- Reduce the volume and velocity of stormwater runoff where feasible
- <u>Consistent with local water management practices, water rights,</u> water quality protection standards, plans, and policies), develop regional and subregional networks of stormwater detention areas where feasible
- <u>Consistent with regulatory requirements, water rights, water quality protection standards,</u> plans and policies, encourage new developments to detain stormwater onsite to mitigate runoff where feasible

Establish Riverfront Greenways to Cleanse Water, Hold Floodwaters, & Extend Open Space

- Acquire land for flood management, wetlands, cleansing of water, and compatible uses
- Create a continuous network of parks along the waterways
- Consistent with regulatory requirements, water rights, and water management practices, develop recreational opportunities along waterways
- Connect communities to the waterways by extended greenways

Improve Quality of Surface Water and Groundwater

- Reduce dry weather urban runoff discharge into waterways and the ocean
- Coordinate local planning and opportunities for water quality improvements consistent with the regional basin plan for water quality standards, plans, and policies
- Support public/volunteer water quality monitoring programs

- Assist cities in implementing water quality regulatory requirements

Improve Flood Safety Through Restoration of River and Creek Ecosystems

- Consistent with water quality protection standards, plans, and policies, regulatory requirements, water rights, water management practices and flood control needs, enhance or restore the natural hydrologic functioning of subwatershed areas
- Naturalize low-flow streambeds/develop floodways for storm events where consistent with flood control needs, water rights, and water management practices
- Restore local streams to replace storm drains where consistent with flood control needs, water rights, and water management practices
- Maintain sufficient flow conditions to support riparian/riverine habitats where consistent with water rights and water management practices
- Develop sediment management strategy

Optimize Water Resources to Reduce Dependence on Imported Water

- Expand groundwater recharge facilities to increase local water supplies
- Consistent with water quality protection standards, plans, policies; regulatory requirements, and water rights, encourage onsite collection of stormwater for irrigation and percolation~~, where consistent with water quality goals and existing water rights~~
- Consistent with water quality protection standards, plans, policies, regulatory requirements and service duplication laws, extend the distribution and range of uses for reclaimed water
- Expand water conservation programs
- Publish a subwatershed-level water budget and periodically monitor performance

C. OPPORTUNITIES

The discussion of opportunities is modified as follows:

4. Water Resources

A new introductory paragraph is inserted (on page 70):

"The RMC encourages public agencies, counties, cities, communities, neighborhoods, non-profit groups and community-based organizations to develop and implement policies, programs and projects which maintain and enhance flood protection, surface waters and groundwater. By statute, the RMC may not engage in any activity which:

- Interferes or conflicts with the exercise of the powers or duties of any watermaster, public agency, or other body or entity responsible for groundwater or surface water management or groundwater replenishment as designated or established pursuant to any adjudication or statute.

- Interferes or conflicts with any provision of any judgment or court order issued, or rule or regulation adopted, pursuant to any adjudication affecting water or water management in the San Gabriel River watershed and basin.

- Impedes or adversely impacts any previously adopted Los Angeles County Drainage Area project, as described in the report of the Chief of Engineers dated June 30, 1992, including any supplement or addendum to that report as of September 1, 1999, or any maintenance agreement to operate the project.

- Results in the degradation of water quality, or interferes or conflicts with any action by a watermaster or public agency that is authorized pursuant to statute, any water right or adjudication including, but not limited to, any action relating to water conservation, groundwater recharge, conservation or storage of water, or both, the pumping of groundwater, water treatment, the regulation of spreading, injection, pumping, storage, or the use of water from local sources, stormwater flows and runoff, or from imported or reclaimed water that is undertaken in connection with the management of the San Gabriel River or any branch, stream, fork, or tributary thereof, a groundwater basin, or groundwater resource.

- Interferes with, obstructs, hinders, or delays the exercise of, any water right by the owner of a public water system, including, but not limited to, the construction, operation, maintenance, replacement, repair, location, or relocation of any well or water pumping, treatment, or storage facility, pipeline, or other facility or property necessary or useful to the operation of the public water system."

E. NEXT STEPS

The list of actions to be undertaken by other agencies (on pages 76 and 77) is modified to include the following:

"Water Agencies and Associations: Continue to implement policies, programs and projects that enhance water supplies and protect water quality.

Conceptual Feasibility Report

South Los Angeles Wetlands Park

Phase I

Submitted to

City of Los Angeles

April 2003

CH2MHILL

555 S. Flower Street
Suite 3550
Los Angeles CA 90071

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ADA	American's with Disabilities Act
BMP	best management practices
cfs	cubic feet per second
gpd	gallons per day
GAC	granular activated carbon
HVWA	Hidden Valley Wildlife Area
LAUSD	Los Angeles County Unified School District
mgd	million gallons per day
MTA	Los Angeles County Metropolitan Transportation Authority
RTD	Southern California Rapid Transit District
SJWS	San Joaquin Wildlife Sanctuary
SMURRF	Santa Monica Urban Runoff Reclamation Facility
TPL	Trust for Public Land
Wetlands Park	South Los Angeles Wetlands Park
WRD	Water Replenishment District

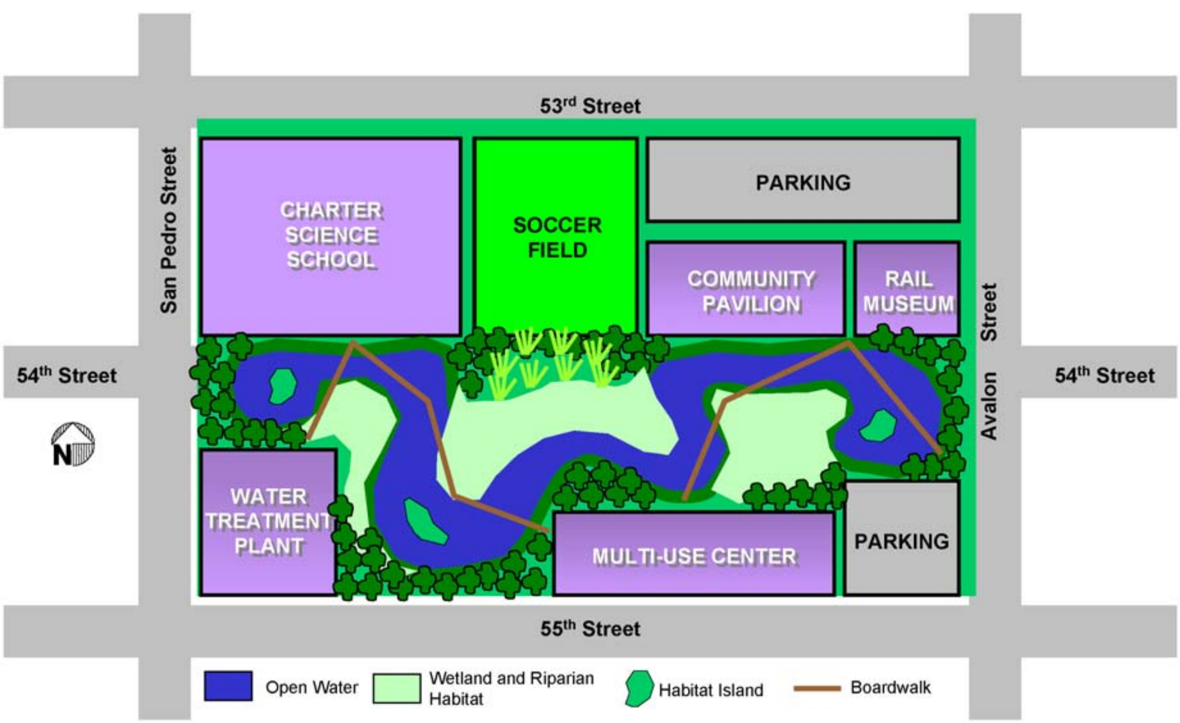
Executive Summary

Project Overview

This report provides a conceptual overview and feasibility assessment of the proposed South Los Angeles Wetlands Park (Wetlands Park), a community resource of wetlands and riparian habitat that will be created in a densely populated urban area now covered in concrete, asphalt, and buildings. Trails, boardwalks, and educational signage located within the created habitats would provide Wetlands Park users with an accessible and quiet refuge within the City to enjoy and learn about southern California ecology. The wetlands and riparian habitats would be supplied with treated stormwater and extracted groundwater, which would provide the additional benefit of improving water quality.

Grouped around the wetlands and riparian habitats would be other public-use facilities, including a multi-use community center and a water treatment facility (see Figure ES-1).. The Wetlands Park will create valuable greenspace and access to public recreation and educational facilities. As a former transportation facility, the site would include a rail museum to document the history of mass transit in the City and preserve architectural heritage through the re-use of historical buildings.

Figure ES-1
Concept Site Plan



Existing Site Features

The proposed site for the Wetlands Park includes approximately 18 acres, along 54th Street between Avalon Boulevard and San Pedro Street. The site currently consists of parcels owned and/or occupied by the Los Angeles County Metropolitan Transportation Authority (MTA), LAUSD, and the Avalon Discount Stores and Swap Meet.

Project Needs and Opportunities

The potential Wetlands Park site is located within an urban area with limited open space and community facilities. Implementation of the Wetlands Park would provide valuable green space and an opportunity for public recreation and education, while creating a high-quality wetlands habitat in urban Los Angeles.

The conceptual opportunities afforded by the Wetlands Park are numerous and extraordinary. These include the following:

- Wildlife Habitat
- Open Green Space/Visual Improvement
- Passive Recreation/Active Recreation
- Environmental Education/Science Center
- Groundwater Quality Improvement/Stormwater Quality Improvement
- Transportation Heritage

Project Issues

All projects face constraints during the initial visionary steps. As information is collected, and the project progresses, the various technical, regulatory, and economic constraints become more clearly defined, and solutions become more apparent.

Key issues to be resolved for the Wetlands Park include the following:

- 54th Street (between San Pedro and Avalon Street) and Hardscape Replacement
- Groundwater and Soil Contamination
- Regulatory Agency Review
- Public Outreach
- Security Buffer
- Safe Access and Use
- School District Participation and Curriculum Planning
- Vector Control Plan

Project Schedule and Cost

The project would be separated into three phases. Phase 1 is the conceptual feasibility study provided by this document. Phase 2 is the preliminary and final design of the site facilities, including public outreach and environmental permitting. Phase 3 would then entail the construction of the site facilities. Table 4-1 presents a conceptual schedule to implement the Wetlands Park. The completion of the Wetlands Park is expected to take a minimum of three years to complete and conceptually cost from $3.8 to $6.1 million for site facility design and $26.3 to $43.7 million to construct. (See Table 4-2)

Introduction

Overview

This report provides a conceptual overview and feasibility assessment of the potential to create the Wetlands Park (Wetlands Park), a community resource of wetlands and riparian habitat created in a densely populated urban area now covered in concrete, asphalt, and buildings. Trails, boardwalks, and educational signage located within the created habitats will provide Wetlands Park users with an accessible and quiet refuge within the City to enjoy and learn about southern California ecology. The wetlands and riparian habitats would be supplied with treated stormwater and extracted groundwater, which would provide the additional benefit of improving water quality.

Grouped around the wetlands and riparian habitats would be other public-use facilities, including a multi-use community center and a water treatment facility. The Wetlands Park will create valuable greenspace and access to public recreation and educational facilities. As a former transportation facility, the site would include a rail museum to document the history of mass transit in the City and preserve architectural heritage through the re-use of historical buildings.

The proposed site for the Wetlands Park is located in City Council District 9 along 54th street between San Pedro Street and Avalon Boulevard, south of downtown Los Angeles and east of the 110 Freeway, as shown in Figure 1-1. The park would situate on one city block, or approximately 9 acres, in a predominantly under-served and traditionally resource-limited area.

Report Outline

This report provides a brief summary of the site history and current site conditions, followed by a discussion of project needs and opportunities for the Wetlands Park. The potential public-use opportunities and community resources are then presented. The conceptual Wetlands plan is provided to outline target vegetative communities, potential wildlife uses, and water supply and treatment. A summary of project issues, conceptual costs, and important steps for implementing this community resource vision conclude this report.

Existing Site Features

The proposed site for the Wetlands Park could include one city block, approximately 9 acres, along 54th Street between Avalon Boulevard and San Pedro Street. Figure 1-2 shows the Wetlands Park site, and the existing development within the area of the proposed site. The parcel bordered by 54th Street to the north and 55th Street to the south was historically used as a streetcar repair station, and is currently owned by the MTA. The LAUSD owns over half of the "north" parcel bordered by 53rd Street to the north and 54th Street to the south. The Avalon Discount Stores and Swap Meet are located on the eastern portion of the north parcel. A historic brick building is located in the southeast corner of the north parcel.

MTA Property

By using this specific MTA property in the project concept, the public would be provided an opportunity to learn about the history of mass transit in Los Angeles. Approximately 220 companies have provided mass transportation beginning in 1873, with the Main Street Railroad Company and continuing with current operation of the MTA created in 1993. Mass transportation in Los Angeles has included horsecars, cable cars, incline railways, steam trains, electric streetcars and trolleys, and gasoline, methanol, diesel, and compressed natural gas fueled buses (Los Angeles County Metropolitan Transportation Authority, 1997).

An earlier version of the local transit authority, originally created in 1951, developed a monorail system along the Los Angeles River. This agency developed the Long Beach Line (Red Line) and expanded it to include the Yellow Line and some bus operations. The agency was in operation from 1951 to 1964. The proposed south parcel for the Wetlands Park served as the streetcar repair station during the operation of the Yellow Line. As the region shifted away from light rail and began to increasingly utilize buses in the early 1960s, the Red and Yellow Lines were discontinued. The Southern California Rapid Transit District (RTD) was created in 1964, and was mandated to improve the bus system and design and build a transit system for Los Angeles.

The current entrance into the MTA property is along the eastern edge of the parcel on Avalon Avenue. The perimeter of the property generally consists of chain-link barbed-wire fence and building fronts. Figure 1-3 shows the MTA property along 54th Street. Much of the southern edge of the property is bordered by the historic Yellow Line rail repair station.

Insert
Figure 1-1 – Project Location, South Los Angeles Wetlands Park

Figure 1-2
Proposed Site
South Los Angeles Wetlands Park

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Figure 1-3
MTA Property along 54th Street
Vacating 54th Street, from San Pedro to Avalon

Adjoining Properties

The LAUSD property is divided into three distinct parcels that are situated side-by-side. The west parcel is composed of asphalt basketball courts and other sports fields. The center parcel houses classroom and administrative buildings of the Dorothy V. Johnson Opportunity High School, and the east parcel contains a grassed field, which will be converted into two futbol (soccer) fields. Joint agreement between LAUSD and Concerned Citizens of South Central LA (CCSCLA). The school currently has approximately 130 students. Figure 1-4 shows the LAUSD classroom buildings along 53rd Street.

Figure 1-4
LAUSD Property along 53rd Street

Avalon Discount Stores and Swap Meet

The Avalon Discount Stores and swap meet property consists of a large warehouse-type building and a sizeable parking area. Figure 1-5 shows the Avalon Discount Store along 53rd Street.

Figure 1-5
Avalon Discount Stores along 53rd Street

Historic Brick Building

A historic red brick building is located in the northwest quadrant of the 54th Street and Avalon Avenue intersection. The historic building is shown in Figure 1-6.

Figure 1-6
Historic Brick Building

Project Needs and Opportunities

The proposed Wetlands Park site is located within an urban area that has limited open space and community facilities. Implementation of the Wetlands Park would provide valuable green space and an opportunity for public recreation and education, while creating a high-quality wetlands habitat in urban Los Angeles.

The Wetlands Park would improve stormwater quality and provide unique water re-use opportunities. A portion of flows from a local storm drain could be routed to the project site and treated prior to discharge to the wetlands. The wetlands would provide supplemental polishing treatment of the stormwater flows so that the water could be used for irrigation and other suitable water re-uses within the project area, or discharged back into the storm drain. Table 1-1 summarizes the suspended solids and nutrient removal capabilities of wetlands located in North America.

TABLE 1-1
Summary of North American Wetlands Treatment System Performance

	Concentration (mg/l)		
Parameter	**In**	**Out**	**Removal Efficiency**
BOD_5	30.3	8.0	74%
TSS	45.6	13.5	70%
Ammonium Nitrogen (NH_4-N)	4.88	2.33	54%
TP	3.78	1.62	57%

Abbreviations:
BOD_5 - 5-Day Biochemical Oxyen Demand
TSS - Total Suspended Solids
TP - Total Phosphorous
Source: (Kadlec and Knight, 1996)

Since the quantity of stormwater needed to support the wetlands during the dry summer months would not be available, groundwater would be extracted to provide a reliable year-round water supply. The potential exists to encounter contaminated soils and groundwater because of the historic use of the Wetlands Park site for MTA railcar maintenance. If contaminated groundwater is encountered, extraction and subsequent treatment using the on-site treatment facility would help capture and remediate the underground contaminant plume.

Other conventional community park and recreation facilities in the area surrounding the proposed Wetlands Park location are listed in Table 1-2. These valuable resources provide much needed greenspace, active recreational facilities for a range of sports, teen centers, a pavilion or stage for performances, and a swimming pool. However, the proposed Wetlands Park would provide a unique combination of recreational, environmental, or educational resources to the community.

TABLE 1-2
Existing Area Community Park and Recreation Facilities

Community Facility	Location	Distance from WP[a] (mi)
South Park	50th St and Avalon Blvd	0.5
Gilbert Lindsay Community Center Park	42nd St and Avalon Blvd	2.0
Theresa Lindsay Park	57th St and Figueroa St	2.0
Slauson Recreation Center	53rd St and Compton Ave	2.2
48th Street Park	48th St and Hoover St	3.0
Fred Roberts Park	47th St and Long Beach Ave	3.5
Ross Snyder Recreation Center	41st St and Compton Ave	4.0

[a] Roadway distance from the planned Wetlands Park location and other existing area community facilities.

mi – mile
WP – Wetlands Park

Community Need

Often, legislation creates open space on the outskirts of urban areas, making this space inaccessible to inner–city communities. This proposal would change this reality, bringing parkland to a highly urban community that is in need of open space. The proposed location of the Wetlands Park would attract residents from throughout the City and the community, which it directly serves.

Currently, the Ninth District has less parkland and open space than other districts in the City; 105 acres of parkland serve approximately 250,000 residents. This project provides an opportunity for greater open space.

The proposed Wetlands Park is the first step in many to help serve an under-served community, while cleaning the environment, improving water quality, and fostering a greater appreciation for the community. In addition to the park, a youth center and a senior center are included in the plans to further meet the immediate needs of the Ninth District.

Project Opportunities

The conceptual opportunities afforded by the Wetlands Park are numerous and extraordinary. These include the following:

- **Wildlife Habitat** – Deep and shallow marshes, open pools of water, riparian woodlands, and native upland grassland habitats could be created at this site and populated with native Californian vegetation and colonized by wildlife.

- **Open Green Space/Visual Improvement** – The replacement of the existing industrial landscape with an open natural landscape of plants and water would create an urban oasis. A well-designed and maintained Wetlands Park would replace the existing blighted aspect of the site with a greenery from a combination of native trees, shrubs, and marsh plants.
- **Passive Recreation/Active Recreation** – The Wetlands Park would be used for passive recreation activities, such as walking and cycling, and nature study, including activities such as photography and bird-watching. The soccer fields could be viewed with a landscaped margin that provides a overlook onto the field.
- **Environmental Education/Science Center** – The Wetlands Park could be designed to support science educational curricula for grades K through 12. Area school programs could incorporate valuable field trips to view the wetlands, riparian areas, water treatment facility, and the rail museum. Creating a modern science education facility next to the Wetlands Park is certain to inspire future students in the study of the environment. Other community schools would also be interested in using the site, given the ready access and utility of the design for public use.
- **Groundwater Quality Improvement/Stormwater Quality Improvement** – Clean groundwater could be used to provide a year-round water source to create the wetlands and irrigate the surrounding uplands. Natural wetlands treatment processes would provide final water-quality polishing. Groundwater, site runoff and stormwater diverted from local drainage systems could be pre-treated using the on-site treatment facility, and subsequently used to provide a source of water to the wetlands.
- **Transportation Heritage** – The heritage of this parcel as a transportation center could be preserved by re-using the historic rail service building as a multi-use community facility, and as an instructional amenity.

Section 2
Public-Use and Community Resources

Creation of wetlands and riparian habitats in the urban setting would create a physical environment with scenic and interpretive opportunities of increased attractiveness for public use. The preliminary conceptual plan for the Wetlands Park is presented as Figure 2-1, and provides a vision for incorporating public-use and educational facilities. The conceptual plan sets a framework for discussion of the planned uses among citizens, community leaders, and regulatory and funding agencies. The overall objective, based on input from these groups, will be to identify and implement compatible uses of the site by the community.

The Wetlands Park concept presents a multiple-benefit facility centered on 6 acres of created wetlands and riparian habitat. The created habitats will incorporate a system of trails, boardwalks, educational signage, and interpretive facilities to encourage public use and education about water resources and native habitat types. The concept also incorporates a LAUSD educational facility with a science focus, soccer field, community pavilion, rail museum, multi-use center, water treatment plant, and facility parking. Collectively, this diverse site use, distributed around the common water feature, creates an environmental and educational campus for use by the local community. Public-use features and community benefits of the Wetlands Park are discussed below.

2.1 Trails, Boardwalks, and Signage

The public-use features of the Wetlands Park concept include a ½-mile footpath through riparian and wetlands habitat, ¼ mile of boardwalk, and three gazebos as shown in Figure 2-1. Two gazebos would provide viewing platforms within the wetlands habitat, and the third would provide a shade shelter and observation tower atop the hill south of the soccer field to afford an aerial perspective of the various habitat types.

Educational signs would add to the experience by educating park users on regional water resource issues, wildlife, and the benefits of wetlands. Water-treatment processes, natural ecology, wetlands uses, biology, and wildlife likely to be observed in and around the wetlands could be described. The boardwalks and overlook would allow users to observe treatment wetlands function, wetlands plant life, and wildlife at close range. Regional elementary through secondary school programs could incorporate field trips and focused wetlands studies into their science curricula. Water-quality improvement, wildlife use, and ecology of wetlands plants could be studied and experienced in a well-maintained wetlands environment. A representative boardwalk through constructed wetlands is shown in Figure 2-2.

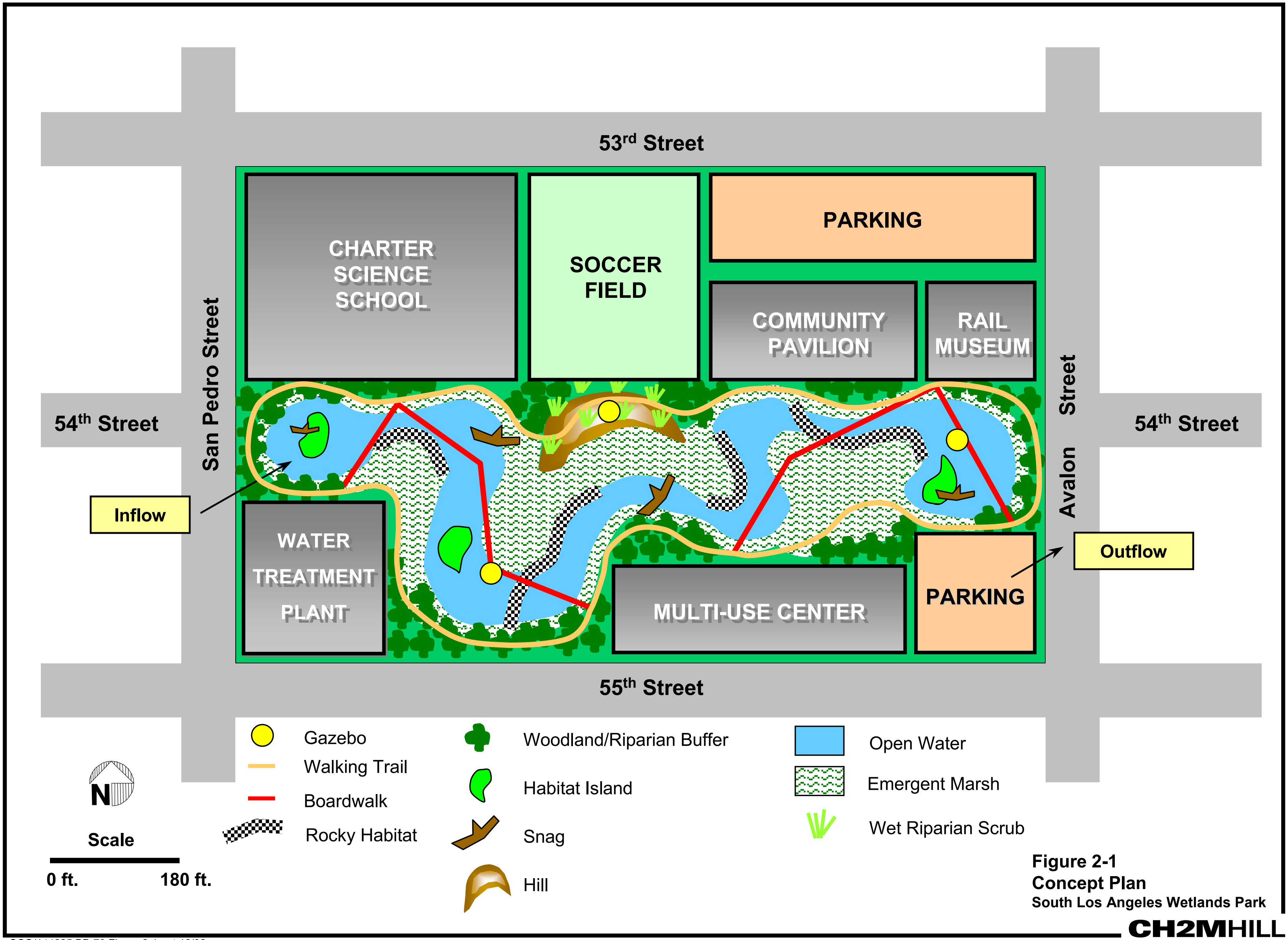

Figure 2-1
Concept Plan
South Los Angeles Wetlands Park

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Figure 2-2

Boardwalk through Wetlands

2.2 Water Treatment Facility

A state-of-the-art water treatment facility will be constructed at the project site to treat stormwater, and extracted groundwater, if the local groundwater is found to be contaminated. In addition, the water recycled within the wetlands would also be treated to maintain the proper ecological and water-quality balance within the wetlands. The treatment systems will be located within a common water treatment facility, that would be situated in the southwest corner of the wetlands. The water treatment plant affords an opportunity to educate the public about the treatment technologies used to treat the source waters for use within the wetlands. The water treatment facility can be integrated into the educational center activities. The treatment processes can be housed in a building that would have a pavilion area with windows that would allow the public to view the various treatment processes and equipment. Educational exhibits can be provided in the pavilion area to educate the public on the treatment technologies and processes they are viewing.

2.3 LAUSD Educational Facility

There are many available opportunities for the LAUSD educational facility. One opportunity would be for a magnet facility similar to the North Hollywood High School Animal Studies/Biological Sciences Zoo Magnet Center. This school has approximately 300 students and is located adjacent to the Los Angeles Zoo. The wetlands and the water treatment facility component of the Wetlands Park would provide a year-round outdoor classroom emphasizing ecology, water quality, and water resource management. Figure 2-3 shows a student collecting a water sample for water-quality analysis. Another opportunity would be for an educational science center, that would promote the use of the Wetlands Park to many schools or groups. Schools and other groups could be supported by the development of appropriately designed site field trips, tours, and educational workshops. Classes or groups could come in with a special permit under the supervision of a teacher or docent. Depending on the decided use, the City and LAUSD may develop a Joint Powers Agreement to help facilitate the planning and operation of the Wetlands Park.

Figure 2-3
Student Collecting a Water Sample

2.4 Community Pavillion

A shade pavilion with restrooms, picnic tables, and storage could be constructed for use as an outfoor classroom and staging area. The addition of an amphitheater would provide a stage and seating area for community performances, presentations, and entertainment.

2.5 Multi-Use Center

The uses for the multi-use center could range from senior-care and daycare centers to wetlands science center. A full-time, staffed visitor center, with wildlife displays, classrooms or laboratories, and concessions would be included to ensure the close supervision of the park and a primary point of contact with the City for park users.

2.6 Soccer Field

The soccer field would be constructed immediately east of the LAUSD educational facility with a joint use agreement with CCSCLA. Raised earthen berms surrounding the field would provide an overlook of activities on the field, while obscuring the soccer field and attendant crowds from the direct view of the visitors in the wetlands area. The soccer field will be used by LAUSD for physical education during school hours.

2.7 Rail Museum

The Rail Museum, renovated and strengthened to current building codes, would allow the history of rail and mass transit in the City of Los Angeles to be presented to the interested public, and would preserve an aspect of the architectural heritage of the City. Museum exhibits could be placed in the historic multi-use center.

2.8 Parking

The conceptual Wetlands Park design will include one parking area near the wetlands and the multi-use center. There is limited parking on side streets. The new parking facility would be landscaped with native vegetation, incorporate best management practices (BMPs) for pollutant removal and low-impact development guidelines for infiltration of runoff to the soil. Excess, stormwater runoff could be routed to the wetlands. The parking area would be sized to accommodate special event parking for busses or groups of cars. The parking facility could be used as a demonstration prototype facility to provide examples of BMPs.

2.9 Public Safety and Site Access

The entire wetlands and riparian area facility could be fenced using natural stone and patterned metals to control site access and ensure the safety of the park users and wildlife.

Access into the wetlands and riparian area could be provided from three locations:

- Multi-Use Center
- School
- Futbol Field

The Multi-Use Center would be the main entrance, with the others being locked, unless opened by the school staff or on-site ranger or security. All access, trails, and board-walks would be compatible with American's with Disabilities Act (ADA) requirements.

Various concerns relating to safety and security are considered in anticipation of increased public use of the Wetlands Park. Concerns over vandalism, privacy, noise, and physical hazards would influence final site plans. A combination of strategies, including physical improvements as well as operational approaches, would likely be used. Regulations and hours for use would be posted at all entry points, which would be equipped with lockable gates. Supervision would be required for large groups to help keep unacceptable behavior under control. Site furnishings would be constructed from concrete or metal materials, to make them more resistant to vandalism and easier to clean in case of graffiti. Ground-level vegetation in riparian woodland and upland areas would generally be open to the wetlands or water edge to provide a security line of sight. Trail and walkway edges along "walking-tour routes" would be delineated with railings, raised edges, and signage to discourage people from wandering off the paths. The facility would include appropriate lighting (including parking lots). Emergency call boxes could be installed to facilitate assistance in case of injury or crime. Raised earthen berms and selected plantings could be installed around the perimeter of the property. Visual access to the street would be minimized with an appropriate fence design.

Section 3
Conceptual Wetlands Plan

Up to 4 acres of productive native wetlands and 2 acres of riparian and upland habitats could be created within the Wetlands Park. The sources of water for the wetlands and adjacent habitat will be treated stormwater runoff and groundwater. This section describes the target habitat types and wildlife, wetlands configuration, project source waters, water circulation patterns within the wetlands, and water treatment facilities.

3.1 Habitats and Wildlife

The conceptual plan would incorporate native plant communities consistent with historical habitat conditions in the Los Angeles Basin. As shown in Figure 3-1, these plant communities, or habitat types, include riparian woodland, wet riparian scrub, emergent marsh, deep marsh, and upland areas. Water depths or elevation above surface water for the different habitats and characteristic plant species are provided in Table 3-1. The table also provides an assessment of the duration of time that each habitat type would be flooded. Figure 3-2 illustrates the conceptual elevation profile showing the relative depths of the different wetland zones and adjacent riparian lands.

Generally, the riparian woodland zone is above areas of sustained inundation, but low-lying areas may receive occasional flooding. The wet riparian scrub and transitional marsh zones are in areas that require up to several months of seasonal inundation. The deep marsh and open-water zones would receive permanent inundation. Upland areas would be constructed with grade elevations above the seasonal high-water level.

TABLE 3-1
Conceptual Water Regime for South Los Angeles Wetlands Park Habitats[a]

Habitat	Characteristic Species	Ground Elevation from Mean Water Surface (feet)	Duration in Flooded Conditions
Open Water	Water starwort pondweed	-3.0 to -6.0	Permanent
Deep Marsh	Bulrush sp. cattail	+0.5 to -3.0	Permanent
Emergent Marsh	Tall flatsedge, rush sp., sedge sp.	0.0 to +1.0	6 Months
Wet Riparian Scrub	Goodding's willow, arroyo willow, California wild grape	0.0 to +1.0	4 to 5 Months during dormancy
Riparian Woodland	California sycamore, elderberry, Goodding's willow, arroyo willow, mulefat	+1.0 to +3.0	0 to 4 Months during dormancy
Upland	Western sycamore, coast live oak, wild rye	+3.0 to +8.0	0 Months

[a]Source: Stanley, J.T. 1993. *The Relationship Between Surface and Groundwater Hydrology and Riparian Vegetation.* The Habitat Restoration Group. Lou Denger, San Joaquin Marsh Manager, pers. comm., 2002.

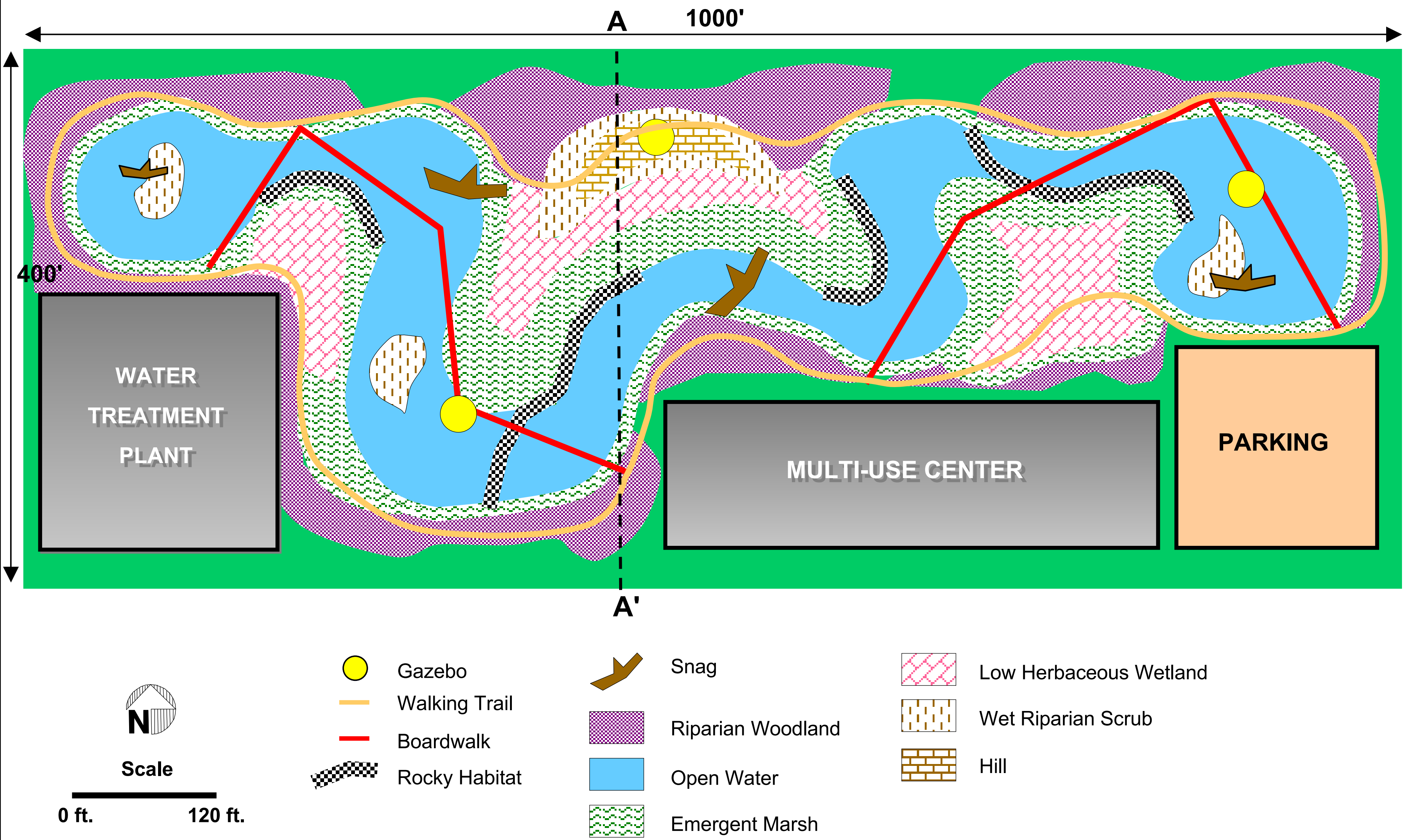

Figure 3-1
Habitat Map
South Los Angeles Wetlands Park

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SCO/144225.BD.79 Figure 3-1.ppt 12/02

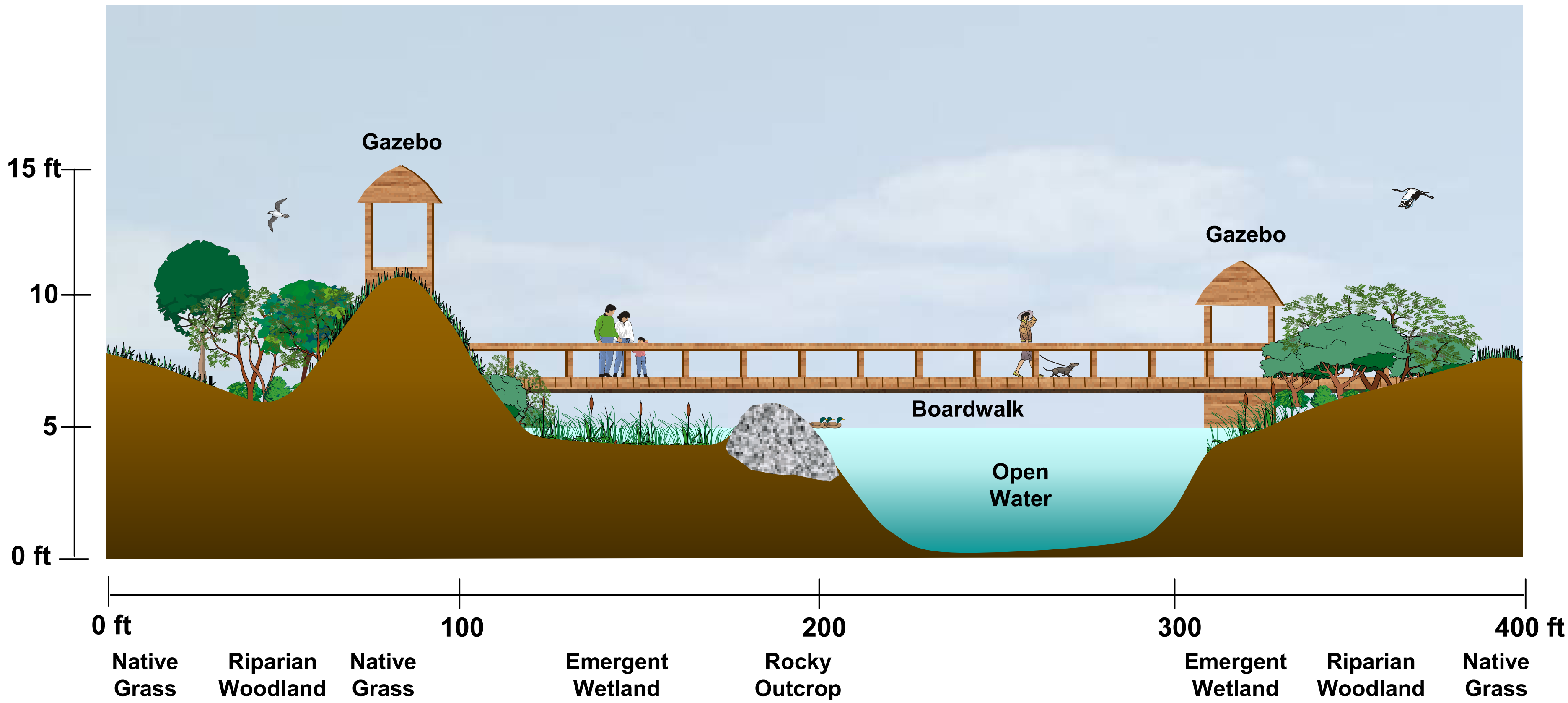

Figure 3-2
Section A-A' Profile
South Los Angeles Wetlands Park

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The proposed habitats are described below, with corresponding community types after Holland (1986) and Cowardin (1979), and wildlife communities developed from Mayer and Laudenslayer (1988).

3.3.1. Riparian Woodland and Wet Riparian Scrub

These habitat types would be planted with mulefat, coyote bush, numerous species of willows, California sycamore, velvet ash, black cottonwood, and other herbaceous and woody species. They are comparable to the Southern Cottonwood-Willow Riparian Forest, Southern Willow Scrub, Mulefat Scrub, and Sycamore Alluvial Riparian Woodland community types described by Holland (1986). A photograph showing representative wet riparian shrub and riparian woodland communities at the San Joaquin Marsh is presented as Figure 3-3. Varying amounts of these habitats are proposed along the edges of the wetlands areas and on portions of created islands. These habitats are important for wildlife; species typically associated with these habitats include bird species such as yellow warbler, least Bell's vireo, Cooper's hawk, red-shouldered hawk, yellow-breasted chat, downy woodpecker, northern oriole; butterflies such as the fatal metalmark; common mammals such as the raccoon, and desirable reptiles and amphibians such as the two-striped garter snake, California red-legged frog, and western toad.

Figure 3-3
Riparian Scrub and Woodland Habitat

3.3.2. Transitional Marsh

Transitional marsh would be planted with herbaceous wetlands species including species of rush and sedge, curly dock, and arrowweed. Open shoreline areas could be allowed to develop in transitional marsh areas along the edges of permanent water. This habitat is comparable in part to Coastal and Valley Freshwater Marsh from Holland (1986). It is proposed as a habitat area between the riparian habitats and deep marsh, and is generally proposed for peripheral marsh areas where the hydrology is not sufficiently inundated to support deep marsh. A photograph showing representative transitional marsh and riparian scrub or woodland communities at Sycamore Canyon in Point Mugu State Park is presented as Figure 3-4. Species of wildlife using this habitat include marsh and riparian species such as mallard, green heron, American coot, red-wing blackbird, and American goldfinch. Shorebirds including black-necked stilt, western sandpiper, and others may forage in open mudflat areas.

Figure 3-4
Transitional Marsh and Riparian Scrub or Woodland Habitat

3.3.3. Deep Marsh

Deep marsh habitat would be planted with bulrush and cattail, and interspersed with open pools of water. It is comparable in part to Coastal and Valley Freshwater Marsh as mentioned by R.F. Holland (1986). It would be planted in areas along the margin of open water channels and on portions of the islands. A photograph showing representative deep marsh and open water habitat at the Prado Wetlands in southern California is presented as Figure 3-5. This habitat is suitable for a number of wetlands wildlife species, including common yellowthroat, least bittern, yellow-headed blackbird, tri-colored blackbird, and marsh wren.

Figure 3-5
Deep Marsh and Open Water Habitat

3.3.4. Open Water

This habitat is comparable to the Lacustrine Open Water wetlands type described by Cowardin (1979). Plant species commonly observed in open water areas include water starwort and pondweed. This is an important habitat for many species of foraging and roosting waterfowl, such as green-winged teal and ruddy duck. When interspersed with deep marsh it supports a number of breeding species, including pied-billed grebe and common moorhen.

3.3.5. Upland

This habitat would be planted with species such as western sycamore, coast live oak, sage, coyote bush, and wild rye. Birds commonly found in these areas include white crown sparrows, goldfinches, and western flycatcher.

3.2 Wetlands Configuration

The conceptual layout presented in Figure 3-1 portrays the Wetlands Park as a natural stream and peripheral wetlands comprised of and modeled after the historic wetlands and riparian communities that occurred in the region before development. The central water feature will be a slow-moving stream of varying depth, subdivided into a series of reaches, by shallow cobble riffles, made of natural materials such as rocks, logs, branches, and soil. Water surface elevations, and ground surface elevations, would be planned to be relatively higher on the west side of the park and grade slightly downward from west to east to create a natural water gravity flow pattern.

All features of the wetlands would mimic and function like their natural counterparts. Widths of the stream sections over cobble riffles connecting the different pools would be narrow, and create a visible velocity gradient in the water to create a well-oxygenated habitat.

Depth of water would grade evenly from the deeper center pool and become more shallow toward the periphery of the wetlands and into the riparian habitat. Over time, as water levels are allowed to fluctuate naturally, the zonation of the marshes would become more vegetated with natural intergradations as influenced by water levels and soil features.

A series of small islands, oriented in the direction of stream flow, would be created along the interior of the site in enough water to encourage birds to rest and feed on the islands. Trees and shrubs growing on the islands would add diversity to the perspective of the park when viewed lengthwise from the east or west ends of the Wetlands Park.

Lightly wooded riparian tree and shrub habitats would be placed to reduce the direct exposure of the site to the adjacent streets and to enhance their use by native wildlife, while maintaining a clear line of site for park users. All of the habitat types described in this section would be placed in proximity to each other as they are found in natural settings.

Habitat features integrated throughout the site would be designed to attract wildlife. Islands, broad flat rocks, vegetation, and trees would be placed and positioned for maximal wildlife benefit and site interest.

3.3 Water Supply and Treatment

3.3.1. Water Sources

The sources of water for the wetlands and adjacent habitat types are groundwater and stormwater runoff. Consistent, year-round flows to sustain the wetlands would be provided by pumping groundwater from the aquifer underlying the site. Given the past use of the site for railcar maintenance, the possibility exists for contaminated soils and groundwater at the site. The groundwater, in the absence of any contamination, could be used directly as a source of water for the wetlands. If groundwater contamination is discovered during site investigations, an on-site treatment system would be installed to treat the groundwater to an acceptable quality for use in the wetlands.

A supplemental source of water would be stormwater runoff that would be diverted from a local storm drain. Both dry-weather flows and “first flush” flows from winter storms would be diverted to a treatment system before the water is discharged into the wetlands. The dry-weather flow is water that is collected during dry (i.e. not raining) weather. Some sources of this flow include excess irrigation and driveway washing. The “first flush” flow is the stormwater collected from the first period of rainfall. The “first flush” generally requires more treatment. The treated stormwater flows would also meet human contact criteria prior to discharge to the wetlands. The treatment systems for groundwater and the stormwater flows would be separate systems constructed at the same location within the Wetlands Park.

3.3.2. Water Needs

Appendix A provides a conceptual water budget for the wetlands and preliminary water needs for irrigation of riparian or upland areas and other Wetlands Park facilities. Inflow needed to support the wetlands is estimated as the balance of water gains (precipitation) and losses (evapotranspiration, infiltration, and outflow). The rate of wetlands outflow, or discharge, was established to achieve a net monthly discharge equal to the total wetlands water volume. This rate of wetlands outflow would prohibit long-term accumulation of salts within the wetlands. Table A-1 shows that an average annual total of about 174 acre-feet of water would be sufficient to replace annual wetland water losses. This corresponds to an average inflow rate of 156,000 gallons per day and an average outflow rate of 105,000 gallons per day. Based on a irrigation rate of 60 in/yr, about 9000 gal/day would be needed each year for site irrigation. This corresponds to an annual average irrigation rate of 24,000 gallons per day.

The combination of extracted groundwater and stormwater runoff would be more than adequate to keep up with evaporation and infiltration losses, support appropriate water elevations in the 4-acre wetlands, and to provide site irrigation. Additional pre-treated stormwater could be safely discharged through the wetlands during the winter, when seasonal rainfall and available storm flows occur. The Wetlands Park would have the overall benefit of producing high-quality effluent that could be used for off-site irrigation and other suitable reclaimed water uses, or discharged back into the storm drain. As outlined above, the quantity of reclaimed water available for off-site uses could be in excess of 90 acre-feet per year, or an average of approximately 80,000 gallons per day. These quantities could be increased if additional area water needs are identified during subsequent planning activities.

3.3.3. Water Flow Patterns

Figure 3-6 presents a flow schematic of the water flow patterns for the wetlands. Stormwater and groundwater will be the two source waters for the Wetlands Park. Both water sources would receive treatment before they are discharged into the wetlands. The source waters would be discharged into the west end of the wetlands. The water would then flow through a sinuous open water channel and across wetlands marsh areas to the outlet structure at the east end of the site. A portion of the water would be recycled back from the east end of the wetlands to the west end of the wetlands. The recycled flow would receive primary treatment to remove any unwanted particulates before it is discharged back into the wetlands. The re-circulation of the wetlands water is essential to maintain good water quality within the wetlands and support shallow rock and cobble riffle habitats. A portion of the flow would have to be discharged from the system to maintain proper water-quality balance within the wetlands ecosystem. Depending on discharge location, all or a portion of the flow may need to be filtered or treated before being released.

Water will be discharged from the wetlands primarily to prevent the buildup of total dissolved solids, alkalinity, hardness, and other water-quality constituents that could be detrimental to the proper development of the plants in the wetlands ecosystem. The three discharge options for the wetland flows are discharge to an adjacent drain, discharge to an adjacent storm drain, and direct re-injection of the water back into the underlying groundwater aquifer. The design will investigate the option for direct re-injection discharge. It may be determined that the water needs to be treated again before re-injection. If contamination is found in the underlying groundwater aquifer, the treatment provided would beneficially improve groundwater quality. The water treatment system could involve filtration, which will have a waste backwash discharge. That waste backwash discharge would be discharged to a local drain.

The re-circulation of water will be designed to maintain proper water quality within the wetlands. A two-day nominal hydraulic residence time within the wetlands would significantly reduce the potential for mosquito concerns, or algae blooms. A pump sized to adequately yield a two-day residence time within the 4-acre wetlands will have a pumping capacity of about 1.3 million gallons per day (mgd), or about 2 cubic feet per second (cfs). Table A-2 presents the pump station sizing calculations. An added benefit of a re-circulation feature would be the opportunity to create some shallow, cobble and rock-filled areas within the stream forming a high-quality habitat for shore and wading birds, as well as for the aesthetic benefit of the sound of flowing water.

Insert Figure 3-6 – Schematic Showing Wetlands Water Supply and Treatment

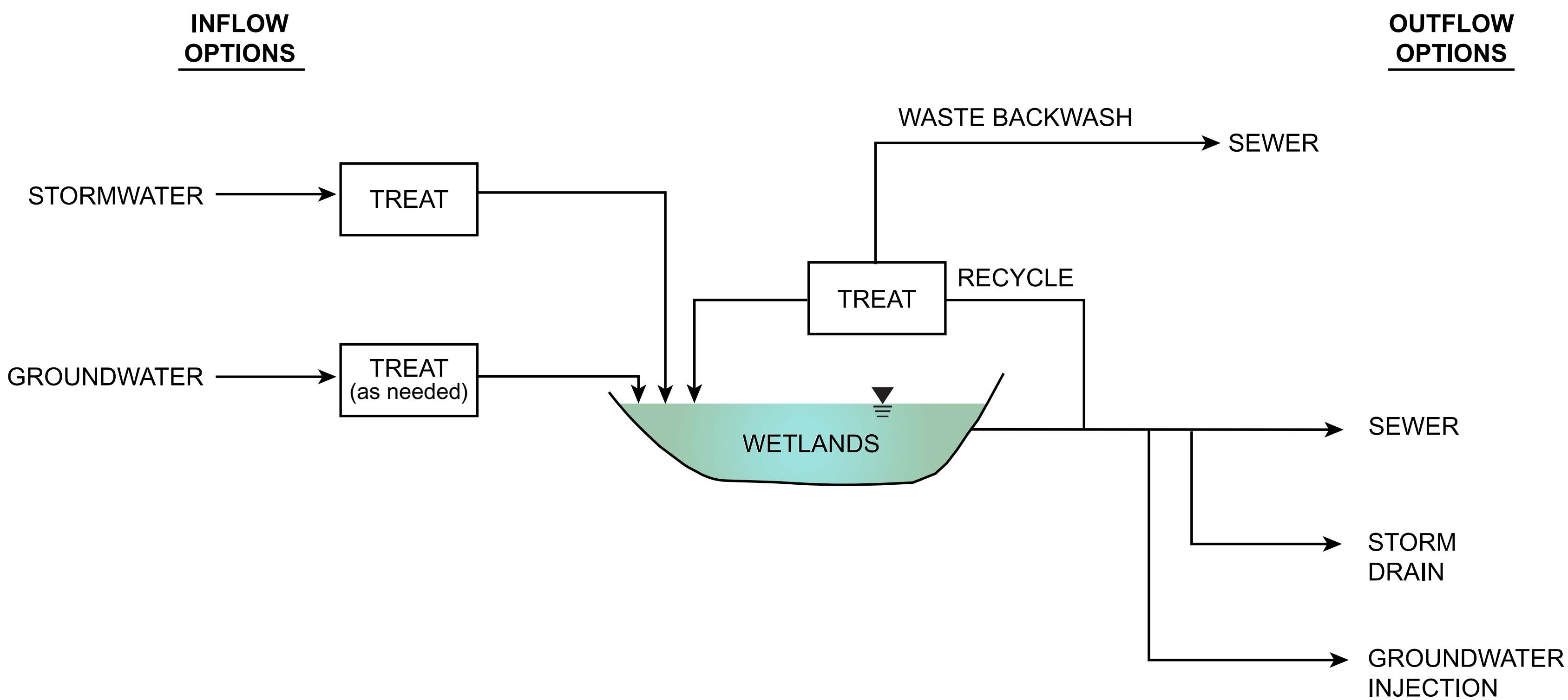

Figure 3-6
Schematic Showing Wetlands Water Supply and Treatment
South Los Angeles Wetlands Park

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3.3.4. Water Treatment

A treatment system may have to be provided to treat the groundwater before it is discharged into the wetlands depending upon the quality of the groundwater at the site. If the groundwater is not contaminated, it would be a filtered water source of acceptable quality to allow discharge directly into the wetlands without treatment. Treatment of the groundwater would only be necessary if it is found through subsequent investigations that the groundwater is contaminated. The type of treatment provided would depend on the contaminants found. Organic compounds could be adequately treated by passing the water through a granular activated carbon (GAC) treatment process. Volatile organics could be treated by air stripping the compounds from the water. This treatment system, if needed, would be co-located with the stormwater treatment system within the water treatment plant area shown in Figure 2-1.

There would be a need to treat the stormwater flows (to the extent that stormwater is used as a seasonal water source) to remove floatable debris, settle out sediments (sands, silts and other colloidal materials), and separate oils and greases. The diversion of the "first flush" storm flows to the wetlands would require storage of the flows before treatment. The storage for those flows would be located under the water treatment plant site. Accordingly, the treatment system would include screening for the removal of the coarse material, centrifugal solids removal, and either gravity or dissolved air flotation removal of the oils and grease. The collected solids and oils and greases removed from the storm flows would be stored on-site and trucked off-site for disposal. This treatment system would be co-located with the groundwater treatment system, if needed, within the area reserved for the footprint of the water treatment plant shown in Figure 2-1.

In either regard, this treatment of groundwater or surface water would create a net environmental benefit by reducing pollutant loads in surface flows and in remediating potential groundwater contamination beneath the site. The wetlands would also provide additional treatment and conditioning of the pre-treated source waters.

3.3.5. Site Irrigation

Irrigation systems would be installed to facilitate establishment of tree, shrub, and grass plantings within the riparian and upland habitats, and to provided irrigation for other Wetlands Park facilities. A timer-controlled drip and spray irrigation system could be used for tree establishment to provide controlled water application and protect against drought. The spray system would be used primarily for shrub and grass.

Section 4
Project Issues, Costs, and a Path Forward

In all ways, the Wetlands Park would create both environmental and cultural benefits to the surrounding neighborhoods as well as the City of Los Angeles and the region. However, replacement of a city block in an urban zone with a viable wetlands park is a challenging prospect, and would necessarily require detailed engineering, permitting, financial planning, and public outreach to ensure that the project's benefits and costs are clearly understood by all. This section provides a preliminary discussion of the apparent constraints to the project, a preliminary cost opinion, a schedule of completion, and the preliminary recommendations based upon this conceptual report.

4.1 Project Issues

All projects face constraints during the initial visionary steps. As information is collected, and the project progresses, the various technical, regulatory, and economic constraints become more clearly defined, and solutions become more apparent.

Key issues to be resolved for the Wetlands Park include the following:

- **54th Street and Hardscape Replacement –** Potential effects to local traffic flow, utility rights-of-way, and site access would need to be assessed and solutions developed. Approaches to the safe demolition of existing buildings and roads need to be developed that are sensitive to project neighbors.
- **Groundwater and Soil Contamination –** Given the history of the site as a railyard service area, there are concerns over the potential presence of contaminants in the soil and underlying groundwater. The type and extent of contamination would need to be determined.
- **Regulatory Agency Review –** The project and its benefits, as well as solutions to the key issues raised, needs to be presented to the pertinent City, County, State and Federal agencies that provide oversight to development and remediation projects.
- **Public Outreach –** A positive, pro-active, and community-oriented outreach program would significantly improve the reception, understanding, and participation by the public in the project. This effort is necessary to define the desired uses for the Community Pavilion and Multi-Use Centers.
- **Security Buffer –** To protect the Wetlands Park and its visitors, provisions need to be made for a security buffer consisting of a landscaped and aesthetic perimeter fence, well-lighted and open parking design, facility lighting, and a site resident manager.

- **Safe Access and Use –** Placement and type of trails can support planning efforts to make the site safe to the general user, as well as for the wildlife that will become established. Location of water features away from the site perimeter and creating well delineated trails and boardwalks would help in this regard. Entrance roads need to be configured to allow safe traffic movements into and out of the Wetlands Park. All facilities and walkways will comply with the American Disabilities Act.
- **School District Participation and Curriculum Planning –** Defining the appropriate uses of the Wetlands Park as a combined educational resource and recreational area would need to be confirmed through discussions with LAUSD representatives and presented to the public for comment.
- **Vector Control Plan –** An integrated pest management plan would need to be developed through coordination with the Greater Los Angeles County Vector Control District. The plan would be similar to existing plans developed for Lake Balboa, Machado Lake, and Echo Park Lake. A successful pest management plan would reduce the incidence of nuisance mosquito populations and help to protect the public from exposure to mosquito-borne diseases. This coordination would continue throughout the life of the project.

4.2 Project Schedule and Cost

The implementation of this project would be separated into three phases. Phase 1 is the conceptual feasibility study provided by this document. Phase 2 is the preliminary and final design of the site, including public outreach and environmental permitting. Phase 3 would then entail the site construction of the proposed wetlands facilities. Table 4-1 presents a conceptual schedule to implement the Wetlands Park. Eleven major tasks are suggested that would support steady progress through planning, design, and construction.

During Phase 2, the project vision and implementation partnerships should be developed to ensure adequate sources of funding through the life of the project. Public outreach should begin at an early date to establish a clear public mandate for the project and to bring the community into the site planning process for what will ultimately be their parkocal, State and Federal regulatory issues need to then be investigated to determine in a more accurate manner the project timeline and preliminary site engineering needs. Geotechnical and contaminant remedial investigations would follow to determine the extent and quality of groundwater and soil at the site. A sustainable water source (i.e., stormwater and groundwater) needs to be identified and verified. Preliminary design(to 30%) would follow next, with input and interaction to and from the permitting process and the public outreach program. The final designs would be separated into subtasks. Each subtask would be undertaken after public outreach sessions confirm the site planning and when funding sources has been identified and/or secured for the task. The designs, as they are completed, would then be bid, if a conventional design-bid-build procurement approach were selected.

Construction would also be separated into similar subtasks and undertaken as the designs are completed. Construction could take at least 2 ¼-years or a quarter, and possibly longer, given the complexity of the site. Following construction, vegetation establishment and maintenance would take place concurrent with opening the site to the public.

TABLE 4-1
Conceptual Project Schedule, South Los Angeles Wetlands Park

	2003				2004				2005				2006				2007			
Quarter	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Phase 1																				
Conceptual Feasibility Report	■																			
Phase 2																				
Project Vision and Partnerships		■																		
Public Outreach		■		■		■		■		■		■		■		■				
Regulatory Compliance (NEPA/CEQA)			■	■	■		■													
Geotechnical/Remedial Investigation			■	■																
Water Source			■																	
Preliminary Design				■																
Final Design				■	■															
Bid and Award						■														
Phase 3																				
Construction								■	■	■	■	■	■	■	■	■				
Establishment Monitoring															■	■	■	■	■	■

The cost to construct the Wetlands Park facilities , shown in Table 4-2, is expected to range from about $15 million to $26 million. This includes construction of the wetlands and riparian habitats and associated public-use facilities; water treatment plant building and the stormwater and re-circulated water treatment systems; multi-use center; remodeling the existing building into a rail museum; and the two parking areas. It does not include costs associated with MTA property acquisition or adjustments to 54th Street. Table 4-2 summarizes the estimated project costs by project component. The estimated project costs presented in the table do not include any cost to remediate any contamination that may be discovered at the site, or treat contaminated groundwater. The costs for remediation of any site contamination could range from $2.0 million to a figure to be determined, based on the extent of the contamination discovered at the site.

Insert Table 4-2, Page 1

Insert Table 4-2, Page 2

4.3 A Path Forward

Partnerships between the community and the municipal governments and agencies will need to be forged to implement a vision of this magnitude. Site information is needed to reduce the uncertainty of cost estimates in a meaningful manner. Long-term commitments to site maintenance, operation, and monitoring are necessary. Support at the legislative level would benefit the project as well.

The tasks presented here, if implemented in sequence, will significantly increase the project feasibility. Detailed site contamination assessments and preliminary engineering should be performed prior to implementation of an extensive public outreach campaign. Interviews with representatives of the MTA should be consulted early in the project regarding the feasibility of road removal and traffic flow modification. A compact, but attractive, brochure on the project and its feasibility should be prepared and used to help build understanding of the project and approach.

Section 5
References

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Appendix A
Conceptual Water Budget

TABLE A-1
Conceptual Water Budget for 4 Acres of Wetlands

Climate Data	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Precipitation	in/mo	2.6	2.3	1.8	0.8	0.1	0.0	0.0	0.1	0.2	0.3	1.5	1.5
Evapotranspiration	in/mo	2.2	2.6	3.7	4.7	5.5	5.8	6.2	5.9	5.0	3.9	2.6	1.9
Infiltration	in/mo	10.5	9.5	10.5	10.2	10.5	10.2	10.5	10.5	10.2	10.5	10.2	10.5
Outflow	in/mo	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Inflow	in/mo	40.1	39.8	42.4	44.1	45.9	46.0	46.7	46.3	45.0	44.1	41.3	40.9
	cfs	0.22	0.24	0.23	0.25	0.25	0.26	0.25	0.25	0.25	0.24	0.23	0.22
	gal/day	140,659	154,486	148,717	159,684	160,981	166,563	163,784	162,382	162,943	154,674	149,547	143,462

Precipitation: Monthly average from 1947 through 1990 (www.nwsla.noaa.gov.climate/lax/laxtex).

Evapotranspiration: California Irrigation Management Information System (wwwdpla.water.ca.gov/cimis/cimis/hq/normatbl.txt).

Infiltration: 1.0×10^{-5} cm/s.

Outflow: Rate established to achieve a net monthly discharge equal to the total wetlands water volume.

Inflow: Inflow estimated as the balance of water gains (precipitation) and losses (evapotranspiration, infiltration, and outflow).

cfs – cubic feet per second

cm/s – centimeter per second

gal/day – gallons per day

in/mo – inches per month

TABLE A-2
Water Recirculation Needed for 2-Day Nominal Residence Time in 4 Acres of Wetlands

	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly Average Daily Inflow	mgd	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6
Hydraulic Loading Rate	cm/d	38.5	38.5	38.6	38.7	38.8	38.8	38.8	38.8	38.7	38.7	38.6	38.5
Monthly Average Daily Outflow	m^3/d	6,100	6,095	6,085	6,071	6,062	6,058	6,057	6,059	6,065	6,074	6,090	6,095
	mgd	1.34	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33
Hydraulic Residence Time	d	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

cm/d – centimeters per day

d – day

m^3/d – cubic meters per day

mgd – million gallons per day

Appendix B
Related Area Projects

Related Area Projects

Interest in the restoration of the Los Angeles River and a growing awareness of a need to preserve and restore native plant and wildlife communities have become important motivating forces for the planning and creation of native marsh and riparian habitats within Los Angeles. Historically, much of the area now occupied by downtown Los Angeles to San Pedro Bay and eastward to the San Gabriel River consisted of freshwater marshes, streams, lakes, and seeps. Extensive riparian woodlands and diverse upland habitats once occurred throughout the lower Los Angeles River basin. Drainage and construction over the past century have removed, or significantly modified, virtually all natural wetlands. Cattail and bulrush marshes, open native bunch-grasses, vernal pools, willow thickets, gallery cottonwood forests, and tall forests of sycamore, oak, and walnut all occurred within the vicinity of the project area.

A number of regional parks and habitat restoration efforts in the lower Los Angeles River watershed re-create a semblance of these once abundant wetlands resources. This includes land set aside for habitat preservation and active efforts to restore habitats. These efforts are in varying stages of implementation, and understanding these projects may be of use during concept-level planning for the Wetlands Park. Nearby restoration or preservation efforts can function as reference sites, providing information on feasibility and effectiveness of habitat improvement or protection, and most importantly, how people view and value these rare resources.

Madrona Marsh Preserve and Nature Center – This is a 43-acre site located on Sepulveda Boulevard in the City of Torrance. It was the site of historic oil-extraction activities and was given to the City of Torrance in 1989. It is a remnant of extensive bottomland marsh and riparian woodlands that historically occurred in the region, with back dune habitat within what was the greater El Segundo Sand Dune System. It has been in the process of restoration since its dedication and features a vernal marsh, alkaline margin, upland dune scrub, and vernal pool habitats. It is open to the public for nature observation, and has an associated nature or visitor center and demonstration gardens. Over 200 species of birds have been recorded at this location.

Harbor Park Wildlife Area – This is one of the most extensive areas of native habitat left in Long Beach, consisting of 230 acres of climax willow forest, open water, emergent marsh, mulefat scrub, and other habitats. It is located in Ken Malloy Harbor Regional Park alongside the Harbor Freeway, between Pacific Coast Highway and Anaheim Street. The native habitat lies adjacent to Machado Lake on the south and east sides of the lake; landscaped parkland lies to the north and west of the lake. A number of birds species that are otherwise rare breeders in the area have colonized the site, including least bitterns and yellow-breasted chat. Active restoration projects are ongoing at the site.

El Dorado Nature Center Park – Owned and operated by the City of Long Beach, the Nature Center Park is part of the larger El Dorado Park and golf course that extends for 1 to 2 miles along the San Gabriel River. The Nature Center Park contains over 100 acres of a variety of upland, riparian, wetlands, and open-water habitats, some of which were not native to the region, but were planted to provide representatives of California habitats. The park also contains self-guided nature trails and a nature center with displays.

Dominguez Gap Spreading Grounds – A feasibility study has been conducted on the east and west basins of this site by the Los Angeles County Department of Public Works to evaluate the potential for conversion to a multipurpose project involving wetlands habitat, passive recreational uses, treatment wetlands, flood control, and infiltration. The site is located just south of Del Amo Boulevard, with the east basin on the east side of the Los Angeles River, and the west basin on the west side of the river.

Wrigley Heights – Portions of this 40-acre parcel are in escrow for purchase by the City of Long Beach, through the Trust for Public Land (TPL). The site is located along the east side of the Los Angeles River both south and north of the 405 Freeway, just south of the Dominguez Gap Spreading Grounds. The City anticipates using the areas closest to the Los Angeles River as a wetlands habitat.

Sepulveda Dam Recreation Area – In the San Fernando Valley, the Los Angeles River flows through portions of the Sepulveda Dam Recreation Area. Constructed by the US Army Corps of Engineers in 1949, Sepulveda Dam functions to hold and store flood waters from the Los Angeles River watershed upstream of the dam and other sources. The basin is closed off to the public, during severe rains, as it fills with stormwater to alleviate flooding downstream. Within this reach, the river is in a natural state and offers habitat to an abundance of various wildlife. The Sepulveda Dam Recreation Area is open to the public under normal weather conditions for a variety of recreational uses including golf, parks, bikeways, model airplane center, community center, garden center, and agricultural lots. Plans have been developed to convert a portion of the Recreation Area to a wetlands park that would accomplish the dual objectives of wastewater treatment and wildlife habitat.

San Joaquin Marsh – The Irvine Ranch Water District operates the San Joaquin Marsh Wetlands located adjacent to San Diego Creek, about a mile upstream of Newport Beach. The Marsh Wetlands are part of the 300-acre San Joaquin Wildlife Sanctuary (SJWS) and are used to treat diverted flows from San Diego Creek. The wetlands effectively remove large amounts of nitrogen and sediment from creek flows. The wetlands have helped minimize algal blooms and sediment deposition in Newport Bay. The Marsh Wetlands provide open water and marsh habitat. The Audubon Society has documented 263 bird species at the SJWS. Public-use facilities at the SJWS include a staffed interpretive center displaying selected bird and other wildlife specimens. Regional birding and guidebooks are also available at the interpretive center. An extensive network of paths, trails, and access roads provide for active and passive recreational activities.

Hidden Valley Marsh – The City of Riverside Regional Water Quality Control Plant uses 70 to 80 acres of constructed wetlands for denitrification of a portion of its effluent prior to discharge to the Santa Ana River. The wetlands facility is located within the Hidden Valley Wildlife Area (HVWA), which consists of 1,500 acres of parkland. In lieu of making major capital improvements at the plant to meet more stringent discharge requirements, the City of Riverside elected to use existing duck ponds that were degrading because of unreliable irrigation water supply and fiscal constraints. Improving the reliability of water flow restored open water, emergent marsh, and riparian habitats, while providing water-quality benefits of reducing nitrate concentrations. It is estimated that the wetlands support 94 bird species, and that the HVWA receives over 10,000 visitors per year. The HVWA employs a full-time naturalist and interpretive services supervisor to oversee public education opportunities. Public access is provide for a portion of the wetlands and includes trails and educational signage. Other portions of the wetlands are managed strictly for wildlife uses and are not open to the public; however, tours of these areas can be arranged with the Riverside County Regional Park and Open-Space District.

Santa Monica Urban Runoff Recycling Facility – The Santa Monica Urban Runoff Reclamation Facility (SMURRF) is a state-of-the-art, water reclamation plant that beneficially reuses the dry weather runoff in the Pico-Kenter and Pier storm drain systems. Approximately 500,000 gallons per day (gpd) of average daily runoff generated in the watershed is treated in uniquely designed treatment systems to remove the trash and harmful bacteria so that the water can be reused for landscape irrigation and gray water in commercial buildings. An additional 250,000 gpd, representing peak flows or "first flush" can be treated for short periods of time depending on storage availability and process stability. The treatment processes include coarse and fine screening to remove trash and debris, degritting systems to remove sand and grit, dissolved air floatation to remove oil and grease, microfiltration to remove turbidity and ultra violet radiation to kill pathogens. Once treated the water is safe for all landscape irrigation and gray water usage as prescribed by the California Department of Health Services and meet all of California's Title 22 requirements. Landscape irrigation customers include the Caltrans for highway medians, City parks and cemetery, and school playgrounds. Potential gray water customers include commercial developments that have dual plumbing systems.

Art and Education

A major emphasis of this project is public education and the use of public art to make this facility pleasing and attractive. The SMURRF facility has been designed as a process more than a place, a location that people move through, rather than go to. This "moving through" effect has been accomplished by an elevated walkway that descends from one end of the site to the other. A visitor walking down the walkway has a complete view of all the equipment and processes that are used to clean the stormwater. The siting of the equipment is determined as much by the need to make the process of stormwater treatment understandable to the visitor as it is by the requirements of the technology. The equipment has been arranged in sequential order so that the visitor can follow the process visually. The equipment has been oriented toward the viewer so that he or she has the best view of the technology. Each piece of equipment has been placed on a prominent base, which raises it to an appropriate viewing level and establishes its place onsite. Furthermore, the water moving through the system has been "daylighted" (i.e., exposed to open air) in several places (at the drum screen, grit chamber, DAF surface, microfiltration surface, and the UV channel). Exposed water clearly shows how the dirty water is cleaned as it progresses through the plant.

The educational element of the design has been concentrated in the information plaza located at the bottom of the walkway. Art and architectural elements have been designed to convey three things: a) explain the workings of the facility, b) place the facility in the larger context of the Santa Monica watershed, and c) inform citizens as to what they can do to decrease pollution of their water supply. SMURRF won the 2001 Engineering Excellence Grand Award from the American Consulting Engineers Council, making it one of the top eight engineering projects in the nation.

The project is a showcase of how a public facility can be used to educate the public and enhance community pride. SMURRF is located at the world famous Santa Monica Pier and attracts many of the more than two million visitors who visit the beach there each year.

Draft Conceptual Report

South Los Angeles Wetland Park Proposition O Project

June 12, 2006

Prepared for:

City of Los Angeles
Bureau of Sanitation, Watershed Protection Division and
Council District 9

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Contents

Executive Summary

This report provides a conceptual overview and feasibility assessment of the potential to create the South Los Angeles Wetlands Park (Wetlands Park), a community resource of wetlands and riparian habitat created in a densely populated urban area now covered in concrete, asphalt, and buildings. Trails, boardwalks, and educational signage located within the created habitats will provide Wetlands Park users with an accessible and quiet refuge within the City of Los Angeles (City) to enjoy and learn about southern California ecology. The wetlands and riparian habitats would be supplied with pre-treated stormwater, which would provide the additional benefit of improving water quality.

Grouped around the wetlands and riparian habitats would be other public-use facilities, including a multi-use community center. The Wetlands Park will create valuable green space and access to public recreation and educational facilities. As a former transportation facility, the site would include rail museum elements, such as historic photos, artifacts, and interpretive pieces to document the history of mass transit in the City and preserve architectural heritage through the re-use of historical buildings.

Section 1
Introduction

The purpose of this concept report is to provide a conceptual overview and feasibility of the proposed South Los Angeles Wetlands Park (herein Wetlands Park). The lead applicant is Council District 9, partnered with the Los Angeles Bureau of Sanitation, Watershed Protection Division.

1.1 Study Purpose

The information presented in this report provides an overview of the conceptual design, potential benefits and issues to address, and an approximation of the proposed project's cost and construction time frame. This study is a tool supplying general criteria and impacts associated with the implementation of the Wetlands Park both as a water quality improvement project and as a recreational and educational resource to the community.

1.2 Project Objectives

The overall project goal is to aid the City in meeting the Total Maximum Daily Load (TMDL) requirements passed by the Regional Water Quality Control Board (RWQCB) for the Los Angeles River Watershed. The Los Angeles River currently has two approved TMDLs for trash and nitrogen. An approved TMDL for bacteria is expected by 2008. The wetlands are expected to reduce metals in stormwater and dry weather runoff by 36-85%, total suspended solids (TSS) by 83±51%, nitrogen by 26±49%, and bacteria by 76%[1], thereby preventing these constituents from entering the Los Angeles River. The project plans to accomplish this goal through:

- The design and construction of a wetland which will encompass native plants such as California sycamore, willows, alders, sage, Black Walnut, and oak, as well as biological organisms that have been proven to remove the targeted pollutants (e.g., bacteria, nitrogen, total suspended solids, and trash, among other listed contaminants of concern).

- The determination of storm drain capacity and volume to be treated.

Non-Proposition O Objectives

Another objective of the Wetlands Park includes providing the surrounding community with public-use facilities, including a multi-use community center. The Wetlands Park will create valuable green space and access to public recreation and educational facilities. As a former transportation facility, the site would include rail elements, such as historic photos, artifacts, and interpretive pieces to document the history of mass transit in the City and preserve architectural heritage through the re-use of historic buildings.

1

http://www.stormwatercenter.net/Assorted%20Fact%20Sheets/Tool6_Stormwater_Practices/Wetland/Wetland.htm

1.3 Overview of Project

As described in greater detail below, the Wetlands Park would improve water quality by creating a wetland environment in the urbanized area of South Los Angeles. The available stormwater flow will be used to create a habitat suitable for the dry southern California climate at the Wetland Park. The park setting includes walkways and educational signs in addition to a multi-use recreation and education center that will bring in additional revenues to maintain the Wetland Parks operations for years to come.

1.4 Report Organization

This report has been structured as follows:

Section 2: Existing Project Site Characteristics – This section presents the proposed Wetlands Park site's existing conditions and current usage.

Section 3: Description of Proposed Project – This section provides the conceptual design of the proposed stormwater management system and identifies various problems that the will be addressed with the creation of the Wetlands Park.

Section 4: Proposed Project Siting – This section describes the location and construction issues along with environmental feasibility of the project on the site.

Section 5: Operations and Maintenance (O&M) – This section lists the various operations and equipment requiring periodic upkeep in addition to the O&M requirements.

Section 6: Regulatory Permit Requirements – This section describes potential regulatory requirements associated with the project approvals, design, construction, operation, and maintenance of the Wetlands Park.

Section 7: Public Outreach Program – This section describes agency and community involvement with the proposed project in addition to recreational and cultural aspects.

Section 8: Preliminary Cost Estimate – This section provides detailed project cost information related to construction and operations and maintenance. This section will also discuss non-Proposition O funding and what is needed to secure the funds in a timely manner.

Section 9: Implementation Schedule – This section will provide an approximate timeline for the creation of the Wetlands Park from the Concept Report stage, through the design and construction phases, project start-up, and ending with final project closeout.

Section 10: Project Recommendations – Summary of the proposed Wetlands Park features, and benefits to the community.

Section 2
Existing Project Site Characteristics
2.1 Land Use and Jurisdictional Boundaries

The proposed site for the South Los Angeles Wetlands Park is located in the City of Los Angeles, approximately 5 miles south of downtown Los Angeles and approximately ½ a mile east of the 110 freeway. The neighborhood is considered South Central Los Angeles, which is a highly urbanized area, with limited open space and community facilities. The location falls within the jurisdiction of the Ninth Council District. Figure 2-1 shows the neighborhood of the project location.

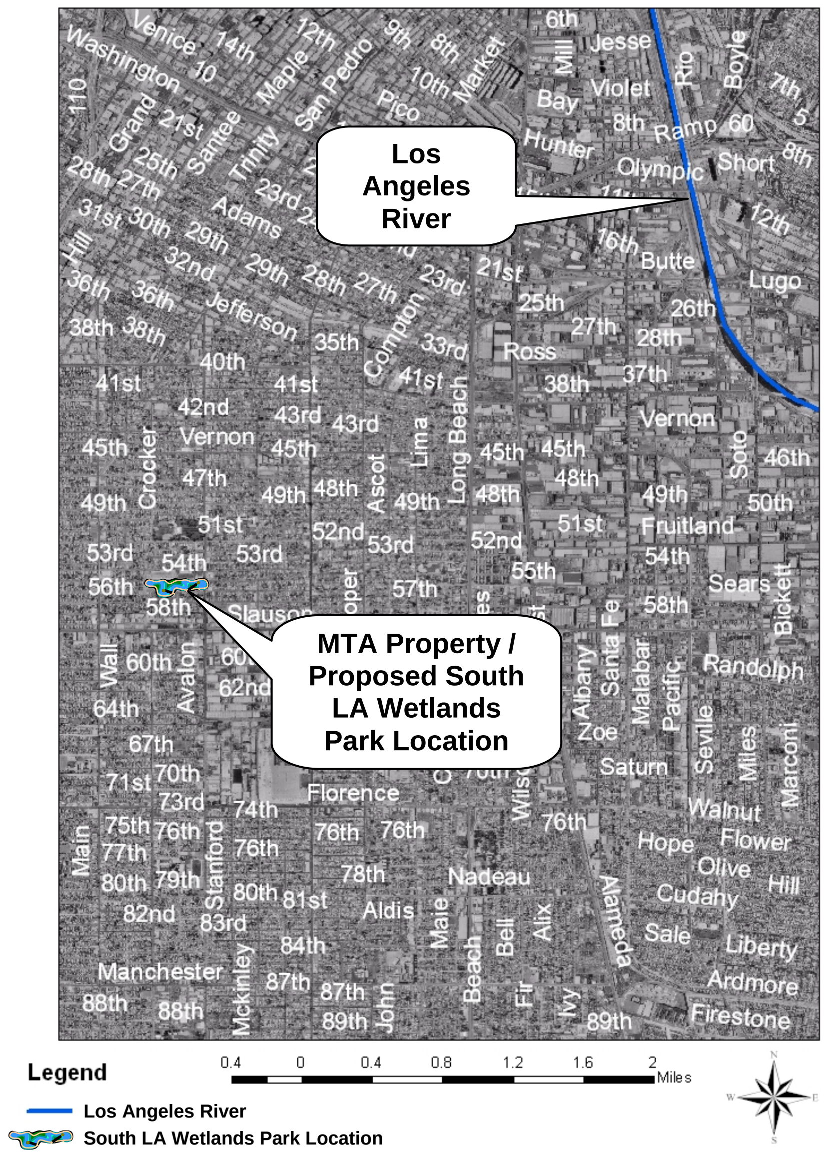


Figure 2-1. Neighborhood of the Proposed South Los Angeles Wetlands Park.

The site is an entire city block, bordered to the north by 54th Street, to the south by 55th Street, to the west by San Pedro Boulevard, and to the east by Avalon Boulevard. Figure 2-2 shows the project location. The area available on the site for all structures incorporated into the Wetlands Park is approximately 9 acres.

Figure 2-2. Proposed Location for the South Los Angeles Wetlands Park.

The property address is 5413 Avalon Boulevard and the County Assessors Parcel, Tract, and Lot Numbers for the property are 5101-002-900, TRACT 8784, and LOT 1, respectively (Los Angeles County, 2006). Currently, the Metropolitan Transportation

Authority (MTA) owns the property; however, MTA is negotiating the sale of this parcel with the City of Los Angeles.

The project location has historically been the site of transportation facilities. Commercial use of the Wetlands Park site began in 1901 when the Los Angeles Railway (LARY) purchased the current project site. A facility was constructed to serve as maintenance and storage for their fleet of trolley cars. The site included a blacksmith shop, machine shop, carpenter shop, several paint shops, an electrical and motor repair shop, an oil house, and several storage areas. Various manufacturing and fabricating tasks were conducted here in addition to assembly of motors, truck parts and other mechanical equipment (CDTSC, 2005).

The site remained a facility devoted to transportation; however, it changed hands throughout the years. In February 1993, the MTA took ownership of the site through a merger with its predecessor. MTA currently uses the site for maintenance of service and support vehicles, as well as equipment storage.

2.1.1 Community Plan and Zoning

The Southeast Los Angeles Community Plan (Community Plan) is the document specifying the specific goals and objectives for the neighborhood in the future. It identifies current land use issues and identifies which direction the community has indicated it wants to go in the future. According to the Community Plan, the area has seen some inconsistent land use developments over the years that have created issues for the community. To resolve these issues, the Community Plan identifies goals and objectives which are summarized as follows:

- Residential: Encourage preservation of the single-family residential land use in the area and the development of low-medium multi-family residential use to off-set the extreme pressure for higher density developments created by the growth of downtown.

- Commercial: Strengthen and encourage commercial and retail development along the historic commercial corridors to bring back needed services that have left the area.

- Industry: Preserve the job-creating industrial uses but encourage environmental mitigation and creating aesthetically pleasing environments.

- Open Space: Encourage the development of new open space in the area including the joint development of community centers and schools with recreation space. The Community Plan identified a lack of open space within the area.

The site is located within the established boundaries for the Southeast Los Angeles Community Plan Area. This area encompasses approximately 15 square miles of diversified uses in a historic part of Los Angeles. The population in this area, according to the 2002 census was 254,795 with a population density of approximately 16, 200 people per square mile. The area contains some of the oldest parts of Los Angeles, which, despite changes in land use and densification over the years, still remains a vibrant residential community. The community is represented by the Vernon/Main Neighborhood Council.

Within the area, land use is primarily residential to the north, east and west of the project site, with commercial and manufacturing uses to the south. Limited commercial businesses line the major north-south corridors such as Main Street, Avalon Boulevard, and Central Avenue. These corridors are designated as secondary highways with Avalon Boulevard receiving the designation of Major Highway Class II. East-west Corridors are primarily designated as collectors, although Slauson Avenue is also designated as a Major Highway Class II Boulevard.

The proposed Wetlands Park site is zoned consistent with the submerged lands (SL) designation under the City of Los Angeles' General Plan. Under the SL designation, uses such as navigation, shipping, fishing and recreation are allowable. Other uses identified for this site include manufacturing, commercial, housing, schools and churches. This is consistent with existing adjacent uses, including a school and residential neighborhoods.

2.2 Current Environmental Setting

The Wetlands Park land is impervious at present, covered by asphalt paving and a variety of onsite maintenance and storage buildings as well as parking. Much of the southern edge of the property is bordered by an approximately 60,000 square foot historic vehicle repair station. Adjacent to the repair station, on the southwest side of the property, are three existing clarifiers. The perimeter of the property generally consists of chain-link barbed wire fence and building fronts.

The historical activities at the site have led to its classification by the California Department of Toxic Substances Control (CDTSC) as a site mitigation and brownfield reuse site (Envirostor Database ID 60000138) (CDTSC 2005). Per CDTSC, brownfields are sites with actual or perceived contamination and the potential for redevelopment or reuse.

2.2.1 Hydrology

Watershed Description

The proposed Wetlands Park is located in the Los Angeles River Watershed. The Los Angeles River Watershed covers a land area of over 2,135 square kilometers (834 square miles) from the eastern portions of Santa Monica Mountains, and Simi Hills, and Santa Susana Mountains to the San Gabriel Mountains in the west. The watershed encompasses and is shaped by the path of the Los Angeles River, which flows from its headwaters in the mountains eastward to the northern corner of Griffith Park where the channel turns southward through the Glendale Narrows before it flows across the coastal plain and into San Pedro Bay near Long Beach. The Los Angeles River Watershed has diverse patterns of land use. The upper portion of the watershed, 920 square kilometers (approximately 360 square miles), is covered by forest or open space, while the remaining watershed, 1,215 square kilometers (approximate 474 square miles), is highly developed with commercial, industrial, or residential uses. There are eight major tributaries to the Los Angeles River as it flows from its headwaters to the Pacific Ocean. The major tributaries of the Los Angeles River include Burbank Western Channel, Pacoima Wash, Tujunga Wash, and Verdugo Wash in the San Fernando Valley; and the Arroyo Seco, Compton Creek, and Rio Hondo south of the Glendale Narrows. The Los Angeles River Watershed has 22 lakes within its boundaries including Devil Gates Dam, Hansen Basin, Lopez Dam, Pacoima Dam, and Sepulveda Basin. In addition, there are a number of spreading grounds in the watershed including sites at Dominguez Gap, the Headworks, Hansen Dam, Lopez Dam, and Pacoima Dam. The Los Angeles River is hydraulically connected to the San Gabriel River through the Whittier Narrows Reservoir, although this occurs primarily during large storm events.

The Los Angeles River Watershed has impaired water quality in the middle and lower portions of the basin due to runoff from dense clusters of commercial, industrial, residential, and other urban activities. The 1998 303d list classifies impairments in the majority of the watershed, due to point and non-point sources. These impairments include pH, ammonia, a number of metals, coliform, trash, scum, algae, oil, chorpyrifos as well as other pesticides, and volatile organics.

Subwatershed Tributary Area

The subwatershed surrounding the Wetlands Park is mostly urbanized and residential with very little open space. The City of Los Angeles, Bureau of Engineering has indicated that the tributary area which drains to the site is approximately 500 acres, of which it is assumed that 89 percent is impermeable surfaces in the form of rooftops, parking lots, industrial land, and roads. Because the area is so highly impermeable, the vast majority of wet weather and dry weather runoff will travel, via overland flow, to the stormwater drains, rather than infiltrate to the subsurface. On average, 80,000 gallons per day of dry-weather runoff flow to this area and could be treated by the wetland.

2.2.2 Geology and Hydrogeology

According to information presented in the 2004 Preliminary Endangerment Assessment (PEA), the Wetlands Park site is at an elevation of approximately 165 feet above mean sea level and the land surface slopes gently to the southwest. Site soils consist primarily of recent unconsolidated to poorly consolidated gravel, sand, silt and clay alluvial deposits (Ultrasystems 2004). As part of the Supplemental Site Assessment (SSA), Ninyo & Moore installed four soil borings to a maximum depth of 40 feet below ground surface (bgs) near the clarifiers on the southwest of the property. Soils at these locations consisted of silty clay and sand.

The Wetlands Park site is south of the Los Angeles Narrows at the north end of the Downey Plain within the Forebay Area of the Coastal Plain of Los Angeles County. In the vicinity of the site, near surface groundwater occurs within the Exposition Aquifer that overlies deeper aquifers including the Gage Aquifer, within the Lakewood formation, and the Lynwood, Silverado and Sunnyside aquifers of the San Pedro formation (Ninyo & Moore 2005).

Three groundwater monitoring wells were installed at the site in 1990 by ABB Environmental Services to a maximum depth of 175 feet bgs. In 1990, the depth to groundwater measured in these wells was approximately 165 feet bgs (Ninyo & Moore 2005).

2.2.3 Biology

The site is currently being used by MTA for maintenance of service and support vehicles, as well as equipment storage. Additionally, the surrounding area is highly urbanized. These disturbed habitats support a variety of species including non-native grasses and weeds, American crow, rock dove, Northern mockingbird, common sparrow and pigeon and Brewer's blackbird. Other wildlife species potentially found within the area could include western fence lizard, feral dogs and cats, and various species of bats, ground squirrels, possums and raccoons.

2.2.4 Recreation and Open Space

Parks

While there are 15 public parks and recreational centers within the Southeast Los Angeles Community, the area is still considered deficient of park space as the majority of those 15 parks and recreational centers fall into the small parkland category (as defined by square footage). The Community Plan establishes the goal of creating adequate recreation and park facilities that meet the needs of the community. A number of the policies established by the Community Plan for recreation and park space to achieve this goal include the following:

- Actively pursue City and/or private funding for the acquisition and construction of new recreation and park facilities.

- Encourage cooperation between the Los Angeles Unified School District, other public and private entities and the Department of Recreation and Parks in order to develop and utilize other open space opportunities for the community.

In addition, the Community Plan identifies the Open Space policies as follows:

- Encourage retention of passive and visual open space which provides a balance to the urban development of the Plan Area.

- Accommodate active parklands, and other open space uses.

Accessibility & Other Resources

The Wetlands Park site is served by major regional transit and accessibility lines that are undergoing or will undergo significant changes in the future. These regional transit sources are at the edges of the Community Plan Area and include the Los Angeles River, Exposition Park, University of Southern California (USC), the Metro Blue Line rail transit and the soon to be in construction Exposition light rail line. Each of these regional sources of transportation will experience some great financial investments in future years including efforts to green the Los Angeles River, potential return of the National Football League to the historic Los Angeles Coliseum, construction of the light rail line from downtown Los Angeles to Culver City (Phase 1) and then to Santa Monica (Phase 2), the completion of the new state-of–the-art gymnasium for USC and other expansion projects, as well as potential developments around Metro Blue Line Stations.

The community is well served by transit, with major bus lines connecting to larger mass transit services including the light rail lines previously mentioned and the Harbor transit busway. However, in addition to these, there are bike lanes in the area that provide the local community with an opportunity for shorter trips using existing streets. These include bike routes on 51st Street and Broadway Ave. and a bike lane on Gage connecting to the Harbor Transitway. Finally, as part of the Exposition light rail line, construction of a 9-mile exclusive bike path will be constructed from downtown to Culver City by 2009.

2.2.5 Environmental Studies

Two environmental assessments, a preliminary endangerment assessment (PEA) and a supplemental site assessment were performed in 2004 and 2005 to identify subsurface contamination, if any.

Preliminary Endangerment Assessment

A PEA was completed by UltraSystems Environmental Inc. in July 2004. The PEA identified eight areas of potential concern for investigation. Soil samples were collected at 0.5, 5, and 10 feet below ground surface (bgs) from 17 sample locations. All samples were analyzed for total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pH, and Title 22 Metals. Of the VOCs, only acetone was detected in a single sample, along with estimated concentrations of the PAHs benzo(a)pyrene and pyrene. TPH was detected in the samples and was determined to have likely originated from asphalt road-base material.

In addition, soil-gas samples were collected from 12 of the 17 soil borings. VOCs, including trichloroethene (TCE), cis-1,2-dichloroethylene (cis-1,2-DCE), chloroform, 1,1,1-Trichloroethane (TCA), and tetrachloroethene (PCE) were detected in four of the samples. Samples in the vicinity of clarifiers C2 to C4 at the project location were found to have concentrations of cis-1,2-DCE, TCE and PCE exceeding the acceptable risk range of 1 x 10-6 to 1 x 10-4 as well as the cumulative hazard index threshold of 1.

As discussed, soil samples collected [to a depth of 10 feet] in this area did not contain detectable VOCs, suggesting that the source of the soil gas impacts may be deeper than 10 feet. Groundwater samples were not collected as part of the reported assessments; however three monitoring wells were reportedly installed on the site in 1990 (UltraSystems 2004).

Based on the analytical results, UltraSystems recommended that further assessment be conducted in the vicinity of the clarifiers C2 to C4 to evaluate the extent of VOC contamination in the subsurface soils, and to conduct a limited assessment of shallow soils within the eastern portion of the Former Maintenance Bay, Former Railcar Maintenance Building, Former Mill Area, Hazardous Waste Storage Area, and Former Paint Booths where VOCs and PAHs were detected.

Supplemental Site Assessment

In response to the PEA, a Supplemental Site Assessment (SSA) was completed by Ninyo and Moore in June 2005. Ninyo & Moore installed four soil borings, and collected samples in 5 foot intervals to a terminal depth of 40 feet bgs in the vicinity of clarifiers C2 to C4. In total, 32 samples were analyzed for VOCs, including fuel oxygenates. Analytic results indicated the presence of TCE, cis-1,2-DCE, trans-1,2-dichloroethene (trans-DCE), and PCE in soil to a depth of 40 feet; however, none of the measured concentrations exceed the established Region 9 EPA Preliminary Remediation Goals and calculated site specific soil screening levels.

The former clarifiers appear to have been a source of VOC impacts to soil and soil-gas in the vicinity. Based on these findings, the California Department of Toxic Substances Control determined that the site would be suitable for a Wetlands Park provided that the clarifiers are properly abandoned and the VOCs in the soil are remediated prior to construction.

The clarifiers should be permanently abandoned by removal according to the requirements of the local permitting agency and additional samples collected after removal. Should VOCs be detected, soil mitigation and/or groundwater monitoring should be considered, as per Ninyo & Moore's recommendations.

Section 3
Description of Proposed Project

3.1 Overview of Proposed Project

The Wetlands Park includes water quality elements that will be funded by Proposition O, as well as supporting elements that will be funded by other sources.

The project is expected to be completed in 2008, with CEQA documentation filed by the end of 2006. Figure 3-1A below shows the location and approximate site layout of the proposed project. Figure 3-1B illustrates the benefits and features of wetlands in general.

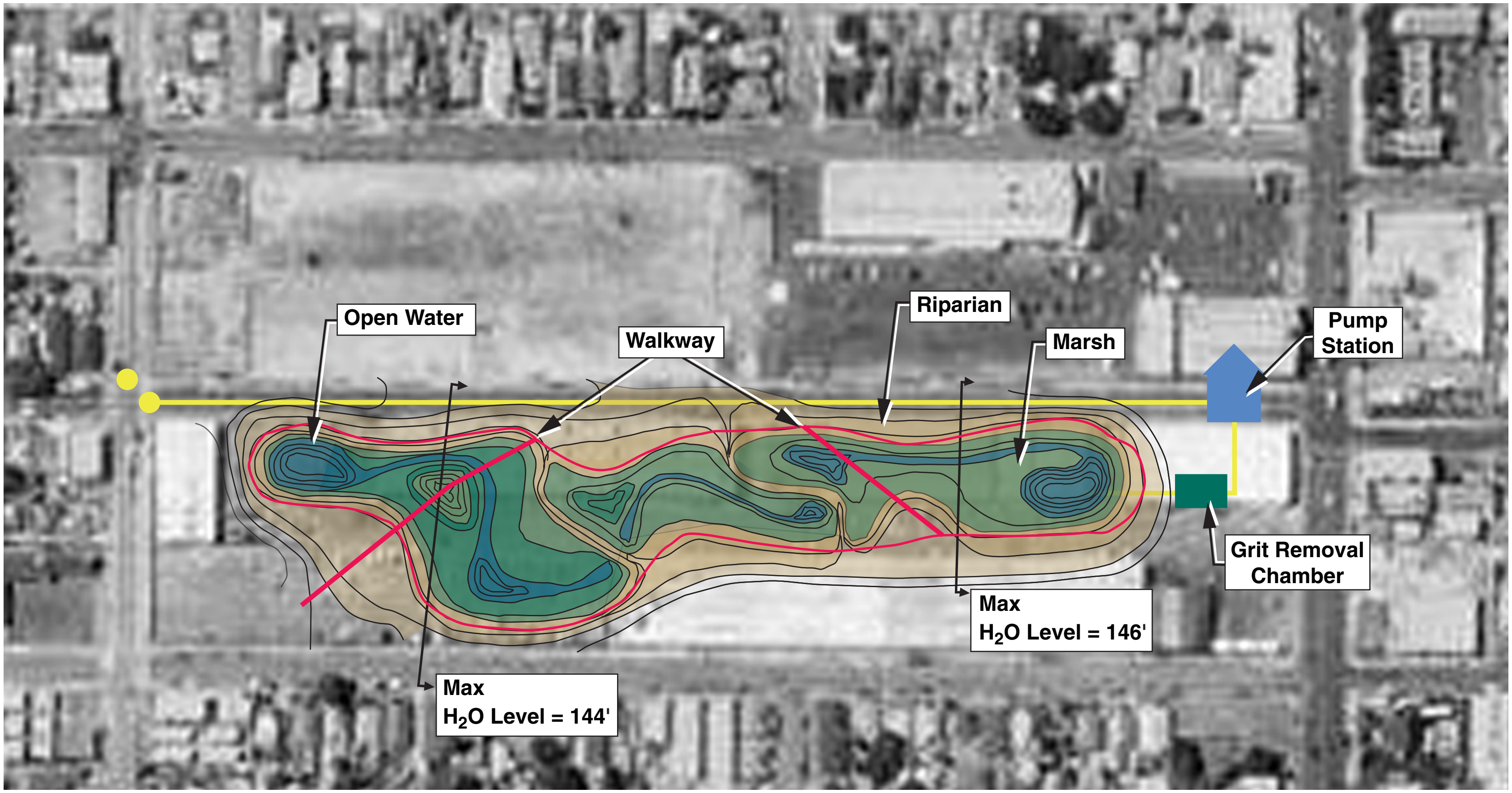
3.1.1 Proposition O Funded

The elements of South Los Angeles Wetlands Park project that will be funded by Proposition O are those that are directly related to the improvement of water quality. The stormwater treatment wetland components and associated habitat creation will be supported by Prop O. Proposition O funded elements include:

- Treatment Wetland
- Habitat
- Liner
- Stormwater Diversion
- Irrigation

Treatment Wetland

A great deal of research has been performed documenting the ability of wetlands, both natural and constructed, to provide consistent and reliable water quality improvement. With proper execution of design and construction elements, constructed wetlands exhibit characteristics that are similar to natural wetlands in that they support similar vegetation and microbes to assimilate pollutants. In addition, constructed wetlands provide wildlife habitat and environmental benefits that are similar to natural wetlands. Constructed wetlands are effective in the treatment of BOD, TSS, nitrogen, phosphorus, pathogens, metals, sulfates, organics and other toxic substances. Water quality regulations must be considered in the design and permitting of these systems as well as the establishment of a wetland monitoring program.



Source: CDM Inc.

Figure 3-1
Project Site Location

What is a Wetland?

Wetlands are transitional areas between terrestrial lands and aquatic systems. Wetlands support plant species adapted to wet conditions, and wetlands soils develop particular characteristics caused by flooding or saturation. Wetlands may also be supported by high groundwater levels rather than bordering on a water body. Common wetland types include marshes, swamps, bogs and wet meadows, and wetlands offer multiple benefits.

Explore Nature
- Birdwatching
- Trails
- Preserve Open Space

Provide Habitat
- Wildlife
- Fish
- Birds

Improve Water Quality
- Nutrient Removal
- Toxics Decontamination
- Protect Downstream Receiving Water and Drinking Water Supply

Reduce Flooding and Erosion
- Sediment Entrapment (Capture)
- Groundwater Recharge
- Stormwater Storage

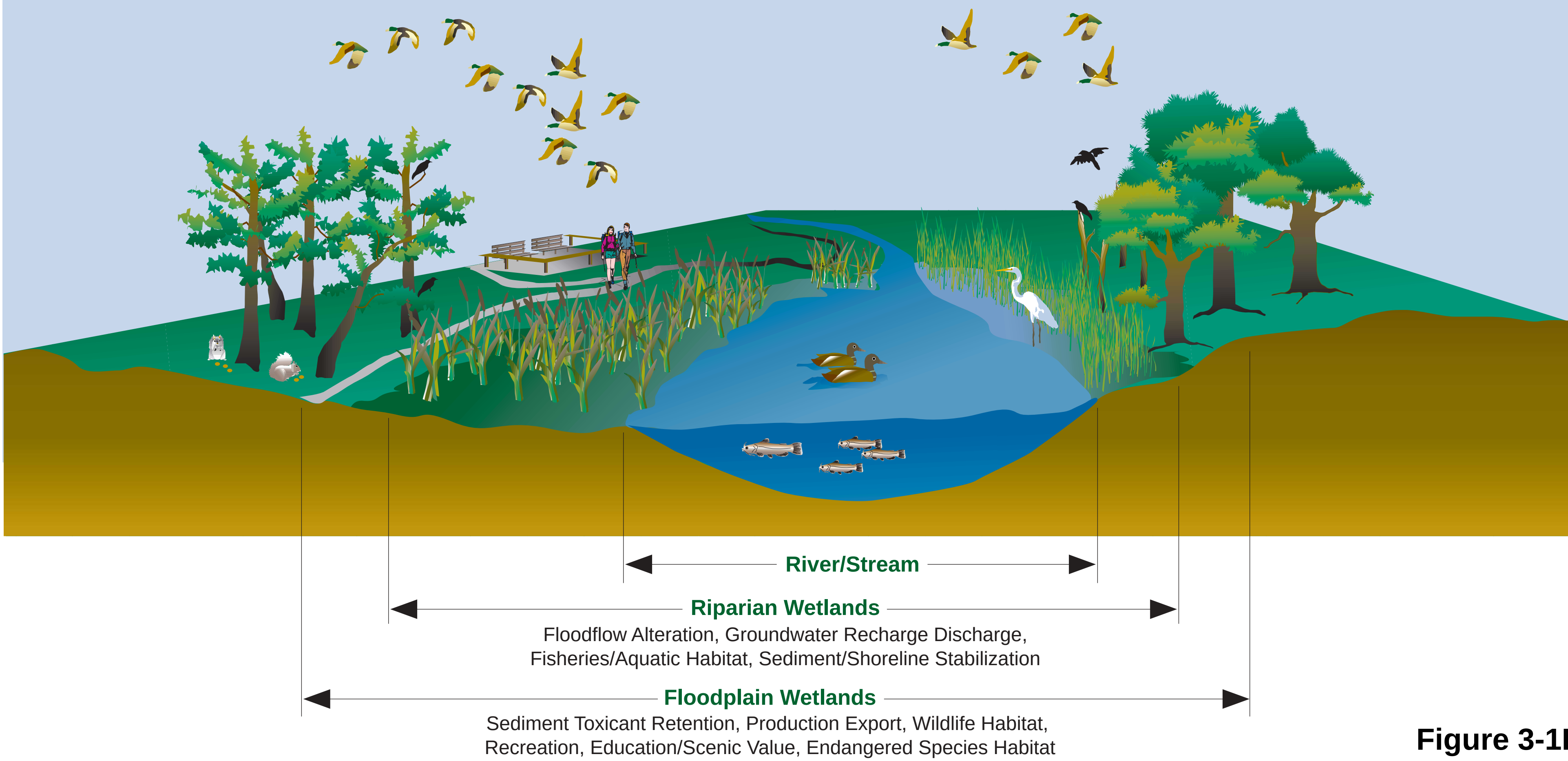


Figure 3-1B

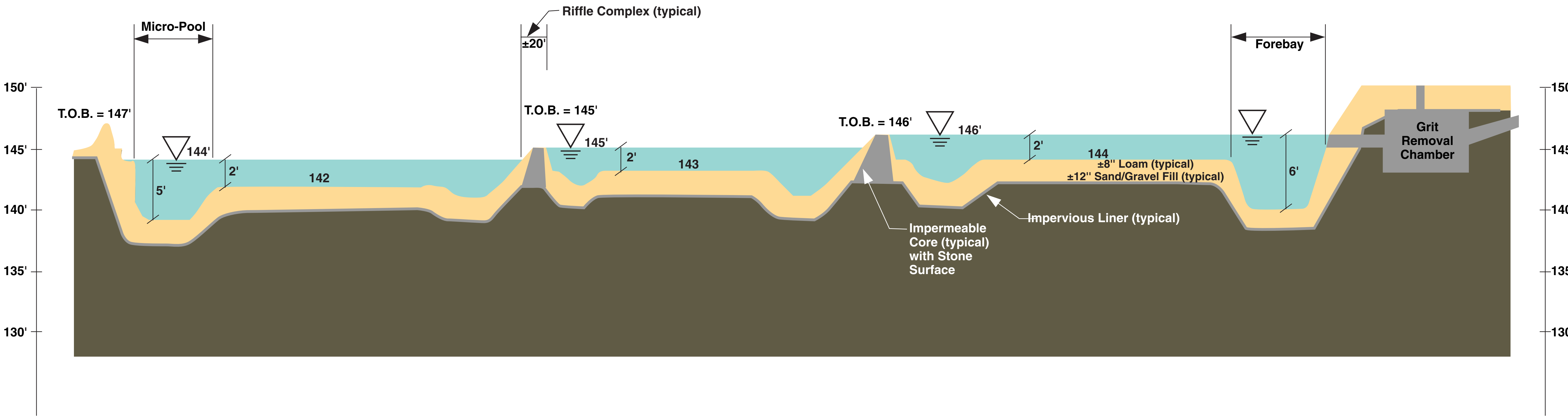
It is envisioned that the proposed wetland will occupy approximately 4 to 5 acres of the 9 acre site and will follow the existing grade of the site. The main channel of the wetland will begin in the northeast of the site and meander to the southwest. As shown in Figure 3-1, the wetland will be designed as a three cell system. Adjacent cells will be separated by a berm, constructed of large diameter grouted rocks. The berms will provide a riffle/pool effect, thus improving aeration and aesthetics, as well as reducing roadway noise. Figure 3-2 shows the profile of the wetland across the full length of the system. Figures 3-3 and 3-4 show typical cross-sections through the wetland.

The upstream end of the wetland system will be at an approximate elevation of 150 feet above mean sea level (amsl). The first cell of the wetland system will begin with a 6 foot deep forebay, which will aid in the removal of sediment, followed by a 2 foot deep channel. The 2 foot deep channel will flow through the second cell and into the third cell. As discussed, impermeable berms will separate the three cells and will allow for a gradual (one foot per cell) elevation change across the wetland. The wetland will terminate at the end of the third cell with a 6 foot deep micropool. A discharge pipe will direct flows from the micropool to the storm drain system on San Pedro Boulevard (San Pedro). Underlying the wetland system will be an impervious liner, overlain by 12 inches of sand/gravel fill and 8 inches of loam.

The wetland will be a deep marsh system with a vegetated main channel. Because of the 7 month dry season, it will be possible to plant wetland vegetation across the entire cross section without the risk of erosion. Figures 3-3 and 3-4 present a typical cross section of the first and third cells, respectively. In general, the slopes of the wetland system will transition from emergent marsh, through riparian scrub, to riparian woodland habitats. Descriptions of these habitat types can be found in the following section. To discourage human contact with the flora and fauna, an approximately three-foot thick, knee high hedge of sage will be planted between the boardwalk/viewing area and the wetlands.

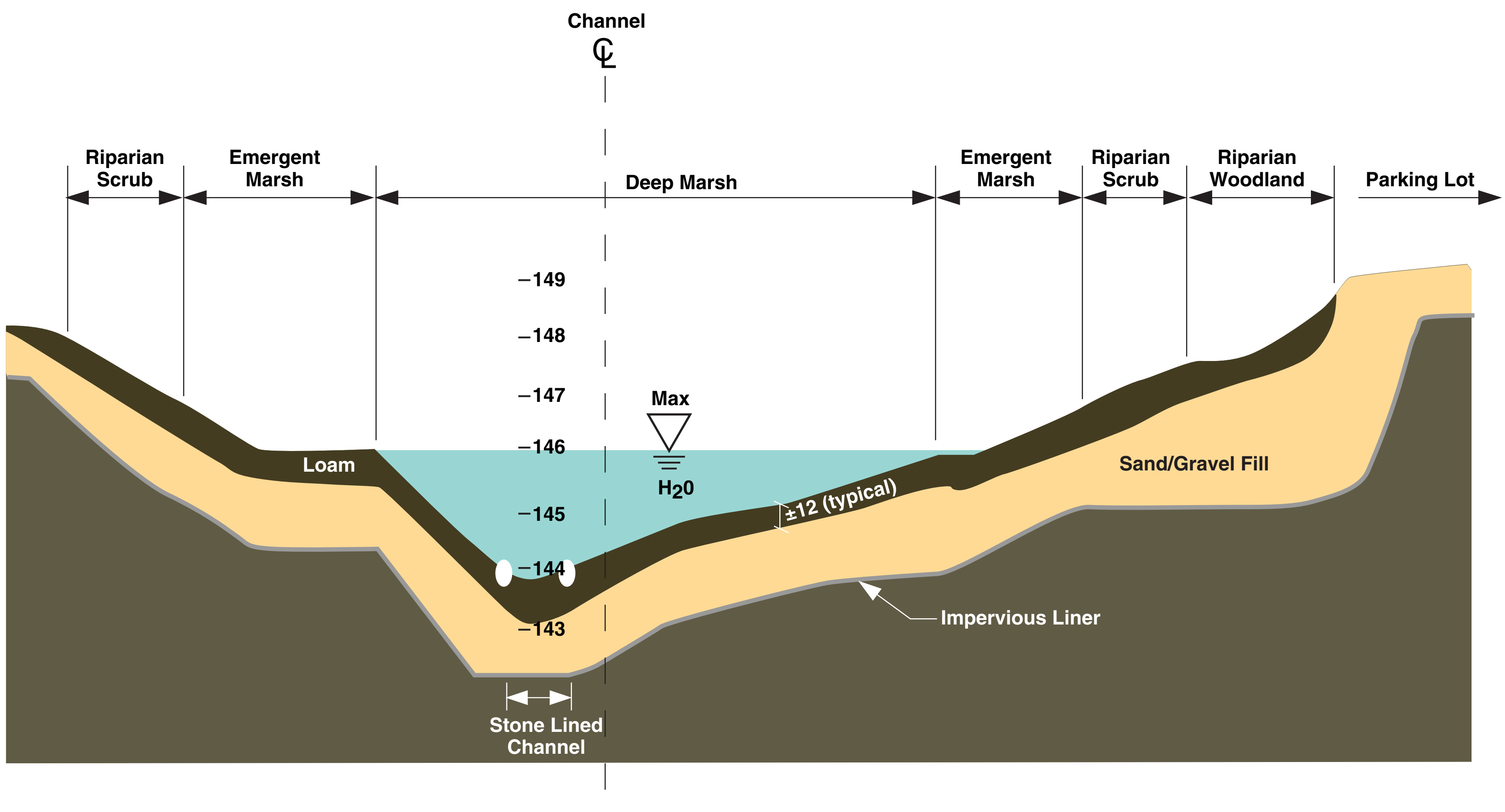
The wetland will be constructed in a location that is not a naturally occurring wetland; therefore a liner will be required to prevent significant losses to infiltration. Typical liner materials include clay, and geosynthetic liner materials such as polyvinyl chloride and polyethylene. If desired, a geotextile fabric may be used over the liner for protection. It is important that the liner not be punctured during installation and maintenance to insure liner integrity, otherwise wetland hydraulics may be altered.

Alternative 1: As a possible alternative to a deep marsh wetland, a scrub/shrub habitat may be implemented. This type of setting may be better suited to the long dry season, with little or typically no rain events for two-thirds of the year. The vegetation incorporated into the design would be accustomed to minimal water needs during hot summer periods.



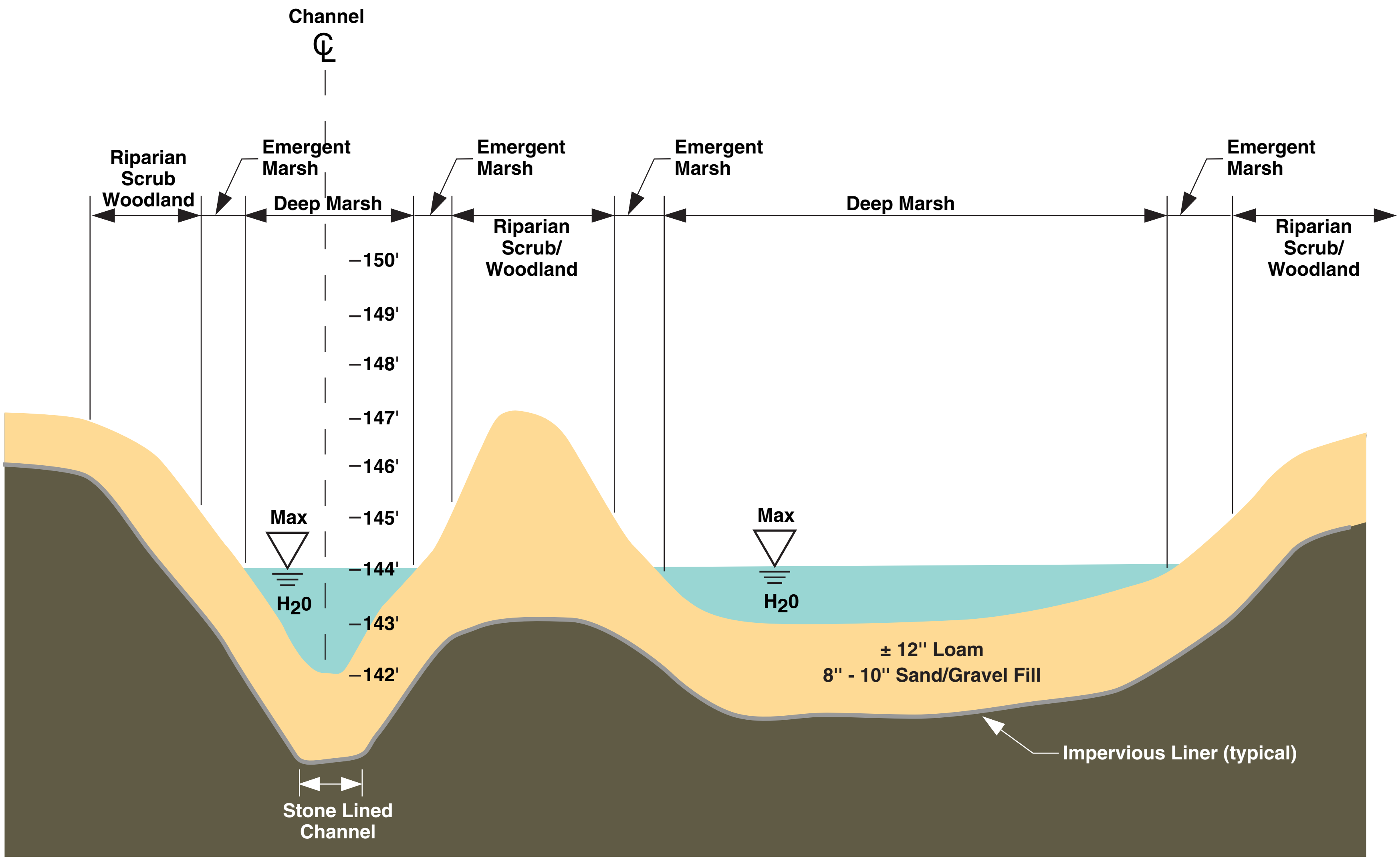
Source: CDM Inc.

Figure 3-2
Profile Through Channel



Source: CDM Inc.

Figure 3-3
Cross-Section Cell 1



Source: CDM Inc.

Figure 3-4
Cross-Section Cell 3

If Alternative 1 is employed, a liner may not be necessary. In this case, the liner will be replaced with a rich organic layer capable of retaining large volumes of water. This organic layer will be a minimum of 12 inches thick to prevent significant water loss to infiltration. An additional benefit of thick organic layer may enhance nutrient uptake.

Habitat

The South Los Angeles Wetlands project would be constructed in an area characterized by warm, dry summers and mild, wet winters (Mediterranean climate). It is anticipated that the wetland will receive a dry weather runoff discharge of approximately 80,000 gallons per day for most of the year. Based on the expected climate and hydrology for the site, five plant communities/habitats have been chosen for the South Los Angeles Wetlands site. The description of each habitat includes:

- A definition of each habitat;
- Water level tolerances of each habitat;
- Where each habitat would occur within the wetland design; and,
- A general list of vegetation and wildlife species that are found in each habitat in LA County.

The specific vegetation species used for the South Los Angeles Wetlands project will be further refined based on future design revisions and species availability. Table 3-1 provides more detail on the proposed plant species for each habitat.

Open water habitat is defined by a permanent pool 3-6 feet deep. The South Los Angeles Wetland conceptual design has open water habitat occurring in the forebay and micropool. Plant species associated with this habitat include water cress, water plantain, duckweed, pondweed, and water shield. These areas can function as foraging and resting habitat for waterfowl species such as mallard, cinnamon teal, and ruddy duck, and as breeding habitat for various frog and pond turtle species.

Emergent Wetland habitat (emergent marsh), as defined by Cowardin et. al. (1979), is characterized by erect, rooted, herbaceous hydrophytes, present for most of the growing season in most years, in all water regimes except subtidal and irregularly exposed. Within the South Los Angeles Wetland emergent marsh habitat would occur in cells 1-3 where water levels range from 0-3 feet such as in the main channel. Vegetation species would be planted according to their flooding and drought tolerances. For instance, species such as Nebraska and other sedges, Baltic rush, and various tule, bulrush, and cattail species would be planted in the main channel where water levels will be up to 3 feet Species such as rushes, sedges, arrow weed, various grasses including meadow barley, and some willows and other shrubs would be planted where water levels range from 0-1 feet These species would be selected for their ability to tolerate water conditions that will range from flows of approximately

140 cfs to 55 cfs, or very wet in the winter to dry throughout the rest of the year. Wildlife species commonly observed in Los Angeles County emergent marsh habitat include great blue heron, black-crowned night heron, green heron, least bittern, mallard, American coot, yellow-headed blackbird, red-winged blackbird, marsh wren, and American goldfinch. Emergent marsh would function as foraging, resting, and nesting habitat for these species. Various amphibian species could also be found in this habitat.

Scrub-shrub Wetland (riparian scrub), as defined by Cowardin et. al. (1979), is dominated by woody vegetation less than 20 feet tall in all water regimes except subtidal. Within the South LA Wetland riparian scrub habitat would occur in cells 1-3 approximately 0-1 feet above the mean water surface adjacent to emergent marsh and on islands that will be created to attract migrating birds. Vegetation species may include various willows and alders, American dogwood, blue elderberry, and mulefat. A variety of bird species are associated with riparian scrub including woodland species such as warbler, western scrub jay, and wren and egrets and herons. Riparian scrub would function as foraging, resting, and nesting habitat for these species. Various reptile and amphibian species could also be found in this habitat.

Forested Wetland (riparian woodland), as defined by Cowardin et. al. (1979), is characterized by woody vegetation 20 feet tall or taller in all water regimes except subtidal. Within the South LA Wetland riparian woodland habitat would occur in cells 1-3 approximately 1-3 feet above the mean water surface adjacent to riparian scrub habitat and on islands if the design allows. Vegetation species may include California sycamore, velvet ash, and black cottonwood. Wildlife species associated with riparian woodland include warbler, sparrow, egrets, and herons. Riparian woodland would function as foraging, resting, and nesting habitat for these species. Various reptile and amphibian species could also be found in this habitat.

Upland habitat is defined as vegetation located 3-8 feet above the mean water surface. Within the South Los Angeles Wetland, upland habitat would occur wherever additional vegetation is needed. Vegetation species may include California sycamore, black walnut, gooseberry, various oak species, sage, coyote bush, and wild rye depending upon the desired upland plant community (oak woodland, coastal sage scrub, etc.). Bird species commonly found in upland habitat include mourning dove, rock dove, crow, raven, scrub jay, mocking bird, sparrow, American goldfinch, hummingbird, and flycatcher. Upland habitat would function as foraging, resting, and nesting habitat for these species. Other wildlife species could include western fence lizard and Pacific tree frog.

Additional microhabitats can also be created onsite to attract specific species, such as nest boxes for wood ducks and swallows, and bat boxes. Or specific plant species can be incorporated into the upland habitats to attract birds and butterflies such as blue elderberry, dogwood, California fuschia, honeysuckle, and various species of sage.

Where feasible, mature vegetation will be used to give the appearance of fully developed plant communities and to minimize the time for these communities to obtain 50% coverage, the point at which they may be considered self-sustaining. Planting and establishment of wetland vegetation should follow the Natural Resource Conservation Service Guidelines for Planting, Establishment, and Maintenance of Constructed Wetland Systems (Hoag, J. Chris 1998), where applicable.

Table 3-1: Habitat and Vegetation

Species	***Growth Form***	***Wetland Indicator***	***Material Commercially Available?***
	Open Water		
Water Cress *Rorippa nasturtium-aquaticum*	Perennial herb (aquatic)	OBL	Yes - limited
Water Plantain *Alisma plantago-aquatica*	Perennial herb (aquatic)	OBL	Yes - limited
Duckweed *Lemna minor*	Perennial herb	OBL	Yes - limited
Fennel-leaved Pondweed *Potamogeton pectinatus*	Perennial herb (aquatic)	OBL	Yes - limited
Water Shield *Brasenia schreberi*	Perennial herb (aquatic)	OBL	No
	Emergent Marsh		
Nebraska Sedge *Carex nebrascensis*	Perennial herb	OBL	No
Santa Barbara Sedge *Carex barbarae*	Perennial herb	FACW	Yes
San Diego Sedge *Carex spissa*	Perennial herb	FAC	Yes
Common Rush *Juncus patens*	Perennial herb	FAC	Yes
Irisleaf Rush *Juncus xiphioides*	Perennial herb	OBL	Yes
Mexican Rush *Juncus mexicanus*	Perennial herb	FACW	Yes
California Tule *Scirpus californicus*	Perennial herb	OBL	Yes
Hardstem Bulrush *Scirpus acutus var. occidentalis*	Perennial herb	OBL	Yes - limited
Big Bulrush *Scirpus robustus*	Perennial herb	OBL	Yes
Broadleaf Cattail *Typha latifolia*	Perennial herb	OBL	Yes

Table 3-1: Habitat and Vegetation

Species	***Growth Form***	***Wetland Indicator***	***Material Commercially Available?***
Arrow Weed *Pluchea sericea*	Shrub	FACW	Yes – limited
Smooth Flatsedge *Cyperus laevigatus*	Perennial herb	FACW+	No
Black Flatsedge *Cyperus niger*	Perennial herb	FACW+	No
Common Spikerush *Eleocharis macrostachya*	Perennial herb	OBL	Yes
California Sunflower *Helianthus californicus*	Perennial herb	OBL	Yes - limited
Wild Mint *Mentha arvensis*	Perennial herb	FACW	Yes
Meadow Barley *Hordeum brachyantherum*	Perennial herb	FACW	Yes
Spike Bentgrass *Agrostis exarata*	Perennial herb	FACW	Yes
Water Foxtail *Alopecurus aequalis*	Perennial herb	OBL	No
Red Willow *Salix laevigata*	Tree, Shrub	FACW+	Yes
Riparian Scrub			
Arroyo Willow *Salix lasiolepis*	Tree, Shrub	FACW	Yes
Sand Bar Willow *Salix exigua*	Tree, Shrub	FACW	Yes
Red Alder *Alnus rubra*	Tree, Shrub	FACW	Yes
White Alder *Alnus rhombifolia*	Tree	FACW	Yes
Blue Elderberry *Sambucus mexicana*	Shrub	FACU	Yes
American Dogwood *Cornus sericea ssp. sericea*	Shrub	FACW	Yes
California Rose *Rosa californica*	Shrub	FAC+	Yes
California Blackberry *Rubus ursinus*	Vine, Shrub	FAC+	Yes
Mulefat *Baccharis salicifolia*	Shrub	FACW	Yes
Riparian Woodland			

Table 3-1: Habitat and Vegetation			
Species	***Growth Form***	***Wetland Indicator***	***Material Commercially Available?***
California Sycamore *Platanus racemosa*	Tree	FACW	Yes
Velvet Ash *Fraxinus velutina*	Tree	FACW	Yes - limited
Black Cottonwood *Populus balsamifera ssp. trocjpcarpa*	Tree	FACW	Yes
Box Elder *Acer negundo var. californicum*	Tree	FACW	Yes
Upland			
California Black Walnut *Juglans californica*	Tree	FAC	Yes
Fremont Cottonwood *Populus fremontii*	Tree	FAC+	Yes
Bigleaf Maple *Acer macrophyllum*	Tree	FAC	Yes
California Laurel *Umbellularia californica*	Tree	FAC	Yes
Spreading Gooseberry *Ribes divaricatum*	Shrub	FACW	Yes - limited
Coast Live Oak *Quercus agrifolia*	Tree	NL	Yes
Interior Live Oak *Quercus wislizeni*	Tree	NL	Yes
Valley Oak *Quercus lobata*	Tree	FACU	Yes
Black Sage *Salivia mellifera*	Shrub	NL	Yes
Purple Sage *Salvia leucophylla*	Shrub	NL	Yes
Coyote Bush *Baccharis pilularis*	Shrub	NL	Yes
Blue Wildrye *Elymus glaucus*	Grass	FACU	Yes

Table 3-1: Habitat and Vegetation			
Species	***Growth Form***	***Wetland Indicator***	***Material Commercially Available?***

Wetland Indicator:

OBL: Obligate Wetland – occurs almost always under natural wetland conditions.

FACW: Facultative Wetland – usually occurs in wetlands, but occasionally found in non-wetlands.

FAC: Facultative – equally likely to occur in wetlands or non-wetlands.

FACU: Facultative Upland – usually occur in non-wetlands, but occasionally found in wetlands.

UPL: Obligate Upland – occur in wetlands in another region, but occur almost always under natural conditions in non-wetlands in the region specified.

NL: Not Listed – always occurs in non-wetlands.

Stormwater Diversion

The wetlands will be hydrated with water from the storm drain system. As shown on Figure 3-1, two main storm drains pass the site; one runs along San Pedro Boulevard (San Pedro) and the other runs along Avalon Boulevard. The San Pedro storm drain captures the majority of the stormwater and dry weather flow from the 500 acre tributary area.

As mentioned above, the wetland will be constructed with the existing grade of the site (northeast to southwest). However, the San Pedro storm drain is at the downstream end of the wetland. Thus, a pump station will be required to pump the water to the upstream end of the wetland. Details of the pump station are included in Section 4.

Irrigation

It will take a minimum of five years to establish the wetland with mature vegetation. During this establishment period, supplemental irrigation will be required for the entire wetland system during the dry season. After the initial establishment period, dry weather runoff should meet the daily water requirements for the open water, deep marsh, and emergent marsh habitats. It is possible that the wet riparian scrub, riparian woodland, and upland habitats will require supplemental irrigation during the dry season.

A "Smart Irrigation" system is recommended to meet the site's irrigation needs, including the wetland system and other grassy areas. The term "Smart Irrigation" refers to the use of irrigation controllers to monitor irrigation, based on actual weather data and soil moisture content. In addition to reducing the amount of water used by limiting irrigation (i.e. no irrigating after a storm event when the soil is already saturated), the units would also reduce or eliminate over-watering, a significant contributor to dry weather runoff. The Smart Irrigation device reduces the amount of over irrigation by anywhere from 20 to 80 percent and reduces the amount of runoff from over irrigation by 60 percent (City of Los Angeles IRP Facilities Plan, 2005).

Furthermore, any excess runoff from irrigating the non-wetland areas of the site could be routed back to the wetlands.

3.1.2 Project Elements not funded by Proposition O

Supporting elements of the project that will not be funded by Proposition O include educational signage along walkways, boardwalks, gazebos, community pavilion, and multi-use center. Trails, boardwalks, and educational signage located within the created habitats will provide Wetlands Park users with an accessible and quiet refuge within the City to enjoy and learn about Southern California ecology. These additional elements are expected to be funded by Proposition K ($1M), the settlement agreement between the City and Santa Monica Baykeepers/US EPA Supplemental Environmental Projects (SEP) ($2M), Proposition 50, Chapter 8 ($4M) and a loan from the City ($700K).

3.2 Water Quality Benefits

Proposed Project BMPs

There are several water quality benefits at the South Los Angeles Wetlands site, and include both dry weather and wet weather runoff management. Since the site has a drainage area of 500 acres, the site has the potential to manage the runoff from this entire area.

Treatment Wetlands

As described in this section, the project includes the installation of the treatment wetlands that will be supported by dry and wet weather runoff. As described, the entire flow of dry weather runoff, estimated to be 80,000 gallons per day, will be able to be diverted from the storm drain system to the proposed pretreatment system, which will consist of a trash, oil and grease skimmer that will operate in the forebay. The flow will then continue to the three cells of the wetlands where the wetlands will further treat the runoff, before the runoff is finally discharged back into the storm drain system. Additionally, a portion of the wet weather runoff that reaches the site will be treated in the same manner (refer to Section 4 for details). As such, the runoff that was previously not treated in any way prior to entering the receiving waters will now have pollutants removed by the treatment wetlands.

The Bureau of Sanitation (BOS) has developed a planning tool to determine total annual pollutant load for the delineated drainage area and how pollutant removal is expected with various types of BMPs. Table 3-2 provides the specific pollutant load information generated from the BOS BMP Module and the percent removal of each pollutant. The BMP inputs into the Module were the oil and grease separator and the wetlands.

Table 3-2: Pollutant Load Data

Pollutant (lbs)	*Influent Load (lbs/year)*	*Total Removed (lbs/year)*	*Effluent Total (lbs/year)*	*Percent Removal*

Total Petroleum Hydrocarbons	0.15	0.05	0.11	27%
Total Coliform*	399,513.00	299,635.00	99,878.00	75%
Fecal Coliform*	245,621.00	184,216.00	61,405.00	75%
Fecal Enterococcus*	124,573.00	93,430.00	31,143.00	75%
Total Suspended Solids	10,264.46	8,353.58	1,910.88	81%
Oil and Grease	153.96	0.00	153.96	0%
Total Aluminum	165.28	66.11	99.17	40%
Total Cadmium	0.02	0.01	0.01	50%
Total Copper	2.50	1.50	1.00	60%
Total Lead	1.27	0.91	0.36	72%
Total Nickel	0.53	0.21	0.32	40%
Total Zinc	21.00	12.60	8.40	60%
Dissolved Copper	1.22	0.00	1.22	0%
Dissolved Zinc	12.90	0.00	12.90	0%
Nitrate as N	70.94	0.00	70.94	0%
Total Kjeldhal Nitrogen	290.75	0.00	290.75	0%

Notes:
Total Coliform, Fecal Coliform and Fecal Enterococcus are in MPN/100m

- All waters from the sub-basin pass thru the BMP structure
- The BMP is installed and sized properly for the sub-basin location
- The BMP installation has address all constraints for that BMP location
- The Pollutant Loads and BMP applications assume the loads for the first significant storm event of the year
- The BMPs were selected based on their feasibility as well as whether there was sufficient data to characterize their performance.
- All data from recent literature was researched and summarized to characterize performance of various structural BMPs that may be applicable for implementation within the City of Los Angeles.
- The data sources included the American Society of Civil Engineers (ASCE) and EPA database recently compiled by ASCE's Urban Runoff Research Council.
- The published range of pollutant removal percents as well as low and average percent removals (or concentration changes) for each BMP.
- In the published references, a variety of BMP performance measures and methodologies were applied (including event averages and long-term averages).

Porous Pavement

Another BMP that could be used at the site is porous pavement at the parking lot. Areas such as roadways, driveways, and parking areas covered with impermeable pavement are one of the largest contributors to wet weather urban runoff. Porous pavement is a special type of material used to allow water to pass through while being strong enough to support vehicular traffic.

Concrete block pavements have been available for many years and have been used primarily as aesthetic treatments to parking areas and low volume roadways. In the last 20 years, high-density plastic grids have also entered the market place. There are many configurations and applications that have been developed for each of these materials. Most of the systems are supported by a stone base that has large pore spaces. This base acts both as pavement support and as a reservoir to store water so that it can be infiltrated, if the soil conditions allow, or detained and slowly released to the storm drain system. There are several types of porous pavements which could be considered during the design.

Retention Grading

By grading the site such that the runoff that is generated on site remains on site, this would eliminate runoff entering the storm drains from the site. If runoff were allowed to leave the site, it would pick up pollutants from the street before entering the storm drain, therefore increasing the amount of pollutants entering the storm drain system. By keeping the runoff on site, it would infiltrate on site without transporting additional pollutants.

3.3 Additional Project Benefits

The Wetlands Park will provide the South LA community a much needed public green space and recreational facility. Recreational activities that the park will offer include: bird and wildlife observation, photographic opportunities, trail walking and running. A multi-use facility will be built onsite, which could accommodate community and school programming.

The park will also serve as an outdoor classroom for school-age children and adults alike. Visitors to the Wetlands Park will learn about aquatic and riparian ecosystems, and observe native California habitat and species. Educational signage in the park could also include explanations of the physical and biological processes at work in a wetland, as well as how wetlands reduce non-point source pollution.

As described above in Section 3.1.2, the project will also include a multi-use facility that can be used to generate revenue for upkeep of the Wetlands Park. Schools will be able to bring students and educate them on native California habitat and species and the physical and biological processes at work in a wetland.

Furthermore, the construction of the Wetlands Park will rehabilitate an urban brownfield. As recommended by CDTSC, the MTA clairifiers will be removed and the underlying soils excavated. Residual VOC contamination will be remediated with a soil vapor extraction system.

Section 4
Proposed Project Siting

4.1 Siting Location and Construction Constraints

Design Criteria

In order to design the proposed project the existing site conditions need to be analyzed to determine the most logical flow for the wetlands. Both the existing grading of the site, as well as the locations of the existing storm drains, which will provide runoff to irrigate the wetlands, needs to be determined. The wetlands will need to be graded so that the water flows by gravity. Ideally, the runoff from the tributary area would arrive at the site by gravity at the upstream end of the site. If not, then the runoff would need to be pumped upstream or the site would need to be re-graded.

The existing grading of the site shows the natural flow of water would be from the northeast end to the southwest end of the site. However, the majority of the runoff enters the site from the storm drain located on the west end of the site near the intersection of San Pedro Blvd and 54th Street. Based on the elevations of the existing storm drains, it is not possible to simply re-grade the site such that it would flow from west to east, because the discharge water from the wetlands would not be able to reconnect to the storm drain (i.e. the discharge pipeline would be too deep to flow by gravity from the site to the existing storm drain). Additionally, the existing storm drain on the east end of the site is not large enough to hold the discharge flows. Therefore, it appears to be necessary to pump the runoff from the west end to the northeast end of the site and then allow the runoff to flow by gravity through the wetlands from northeast to southwest. The runoff from the storm drain located on the east end of the site could be diverted as well to allow that flow to enter the site by gravity, and the benefits of doing this as well will need to be further examined.

In order to get the runoff from the southwest end of the site to the northeast end, a pump station will be constructed on site near the intersection of 54th Street and San Pedro Blvd. This pump station will divert flows from the existing San Pedro Blvd. storm drain and discharge into the wetland at its upstream end. A force main will be constructed from the proposed pump station to the wetland along 54th Street to convey the diverted runoff. The pump station will be designed for a peak flow rate of between 30 cfs and 55 cfs (or 13,000 gpm to 25,000 gpm) in order to capture a design water quality storm equivalent to the SUSMP requirement for the entire project watershed[2]. The pump station would also have a low flow pump to handle the normal dry weather flow of about 80,000 gpd. The water will be pumped from an elevation of 135 feet up to an elevation of 146 feet. An overflow feature will need to

[2] Though the SUSMP requirements are referenced here, the South Los Angeles Wetlands project does not need to meet the SUSMP requirements. SUSMP values are referred to only as a method of comparison.

be installed in the San Pedro Blvd. storm drain to allow the discharge in excess of the diverted maximum flow rate to continue downstream.

Based on the preliminary wetlands design, the wetlands have the capacity to treat 500 cfs of flow. The storm drain that discharges the runoff has a design capacity of 140 cfs. Therefore, neither the wetlands capacity nor the maximum flow from the storm drain are the limiting factors in determining how much wet weather runoff to divert from the storm drain to the wetlands, as the wetlands could manage the entire design flow from the storm drain. Therefore, the feasibility of pumping the flow upstream, and the costs associated with it, is the limiting factor. As such, the SUSMP requirements were used as a basis for determining a reasonable design flow for wet weather runoff.

The 30 cfs to 55 cfs was determined based on the Standard Urban Stormwater Mitigation Plan (SUSMP) Correction Sheet, which can be found at www.ladwp.org. Appendix I of that document has tables that show, based on various soil types and percent imperviousness, the resulting instantaneous flow rate that would need to be treated in order to meet the SUSMP requirements. For the purposes of this Concept Report, a mid-range soil type was used, along with an assumed percent impervious of 90 percent. This resulted in a flow of 55 cfs. Since the project is not required to meet these requirements, it has been stated that a range of 30 to 55 cfs of wet weather runoff would be treated. As such, during the design phase a more detailed analysis of these types of factors in order to determine the exact target flow to be managed will be required.

The wetlands design will need to take into consideration the information contained in Section 3.0. The wetlands were preliminarily designed to manage 500 cfs of flow, with cross sections in the channel of 100 square feet. The channel, which has an estimated cross section of 100 square feet, needs to be designed such that the channel is meandering and includes berms so that the flow of the water is slowed down which will increase the retention time. Higher retention times will result in more pollutant removal, much of which will occur from settling, nitrification, etc.

The wetlands will have a trash, oil and grease skimmer installed in the forebay that will pretreat the runoff before it enters the wetlands, which will need to be designed based on the final flow numbers and the pollutant loads. The wetlands habitat needs to be designed to handle the 7 months of continuous dry weather conditions. As such, the types of wetland plants selected need to be able to keep the non-wetlands plants from overtaking the wetlands during these dry periods.

Porous pavement will be located at the parking lot and any other paved areas on the site. The design will need to take into consideration the various types of porous pavement available in order to determine which is best suited for this location. Also, when grading the site, it should be graded to retain all runoff on site.

Additionally, the design will need to include vector control. The wetland design incorporates design elements intended to promote circulation and flow thereby avoiding stagnant pools of standing water. Plant material and terraced vegetation described in Section 3.1 will also promote healthy wetland vegetation thereby avoiding degraded habitat conditions. Finally, early consultation with local vector control district experts will alleviate vector issues for the subject Wetland Park.

Typically, mosquito fish (Gambusia affinis) would be used to prey on mosquito larvae, however Gambusia should not be introduced into natural habitats such as creeks and streams. Since the created wetlands will drain into the storm drain system that ultimately empties into the Los Angeles River, local vector control district experts should be consulted to determine whether or not Gambusia are appropriate fish for the Wetlands Park. If the Gambusia cannot be used, then it should be considered that instead chemicals should be used to control mosquitoes before they emerge as adults. Sources would be treated with either Bacillus thuringiensis var. israelensis (Bti) or methoprene (Altosid). Bti is a microbial agent formulated as crystalline bacterial spores. These spores are ingested by mosquito larvae and cause the cell walls of the larval digestive system to burst. Methoprene is a synthetic insect growth regulator which mimics naturally occurring hormones in the mosquito's body. Methoprene disrupts the mosquito's normal life cycle causing the adult mosquito to fail to emerge from the pupae. Both of these controls are safe to the environment and target specific. If the breeding source is active with pupae, initially treat the source with Agnique MMF. Agnique MMF is a mono molecular film which suffocates the mosquito pupae and larvae. Since pupae do not feed, they must be killed by suffocation. (http://www.lawestvector.org/; accessed on May 17, 2006)

Construction Constraints

There are several construction constraints that need to be taken into consideration. Since the site is located in a densely populated area of the City, construction scheduling needs to be done such that the surrounding neighborhoods are not drastically impacted by the construction activities. As one of the goals is to improve the neighborhood for its residents, the impact on the residents during construction is an important consideration, which will include the frequency and duration of street closures, truck traffic, street sweeping, watering the site during grading activities to reduce dust, etc.

Additionally, the sequencing of construction needs to be phased such that the new habitat is immediately supported by the water supply once the plants are installed (i.e. the runoff needs to be completely diverted and able to begin watering the wetlands before the wetlands habitat can be installed). Furthermore, the time of year that the project is build needs to account for the potential of wet season storm events, and therefore certain portions of construction should not be done during the wet season.

4.2 Environmental Feasibility

Runoff flow to the site arrives via the existing storm drain system. As described in previous sections, the runoff from the storm drain located at the west end of the site will be pumped to the northeast end of the site. From there, the water will flow through the pretreatment system and then the three cells of the wetlands, and finally discharge back into the storm drain system. For dry weather flows, all of the flow will be pumped to the wetlands, while during storm events only flows up to the design flow rate (between 30 and 55 cfs depending on what is determined in the design phase) will be pumped to the wetlands. The remainder of any large storm even will continue in the storm drain system.

As the site currently has no existing recreational program elements, construction of the proposed facilities will not have any impacts on recreational aspects of the site.

Items that may need to be procured include the pumps, the pipeline that will divert the runoff from the west to the east end of the site, the trash, oil and grease skimmer, the porous pavement, the evapotranspiration devices, and the liner.

Section 5
Operations and Maintenance

Per conversation with Jeff Catalano, staff to Councilwoman Jan Perry (SD 9), O&M will be funded through an undetermined funding source during the first year of operation. Staff needed during operating hours will include one ranger and one administrative assistant. General maintenance will be provided by the Los Angeles Conservation Corps. The City of Los Angeles Recreation and Parks Division will oversee park maintenance and operations.

Special events held on the grounds will be managed by the City of Los Angeles Recreation and Parks Division. Revenue generated through park usage fees for such events will also be collected by the City of Los Angeles Recreation and Parks Division. These revenues are expected to be used to help fund park operations and maintenance[3].

[3] One example of revenue generated by park use is the Los Angeles River Center which yields approximately $300,000 annually through facility usage fees

Section 6
Regulatory Requirements

This section describes the environmental review process and appropriate regulatory requirements for the project.

6.1 Environmental Review

In accordance with the California Environmental Quality Act (CEQA) and CEQA Guidelines, as amended, the City of Los Angeles, as Lead Agency for the subject project, will be preparing an Initial Study to determine the significance of environmental impacts, if any, resulting from the proposed project as described below.

- Provide a preliminary environmental evaluation by preparing an Initial Study, per CEQA Guidelines, Section 15063, of the proposed basin to determine if the project may have a significant effect on the environment. This task shall describe the project including the location of the project, existing conditions, an identification of environmental effects by use of a checklist and brief explanation, a discussion of ways to mitigate the significant effects identified, and an examination of whether the project would be consistent with existing zoning, plans, and other applicable land use controls. Based on the results of the Initial Study, the City of Los Angeles will prepare the appropriate CEQA documentation (e.g., Categorical Exemption, Mitigated Negative Declaration, or Environmental Impact Report), including required technical studies, and identify state and federal permitting requirements.
- Timing: The City of Los Angeles anticipates commencing with CEQA documentation in June 2006, following Proposition O funding approvals.
- A files and records search will be completed to determine if the MTA building on the site is considered historic in accordance with the National Historic Preservation Act (NHPA). If the building is determined to be a historic structure, any modifications to the structure would need to undergo further historic documentation in accordance with NHPA and CEQA. Further, any modifications to the structure would need to be reviewed and approved by the City of Los Angeles as part of the CEQA approval for the project.

6.1.1 National Historic Preservation Act (NHPA)

The NHPA preserves significant historic features and establishes a National Register of Historic Places, which is an inventory of the United States' historic resources that includes buildings, structures, objects, sites, districts, and archeological resources. Section 106 of the Act requires that a Federal agency involved in a proposed project must confer with the State Historic Preservation Officer and the NHPA to determine if the project will impact a significant historic feature.

6.1.2 Section 402 National Pollutant Discharge Elimination System (NPDES)

Section 402 of the Clean Water Act regulates the discharge from point sources into waters of the U.S. As construction and operation of a treatment wetland may result in a discharge into waters of the U.S., these projects may require an NPDES permit. If construction of a treatment wetland disturbs one acre or more, an NDPES permit for stormwater discharge from the construction activity is required. This requirement applies to all construction projects.

6.1.3 Vector Control

One potential undesirable attribute of wetland projects, if not addressed properly is that they can become breeding grounds for mosquitoes that can serve as vectors for diseases harmful to humans such as West Nile virus, malaria, and encephalitis (MVCAC 2004).

The California Department of Health Services (DHS) has the authority to abate public nuisances and has determined that water that supports a breeding population of mosquitoes constitutes a public nuisance. DHS and other local vector control agencies have the authority to take necessary actions up to a legal notice to abate a public nuisance (DHS 01). As such, it is important to plan for vector control in wetland projects.

The Mosquito and Vector Control Association of California (MVCAC) is a nonprofit association that was established in 1951. They provide public information, mosquito and vector–borne disease surveillance, and advocate environmentally friendly methods for vector control. The MVCAC "supports the sensible development of wetlands when they include best management practices for the control of mosquitoes", and advocate planning for mosquito control at during the early phases of a project (MVCAC 2004). In general, mosquito control in a wetland project is best handled through early planning and most importantly, the creation of long-term maintenance agreements that include vector monitoring and control as part of the project's operation and maintenance plan.

6.1.4 Recommendations

The City of Los Angeles should contact the Los Angeles Vector Control District prior to 30% design to submit the conceptual plan for the South Los Angeles Wetlands project and request input on the design of the wetlands. Early consultation with the District will allow for proper vector control design modifications to mitigate the potential for vector impacts. Establishing a relationship with the local District early in the design process will also be helpful in creating a long-term maintenance agreement including vector monitoring and control as part of the project's operation and maintenance plan.

Non-point Source Management Programs under CWA Section 319: Provides for the assessment of waterbodies that cannot be expected to meet water quality standards without actions to control non-point sources of pollution and the preparation of management programs for controlling pollution and water quality from non-point sources. It emphasizes a watershed-based approach which may include protection and/or restoration of wetlands and riparian areas.

California Non-point Source Program: Established under the framework CWA Section 319, the Program is a comprehensive statewide effort aimed to reduce and prevent non-point source pollution under the authority of the Coastal Commission and the Regional Boards. The Program identifies non-point source management measures to be implemented by 2013.

Section 7
Public Outreach Program

7.1 Stakeholders

Table 7-1 below summarizes the groups and agencies involved with this project and their respective responsibilities.

Table 7-1
Stakeholders, Roles and Responsibilities

Participant	Role	Responsibility
Jan Perry's Office, Council District 9	Lead Applicant	Project Management
City of Los Angeles Bureau of Sanitation-Watershed Protection Division	Lead Agency	Technical Guidance
Community Redevelopment Agency	Supporting Agency	Community Awareness
City of Los Angeles Bureau of Engineering	Supporting Agency	Project Design and Construction
City of Los Angeles Recreation and Parks Division	Supporting Agency	Project Operations and Maintenance
Community and Neighbors for the Ninth District Neighborhood Council	Supporting Organization	Community Awareness
Coalition for Responsible Community Development	Supporting Organization	Secure Resources to maintain cleanliness of the park and surrounding areas
Estelle Van Meter Multi-Purpose Center	Supporting Organization	Provide possible docents
Youth Educating and Advocating for Health, a project of Walden House Inc. in partnership with All People's Christian Church and the Los Angeles Metropolitan Churches	Supporting Agency	Community Awareness
Mayor Antonio Villaraigosa's Office	Supporting Elected Official	Community Awareness
Department of Water and Power	Regulating Agency	Groundwater Oversight
Department of Fish and Game	Regulating Agency	Endangered Species Regulation and oversight
Army Corps of Engineers	Regulating Agency	Waters of the U.S. Regulation and oversight
The Mosquito and Vector Control Association of California (MVCAC)	Regulating Agency	Vector Control, design, operations, and maintenance oversight
U.S. Fish and Wildlife Service	Regulating Agency	Endangered Species Regulation, monitoring, and construction oversight

7.1.1 Councilwoman Jan Perry's Office, Council District 9 (CD 9)

Councilwoman Jan Perry's Office has been working in conjunction with BOS-WPD for three years to develop the Wetlands Park Concept. In February 2006, Councilwoman Perry's Office opened a similar wetlands park near Slauson Boulevard and Compton Avenue. The Councilwoman's office will be active participants in the design of the Wetlands Park.

7.1.2 City of Los Angeles Bureau of Sanitation, Watershed Protection Division (BOS-WPD)

The BOS-WPD is the partner agency with CD 9 on the Wetlands Park project and BOS-WPD is providing design services. The Division is responsible for the development and implementation of stormwater pollution abatement projects within the City. The Stormwater Program has two major elements — Pollution Abatement and Flood Control. Pollution Abatement involves compliance with federal regulations, and in essence, constitutes the model program components (i.e., Public Education, Inspection/Enforcement, Illicit Discharges/Illicit Connections, Program Compliance) while Flood Control is essential for the protection of life and property. A major focus of the program is the control and elimination of stormwater pollution through compliance with the NPDES municipal stormwater permit. The City is currently in its second five-year cycle.

The Division supports the development of the Wetlands Park at 54th and Avalon and has determined that the Wetlands Park would assist the City in meeting the TMDLs for bacteria and nitrogen.

7.1.3 Community Redevelopment Agency (CRA)

The Community Redevelopment Agency is in support of the Wetlands Park. The Wetlands Park complements CRA's on-going and planned commercial and industrial revitalization efforts in the Council District 9 Corridors South of the Santa Monica Freeway Recovery Redevelopment Project (CD9 Project) by eliminating blight and increasing green open space resources within a densely populated urban environment. Support from CRA on previous community redevelopment projects has included partnering with CD 9 to build the Augustus Hawkins Wetland Park approximately 2 miles away near the intersections of Compton Avenue and Slauson Boulevard.

7.1.4 Community and Neighbors for the Ninth District Neighborhood Council (CANNDU)

CANNDU supports the creation of the Wetland Park. CANNDU has taken a leadership role in environmental issues in South Los Angeles. The organization takes an active role in monitoring environmental legislation and providing input on various environmental planning efforts. CANNDU also manages the South Los Angeles

Community Emergency Response Team Training Center, which trains residents in disaster preparedness.

7.1.5 The Coalition for Responsible Community Development (CRCD)

CRCD supports the creation of the Wetlands Park. CRCD was formed by community development professionals and local politicians to work with non-profit community development organizations, local stakeholders and government agencies to create affordable housing and economic development opportunities in South Los Angeles and the greater Los Angeles County region for residents and businesses at risk for displacement and disenfranchisement. CRCD created the South Los Angeles Beautification team (SLABT). SLABT is the primary contractor in graffiti removal for the City of Los Angeles.

7.1.6 Estelle Van Meter Multi-Purpose Center

The Estelle Van Meter Multi-Purpose Center stands in support of the Wetlands Park. The Estelle Van Meter Multi-Purpose Center is a Senior Citizens Center that serves senior residents through information, referrals and services. Some of the senior citizens are willing to serve as docents and stewards for the wetland park.

7.1.7 Department of Water and Power

The Department of Water and Power is in support of the Wetlands Park if it provides stormwater quality improvements but does not impact the drinking water supply. The Department is not currently using, and does not have any immediate plans to use the groundwater from the aquifer which underlies the Wetlands Park, but is opposed to the use of the groundwater because of contamination concerns and the depth to water.

7.1.8 Department of Fish and Game

By State law the Department of Fish and Game has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations. The Department shall consult with lead and responsible agencies and shall provide the requisite biological expertise to review and comment upon environmental documents and impacts arising from project activities. A Trustee Agency has jurisdiction over certain resources held in trust for the people of California. The Department is one of four trustee agencies. The others include the State Lands Commission, the Department of Parks and Recreation, and the University of California. Trustee agencies are generally required to be notified of CEQA documents relevant to their jurisdiction, whether or not these agencies have actual permitting authority or approval power over aspects of the underlying project (CEQA Guidelines, Section 15386). The Department is always a trustee agency and must be notified of CEQA documents regarding projects involving fish and wildlife of the state, rare and endangered native plants, wildlife areas, and ecological reserves. Although, as a trustee agency the Department cannot approve or disapprove a project, lead and responsible agencies are required to consult with the Department. The Department, as the trustee agency for fish and wildlife resources, shall provide the requisite biological expertise to review and comment upon environmental documents and impacts arising from project activities and shall make recommendations regarding those resources held in trust for the people of California (Fish and Game Code Section 1602). This project will not need require permits from the Department of Fish and Game at this time.

7.1.9 Army Corps of Engineers

Section 404 of the CWA makes it unlawful to discharge dredged or fill material into waters of the U.S. (including wetlands) without obtaining a permit from the Army Corp of Engineers (USACE). If wetland construction activities involve the discharge of dredged (excavated materials) or fill materials (i.e., material used to replace an aquatic area with dry land or to change the bottom elevation of a body of water), authorization must be obtained and may include mitigation for wetland impacts. Additionally, subsequent maintenance activities may also require a permit.

There are two basic types of Section 404 permits issued by the USACE, individual and general. An individual permit is usually required for potentially significant impacts. However, for most discharges that will have only minimal adverse effects, the USACE often grants general permits. These may be issued on a nationwide, regional, or statewide basis for particular categories of activities (e.g., minor road crossings, utility line backfill and bedding) in order to expedite the permitting process. The Army Corps Corps of Engineers will serve in a consultation role for the City of Los Angeles during the design, construction, and monitoring of the wetlands. No permits from the Army Corps will be required at this time.

7.1.10 Vector Control

One potential undesirable attribute of wetland projects, if not addressed properly is that they can become breeding grounds for mosquitoes that can serve as vectors for encephalitis (MVCAC 2004). The California Department of Health Services (DHS) has the authority to abate public nuisances and has determined that water that supports a breeding population of mosquitoes constitutes a public nuisance. DHS and other local vector control agencies have the authority to take necessary actions up to a legal notice to abate a public nuisance (DHS 01). As such, it is important to plan for vector control in wetland projects.

The Mosquito and Vector Control Association of California (MVCAC) is a nonprofit association that was established in 1951. They provide public information, mosquito and vector–borne disease surveillance, and advocate environmentally friendly methods for vector control. The MVCAC “supports the sensible development of wetlands when they include best management practices for the control of mosquitoes”, and advocate planning for mosquito control at during the early phases of a project (MVCAC 2004). In general, mosquito control in a wetland project is best handled through early planning and most importantly, the creation of long-term maintenance agreements that include vector monitoring and control as part of the projects operation and maintenance plan. A brief discussion of vector control is provided above in Section 4.1, with additional references on vector control available in Appendix B.

7.1.11 United States Fish and Wildlife Service

The United States Fish and Wildlife Service interests in the project lie in the monitoring of the biological species that will inhabit the wetlands. No permit will be required from the agency at this time.

7.2 Cooperating Public Agencies

There are no noted opposing public, non-public or non-governmental agencies on record that oppose the Wetlands Park.

7.2.1 Metropolitan Transit Authority (MTA)

The MTA is the current willing seller of the land where the Wetlands Park will be located. A rail museum dedicated to the history of transportation in the Los Angeles area will be located just east of the Wetlands Park.

7.3 Additional Outreach

The City of Los Angeles Recreation and Parks is in support of the Wetlands Park and will be responsible for the maintenance and security of the Wetlands Park. The Department will provide a park ranger at the Wetlands Park during the day to offer information and guidance regarding the wetlands.

7.3.2 Cultural Affairs

In March 1991, the City Council approved the Arts Development Fee Ordinance which funds the Public Percent for Art Program. The program celebrates and promotes diversity and community artists by requiring arts fees be gathered in the amount of one percent of the capital improvement cost of a project as mitigation for new construction in the City The amount of the fee is based on the size and use of the building, expected occupancy, and the value of the arts burden added to the City by each new building occupant. In accordance with this City law, the project will coordinate with the Department of Cultural Affairs, Public Art Division to develop a request for qualifications (RFQ) or a request for proposals (RFP). Project engineers will work with the Department of Cultural Affairs, local artists, and the community to select appropriate and qualified artists for the program. The Cultural Affairs Commission will approve the design of structures built on the property.

Section 8
Preliminary Cost Estimate

Table 8-1 below provides preliminary information regarding the costs associated with implementation of the wetland park.

8.1 Proposition O – Project Cost Estimate Table Budget Category Explanations

- *Direct Project Administration Costs* (line a) – Includes: salaries, wages, fringe benefits, office supplies, and equipment needed to support the project, staff travel costs (at or below the rate allowed for unrepresented City of Los Angeles employees), and preparation of required quarterly and final reports. This budget category includes all such costs for the grant recipient and any partner agencies or organizations. Applicants are encouraged to limit such costs to less than 5% of the total proposal costs. Such administrative expenses are the necessary costs incidentally but directly related to the proposal.

- *Land Purchase/Easement* (line b) – If land acquisition is to be included, include whether it is a proposed acquisition, or if the land is already owned. Land acquisition costs will not be considered a reimbursable item if purchased prior to the effective date of the grant agreement. For land purchased prior to the date of the application include the date of purchase and purchase price of the land. Costs for easements will be handled similarly as for land purchases.

- *Planning/Design/Engineering/Environmental Documentation* (line c) – For these efforts, differentiate costs between consulting services and/or agency/organization staff costs. Planning costs include: planning efforts, reconnaissance studies, feasibility studies, and preliminary reports. Design and engineering costs include: conceptual, preliminary and final design efforts, geotechnical reports, hydraulic studies, water quality investigations and efforts, and other engineering types of work. Include the costs of bid preparation and processing here. Environmental documentation costs include all efforts involved in the CEQA or NEPA process up to the point of the Notice of Determination, Finding of No Significant Impact, or Record of Decision.

- *Construction/Implementation* (line d) – Includes the summary of labor, materials, and equipment purchases and/or rentals. After bids are received these costs will be the actual construction cost awarded to the qualified low bidder. The construction or implementation costs for Pilot Projects should be included here.

- *Environmental Compliance/Mitigation/Enhancement* (line e) – Includes those costs required by a CEQA/NEPA document to offset any potential damages caused by the proposal. If these costs are included in the contract awarded for construction or implementation of the proposal, differentiate such costs for purposes of this budget.

- *Project Summary* (line f) – The summation of the costs for items (a) through (e) above.

- *Construction Administration* (line g) – Includes those costs required to supervise and administer the construction or implementation of the project. Differentiate costs between consulting services and agency staff costs to perform this work.

- *Other* (line h)– Includes costs for legal services, license fees, permits, any implementation verification costs, and any monitoring and assessment costs required during the construction/implementation of the proposal. Do not include monitoring and assessment costs for efforts required after construction/implementation of the proposal is complete. These costs are considered to be operation and maintenance costs and are not reimbursable.

- *Construction/Implementation Contingency* (line i) – Includes any contingency costs for the construction/ implementation of the proposal. Specify the percentage used for this contingency cost. For all other contingency costs (i.e. design, land purchase, etc.) include those contingencies in the appropriate cost category.

- *Grand Total* (line j) – The summation of the costs for items (f) through (i) above.

South Los Angeles Wetland Project Cost Estimate Table

TABLE 8-1. PROJECT COST ESTIMATE TABLE				
Budget Category		Non-Proposition O Funding (if applicable) see notes below	Requested Proposition O Funding	Total
(a)	Direct Project Administration Costs **= .04 x d**		$230,000	$230,000
(b)	Land Purchase/Easement		$4,900,000	$4.9 million
(c)	Planning/Design/Engineering/ Environmental Documentation= **.20 x d**		$1,160,000	$1.16 million
(d)	Construction/Implementation		$5,800,000	$5.8 million
(e)	Environmental Compliance/Mitigation/ Enhancement **= .02 x d**	$600,000		$600,000
(f)	Project Summary [Sum (a) through (e) for each column]		$12,090,000	$12.69million
(g)	Construction Administration **= .1 x d**		$580,000	$580,000
(h)	Other (Explain): _Permits = **.015x d** ____________________		$87,000	$87,000
(i)	Construction/Implementation Contingency = **.20 x d**		$1,160,000	$1.16 million
(j)	Grant Total [Sum (f) through (i) for each column]	*$600,000	$13,917,000	$14.52 million
Source(s) of Non-Proposition O Funds		*Potential Sources for Non-Prop O funding: • Site Mitigation Funds – MTA or Current Property Owner • Prop. K - $1 million • Baykeepers/LA Settlement (SEP) - $2 million • Loan of $700,000 from Los Angeles Public Works Trust Fund • Revenue collected from patron fees utilizing the future park facilities for events by way of park usage fees.		

Basis of Estimate

(1) Reference: CH2MHill, 2003 report

a) This value is a percentage of construction as provided in the original Proposition O guidelines.

b) Land purchase value comes from the Prop O application

c) Planning; Design; Engineering; Environmental Documentation - Calculated at 20% of construction costs

d) Construction Costs – Used upper range in table:

Creation of Wetlands, Riparian Areas and Public Use Areas	$.6-1.2	(1)
Stormwater Diversion and Conveyance Facilities	$1.0-2.0	(1)
Stormwater Treatment System	$.7-1.0	(1)
Wetlands Re-Circulated Flow Treatment System	$.5-.7	(1)
Wetlands Area Landscaping and Perimeter Fencing	$.5-.9	(1)
Total	$3.3-5.8	

(e) Environmental Mitigation Compliance and Enhancement

- Standard percentage based on application - 2% if construction (66k – 116k)
- Revised value based upon September 2005 letter from DTSC regarding abandonment of clarifiers on site. Estimated costs - $583,200.

8.2 Potential Sources of Revenue

As detailed in previous chapters, the multi-use facility included on the Wetlands Park site could be a source of revenues used for the continued maintenance and operation of the Wetland Park. Table 8-2 below provides preliminary information on this potential source of funding.

Table 8-2. Proforma Income Statement for Park Site Revenue

	Year 1		Year 2		Year 3	
Leasing Fees		$120,000		$126,000		$132,300
Note: Assumes 10,000 sq feet @$1.00/sq foot; 5% increase yearly						
Event Revenue (May-Oct Year 1; April- Nov Year 2; Year Round Year 3)						
Net proceeds per event		$1,500		$1,700		$2,000
Friday	10	$15,000	20	$34,000	30	$60,000
Saturday	20	$30,000	35	$59,500	45	$90,000
Sunday	5	$7,500	15	$25,500	25	$50,000
Revenue	35	$52,500	70	$119,000	100	$200,000
Total Yearly Revenue		**$172,500**		**$245,000**		**$332,300**

Source: Council District 9, Jeff Catalano

Section 9
Implementation Schedule

The final version of this Concept Report, which will provide a conceptual overview and feasibility assessment of the creation of the Wetlands Park (Wetlands Park), will be completed in June 2006. Based on the best information available during preparation of this Concept Report, the project design and construction will be completed by Winter 2008.

Existing structures that will require demolition include the MTA buildings and their associated parking lots. A staging area for construction vehicles will be onsite and traffic control measures, according to the approved traffic control plan, will be implemented along affected streets. Per communication between the California Department of Toxic Substances Control (DTSC) and the City of Los Angeles, a remediation plan will be carried out for any contaminated soil at the site before construction begins. Remediation required by DTSC may affect the project schedule detailed in this Concept Report.

Figure 9-1 MS Project Schedule

Section 10
Project Recommendations

The creation of the Wetland Park will enhance water quality in addition to providing cultural and recreational benefits to the area. The inclusion of educational signage, walkways, and multi-purpose facilities also provide a means of continuous revenues to help maintain and operate the site. This Concept Report contains recommendations for the subject Wetlands Park that can be used by the City of Los Angeles, Council District 9, and key supporting agencies and organizations, as well as regulatory or reviewing agencies and organizations in the future phases of the project design, engineering, construction, operations, monitoring, and maintenance.

In summary, the following project recommendations should be considered:

1. Consult regulatory agencies listed in Section 7 of this Concept Report early on in the design phase of the project to review the project design elements to minimize project delays.

2. Consult with the California Department of Toxic Substances Control regarding site remediation. The former clarifiers appear to have been a source of VOC impacts to soil and soil-gas in the vicinity. Based on these findings, the California Department of Toxic Substances Control determined that the site would be suitable for a Wetlands Park provided that the clarifiers are properly abandoned and the VOCs in the soil are remediated prior to construction.

3. Consult with the Los Angeles Vector Control District during the design phase of the project to review the project concept design as well as operations and maintenance components to avoid vector impacts.

4. Consult with CDFG and USFWS regarding expected habitat and species that will occupy the Wetlands Park during the design phase to encourage resource agency collaboration and coordination during operations, monitoring, and maintenance of the Wetlands Park. Review plant palette, habitat, and species listed in Section 3 of this Concept Report with CDFG and USFWS experts.

Appendix A
References

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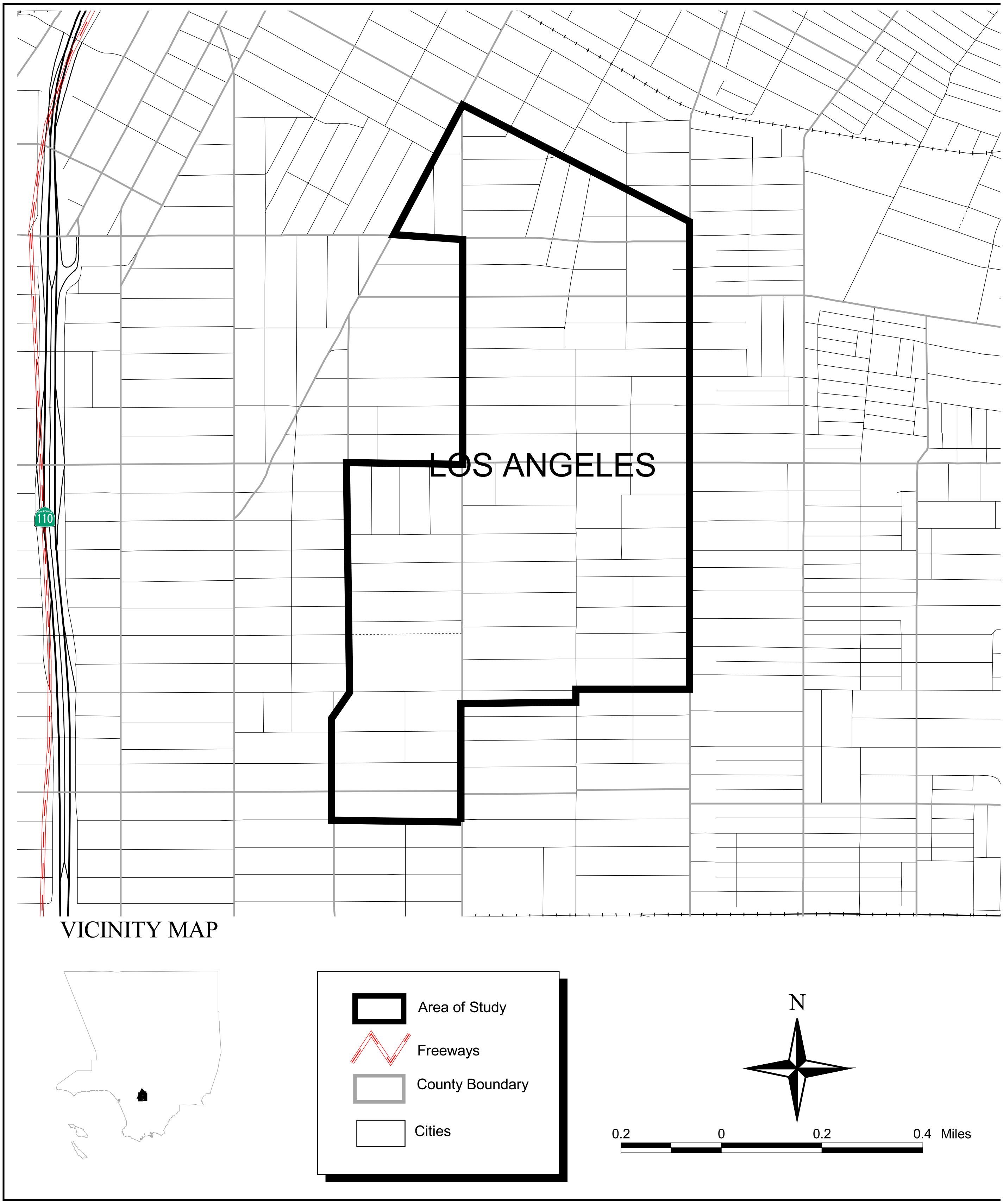
Appendix B
Vector Studies

AREA OF STUDY



STORM EVENT DATE: 1Y/ea/Year RUN DATE: 06/05/2006 SIZE OF WATERSHED: 522.76 Acres

LOADING BY LAND USE IN STUDY AREA

NAME	UNITS	High Density Residential	Light Industrial	Vacant	Commercial	Multi Family Residential	Transportation	Education	Mixed Residential	TOTAL	Per Acre
Total Petroleum Hydrocarbon	ug/l	0.05	0.02	0.00	0.08	0.00	0.00	0.00	0.00	0.15	0.00
Total Coliform	MPN/10	246,777.92	23,462.40	52.12	128,796.17	0.00	0.00	0.00	0.00	399,088.62	760.81
Fecal Coliform	MPN/10	168,531.26	17,478.97	7.92	59,737.70	0.00	0.00	0.00	0.00	245,755.86	468.50
Fecal Enterococcus	MPN/10	110,147.22	5,074.91	3.85	9,744.45	0.00	0.00	0.00	0.00	124,970.42	238.24
Total Suspended Solids	mg/l	3,782.09	2,734.59	232.67	1,644.02	0.00	0.00	896.44	1,027.92	10,317.73	19.67
Oil and Grease	mg/l	51.75	19.37	0.00	82.20	0.00	0.00	0.00	0.00	153.33	0.29
Total Aluminum	ug/l	23.85	20.78	2.10	101.01	0.00	0.00	8.31	8.37	164.42	0.31
Total Cadmium	ug/l	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.00
Total Copper	ug/l	0.60	0.36	0.02	0.97	0.00	0.00	0.23	0.31	2.49	0.00
Total Lead	ug/l	0.40	0.19	0.00	0.45	0.00	0.00	0.05	0.18	1.27	0.00
Total Mercury	ug/l	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Nickel	ug/l	0.00	0.11	0.00	0.37	0.00	0.00	0.04	0.00	0.53	0.00
Total Zinc	ug/l	3.15	7.28	0.06	6.00	0.00	0.00	1.30	3.31	21.10	0.04
Dissolved Copper	ug/l	0.34	0.23	0.00	0.35	0.00	0.00	0.12	0.20	1.23	0.00
Dissolved Lead	ug/l	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dissolved Zinc	ug/l	1.75	4.64	0.00	3.79	0.00	0.00	0.62	2.17	12.97	0.02
Nitrate as N	mg/l	34.24	9.91	1.31	11.96	0.00	0.00	4.81	8.97	71.21	0.14
Total Kjeldahl Nitrogen	mg/l	115.45	34.18	0.99	84.69	0.00	0.00	15.10	40.79	291.20	0.56
Total Phosphorus	mg/l	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

** Total Coliforn, Fecal Coliform and Fecal Enterococcus in Billion*

BMP RESULTS SUMMARIZED BY BMP

Alternative1	UNITS	INFLUENT LOAD	BMP1	BMP2	BMP3	BMP4	BMP5	TOTAL REMOVED	EFFLUENT TOTAL	GOAL
Alt 1: Wetland w/ Pre-Treatment			*Vortechs*	*Wetlands*						
Total Petroleum Hydrocarbons	lb	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.1
Total Coliform	* MPN/100m	399,089.00	0.00	299,317.00	0.00	0.00	0.00	299,317.00	99,772.00	399,089.0
Fecal Coliform	* MPN/100m	245,756.00	0.00	184,317.00	0.00	0.00	0.00	184,317.00	61,439.00	245,756.0
Fecal Enterococcus	* MPN/100m	124,970.00	0.00	93,728.00	0.00	0.00	0.00	93,728.00	31,243.00	124,970.0
Total Suspended Solids	lb	10,317.73	8,770.07	1,160.75	0.00	0.00	0.00	9,930.82	386.92	10,317.7
Oil and Grease	lb	153.32	0.00	0.00	0.00	0.00	0.00	0.00	153.32	153.3
Total Aluminum	lb	164.42	0.00	65.77	0.00	0.00	0.00	65.77	98.65	164.4
Total Cadmium	lb	0.02	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.0
Total Copper	lb	2.49	0.00	1.25	0.00	0.00	0.00	1.25	1.25	2.4
Total Lead	lb	1.27	0.00	0.76	0.00	0.00	0.00	0.76	0.51	1.2
Total Mercury	lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Total Nickel	lb	0.52	0.00	0.21	0.00	0.00	0.00	0.21	0.31	0.5
Total Zinc	lb	21.10	0.00	10.55	0.00	0.00	0.00	10.55	10.55	21.1
Dissolved Copper	lb	1.24	0.00	0.00	0.00	0.00	0.00	0.00	1.24	1.2
Dissolved Lead	lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Dissolved Zinc	lb	12.97	0.00	0.00	0.00	0.00	0.00	0.00	12.97	12.9
Nitrate as N	lb	71.20	0.00	0.00	0.00	0.00	0.00	0.00	71.20	71.2
Total Kjeldahl Nitrogen	lb	291.20	0.00	0.00	0.00	0.00	0.00	0.00	291.20	291.2
Total Phosphorus	lb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0

** Total Coliforn, Fecal Coliform and Fecal Enterococcus in Billions*

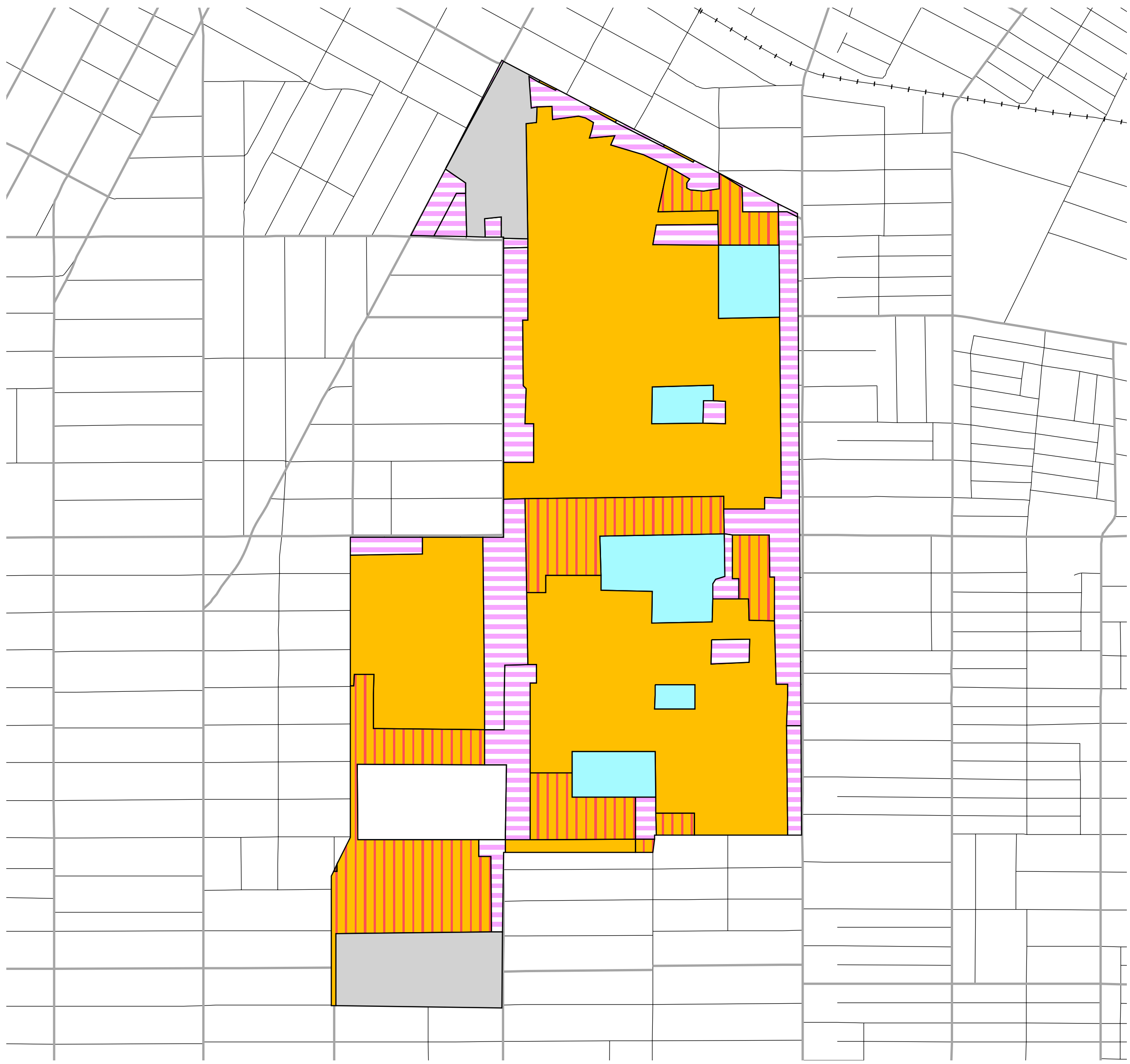
Assumptions for the BMP Planning Application:

- All waters from the sub-basin pass thru the BMP structure
- The BMP is installed and sized properly for the sub-basin location
- The BMP installation has address all constraints for that BMP location
- The Pollutant Loads and BMP applications assume the loads for the first significant storm event of the year
- The BMPs were selected based on their feasibility as well as whether there was sufficient data to characterize their performance.
- All data from recent literature was researched and summarized to characterize performance of various structural BMPs that may be applicable for implementation within the City of Los Angeles.
- The data sources included the American Society of Civil Engineers (ASCE) and EPA database recently compiled by ASCE's Urban Runoff Research Council.
- The published range of pollutant removal percents as well as low and average percent removals (or concentration changes) for each BMP.
- In the published references, a variety of BMP performance measures and methodologies were applied (including event averages and long-term averages).

Due to the possible effect of influent concentrations on efficiency, an alternative to the percent removal evaluations is to compare effluent concentrations. Recent research indicates that with most treatment BMPs, efficiency decreases with decreasing influent concentrations. Newer studies suggest that storm water treatment BMPs may be better characterized by effluent quality rather than percent removal. Percent removal is simply the percentage reduction in effluent quality when compared with influent quality. The characterization of pollutant removal for a BMP with effluent quality may be preferred because it is less influenced by influent water quality. For example, a BMP may show high removal efficiency if the influent is high, however if the influent concentrations are low, the removal efficiency is typically lower.

Subsequently the City decided to expand the BMP performance data with recently published Caltrans pilot study information which includes effluent concentrations for many structural BMPs (Caltrans BMP retrofit Pilot Program – Proposed Final Report, April 2002). Furthermore, the Caltrans study represents very recent research performed in the Southern California region which may be better representative of BMP data than the nationwide references. Also, the Caltrans study is unique in that a wide range of applicable BMPs were studied and the pilot study applied the same set of criteria to all BMPs evaluated (therefore minimizes study variability issues amongst the BMPs). Furthermore, the Caltrans study provided data for a few added constituents which were lacking and/or insufficient in the nationwide data sources. In addition to effluent concentrations, Caltrans data provides constituent percent removals.

DRAINAGE AREA AND LAND USE CATEGORIES IN AREA OF STUDY



Land Use Composition

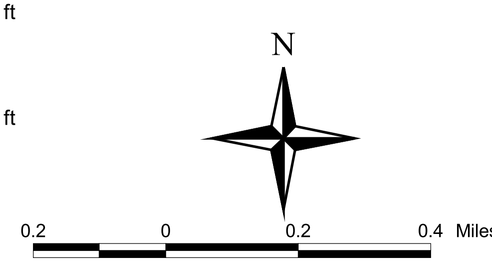
18.2%		High Density Single Family
18.2%		Light Industrial
9.2%		Vacant
38.0%		Retail/Commercial
0.0%		Multi Family Residential
0.0%		Transportation
16.4%		Education
0.0%		Mixed Residential
0.0%		All Other

Freeways

County Boundary

Parameters for Area of Study

Total Area:	524.59 acres
Rainfall Volume:	66.89 acre ft
Imperviousness:	0.58
Runoff Coefficient:	0.57
Runoff Volume:	37.92 acre ft



SUPPLEMENTAL SITE ASSESSMENT
5413 AVALON BOULEVARD
LOS ANGELES, CALIFORNIA

PREPARED FOR:
The Community Redevelopment Agency
of the City of Los Angeles
354 South Spring Street, Suite 700
Los Angeles, California 90013

PREPARED BY:
Ninyo & Moore
Geotechnical and Environmental Sciences Consultants
475 Goddard, Suite 200
Irvine, California 92618

June 23, 2005
Project No. 206060001

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Mr. Dan Weissman
The Community Redevelopment Agency
of the City of Los Angeles
354 South Spring Street, Suite 700
Los Angeles, California 90013

Subject: Supplemental Site Assessment
5413 Avalon Boulevard
Los Angeles California

Dear Mr. Weissman:

This report presents the results of Supplemental Site Assessment at the above-referenced property. The work was conducted in general accordance with our proposal dated December 15, 2004 between the Community Redevelopment Agency of the City of Los Angeles and Niny & Moore. This report presents our methodology, findings, conclusions, and recommendations regarding our soil assessment around clarifiers C2 to C4, at the above-referenced property.

We appreciate the opportunity to be of service to the Community Redevelopment Agency of the City of Los Angeles. If you have any questions regarding this report, please contact the undersigned at your convenience.

Sincerely,
NINYO & MOORE

Julie Wozencraft

Julie E. Wozencraft
Senior Staff Environmental Scientist

Walter Crone

Walter R. Crone, P.G., R.E.A.
Principal Environmental Geologist

JW/WRC/mll

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1. INTRODUCTION

The Community Redevelopment Agency of the City of Los Angeles (CRALA) has authorized Ninyo & Moore to perform a Supplemental Site Assessment (SSA) at 5413 Avalon Boulevard, Los Angeles, California (site; Figure 1). The work was conducted in general accordance with our proposal dated December 15, 2004 between CRALA and Ninyo & Moore. This report has been prepared in accordance with generally accepted environmental science and engineering practices. This report is based upon conditions at the subject site at the time of the sampling activities, and provides documentation of our findings and recommendations.

2. OBJECTIVE

Based on assessment activities conducted by UltraSystems Environmental Inc. (UltraSystems) in July 2004 and analytical results, Ultrasystems recommended that further assessment be conducted in the vicinity of the clarifiers C2 to C4 to evaluate the extent of subsurface soil impact by volatile organic compounds (VOCs). The objective of this SSA is to further assess the presences of VOCs in soil near clarifiers C2 to C4.

3. BACKGROUND

According to a Preliminary Endangerment Assessment (PEA) report prepared by UltraSystems for the Department of Toxic Substances Control (DTSC) and dated September 2004 (UltraSystemes, 2004), the site has historically been used for railcar or vehicle maintenance by the Metropolitan Transit Authority (MTA) since 1908. Based on information provided in the PEA report, eight areas of potential concern (AOPC) were identified and investigated (Appendix A for PEA Figure that depicts the AOPCs).

Soil-gas samples were collected from 12 soil borings (B-60, B-62, B-64, B-65, B-67 to B-69, and B-71 to B-75; Appendix A for PEA Figure). Soil-gas samples were collected at a depth of 5 feet and 15 feet bgs, and each sample was analyzed for targeted halogenated and aromatic VOCs in accordance with Environmental Protection Agency (EPA) Method 8260B. VOCs were detected in 4 of the 12 soil gas sampling locations. The following is a summary of the laboratory results:

- Cis-1,2-dichloroethylene (cis-DCE) was reported from non-detected (ND) to 446 micrograms per liter (µg/l) in one boring (B-72). A concentration of 122 µg/l was detected at 5 feet bgs and a concentration of 446 µg/l was detected at 15 bgs.

- Chloroform was reported from ND to 1 µg/l in boring B-72. A concentration of 1 µg/l was detected at 15 feet bgs.

- Trichloroethylene (TCE) was reported from ND to 126 µg/l in boring B-72. A concentration of 74 µg/l was detected at 5 feet bgs and 126 µg/l at 15 feet bgs.

- 1,1,1-Trichloroethane (TCA) was reported from ND to 1.6 µg/l in three borings (B-67, B-68, and B-71). The detected concentrations were lower at 15 feet bgs than at 5 feet bgs.

- Tetrachloroethene (PCE) was detected from ND to 226 µg/l in four borings (B-60, B-71, B-72, and B-74). PCE was not detected at 5 feet bgs in the soil gas samples collected from B-71 and B-74, but was detected at 0.7 µg/l at 15 feet bgs. The concentrations at 5 feet and 15 feet bgs were 2.3 and 2.2 µg/l, respectively, in B-60. In B-72, PCE was detected at concentrations of 226 and 167 µg/l at depths of 5 feet and 15 feet bgs.

Soil matrix samples were collected at 17 locations (B-60, B-62, B-64 to B-69, B-71 to B-75, and HA-5 to HA-9; Appendix A for PEA Figure) from approximately 0.5 feet bgs and at five-foot intervals to a total depth up to 10 feet bgs. Soil samples were analyzed for total petroleum hydrocarbons (TPH), VOCs, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pH, and Title 22 Metals in accordance with EPA Method 8016B, 8260B, 8310, 8082A, 9045, 6010B and 7471A, respectively. The following is a summary of the laboratory results:

- TPH (C10 to C20) was detected at 12 milligrams per kilogram (mg/kg), TPH (C20 to C30) was detected at 130 mg/kg.

- Acetone was detected in one sample at 260 micrograms per kilogram (µg/kg). No other VOCs were detected.

- Benzo(a)pyrene was detected at 0.017J, and pyrene was detected at 0.11J in the same sample that acetone was detected (J indicates the detected concentrations were between the method detection limit and the laboratory practical quantitation limit).

- PCBs were not detected in the samples analyzed.

- The soil pH ranged from 7.5 to 9.3

- Metal were detected in the samples collected and determined by UltraSystems to be at levels that represent naturally occurring metals.

Soil-gas sample analyses yielded the following results: PCE (2.3 µg/l) was detected at the Former Vehicle Maintenance (AOPC #71), 1,1,1 TCA detected at concentrations up to 1.2 µg/l at the Former Railcar Maintenance (AOPC #72), PCE up to 0.7 µg/L and 1,1,1 TCA up to 1.6 µg/l at the Hazardous Waste Storage Area (AOPC #83), Cis-1,2 DCE up to 446 µg/l, chloroform up to 1 µg/l, TCE up to 126 µg/l, and PCE up to 226 µg/L at Clarifiers C2 to C4 (AOPC #84, #96, and #103), and PCE up to 0.7 µg/l at the Former Paint Booths (AOPC #158).

Soil sample analyses indicated that TPH (C20 to C30) was detected above 100 milligrams per kilogram (mg/kg) in one soil sample (130 mg/kg) collected at a depth of approximately 0.5 foot adjacent to an outdoor drain. According to UltraSystems, TPH in this area was likely asphalt road-base material. Acetone (260 micrograms per kilogram (µg/kg) and low concentrations of benzene(a)pyrene (0.017 mg/kg) and pyrene (9.911 mg/kg) were detected at a depth of approximately 0.5 foot beneath the Former Mill area (AOPC #79), and according to UltraSystems, most likely related to the use of tar products. No other VOCs, PAHs or PCBs were detected in soil samples collected at the site.

Using these analytical results, human and ecological risk assessments were conducted according to DTSC guidelines. Based on the risk assessments, Ultrasystems concluded the following:

- VOCs in soil-gas within the eastern portion of Former Maintenance Bay Area (AOPC #71), Former Railcar Maintenance Building (AOPC #72), Hazardous Waste Storage Area (AOPC #83) and Former Pain Booths (#158) were detected at concentrations well below the acceptable risk range of 1×10^{-6} to 1×10^{-4}, and below the cumulative hazard index threshold of 1. There are no unacceptable levels of risk or hazard posed by VOCs in soil-gas within these AOPCs.

- Low concentrations of VOCs were detected in soil-gas within AOPCs #71, #72, #83 and #158. No organic compounds were detected in soil samples collected from the same borings. Acetone and low concentrations of PAHs were detected at a depth of 0.5 feet within the Former Mill Area (AOPC #79). These findings suggested isolated soil impacts of limited extent may have occurred within these AOPCs near the areas sampled and were likely caused by incidental spills.

- Cis-1,2-DCE, TCE and PCE were detected in soil-gas at concentrations exceeding (or greater than) the acceptable risk range of 1×10^{-6} to 1×10^{-4}, and above the cumulative hazard index threshold of 1 in the vicinity of clarifiers C2 to C4 (AOPC #84, #96 & #103). No organic compounds were detected in soil samples collected in this area to a depth of approximately 10 feet bgs. These findings suggested that subsurface soils at depths greater than 10 feet bgs may have been impacted by VOCs in the vicinity of the clarifiers C2 to C4 by the release of waste solutions during clarifier use.

Based on the analytical results, UltraSystems recommended that further assessment be conducted in the vicinity of the clarifiers C2 to C4 (AOPC #84, #96 & #103) to evaluate the extent of subsurface soil impact by VOCs, and to conduct a limited assessment of shallow soils within the eastern portion of the Former Maintenance Bay, Former Railcar Maintenance Building, Former Mill Area, Hazardous Waste Storage Area, and Former Paint Booths where VOCs and benzo(a)pyrene (PAHs) were detected.

4. GEOLOGY/HYDROLOGY

According to information presented in the 2004 PEA performed by Ultrasystems, the site is at an elevation of approximately 165 feet and the land surface slopes gently to the southwest. The soils beneath the site consist primarily of recent unconsolidated to poorly consolidated gravel, sand, silt and clay alluvial deposits.

Soils at the site were observed by Ninyo & Moore during the May 11, 2005 field activities, to consist of silty clay and sand to the maximum depth investigated (40 feet bgs).

The site is south of the Los Angeles Narrows at the north end of the Downey Plain within the Forebay Area of the Coastal Plain of Los Angeles County. In the vicinity of the site, near surface groundwater occurs within the Exposition Aquifer that overlies deeper aquifers including the Gage Aquifer, within the Lakewood formation, and the Lynwood, Silverado and Sunnyside aquifers of the San Pedro formation.

According to UltraSystems, three groundwater monitoring wells were installed at the site in 1990 by ABB Environmental Services to a maximum depth of 175 feet bgs. The depths to groundwater measured in these wells were approximately 165 feet bgs.

5. FIELD ACTIVITIES

On May 11, 2005, a representative from Ninyo & Moore visited the site for the purpose of completing an additional subsurface site assessment around clarifiers C2 to C4. Ninyo & Moore retained Coreprobe International, Inc. (Coreporbe), of Irwindale to complete four direct-push borings using truck-mounted rig. Fieldwork was conducted in general accordance with the revised cost estimate/workplan, dated December 15, 2005, by Ninyo & Moore.

Coreprobe advanced direct-push soil borings to the specified depths described below and soil samples were collected for chemical analysis. Soil samples were collected from each boring at five-foot depth intervals, unless otherwise stated, to the total depth explored. Soil samples that were to be analyzed for VOCs were collected and prepared for analysis in accordance with EPA Method 5035. The soil was screened in the field using a photo ionization detector (PID) and was visually inspected for obvious staining. The soil samples were collected in an acetate liner, placed in a cooler chilled to approximately 4 degrees Celsius, delivered to a California-certified environmental laboratory, and analyzed on a standard 10 working-day turn-around time.

Four soil borings were advanced to 40 feet bgs in the vicinity of the clarifiers C2 to C4. The soil borings were designated C1 through C4 (Figure 2). Soil samples were collected at 5 foot intervals and designated C1-5, C1-10, and etc. reflecting the boring designation and sample depth. Soil samples collected from the borings were field screened for the presence of VOCs using a calibrated (with hexane) organic vapor meter equipped with PID. PID readings from the soil samples collected did not exceed 1 part per million by volume (ppmv). Soil samples were labeled, recorded on a chain-of-custody (COC) document, placed in cold storage, and delivered to a State-certified hazardous materials testing laboratory for analysis. Soil samples collected were analyzed for VOCs and oxygenates in general accordance with EPA Method 8260B. Field procedures for these activities are presented in Appendix B. Boring logs are presented in Appendix C.

6. LABORATORY RESULTS

On May 11, 2005, Ninyo & Moore collected 32 soil samples from the site from four borings completed to depths ranging from 5 to 40 feet bgs. Analytical results for the soil samples collected during this assessment indicated the following:

- The analytical results from soil samples collected in the vicinity of the clarifiers C2 to C4 indicated VOCs were detected. Cis-DCE was detected in samples C1-10 to C1-35, C2-10 to C2-20, and C4-20 and ranged in concentrations from 5 µg/kg to 170 µg/kg. Concentrations of PCE were reported in samples C1-5 to C1-40, C2-5 to C2-20, C2-30, C2-35, C3-10, C3-30, C4-5 to C4-20, and C4-30 and ranged in concentrations from 4.7µg/kg to 55µg/kg. Trans-1,2-dichloroethene (trans-DCE) was reported in samples C1-15, C1-20, and C2-15 at concentrations of 5.1 µg/kg, 7.1 µg/kg, and 4 µg/kg, respectively. Trichloroethene (TCE) was detected in samples C1-10 to c1-25, C1-30, C2-10, and C2-15 and ranged in concentrations from 5.2 µg/kg to 32 µg/kg.

Results of the chemical analyses for soil sampling are summarized in Table 1 and sample locations are presented in Figures 2. Copies of the laboratory reports are included in Appendix D.

7. DISCUSSION

During this assessment cis-DCE, trans-DCE, PCE, and TCE were detected. The concentrations detected did not exceed the respective Region 9 EPA Preliminary Remediation Goals (PRGs) for the residential land-use scenario for each chemical. PRGs can be used as screening levels for chemicals in soil and are considered to be health protective of human exposures (including sensitive groups), over a lifetime.

Site specific Soil Screening Levels (SSLs) were also calculated for the site based on the subsurface geology observed during field activities (a mixture of silty sand and sand), the average depth to groundwater (reported in the September 2004 PEA at 165 feet bgs), the published maximum contaminant levels (MCLs) for each compound, and using the Los Angeles Regional Water Quality Control Boards (LARWQCB) May 1996 Interim Site Assessment and Cleanup Guidebook. To be conservative, the SSLs are calculated assuming the groundwater detected at approximately 150 feet bgs is a drinking water aquifer. The resulting SSLs for each of the analytes detected during this assessment are as follows:

COCs	MCL µg/l	SSL 1 feet bgs	SSL 5 feet bgs	SSL 10 feet bgs	SSL 15 feet bgs	SSL 20 feet bgs	SSL 25 feet bgs	SSL 30 feet bgs	SSL 35 feet bgs	SSL 40 feet bgs
Attenuation Factor		**38.5**	**36.9**	**35.3**	**33.7**	**32.1**	**30.5**	**29**	**27.3**	**25.7**
PCE	5	192.5	184.5	176.5	168.5	160.5	152.5	145	136.5	128.5
TCE	5	192.5	184.5	176.5	168.5	160.5	152.5	145	136.5	128.5
cis-DCE	6	231	221.4	211.8	202.2	196.6	183	174	163.8	154.2
Trans-DCE	10	385	369	353	337	321	305	290	273	257

Note:
SSL results are presented in µg/kg
SSL – soil screening level
COCs – chemical of concerns
MCL – maximum contaminants levels
SSL – soil screening levels
bgs – below ground surface
PCE – Tetrachloroethene
TCE – Trichloroethene
cis-DCE – cis-1,2-dichloroethene
Trans-DCE – Trans-1,2-dichloroethene
µg/kg – microgram per kilogram

Analytical results for cis-DCE, trans-DCE, PCE, and TCE are compared to the SSL in the tables below:

Comparison of PCE Analytical Results to SSL

Boring	SSL 5 feet bgs	SSL 10 feet bgs	SSL 15 feet bgs	SSL 20 feet bgs	SSL 25 feet bgs	SSL 30 feet bgs	SSL 35 feet bgs	SSL 40 feet bgs
	184.5	**176.5**	**168.5**	**160.5**	**152.5**	**145**	**136.5**	**128.5**
C1	21	38	55	48	7	13	5.9	5.1
C2	20	44	45	5	<5.2	5.5	4.9	<5
C3	<5.9	14	10	<4.4	<5.4	<3.9	<5.4	<5.4
C4	6.6	9	6.6	7.5	<5.2	4.7	<4.5	<5.5

SSL and analytical results are presented in µg/kg
SSL – soil screening level
bgs – below ground surface
µg/kg – microgram per kilogram
PCE – Tetrachloroethene

Comparison of TCE Analytical Results to SSL

Boring	SSL 5 feet bgs	SSL 10 feet bgs	SSL 15 feet bgs	SSL 20 feet bgs	SSL 25 feet bgs	SSL 30 feet bgs	SSL 35 feet bgs	SSL 40 feet bgs
	184.5	**176.5**	**168.5**	**160.5**	**152.5**	**145**	**136.5**	**128.5**
C1	<5.1	13	27	32	<4.4	5.2	<4.3	<4.6
C2	<5.1	16	27	<4.6	<5.2	<4.7	<4.1	<5
C3	<5.9	<4.6	<4.3	<4.4	<5.4	<3.9	<5.4	<5.4
C4	<5.4	<4.8	<4.6	<4.2	<5.2	<4.6	<4.5	<5.5

SSL and analytical results are presented in µg/kg
SSL – soil screening level
bgs – below ground surface
µg/kg – microgram per kilogram
TCE – Trichloroethene

Comparison of cis-DCE Analytical Results to SSL

Boring	SSL 5 feet bgs	SSL 10 feet bgs	SSL 15 feet bgs	SSL 20 feet bgs	SSL 25 feet bgs	SSL 30 feet bgs	SSL 35 feet bgs	SSL 40 feet bgs
	6	**231**	**221.4**	**211.8**	**202.2**	**196.6**	**183**	**174**
C1	<5.1	42	130	170	31	24	6.4	<4.6
C2	<5.1	32	73	5	<5.2	<4.7	<4.1	<5
C3	<5.9	<4.3	<4.3	<4.4	<5.4	<3.9	<5.4	<5.4
C4	<5.4	<4.8	<4.6	<4.2	<5.2	<4.6	<4.5	<5.5

SSL and analytical results are presented in µg/kg
SSL – soil screening level
bgs – below ground surface
µg/kg – microgram per kilogram
cis-DCE – cis-1,2-dichloroethene

Comparison of Trans-DCE Analytical Results to SSL

Boring	SSL 5 feet bgs	SSL 10 feet bgs	SSL 15 feet bgs	SSL 20 feet bgs	SSL 25 feet bgs	SSL 30 feet bgs	SSL 35 feet bgs	SSL 40 feet bgs
	10	**385**	**369**	**353**	**337**	**321**	**305**	**290**
C1	<5.1	<4.6	5.1	7.1	<4.4	<4	<4.3	<4.6
C2	<5.1	<4.1	4	<4.6	<5.2	<4.7	<4.1	<5
C3	<5.9	<4.3	<4.3	<4.4	<5.4	<3.9	<5.4	<5.4
C4	<5.4	<4.8	<4.6	<4.2	<5.2	<4.6	<4.5	<5.5

SSL and analytical results are presented in µg/kg
SSL – soil screening level
bgs – below ground surface
µg/kg – microgram per kilogram
Trans-DCE – Trans-1,2-Dichloroethene

8. CONCLUSIONS

Based on the results of the May 2004 SSA, Ninyo & Moore concludes the following:

- Concentrations of cis-DCE were detected in soil samples collected. The concentrations detected (5 μg/kg to 170 μg/kg) are below the established residential PRG and calculated SSL.
- Concentrations of trans-DCE were detected in soil samples collected. The concentrations detected (4 μg/kg to 7.1 μg/kg) are below the established PRG and calculated SSL.
- Concentrations of TCE were detected in soil samples collected. The concentrations detected (5.2 μg/kg to 27 μg/kg) are below the established PRG and calculated SSL.
- Concentrations of PCE were detected in soil samples collected. The concentrations detected (4.7 μg/kg to 55 μg/kg) are below the established PRG and calculated SSL.

9. RECOMMENDATIONS

Based on the limited soil sampling completed by Ninyo & Moore in the vicinity of the clarifiers C2 to C4, and the analytical results which indicated that cis-DCE, trans-DCE, TCE, and PCE did not exceed the established PRG and calculated SSLs, Ninyo & Moore recommends that the clarifier be abandoned by removal in accordance with current regulatory guidelines and soil samples be taken at the bottom of the clarifiers to assess the vertical extent of the impacted soils. If VOCs impacted soils are discovered at depth, additional mitigation and/or groundwater monitoring may be warranted.

10. LIMITATIONS

The environmental services described in this report have been conducted in general accordance with current regulatory guidelines and the standard-of-care exercised by environmental consultants performing similar work in the project area. No warranty, expressed or implied, is made regarding the professional opinions presented in this report. Please note that this study did not include an evaluation of geotechnical conditions or potential geologic hazards.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires any additional information or has questions regarding the content, interpretations presented, or completeness of this document.

Our conclusions, recommendations and opinions are based on an analysis of the observed site conditions and the referenced literature. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

11. REFERENCES

Los Angeles Regional Water Quality Control Board, 1996, Interim Site Assessment and Cleanup Guidebook, May.

UltraSystems Environmental Inc., 2004, Preliminary Endangerment Assessment Targeted Site Investigation, Avalon Park Wetland Project, 5413 Avalon Boulevard, Los Angeles, California, September.

TABLE 1 - VOLATILE ORGANIC COMPOUNDS (VOCs) IN SOIL - Part 1

Sample	Collection Date	Analyte												
		1,1,1,2-Tetrachloroethane (µg/kg)	1,1,1-Trichloroethane (µg/kg)	1,1,2,2-Tetrachloroethane (µg/kg)	1,1,2-Trichloroethane (µg/kg)	1,1-Dichloroethane (µg/kg)	1,1-Dichloroethene (µg/kg)	1,1-Dichloropropene (µg/kg)	1,2,3-Trichlorobenzene (µg/kg)	1,2,3-Trichloropropane (µg/kg)	1,2,4-Trichlorobenzene (µg/kg)	1,2,4-Trimethylbenzene (µg/kg)	1,2-Dibromo-3-chloropropane (µg/kg)	1,2-Dibromoethane (µg/kg)
C1-5	5/11/2005	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<10	<5.1
C1-10	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<9.2	<4.6
C1-15	5/11/2005	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<8.3	<4.2
C1-20	5/11/2005	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<7.3	<3.7
C1-25	5/11/2005	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<8.7	<4.4
C1-30	5/11/2005	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<7.9	<4
C1-35	5/11/2005	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<8.6	<4.3
C1-40	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<9.1	<4.6
C2-5	5/11/2005	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<10	<5.1
C2-10	5/11/2005	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<8.2	<4.1
C2-15	5/11/2005	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<7.8	<3.9
C2-20	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<9.2	<4.6
C2-25	5/11/2005	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<10	<5.2
C2-30	5/11/2005	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<9.5	<4.7
C2-35	5/11/2005	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<8.3	<4.1
C2-40	5/11/2005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<10	<5
C3-5	5/11/2005	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<12	<5.9
C3-10	5/11/2005	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<8.6	<4.3
C3-15	5/11/2005	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<8.7	<4.3
C3-20	5/11/2005	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<8.8	<4.4
C3-25	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<11	<5.4
C3-30	5/11/2005	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<7.7	<3.9
C3-35	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<11	<5.4
C3-40	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<11	<5.4
C4-5	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<11	<5.4
C4-10	5/11/2005	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<9.6	<4.8
C4-15	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<9.3	<4.6
C4-20	5/11/2005	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<8.4	<4.2
C4-25	5/11/2005	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<10	<5.2
C4-30	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<9.2	<4.6
C4-35	5/11/2005	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<9.0	<4.5
C4-40	5/11/2005	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<11	<5.5

Notes:

EPA – United States Environmental Protection Agency.

VOCs – Volatile Organic Compounds analyzed in general accordance with EPA Method 8260B.

µg/kg – micrograms per kilogram.

TABLE 1 - VOLATILE ORGANIC COMPOUNDS (VOCs) IN SOIL - Part 2

Sample	Collection Date	Analyte												
		1,2-Dichlorobenzene (µg/kg)	1,2-Dichloroethane (µg/kg)	1,2-Dichloropropane (µg/kg)	1,3,5-Trimethylbenzene (µg/kg)	1,3-Dichlorobenzene (µg/kg)	1,3-Dichloropropane (µg/kg)	1,4-Dichlorobenzene (µg/kg)	2,2-Dichloropropane (µg/kg)	2-Chlorotoluene (µg/kg)	4-Chlorotoluene (µg/kg)	4-Isopropyltoluene (µg/kg)	Benzene (µg/kg)	Bromobenzene (µg/kg)
C1-5	5/11/2005	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1
C1-10	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C1-15	5/11/2005	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
C1-20	5/11/2005	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7
C1-25	5/11/2005	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
C1-30	5/11/2005	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
C1-35	5/11/2005	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3
C1-40	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C2-5	5/11/2005	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1
C2-10	5/11/2005	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1
C2-15	5/11/2005	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9
C2-20	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C2-25	5/11/2005	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2
C2-30	5/11/2005	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7
C2-35	5/11/2005	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1
C2-40	5/11/2005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
C3-5	5/11/2005	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9
C3-10	5/11/2005	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3
C3-15	5/11/2005	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3
C3-20	5/11/2005	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
C3-25	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C3-30	5/11/2005	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9
C3-35	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C3-40	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C4-5	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C4-10	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C4-15	5/11/2005	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5
C4-20	5/11/2005	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
C4-25	5/11/2005	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2
C4-30	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C4-35	5/11/2005	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5
C4-40	5/11/2005	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5

Notes:

EPA – United States Environmental Protection Agency.

VOCs – Volatile Organic Compounds analyzed in general accordance with EPA Method 8260B.

µg/kg – micrograms per kilogram.

TABLE 1 - VOLATILE ORGANIC COMPOUNDS (VOCs) IN SOIL Part 3

Sample	Collection Date	Analyte												
		Bromodichloromethane (µg/kg)	Bromoform (µg/kg)	Bromomethane	Carbon tetrachloride (µg/kg)	Chlorobenzene (µg/kg)	Chloroethane (µg/kg)	Chloroform (µg/kg)	Chloromethane (µg/kg)	cis-1,2-Dichloroethene (µg/kg)	cis-1,3-Dichloropropene (µg/kg)	Dibromochloromethane (µg/kg)	Dibromomethane (µg/kg)	Dichlorodifluoromethane (µg/kg)
C1-5	5/11/2005	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1
C1-10	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	**42**	<4.6	<4.6	<4.6	<4.6
C1-15	5/11/2005	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	**130**	<4.2	<4.2	<4.2	<4.2
C1-20	5/11/2005	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	**170**	<3.7	<3.7	<3.7	<3.7
C1-25	5/11/2005	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	**31**	<4.4	<4.4	<4.4	<4.4
C1-30	5/11/2005	<4	<4	<4	<4	<4	<4	<4	<4	**24**	<4	<4	<4	<4
C1-35	5/11/2005	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	**6.4**	<4.3	<4.3	<4.3	<4.3
C1-40	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C2-5	5/11/2005	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1
C2-10	5/11/2005	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	**32**	<4.1	<4.1	<4.1	<4.1
C2-15	5/11/2005	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	**73**	<3.9	<3.9	<3.9	<3.9
C2-20	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	**5**	<4.6	<4.6	<4.6	<4.6
C2-25	5/11/2005	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2
C2-30	5/11/2005	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7
C2-35	5/11/2005	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1
C2-40	5/11/2005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
C3-5	5/11/2005	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9
C3-10	5/11/2005	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3
C3-15	5/11/2005	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3
C3-20	5/11/2005	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
C3-25	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C3-30	5/11/2005	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9
C3-35	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C3-40	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C4-5	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C4-10	5/11/2005	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8
C4-15	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C4-20	5/11/2005	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	**8.9**	<4.2	<4.2	<4.2	<4.2
C4-25	5/11/2005	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2
C4-30	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C4-35	5/11/2005	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5
C4-40	5/11/2005	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5

Notes:
EPA – United States Environmental Protection Agency.
VOCs – Volatile Organic Compounds analyzed in general accordance with EPA Method 8260B.
µg/kg – micrograms per kilogram.

TABLE 1 - VOLATILE ORGANIC COMPOUNDS (VOCs) IN SOIL - Part 4

Sample	Collection Date	Analyte												
		Di-isopropyl ether (µg/kg)	Ethyl tert-butyl ether (µg/kg)	Ethylbenzene (µg/kg)	Hexachlorobutadiene (µg/kg)	Isopropylbenzene (µg/kg)	m,p-Xylene (µg/kg)	Methylene chloride (µg/kg)	MTBE (µg/kg)	Naphthalene (µg/kg)	n-Butylbenzene (µg/kg)	n-Propylbenzene (µg/kg)	o-Xylene (µg/kg)	sec-Butylbenzene (µg/kg)
C1-5	5/11/2005	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1
C1-10	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C1-15	5/11/2005	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
C1-20	5/11/2005	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7	<3.7
C1-25	5/11/2005	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
C1-30	5/11/2005	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
C1-35	5/11/2005	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3
C1-40	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C2-5	5/11/2005	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1
C2-10	5/11/2005	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1
C2-15	5/11/2005	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9
C2-20	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C2-25	5/11/2005	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2
C2-30	5/11/2005	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7
C2-35	5/11/2005	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1
C2-40	5/11/2005	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
C3-5	5/11/2005	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9
C3-10	5/11/2005	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3
C3-15	5/11/2005	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3	<4.3
C3-20	5/11/2005	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
C3-25	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C3-30	5/11/2005	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9	<3.9
C3-35	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C3-40	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C4-5	5/11/2005	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C4-10	5/11/2005	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8
C4-15	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C4-20	5/11/2005	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2	<4.2
C4-25	5/11/2005	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2
C4-30	5/11/2005	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6	<4.6
C4-35	5/11/2005	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5
C4-40	5/11/2005	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5

Notes:

EPA – United States Environmental Protection Agency.

VOCs – Volatile Organic Compounds analyzed in general accordance with EPA Method 8260B.

µg/kg – micrograms per kilogram.

TABLE 1 - VOLATILE ORGANIC COMPOUNDS (VOCs) IN SOIL - Part 5

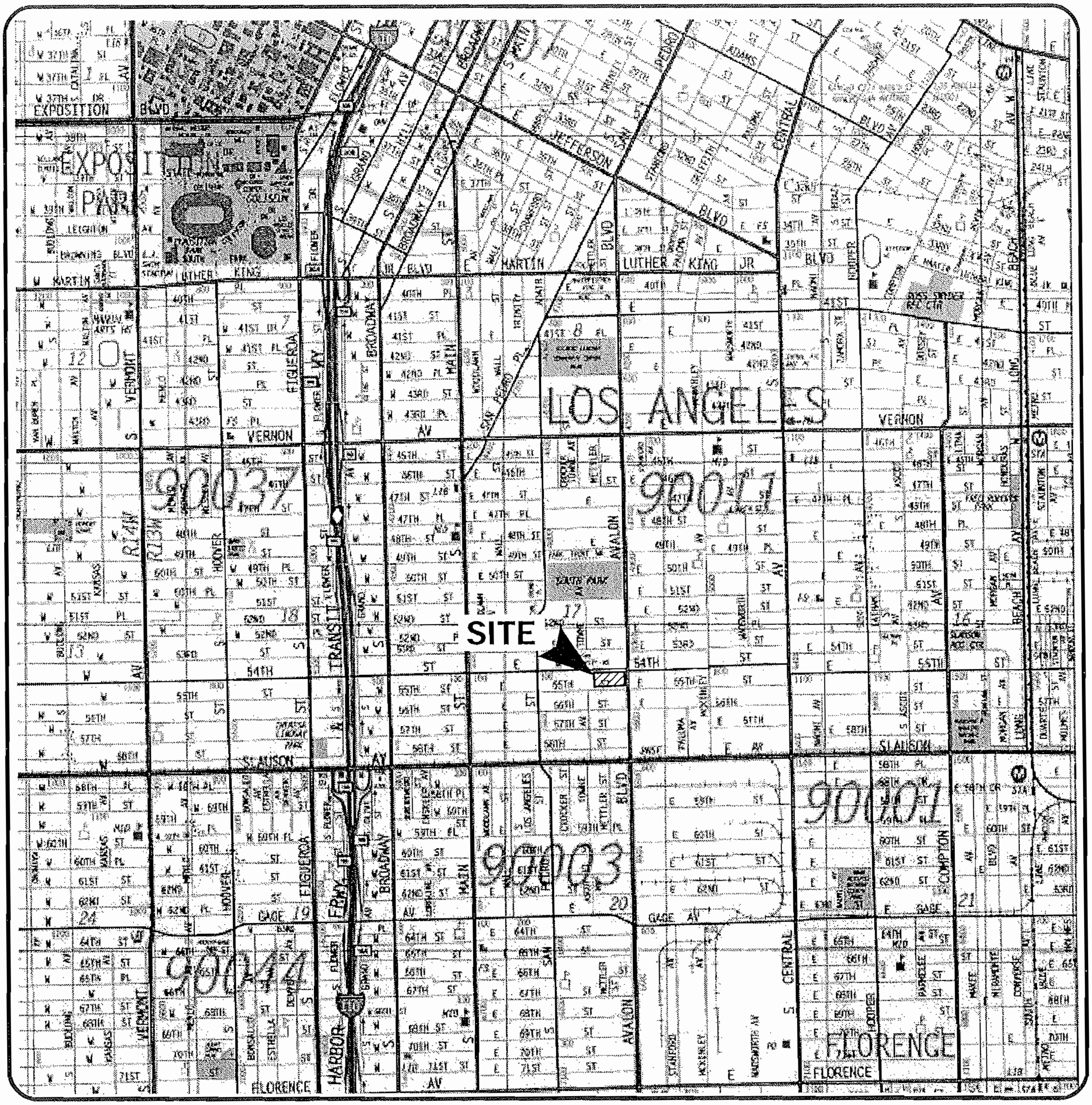
Sample	Collection Date	Analyte									
		Styrene (µg/kg)	Tert-amyl methyl ether (µg/kg)	Tert-Butanol (µg/kg)	tert-Butylbenzene (µg/kg)	Tetrachloroethene (µg/kg)	Toluene (µg/kg)	trans-1,2-Dichloroethene (µg/kg)	Trichloroethene (µg/kg)	Trichlorofluoromethane (µg/kg)	Vinyl chloride (µg/kg)
C1-5	5/11/2005	<5.1	<5.1	<100	<5.1	**21**	<5.1	<5.1	<5.1	<5.1	<5.1
Cl-10	5/11/2005	<4.6	<4.6	<92	<4.6	**38**	<4.6	<4.6	**13**	<4.6	<4.6
C1-15	5/11/2005	<4.2	<4.2	<83	<4.2	**55**	<4.2	**5.1**	**27**	<4.2	<4.2
C1-20	5/11/2005	<3.7	<3.7	<73	<3.7	**48**	<3.7	**7.1**	**32**	<3.7	<3.7
C1-25	5/11/2005	<4.4	<4.4	<87	<4.4	**7**	<4.4	<4.4	<4.4	<4.4	<4.4
C1-30	5/11/2005	<4	<4	<79	<4	**13**	<4	<4	**5.2**	<4	<4
C1-35	5/11/2005	<4.3	<4.3	<86	<4.3	**5.9**	<4.3	<4.3	<4.3	<4.3	<4.3
C1-40	5/11/2005	<4.6	<4.6	<91	<4.6	**5.1**	<4.6	<4.6	<4.6	<4.6	<4.6
C2-5	5/11/2005	<5.1	<5.1	<100	<5.1	**20**	<5.1	<5.1	<5.1	<5.1	<5.1
C2-10	5/11/2005	<4.1	<4.1	<82	<4.1	**44**	<4.1	<4.1	**16**	<4.1	<4.1
C2-15	5/11/2005	<3.9	<3.9	<78	<3.9	**45**	<3.9	**4**	**27**	<3.9	<3.9
C2-20	5/11/2005	<4.6	<4.6	<92	<4.6	**5**	<4.6	<4.6	<4.6	<4.6	<4.6
C2-25	5/11/2005	<5.2	<5.2	<100	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2
C2-30	5/11/2005	<4.7	<4.7	<95	<4.7	**5.5**	<4.7	<4.7	<4.7	<4.7	<4.7
C2-35	5/11/2005	<4.1	<4.1	<83	<4.1	**4.9**	<4.1	<4.1	<4.1	<4.1	<4.1
C2-40	5/11/2005	<5	<5	<100	<5	<5	<5	<5	<5	<5	<5
C3-5	5/11/2005	<5.9	<5.9	<120	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9
C3-10	5/11/2005	<4.3	<4.3	<86	<4.3	**14**	<4.3	<4.3	<4.3	<4.3	<4.3
C3-15	5/11/2005	<4.3	<4.3	<87	<4.3	**10**	<4.3	<4.3	<4.3	<4.3	<4.3
C3-20	5/11/2005	<4.4	<4.4	<88	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4	<4.4
C3-25	5/11/2005	<5.4	<5.4	<110	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C3-30	5/11/2005	<3.9	<3.9	<77	<3.9	**5.9**	<3.9	<3.9	<3.9	<3.9	<3.9
C3-35	5/11/2005	<5.4	<5.4	<110	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C3-40	5/11/2005	<5.4	<5.4	<110	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4	<5.4
C4-5	5/11/2005	<5.4	<5.4	<110	<5.4	**6.6**	<5.4	<5.4	<5.4	<5.4	<5.4
C4-10	5/11/2005	<4.8	<4.8	<96	<4.8	**9**	<4.8	<4.8	<4.8	<4.8	<4.8
C4-15	5/11/2005	<4.6	<4.6	<93	<4.6	**6.6**	<4.6	<4.6	<4.6	<4.6	<4.6
C4-20	5/11/2005	<4.2	<4.2	<84	<4.2	**7.5**	<4.2	<4.2	<4.2	<4.2	<4.2
C4-25	5/11/2005	<5.2	<5.2	<100	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2
C4-30	5/11/2005	<4.6	<4.6	<92	<4.6	**4.7**	<4.6	<4.6	<4.6	<4.6	<4.6
C4-35	5/11/2005	<4.5	<4.5	<90	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5	<4.5
C4-40	5/11/2005	<5.5	<5.5	<110	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5	<5.5

Notes:

EPA – United States Environmental Protection Agency.

VOCs – Volatile Organic Compounds analyzed in general accordance with EPA Method 8260B.

µg/kg – micrograms per kilogram.



REFERENCE: 2004 THOMAS GUIDE FOR LOS ANGELES/ORANGE COUNTIES, STREET GUIDE AND DIRECTORY

NORTH

0 2400 4800

APPROXIMATE SCALE IN FEET

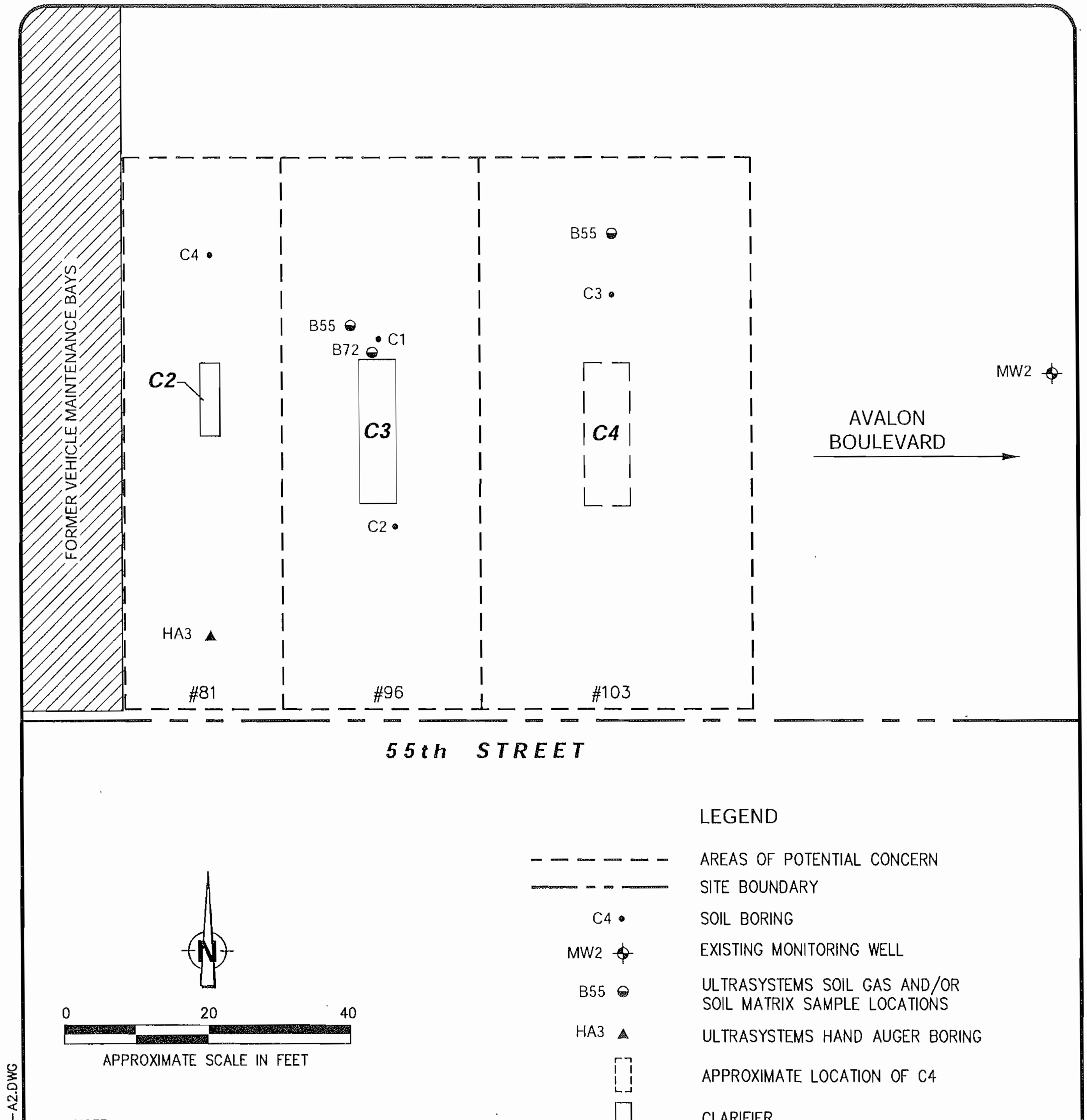
206060-A1.DWG

Ninyo & Moore

SITE LOCATION MAP

5413 AVALON BOULEVARD
LOS ANGELES, CALIFORNIA

PROJECT NO.	DATE	FIGURE
206060001	6/2005	1



NOTE:
FIGURE ADAPTED FROM THE ULTRASYSTEMS ENVIRONMENTAL INC. TARGETED SITE INVESTIGATION PRELIMINARY ENDANGERMENT ASSESSMENT 5413 AVALON BOULEVARD, FIGURE2.

NOTE: ALL DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Ninyo & Moore

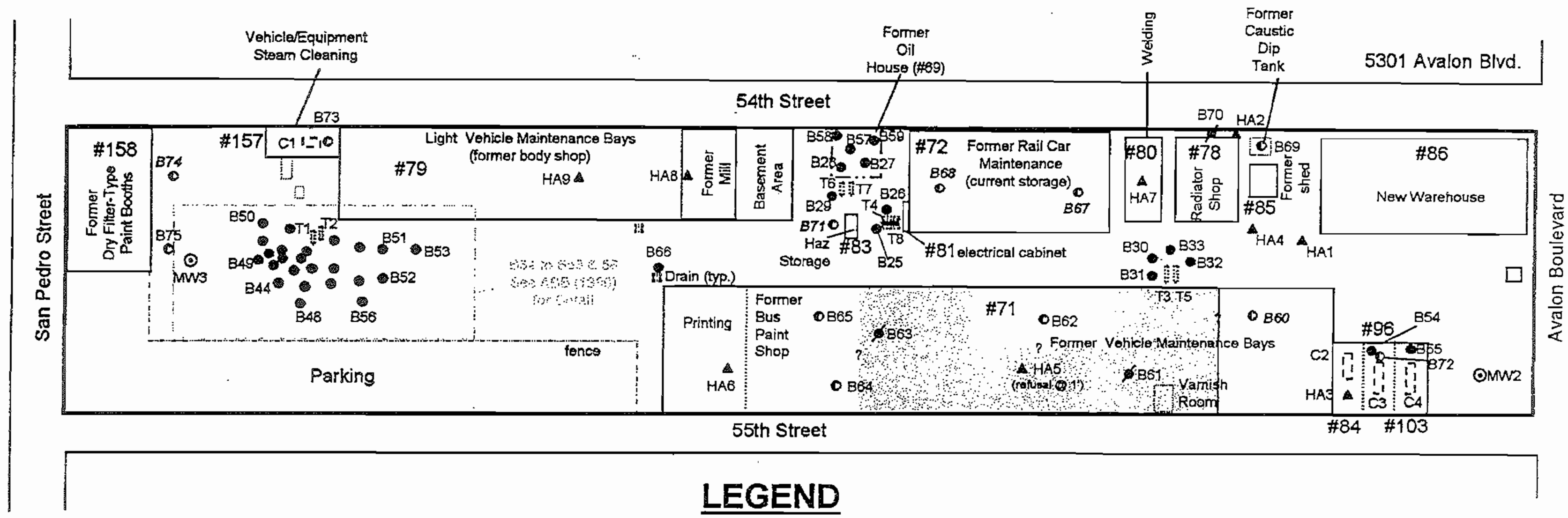
BORING LOCATION MAP

5413 AVALON BOULEVARD
LOS ANGELES, CALIFORNIA

PROJECT NO.	DATE	FIGURE
206060001	6/2005	2

APPENDIX A

PREVIOUS ASSESSMENT FIGURE



LEGEND

SYMBOLS

- Previous hollow-stem or direct-push boring (black)
- Existing monitoring Well
- Previous hand-auger boring (black)
- T1 Former USTs
- Existing UST
- C1 Clarifier
- #79 Building Number
- Direct-push boring for collection of soil matrix samples (blue) [slash indicates refusal]
- Direct-push boring for collection of soil matrix & soil gas samples (blue) [boring # in *italic-red* where VOCs detected in soil gas]
- Hand-auger boring for collection of soil matrix samples (blue)
- AOPC recommended for additional soil sampling
- Estimated extent of buried concrete slab approximately one foot below surface

AREAS OF POTENTIAL CONCERN

Building #	Description
#71	Former maintenance & painting and current printing
#72	Former railway car maintenance
#78 & 80	Former welding & radiator cleaning
#79	Former milling & current vehicle maintenance
#83	Current haz. waste storage
#84, 96 & 103	Former haz. waste storage & Clarifiers (C2 – C4)
#157	Current equipment steam cleaning & clarifier (C1)
#158	Former paint booths

0 80 160
SCALE (ft)
(scale & all locations are approximate)

N

After:
ABB, 1990, Report of Phase II Site Investigation for New Jefferson Senior High School: ABB Environmental Services, Inc., Camarillo, CA

UltraSystems Environmental Inc.

Prepared by: Dan Herlihy
RG #4388, CEG #1378, CHG #107,
REA #224, CEM #1808

SITE PLAN

Targeted Site Investigation
5413 Avalon Boulevard
Los Angeles, California

FIGURE 2

APPENDIX B

FIELD PROCEDURES

Direct Push Sampling

1. A direct-push sampling system (direct-push), or equivalent, was used to collect soil from soils borings collected at the site. The direct-push consisted of a pick-up truck or limited access rig-mounted hydraulic ram/pneumatic hammer system which pushed four-foot long 1¼-inch-diameter rods.

2. Soil samples were collected by attaching a 2-foot long 1.6-inch-diameter stainless steel core sampler (Probe-Drive Sampler) to the bottom of the rods. The Probe-Drive Sampler consisted of the sampler, sample tube, a piston tip attached to a piston rod, a drive head and a piston stop pin.

3. The sample tube was placed in the sampler. The piston tip and attached piston rod were placed into the sampler from the bottom. The drive head was then screwed onto the top of the sampler. The piston stop-pin was screwed into the top of the drive head. The sampler was then attached to the 1-inch drive rods.

4. Undisturbed soil samples were collected by driving the sampler and rods to the target depth. The piston stop pin prevented the piston tip and rod from rising into the sampler.

5. Subsequently, the Probe-Drive Sampler remained completely sealed while it was pushed or driven to the desired sampling depth. Once the target depth was reached, the piston stop-pin was removed by means of extension rods inserted down the inside diameter of the probe rods. The sampler was pushed approximately 24 inches. As the sampler was pushed down, the piston tip and rod rose in the sampler on top of the intruding soil.

6. The rods and sampler were then retrieved. The sampler was disassembled, the sample tubes removed for identification and analysis, and the apparatus decontaminated prior to reuse.

7. Upon retrieval, the sample sleeves containing the soil samples were removed from the sampler, capped with Teflon sheets, and sealed with rubber end caps.

8. The remaining portion of the sample was used to describe the soil lithology in general accordance with the Unified Soil Classification System and to measure VOCs using a photoionization detector (PID). The PID was calibrated to isobutylene on the day of field activities. The soil lithology, sample type and depth, and related drilling information was recorded on a boring log under the supervision of a State-registered geologist from Ninyo & Moore.

9. The soil samples were collected in accordance with EPA Method 5035. Following retrieval of the sample sleeves, a plastic syringe was used to collect two samples of approximately 5 grams of soil. The soil was ejected into a pre-weighed, laboratory supplied, 40-milliliter vial containing sodium bisulfate. One additional soil sample, weighing approximately 5 grams, was collected using the syringe and ejected into a vial containing methanol. A new syringe was used for each sampling interval.

10. The samples were then labelled and recorded on a chain-of-custody.

Sample Handling

1. The samples retained for chemical analyses were placed in Ziploc bags and stored in an ice chest cooled, to a temperature of approximately 40 degrees Fahrenheit.

2. The samples were delivered to a State-certified environmental laboratory within 72 hours of collection. Sample handling, transport, and delivery to the laboratory were documented using chain-of-custody procedures, including the use of chain-of-custody forms.

APPENDIX C

BORING LOGS

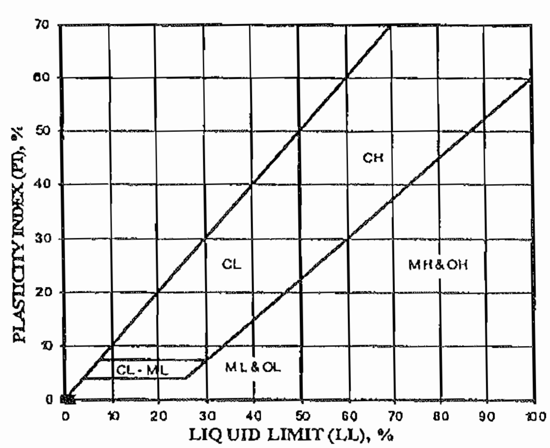
U.S.C.S. METHOD OF SOIL CLASSIFICATION

MAJOR DIVISIONS		SYMBOL	TYPICAL NAMES
COARSE-GRAINED SOILS (More than 1/2 of soil >No. 200 sieve size)	GRAVELS (More than 1/2 of coarse fraction > No. 4 sieve size)	GW	Well graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS (More than 1/2 of coarse fraction <No. 4 sieve size)	SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (More than 1/2 of soil <No. 200 sieve size)	SILTS & CLAYS Liquid Limit <50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean
		OL	Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS Liquid Limit >50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils

GRAIN SIZE CHART

CLASSIFICATION	RANGE OF GRAIN SIZE	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL Coarse Fine	3" to No. 4 3" to 3/4" 3/4" to No. 4	76.2 to 4.76 76.2 to 19.1 19.1 to 4.76
SAND Coarse Medium Fine	No. 4 to No. 200 No. 4 to No. 10 No. 10 to No. 40 No. 40 to No. 200	4.76 to 0.075 4.76 to 2.00 2.00 to 0.420 0.420 to 0.075
SILT & CLAY	Below No. 200	Below 0.075

PLASTICITY CHART



Ninyo & Moore | U.S.C.S. METHOD OF SOIL CLASSIFICATION

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	BORING LOG EXPLANATION SHEET
0								Bulk sample.
								Modified split-barrel drive sampler.
								No recovery with modified split-barrel drive sampler.
								Sample retained by others.
								Standard Penetration Test (SPT).
5								No recovery with a SPT.
			XX/XX					Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
								No recovery with Shelby tube sampler.
								Continuous Push Sample.
				♀				Seepage.
10								Groundwater encountered during drilling.
								Groundwater measured after drilling.
							SM	ALLUVIUM: Solid line denotes unit change.
								Dashed line denotes material change.
15								Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Sheared Bedding Surface
20								The total depth line is a solid line that is drawn at the bottom of the boring.

Ninyo & Moore

BORING LOG		
EXPLANATION OF BORING LOG SYMBOLS		
PROJECT NO.	DATE Rev. 01/03	FIGURE A-0

DATE DRILLED	5/11/05	BORING NO.	C1	
GROUND ELEVATION	165' ± (MSL)	SHEET	1	OF 1
METHOD OF DRILLING	Direct-Push			
DRIVE WEIGHT	NA	DROP	NA	
SAMPLED BY	JW	LOGGED BY	JW	REVIEWED BY WRC

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	SAMPLE ID	ORGANIC VAPORS (ppm)	MOISTURE	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								SM	ASPHALT: Approximately 6 inches thick. ALLUVIUM: Dark yellowish brown (10 YR 4/2), moist, silty SAND.
				C1-5	<1				
				C1-10	<1				
15				C1-15	<1				
				C1-20	<1			SC	Moderate yellowish brown (10 YR 5/4), moist, clayey SAND.
				C1-25	<1			SP	Pale yellowish brown (10 YR 6/2), moist, fine to medium SAND.
30				C1-30	<1			SM	Dark yellowish brown (10 YR 4/2), moist, silty SAND. Moderate yellowish brown (10 YR 5/4).
				C1-35	<1				
								SP	Pale yellowish brown (10 YR 6/2), moist, fine to medium SAND.
				C1-40	<1			SM	Moderate yellowish brown (10 YR 5/4), wet, silty SAND. Total Depth = 40 feet. No groundwater encountered during drilling. No odors noted in samples. Backfilled with hydrated bentonite on 5/11/05.
45									
60									

Ninyo & Moore

BORING LOG

5413 Avalon Boulevard
Los Angeles

PROJECT NO.	DATE	FIGURE
206060001	6/2005	C-1

DATE DRILLED	5/11/05
BORING NO.	C2
GROUND ELEVATION	165' ± (MSL)
SHEET	1 OF 1
METHOD OF DRILLING	Direct-Push
DRIVE WEIGHT	NA
DROP	NA
SAMPLED BY	JW
LOGGED BY	JW
REVIEWED BY	WRC

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	SAMPLE ID	ORGANIC VAPORS (ppm)	MOISTURE	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								SP	ASPHALT: Approximately 6 inches thick. ALLUVIUM: Pale yellowish brown (10 YR 6/2), moist, SAND.
				C2-5	<1				
				C2-10	<1			SC	Dark yellowish brown (10 YR 4/2), moist, clayey SAND.
15				C2-15	<1				
				C2-20	<1				
				C2-25	<1			SP	Pale yellowish brown (10 YR 6/2), moist, fine to medium SAND.
30				C2-30	<1			SM	Dark yellowish brown (10 YR 4/2), moist, silty SAND.
				C2-35	<1				
				C2-40	<1			SP	Pale yellowish brown (10 YR 6/2), moist, fine to medium SAND.
									Total Depth = 40 feet. No groundwater encountered during drilling. No odors noted in samples. Backfilled with hydrated bentonite on 5/11/05.
45									
60									

Ninyo & Moore

BORING LOG

5413 Avalon Boulevard
Los Angeles

PROJECT NO.	DATE	FIGURE
206060001	6/2005	C-2

DATE DRILLED 5/11/05 BORING NO. C3

GROUND ELEVATION 165' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING Direct-Push

DRIVE WEIGHT NA DROP NA

SAMPLED BY JW LOGGED BY JW REVIEWED BY WRC

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	SAMPLE ID	ORGANIC VAPORS (ppm)	MOISTURE	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0								SM	ASPHALT: Approximately 6 inches thick. ALLUVIUM: Moderate yellowish brown (10 YR 5/4), moist, silty SAND.
		■		C3-5	<1				
		■		C3-10	<1			SC	Dark yellowish brown (10 YR 4/2), moist, clayey SAND.
15		■		C3-15	<1			SM	Dark yellowish brown (10 YR 4/2), moist, silty SAND.
		■		C3-20	<1				
		■		C3-25	<1			SP	Pale yellowish brown (10 YR 6/2), moist, fine to medium SAND.
30		■		C3-30	<1			SC	Dark yellowish brown (10 YR 4/2), moist, clayey SAND.
		■		C3-35	<1			SP	Pale yellowish brown (10 YR 6/2), moist, fine to medium SAND.
		■		C3-40	<1				Total Depth = 40 feet. No groundwater encountered during drilling. No odors noted in samples. Backfilled with hydrated bentonite on 5/11/05.
45									
60									

Ninyo & Moore

BORING LOG 5413 Avalon Boulevard Los Angeles		
PROJECT NO. 206060001	DATE 6/2005	FIGURE C-3

DATE DRILLED	5/11/05	BORING NO.	C4
GROUND ELEVATION	165' ± (MSL)	SHEET	1 OF 1
METHOD OF DRILLING	Direct-Push		
DRIVE WEIGHT	NA	DROP	NA
SAMPLED BY	JW	LOGGED BY JW	REVIEWED BY WRC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	SAMPLE ID	ORGANIC VAPORS (ppm)	MOISTURE	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SP	CONCRETE: Approximately 8 inches thick. ALLUVIUM: Dark yellowish brown (10 YR 4/2), moist, fine to medium SAND.
	Driven		C4-5	<1				
	Driven		C4-10	<1			SC	Dark yellowish brown (10 YR 4/2), moist, clayey SAND.
15	Driven		C4-15	<1				
	Driven		C4-20	<1				Moderate yellowish brown (10 YR 5/4); moist.
	Driven		C4-25	<1			SP	Pale yellowish brown (10 YR 6/2), moist, fine to medium SAND.
30	Driven		C4-30	<1			SC	Moderate yellowish brown (10 YR 5/4), moist, clayey SAND.
	Driven		C4-35	<1				
	Driven		C4-40	<1			SP	Moderate yellowish brown (10 YR 5/4), moist, fine to medium SAND. Total Depth = 40 feet. No groundwater encountered during drilling. No odors noted in samples. Backfilled with hydrated bentonite on 5/11/05.
45								
60								

Ninyo & Moore

BORING LOG

5413 Avalon Boulevard
Los Angeles

PROJECT NO.	DATE	FIGURE
206060001	6/2005	C-4

APPENDIX D

LABORATORY REPORTS

Ninyo & Moore
Project: CRA Avalon, 206060001

ATL Work Order: 076405

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Table of Contents

ATL Work Order: 076405

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

May 17, 2005

ELAP No.: 1838
NELAP No.: 02107CA
CSDLAC No.: 10196

Julie Wozencraft
Ninyo & Moore
475 Goddard Suite 200
Irvine, CA 92618

TEL: (949) 753-7070
FAX: (949) 753-7071

Workorder No.: 076405

RE: CRA Avalon, 206060001

Attention: Julie Wozencraft

Enclosed are the results for sample(s) received on May 11, 2005 by Advanced Technology Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (562)989-4045 if I can be of further assistance to your company.

Sincerely,

Eddie F. Rodriguez
Laboratory Director

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

 Date: *17-May-05*

CLIENT:	Ninyo & Moore
Project:	CRA Avalon, 206060001
Lab Order:	076405

CASE NARRATIVE

All volatile soil analyses were performed using 5035 preservation requirements. Any high level dilutions were performed on a preserved methanol sample unless otherwise noted.

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

CHAIN OF COUNTY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#:
Logged By: Dm Date: 05/05

Method of Transport: Client ☑ ATL ☐ CA OverN ☐ FEDEX ☐ Other:

Sample Condition Upon Receipt
1. CHILLED 5.2°C Y ☑ N ☐
2. HEADSPACE (VOA) Y ☐ N ☐
3. CONTAINER INTACT Y ☑ N ☐
4. SEALED Y ☐ N ☑
5. # OF SPLS MATCH COC Y ☑ N ☐
6. PRESERVED Y ☑ N ☐

Client: Ninyo & Moore
Attn: Julie Wozencraft
Address: 475 Goddard Ste 200
City: Irvine State: CA Zip Code: 92618
TEL: (949) 753-7070
FAX: (949) 753-7071

Project Name: CRA Avalon
Project #: 206060001
Sampler: (Printed Name) Julie Wozencraft (Signature)

Relinquished by: (Signature and Printed Name) [signature] Julie Wozencraft Date: 5/11/05 Time: 1:40
Received by: (Signature and Printed Name) [signature] Date: 05/1/05 Time: 1340
Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time:
Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Julie Wozencraft 5/11/05
Print Name Date
[signature]
Signature

Send Report To:
Attn: Julie Wozencraft
Co: Ninyo & Moore
Address: 475 Goddard
City: Irvine State: CA Zip: 92630

Bill To:
Attn:
Co:
Address:
City: State: Zip:

Special Instructions/Comments:
Provide Level III package

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.
Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

SPECIFY APPROPRIATE MATRIX

QA/QC: RTNE ☐ CT ☐ SWRCB ☐ Logcode OTHER

ITEM	LAB USE ONLY: Batch #: Lab No.	Sample I.D. / Location	Date	Time	8081A (Pesticides)	8082 (PCB)	8260B (Volatiles) + fuel oxygenates	8270C (BNA)	6010B (Total Metal)	8015B (GRO) / BTEX	8015B (DRO)	SOIL	WATER	GROUND WATER	WASTEWATER	TAT	Container(s) #	Container(s) Type	PRESERVATION	REMARKS
	070405-001	C1-5	5/11/05	7:53			X					X				E	43	V G	T	
	-002	C1-10		7:58			X					X					43	V G	T	
	-003	C1-15		8:05			X					X					43	V G	T	
	-004	C1-20		8:22			X					X					43	V G	T	
	-005	C1-25		8:30			X					X					43	V G	T	
	-006	C1-30		8:45			X					X					43	V G	T	
	-007	C1-35		8:55			X					X					43	V G	T	
	-008	C1-40		9:10			X					X					43	V G	T	
	-009	C2-5		9:25			X					X					43	V G	T	
	-010	C2-10		9:33			X					X					43	V G	T	

- TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: White with report, Yellow to folder, Pink to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#:
Logged By: BD Date: 051105

Method of Transport: Client ☒ ATL ☐ CA OverN ☐ FEDEX ☐ Other:

Sample Condition Upon Receipt
1. CHILLED 5.2°C Y☒ N☐ 4. SEALED Y☐ N☒
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☒ N☐
3. CONTAINER INTACT Y☒ N☐ 6. PRESERVED Y☒ N☐

Client: Ninyo & Moore
Attn: Julie Wozencraft
Address: 475 Goddard Ste 200
City: Irvine State: CA Zip Code: 92618
TEL: (949) 753-7070
FAX: (949) 753-7071
Project Name: CRA Avalon
Project #: 206060001
Sampler: (Printed Name) Julie Wozencraft (Signature) [signature]

Relinquished by: (Signature and Printed Name)	Date	Time	Received by: (Signature and Printed Name)	Date	Time
[signature] Julie Wozencraft	5/11/05	1:40	[signature]	051105	1340

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Print Name / Date / Signature

Send Report To: Attn: Co: Address City State Zip

Bill To: Attn: Co: Address City State Zip

Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.
Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles) + fuel oxygenates, 8270C (BNA), 6010B (Total Metal), 8015B (GRO) / BTEX, 8015B (DRO)

Specify Appropriate Matrix: Soil, Water, Ground Water, Wastewater

ITEM	Lab No.	Sample I.D. / Location	Date	Time	8081A	8082	8260B + fuel oxygenates	8270C	6010B	8015B (GRO)/BTEX	8015B (DRO)	Soil	Water	Ground Water	Wastewater	TAT	#	Type	Preservation	Remarks
	076405-011	C2-15	5/11/05	9:40			X					X				E	4	VGT		
	-012	C2-20		9:47			X					X					4	VGT		
	-013	C2-25		9:51			X					X					4	VGT		
	-014	C2-30		9:56			X					X					4	VGT		
	-015	C2-35		10:02			X					X					4	VGT		
	-016	C2-40		10:10			X					X					4	VGT		
	-017	C3-5		11:05			X					X					4	VGT		
	-018	C3-10		11:09			X					X					4	VGT		
	-019	C3-15		11:14			X					X					4	VGT		
0004	-020	C3-20		11:17			X					X					4	VGT		

QA/QC: RTNE ☐ CT ☐ SWRCB ☐ Logcode OTHER

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: White with report, Yellow to folder, Pink to submitter.

CHAIN OF CUSTODY RECORD

Advanced Technology Laboratories
3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

FOR LABORATORY USE ONLY:

P.O.#:
Logged By: BO Date: 05/11/05

Method of Transport: Client ☑ ATL ☐ CA OverN ☐ FEDEX ☐ Other:

Sample Condition Upon Receipt
1. CHILLED 5.7°C Y☑ N☐ 4. SEALED Y☐ N☑
2. HEADSPACE (VOA) Y☐ N☐ 5. # OF SPLS MATCH COC Y☑ N☐
3. CONTAINER INTACT Y☑ N☐ 6. PRESERVED Y☐ N☑

Client: Ninyo & Moore
Attn: Julie Wozencraft
Address:
City State Zip Code
TEL: ( )
FAX: ( )

Project Name: CRA Avalon Project #: 206060001 Sampler: (Printed Name) Julie Wozencraft (Signature)

Relinquished by: (Signature and Printed Name) Julie Wozencraft Date: 5/11/05 Time: 1440 Received by: (Signature and Printed Name) Date: 05/11/05 Time: 1440
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:
Relinquished by: (Signature and Printed Name) Date: Time: Received by: (Signature and Printed Name) Date: Time:

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
Print Name Date
Signature

Send Report To: Attn: Co: Address City State Zip
Bill To: Attn: Co: Address City State Zip
Special Instructions/Comments:

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.
Storage Fees (applies when storage is requested):
- Sample : $2.00 / sample / mo (after 45 days)
- Records : $1.00 / ATL workorder / mo (after 1 year)

LAB USE ONLY: Batch #:

Circle or Add Analysis(es) Requested: 8081A (Pesticides), 8082 (PCB), 8260B (Volatiles) + fuel oxygenates, 8270C (BNA), 6010B (Total Metal), 8015B (GRO) / BTEX, 8015B (DRO)

ITEM	Lab No.	Sample I.D. / Location	Date	Time	8081A	8082	8260B + fuel oxygenates	8270C	6010B	8015B (GRO)/BTEX	8015B (DRO)	Soil	Water	Ground Water	Wastewater	TAT	#	Type	Preservation	Remarks
	070405-001	C3-25	5/11/05	11:24			X					X				E	4	VGT		
	-002	C3-30		11:32			X					X								
	-003	C3-35		11:42			X					X								
	-004	C3-40		11:48			X					X								
	-005	C4-5		12:18			X					X								
	-006	C4-10		12:21			X					X								
	-007	C4-15		12:25			X					X								
	-008	C4-20		12:32			X					X								
	-009	C4-25		12:36			X					X								
	-010	C4-30		12:41			X					X								

QA/QC: RTNE ☐ CT ☐ SWRCB ☐ Logcode OTHER

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal

Preservatives: H=Hcl N=HNO_3 S=H_2SO_4 C=4°C Z=$Zn(AC)_2$ O=NaOH T=$Na_2S_2O_3$

DISTRIBUTION: **White** with report, **Yellow** to folder, **Pink** to submitter.

000

SIERRA ANALYTICAL
TEL: 949•348•9389
FAX: 949•348•9115
26052 Merit Circle • Suite 105 • Laguna Hills, CA • 92653

CHAIN OF COUSTODY RECORD

Date: ___/___/___ Page 4 of 4

Lab Project ID: ______

Client: Ninyo & Moore

Client Address:

Client Tel. No:

Client Fax No.:

Client Proj. Mgr.: Julie Wozencraft

Client Project ID: 206060001

CRA Avalon

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☒ Normal ☐ Mobile

Analyses Requested

Client Sample ID.	Sierra Sample No.	Date/Time	Matrix	Preservatives	Container Type	No. of Containers	8260B - VOCs + fuel oxygenates	Comments
C4-35	5/11/05	12:50	Soil		TVG	4		
C4-40	↓	12:58	|			4		

1 Sampler Signature: Julie Wozencraft		Shipped Via:	
Printed Name: Julie Wozencraft		(Carrier/Waybill No.)	
2 Relinquished By: Julie Wozencraft	Date: 5/11/05	Received By:	Date: 05/11/05
Company: Ninyo & Moore	Time: 1:40	Company: AP	Time: 1340
3 Relinquished By:	Date:	Received By:	Date:
Company:	Time:	Company:	Time:
4 Relinquished By:	Date:	Received By:	Date:
Company:	Time:	Company:	Time:

Special Instructions:
006

Total Number of Containers Submitted to Laboratory

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

Total Number of Containers Received by Laboratory

Sample Disposal:
☐ Return to Client
☐ Lab Disposal*
☐ Archive ______mos.
☐ Other ______

FOR LABORATORY USE ONLY - Sample Receipt Conditions:
☒ Intact
☐ Sample Seals NM
☒ Properly Labeled
☒ Appropriate Sample Container
☒ Chilled - Temp (°C) 5.7°C
☐ Preservatives - Verified By ______
☐ Other ______
☐ Storage Location ______

DISTRIBUTION: White - To Accompany Samples, Yellow - Laboratory Copy, Pink - Field Personnel Copy

SIERRA ANALYTICAL
TEL: 949•348•9389
FAX: 949•348•9115
26052 Merit Circle • Suite 105 • Laguna Hills, CA • 92653

CHAIN OF CUSTODY RECORD

Date: __/__/__ Page 4 of 4

Lab Project ID: ________

Client: Ninyo & Moore
Client Address:
Client Tel. No:
Client Fax No.:
Client Proj. Mgr.: Julie Wozencraft

Client Project ID: 206060001
CKA Avalon

Turn Around Time Requested: ☐ Immediate ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 4 Day ☐ 5 Day ☒ Normal ☐ Mobile

Analyses Requested: 8260B - VOCs + fuel oxygenates

Client Sample ID.	Sierra Sample No.	Date/Time	Matrix	Preservatives	Container Type	No. of Containers	8260B - VOCs + fuel oxygenates	Comments
C4-35		5/11/05 12:50	Soil		TVG	4	X	
C4-40		12:55	Soil			4	X	

1 Sampler Signature: Julie Wozencraft
Printed Name: Julie Wozencraft
Shipped Via:
(Carrier/Waybill No.)

2 Relinquished By: Julie Wozencraft Date: 5/11/05 Received By: [illegible] Date: 05/11/05
Company: Ninyo & Moore Time: 1:40 Company: A1 Time: [illegible]

3 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

4 Relinquished By: Date: Received By: Date:
Company: Time: Company: Time:

Special Instructions:

Total Number of Containers Submitted to Laboratory

The delivery of samples and the signature on this chain of custody form constitutes authorization to perform the analyses specified above under SIERRA's Terms and Conditions, unless otherwise agreed upon in writing between SIERRA and CLIENT.
* - Samples determined to be hazardous by SIERRA will be returned to CLIENT.

Total Number of Containers

Sample Disposal:
☐ Return to Client
☐ Lab Disposal*
☐ Archive ____ mos.
☐ Other ____

Post-it® Fax Note 7671

Date	# of pages ▶
To Carmen	From
Co./Dept.	Co.
Phone # 562-989-4040	Phone #
Fax #	Fax #

Rev: 041301

Arada, Mary Rachelle

From: Julie Wozencraft [jwozencraft@ninyoandmoore.com]
Sent: Thursday, May 12, 2005 2:00 PM
To: Arada, Mary Rachelle
Subject: RE: Raw Data Packages

Hi Rachelle,

Yes the typical package is fine. The client asked us to include it just in case they will need it for the future.

Thanks,
Julie

-----Original Message-----
From: Arada, Mary Rachelle [mailto:Rachelle@atlglobal.com]
Sent: Thursday, May 12, 2005 11:35 AM
To: Julie Wozencraft
Subject: FW: Raw Data Packages

Hi Julie,

Enclosed is the level 3 items that are usually included in our data package. Please review and let me know if you need something different.

<<level3items.pdf>>
Thanks,
Rachelle

-----Original Message-----
From: Bing Roura
Sent: Thursday, May 12, 2005 11:17 AM
To: Arada, Mary Rachelle; Galvan, Diane
Subject: Raw Data Packages

Here is ATL's default raw data packages, which is charged are plus 10% (Level 3) and plus 15% (Level 4). Minimum charge should be $50.

For any variations from the client, price is based on complexity of information required.

Thanks.

Regards,
Bing

0008

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT: Ninyo & Moore
Project: CRA Avalon, 206060001
Lab Order: 076405
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
076405-001A	C1-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-001B	C1-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-001C	C1-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-001D	C1-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-002A	C1-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-002B	C1-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-002C	C1-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-002D	C1-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-003A	C1-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-003B	C1-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-003C	C1-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-003D	C1-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-004A	C1-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-004B	C1-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-004C	C1-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-004D	C1-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-005A	C1-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-005B	C1-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-005C	C1-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-005D	C1-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-006A	C1-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-006B	C1-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-006C	C1-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-006D	C1-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-007A	C1-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-007B	C1-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-007C	C1-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-007D	C1-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-008A	C1-40	Soil	5/11/2005	5/11/2005	5/17/2005

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

CLIENT:	Ninyo & Moore		
Project:	CRA Avalon, 206060001		**Work Order Sample Summary**
Lab Order:	076405		
Contract No:			

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
076405-008B	C1-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-008C	C1-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-008D	C1-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-009A	C2-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-009B	C2-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-009C	C2-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-009D	C2-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-010A	C2-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-010B	C2-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-010C	C2-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-010D	C2-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-011A	C2-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-011B	C2-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-011C	C2-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-011D	C2-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-012A	C2-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-012B	C2-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-012C	C2-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-012D	C2-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-013A	C2-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-013B	C2-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-013C	C2-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-013D	C2-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-014A	C2-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-014B	C2-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-014C	C2-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-014D	C2-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-015A	C2-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-015B	C2-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-015C	C2-35	Soil	5/11/2005	5/11/2005	5/17/2005

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CLIENT:	Ninyo & Moore
Project:	CRA Avalon, 206060001
Lab Order:	076405
Contract No:	

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
076405-015D	C2-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-016A	C2-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-016B	C2-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-016C	C2-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-016D	C2-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-017A	C3-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-017B	C3-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-017C	C3-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-017D	C3-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-018A	C3-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-018B	C3-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-018C	C3-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-018D	C3-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-019A	C3-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-019B	C3-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-019C	C3-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-019D	C3-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-020A	C3-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-020B	C3-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-020C	C3-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-020D	C3-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-021A	C3-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-021B	C3-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-021C	C3-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-021D	C3-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-022A	C3-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-022B	C3-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-022C	C3-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-022D	C3-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-023A	C3-35	Soil	5/11/2005	5/11/2005	5/17/2005

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CLIENT:	Ninyo & Moore
Project:	CRA Avalon, 206060001
Lab Order:	076405
Contract No:	

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
076405-023B	C3-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-023C	C3-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-023D	C3-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-024A	C3-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-024B	C3-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-024C	C3-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-024D	C3-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-025A	C4-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-025B	C4-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-025C	C4-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-025D	C4-5	Soil	5/11/2005	5/11/2005	5/17/2005
076405-026A	C4-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-026B	C4-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-026C	C4-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-026D	C4-10	Soil	5/11/2005	5/11/2005	5/17/2005
076405-027A	C4-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-027B	C4-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-027C	C4-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-027D	C4-15	Soil	5/11/2005	5/11/2005	5/17/2005
076405-028A	C4-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-028B	C4-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-028C	C4-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-028D	C4-20	Soil	5/11/2005	5/11/2005	5/17/2005
076405-029A	C4-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-029B	C4-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-029C	C4-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-029D	C4-25	Soil	5/11/2005	5/11/2005	5/17/2005
076405-030A	C4-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-030B	C4-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-030C	C4-30	Soil	5/11/2005	5/11/2005	5/17/2005

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CLIENT:	Ninyo & Moore		
Project:	CRA Avalon, 206060001		
Lab Order:	076405		
Contract No:			

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
076405-030D	C4-30	Soil	5/11/2005	5/11/2005	5/17/2005
076405-031A	C4-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-031B	C4-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-031C	C4-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-031D	C4-35	Soil	5/11/2005	5/11/2005	5/17/2005
076405-032A	C4-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-032B	C4-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-032C	C4-40	Soil	5/11/2005	5/11/2005	5/17/2005
076405-032D	C4-40	Soil	5/11/2005	5/11/2005	5/17/2005

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Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-5
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 7:53:00 AM
Lab ID:	076405-001A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	5.1		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	5.1		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	5.1		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	5.1		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	5.1		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	5.1		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	5.1		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	5.1		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	5.1		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	5.1		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	5.1		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	10		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	5.1		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	5.1		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	5.1		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	5.1		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	5.1		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	5.1		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	5.1		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	5.1		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	5.1		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	5.1		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	5.1		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	5.1		µg/Kg	1	5/13/2005
Benzene	ND	5.1		µg/Kg	1	5/13/2005
Bromobenzene	ND	5.1		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	5.1		µg/Kg	1	5/13/2005
Bromoform	ND	5.1		µg/Kg	1	5/13/2005
Bromomethane	ND	5.1		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	5.1		µg/Kg	1	5/13/2005
Chlorobenzene	ND	5.1		µg/Kg	1	5/13/2005
Chloroethane	ND	5.1		µg/Kg	1	5/13/2005
Chloroform	ND	5.1		µg/Kg	1	5/13/2005
Chloromethane	ND	5.1		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	5.1		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	5.1		µg/Kg	1	5/13/2005

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interferen
- H - Sample exceeded analytical holding time
- E - Value above quantitation range
- R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-5
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 7:53:00 AM
Lab ID:	076405-001A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	5.1		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	5.1		µg/Kg	1	5/13/2005
Dibromomethane	ND	5.1		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	5.1		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	5.1		µg/Kg	1	5/13/2005
Ethylbenzene	ND	5.1		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	5.1		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	5.1		µg/Kg	1	5/13/2005
m,p-Xylene	ND	5.1		µg/Kg	1	5/13/2005
Methylene chloride	ND	5.1		µg/Kg	1	5/13/2005
MTBE	ND	5.1		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	5.1		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	5.1		µg/Kg	1	5/13/2005
Naphthalene	ND	5.1		µg/Kg	1	5/13/2005
o-Xylene	ND	5.1		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	5.1		µg/Kg	1	5/13/2005
Styrene	ND	5.1		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	5.1		µg/Kg	1	5/13/2005
Tert-Butanol	ND	100		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	5.1		µg/Kg	1	5/13/2005
Tetrachloroethene	21	5.1		µg/Kg	1	5/13/2005
Toluene	ND	5.1		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	5.1		µg/Kg	1	5/13/2005
Trichloroethene	ND	5.1		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	5.1		µg/Kg	1	5/13/2005
Vinyl chloride	ND	5.1		µg/Kg	1	5/13/2005

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-10
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 7:58:00 AM
Lab ID:	076405-002A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.6		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.6		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.6		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	9.2		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.6		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.6		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.6		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.6		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.6		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.6		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.6		µg/Kg	1	5/13/2005
Benzene	ND	4.6		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.6		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.6		µg/Kg	1	5/13/2005
Bromoform	ND	4.6		µg/Kg	1	5/13/2005
Bromomethane	ND	4.6		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.6		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
Chloroethane	ND	4.6		µg/Kg	1	5/13/2005
Chloroform	ND	4.6		µg/Kg	1	5/13/2005
Chloromethane	ND	4.6		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	42	4.6		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.6		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank	E - Value above quantitation range
DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-10
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 7:58:00 AM
Lab ID:	076405-002A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.6		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.6		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.6		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.6		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.6		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.6		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.6		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.6		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.6		µg/Kg	1	5/13/2005
MTBE	ND	4.6		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.6		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Naphthalene	ND	4.6		µg/Kg	1	5/13/2005
o-Xylene	ND	4.6		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Styrene	ND	4.6		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.6		µg/Kg	1	5/13/2005
Tert-Butanol	ND	92		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Tetrachloroethene	38	4.6		µg/Kg	1	5/13/2005
Toluene	ND	4.6		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.6		µg/Kg	1	5/13/2005
Trichloroethene	13	4.6		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.6		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.6		µg/Kg	1	5/13/2005

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-15
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 8:05:00 AM
Lab ID:	076405-003A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.2		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.2		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.2		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.2		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.2		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.2		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.2		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.2		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.2		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.2		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.2		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	8.3		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.2		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.2		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.2		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.2		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.2		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.2		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.2		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.2		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.2		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.2		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.2		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.2		µg/Kg	1	5/13/2005
Benzene	ND	4.2		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.2		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.2		µg/Kg	1	5/13/2005
Bromoform	ND	4.2		µg/Kg	1	5/13/2005
Bromomethane	ND	4.2		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.2		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.2		µg/Kg	1	5/13/2005
Chloroethane	ND	4.2		µg/Kg	1	5/13/2005
Chloroform	ND	4.2		µg/Kg	1	5/13/2005
Chloromethane	ND	4.2		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	130	4.2		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.2		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank	E - Value above quantitation range
DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-15
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 8:05:00 AM
Lab ID:	076405-003A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS — EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.2		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.2		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.2		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.2		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.2		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.2		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.2		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.2		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.2		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.2		µg/Kg	1	5/13/2005
MTBE	ND	4.2		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.2		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.2		µg/Kg	1	5/13/2005
Naphthalene	ND	4.2		µg/Kg	1	5/13/2005
o-Xylene	ND	4.2		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.2		µg/Kg	1	5/13/2005
Styrene	ND	4.2		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.2		µg/Kg	1	5/13/2005
Tert-Butanol	ND	83		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.2		µg/Kg	1	5/13/2005
Tetrachloroethene	55	4.2		µg/Kg	1	5/13/2005
Toluene	ND	4.2		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	5.1	4.2		µg/Kg	1	5/13/2005
Trichloroethene	27	4.2		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.2		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.2		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-20
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 8:22:00 AM
Lab ID:	076405-004A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	3.7		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	3.7		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	3.7		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	3.7		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	3.7		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	3.7		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	3.7		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	3.7		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	3.7		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	3.7		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	3.7		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	7.3		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	3.7		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	3.7		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	3.7		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	3.7		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	3.7		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	3.7		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	3.7		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	3.7		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	3.7		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	3.7		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	3.7		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	3.7		µg/Kg	1	5/13/2005
Benzene	ND	3.7		µg/Kg	1	5/13/2005
Bromobenzene	ND	3.7		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	3.7		µg/Kg	1	5/13/2005
Bromoform	ND	3.7		µg/Kg	1	5/13/2005
Bromomethane	ND	3.7		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	3.7		µg/Kg	1	5/13/2005
Chlorobenzene	ND	3.7		µg/Kg	1	5/13/2005
Chloroethane	ND	3.7		µg/Kg	1	5/13/2005
Chloroform	ND	3.7		µg/Kg	1	5/13/2005
Chloromethane	ND	3.7		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	170	3.7		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	3.7		µg/Kg	1	5/13/2005

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interferen
- H - Sample exceeded analytical holding time
- E - Value above quantitation range
- R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-20
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 8:22:00 AM
Lab ID:	076405-004A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	3.7		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	3.7		µg/Kg	1	5/13/2005
Dibromomethane	ND	3.7		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	3.7		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	3.7		µg/Kg	1	5/13/2005
Ethylbenzene	ND	3.7		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	3.7		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	3.7		µg/Kg	1	5/13/2005
m,p-Xylene	ND	3.7		µg/Kg	1	5/13/2005
Methylene chloride	ND	3.7		µg/Kg	1	5/13/2005
MTBE	ND	3.7		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	3.7		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	3.7		µg/Kg	1	5/13/2005
Naphthalene	ND	3.7		µg/Kg	1	5/13/2005
o-Xylene	ND	3.7		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	3.7		µg/Kg	1	5/13/2005
Styrene	ND	3.7		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	3.7		µg/Kg	1	5/13/2005
Tert-Butanol	ND	73		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	3.7		µg/Kg	1	5/13/2005
Tetrachloroethene	48	3.7		µg/Kg	1	5/13/2005
Toluene	ND	3.7		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	7.1	3.7		µg/Kg	1	5/13/2005
Trichloroethene	32	3.7		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	3.7		µg/Kg	1	5/13/2005
Vinyl chloride	ND	3.7		µg/Kg	1	5/13/2005

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interferen
- H - Sample exceeded analytical holding time
- E - Value above quantitation range
- R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-25
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 8:30:00 AM
Lab ID:	076405-005A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.4		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.4		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.4		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.4		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.4		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.4		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.4		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.4		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.4		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.4		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.4		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	8.7		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.4		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.4		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.4		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.4		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.4		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.4		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.4		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.4		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.4		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.4		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.4		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.4		µg/Kg	1	5/13/2005
Benzene	ND	4.4		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.4		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.4		µg/Kg	1	5/13/2005
Bromoform	ND	4.4		µg/Kg	1	5/13/2005
Bromomethane	ND	4.4		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.4		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.4		µg/Kg	1	5/13/2005
Chloroethane	ND	4.4		µg/Kg	1	5/13/2005
Chloroform	ND	4.4		µg/Kg	1	5/13/2005
Chloromethane	ND	4.4		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	31	4.4		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.4		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-25
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 8:30:00 AM
Lab ID:	076405-005A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.4		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.4		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.4		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.4		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.4		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.4		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.4		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.4		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.4		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.4		µg/Kg	1	5/13/2005
MTBE	ND	4.4		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.4		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.4		µg/Kg	1	5/13/2005
Naphthalene	ND	4.4		µg/Kg	1	5/13/2005
o-Xylene	ND	4.4		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.4		µg/Kg	1	5/13/2005
Styrene	ND	4.4		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.4		µg/Kg	1	5/13/2005
Tert-Butanol	ND	87		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.4		µg/Kg	1	5/13/2005
Tetrachloroethene	7.0	4.4		µg/Kg	1	5/13/2005
Toluene	ND	4.4		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.4		µg/Kg	1	5/13/2005
Trichloroethene	ND	4.4		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.4		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.4		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank	E - Value above quantitation range
DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-30
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 8:45:00 AM
Lab ID:	076405-006A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS1_050512A	QC Batch: P05VS062			PrepDate:	5/12/2005	Analyst: MFR
1,1,1,2-Tetrachloroethane	ND	4.0		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.0		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.0		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.0		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.0		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.0		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.0		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.0		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.0		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.0		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.0		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	7.9		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.0		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.0		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.0		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.0		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.0		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.0		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.0		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.0		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.0		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.0		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.0		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.0		µg/Kg	1	5/13/2005
Benzene	ND	4.0		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.0		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.0		µg/Kg	1	5/13/2005
Bromoform	ND	4.0		µg/Kg	1	5/13/2005
Bromomethane	ND	4.0		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.0		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.0		µg/Kg	1	5/13/2005
Chloroethane	ND	4.0		µg/Kg	1	5/13/2005
Chloroform	ND	4.0		µg/Kg	1	5/13/2005
Chloromethane	ND	4.0		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	24	4.0		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.0		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-30
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 8:45:00 AM
Lab ID:	076405-006A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.0		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.0		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.0		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.0		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.0		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.0		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.0		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.0		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.0		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.0		µg/Kg	1	5/13/2005
MTBE	ND	4.0		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.0		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.0		µg/Kg	1	5/13/2005
Naphthalene	ND	4.0		µg/Kg	1	5/13/2005
o-Xylene	ND	4.0		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.0		µg/Kg	1	5/13/2005
Styrene	ND	4.0		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.0		µg/Kg	1	5/13/2005
Tert-Butanol	ND	79		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.0		µg/Kg	1	5/13/2005
Tetrachloroethene	13	4.0		µg/Kg	1	5/13/2005
Toluene	ND	4.0		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.0		µg/Kg	1	5/13/2005
Trichloroethene	5.2	4.0		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.0		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.0		µg/Kg	1	5/13/2005

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-35
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 8:55:00 AM
Lab ID:	076405-007A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS1_050512A	QC Batch: P05VS062			PrepDate:	5/12/2005	Analyst: **MFR**
1,1,1,2-Tetrachloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.3		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.3		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.3		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.3		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	8.6		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.3		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.3		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.3		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.3		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.3		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.3		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.3		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.3		µg/Kg	1	5/13/2005
Benzene	ND	4.3		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.3		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.3		µg/Kg	1	5/13/2005
Bromoform	ND	4.3		µg/Kg	1	5/13/2005
Bromomethane	ND	4.3		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.3		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
Chloroethane	ND	4.3		µg/Kg	1	5/13/2005
Chloroform	ND	4.3		µg/Kg	1	5/13/2005
Chloromethane	ND	4.3		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	6.4	4.3		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.3		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit | S - Spike/Surrogate outside of limits due to matrix interferen

J - Analyte detected below quantitation limits | H - Sample exceeded analytical holding time

B - Analyte detected in the associated Method Blank | E - Value above quantitation range

DO - Surrogate Diluted Out | R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-35
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 8:55:00 AM
Lab ID:	076405-007A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS1_050512A	QC Batch: P05VS062			PrepDate:	5/12/2005	Analyst: **MFR**
Di-isopropyl ether	ND	4.3		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.3		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.3		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.3		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.3		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.3		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.3		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.3		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.3		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.3		µg/Kg	1	5/13/2005
MTBE	ND	4.3		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.3		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.3		µg/Kg	1	5/13/2005
Naphthalene	ND	4.3		µg/Kg	1	5/13/2005
o-Xylene	ND	4.3		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.3		µg/Kg	1	5/13/2005
Styrene	ND	4.3		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.3		µg/Kg	1	5/13/2005
Tert-Butanol	ND	86		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.3		µg/Kg	1	5/13/2005
Tetrachloroethene	5.9	4.3		µg/Kg	1	5/13/2005
Toluene	ND	4.3		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.3		µg/Kg	1	5/13/2005
Trichloroethene	ND	4.3		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.3		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.3		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interferen

H - Sample exceeded analytical holding time

E - Value above quantitation range

R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-40
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:10:00 AM
Lab ID:	076405-008A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS — EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.6		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.6		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.6		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	9.1		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.6		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.6		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.6		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.6		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.6		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.6		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.6		µg/Kg	1	5/13/2005
Benzene	ND	4.6		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.6		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.6		µg/Kg	1	5/13/2005
Bromoform	ND	4.6		µg/Kg	1	5/13/2005
Bromomethane	ND	4.6		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.6		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
Chloroethane	ND	4.6		µg/Kg	1	5/13/2005
Chloroform	ND	4.6		µg/Kg	1	5/13/2005
Chloromethane	ND	4.6		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	4.6		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.6		µg/Kg	1	5/13/2005

Qualifiers:
- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interferen
- H - Sample exceeded analytical holding time
- E - Value above quantitation range
- R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C1-40
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:10:00 AM
Lab ID:	076405-008A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
			EPA 8260B			
RunID: MS1_050512A	QC Batch: P05VS062			PrepDate:	5/12/2005	Analyst: MFR
Di-isopropyl ether	ND	4.6		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.6		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.6		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.6		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.6		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.6		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.6		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.6		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.6		µg/Kg	1	5/13/2005
MTBE	ND	4.6		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.6		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Naphthalene	ND	4.6		µg/Kg	1	5/13/2005
o-Xylene	ND	4.6		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Styrene	ND	4.6		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.6		µg/Kg	1	5/13/2005
Tert-Butanol	ND	91		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Tetrachloroethene	5.1	4.6		µg/Kg	1	5/13/2005
Toluene	ND	4.6		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.6		µg/Kg	1	5/13/2005
Trichloroethene	ND	4.6		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.6		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.6		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-5
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:25:00 AM
Lab ID:	076405-009B	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050516A QC Batch: P05VS065 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	5.1		µg/Kg	1	5/16/2005
1,1,1-Trichloroethane	ND	5.1		µg/Kg	1	5/16/2005
1,1,2,2-Tetrachloroethane	ND	5.1		µg/Kg	1	5/16/2005
1,1,2-Trichloroethane	ND	5.1		µg/Kg	1	5/16/2005
1,1-Dichloroethane	ND	5.1		µg/Kg	1	5/16/2005
1,1-Dichloroethene	ND	5.1		µg/Kg	1	5/16/2005
1,1-Dichloropropene	ND	5.1		µg/Kg	1	5/16/2005
1,2,3-Trichlorobenzene	ND	5.1		µg/Kg	1	5/16/2005
1,2,3-Trichloropropane	ND	5.1		µg/Kg	1	5/16/2005
1,2,4-Trichlorobenzene	ND	5.1		µg/Kg	1	5/16/2005
1,2,4-Trimethylbenzene	ND	5.1		µg/Kg	1	5/16/2005
1,2-Dibromo-3-chloropropane	ND	10		µg/Kg	1	5/16/2005
1,2-Dibromoethane	ND	5.1		µg/Kg	1	5/16/2005
1,2-Dichlorobenzene	ND	5.1		µg/Kg	1	5/16/2005
1,2-Dichloroethane	ND	5.1		µg/Kg	1	5/16/2005
1,2-Dichloropropane	ND	5.1		µg/Kg	1	5/16/2005
1,3,5-Trimethylbenzene	ND	5.1		µg/Kg	1	5/16/2005
1,3-Dichlorobenzene	ND	5.1		µg/Kg	1	5/16/2005
1,3-Dichloropropane	ND	5.1		µg/Kg	1	5/16/2005
1,4-Dichlorobenzene	ND	5.1		µg/Kg	1	5/16/2005
2,2-Dichloropropane	ND	5.1		µg/Kg	1	5/16/2005
2-Chlorotoluene	ND	5.1		µg/Kg	1	5/16/2005
4-Chlorotoluene	ND	5.1		µg/Kg	1	5/16/2005
4-Isopropyltoluene	ND	5.1		µg/Kg	1	5/16/2005
Benzene	ND	5.1		µg/Kg	1	5/16/2005
Bromobenzene	ND	5.1		µg/Kg	1	5/16/2005
Bromodichloromethane	ND	5.1		µg/Kg	1	5/16/2005
Bromoform	ND	5.1		µg/Kg	1	5/16/2005
Bromomethane	ND	5.1		µg/Kg	1	5/16/2005
Carbon tetrachloride	ND	5.1		µg/Kg	1	5/16/2005
Chlorobenzene	ND	5.1		µg/Kg	1	5/16/2005
Chloroethane	ND	5.1		µg/Kg	1	5/16/2005
Chloroform	ND	5.1		µg/Kg	1	5/16/2005
Chloromethane	ND	5.1		µg/Kg	1	5/16/2005
cis-1,2-Dichloroethene	ND	5.1		µg/Kg	1	5/16/2005
cis-1,3-Dichloropropene	ND	5.1		µg/Kg	1	5/16/2005

Qualifiers:

ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank	E - Value above quantitation range
DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-5
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:25:00 AM
Lab ID:	076405-009B	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS1_050516A	QC Batch: P05VS065			PrepDate:	5/11/2005	Analyst: **MFR**
Di-isopropyl ether	ND	5.1		µg/Kg	1	5/16/2005
Dibromochloromethane	ND	5.1		µg/Kg	1	5/16/2005
Dibromomethane	ND	5.1		µg/Kg	1	5/16/2005
Dichlorodifluoromethane	ND	5.1		µg/Kg	1	5/16/2005
Ethyl Tert-butyl ether	ND	5.1		µg/Kg	1	5/16/2005
Ethylbenzene	ND	5.1		µg/Kg	1	5/16/2005
Hexachlorobutadiene	ND	5.1		µg/Kg	1	5/16/2005
Isopropylbenzene	ND	5.1		µg/Kg	1	5/16/2005
m,p-Xylene	ND	5.1		µg/Kg	1	5/16/2005
Methylene chloride	ND	5.1		µg/Kg	1	5/16/2005
MTBE	ND	5.1		µg/Kg	1	5/16/2005
n-Butylbenzene	ND	5.1		µg/Kg	1	5/16/2005
n-Propylbenzene	ND	5.1		µg/Kg	1	5/16/2005
Naphthalene	ND	5.1		µg/Kg	1	5/16/2005
o-Xylene	ND	5.1		µg/Kg	1	5/16/2005
sec-Butylbenzene	ND	5.1		µg/Kg	1	5/16/2005
Styrene	ND	5.1		µg/Kg	1	5/16/2005
Tert-amyl methyl ether	ND	5.1		µg/Kg	1	5/16/2005
Tert-Butanol	ND	100		µg/Kg	1	5/16/2005
tert-Butylbenzene	ND	5.1		µg/Kg	1	5/16/2005
Tetrachloroethene	20	5.1		µg/Kg	1	5/16/2005
Toluene	ND	5.1		µg/Kg	1	5/16/2005
trans-1,2-Dichloroethene	ND	5.1		µg/Kg	1	5/16/2005
Trichloroethene	ND	5.1		µg/Kg	1	5/16/2005
Trichlorofluoromethane	ND	5.1		µg/Kg	1	5/16/2005
Vinyl chloride	ND	5.1		µg/Kg	1	5/16/2005

Qualifiers:

ND - Not Detected at the Reporting Limit

S - Spike/Surrogate outside of limits due to matrix interferen

J - Analyte detected below quantitation limits

H - Sample exceeded analytical holding time

B - Analyte detected in the associated Method Blank

E - Value above quantitation range

DO - Surrogate Diluted Out

R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-10
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:33:00 AM
Lab ID:	076405-010A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS1_050512A	QC Batch: P05VS062			PrepDate:	5/12/2005	Analyst: MFR
1,1,1,2-Tetrachloroethane	ND	4.1		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.1		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.1		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.1		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.1		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.1		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.1		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.1		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.1		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.1		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.1		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	8.2		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.1		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.1		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.1		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.1		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.1		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.1		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.1		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.1		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.1		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.1		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.1		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.1		µg/Kg	1	5/13/2005
Benzene	ND	4.1		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.1		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.1		µg/Kg	1	5/13/2005
Bromoform	ND	4.1		µg/Kg	1	5/13/2005
Bromomethane	ND	4.1		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.1		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.1		µg/Kg	1	5/13/2005
Chloroethane	ND	4.1		µg/Kg	1	5/13/2005
Chloroform	ND	4.1		µg/Kg	1	5/13/2005
Chloromethane	ND	4.1		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	32	4.1		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.1		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-10
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:33:00 AM
Lab ID:	076405-010A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.1		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.1		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.1		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.1		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.1		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.1		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.1		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.1		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.1		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.1		µg/Kg	1	5/13/2005
MTBE	ND	4.1		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.1		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.1		µg/Kg	1	5/13/2005
Naphthalene	ND	4.1		µg/Kg	1	5/13/2005
o-Xylene	ND	4.1		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.1		µg/Kg	1	5/13/2005
Styrene	ND	4.1		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.1		µg/Kg	1	5/13/2005
Tert-Butanol	ND	82		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.1		µg/Kg	1	5/13/2005
Tetrachloroethene	44	4.1		µg/Kg	1	5/13/2005
Toluene	ND	4.1		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.1		µg/Kg	1	5/13/2005
Trichloroethene	16	4.1		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.1		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.1		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-15
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:40:00 AM
Lab ID:	076405-011A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	3.9		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	3.9		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	3.9		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	3.9		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	3.9		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	3.9		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	3.9		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	3.9		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	3.9		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	3.9		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	3.9		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	7.8		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	3.9		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	3.9		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	3.9		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	3.9		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	3.9		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	3.9		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	3.9		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	3.9		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	3.9		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	3.9		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	3.9		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	3.9		µg/Kg	1	5/13/2005
Benzene	ND	3.9		µg/Kg	1	5/13/2005
Bromobenzene	ND	3.9		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	3.9		µg/Kg	1	5/13/2005
Bromoform	ND	3.9		µg/Kg	1	5/13/2005
Bromomethane	ND	3.9		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	3.9		µg/Kg	1	5/13/2005
Chlorobenzene	ND	3.9		µg/Kg	1	5/13/2005
Chloroethane	ND	3.9		µg/Kg	1	5/13/2005
Chloroform	ND	3.9		µg/Kg	1	5/13/2005
Chloromethane	ND	3.9		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	73	3.9		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	3.9		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-15
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:40:00 AM
Lab ID:	076405-011A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS1_050512A	QC Batch: P05VS062			PrepDate:	5/12/2005	Analyst: **MFR**
Di-isopropyl ether	ND	3.9		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	3.9		µg/Kg	1	5/13/2005
Dibromomethane	ND	3.9		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	3.9		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	3.9		µg/Kg	1	5/13/2005
Ethylbenzene	ND	3.9		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	3.9		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	3.9		µg/Kg	1	5/13/2005
m,p-Xylene	ND	3.9		µg/Kg	1	5/13/2005
Methylene chloride	ND	3.9		µg/Kg	1	5/13/2005
MTBE	ND	3.9		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	3.9		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	3.9		µg/Kg	1	5/13/2005
Naphthalene	ND	3.9		µg/Kg	1	5/13/2005
o-Xylene	ND	3.9		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	3.9		µg/Kg	1	5/13/2005
Styrene	ND	3.9		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	3.9		µg/Kg	1	5/13/2005
Tert-Butanol	ND	78		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	3.9		µg/Kg	1	5/13/2005
Tetrachloroethene	45	3.9		µg/Kg	1	5/13/2005
Toluene	ND	3.9		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	4.0	3.9		µg/Kg	1	5/13/2005
Trichloroethene	27	3.9		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	3.9		µg/Kg	1	5/13/2005
Vinyl chloride	ND	3.9		µg/Kg	1	5/13/2005

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
	J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-20
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:47:00 AM
Lab ID:	076405-012A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.6		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.6		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.6		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	9.2		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.6		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.6		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.6		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.6		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.6		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.6		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.6		µg/Kg	1	5/13/2005
Benzene	ND	4.6		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.6		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.6		µg/Kg	1	5/13/2005
Bromoform	ND	4.6		µg/Kg	1	5/13/2005
Bromomethane	ND	4.6		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.6		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
Chloroethane	ND	4.6		µg/Kg	1	5/13/2005
Chloroform	ND	4.6		µg/Kg	1	5/13/2005
Chloromethane	ND	4.6		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	5.0	4.6		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.6		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-20
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:47:00 AM
Lab ID:	076405-012A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.6		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.6		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.6		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.6		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.6		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.6		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.6		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.6		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.6		µg/Kg	1	5/13/2005
MTBE	ND	4.6		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.6		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Naphthalene	ND	4.6		µg/Kg	1	5/13/2005
o-Xylene	ND	4.6		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Styrene	ND	4.6		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.6		µg/Kg	1	5/13/2005
Tert-Butanol	ND	92		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Tetrachloroethene	5.0	4.6		µg/Kg	1	5/13/2005
Toluene	ND	4.6		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.6		µg/Kg	1	5/13/2005
Trichloroethene	ND	4.6		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.6		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.6		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank	E - Value above quantitation range
DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-25
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:51:00 AM
Lab ID:	076405-013B	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050516A QC Batch: P05VS065 PrepDate: 5/11/2005 Analyst: MFR

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	5.2		µg/Kg	1	5/16/2005
1,1,1-Trichloroethane	ND	5.2		µg/Kg	1	5/16/2005
1,1,2,2-Tetrachloroethane	ND	5.2		µg/Kg	1	5/16/2005
1,1,2-Trichloroethane	ND	5.2		µg/Kg	1	5/16/2005
1,1-Dichloroethane	ND	5.2		µg/Kg	1	5/16/2005
1,1-Dichloroethene	ND	5.2		µg/Kg	1	5/16/2005
1,1-Dichloropropene	ND	5.2		µg/Kg	1	5/16/2005
1,2,3-Trichlorobenzene	ND	5.2		µg/Kg	1	5/16/2005
1,2,3-Trichloropropane	ND	5.2		µg/Kg	1	5/16/2005
1,2,4-Trichlorobenzene	ND	5.2		µg/Kg	1	5/16/2005
1,2,4-Trimethylbenzene	ND	5.2		µg/Kg	1	5/16/2005
1,2-Dibromo-3-chloropropane	ND	10		µg/Kg	1	5/16/2005
1,2-Dibromoethane	ND	5.2		µg/Kg	1	5/16/2005
1,2-Dichlorobenzene	ND	5.2		µg/Kg	1	5/16/2005
1,2-Dichloroethane	ND	5.2		µg/Kg	1	5/16/2005
1,2-Dichloropropane	ND	5.2		µg/Kg	1	5/16/2005
1,3,5-Trimethylbenzene	ND	5.2		µg/Kg	1	5/16/2005
1,3-Dichlorobenzene	ND	5.2		µg/Kg	1	5/16/2005
1,3-Dichloropropane	ND	5.2		µg/Kg	1	5/16/2005
1,4-Dichlorobenzene	ND	5.2		µg/Kg	1	5/16/2005
2,2-Dichloropropane	ND	5.2		µg/Kg	1	5/16/2005
2-Chlorotoluene	ND	5.2		µg/Kg	1	5/16/2005
4-Chlorotoluene	ND	5.2		µg/Kg	1	5/16/2005
4-Isopropyltoluene	ND	5.2		µg/Kg	1	5/16/2005
Benzene	ND	5.2		µg/Kg	1	5/16/2005
Bromobenzene	ND	5.2		µg/Kg	1	5/16/2005
Bromodichloromethane	ND	5.2		µg/Kg	1	5/16/2005
Bromoform	ND	5.2		µg/Kg	1	5/16/2005
Bromomethane	ND	5.2		µg/Kg	1	5/16/2005
Carbon tetrachloride	ND	5.2		µg/Kg	1	5/16/2005
Chlorobenzene	ND	5.2		µg/Kg	1	5/16/2005
Chloroethane	ND	5.2		µg/Kg	1	5/16/2005
Chloroform	ND	5.2		µg/Kg	1	5/16/2005
Chloromethane	ND	5.2		µg/Kg	1	5/16/2005
cis-1,2-Dichloroethene	ND	5.2		µg/Kg	1	5/16/2005
cis-1,3-Dichloropropene	ND	5.2		µg/Kg	1	5/16/2005

Qualifiers:

ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank	E - Value above quantitation range
DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-25
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:51:00 AM
Lab ID:	076405-013B	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050516A QC Batch: P05VS065 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	5.2		µg/Kg	1	5/16/2005
Dibromochloromethane	ND	5.2		µg/Kg	1	5/16/2005
Dibromomethane	ND	5.2		µg/Kg	1	5/16/2005
Dichlorodifluoromethane	ND	5.2		µg/Kg	1	5/16/2005
Ethyl Tert-butyl ether	ND	5.2		µg/Kg	1	5/16/2005
Ethylbenzene	ND	5.2		µg/Kg	1	5/16/2005
Hexachlorobutadiene	ND	5.2		µg/Kg	1	5/16/2005
Isopropylbenzene	ND	5.2		µg/Kg	1	5/16/2005
m,p-Xylene	ND	5.2		µg/Kg	1	5/16/2005
Methylene chloride	ND	5.2		µg/Kg	1	5/16/2005
MTBE	ND	5.2		µg/Kg	1	5/16/2005
n-Butylbenzene	ND	5.2		µg/Kg	1	5/16/2005
n-Propylbenzene	ND	5.2		µg/Kg	1	5/16/2005
Naphthalene	ND	5.2		µg/Kg	1	5/16/2005
o-Xylene	ND	5.2		µg/Kg	1	5/16/2005
sec-Butylbenzene	ND	5.2		µg/Kg	1	5/16/2005
Styrene	ND	5.2		µg/Kg	1	5/16/2005
Tert-amyl methyl ether	ND	5.2		µg/Kg	1	5/16/2005
Tert-Butanol	ND	100		µg/Kg	1	5/16/2005
tert-Butylbenzene	ND	5.2		µg/Kg	1	5/16/2005
Tetrachloroethene	ND	5.2		µg/Kg	1	5/16/2005
Toluene	ND	5.2		µg/Kg	1	5/16/2005
trans-1,2-Dichloroethene	ND	5.2		µg/Kg	1	5/16/2005
Trichloroethene	ND	5.2		µg/Kg	1	5/16/2005
Trichlorofluoromethane	ND	5.2		µg/Kg	1	5/16/2005
Vinyl chloride	ND	5.2		µg/Kg	1	5/16/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-30
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:56:00 AM
Lab ID:	076405-014A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
			EPA 8260B			
RunID: MS1_050512A	QC Batch: P05VS062			PrepDate: 5/12/2005		Analyst: **MFR**
1,1,1,2-Tetrachloroethane	ND	4.7		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.7		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.7		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.7		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.7		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.7		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.7		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.7		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.7		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.7		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.7		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	9.5		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.7		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.7		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.7		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.7		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.7		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.7		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.7		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.7		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.7		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.7		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.7		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.7		µg/Kg	1	5/13/2005
Benzene	ND	4.7		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.7		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.7		µg/Kg	1	5/13/2005
Bromoform	ND	4.7		µg/Kg	1	5/13/2005
Bromomethane	ND	4.7		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.7		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.7		µg/Kg	1	5/13/2005
Chloroethane	ND	4.7		µg/Kg	1	5/13/2005
Chloroform	ND	4.7		µg/Kg	1	5/13/2005
Chloromethane	ND	4.7		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	4.7		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.7		µg/Kg	1	5/13/2005

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-30
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 9:56:00 AM
Lab ID:	076405-014A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A   QC Batch: P05VS062   PrepDate: 5/12/2005   Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.7		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.7		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.7		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.7		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.7		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.7		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.7		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.7		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.7		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.7		µg/Kg	1	5/13/2005
MTBE	ND	4.7		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.7		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.7		µg/Kg	1	5/13/2005
Naphthalene	ND	4.7		µg/Kg	1	5/13/2005
o-Xylene	ND	4.7		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.7		µg/Kg	1	5/13/2005
Styrene	ND	4.7		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.7		µg/Kg	1	5/13/2005
Tert-Butanol	ND	95		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.7		µg/Kg	1	5/13/2005
Tetrachloroethene	5.5	4.7		µg/Kg	1	5/13/2005
Toluene	ND	4.7		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.7		µg/Kg	1	5/13/2005
Trichloroethene	ND	4.7		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.7		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.7		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories   *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-35
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 10:02:00 AM
Lab ID:	076405-015A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
			EPA 8260B			
RunID: MS1_050512A	QC Batch: P05VS062			PrepDate:	5/12/2005	Analyst: **MFR**
1,1,1,2-Tetrachloroethane	ND	4.1		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.1		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.1		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.1		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.1		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.1		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.1		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.1		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.1		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.1		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.1		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	8.3		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.1		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.1		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.1		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.1		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.1		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.1		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.1		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.1		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.1		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.1		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.1		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.1		µg/Kg	1	5/13/2005
Benzene	ND	4.1		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.1		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.1		µg/Kg	1	5/13/2005
Bromoform	ND	4.1		µg/Kg	1	5/13/2005
Bromomethane	ND	4.1		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.1		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.1		µg/Kg	1	5/13/2005
Chloroethane	ND	4.1		µg/Kg	1	5/13/2005
Chloroform	ND	4.1		µg/Kg	1	5/13/2005
Chloromethane	ND	4.1		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	4.1		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.1		µg/Kg	1	5/13/2005

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-35
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 10:02:00 AM
Lab ID:	076405-015A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050512A QC Batch: P05VS062 PrepDate: 5/12/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.1		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.1		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.1		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.1		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.1		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.1		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.1		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.1		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.1		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.1		µg/Kg	1	5/13/2005
MTBE	ND	4.1		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.1		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.1		µg/Kg	1	5/13/2005
Naphthalene	ND	4.1		µg/Kg	1	5/13/2005
o-Xylene	ND	4.1		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.1		µg/Kg	1	5/13/2005
Styrene	ND	4.1		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.1		µg/Kg	1	5/13/2005
Tert-Butanol	ND	83		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.1		µg/Kg	1	5/13/2005
Tetrachloroethene	4.9	4.1		µg/Kg	1	5/13/2005
Toluene	ND	4.1		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.1		µg/Kg	1	5/13/2005
Trichloroethene	ND	4.1		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.1		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.1		µg/Kg	1	5/13/2005

Qualifiers:

- ND - Not Detected at the Reporting Limit
- S - Spike/Surrogate outside of limits due to matrix interferen
- J - Analyte detected below quantitation limits
- H - Sample exceeded analytical holding time
- B - Analyte detected in the associated Method Blank
- E - Value above quantitation range
- DO - Surrogate Diluted Out
- R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-40
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 10:10:00 AM
Lab ID:	076405-016A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
			EPA 8260B			
RunID: MS1_050513A	QC Batch: P05VS063			PrepDate:	5/11/2005	Analyst: **MFR**
1,1,1,2-Tetrachloroethane	ND	5.0		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	5.0		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	5.0		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	5.0		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	5.0		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	5.0		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	5.0		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	5.0		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	5.0		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	5.0		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	5.0		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	10		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	5.0		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	5.0		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	5.0		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	5.0		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	5.0		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	5.0		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	5.0		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	5.0		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	5.0		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	5.0		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	5.0		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	5.0		µg/Kg	1	5/13/2005
Benzene	ND	5.0		µg/Kg	1	5/13/2005
Bromobenzene	ND	5.0		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	5.0		µg/Kg	1	5/13/2005
Bromoform	ND	5.0		µg/Kg	1	5/13/2005
Bromomethane	ND	5.0		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	5.0		µg/Kg	1	5/13/2005
Chlorobenzene	ND	5.0		µg/Kg	1	5/13/2005
Chloroethane	ND	5.0		µg/Kg	1	5/13/2005
Chloroform	ND	5.0		µg/Kg	1	5/13/2005
Chloromethane	ND	5.0		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	5.0		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	5.0		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interferen

H - Sample exceeded analytical holding time

E - Value above quantitation range

R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories **Date:** *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C2-40
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 10:10:00 AM
Lab ID:	076405-016A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	5.0		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	5.0		µg/Kg	1	5/13/2005
Dibromomethane	ND	5.0		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	5.0		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	5.0		µg/Kg	1	5/13/2005
Ethylbenzene	ND	5.0		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	5.0		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	5.0		µg/Kg	1	5/13/2005
m,p-Xylene	ND	5.0		µg/Kg	1	5/13/2005
Methylene chloride	ND	5.0		µg/Kg	1	5/13/2005
MTBE	ND	5.0		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	5.0		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	5.0		µg/Kg	1	5/13/2005
Naphthalene	ND	5.0		µg/Kg	1	5/13/2005
o-Xylene	ND	5.0		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	5.0		µg/Kg	1	5/13/2005
Styrene	ND	5.0		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	5.0		µg/Kg	1	5/13/2005
Tert-Butanol	ND	100		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	5.0		µg/Kg	1	5/13/2005
Tetrachloroethene	ND	5.0		µg/Kg	1	5/13/2005
Toluene	ND	5.0		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	5.0		µg/Kg	1	5/13/2005
Trichloroethene	ND	5.0		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	5.0		µg/Kg	1	5/13/2005
Vinyl chloride	ND	5.0		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-5
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:05:00 AM
Lab ID:	076405-017A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	5.9		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	5.9		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	5.9		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	5.9		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	5.9		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	5.9		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	5.9		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	5.9		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	5.9		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	5.9		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	5.9		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	12		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	5.9		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	5.9		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	5.9		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	5.9		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	5.9		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	5.9		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	5.9		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	5.9		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	5.9		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	5.9		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	5.9		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	5.9		µg/Kg	1	5/13/2005
Benzene	ND	5.9		µg/Kg	1	5/13/2005
Bromobenzene	ND	5.9		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	5.9		µg/Kg	1	5/13/2005
Bromoform	ND	5.9		µg/Kg	1	5/13/2005
Bromomethane	ND	5.9		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	5.9		µg/Kg	1	5/13/2005
Chlorobenzene	ND	5.9		µg/Kg	1	5/13/2005
Chloroethane	ND	5.9		µg/Kg	1	5/13/2005
Chloroform	ND	5.9		µg/Kg	1	5/13/2005
Chloromethane	ND	5.9		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	5.9		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	5.9		µg/Kg	1	5/13/2005

Qualifiers:

- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interferen
- H - Sample exceeded analytical holding time
- E - Value above quantitation range
- R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-5
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:05:00 AM
Lab ID:	076405-017A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS — EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	5.9		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	5.9		µg/Kg	1	5/13/2005
Dibromomethane	ND	5.9		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	5.9		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	5.9		µg/Kg	1	5/13/2005
Ethylbenzene	ND	5.9		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	5.9		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	5.9		µg/Kg	1	5/13/2005
m,p-Xylene	ND	5.9		µg/Kg	1	5/13/2005
Methylene chloride	ND	5.9		µg/Kg	1	5/13/2005
MTBE	ND	5.9		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	5.9		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	5.9		µg/Kg	1	5/13/2005
Naphthalene	ND	5.9		µg/Kg	1	5/13/2005
o-Xylene	ND	5.9		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	5.9		µg/Kg	1	5/13/2005
Styrene	ND	5.9		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	5.9		µg/Kg	1	5/13/2005
Tert-Butanol	ND	120		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	5.9		µg/Kg	1	5/13/2005
Tetrachloroethene	ND	5.9		µg/Kg	1	5/13/2005
Toluene	ND	5.9		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	5.9		µg/Kg	1	5/13/2005
Trichloroethene	ND	5.9		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	5.9		µg/Kg	1	5/13/2005
Vinyl chloride	ND	5.9		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank	E - Value above quantitation range
DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-10
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:00:00 AM
Lab ID:	076405-018A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.3		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.3		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.3		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.3		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	8.6		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.3		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.3		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.3		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.3		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.3		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.3		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.3		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.3		µg/Kg	1	5/13/2005
Benzene	ND	4.3		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.3		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.3		µg/Kg	1	5/13/2005
Bromoform	ND	4.3		µg/Kg	1	5/13/2005
Bromomethane	ND	4.3		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.3		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
Chloroethane	ND	4.3		µg/Kg	1	5/13/2005
Chloroform	ND	4.3		µg/Kg	1	5/13/2005
Chloromethane	ND	4.3		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	4.3		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.3		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-10
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:00:00 AM
Lab ID:	076405-018A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.3		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.3		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.3		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.3		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.3		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.3		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.3		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.3		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.3		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.3		µg/Kg	1	5/13/2005
MTBE	ND	4.3		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.3		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.3		µg/Kg	1	5/13/2005
Naphthalene	ND	4.3		µg/Kg	1	5/13/2005
o-Xylene	ND	4.3		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.3		µg/Kg	1	5/13/2005
Styrene	ND	4.3		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.3		µg/Kg	1	5/13/2005
Tert-Butanol	ND	86		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.3		µg/Kg	1	5/13/2005
Tetrachloroethene	14	4.3		µg/Kg	1	5/13/2005
Toluene	ND	4.3		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.3		µg/Kg	1	5/13/2005
Trichloroethene	ND	4.3		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.3		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.3		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-15
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:14:00 AM
Lab ID:	076405-019A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.3		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.3		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.3		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.3		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	8.7		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.3		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.3		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.3		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.3		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.3		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.3		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.3		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.3		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.3		µg/Kg	1	5/13/2005
Benzene	ND	4.3		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.3		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.3		µg/Kg	1	5/13/2005
Bromoform	ND	4.3		µg/Kg	1	5/13/2005
Bromomethane	ND	4.3		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.3		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.3		µg/Kg	1	5/13/2005
Chloroethane	ND	4.3		µg/Kg	1	5/13/2005
Chloroform	ND	4.3		µg/Kg	1	5/13/2005
Chloromethane	ND	4.3		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	4.3		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.3		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interferen

H - Sample exceeded analytical holding time

E - Value above quantitation range

R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-15
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:14:00 AM
Lab ID:	076405-019A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS1_050513A	QC Batch: P05VS063			PrepDate:	5/11/2005	Analyst: **MFR**
Di-isopropyl ether	ND	4.3		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.3		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.3		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.3		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.3		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.3		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.3		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.3		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.3		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.3		µg/Kg	1	5/13/2005
MTBE	ND	4.3		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.3		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.3		µg/Kg	1	5/13/2005
Naphthalene	ND	4.3		µg/Kg	1	5/13/2005
o-Xylene	ND	4.3		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.3		µg/Kg	1	5/13/2005
Styrene	ND	4.3		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.3		µg/Kg	1	5/13/2005
Tert-Butanol	ND	87		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.3		µg/Kg	1	5/13/2005
Tetrachloroethene	10	4.3		µg/Kg	1	5/13/2005
Toluene	ND	4.3		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.3		µg/Kg	1	5/13/2005
Trichloroethene	ND	4.3		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.3		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.3		µg/Kg	1	5/13/2005

Qualifiers:
- ND - Not Detected at the Reporting Limit
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- DO - Surrogate Diluted Out
- S - Spike/Surrogate outside of limits due to matrix interferen
- H - Sample exceeded analytical holding time
- E - Value above quantitation range
- R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-20
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:17:00 AM
Lab ID:	076405-020A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.4		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.4		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.4		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.4		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.4		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.4		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.4		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.4		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.4		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.4		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.4		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	8.8		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.4		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.4		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.4		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.4		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.4		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.4		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.4		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.4		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.4		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.4		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.4		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.4		µg/Kg	1	5/13/2005
Benzene	ND	4.4		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.4		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.4		µg/Kg	1	5/13/2005
Bromoform	ND	4.4		µg/Kg	1	5/13/2005
Bromomethane	ND	4.4		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.4		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.4		µg/Kg	1	5/13/2005
Chloroethane	ND	4.4		µg/Kg	1	5/13/2005
Chloroform	ND	4.4		µg/Kg	1	5/13/2005
Chloromethane	ND	4.4		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	4.4		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.4		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-20
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:17:00 AM
Lab ID:	076405-020A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.4		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.4		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.4		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.4		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.4		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.4		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.4		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.4		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.4		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.4		µg/Kg	1	5/13/2005
MTBE	ND	4.4		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.4		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.4		µg/Kg	1	5/13/2005
Naphthalene	ND	4.4		µg/Kg	1	5/13/2005
o-Xylene	ND	4.4		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.4		µg/Kg	1	5/13/2005
Styrene	ND	4.4		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.4		µg/Kg	1	5/13/2005
Tert-Butanol	ND	88		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.4		µg/Kg	1	5/13/2005
Tetrachloroethene	ND	4.4		µg/Kg	1	5/13/2005
Toluene	ND	4.4		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.4		µg/Kg	1	5/13/2005
Trichloroethene	ND	4.4		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.4		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.4		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-25
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:24:00 AM
Lab ID:	076405-021A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	5.4		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	5.4		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	5.4		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	11		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	5.4		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	5.4		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	5.4		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	5.4		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	5.4		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	5.4		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	5.4		µg/Kg	1	5/13/2005
Benzene	ND	5.4		µg/Kg	1	5/13/2005
Bromobenzene	ND	5.4		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	5.4		µg/Kg	1	5/13/2005
Bromoform	ND	5.4		µg/Kg	1	5/13/2005
Bromomethane	ND	5.4		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	5.4		µg/Kg	1	5/13/2005
Chlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
Chloroethane	ND	5.4		µg/Kg	1	5/13/2005
Chloroform	ND	5.4		µg/Kg	1	5/13/2005
Chloromethane	ND	5.4		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	5.4		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	5.4		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits
H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank
E - Value above quantitation range
DO - Surrogate Diluted Out
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-25
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:24:00 AM
Lab ID:	076405-021A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS1_050513A	QC Batch: P05VS063			PrepDate: 5/11/2005		Analyst: **MFR**
Di-isopropyl ether	ND	5.4		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	5.4		µg/Kg	1	5/13/2005
Dibromomethane	ND	5.4		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	5.4		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	5.4		µg/Kg	1	5/13/2005
Ethylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	5.4		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	5.4		µg/Kg	1	5/13/2005
m,p-Xylene	ND	5.4		µg/Kg	1	5/13/2005
Methylene chloride	ND	5.4		µg/Kg	1	5/13/2005
MTBE	ND	5.4		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	5.4		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Naphthalene	ND	5.4		µg/Kg	1	5/13/2005
o-Xylene	ND	5.4		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Styrene	ND	5.4		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	5.4		µg/Kg	1	5/13/2005
Tert-Butanol	ND	110		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Tetrachloroethene	ND	5.4		µg/Kg	1	5/13/2005
Toluene	ND	5.4		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	5.4		µg/Kg	1	5/13/2005
Trichloroethene	ND	5.4		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	5.4		µg/Kg	1	5/13/2005
Vinyl chloride	ND	5.4		µg/Kg	1	5/13/2005

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
	J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-30
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:32:00 AM
Lab ID:	076405-022A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
			EPA 8260B			
RunID: MS1_050513A	QC Batch: P05VS063			PrepDate:	5/11/2005	Analyst: MFR
1,1,1,2-Tetrachloroethane	ND	3.9		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	3.9		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	3.9		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	3.9		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	3.9		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	3.9		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	3.9		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	3.9		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	3.9		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	3.9		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	3.9		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	7.7		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	3.9		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	3.9		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	3.9		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	3.9		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	3.9		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	3.9		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	3.9		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	3.9		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	3.9		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	3.9		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	3.9		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	3.9		µg/Kg	1	5/13/2005
Benzene	ND	3.9		µg/Kg	1	5/13/2005
Bromobenzene	ND	3.9		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	3.9		µg/Kg	1	5/13/2005
Bromoform	ND	3.9		µg/Kg	1	5/13/2005
Bromomethane	ND	3.9		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	3.9		µg/Kg	1	5/13/2005
Chlorobenzene	ND	3.9		µg/Kg	1	5/13/2005
Chloroethane	ND	3.9		µg/Kg	1	5/13/2005
Chloroform	ND	3.9		µg/Kg	1	5/13/2005
Chloromethane	ND	3.9		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	3.9		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	3.9		µg/Kg	1	5/13/2005

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
	J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-30
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:32:00 AM
Lab ID:	076405-022A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	3.9		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	3.9		µg/Kg	1	5/13/2005
Dibromomethane	ND	3.9		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	3.9		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	3.9		µg/Kg	1	5/13/2005
Ethylbenzene	ND	3.9		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	3.9		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	3.9		µg/Kg	1	5/13/2005
m,p-Xylene	ND	3.9		µg/Kg	1	5/13/2005
Methylene chloride	ND	3.9		µg/Kg	1	5/13/2005
MTBE	ND	3.9		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	3.9		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	3.9		µg/Kg	1	5/13/2005
Naphthalene	ND	3.9		µg/Kg	1	5/13/2005
o-Xylene	ND	3.9		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	3.9		µg/Kg	1	5/13/2005
Styrene	ND	3.9		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	3.9		µg/Kg	1	5/13/2005
Tert-Butanol	ND	77		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	3.9		µg/Kg	1	5/13/2005
Tetrachloroethene	5.9	3.9		µg/Kg	1	5/13/2005
Toluene	ND	3.9		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	3.9		µg/Kg	1	5/13/2005
Trichloroethene	ND	3.9		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	3.9		µg/Kg	1	5/13/2005
Vinyl chloride	ND	3.9		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-35
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:42:00 AM
Lab ID:	076405-023A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	5.4		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	5.4		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	5.4		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	11		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	5.4		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	5.4		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	5.4		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	5.4		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	5.4		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	5.4		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	5.4		µg/Kg	1	5/13/2005
Benzene	ND	5.4		µg/Kg	1	5/13/2005
Bromobenzene	ND	5.4		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	5.4		µg/Kg	1	5/13/2005
Bromoform	ND	5.4		µg/Kg	1	5/13/2005
Bromomethane	ND	5.4		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	5.4		µg/Kg	1	5/13/2005
Chlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
Chloroethane	ND	5.4		µg/Kg	1	5/13/2005
Chloroform	ND	5.4		µg/Kg	1	5/13/2005
Chloromethane	ND	5.4		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	5.4		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	5.4		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-35
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:42:00 AM
Lab ID:	076405-023A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS1_050513A	QC Batch: P05VS063			PrepDate:	5/11/2005	Analyst: **MFR**
Di-isopropyl ether	ND	5.4		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	5.4		µg/Kg	1	5/13/2005
Dibromomethane	ND	5.4		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	5.4		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	5.4		µg/Kg	1	5/13/2005
Ethylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	5.4		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	5.4		µg/Kg	1	5/13/2005
m,p-Xylene	ND	5.4		µg/Kg	1	5/13/2005
Methylene chloride	ND	5.4		µg/Kg	1	5/13/2005
MTBE	ND	5.4		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	5.4		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Naphthalene	ND	5.4		µg/Kg	1	5/13/2005
o-Xylene	ND	5.4		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Styrene	ND	5.4		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	5.4		µg/Kg	1	5/13/2005
Tert-Butanol	ND	110		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Tetrachloroethene	ND	5.4		µg/Kg	1	5/13/2005
Toluene	ND	5.4		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	5.4		µg/Kg	1	5/13/2005
Trichloroethene	ND	5.4		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	5.4		µg/Kg	1	5/13/2005
Vinyl chloride	ND	5.4		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-40
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:48:00 AM
Lab ID:	076405-024A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS1_050513A	QC Batch: P05VS063			PrepDate:	5/11/2005	Analyst: **MFR**
1,1,1,2-Tetrachloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	5.4		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	5.4		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	5.4		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	11		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	5.4		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	5.4		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	5.4		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	5.4		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	5.4		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	5.4		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	5.4		µg/Kg	1	5/13/2005
Benzene	ND	5.4		µg/Kg	1	5/13/2005
Bromobenzene	ND	5.4		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	5.4		µg/Kg	1	5/13/2005
Bromoform	ND	5.4		µg/Kg	1	5/13/2005
Bromomethane	ND	5.4		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	5.4		µg/Kg	1	5/13/2005
Chlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
Chloroethane	ND	5.4		µg/Kg	1	5/13/2005
Chloroform	ND	5.4		µg/Kg	1	5/13/2005
Chloromethane	ND	5.4		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	5.4		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	5.4		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

DO - Surrogate Diluted Out

S - Spike/Surrogate outside of limits due to matrix interferen

H - Sample exceeded analytical holding time

E - Value above quantitation range

R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C3-40
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 11:48:00 AM
Lab ID:	076405-024A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	5.4		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	5.4		µg/Kg	1	5/13/2005
Dibromomethane	ND	5.4		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	5.4		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	5.4		µg/Kg	1	5/13/2005
Ethylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	5.4		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	5.4		µg/Kg	1	5/13/2005
m,p-Xylene	ND	5.4		µg/Kg	1	5/13/2005
Methylene chloride	ND	5.4		µg/Kg	1	5/13/2005
MTBE	ND	5.4		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	5.4		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Naphthalene	ND	5.4		µg/Kg	1	5/13/2005
o-Xylene	ND	5.4		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Styrene	ND	5.4		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	5.4		µg/Kg	1	5/13/2005
Tert-Butanol	ND	110		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Tetrachloroethene	ND	5.4		µg/Kg	1	5/13/2005
Toluene	ND	5.4		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	5.4		µg/Kg	1	5/13/2005
Trichloroethene	ND	5.4		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	5.4		µg/Kg	1	5/13/2005
Vinyl chloride	ND	5.4		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-5
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:18:00 PM
Lab ID:	076405-025A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	5.4		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	5.4		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	5.4		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	11		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	5.4		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	5.4		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	5.4		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	5.4		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	5.4		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	5.4		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	5.4		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	5.4		µg/Kg	1	5/13/2005
Benzene	ND	5.4		µg/Kg	1	5/13/2005
Bromobenzene	ND	5.4		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	5.4		µg/Kg	1	5/13/2005
Bromoform	ND	5.4		µg/Kg	1	5/13/2005
Bromomethane	ND	5.4		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	5.4		µg/Kg	1	5/13/2005
Chlorobenzene	ND	5.4		µg/Kg	1	5/13/2005
Chloroethane	ND	5.4		µg/Kg	1	5/13/2005
Chloroform	ND	5.4		µg/Kg	1	5/13/2005
Chloromethane	ND	5.4		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	5.4		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	5.4		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-5
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:18:00 PM
Lab ID:	076405-025A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	5.4		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	5.4		µg/Kg	1	5/13/2005
Dibromomethane	ND	5.4		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	5.4		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	5.4		µg/Kg	1	5/13/2005
Ethylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	5.4		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	5.4		µg/Kg	1	5/13/2005
m,p-Xylene	ND	5.4		µg/Kg	1	5/13/2005
Methylene chloride	ND	5.4		µg/Kg	1	5/13/2005
MTBE	ND	5.4		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	5.4		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Naphthalene	ND	5.4		µg/Kg	1	5/13/2005
o-Xylene	ND	5.4		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Styrene	ND	5.4		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	5.4		µg/Kg	1	5/13/2005
Tert-Butanol	ND	110		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	5.4		µg/Kg	1	5/13/2005
Tetrachloroethene	6.6	5.4		µg/Kg	1	5/13/2005
Toluene	ND	5.4		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	5.4		µg/Kg	1	5/13/2005
Trichloroethene	ND	5.4		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	5.4		µg/Kg	1	5/13/2005
Vinyl chloride	ND	5.4		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-10
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:21:00 PM
Lab ID:	076405-026A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.8		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.8		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.8		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.8		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.8		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.8		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.8		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.8		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.8		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.8		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.8		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	9.6		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.8		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.8		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.8		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.8		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.8		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.8		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.8		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.8		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.8		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.8		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.8		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.8		µg/Kg	1	5/13/2005
Benzene	ND	4.8		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.8		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.8		µg/Kg	1	5/13/2005
Bromoform	ND	4.8		µg/Kg	1	5/13/2005
Bromomethane	ND	4.8		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.8		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.8		µg/Kg	1	5/13/2005
Chloroethane	ND	4.8		µg/Kg	1	5/13/2005
Chloroform	ND	4.8		µg/Kg	1	5/13/2005
Chloromethane	ND	4.8		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	4.8		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.8		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank	E - Value above quantitation range
DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-10
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:21:00 PM
Lab ID:	076405-026A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS — **EPA 8260B**

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.8		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.8		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.8		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.8		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.8		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.8		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.8		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.8		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.8		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.8		µg/Kg	1	5/13/2005
MTBE	ND	4.8		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.8		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.8		µg/Kg	1	5/13/2005
Naphthalene	ND	4.8		µg/Kg	1	5/13/2005
o-Xylene	ND	4.8		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.8		µg/Kg	1	5/13/2005
Styrene	ND	4.8		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.8		µg/Kg	1	5/13/2005
Tert-Butanol	ND	96		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.8		µg/Kg	1	5/13/2005
Tetrachloroethene	9.0	4.8		µg/Kg	1	5/13/2005
Toluene	ND	4.8		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.8		µg/Kg	1	5/13/2005
Trichloroethene	ND	4.8		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.8		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.8		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank	E - Value above quantitation range
DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-15
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:25:00 PM
Lab ID:	076405-027A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS — EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.6		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.6		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.6		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	9.3		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.6		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.6		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.6		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.6		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.6		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.6		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.6		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.6		µg/Kg	1	5/13/2005
Benzene	ND	4.6		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.6		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.6		µg/Kg	1	5/13/2005
Bromoform	ND	4.6		µg/Kg	1	5/13/2005
Bromomethane	ND	4.6		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.6		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.6		µg/Kg	1	5/13/2005
Chloroethane	ND	4.6		µg/Kg	1	5/13/2005
Chloroform	ND	4.6		µg/Kg	1	5/13/2005
Chloromethane	ND	4.6		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	4.6		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.6		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-15
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:25:00 PM
Lab ID:	076405-027A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A   QC Batch: P05VS063   PrepDate: 5/11/2005   Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.6		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.6		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.6		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.6		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.6		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.6		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.6		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.6		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.6		µg/Kg	1	5/13/2005
MTBE	ND	4.6		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.6		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Naphthalene	ND	4.6		µg/Kg	1	5/13/2005
o-Xylene	ND	4.6		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Styrene	ND	4.6		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.6		µg/Kg	1	5/13/2005
Tert-Butanol	ND	93		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.6		µg/Kg	1	5/13/2005
Tetrachloroethene	6.6	4.6		µg/Kg	1	5/13/2005
Toluene	ND	4.6		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.6		µg/Kg	1	5/13/2005
Trichloroethene	ND	4.6		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.6		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.6		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories   *3275 Walnut Avenue   Signal Hill, CA 90755   Tel: 562 989-4045   Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-20
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:32:00 PM
Lab ID:	076405-028A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.2		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	4.2		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	4.2		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	4.2		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	4.2		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	4.2		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	4.2		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	4.2		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	4.2		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	4.2		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	4.2		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	8.4		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	4.2		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	4.2		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	4.2		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	4.2		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	4.2		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	4.2		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	4.2		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	4.2		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	4.2		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	4.2		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	4.2		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	4.2		µg/Kg	1	5/13/2005
Benzene	ND	4.2		µg/Kg	1	5/13/2005
Bromobenzene	ND	4.2		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	4.2		µg/Kg	1	5/13/2005
Bromoform	ND	4.2		µg/Kg	1	5/13/2005
Bromomethane	ND	4.2		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	4.2		µg/Kg	1	5/13/2005
Chlorobenzene	ND	4.2		µg/Kg	1	5/13/2005
Chloroethane	ND	4.2		µg/Kg	1	5/13/2005
Chloroform	ND	4.2		µg/Kg	1	5/13/2005
Chloromethane	ND	4.2		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	8.9	4.2		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	4.2		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-20
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:32:00 PM
Lab ID:	076405-028A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.2		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	4.2		µg/Kg	1	5/13/2005
Dibromomethane	ND	4.2		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	4.2		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	4.2		µg/Kg	1	5/13/2005
Ethylbenzene	ND	4.2		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	4.2		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	4.2		µg/Kg	1	5/13/2005
m,p-Xylene	ND	4.2		µg/Kg	1	5/13/2005
Methylene chloride	ND	4.2		µg/Kg	1	5/13/2005
MTBE	ND	4.2		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	4.2		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	4.2		µg/Kg	1	5/13/2005
Naphthalene	ND	4.2		µg/Kg	1	5/13/2005
o-Xylene	ND	4.2		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	4.2		µg/Kg	1	5/13/2005
Styrene	ND	4.2		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	4.2		µg/Kg	1	5/13/2005
Tert-Butanol	ND	84		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	4.2		µg/Kg	1	5/13/2005
Tetrachloroethene	7.5	4.2		µg/Kg	1	5/13/2005
Toluene	ND	4.2		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	4.2		µg/Kg	1	5/13/2005
Trichloroethene	ND	4.2		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	4.2		µg/Kg	1	5/13/2005
Vinyl chloride	ND	4.2		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-25
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:36:00 PM
Lab ID:	076405-029A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS — EPA 8260B

RunID: MS1_050513A QC Batch: P05VS063 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	5.2		µg/Kg	1	5/13/2005
1,1,1-Trichloroethane	ND	5.2		µg/Kg	1	5/13/2005
1,1,2,2-Tetrachloroethane	ND	5.2		µg/Kg	1	5/13/2005
1,1,2-Trichloroethane	ND	5.2		µg/Kg	1	5/13/2005
1,1-Dichloroethane	ND	5.2		µg/Kg	1	5/13/2005
1,1-Dichloroethene	ND	5.2		µg/Kg	1	5/13/2005
1,1-Dichloropropene	ND	5.2		µg/Kg	1	5/13/2005
1,2,3-Trichlorobenzene	ND	5.2		µg/Kg	1	5/13/2005
1,2,3-Trichloropropane	ND	5.2		µg/Kg	1	5/13/2005
1,2,4-Trichlorobenzene	ND	5.2		µg/Kg	1	5/13/2005
1,2,4-Trimethylbenzene	ND	5.2		µg/Kg	1	5/13/2005
1,2-Dibromo-3-chloropropane	ND	10		µg/Kg	1	5/13/2005
1,2-Dibromoethane	ND	5.2		µg/Kg	1	5/13/2005
1,2-Dichlorobenzene	ND	5.2		µg/Kg	1	5/13/2005
1,2-Dichloroethane	ND	5.2		µg/Kg	1	5/13/2005
1,2-Dichloropropane	ND	5.2		µg/Kg	1	5/13/2005
1,3,5-Trimethylbenzene	ND	5.2		µg/Kg	1	5/13/2005
1,3-Dichlorobenzene	ND	5.2		µg/Kg	1	5/13/2005
1,3-Dichloropropane	ND	5.2		µg/Kg	1	5/13/2005
1,4-Dichlorobenzene	ND	5.2		µg/Kg	1	5/13/2005
2,2-Dichloropropane	ND	5.2		µg/Kg	1	5/13/2005
2-Chlorotoluene	ND	5.2		µg/Kg	1	5/13/2005
4-Chlorotoluene	ND	5.2		µg/Kg	1	5/13/2005
4-Isopropyltoluene	ND	5.2		µg/Kg	1	5/13/2005
Benzene	ND	5.2		µg/Kg	1	5/13/2005
Bromobenzene	ND	5.2		µg/Kg	1	5/13/2005
Bromodichloromethane	ND	5.2		µg/Kg	1	5/13/2005
Bromoform	ND	5.2		µg/Kg	1	5/13/2005
Bromomethane	ND	5.2		µg/Kg	1	5/13/2005
Carbon tetrachloride	ND	5.2		µg/Kg	1	5/13/2005
Chlorobenzene	ND	5.2		µg/Kg	1	5/13/2005
Chloroethane	ND	5.2		µg/Kg	1	5/13/2005
Chloroform	ND	5.2		µg/Kg	1	5/13/2005
Chloromethane	ND	5.2		µg/Kg	1	5/13/2005
cis-1,2-Dichloroethene	ND	5.2		µg/Kg	1	5/13/2005
cis-1,3-Dichloropropene	ND	5.2		µg/Kg	1	5/13/2005

Qualifiers:

ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank	E - Value above quantitation range
DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-25
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:36:00 PM
Lab ID:	076405-029A	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS1_050513A	QC Batch: P05VS063			PrepDate:	5/11/2005	Analyst: **MFR**
Di-isopropyl ether	ND	5.2		µg/Kg	1	5/13/2005
Dibromochloromethane	ND	5.2		µg/Kg	1	5/13/2005
Dibromomethane	ND	5.2		µg/Kg	1	5/13/2005
Dichlorodifluoromethane	ND	5.2		µg/Kg	1	5/13/2005
Ethyl Tert-butyl ether	ND	5.2		µg/Kg	1	5/13/2005
Ethylbenzene	ND	5.2		µg/Kg	1	5/13/2005
Hexachlorobutadiene	ND	5.2		µg/Kg	1	5/13/2005
Isopropylbenzene	ND	5.2		µg/Kg	1	5/13/2005
m,p-Xylene	ND	5.2		µg/Kg	1	5/13/2005
Methylene chloride	ND	5.2		µg/Kg	1	5/13/2005
MTBE	ND	5.2		µg/Kg	1	5/13/2005
n-Butylbenzene	ND	5.2		µg/Kg	1	5/13/2005
n-Propylbenzene	ND	5.2		µg/Kg	1	5/13/2005
Naphthalene	ND	5.2		µg/Kg	1	5/13/2005
o-Xylene	ND	5.2		µg/Kg	1	5/13/2005
sec-Butylbenzene	ND	5.2		µg/Kg	1	5/13/2005
Styrene	ND	5.2		µg/Kg	1	5/13/2005
Tert-amyl methyl ether	ND	5.2		µg/Kg	1	5/13/2005
Tert-Butanol	ND	100		µg/Kg	1	5/13/2005
tert-Butylbenzene	ND	5.2		µg/Kg	1	5/13/2005
Tetrachloroethene	ND	5.2		µg/Kg	1	5/13/2005
Toluene	ND	5.2		µg/Kg	1	5/13/2005
trans-1,2-Dichloroethene	ND	5.2		µg/Kg	1	5/13/2005
Trichloroethene	ND	5.2		µg/Kg	1	5/13/2005
Trichlorofluoromethane	ND	5.2		µg/Kg	1	5/13/2005
Vinyl chloride	ND	5.2		µg/Kg	1	5/13/2005

Qualifiers:		
	ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
	J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories 3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-30
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:41:00 PM
Lab ID:	076405-030B	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050516A QC Batch: P05VS065 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.6		µg/Kg	1	5/16/2005
1,1,1-Trichloroethane	ND	4.6		µg/Kg	1	5/16/2005
1,1,2,2-Tetrachloroethane	ND	4.6		µg/Kg	1	5/16/2005
1,1,2-Trichloroethane	ND	4.6		µg/Kg	1	5/16/2005
1,1-Dichloroethane	ND	4.6		µg/Kg	1	5/16/2005
1,1-Dichloroethene	ND	4.6		µg/Kg	1	5/16/2005
1,1-Dichloropropene	ND	4.6		µg/Kg	1	5/16/2005
1,2,3-Trichlorobenzene	ND	4.6		µg/Kg	1	5/16/2005
1,2,3-Trichloropropane	ND	4.6		µg/Kg	1	5/16/2005
1,2,4-Trichlorobenzene	ND	4.6		µg/Kg	1	5/16/2005
1,2,4-Trimethylbenzene	ND	4.6		µg/Kg	1	5/16/2005
1,2-Dibromo-3-chloropropane	ND	9.2		µg/Kg	1	5/16/2005
1,2-Dibromoethane	ND	4.6		µg/Kg	1	5/16/2005
1,2-Dichlorobenzene	ND	4.6		µg/Kg	1	5/16/2005
1,2-Dichloroethane	ND	4.6		µg/Kg	1	5/16/2005
1,2-Dichloropropane	ND	4.6		µg/Kg	1	5/16/2005
1,3,5-Trimethylbenzene	ND	4.6		µg/Kg	1	5/16/2005
1,3-Dichlorobenzene	ND	4.6		µg/Kg	1	5/16/2005
1,3-Dichloropropane	ND	4.6		µg/Kg	1	5/16/2005
1,4-Dichlorobenzene	ND	4.6		µg/Kg	1	5/16/2005
2,2-Dichloropropane	ND	4.6		µg/Kg	1	5/16/2005
2-Chlorotoluene	ND	4.6		µg/Kg	1	5/16/2005
4-Chlorotoluene	ND	4.6		µg/Kg	1	5/16/2005
4-Isopropyltoluene	ND	4.6		µg/Kg	1	5/16/2005
Benzene	ND	4.6		µg/Kg	1	5/16/2005
Bromobenzene	ND	4.6		µg/Kg	1	5/16/2005
Bromodichloromethane	ND	4.6		µg/Kg	1	5/16/2005
Bromoform	ND	4.6		µg/Kg	1	5/16/2005
Bromomethane	ND	4.6		µg/Kg	1	5/16/2005
Carbon tetrachloride	ND	4.6		µg/Kg	1	5/16/2005
Chlorobenzene	ND	4.6		µg/Kg	1	5/16/2005
Chloroethane	ND	4.6		µg/Kg	1	5/16/2005
Chloroform	ND	4.6		µg/Kg	1	5/16/2005
Chloromethane	ND	4.6		µg/Kg	1	5/16/2005
cis-1,2-Dichloroethene	ND	4.6		µg/Kg	1	5/16/2005
cis-1,3-Dichloropropene	ND	4.6		µg/Kg	1	5/16/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits
H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank
E - Value above quantitation range
DO - Surrogate Diluted Out
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-30
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:41:00 PM
Lab ID:	076405-030B	**Matrix:**	SOIL

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS						
				EPA 8260B		
RunID: MS1_050516A	QC Batch: P05VS065			PrepDate:	5/11/2005	Analyst: **MFR**
Di-isopropyl ether	ND	4.6		µg/Kg	1	5/16/2005
Dibromochloromethane	ND	4.6		µg/Kg	1	5/16/2005
Dibromomethane	ND	4.6		µg/Kg	1	5/16/2005
Dichlorodifluoromethane	ND	4.6		µg/Kg	1	5/16/2005
Ethyl Tert-butyl ether	ND	4.6		µg/Kg	1	5/16/2005
Ethylbenzene	ND	4.6		µg/Kg	1	5/16/2005
Hexachlorobutadiene	ND	4.6		µg/Kg	1	5/16/2005
Isopropylbenzene	ND	4.6		µg/Kg	1	5/16/2005
m,p-Xylene	ND	4.6		µg/Kg	1	5/16/2005
Methylene chloride	ND	4.6		µg/Kg	1	5/16/2005
MTBE	ND	4.6		µg/Kg	1	5/16/2005
n-Butylbenzene	ND	4.6		µg/Kg	1	5/16/2005
n-Propylbenzene	ND	4.6		µg/Kg	1	5/16/2005
Naphthalene	ND	4.6		µg/Kg	1	5/16/2005
o-Xylene	ND	4.6		µg/Kg	1	5/16/2005
sec-Butylbenzene	ND	4.6		µg/Kg	1	5/16/2005
Styrene	ND	4.6		µg/Kg	1	5/16/2005
Tert-amyl methyl ether	ND	4.6		µg/Kg	1	5/16/2005
Tert-Butanol	ND	92		µg/Kg	1	5/16/2005
tert-Butylbenzene	ND	4.6		µg/Kg	1	5/16/2005
Tetrachloroethene	4.7	4.6		µg/Kg	1	5/16/2005
Toluene	ND	4.6		µg/Kg	1	5/16/2005
trans-1,2-Dichloroethene	ND	4.6		µg/Kg	1	5/16/2005
Trichloroethene	ND	4.6		µg/Kg	1	5/16/2005
Trichlorofluoromethane	ND	4.6		µg/Kg	1	5/16/2005
Vinyl chloride	ND	4.6		µg/Kg	1	5/16/2005

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike/Surrogate outside of limits due to matrix interferen
	J - Analyte detected below quantitation limits	H - Sample exceeded analytical holding time
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	DO - Surrogate Diluted Out	R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-35
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:50:00 PM
Lab ID:	076405-031A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050514A QC Batch: P05VS064 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	4.5		µg/Kg	1	5/14/2005
1,1,1-Trichloroethane	ND	4.5		µg/Kg	1	5/14/2005
1,1,2,2-Tetrachloroethane	ND	4.5		µg/Kg	1	5/14/2005
1,1,2-Trichloroethane	ND	4.5		µg/Kg	1	5/14/2005
1,1-Dichloroethane	ND	4.5		µg/Kg	1	5/14/2005
1,1-Dichloroethene	ND	4.5		µg/Kg	1	5/14/2005
1,1-Dichloropropene	ND	4.5		µg/Kg	1	5/14/2005
1,2,3-Trichlorobenzene	ND	4.5		µg/Kg	1	5/14/2005
1,2,3-Trichloropropane	ND	4.5		µg/Kg	1	5/14/2005
1,2,4-Trichlorobenzene	ND	4.5		µg/Kg	1	5/14/2005
1,2,4-Trimethylbenzene	ND	4.5		µg/Kg	1	5/14/2005
1,2-Dibromo-3-chloropropane	ND	9.0		µg/Kg	1	5/14/2005
1,2-Dibromoethane	ND	4.5		µg/Kg	1	5/14/2005
1,2-Dichlorobenzene	ND	4.5		µg/Kg	1	5/14/2005
1,2-Dichloroethane	ND	4.5		µg/Kg	1	5/14/2005
1,2-Dichloropropane	ND	4.5		µg/Kg	1	5/14/2005
1,3,5-Trimethylbenzene	ND	4.5		µg/Kg	1	5/14/2005
1,3-Dichlorobenzene	ND	4.5		µg/Kg	1	5/14/2005
1,3-Dichloropropane	ND	4.5		µg/Kg	1	5/14/2005
1,4-Dichlorobenzene	ND	4.5		µg/Kg	1	5/14/2005
2,2-Dichloropropane	ND	4.5		µg/Kg	1	5/14/2005
2-Chlorotoluene	ND	4.5		µg/Kg	1	5/14/2005
4-Chlorotoluene	ND	4.5		µg/Kg	1	5/14/2005
4-Isopropyltoluene	ND	4.5		µg/Kg	1	5/14/2005
Benzene	ND	4.5		µg/Kg	1	5/14/2005
Bromobenzene	ND	4.5		µg/Kg	1	5/14/2005
Bromodichloromethane	ND	4.5		µg/Kg	1	5/14/2005
Bromoform	ND	4.5		µg/Kg	1	5/14/2005
Bromomethane	ND	4.5		µg/Kg	1	5/14/2005
Carbon tetrachloride	ND	4.5		µg/Kg	1	5/14/2005
Chlorobenzene	ND	4.5		µg/Kg	1	5/14/2005
Chloroethane	ND	4.5		µg/Kg	1	5/14/2005
Chloroform	ND	4.5		µg/Kg	1	5/14/2005
Chloromethane	ND	4.5		µg/Kg	1	5/14/2005
cis-1,2-Dichloroethene	ND	4.5		µg/Kg	1	5/14/2005
cis-1,3-Dichloropropene	ND	4.5		µg/Kg	1	5/14/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits
H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank
E - Value above quantitation range
DO - Surrogate Diluted Out
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-35
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:50:00 PM
Lab ID:	076405-031A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS — **EPA 8260B**

RunID: MS1_050514A QC Batch: P05VS064 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	4.5		µg/Kg	1	5/14/2005
Dibromochloromethane	ND	4.5		µg/Kg	1	5/14/2005
Dibromomethane	ND	4.5		µg/Kg	1	5/14/2005
Dichlorodifluoromethane	ND	4.5		µg/Kg	1	5/14/2005
Ethyl Tert-butyl ether	ND	4.5		µg/Kg	1	5/14/2005
Ethylbenzene	ND	4.5		µg/Kg	1	5/14/2005
Hexachlorobutadiene	ND	4.5		µg/Kg	1	5/14/2005
Isopropylbenzene	ND	4.5		µg/Kg	1	5/14/2005
m,p-Xylene	ND	4.5		µg/Kg	1	5/14/2005
Methylene chloride	ND	4.5		µg/Kg	1	5/14/2005
MTBE	ND	4.5		µg/Kg	1	5/14/2005
n-Butylbenzene	ND	4.5		µg/Kg	1	5/14/2005
n-Propylbenzene	ND	4.5		µg/Kg	1	5/14/2005
Naphthalene	ND	4.5		µg/Kg	1	5/14/2005
o-Xylene	ND	4.5		µg/Kg	1	5/14/2005
sec-Butylbenzene	ND	4.5		µg/Kg	1	5/14/2005
Styrene	ND	4.5		µg/Kg	1	5/14/2005
Tert-amyl methyl ether	ND	4.5		µg/Kg	1	5/14/2005
Tert-Butanol	ND	90		µg/Kg	1	5/14/2005
tert-Butylbenzene	ND	4.5		µg/Kg	1	5/14/2005
Tetrachloroethene	ND	4.5		µg/Kg	1	5/14/2005
Toluene	ND	4.5		µg/Kg	1	5/14/2005
trans-1,2-Dichloroethene	ND	4.5		µg/Kg	1	5/14/2005
Trichloroethene	ND	4.5		µg/Kg	1	5/14/2005
Trichlorofluoromethane	ND	4.5		µg/Kg	1	5/14/2005
Vinyl chloride	ND	4.5		µg/Kg	1	5/14/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
S - Spike/Surrogate outside of limits due to matrix interferen
J - Analyte detected below quantitation limits
H - Sample exceeded analytical holding time
B - Analyte detected in the associated Method Blank
E - Value above quantitation range
DO - Surrogate Diluted Out
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-40
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:58:00 PM
Lab ID:	076405-032A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050514A QC Batch: P05VS064 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	5.5		µg/Kg	1	5/14/2005
1,1,1-Trichloroethane	ND	5.5		µg/Kg	1	5/14/2005
1,1,2,2-Tetrachloroethane	ND	5.5		µg/Kg	1	5/14/2005
1,1,2-Trichloroethane	ND	5.5		µg/Kg	1	5/14/2005
1,1-Dichloroethane	ND	5.5		µg/Kg	1	5/14/2005
1,1-Dichloroethene	ND	5.5		µg/Kg	1	5/14/2005
1,1-Dichloropropene	ND	5.5		µg/Kg	1	5/14/2005
1,2,3-Trichlorobenzene	ND	5.5		µg/Kg	1	5/14/2005
1,2,3-Trichloropropane	ND	5.5		µg/Kg	1	5/14/2005
1,2,4-Trichlorobenzene	ND	5.5		µg/Kg	1	5/14/2005
1,2,4-Trimethylbenzene	ND	5.5		µg/Kg	1	5/14/2005
1,2-Dibromo-3-chloropropane	ND	11		µg/Kg	1	5/14/2005
1,2-Dibromoethane	ND	5.5		µg/Kg	1	5/14/2005
1,2-Dichlorobenzene	ND	5.5		µg/Kg	1	5/14/2005
1,2-Dichloroethane	ND	5.5		µg/Kg	1	5/14/2005
1,2-Dichloropropane	ND	5.5		µg/Kg	1	5/14/2005
1,3,5-Trimethylbenzene	ND	5.5		µg/Kg	1	5/14/2005
1,3-Dichlorobenzene	ND	5.5		µg/Kg	1	5/14/2005
1,3-Dichloropropane	ND	5.5		µg/Kg	1	5/14/2005
1,4-Dichlorobenzene	ND	5.5		µg/Kg	1	5/14/2005
2,2-Dichloropropane	ND	5.5		µg/Kg	1	5/14/2005
2-Chlorotoluene	ND	5.5		µg/Kg	1	5/14/2005
4-Chlorotoluene	ND	5.5		µg/Kg	1	5/14/2005
4-Isopropyltoluene	ND	5.5		µg/Kg	1	5/14/2005
Benzene	ND	5.5		µg/Kg	1	5/14/2005
Bromobenzene	ND	5.5		µg/Kg	1	5/14/2005
Bromodichloromethane	ND	5.5		µg/Kg	1	5/14/2005
Bromoform	ND	5.5		µg/Kg	1	5/14/2005
Bromomethane	ND	5.5		µg/Kg	1	5/14/2005
Carbon tetrachloride	ND	5.5		µg/Kg	1	5/14/2005
Chlorobenzene	ND	5.5		µg/Kg	1	5/14/2005
Chloroethane	ND	5.5		µg/Kg	1	5/14/2005
Chloroform	ND	5.5		µg/Kg	1	5/14/2005
Chloromethane	ND	5.5		µg/Kg	1	5/14/2005
cis-1,2-Dichloroethene	ND	5.5		µg/Kg	1	5/14/2005
cis-1,3-Dichloropropene	ND	5.5		µg/Kg	1	5/14/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT:	Ninyo & Moore	**Client Sample ID:**	C4-40
Lab Order:	076405		
Project:	CRA Avalon, 206060001	**Collection Date:**	5/11/2005 12:58:00 PM
Lab ID:	076405-032A	**Matrix:**	SOIL

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: MS1_050514A QC Batch: P05VS064 PrepDate: 5/11/2005 Analyst: **MFR**

Analyte	Result	PQL	Qual	Units	DF	Date Analyzed
Di-isopropyl ether	ND	5.5		µg/Kg	1	5/14/2005
Dibromochloromethane	ND	5.5		µg/Kg	1	5/14/2005
Dibromomethane	ND	5.5		µg/Kg	1	5/14/2005
Dichlorodifluoromethane	ND	5.5		µg/Kg	1	5/14/2005
Ethyl Tert-butyl ether	ND	5.5		µg/Kg	1	5/14/2005
Ethylbenzene	ND	5.5		µg/Kg	1	5/14/2005
Hexachlorobutadiene	ND	5.5		µg/Kg	1	5/14/2005
Isopropylbenzene	ND	5.5		µg/Kg	1	5/14/2005
m,p-Xylene	ND	5.5		µg/Kg	1	5/14/2005
Methylene chloride	ND	5.5		µg/Kg	1	5/14/2005
MTBE	ND	5.5		µg/Kg	1	5/14/2005
n-Butylbenzene	ND	5.5		µg/Kg	1	5/14/2005
n-Propylbenzene	ND	5.5		µg/Kg	1	5/14/2005
Naphthalene	ND	5.5		µg/Kg	1	5/14/2005
o-Xylene	ND	5.5		µg/Kg	1	5/14/2005
sec-Butylbenzene	ND	5.5		µg/Kg	1	5/14/2005
Styrene	ND	5.5		µg/Kg	1	5/14/2005
Tert-amyl methyl ether	ND	5.5		µg/Kg	1	5/14/2005
Tert-Butanol	ND	110		µg/Kg	1	5/14/2005
tert-Butylbenzene	ND	5.5		µg/Kg	1	5/14/2005
Tetrachloroethene	ND	5.5		µg/Kg	1	5/14/2005
Toluene	ND	5.5		µg/Kg	1	5/14/2005
trans-1,2-Dichloroethene	ND	5.5		µg/Kg	1	5/14/2005
Trichloroethene	ND	5.5		µg/Kg	1	5/14/2005
Trichlorofluoromethane	ND	5.5		µg/Kg	1	5/14/2005
Vinyl chloride	ND	5.5		µg/Kg	1	5/14/2005

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DO - Surrogate Diluted Out
S - Spike/Surrogate outside of limits due to matrix interferen
H - Sample exceeded analytical holding time
E - Value above quantitation range
R - RPD outside acceptable recovery limits

Results are wet unless otherwise specified

Advanced Technology Laboratories *3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040*

Advanced Technology Laboratories

Date: *17-May-05*

CLIENT: Ninyo & Moore
Work Order: 076405
Project: CRA Avalon, 206060001

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **P050512MB4** SampType: **MBLK** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050512A**
Client ID: **ZZZZZ** Batch ID: **P05VS062** TestNo: **EPA 8260B** Analysis Date: **5/12/2005** SeqNo: **731165**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0									
1,1,1-Trichloroethane	ND	5.0									
1,1,2,2-Tetrachloroethane	ND	5.0									
1,1,2-Trichloroethane	ND	5.0									
1,1-Dichloroethane	ND	5.0									
1,1-Dichloroethene	ND	5.0									
1,1-Dichloropropene	ND	5.0									
1,2,3-Trichlorobenzene	ND	5.0									
1,2,3-Trichloropropane	ND	5.0									
1,2,4-Trichlorobenzene	ND	5.0									
1,2,4-Trimethylbenzene	ND	5.0									
1,2-Dibromo-3-chloropropane	ND	10									
1,2-Dibromoethane	ND	5.0									
1,2-Dichlorobenzene	ND	5.0									
1,2-Dichloroethane	ND	5.0									
1,2-Dichloropropane	ND	5.0									
1,3,5-Trimethylbenzene	ND	5.0									
1,3-Dichlorobenzene	ND	5.0									
1,3-Dichloropropane	ND	5.0									
1,4-Dichlorobenzene	ND	5.0									
2,2-Dichloropropane	ND	5.0									
2-Chlorotoluene	ND	5.0									
4-Chlorotoluene	ND	5.0									
4-Isopropyltoluene	ND	5.0									
Benzene	ND	5.0									
Bromobenzene	ND	5.0									
Bromodichloromethane	ND	5.0									
Bromoform	ND	5.0									
Bromomethane	ND	5.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

CLIENT: Ninyo & Moore
Work Order: 076405
Project: CRA Avalon, 206060001

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **P050512MB4** SampType: **MBLK** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050512A**
Client ID: **ZZZZZ** Batch ID: **P05VS062** TestNo: **EPA 8260B** Analysis Date: **5/12/2005** SeqNo: **731165**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon tetrachloride	ND	5.0									
Chlorobenzene	ND	5.0									
Chloroethane	ND	5.0									
Chloroform	ND	5.0									
Chloromethane	ND	5.0									
cis-1,2-Dichloroethene	ND	5.0									
cis-1,3-Dichloropropene	ND	5.0									
Di-isopropyl ether	ND	5.0									
Dibromochloromethane	ND	5.0									
Dibromomethane	ND	5.0									
Dichlorodifluoromethane	ND	5.0									
Ethyl Tert-butyl ether	ND	5.0									
Ethylbenzene	ND	5.0									
Hexachlorobutadiene	ND	5.0									
Isopropylbenzene	ND	5.0									
m,p-Xylene	ND	5.0									
Methylene chloride	ND	5.0									
MTBE	ND	5.0									
n-Butylbenzene	ND	5.0									
n-Propylbenzene	ND	5.0									
Naphthalene	ND	5.0									
o-Xylene	ND	5.0									
sec-Butylbenzene	ND	5.0									
Styrene	ND	5.0									
Tert-amyl methyl ether	ND	5.0									
Tert-Butanol	ND	100									
tert-Butylbenzene	ND	5.0									
Tetrachloroethene	ND	5.0									
Toluene	ND	5.0									
trans-1,2-Dichloroethene	ND	5.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

CLIENT: Ninyo & Moore
Work Order: 076405
Project: CRA Avalon, 206060001

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **P050512MB4** SampType: **MBLK** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050512A**
Client ID: **ZZZZZ** Batch ID: **P05VS062** TestNo: **EPA 8260B** Analysis Date: **5/12/2005** SeqNo: **731165**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene	ND	5.0									
Trichlorofluoromethane	ND	5.0									
Vinyl chloride	ND	5.0									
Surr: 1,2-Dichloroethane-d4	44.69	5.0	50	0	89.4	66	149	0	0		
Surr: 4-Bromofluorobenzene	45.72	5.0	50	0	91.4	83	125	0	0		
Surr: Dibromofluoromethane	50.3	5.0	50	0	101	75	139	0	0		
Surr: Toluene-d8	50.51	5.0	50	0	101	87	133	0	0		

Sample ID: **P050513MB2** SampType: **MBLK** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050513A**
Client ID: **ZZZZZ** Batch ID: **P05VS063** TestNo: **EPA 8260B** Analysis Date: **5/13/2005** SeqNo: **731934**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0									
1,1,1-Trichloroethane	ND	5.0									
1,1,2,2-Tetrachloroethane	ND	5.0									
1,1,2-Trichloroethane	ND	5.0									
1,1-Dichloroethane	ND	5.0									
1,1-Dichloroethene	ND	5.0									
1,1-Dichloropropene	ND	5.0									
1,2,3-Trichlorobenzene	ND	5.0									
1,2,3-Trichloropropane	ND	5.0									
1,2,4-Trichlorobenzene	ND	5.0									
1,2,4-Trimethylbenzene	ND	5.0									
1,2-Dibromo-3-chloropropane	ND	10									
1,2-Dibromoethane	ND	5.0									
1,2-Dichlorobenzene	ND	5.0									
1,2-Dichloroethane	ND	5.0									
1,2-Dichloropropane	ND	5.0									
1,3,5-Trimethylbenzene	ND	5.0									
1,3-Dichlorobenzene	ND	5.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

0080

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

CLIENT: Ninyo & Moore
Work Order: 076405
Project: CRA Avalon, 206060001

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: P050513MB2 SampType: MBLK TestCode: 8260_S_5035 Units: µg/Kg Prep Date: Run ID: MS1_050513A
Client ID: ZZZZZ Batch ID: P05VS063 TestNo: EPA 8260B Analysis Date: 5/13/2005 SeqNo: 731934

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichloropropane	ND	5.0									
1,4-Dichlorobenzene	ND	5.0									
2,2-Dichloropropane	ND	5.0									
2-Chlorotoluene	ND	5.0									
4-Chlorotoluene	ND	5.0									
4-Isopropyltoluene	ND	5.0									
Benzene	ND	5.0									
Bromobenzene	ND	5.0									
Bromodichloromethane	ND	5.0									
Bromoform	ND	5.0									
Bromomethane	ND	5.0									
Carbon tetrachloride	ND	5.0									
Chlorobenzene	ND	5.0									
Chloroethane	ND	5.0									
Chloroform	ND	5.0									
Chloromethane	ND	5.0									
cis-1,2-Dichloroethene	ND	5.0									
cis-1,3-Dichloropropene	ND	5.0									
Di-isopropyl ether	ND	5.0									
Dibromochloromethane	ND	5.0									
Dibromomethane	ND	5.0									
Dichlorodifluoromethane	ND	5.0									
Ethyl Tert-butyl ether	ND	5.0									
Ethylbenzene	ND	5.0									
Hexachlorobutadiene	ND	5.0									
Isopropylbenzene	ND	5.0									
m,p-Xylene	ND	5.0									
Methylene chloride	ND	5.0									
MTBE	ND	5.0									
n-Butylbenzene	ND	5.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

CLIENT: Ninyo & Moore
Work Order: 076405
Project: CRA Avalon, 206060001

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **P050513MB2** SampType: **MBLK** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050513A**
Client ID: **ZZZZZ** Batch ID: **P05VS063** TestNo: **EPA 8260B** Analysis Date: **5/13/2005** SeqNo: **731934**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
n-Propylbenzene	ND	5.0									
Naphthalene	ND	5.0									
o-Xylene	ND	5.0									
sec-Butylbenzene	ND	5.0									
Styrene	ND	5.0									
Tert-amyl methyl ether	ND	5.0									
Tert-Butanol	ND	100									
tert-Butylbenzene	ND	5.0									
Tetrachloroethene	ND	5.0									
Toluene	ND	5.0									
trans-1,2-Dichloroethene	ND	5.0									
Trichloroethene	ND	5.0									
Trichlorofluoromethane	ND	5.0									
Vinyl chloride	ND	5.0									
Surr: 1,2-Dichloroethane-d4	48.84	5.0	50	0	97.7	66	149	0	0		
Surr: 4-Bromofluorobenzene	45.11	5.0	50	0	90.2	83	125	0	0		
Surr: Dibromofluoromethane	52.72	5.0	50	0	105	75	139	0	0		
Surr: Toluene-d8	50.89	5.0	50	0	102	87	133	0	0		

Sample ID: **P050514MB2** SampType: **MBLK** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050514A**
Client ID: **ZZZZZ** Batch ID: **P05VS064** TestNo: **EPA 8260B** Analysis Date: **5/14/2005** SeqNo: **732132**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0									
1,1,1-Trichloroethane	ND	5.0									
1,1,2,2-Tetrachloroethane	ND	5.0									
1,1,2-Trichloroethane	ND	5.0									
1,1-Dichloroethane	ND	5.0									
1,1-Dichloroethene	ND	5.0									
1,1-Dichloropropene	ND	5.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Advanced Technology Laboratories

CLIENT: Ninyo & Moore
Work Order: 076405
Project: CRA Avalon, 206060001

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **P050514MB2** SampType: **MBLK** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050514A**
Client ID: **ZZZZZ** Batch ID: **P05VS064** TestNo: **EPA 8260B** Analysis Date: **5/14/2005** SeqNo: **732132**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	ND	5.0									
1,2,3-Trichloropropane	ND	5.0									
1,2,4-Trichlorobenzene	ND	5.0									
1,2,4-Trimethylbenzene	ND	5.0									
1,2-Dibromo-3-chloropropane	ND	10									
1,2-Dibromoethane	ND	5.0									
1,2-Dichlorobenzene	ND	5.0									
1,2-Dichloroethane	ND	5.0									
1,2-Dichloropropane	ND	5.0									
1,3,5-Trimethylbenzene	ND	5.0									
1,3-Dichlorobenzene	ND	5.0									
1,3-Dichloropropane	ND	5.0									
1,4-Dichlorobenzene	ND	5.0									
2,2-Dichloropropane	ND	5.0									
2-Chlorotoluene	ND	5.0									
4-Chlorotoluene	ND	5.0									
4-Isopropyltoluene	ND	5.0									
Benzene	ND	5.0									
Bromobenzene	ND	5.0									
Bromodichloromethane	ND	5.0									
Bromoform	ND	5.0									
Bromomethane	ND	5.0									
Carbon tetrachloride	ND	5.0									
Chlorobenzene	ND	5.0									
Chloroethane	ND	5.0									
Chloroform	ND	5.0									
Chloromethane	ND	5.0									
cis-1,2-Dichloroethene	ND	5.0									
cis-1,3-Dichloropropene	ND	5.0									
Di-isopropyl ether	ND	5.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

CLIENT: Ninyo & Moore
Work Order: 076405
Project: CRA Avalon, 206060001

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **P050514MB2** SampType: **MBLK** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050514A**
Client ID: **ZZZZZ** Batch ID: **P05VS064** TestNo: **EPA 8260B** Analysis Date: **5/14/2005** SeqNo: **732132**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	5.0									
Dibromomethane	ND	5.0									
Dichlorodifluoromethane	ND	5.0									
Ethyl Tert-butyl ether	ND	5.0									
Ethylbenzene	ND	5.0									
Hexachlorobutadiene	ND	5.0									
Isopropylbenzene	ND	5.0									
m,p-Xylene	ND	5.0									
Methylene chloride	ND	5.0									
MTBE	ND	5.0									
n-Butylbenzene	ND	5.0									
n-Propylbenzene	ND	5.0									
Naphthalene	ND	5.0									
o-Xylene	ND	5.0									
sec-Butylbenzene	ND	5.0									
Styrene	ND	5.0									
Tert-amyl methyl ether	ND	5.0									
Tert-Butanol	ND	100									
tert-Butylbenzene	ND	5.0									
Tetrachloroethene	ND	5.0									
Toluene	ND	5.0									
trans-1,2-Dichloroethene	ND	5.0									
Trichloroethene	ND	5.0									
Trichlorofluoromethane	ND	5.0									
Vinyl chloride	ND	5.0									
Surr: 1,2-Dichloroethane-d4	48.1	5.0	50	0	96.2	66	149	0	0		
Surr: 4-Bromofluorobenzene	45.75	5.0	50	0	91.5	83	125	0	0		
Surr: Dibromofluoromethane	53.52	5.0	50	0	107	75	139	0	0		
Surr: Toluene-d8	50.92	5.0	50	0	102	87	133	0	0		

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

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Advanced Technology Laboratories
3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

ANALYTICAL QC SUMMARY REPORT

CLIENT: Ninyo & Moore
Work Order: 076405
Project: CRA Avalon, 206060001

TestCode: 8260_S_5035

Sample ID: **P050516MB2** SampType: **MBLK** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050516A**
Client ID: **ZZZZZ** Batch ID: **P05VS065** TestNo: **EPA 8260B** Analysis Date: **5/16/2005** SeqNo: **732462**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0									
1,1,1-Trichloroethane	ND	5.0									
1,1,2,2-Tetrachloroethane	ND	5.0									
1,1,2-Trichloroethane	ND	5.0									
1,1-Dichloroethane	ND	5.0									
1,1-Dichloroethene	ND	5.0									
1,1-Dichloropropene	ND	5.0									
1,2,3-Trichlorobenzene	ND	5.0									
1,2,3-Trichloropropane	ND	5.0									
1,2,4-Trichlorobenzene	ND	5.0									
1,2,4-Trimethylbenzene	ND	5.0									
1,2-Dibromo-3-chloropropane	ND	10									
1,2-Dibromoethane	ND	5.0									
1,2-Dichlorobenzene	ND	5.0									
1,2-Dichloroethane	ND	5.0									
1,2-Dichloropropane	ND	5.0									
1,3,5-Trimethylbenzene	ND	5.0									
1,3-Dichlorobenzene	ND	5.0									
1,3-Dichloropropane	ND	5.0									
1,4-Dichlorobenzene	ND	5.0									
2,2-Dichloropropane	ND	5.0									
2-Chlorotoluene	ND	5.0									
4-Chlorotoluene	ND	5.0									
4-Isopropyltoluene	ND	5.0									
Benzene	ND	5.0									
Bromobenzene	ND	5.0									
Bromodichloromethane	ND	5.0									
Bromoform	ND	5.0									
Bromomethane	ND	5.0									
Carbon tetrachloride	ND	5.0									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

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CLIENT: Ninyo & Moore
Work Order: 076405
Project: CRA Avalon, 206060001

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **P050516MB2** SampType: **MBLK** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050516A**
Client ID: **ZZZZZ** Batch ID: **P05VS065** TestNo: **EPA 8260B** Analysis Date: **5/16/2005** SeqNo: **732462**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	ND	5.0									
Chloroethane	ND	5.0									
Chloroform	ND	5.0									
Chloromethane	ND	5.0									
cis-1,2-Dichloroethene	ND	5.0									
cis-1,3-Dichloropropene	ND	5.0									
Di-isopropyl ether	ND	5.0									
Dibromochloromethane	ND	5.0									
Dibromomethane	ND	5.0									
Dichlorodifluoromethane	ND	5.0									
Ethyl Tert-butyl ether	ND	5.0									
Ethylbenzene	ND	5.0									
Hexachlorobutadiene	ND	5.0									
Isopropylbenzene	ND	5.0									
m,p-Xylene	ND	5.0									
Methylene chloride	ND	5.0									
MTBE	ND	5.0									
n-Butylbenzene	ND	5.0									
n-Propylbenzene	ND	5.0									
Naphthalene	ND	5.0									
o-Xylene	ND	5.0									
sec-Butylbenzene	ND	5.0									
Styrene	ND	5.0									
Tert-amyl methyl ether	ND	5.0									
Tert-Butanol	ND	100									
tert-Butylbenzene	ND	5.0									
Tetrachloroethene	ND	5.0									
Toluene	ND	5.0									
trans-1,2-Dichloroethene	ND	5.0									
Trichloroethene	ND	5.0									

Qualifiers:
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S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

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CLIENT: Ninyo & Moore
Work Order: 076405
Project: CRA Avalon, 206060001

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **P050516MB2** SampType: **MBLK** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050516A**
Client ID: **ZZZZZ** Batch ID: **P05VS065** TestNo: **EPA 8260B** Analysis Date: **5/16/2005** SeqNo: **732462**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	ND	5.0									
Vinyl chloride	ND	5.0									
Surr: 1,2-Dichloroethane-d4	42.23	5.0	50	0	84.5	66	149	0	0		
Surr: 4-Bromofluorobenzene	47.86	5.0	50	0	95.7	83	125	0	0		
Surr: Dibromofluoromethane	47.42	5.0	50	0	94.8	75	139	0	0		
Surr: Toluene-d8	51.51	5.0	50	0	103	87	133	0	0		

Sample ID: **P050512LC3** SampType: **LCS** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050512A**
Client ID: **ZZZZZ** Batch ID: **P05VS062** TestNo: **EPA 8260B** Analysis Date: **5/12/2005** SeqNo: **731162**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	110.2	5.0	100	0	110	70	119	0	0		
Benzene	102.5	5.0	100	0	103	80	121	0	0		
Chlorobenzene	113.3	5.0	100	0	113	88	129	0	0		
MTBE	104.6	5.0	100	0	105	59	126	0	0		
Toluene	103.3	5.0	100	0	103	84	126	0	0		
Trichloroethene	105.6	5.0	100	0	106	83	129	0	0		
Surr: 1,2-Dichloroethane-d4	43.53	5.0	50	0	87.1	66	149	0	0		
Surr: 4-Bromofluorobenzene	48.07	5.0	50	0	96.1	83	125	0	0		
Surr: Dibromofluoromethane	48.79	5.0	50	0	97.6	75	139	0	0		
Surr: Toluene-d8	50.73	5.0	50	0	101	87	133	0	0		

Sample ID: **P050513LC1** SampType: **LCS** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050513A**
Client ID: **ZZZZZ** Batch ID: **P05VS063** TestNo: **EPA 8260B** Analysis Date: **5/13/2005** SeqNo: **731931**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	108	5.0	100	0	108	70	119	0	0		
Benzene	98.28	5.0	100	0	98.3	80	121	0	0		
Chlorobenzene	108	5.0	100	0	108	88	129	0	0		
MTBE	95.01	5.0	100	0	95	59	126	0	0		

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
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Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

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ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **P050513LC1** SampType: **LCS** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050513A**
Client ID: **ZZZZZ** Batch ID: **P05VS063** TestNo: **EPA 8260B** Analysis Date: **5/13/2005** SeqNo: **731931**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	99.07	5.0	100	0	99.1	84	126	0	0		
Trichloroethene	101.4	5.0	100	0	101	83	129	0	0		
Surr: 1,2-Dichloroethane-d4	44.35	5.0	50	0	88.7	66	149	0	0		
Surr: 4-Bromofluorobenzene	47.15	5.0	50	0	94.3	83	125	0	0		
Surr: Dibromofluoromethane	50.43	5.0	50	0	101	75	139	0	0		
Surr: Toluene-d8	51.8	5.0	50	0	104	87	133	0	0		

Sample ID: **P050514LC1** SampType: **LCS** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050514A**
Client ID: **ZZZZZ** Batch ID: **P05VS064** TestNo: **EPA 8260B** Analysis Date: **5/14/2005** SeqNo: **732129**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	111.9	5.0	100	0	112	70	119	0	0		
Benzene	99.43	5.0	100	0	99.4	80	121	0	0		
Chlorobenzene	110.9	5.0	100	0	111	88	129	0	0		
MTBE	96.02	5.0	100	0	96	59	126	0	0		
Toluene	98.3	5.0	100	0	98.3	84	126	0	0		
Trichloroethene	101	5.0	100	0	101	83	129	0	0		
Surr: 1,2-Dichloroethane-d4	46.47	5.0	50	0	92.9	66	149	0	0		
Surr: 4-Bromofluorobenzene	48.25	5.0	50	0	96.5	83	125	0	0		
Surr: Dibromofluoromethane	51.23	5.0	50	0	102	75	139	0	0		
Surr: Toluene-d8	50.08	5.0	50	0	100	87	133	0	0		

Sample ID: **P050516LC1** SampType: **LCS** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050516A**
Client ID: **ZZZZZ** Batch ID: **P05VS065** TestNo: **EPA 8260B** Analysis Date: **5/16/2005** SeqNo: **732459**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	108.3	5.0	100	0	108	70	119	0	0		
Benzene	100.2	5.0	100	0	100	80	121	0	0		
Chlorobenzene	105.4	5.0	100	0	105	88	129	0	0		
MTBE	99.91	5.0	100	0	99.9	59	126	0	0		

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
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B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

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CLIENT: Ninyo & Moore
Work Order: 076405
Project: CRA Avalon, 206060001

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **P050516LC1** SampType: **LCS** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050516A**
Client ID: **ZZZZZ** Batch ID: **P05VS065** TestNo: **EPA 8260B** Analysis Date: **5/16/2005** SeqNo: **732459**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	90.65	5.0	100	0	90.6	84	126	0	0		
Trichloroethene	99.57	5.0	100	0	99.6	83	129	0	0		
Surr: 1,2-Dichloroethane-d4	39.81	5.0	50	0	79.6	66	149	0	0		
Surr: 4-Bromofluorobenzene	44.18	5.0	50	0	88.4	83	125	0	0		
Surr: Dibromofluoromethane	46.91	5.0	50	0	93.8	75	139	0	0		
Surr: Toluene-d8	46.82	5.0	50	0	93.6	87	133	0	0		

Sample ID: **076438-006AMS** SampType: **MS** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050512A**
Client ID: **ZZZZZ** Batch ID: **P05VS062** TestNo: **EPA 8260B** Analysis Date: **5/12/2005** SeqNo: **731163**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	110.4	5.0	100	0	110	52	135	0	0		
Benzene	98.81	5.0	100	0	98.8	52	143	0	0		
Chlorobenzene	105.6	5.0	100	0	106	48	154	0	0		
MTBE	97.36	5.0	100	0	97.4	34	156	0	0		
Toluene	98.71	5.0	100	0	98.7	54	146	0	0		
Trichloroethene	102.1	5.0	100	0	102	44	169	0	0		
Surr: 1,2-Dichloroethane-d4	43.53	5.0	50	0	87.1	66	149	0	0		
Surr: 4-Bromofluorobenzene	47.67	5.0	50	0	95.3	83	125	0	0		
Surr: Dibromofluoromethane	49.75	5.0	50	0	99.5	75	139	0	0		
Surr: Toluene-d8	50.49	5.0	50	0	101	87	133	0	0		

Sample ID: **076446-002AMS** SampType: **MS** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050513A**
Client ID: **ZZZZZ** Batch ID: **P05VS063** TestNo: **EPA 8260B** Analysis Date: **5/13/2005** SeqNo: **731932**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	107.8	5.0	100	0	108	52	135	0	0		
Benzene	97.87	5.0	100	0	97.9	52	143	0	0		
Chlorobenzene	107.9	5.0	100	0	108	48	154	0	0		
MTBE	97.87	5.0	100	0	97.9	34	156	0	0		

Qualifiers:
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S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

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Project: CRA Avalon, 206060001

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **076446-002AMS** SampType: **MS** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050513A**
Client ID: **ZZZZZ** Batch ID: **P05VS063** TestNo: **EPA 8260B** Analysis Date: **5/13/2005** SeqNo: **731932**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	97.42	5.0	100	0	97.4	54	146	0	0		
Trichloroethene	108.4	5.0	100	0	108	44	169	0	0		
Surr: 1,2-Dichloroethane-d4	47.13	5.0	50	0	94.3	66	149	0	0		
Surr: 4-Bromofluorobenzene	49.86	5.0	50	0	99.7	83	125	0	0		
Surr: Dibromofluoromethane	52.01	5.0	50	0	104	75	139	0	0		
Surr: Toluene-d8	51.08	5.0	50	0	102	87	133	0	0		

Sample ID: **P050514MB2MS** SampType: **MS** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050514A**
Client ID: **ZZZZZ** Batch ID: **P05VS064** TestNo: **EPA 8260B** Analysis Date: **5/14/2005** SeqNo: **732130**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	116.9	5.0	100	0	117	52	135	0	0		
Benzene	105.8	5.0	100	0	106	52	143	0	0		
Chlorobenzene	116.9	5.0	100	0	117	48	154	0	0		
MTBE	100.6	5.0	100	0	101	34	156	0	0		
Toluene	106.4	5.0	100	0	106	54	146	0	0		
Trichloroethene	109.2	5.0	100	0	109	44	169	0	0		
Surr: 1,2-Dichloroethane-d4	45	5.0	50	0	90	66	149	0	0		
Surr: 4-Bromofluorobenzene	48.57	5.0	50	0	97.1	83	125	0	0		
Surr: Dibromofluoromethane	50.4	5.0	50	0	101	75	139	0	0		
Surr: Toluene-d8	51.99	5.0	50	0	104	87	133	0	0		

Sample ID: **P050516MB2MS** SampType: **MS** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050516A**
Client ID: **ZZZZZ** Batch ID: **P05VS065** TestNo: **EPA 8260B** Analysis Date: **5/16/2005** SeqNo: **732460**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	106.5	5.0	100	0	107	52	135	0	0		
Benzene	102.9	5.0	100	0	103	52	143	0	0		
Chlorobenzene	115.6	5.0	100	0	116	48	154	0	0		
MTBE	106.4	5.0	100	0	106	34	156	0	0		

Qualifiers:
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DO- Surrogate dilute out
H - Sample exceeded holding time

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ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **P050516MB2MS** SampType: **MS** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050516A**
Client ID: **ZZZZZ** Batch ID: **P05VS065** TestNo: **EPA 8260B** Analysis Date: **5/16/2005** SeqNo: **732460**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	102.9	5.0	100	0	103	54	146	0	0		
Trichloroethene	104.6	5.0	100	0	105	44	169	0	0		
Surr: 1,2-Dichloroethane-d4	41.72	5.0	50	0	83.4	66	149	0	0		
Surr: 4-Bromofluorobenzene	49.56	5.0	50	0	99.1	83	125	0	0		
Surr: Dibromofluoromethane	47.46	5.0	50	0	94.9	75	139	0	0		
Surr: Toluene-d8	50.35	5.0	50	0	101	87	133	0	0		

Sample ID: **076438-006AMSD** SampType: **MSD** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050512A**
Client ID: **ZZZZZ** Batch ID: **P05VS062** TestNo: **EPA 8260B** Analysis Date: **5/12/2005** SeqNo: **731164**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	111.2	5.0	100	0	111	52	135	110.4	0.749	30	
Benzene	103.2	5.0	100	0	103	52	143	98.81	4.36	30	
Chlorobenzene	108.7	5.0	100	0	109	48	154	105.6	2.90	30	
MTBE	105	5.0	100	0	105	34	156	97.36	7.53	30	
Toluene	103.9	5.0	100	0	104	54	146	98.71	5.10	30	
Trichloroethene	108.4	5.0	100	0	108	44	169	102.1	6.03	30	
Surr: 1,2-Dichloroethane-d4	45.35	5.0	50	0	90.7	66	149	0	0	30	
Surr: 4-Bromofluorobenzene	48.85	5.0	50	0	97.7	83	125	0	0	30	
Surr: Dibromofluoromethane	49.49	5.0	50	0	99	75	139	0	0	30	
Surr: Toluene-d8	51.43	5.0	50	0	103	87	133	0	0	30	

Sample ID: **076446-002AMSD** SampType: **MSD** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050513A**
Client ID: **ZZZZZ** Batch ID: **P05VS063** TestNo: **EPA 8260B** Analysis Date: **5/13/2005** SeqNo: **731933**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	111.4	5.0	100	0	111	52	135	107.8	3.28	30	
Benzene	101	5.0	100	0	101	52	143	97.87	3.16	30	
Chlorobenzene	111.3	5.0	100	0	111	48	154	107.9	3.07	30	
MTBE	104.5	5.0	100	0	104	34	156	97.87	6.54	30	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
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Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

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ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: **076446-002AMSD** SampType: **MSD** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050513A**
Client ID: **ZZZZZ** Batch ID: **P05VS063** TestNo: **EPA 8260B** Analysis Date: **5/13/2005** SeqNo: **731933**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	101.1	5.0	100	0	101	54	146	97.42	3.75	30	
Trichloroethene	115	5.0	100	0	115	44	169	108.4	5.91	30	
Surr: 1,2-Dichloroethane-d4	46.57	5.0	50	0	93.1	66	149	0	0	30	
Surr: 4-Bromofluorobenzene	48.92	5.0	50	0	97.8	83	125	0	0	30	
Surr: Dibromofluoromethane	50.37	5.0	50	0	101	75	139	0	0	30	
Surr: Toluene-d8	51.64	5.0	50	0	103	87	133	0	0	30	

Sample ID: **P050514MB2MSD** SampType: **MSD** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050514A**
Client ID: **ZZZZZ** Batch ID: **P05VS064** TestNo: **EPA 8260B** Analysis Date: **5/14/2005** SeqNo: **732131**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	116.7	5.0	100	0	117	52	135	116.9	0.171	30	
Benzene	105.6	5.0	100	0	106	52	143	105.8	0.170	30	
Chlorobenzene	118	5.0	100	0	118	48	154	116.9	0.953	30	
MTBE	100.2	5.0	100	0	100	34	156	100.6	0.428	30	
Toluene	105.5	5.0	100	0	105	54	146	106.4	0.831	30	
Trichloroethene	107.5	5.0	100	0	108	44	169	109.2	1.53	30	
Surr: 1,2-Dichloroethane-d4	44.55	5.0	50	0	89.1	66	149	0	0	30	
Surr: 4-Bromofluorobenzene	48.55	5.0	50	0	97.1	83	125	0	0	30	
Surr: Dibromofluoromethane	49.69	5.0	50	0	99.4	75	139	0	0	30	
Surr: Toluene-d8	51.14	5.0	50	0	102	87	133	0	0	30	

Sample ID: **P050516MB2MSD** SampType: **MSD** TestCode: **8260_S_5035** Units: **µg/Kg** Prep Date: Run ID: **MS1_050516A**
Client ID: **ZZZZZ** Batch ID: **P05VS065** TestNo: **EPA 8260B** Analysis Date: **5/16/2005** SeqNo: **732461**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	110.5	5.0	100	0	110	52	135	106.5	3.66	30	
Benzene	103.5	5.0	100	0	103	52	143	102.9	0.523	30	
Chlorobenzene	115.8	5.0	100	0	116	48	154	115.6	0.121	30	
MTBE	110.2	5.0	100	0	110	34	156	106.4	3.44	30	

Qualifiers:
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ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_S_5035

Sample ID: P050516MB2MSD SampType: MSD TestCode: 8260_S_5035 Units: µg/Kg Prep Date: Run ID: MS1_050516A
Client ID: ZZZZZ Batch ID: P05VS065 TestNo: EPA 8260B Analysis Date: 5/16/2005 SeqNo: 732461

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	104.4	5.0	100	0	104	54	146	102.9	1.40	30	
Trichloroethene	107.3	5.0	100	0	107	44	169	104.6	2.53	30	
Surr: 1,2-Dichloroethane-d4	41.68	5.0	50	0	83.4	66	149	0	0	30	
Surr: 4-Bromofluorobenzene	49.4	5.0	50	0	98.8	83	125	0	0	30	
Surr: Dibromofluoromethane	46.8	5.0	50	0	93.6	75	139	0	0	30	
Surr: Toluene-d8	50.29	5.0	50	0	101	87	133	0	0	30	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
Calculations are based on raw values
DO- Surrogate dilute out
H - Sample exceeded holding time

3275 Walnut Avenue Signal Hill, CA 90755 Tel: 562 989-4045 Fax: 562 989-4040

Method 8260B

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Data File : C:\DATA\11-04-04\P1104001.D                    Vial: 99
Acq On    :  4 Nov 2004   11:12 am                     Operator: JPC
Sample    : ,P041104_BFBS1,TUNE,VST041028A(0.5uL),      Inst     : MS  #1
Misc      : ,1,P04VS156,                               Multiplr: 1.00
MS Integration Params: rteint.p
Method    : C:\HPCHEM\1\METHODS\BFB.M (RTE Integrator)
Title     : VOC 8240/8260 Advanced Technology Laboratories
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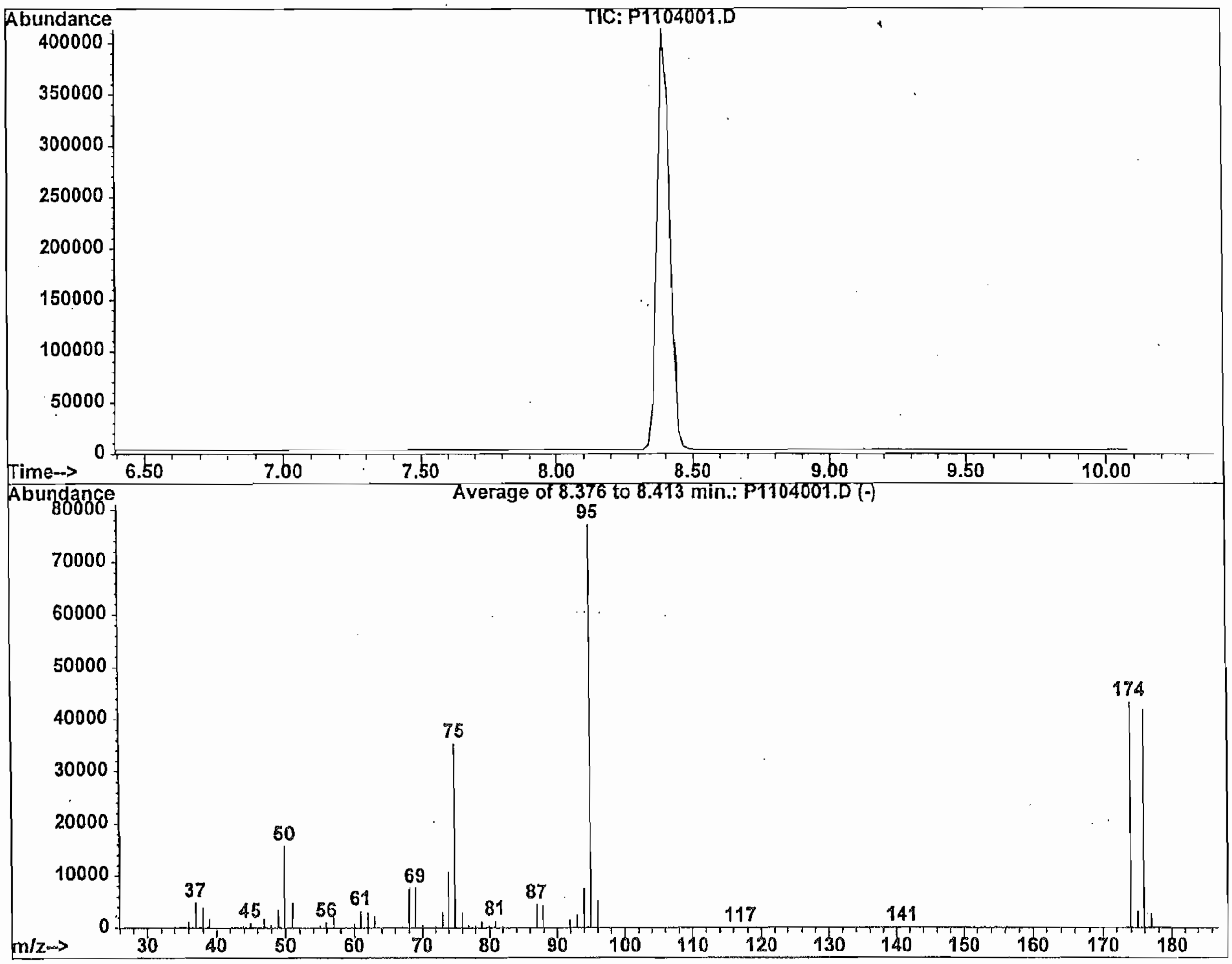

AutoFind: Scans 233, 234, 235; Background Corrected with Scan 227

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	20.3	15717	PASS
75	95	30	60	45.8	35416	PASS
95	95	100	100	100.0	77264	PASS
96	95	5	9	6.6	5081	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	56.1	43368	PASS
175	174	5	9	7.3	3178	PASS
176	174	95	101	96.5	41835	PASS
177	176	5	9	6.6	2761	PASS

0095

BFB

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Data File : C:\DATA\05-12-05\P0512017.D                    Vial: 99
Acq On    : 12 May 2005   8:09 pm                      Operator: MFR/HH
Sample    : ,P050512_BFBS2,TUNE,VST050427A(0.5uL),      Inst    : MS  #1
Misc      : ,1,P05VS062,                                Multiplr: 1.00
MS Integration Params: rteint.p
Method    : C:\HPCHEM\1\METHODS\BFB.M (RTE Integrator)
Title     : VOC 8240/8260 Advanced Technology Laboratories
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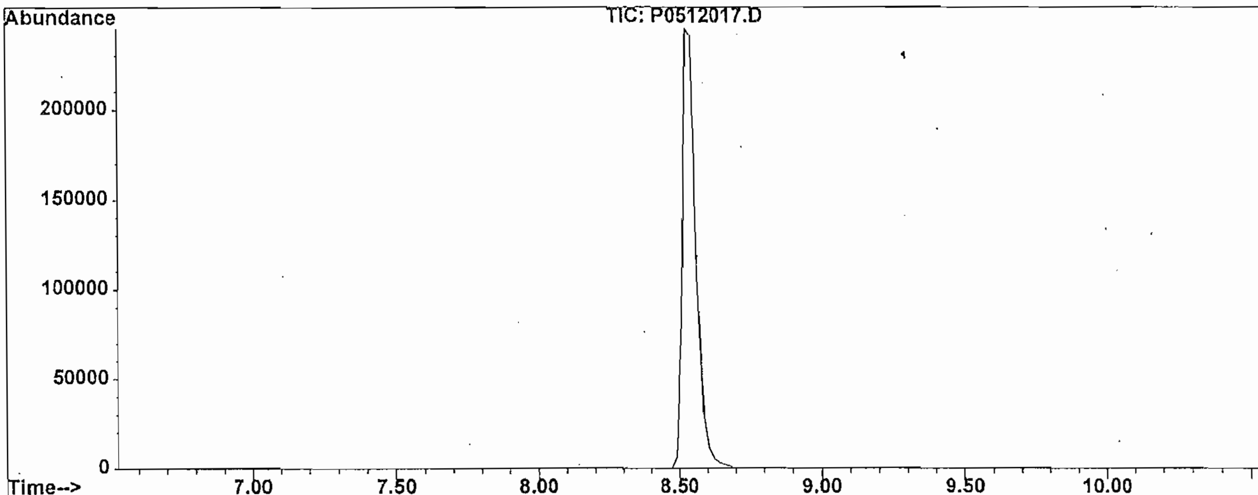

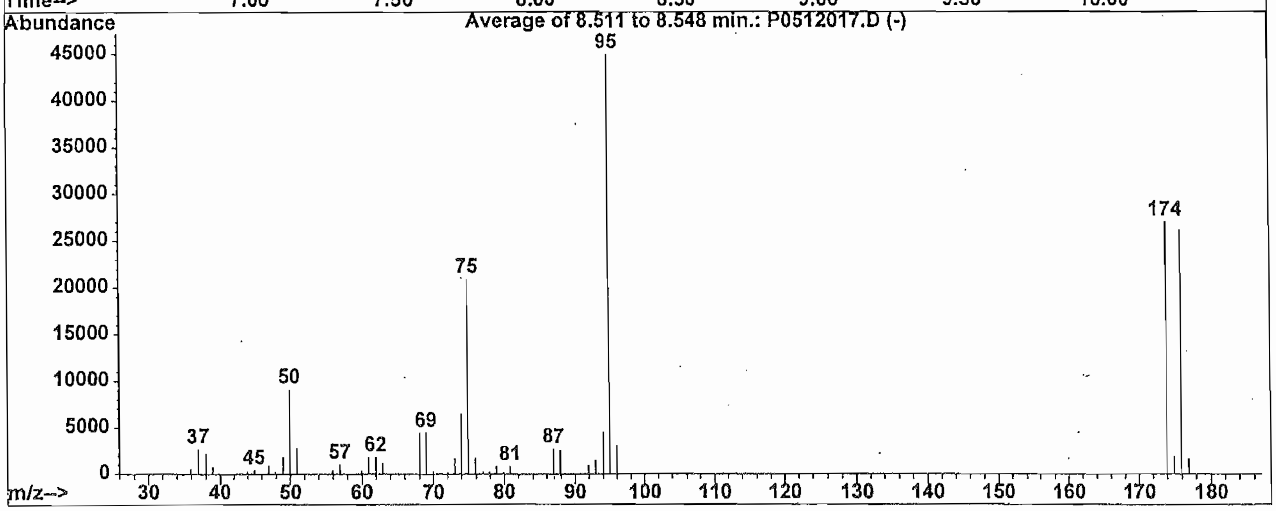

AutoFind: Scans 240, 241, 242; Background Corrected with Scan 236

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	20.3	9119	PASS
75	95	30	60	46.6	20956	PASS
95	95	100	100	100.0	44955	PASS
96	95	5	9	6.9	3080	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	60.1	27040	PASS
175	174	5	9	7.3	1968	PASS
176	174	95	101	96.9	26196	PASS
177	176	5	9	6.6	1723	PASS

0096

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Data File : C:\DATA\05-13-05\P0513001.D                    Vial: 99
Acq On    : 13 May 2005   10:44 am                      Operator: MFR/HH
Sample    : ,P050513_BFBS1,TUNE,VST050427A(0.5uL),      Inst    : MS  #1
Misc      : ,1,P05VS063,                                Multiplr: 1.00
MS Integration Params: rteint.p
Method    : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title     : VOC 8240/8260B  Advanced Technology Laboratory
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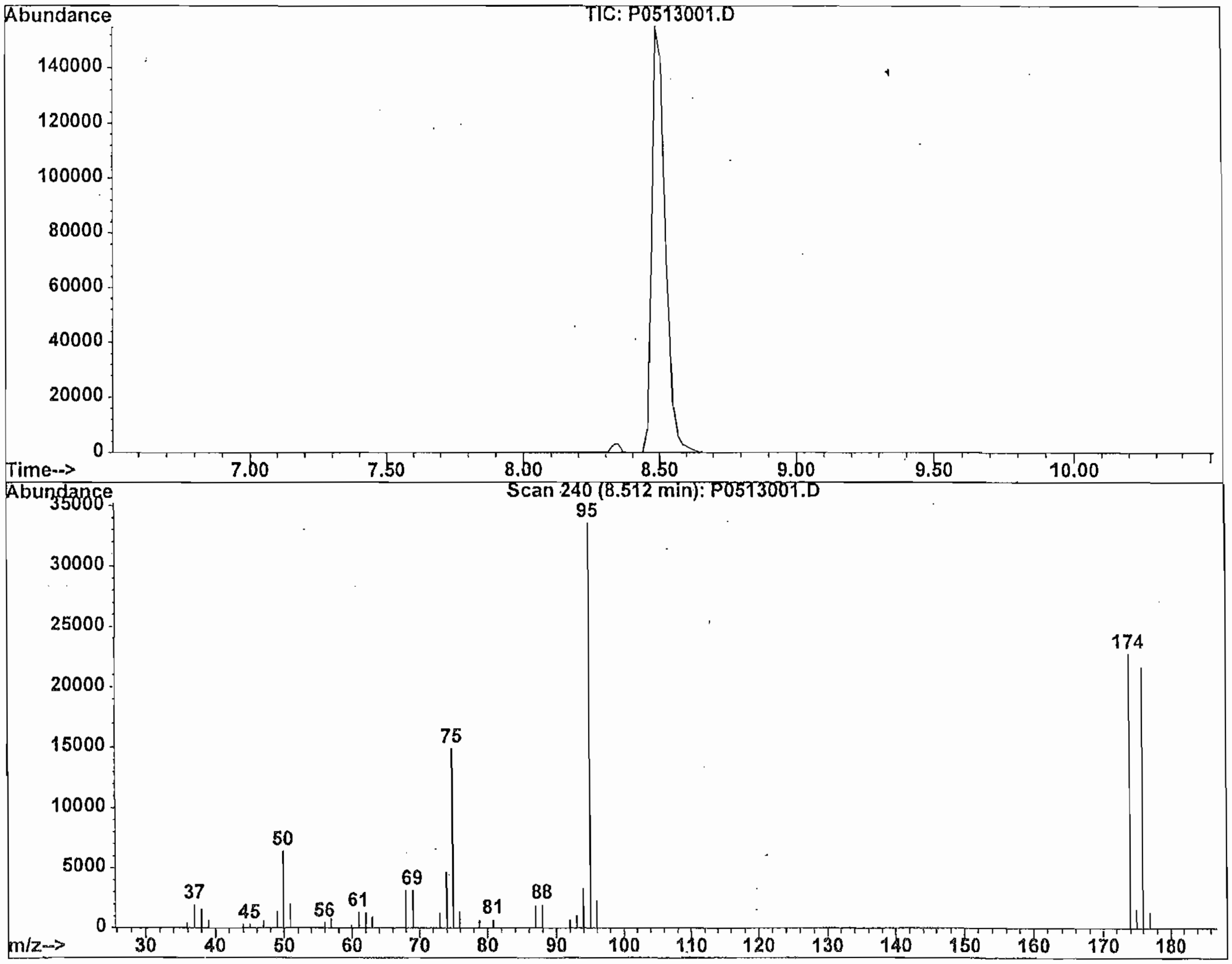
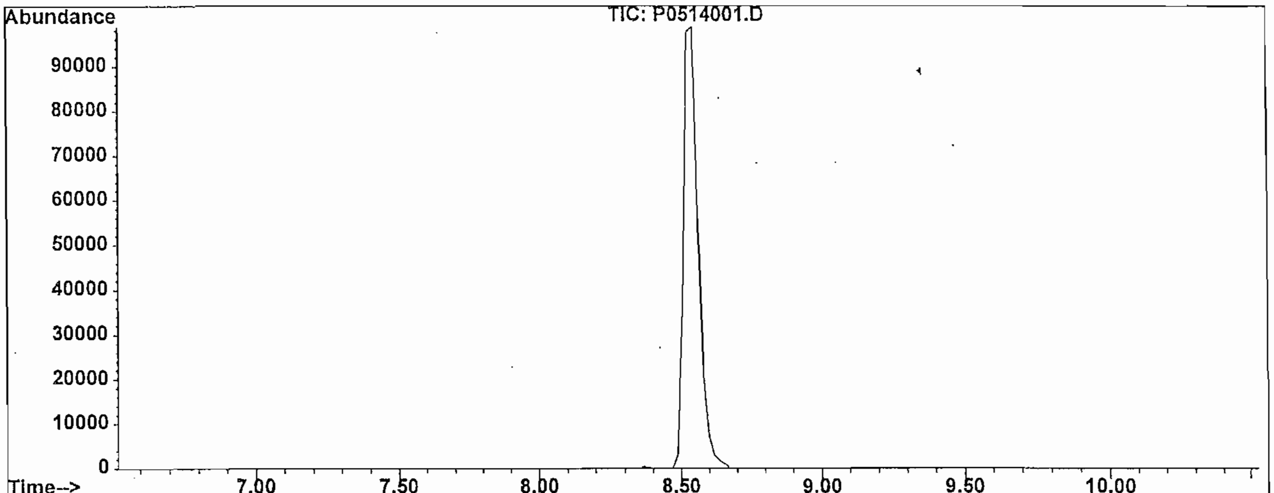


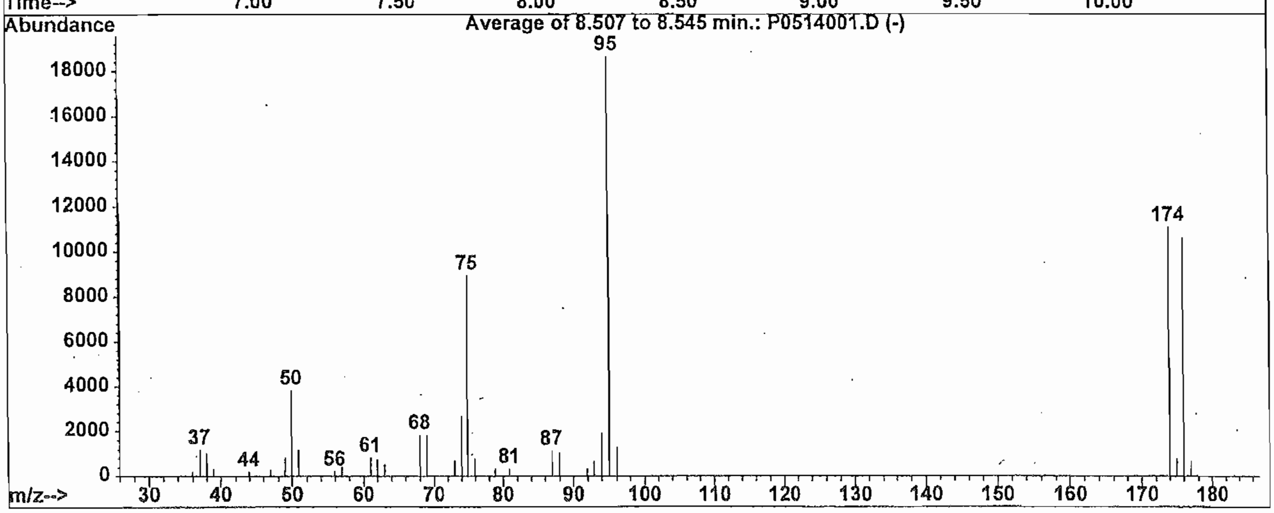
Spectrum Information: Scan 240

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	19.2	6432	PASS
75	95	30	60	44.4	14905	PASS
95	95	100	100	100.0	33568	PASS
96	95	5	9	6.7	2239	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	67.7	22736	PASS
175	174	5	9	7.0	1598	PASS
176	174	95	101	95.3	21664	PASS
177	176	5	9	6.3	1375	PASS

BFB

Data File : C:\DATA\05-14-05\P0514001.D   Vial: 99
Acq On : 14 May 2005 8:41 am   Operator: MFR/HH
Sample : ,P050514_BFBS1,TUNE,VST050427A(0.5uL),   Inst : MS #1
Misc : ,1,P05VS064,   Multiplr: 1.00
MS Integration Params: rteint.p
Method : C:\HPCHEM\1\METHODS\BFB.M (RTE Integrator)
Title : VOC 8240/8260 Advanced Technology Laboratories





AutoFind: Scans 240, 241, 242; Background Corrected with Scan 236

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	20.5	3822	PASS
75	95	30	60	47.9	8929	PASS
95	95	100	100	100.0	18650	PASS
96	95	5	9	6.8	1277	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	59.4	11087	PASS
175	174	5	9	7.2	803	PASS
176	174	95	101	95.6	10596	PASS
177	176	5	9	6.4	683	PASS

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Data File : C:\DATA\05-16-05\P0516001.D                    Vial: 99
Acq On    : 16 May 2005   8:56 am                      Operator: MFR/HH
Sample    : ,P050516_BFBS1,TUNE,VST050427A(0.5uL),     Inst    : MS  #1
Misc      : ,1,P05VS065,                               Multiplr: 1.00
MS Integration Params: rteint.p
Method    : C:\HPCHEM\1\METHODS\BFB.M (RTE Integrator)
Title     : VOC 8240/8260 Advanced Technology Laboratories
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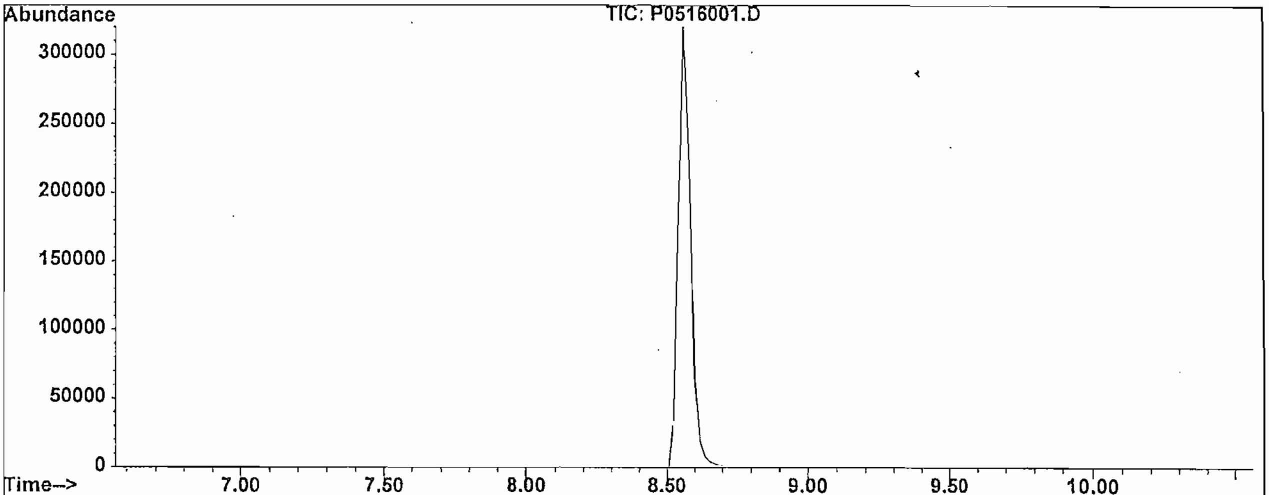
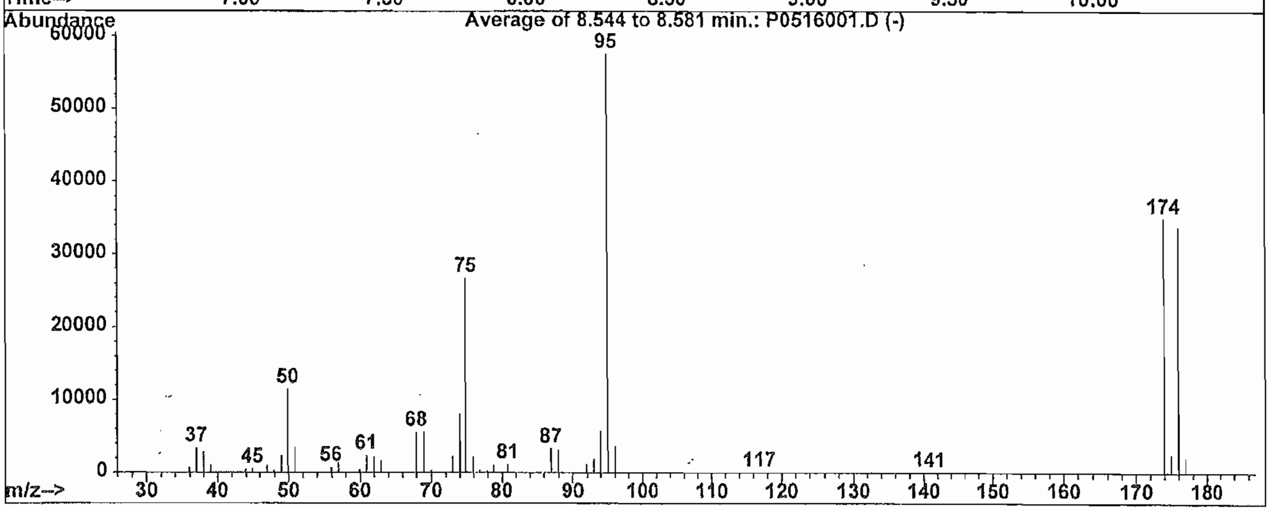




AutoFind: Scans 242, 243, 244; Background Corrected with Scan 237

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	20.0	11487	PASS
75	95	30	60	46.4	26712	PASS
95	95	100	100	100.0	57547	PASS
96	95	5	9	6.4	3677	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	60.9	35019	PASS
175	174	5	9	7.3	2553	PASS
176	174	95	101	96.8	33904	PASS
177	176	5	9	6.5	2194	PASS

Response Factor Report MS #1

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Fri Nov 05 10:35:40 2004
Response via : Initial Calibration

LR = Linear Regression
JPL 11/8/04

Calibration Files
1 =P1104007.D 2 =P1104009.D 3 =P1104010.D
4 =P1104011.D 5 =P1104012.D 6 =P1104013.D

		Compound	1	2	3	4	5	6	Avg	%RSD
1)	I	Pentafluorobenzene				ISTD				
2)	T	dichlorodifluoromet	0.694	0.765	0.772	0.727	0.780	0.776	0.751	4.21
3)	P	chloromethane	1.694	1.722	1.636	1.533	1.604	1.505	1.571	8.99
4)	C	vinyl chloride	1.078	1.193	1.143	1.067	1.166	1.162	1.127	4.56
5)	T	bromomethane	0.463	0.457	0.509	0.482	0.511	0.407	0.456	11.80
6)	T	chloroethane	0.434	0.582	0.583	0.558	0.584	0.558	0.545	9.98
7)	T	trichlorofluorometh	0.518	0.623	0.584	0.540	0.586	0.577	0.563	7.25
8)	T	Ethyl Ether	0.606	0.637	0.638	0.589	0.596	0.544	0.572	14.78
9)	T	Acrolein	0.013	0.030	0.019	0.022	0.025	0.026	0.023	25.68 LR
10)	T	acetone	0.285	0.269	0.248	0.221	0.223	0.220	0.241	11.15
11)	T	iodomethane					0.005	0.009	0.022	121.67 LR
12)	C,M	1,1-dichloroethene	0.549	0.609	0.550	0.525	0.565	0.555	0.549	6.67
13)	T	carbon disulfide	3.509	2.914	2.616	2.370	2.508	2.457	2.653	16.48 LR
14)	T	Acrylonitrile		0.248	0.233	0.217	0.228	0.217	0.229	5.71
15)	T	Freon-113	0.493	0.543	0.548	0.525	0.555	0.542	0.525	6.07
16)	T	methylene chloride	0.821	0.753	0.740	0.696	0.728	0.721	0.732	6.74
17)	T	Tert-butanol	0.027	0.061	0.068	0.065	0.066	0.065	0.059	24.38 LR
18)	T	trans-1,2-dichloroe	0.669	0.634	0.641	0.594	0.636	0.625	0.625	4.94
19)	M	MTBE	1.639	1.636	1.678	1.545	1.638	1.626	1.599	5.25
20)	P	1,1-dichloroethane	1.144	1.503	1.491	1.390	1.548	1.509	1.427	9.62
21)	T	vinyl acetate	2.155	2.276	2.055	1.835	1.892	1.791	1.918	14.60
22)	T	Di-isopropyl ether	4.012	3.878	3.709	3.417	3.634	3.522	3.624	7.64
23)	T	Ethyl tert-butyl et	2.397	2.635	2.651	2.486	2.665	2.597	2.543	4.86
24)	T	2-butanone	0.072	0.084	0.088	0.082	0.087	0.086	0.083	6.42
25)	T	cis-1,2-dichloroeth	0.786	0.813	0.780	0.731	0.794	0.773	0.773	3.86
26)	T	Ethyl Acetate	0.123	0.130	0.126	0.115	0.121	0.119	0.120	6.37
27)	T	2,2-dichloropropane	0.877	0.915	0.888	0.812	0.896	0.857	0.862	5.34
28)	T	Bromochloromethane		0.275	0.271	0.289	0.314	0.310	0.292	6.07
29)	C	chloroform	1.229	1.228	1.246	1.124	1.219	1.189	1.196	4.03
30)	S	1,2-Dichloroethane-	0.711	0.606	0.660	0.640	0.628	0.641	0.648	5.52
31)	S	Dibromofluoromethan	0.607	0.547	0.578	0.595	0.581	0.608	0.586	3.91
32)	T	1,1,1-trichloroetha	0.706	0.786	0.771	0.753	0.804	0.789	0.764	4.42
33)	I	1,4-Difluorobenzene				ISTD				
34)	S	Toluene-d8	1.855	1.339	1.237	1.225	1.127	1.154	1.323	20.47 LR
35)	T	1,2-dichloroethane	0.340	0.383	0.368	0.354	0.373	0.368	0.360	4.98
36)	T	1,1-dichloropropene	0.073	0.133	0.143	0.141	0.148	0.145	0.132	20.05 LR
37)	M	benzene	1.664	1.609	1.564	1.499	1.549	1.512	1.544	5.24
38)	T	carbon tetrachlorid	0.309	0.295	0.268	0.267	0.270	0.267	0.274	8.32
39)	T	Tert-amyl methyl et	1.039	1.104	1.086	1.028	1.066	1.040	1.050	3.81
40)	C	1,2-dichloropropane	0.400	0.419	0.414	0.410	0.427	0.427	0.415	2.48
41)	M	trichloroethene	0.355	0.359	0.348	0.334	0.344	0.344	0.344	3.24
42)	T	dibromomethane	0.159	0.194	0.187	0.190	0.202	0.197	0.188	7.38

0100

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report MS #1

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Fri Nov 05 10:35:40 2004
Response via : Initial Calibration

LR = Linear Regression
JPC 11/8/04

Calibration Files
1 =P1104007.D 2 =P1104009.D 3 =P1104010.D
4 =P1104011.D 5 =P1104012.D 6 =P1104013.D

		Compound	1	2	3	4	5	6	Avg	%RSD
43)	T	bromodichloromethan	0.411	0.431	0.433	0.418	0.437	0.434	0.424	3.16
44)	T	2-chloroethyl vinyl	0.204	0.236	0.271	0.264	0.256	0.268	0.250	10.27
45)	T	cis-1,3-dichloropro	0.633	0.655	0.611	0.595	0.628	0.619	0.618	3.80
46)	T	trans-1,3-dichlorop	0.523	0.556	0.513	0.491	0.510	0.512	0.512	4.63
47)	T	4-methyl-2-pentanon	0.520	0.505	0.453	0.449	0.440	0.416	0.445	13.70
48)	C,M	toluene	1.713	1.624	1.533	1.478	1.501	1.450	1.514	8.68#
49)	T	1,1,2-trichloroetha	0.269	0.274	0.264	0.252	0.263	0.257	0.261	3.32
50)	T	2-hexanone	0.441	0.427	0.410	0.377	0.368	0.347	0.378	14.72
51)	T	1,2-dibromoethane	0.234	0.266	0.257	0.253	0.267	0.266	0.257	4.51
52)	I	Chlorobenzene-d5				ISTD				
53)	S	4-Bromofluorobenzen	0.968	0.622	0.534	0.534	0.466	0.476	0.600	31.47 LR
54)	T	1,3-dichloropropane	0.606	0.664	0.621	0.613	0.592	0.595	0.606	5.51
55)	T	dibromochloromethan	0.181	0.225	0.204	0.210	0.215	0.216	0.208	6.64
56)	T	tetrachloroethene	0.270	0.288	0.291	0.279	0.277	0.282	0.278	3.75
57)	M,P	chlorobenzene	0.968	0.986	0.949	0.937	0.929	0.921	0.933	4.91
58)	T	1,1,1,2-tetrachloro	0.238	0.264	0.270	0.272	0.274	0.274	0.264	4.99
59)	C	ethylbenzene	2.065	1.981	1.827	1.806	1.766	1.752	1.818	9.43
60)	T	m,p-xylene	1.567	1.523	1.373	1.357	1.312	1.281	1.354	12.23
61)	P	bromoform		0.150	0.142	0.149	0.152	0.156	0.150	3.09
62)	T	styrene	1.057	1.133	1.103	1.088	1.099	1.083	1.077	4.74
63)	T	o-xylene	1.505	1.548	1.423	1.407	1.380	1.354	1.399	8.58
64)	T	Cyclohexanone	0.220	0.213	0.184	0.172	0.158	0.153	0.177	17.19 LR
65)	I	1,4-Dichlorobenzene-d				ISTD				
66)	P	1,1,2,2-tetrachloro	1.104	1.134	1.003	1.041	0.989	1.038	1.044	5.32
67)	T	1,2,3-trichloroprop	0.630	0.778	0.818	0.727	0.714	0.738	0.741	8.18
68)	T	isopropylbenzene	3.797	3.807	3.343	3.473	3.341	3.462	3.475	7.32
69)	T	bromobenzene	0.575	0.758	0.693	0.718	0.708	0.734	0.697	8.39
70)	T	2-chlorotoluene	3.202	2.965	2.671	2.475	2.463	2.580	2.683	10.97
71)	T	n-propylbenzene	5.508	5.531	4.819	5.020	4.714	4.794	4.952	9.05
72)	T	4-chlorotoluene	2.857	3.244	2.891	2.810	2.757	2.791	2.845	7.21
73)	T	1,3,5-trimethylbenz	3.206	3.236	2.847	2.988	2.817	2.858	2.937	7.63
74)	T	tert-butylbenzene	2.883	2.971	2.671	2.751	2.619	2.678	2.715	6.54
75)	T	1,2,4-trimethylbenz	3.370	3.309	2.856	2.965	2.839	2.886	2.983	8.78
76)	T	1,3-dichlorobenzene	1.612	1.559	1.426	1.460	1.374	1.416	1.450	7.23
77)	T	sec-butylbenzene	4.746	4.557	4.046	4.159	3.956	4.030	4.157	9.22
78)	T	1,4-dichlorobenzene	1.526	1.475	1.412	1.472	1.362	1.407	1.421	5.47
79)	T	4-isopropyltoluene	3.380	3.332	2.913	3.021	2.820	2.833	2.977	10.00
80)	T	1,2-dichlorobenzene	1.379	1.377	1.304	1.334	1.289	1.304	1.311	4.98
81)	T	n-butylbenzene	4.045	3.894	3.389	3.459	3.272	3.261	3.455	11.62
82)	T	1,2-dibromo-3-chlor		0.071	0.109	0.116	0.121	0.134	0.114	20.51 LR
83)	T	1,2,4-trichlorobenz	0.668	0.747	0.683	0.727	0.703	0.701	0.706	3.75
84)	T	naphthalene	1.779	1.760	1.546	1.638	1.579	1.632	1.660	5.26

0101

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report MS #1

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Fri Nov 05 10:35:40 2004
Response via : Initial Calibration

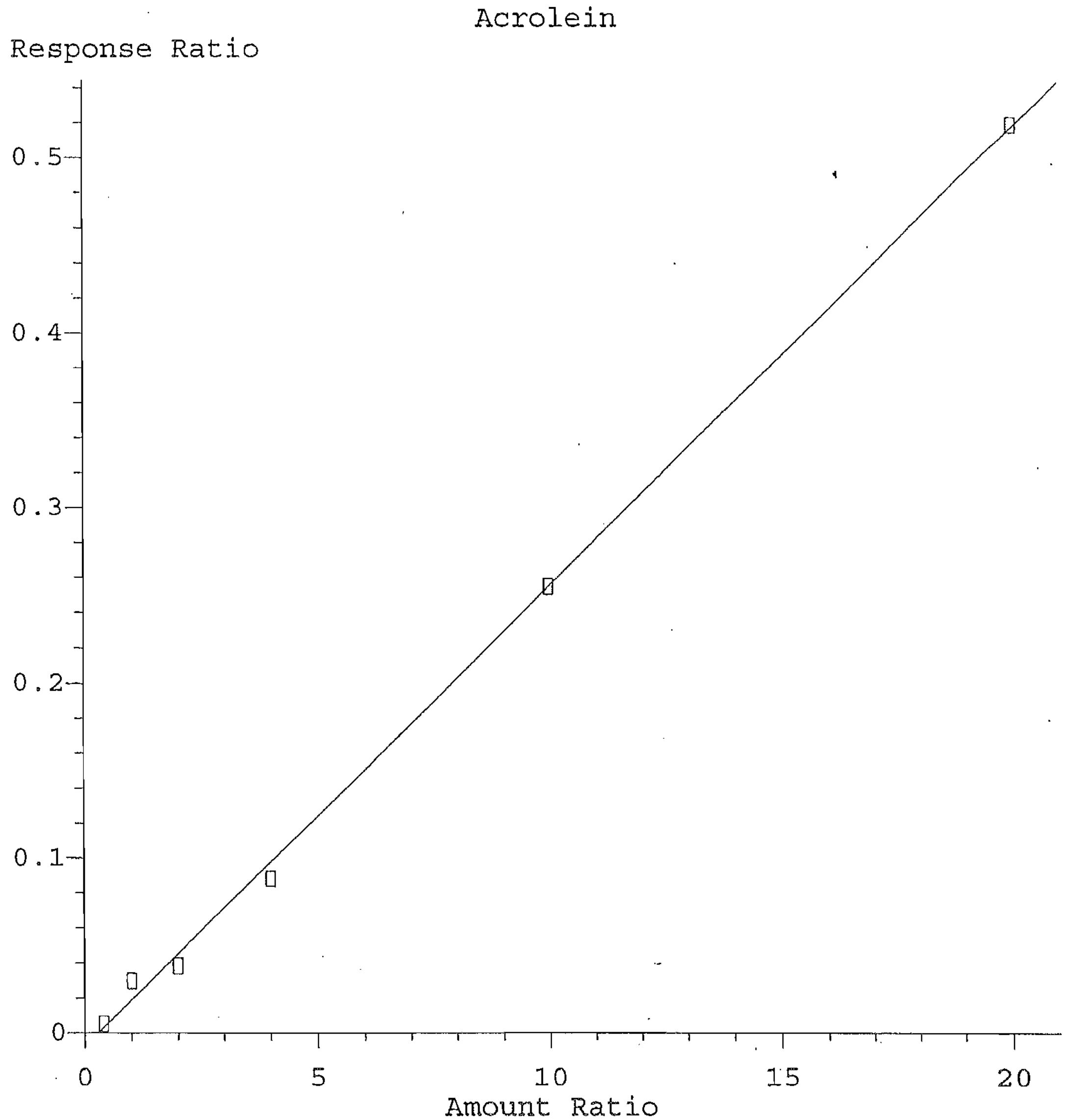
Calibration Files
1 =P1104007.D 2 =P1104009.D 3 =P1104010.D
4 =P1104011.D 5 =P1104012.D 6 =P1104013.D

		Compound	1	2	3	4	5	6	Avg	%RSD
85)	T	1,2,3-trichlorobenz	0.546	0.667	0.613	0.650	0.619	0.618	0.622	6.24
86)	T	hexachlorobutadiene	0.173	0.270	0.270	0.296	0.286	0.284	0.266	15.76 LR

LRS
Linear
Regression
JPL
11/8/04

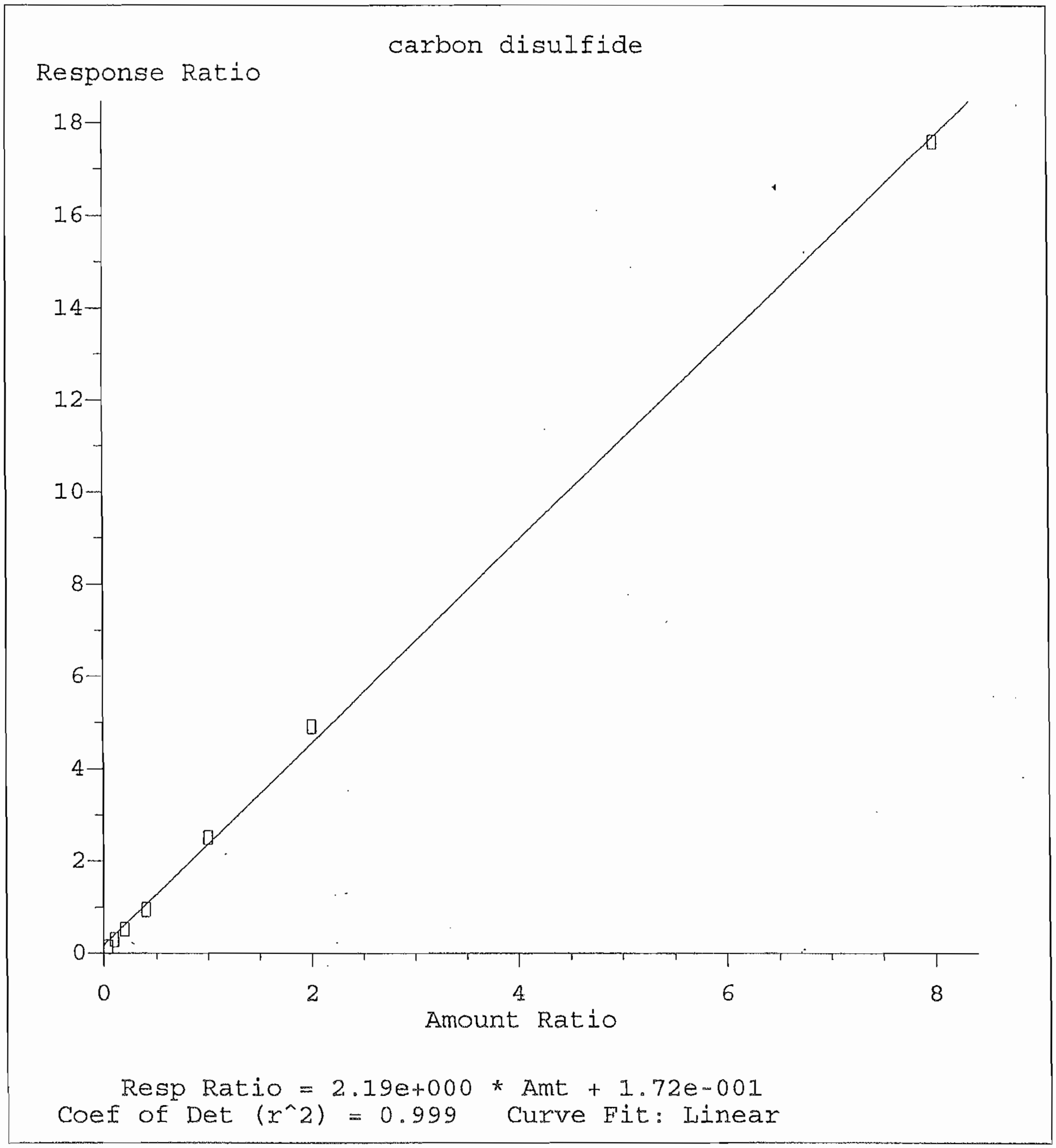
0102

(#) = Out of Range ### Number of calibration levels exceeded format ###

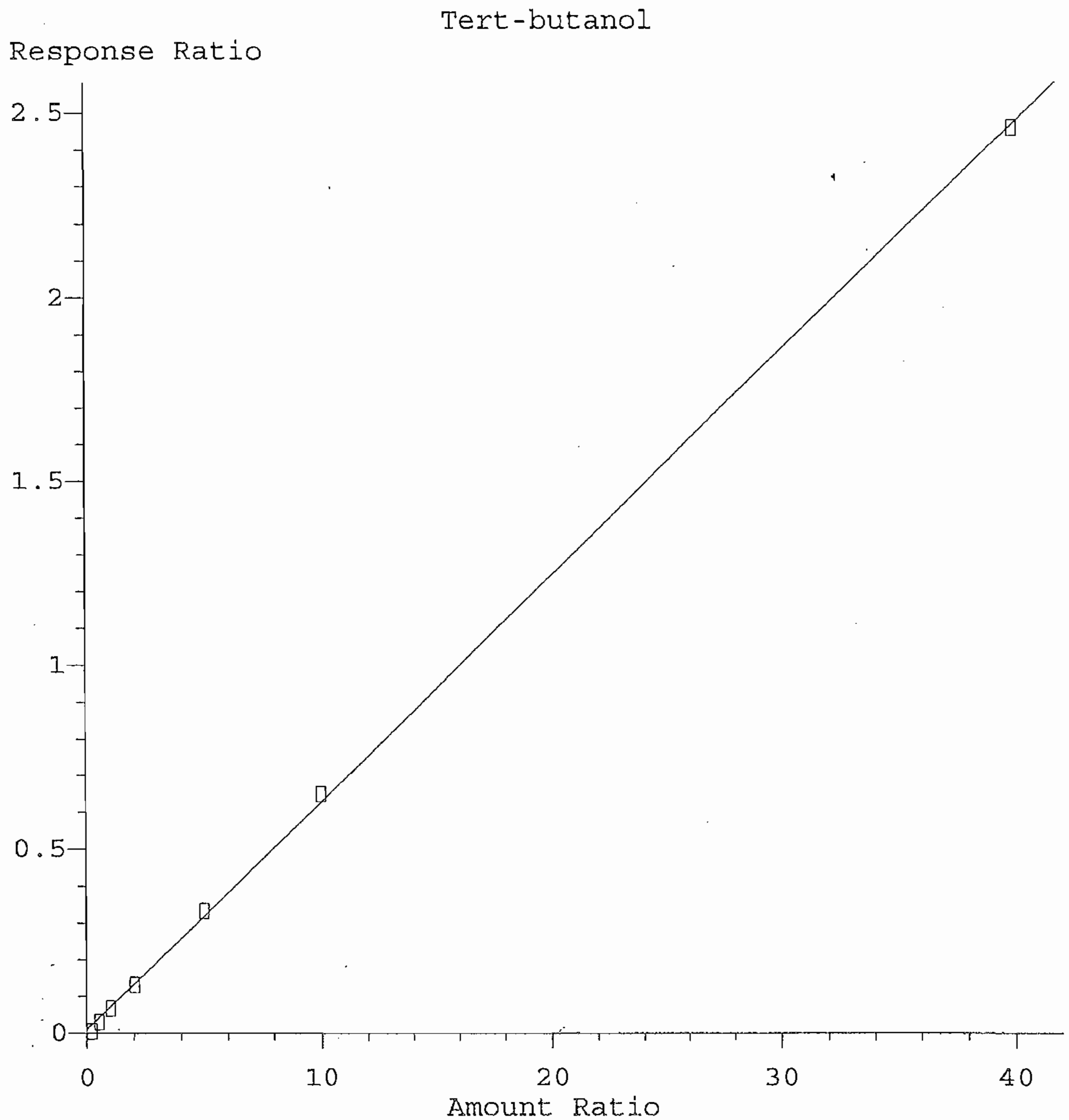


Resp Ratio = 2.62e-002 * Amt - 7.73e-003
Coef of Det (r^2) = 0.999   Curve Fit: Linear

Method Name: C:\HPCHEM\1\METHODS\PS041104.M
Calibration Table Last Updated: Fri Nov 05 10:39:51 2004

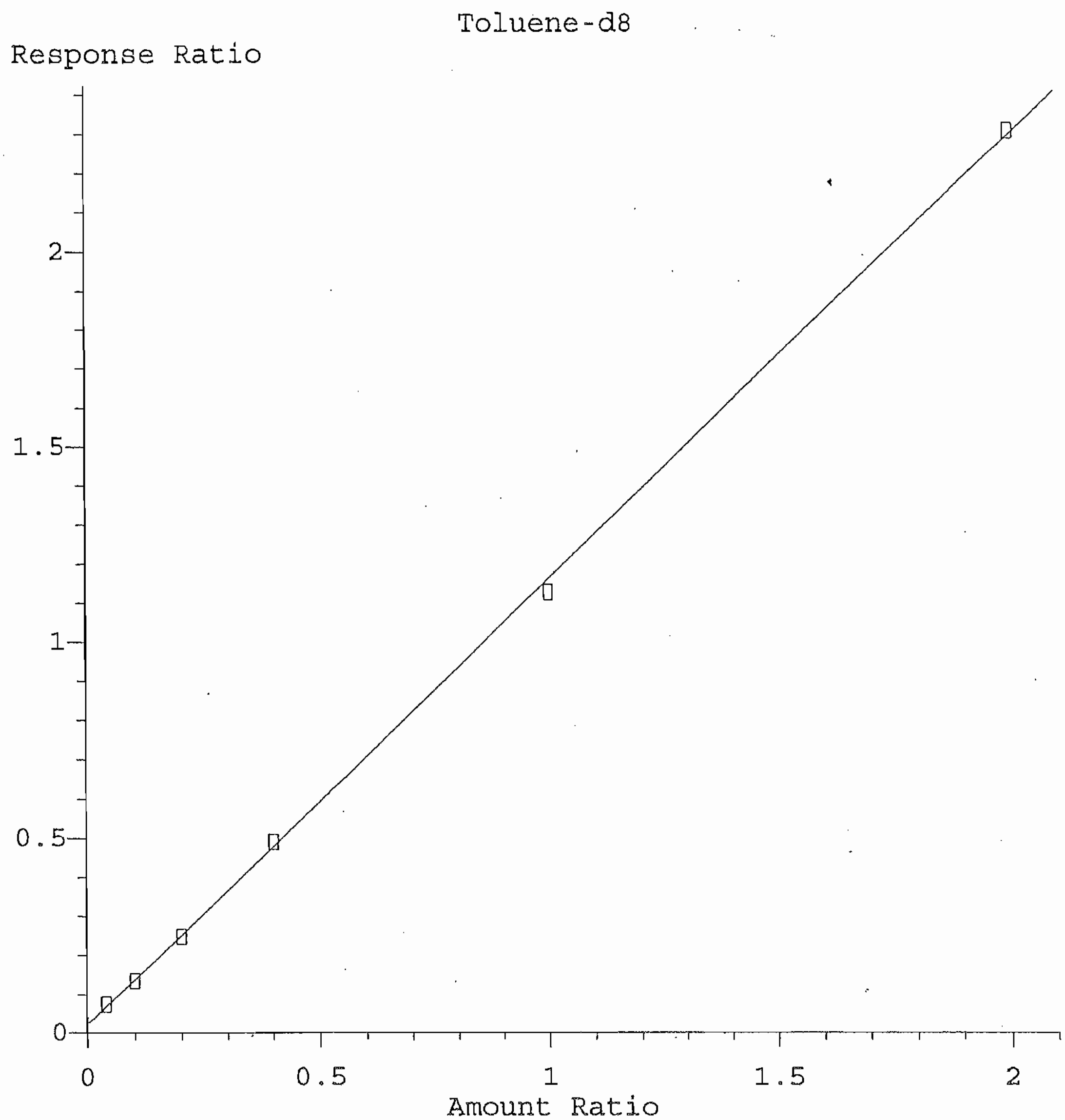


Method Name: C:\HPCHEM\1\METHODS\PS041104.M
Calibration Table Last Updated: Fri Nov 05 10:39:51 2004



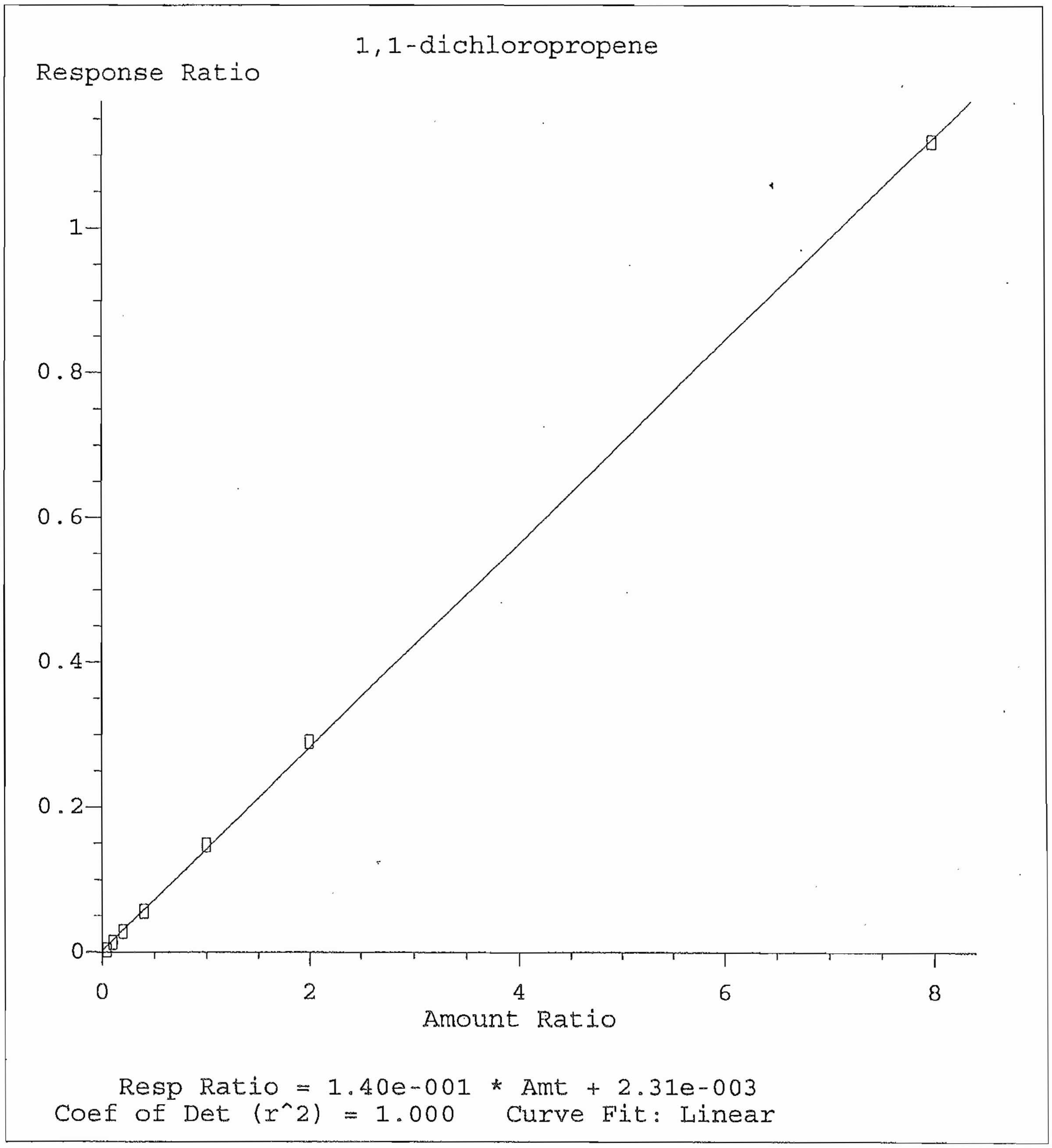
Resp Ratio = 6.14e-002 * Amt + 9.74e-003
Coef of Det (r^2) = 1.000   Curve Fit: Linear

Method Name: C:\HPCHEM\1\METHODS\PS041104.M
Calibration Table Last Updated: Fri Nov 05 10:39:51 2004

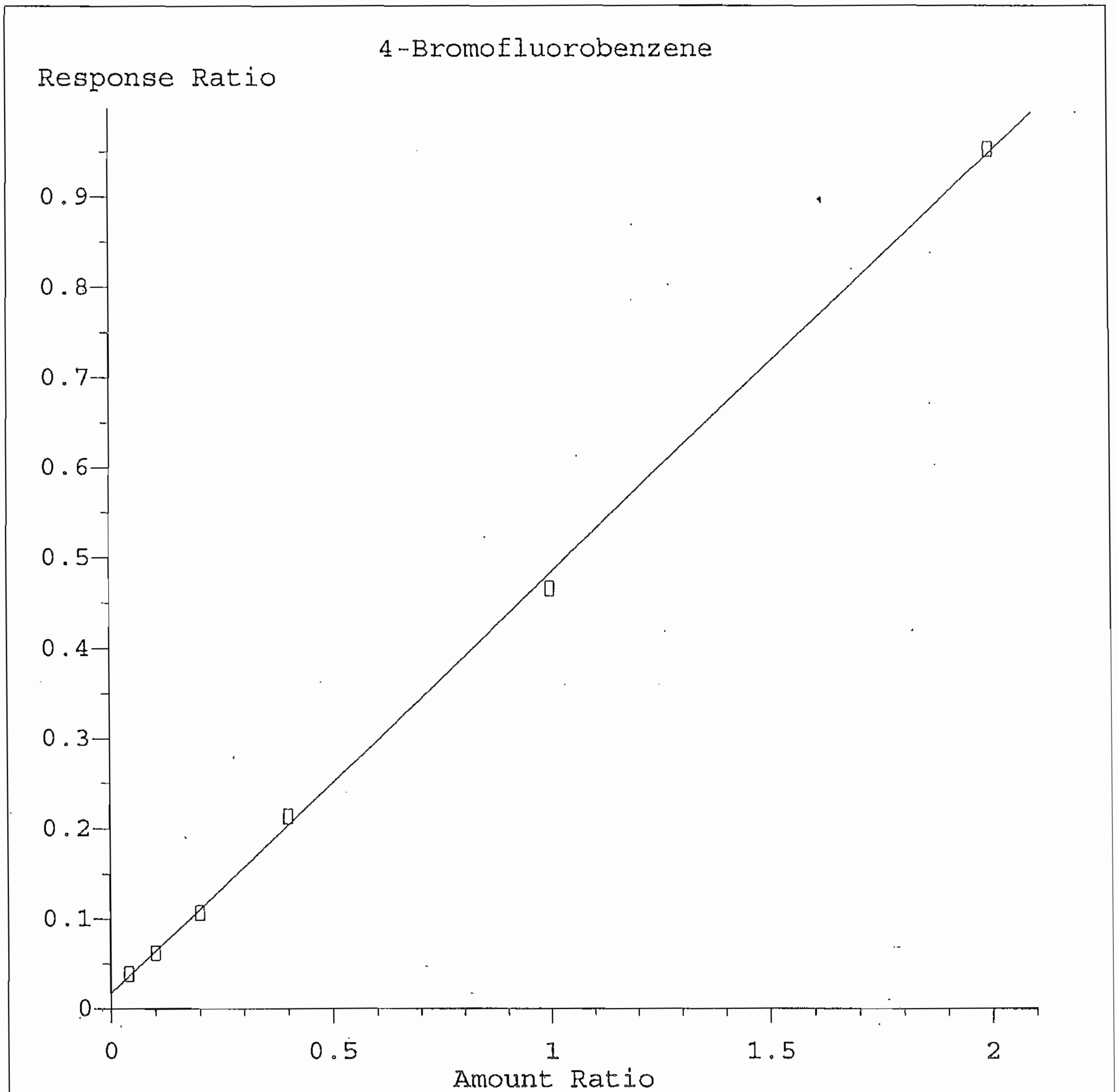


Resp Ratio = 1.14e+000 * Amt + 2.15e-002
Coef of Det (r^2) = 1.000 Curve Fit: Linear

Method Name: C:\HPCHEM\1\METHODS\PS041104.M
Calibration Table Last Updated: Fri Nov 05 10:39:51 2004

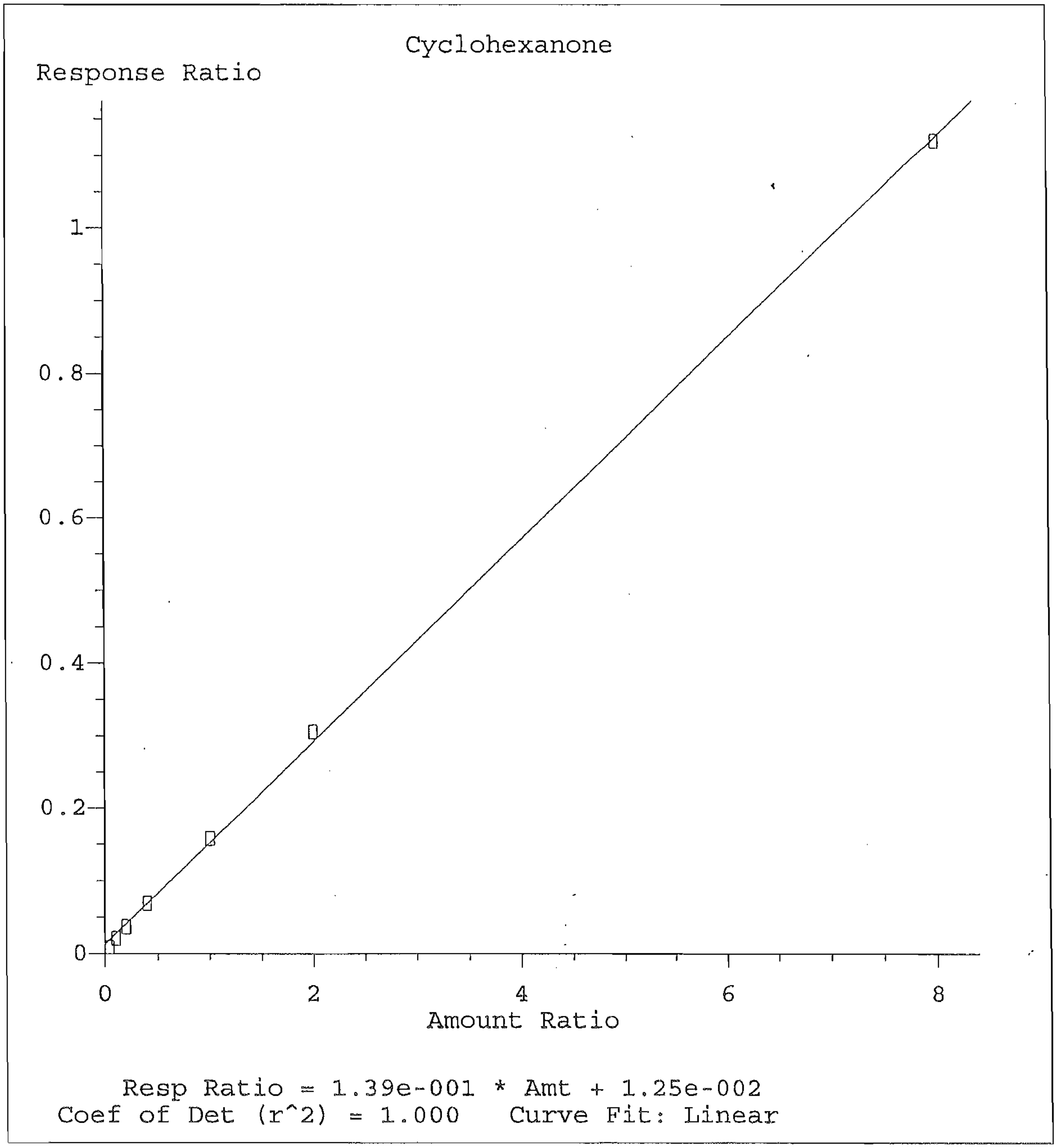


Method Name: C:\HPCHEM\1\METHODS\PS041104.M
Calibration Table Last Updated: Fri Nov 05 10:39:51 2004

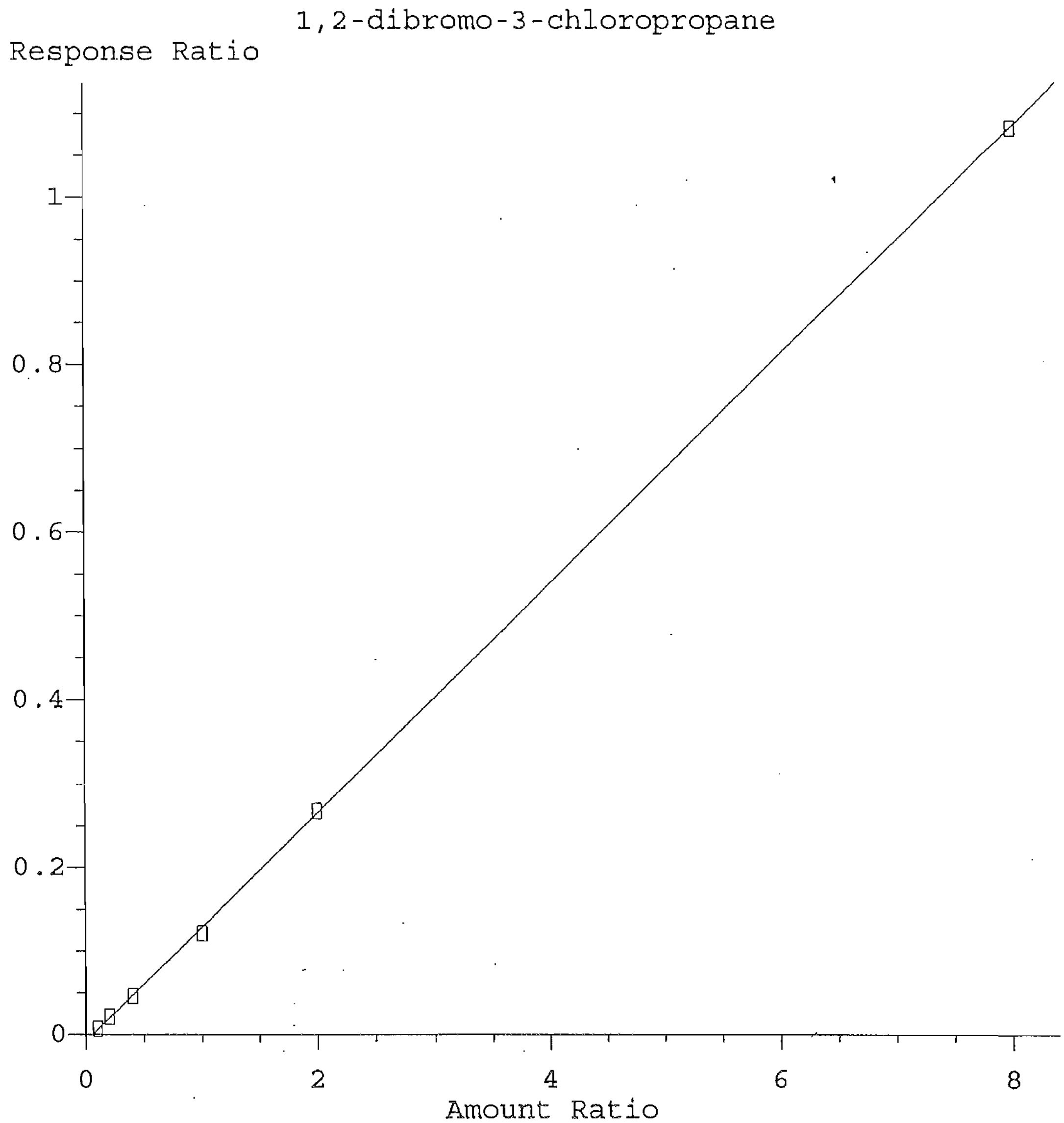


Resp Ratio = 4.65e-001 * Amt + 1.69e-002
Coef of Det (r^2) = 0.999   Curve Fit: Linear

Method Name: C:\HPCHEM\1\METHODS\PS041104.M
Calibration Table Last Updated: Fri Nov 05 10:39:51 2004

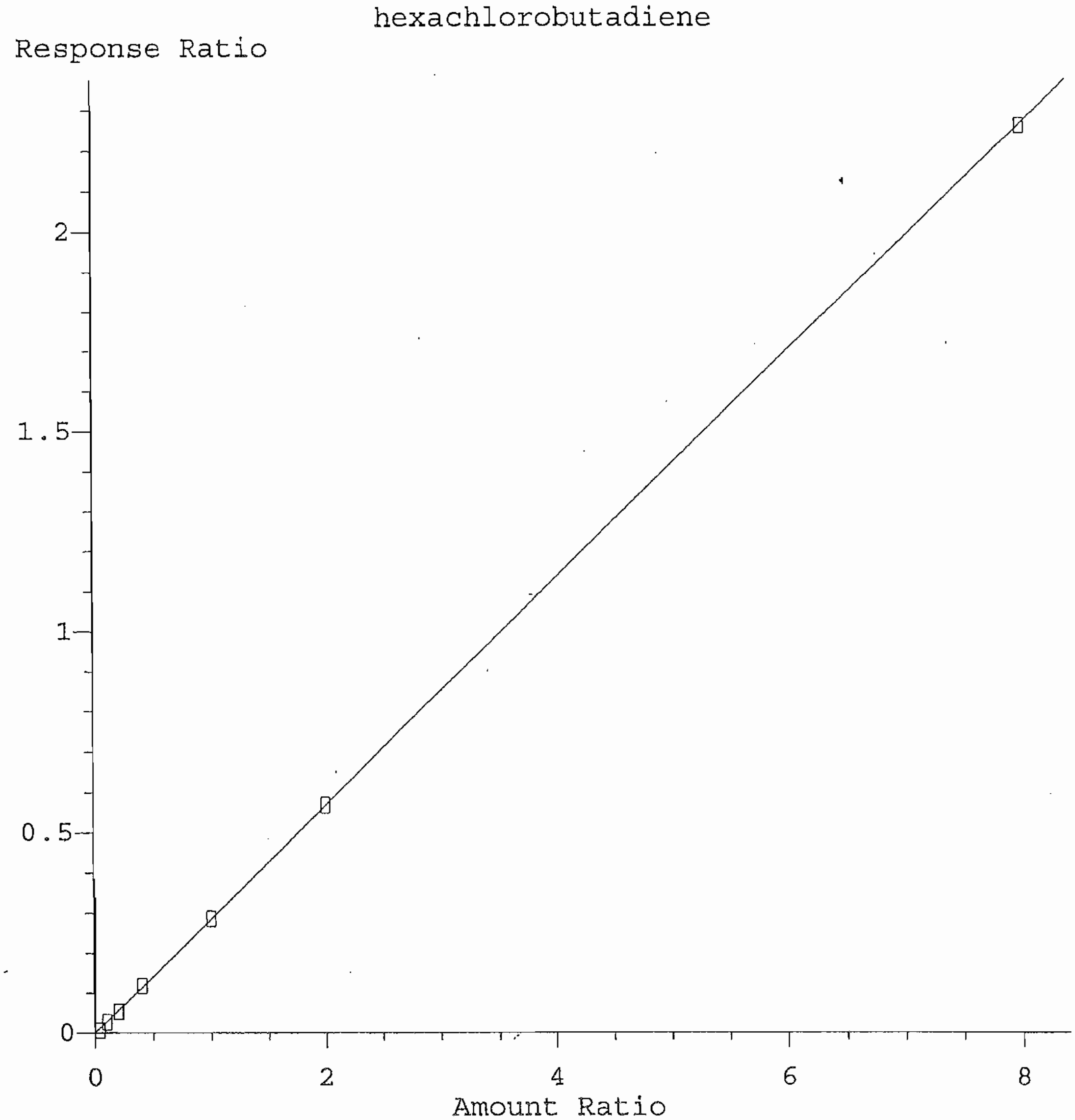


Method Name: C:\HPCHEM\1\METHODS\PS041104.M
Calibration Table Last Updated: Fri Nov 05 10:39:51 2004



Resp Ratio = 1.36e-001 * Amt - 7.92e-003
Coef of Det (r^2) = 1.000   Curve Fit: Linear

Method Name: C:\HPCHEM\1\METHODS\PS041104.M
Calibration Table Last Updated: Fri Nov 05 10:39:51 2004



Resp Ratio = 2.83e-001 * Amt + 7.82e-005
Coef of Det (r^2) = 1.000   Curve Fit: Linear

Method Name: C:\HPCHEM\1\METHODS\PS041104.M
Calibration Table Last Updated: Fri Nov 05 10:39:51 2004

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-12-05\P0512018.D
Acq On : 12 May 2005 8:24 pm
Sample : ,100ppb,CCV,VST050329C(5ul),
Misc : ,1,P05VS062,
MS Integration Params: rteint.p

Vial: 1
Operator: MFR/HH
Inst : MS #1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

⊗ Chloromethane : OK in LCS
HH 5/13/05

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Pentafluorobenzene	1.000	1.000	0.0	88	0.05
2	T	dichlorodifluoromethane	0.751	0.613	18.4	70	0.04
3	P	chloromethane	1.571	1.137	⊗ 27.6#	67	0.04
4	C	vinyl chloride	1.127	0.979	13.1	75	0.04
5	T	bromomethane	0.456	0.579	-27.0#	126	0.05
6	T	chloroethane	0.545	0.558	-2.4	89	0.04
7	T	trichlorofluoromethane	0.563	0.606	-7.6	93	0.05
8	T	Ethyl Ether	0.572	0.592	-3.5	96	0.05
9	T	Acrolein	0.023	0.000	* 100.0#	0#	-3.13#
10	T	acetone	0.241	0.486	* -101.7#	195#	0.05
11	T	iodomethane	0.022	0.564	* -2463.6#	5765#	0.05
12	C,M	1,1-dichloroethene	0.549	0.560	-2.0	89	0.05
13	T	carbon disulfide	2.653	2.255	15.0	81	0.05
14	T	Acrylonitrile	0.229	0.001	* 99.6#	1#	0.05
15	T	Freon-113	0.525	0.545	-3.8	89	0.07
16	T	methylene chloride	0.732	0.748	-2.2	92	0.05
17	T	Tert-butanol	0.059	0.073	-23.7# ✓	99	0.05
18	T	trans-1,2-dichloroethene	0.625	0.676	-8.2	96	0.05
19	M	MTBE	1.599	1.573	1.6	86	0.07
20	P	1,1-dichloroethane	1.427	1.291	9.5	76	0.07
21	T	vinyl acetate	1.918	1.795	6.4	89	0.07
22	T	Di-isopropyl ether	3.624	2.922	19.4	73	0.07
23	T	Ethyl tert-butyl ether	2.543	2.068	18.7	70	0.07
24	T	2-butanone	0.083	0.155	* -86.7#	160#	0.07
25	T	cis-1,2-dichloroethene	0.773	0.717	7.2	82	0.07
26	T	Ethyl Acetate	0.120	0.114	5.0	85	0.05
27	T	2,2-dichloropropane	0.862	0.759	11.9	78	0.07
28	T	Bromochloromethane	0.292	0.306	-4.8	87	0.05
29	C	chloroform	1.196	1.068	10.7	79	0.05
30	S	1,2-Dichloroethane-d4	0.648	0.274	57.7#	38#	0.04
31	S	Dibromofluoromethane	0.586	0.282	51.9#	41#	0.05
32	T	1,1,1-trichloroethane	0.764	0.693	9.3	78	0.05
33	I	1,4-Difluorobenzene	1.000	1.000	0.0	83	0.04
34	S	Toluene-d8	1.323	0.603	54.4#	43#	0.03
35	T	1,2-dichloroethane	0.360	0.364	-1.1	82	0.04
36	T	1,1-dichloropropene	0.132	0.138	-4.5	78	0.05
37	M	benzene	1.544	1.420	8.0	77	0.04
38	T	carbon tetrachloride	0.274	0.267	2.6	83	0.04
39	T	Tert-amyl methyl ether	1.050	0.900	14.3	71	0.04
40	C	1,2-dichloropropane	0.415	0.391	5.8	76	0.04

0112

(#) = Out of Range

* not target analytes HH 5/23/05

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-12-05\P0512018.D
Acq On : 12 May 2005 8:24 pm
Sample : ,100ppb,CCV,VST050329C(5ul),
Misc : ,1,P05VS062,
MS Integration Params: rteint.p

Vial: 1
Operator: MFR/HH
Inst : MS #1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

* not target analyte HH 5/23/05

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
41	M	trichloroethene	0.344	0.320	7.0	77	0.03
42	T	dibromomethane	0.188	0.203	-8.0	85	0.04
43	T	bromodichloromethane	0.424	0.411	3.1	78	0.03
44	T	2-chloroethyl vinyl ether	0.250	0.000	* 100.0#	0#	-10.77#
45	T	cis-1,3-dichloropropene	0.618	0.601	2.8	80	0.03
46	T	trans-1,3-dichloropropene	0.512	0.500	2.3	81	0.02
47	T	4-methyl-2-pentanone	0.445	0.447	-0.4	89	0.03
48	C,M	toluene	1.514	1.419	6.3	81	0.03
49	T	1,1,2-trichloroethane	0.261	0.264	-1.1	85	0.02
50	T	2-hexanone	0.378	0.482	-27.5# ✓	114	0.02
51	T	1,2-dibromoethane	0.257	0.288	-12.1	89	0.03
52	I	Chlorobenzene-d5	1.000	1.000	0.0	89	0.03
53	S	4-Bromofluorobenzene	0.600	0.283	52.8#	53	0.02
54	T	1,3-dichloropropane	0.606	0.561	7.4	84	0.03
55	T	dibromochloromethane	0.208	0.212	-1.9	87	0.03
56	T	tetrachloroethene	0.278	0.263	5.4	83	0.03
57	M,P	chlorobenzene	0.933	0.875	6.2	84	0.03
58	T	1,1,1,2-tetrachloroethane	0.264	0.268	-1.5	87	0.03
59	C	ethylbenzene	1.818	1.531	15.8	77	0.03
60	T	m,p-xylene	1.354	1.123	17.1	78	0.02
61	P	bromoform	0.150	0.157	-4.7	89	0.02
62	T	styrene	1.077	0.998	7.3	82	0.03
63	T	o-xylene	1.399	1.208	13.7	79	0.02
64	T	Cyclohexanone	0.177	0.095	46.3# ✓	55	0.02
65	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	137	0.02
66	P	1,1,2,2-tetrachloroethane	1.044	0.654	37.4# ✓	86	0.00
67	T	1,2,3-trichloropropane	0.741	0.460	37.9# ✓	85	0.02
68	T	isopropylbenzene	3.475	1.968	43.4# ✓	78	0.02
69	T	bromobenzene	0.697	0.483	30.7# ✓	90	0.02
70	T	2-chlorotoluene	2.683	1.583	41.0# ✓	84	0.03
71	T	n-propylbenzene	4.952	2.761	44.2# ✓	79	0.02
72	T	4-chlorotoluene	2.845	1.742	38.8# ✓	86	0.02
73	T	1,3,5-trimethylbenzene	2.937	1.687	42.6# ✓	81	0.02
74	T	tert-butylbenzene	2.715	1.643	39.5# ✓	84	0.02
75	T	1,2,4-trimethylbenzene	2.983	1.687	43.4# ✓	80	0.02
76	T	1,3-dichlorobenzene	1.450	0.926	36.1# ✓	90	0.02
77	T	sec-butylbenzene	4.157	2.336	43.8# ✓	79	0.02
78	T	1,4-dichlorobenzene	1.421	0.923	35.0# ✓	90	0.02
79	T	4-isopropyltoluene	2.977	1.769	40.6# ✓	86	0.02

0113

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-12-05\P0512018.D Vial: 1
Acq On : 12 May 2005 8:24 pm Operator: MFR/HH
Sample : ,100ppb,CCV,VST050329C(5ul), Inst : MS #1
Misc : ,1,P05VS062, Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
80	T	1,2-dichlorobenzene	1.311	0.875	33.3#✓	92	0.02
81	T	n-butylbenzene	3.455	1.937	43.9#✓	81	0.00
82	T	1,2-dibromo-3-chloropropane	0.114	0.089	21.9#✓	91	0.00
83	T	1,2,4-trichlorobenzene	0.706	0.499	29.3#✓	98	0.02
84	T	naphthalene	1.660	1.357	18.3	114	0.02
85	T	1,2,3-trichlorobenzene	0.622	0.451	27.5#✓	100	0.02
86	T	hexachlorobutadiene	0.266	0.194	27.1#✓	94	0.02

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-12-05\P0512018.D Vial: 1
Acq On : 12 May 2005 8:24 pm Operator: MFR/HH
Sample : ,100ppb,CCV,VST050329C(5ul), Inst : MS #1
Misc : ,1,P05VS062, Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Pentafluorobenzene	1.000	1.000	0.0	91	0.05
30	S	1,2-Dichloroethane-d4	0.648	0.547	15.6	79	0.04
31	S	Dibromofluoromethane	0.586	0.563	3.9	88	0.05
33	I	1,4-Difluorobenzene	1.000	1.000	0.0	85	0.04
34	S	Toluene-d8	1.323	1.206	8.8	91	0.03
52	I	Chlorobenzene-d5	1.000	1.000	0.0	90	0.03
53	S	4-Bromofluorobenzene	0.600	0.567	5.5	109	0.02
65	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	132	0.02

(#) = Out of Range SPCC's out = 0 CCC's out = 6
P1104012.D PS041104.M Mon May 23 09:46:01 2005 MS-1

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-13-05\P0513002.D
Acq On : 13 May 2005 11:00 am
Sample : ,100ppb,CCV,VST050329C(5ul),
Misc : ,1,P05VS063,
MS Integration Params: rteint.p

Vial: 1
Operator: MFR/HH
Inst : MS #1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

(x) Chloromethane: OK in LCS
HH 5/13/05

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Pentafluorobenzene	1.000	1.000	0.0	75	0.01
2	T	dichlorodifluoromethane	0.751	0.700	6.8	68	0.01
3	P	chloromethane	1.571	1.166	(x) 25.8#	58	0.01
4	C	vinyl chloride	1.127	1.049	6.9 ✓	68	0.01
5	T	bromomethane	0.456	0.591	-29.6#	109	0.02
6	T	chloroethane	0.545	0.582	-6.8	79	0.01
7	T	trichlorofluoromethane	0.563	0.700	-24.3#	91	0.02
8	T	Ethyl Ether	0.572	0.568	0.7	78	0.02
9	T	Acrolein	0.023	0.000	* 100.0#	0#	-3.13#
10	T	acetone	0.241	0.459	* -90.5#	157#	0.01
11	T	iodomethane	0.022	0.622	* -2727.3#	5402#	0.02
12	C,M	1,1-dichloroethene	0.549	0.619	-12.8 ✓	84	0.01
13	T	carbon disulfide	2.653	2.437	8.1	75	0.02
14	T	Acrylonitrile	0.229	0.001	* 99.6#	0#	0.02
15	T	Freon-113	0.525	0.625	-19.0	87	0.02
16	T	methylene chloride	0.732	0.740	-1.1	77	0.02
17	T	Tert-butanol	0.059	0.057	3.4	66	0.02
18	T	trans-1,2-dichloroethene	0.625	0.719	-15.0	86	0.02
19	M	MTBE	1.599	1.432	10.4	66	0.02
20	P	1,1-dichloroethane	1.427	1.316	7.8	66	0.02
21	T	vinyl acetate	1.918	1.694	11.7	71	0.02
22	T	Di-isopropyl ether	3.624	2.836	21.7# ✓	61	0.02
23	T	Ethyl tert-butyl ether	2.543	1.916	24.7# ✓	55	0.02
24	T	2-butanone	0.083	0.144	* -73.5#	125	0.02
25	T	cis-1,2-dichloroethene	0.773	0.734	5.0	71	0.02
26	T	Ethyl Acetate	0.120	0.100	16.7	63	0.02
27	T	2,2-dichloropropane	0.862	0.837	2.9	73	0.02
28	T	Bromochloromethane	0.292	0.295	-1.0	72	0.02
29	C	chloroform	1.196	1.098	8.2	69	0.01
30	S	1,2-Dichloroethane-d4	0.648	0.281	56.6#	33#	0.01
31	S	Dibromofluoromethane	0.586	0.286	51.2#	35#	0.02
32	T	1,1,1-trichloroethane	0.764	0.761	0.4	72	0.02
33	I	1,4-Difluorobenzene	1.000	1.000	0.0	69	0.01
34	S	Toluene-d8	1.323	0.586	55.7#	35#	0.01
35	T	1,2-dichloroethane	0.360	0.361	-0.3	68	0.01
36	T	1,1-dichloropropene	0.132	0.154	-16.7	73	0.02
37	M	benzene	1.544	1.484	3.9	68	0.01
38	T	carbon tetrachloride	0.274	0.306	-11.7	80	0.01
39	T	Tert-amyl methyl ether	1.050	0.836	20.4# ✓	56	0.02
40	C	1,2-dichloropropane	0.415	0.392	5.5	64	0.02

(#) = Out of Range

* not target analytes HH 5/13/05

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-13-05\P0513002.D
Acq On : 13 May 2005 11:00 am
Sample : ,100ppb,CCV,VST050329C(5ul),
Misc : ,1,P05VS063,
MS Integration Params: rteint.p

Vial: 1
Operator: MFR/HH
Inst : MS #1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

* not target analytes HH 5/23/05

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
41	M	trichloroethene	0.344	0.343	0.3	69	0.01
42	T	dibromomethane	0.188	0.197	-4.8	69	0.01
43	T	bromodichloromethane	0.424	0.414	2.4	66	0.01
44	T	2-chloroethyl vinyl ether	0.250	0.000	* 100.0#	0#	-10.77#
45	T	cis-1,3-dichloropropene	0.618	0.588	4.9	66	0.01
46	T	trans-1,3-dichloropropene	0.512	0.482	5.9	65	0.01
47	T	4-methyl-2-pentanone	0.445	0.425	4.5	71	0.01
48	C,M	toluene	1.514	1.454	4.0	70	0.01
49	T	1,1,2-trichloroethane	0.261	0.252	3.4	68	0.00
50	T	2-hexanone	0.378	0.472	-24.9# ✓	94	0.00
51	T	1,2-dibromoethane	0.257	0.264	-2.7	69	0.01
52	I	Chlorobenzene-d5	1.000	1.000	0.0	67	0.01
53	S	4-Bromofluorobenzene	0.600	0.247	58.8#	35#	0.00
54	T	1,3-dichloropropane	0.606	0.596	1.7	67	0.01
55	T	dibromochloromethane	0.208	0.229	-10.1	71	0.01
56	T	tetrachloroethene	0.278	0.324	-16.5	77	0.01
57	M,P	chlorobenzene	0.933	1.009	-8.1	73	0.01
58	T	1,1,1,2-tetrachloroethane	0.264	0.299	-13.3	73	0.01
59	C	ethylbenzene	1.818	1.794	1.3	69	0.01
60	T	m,p-xylene	1.354	1.323	2.3	69	0.00
61	P	bromoform	0.150	0.160	-6.7	69	0.01
62	T	styrene	1.077	1.111	-3.2	69	0.01
63	T	o-xylene	1.399	1.385	1.0	69	0.01
64	T	Cyclohexanone	0.177	0.086	* 51.4#	38#	0.01
65	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	76	0.00
66	P	1,1,2,2-tetrachloroethane	1.044	0.925	11.4	68	0.00
67	T	1,2,3-trichloropropane	0.741	0.638	13.9	66	0.01
68	T	isopropylbenzene	3.475	3.219	7.4	71	0.01
69	T	bromobenzene	0.697	0.726	-4.2	75	0.00
70	T	2-chlorotoluene	2.683	2.513	6.3	74	0.01
71	T	n-propylbenzene	4.952	4.538	8.4	72	0.00
72	T	4-chlorotoluene	2.845	2.737	3.8	75	0.01
73	T	1,3,5-trimethylbenzene	2.937	2.714	7.6	72	0.01
74	T	tert-butylbenzene	2.715	2.703	0.4	77	0.01
75	T	1,2,4-trimethylbenzene	2.983	2.714	9.0	72	0.01
76	T	1,3-dichlorobenzene	1.450	1.423	1.9	77	0.01
77	T	sec-butylbenzene	4.157	3.891	6.4	74	0.01
78	T	1,4-dichlorobenzene	1.421	1.432	-0.8	78	0.00
79	T	4-isopropyltoluene	2.977	2.922	1.8	79	0.01

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-13-05\P0513002.D
Acq On : 13 May 2005 11:00 am
Sample : ,100ppb,CCV,VST050329C(5ul),
Misc : ,1,P05VS063,
MS Integration Params: rteint.p

Vial: 1
Operator: MFR/HH
Inst : MS #1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
80	T	1,2-dichlorobenzene	1.311	1.323	-0.9	77	0.01
81	T	n-butylbenzene	3.455	3.213	7.0	75	0.00
82	T	1,2-dibromo-3-chloropropane	0.114	0.116	-1.8	66	0.00
83	T	1,2,4-trichlorobenzene	0.706	0.769	-8.9	84	0.01
84	T	naphthalene	1.660	1.941	-16.9	91	0.01
85	T	1,2,3-trichlorobenzene	0.622	0.679	-9.2	84	0.01
86	T	hexachlorobutadiene	0.266	0.310	-16.5	83	0.01

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-13-05\P0513002.D
Acq On : 13 May 2005 11:00 am
Sample : ,100ppb,CCV,VST050329C(5ul),
Misc : ,1,P05VS063,
MS Integration Params: rteint.p

Vial: 1
Operator: MFR/HH
Inst : MS #1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Pentafluorobenzene	1.000	1.000	0.0	77	0.01
30	S	1,2-Dichloroethane-d4	0.648	0.562	13.3	69	0.01
31	S	Dibromofluoromethane	0.586	0.573	2.2	76	0.02
33	I	1,4-Difluorobenzene	1.000	1.000	0.0	71	0.01
34	S	Toluene-d8	1.323	1.172	11.4	74	0.01
52	I	Chlorobenzene-d5	1.000	1.000	0.0	68	0.01
53	S	4-Bromofluorobenzene	0.600	0.494	17.7	72	0.00
65	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	74	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 6
P1104012.D PS041104.M Mon May 23 09:42:15 2005 MS-1

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-14-05\P0514002.D   Vial: 1
Acq On : 14 May 2005 8:58 am   Operator: MFR/HH
Sample : ,100ppb,CCV,VST050329C(5ul),   Inst : MS #1
Misc : ,1,P05VS064,   Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration ⊗ Chloromethane : OK in LCS. HH 5/16/05

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Pentafluorobenzene	1.000	1.000	0.0	89	0.04
2	T	dichlorodifluoromethane	0.751	0.708	5.7	82	0.03
3	P	chloromethane	1.571	1.160	⊗ 26.2#	69	0.06
4	C	vinyl chloride	1.127	1.065	5.5	82	0.03
5	T	bromomethane	0.456	0.598	-31.1#	131	0.04
6	T	chloroethane	0.545	0.583	-7.0	93	0.03
7	T	trichlorofluoromethane	0.563	0.695	-23.4#	107	0.04
8	T	Ethyl Ether	0.572	0.559	2.3	92	0.06
9	T	Acrolein	0.023	0.000	* 100.0#	0#	-3.13#
10	T	acetone	0.241	0.522	* -116.6#	212#	0.04
11	T	iodomethane	0.022	0.620	* -2718.2#	6401#	0.06
12	C,M	1,1-dichloroethene	0.549	0.625	-13.8	101	0.04
13	T	carbon disulfide	2.653	2.427	8.5	88	0.06
14	T	Acrylonitrile	0.229	0.002	* 99.1#	1#	0.06
15	T	Freon-113	0.525	0.632	✓-20.4#	104	0.06
16	T	methylene chloride	0.732	0.721	1.5	89	0.06
17	T	Tert-butanol	0.059	0.075	✓-27.1#	104	0.06
18	T	trans-1,2-dichloroethene	0.625	0.714	-14.2	102	0.06
19	M	MTBE	1.599	1.527	4.5	84	0.06
20	P	1,1-dichloroethane	1.427	1.332	6.7	79	0.06
21	T	vinyl acetate	1.918	1.856	3.2	93	0.07
22	T	Di-isopropyl ether	3.624	2.865	✓20.9#	73	0.07
23	T	Ethyl tert-butyl ether	2.543	1.926	✓24.3#	66	0.06
24	T	2-butanone	0.083	0.170	* -104.8#	176#	0.06
25	T	cis-1,2-dichloroethene	0.773	0.732	5.3	85	0.06
26	T	Ethyl Acetate	0.120	0.119	0.8	89	0.06
27	T	2,2-dichloropropane	0.862	0.834	3.2	87	0.06
28	T	Bromochloromethane	0.292	0.298	-2.1	86	0.06
29	C	chloroform	1.196	1.084	9.4	81	0.04
30	S	1,2-Dichloroethane-d4	0.648	0.306	52.8#	43#	0.04
31	S	Dibromofluoromethane	0.586	0.306	47.8#	45#	0.04
32	T	1,1,1-trichloroethane	0.764	0.762	0.3	86	0.04
33	I	1,4-Difluorobenzene	1.000	1.000	0.0	84	0.03
34	S	Toluene-d8	1.323	0.591	55.3#	43#	0.02
35	T	1,2-dichloroethane	0.360	0.363	-0.8	83	0.04
36	T	1,1-dichloropropene	0.132	0.150	-13.6	87	0.06
37	M	benzene	1.544	1.446	6.3	80	0.04
38	T	carbon tetrachloride	0.274	0.304	-10.9	96	0.04
39	T	Tert-amyl methyl ether	1.050	0.837	20.3#✓	68	0.04
40	C	1,2-dichloropropane	0.415	0.382	8.0	75	0.03

(#) = Out of Range   * not target analytes HH 0120

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-14-05\P0514002.D
Acq On : 14 May 2005 8:58 am
Sample : ,100ppb,CCV,VST050329C(5ul),
Misc : ,1,P05VS064,
MS Integration Params: rteint.p

Vial: 1
Operator: MFR/HH
Inst : MS #1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

* not target analyte. HH 5/23/05

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
41	M	trichloroethene	0.344	0.335	2.6	82	0.03
42	T	dibromomethane	0.188	0.198	-5.3	85	0.03
43	T	bromodichloromethane	0.424	0.406	4.2	79	0.03
44	T	2-chloroethyl vinyl ether	0.250	0.000	* 100.0#	0#	-10.77#
45	T	cis-1,3-dichloropropene	0.618	0.578	6.5	79	0.03
46	T	trans-1,3-dichloropropene	0.512	0.486	5.1	80	0.02
47	T	4-methyl-2-pentanone	0.445	0.474	-6.5	96	0.03
48	C,M	toluene	1.514	1.428	5.7	83	0.03
49	T	1,1,2-trichloroethane	0.261	0.256	1.9	84	0.02
50	T	2-hexanone	0.378	0.510	-34.9# ✓	124	0.02
51	T	1,2-dibromoethane	0.257	0.278	-8.2	88	0.02
52	I	Chlorobenzene-d5	1.000	1.000	0.0	80	0.02
53	S	4-Bromofluorobenzene	0.600	0.232	61.3#	39#	0.00
54	T	1,3-dichloropropane	0.606	0.619	-2.1	83	0.02
55	T	dibromochloromethane	0.208	0.235	-13.0	87	0.02
56	T	tetrachloroethene	0.278	0.319	-14.7	90	0.03
57	M,P	chlorobenzene	0.933	0.996	-6.8	86	0.02
58	T	1,1,1,2-tetrachloroethane	0.264	0.298	-12.9	87	0.02
59	C	ethylbenzene	1.818	1.792	1.4	82	0.02
60	T	m,p-xylene	1.354	1.295	4.4	81	0.02
61	P	bromoform	0.150	0.176	-17.3	90	0.02
62	T	styrene	1.077	1.106	-2.7	82	0.02
63	T	o-xylene	1.399	1.360	2.8	80	0.02
64	T	Cyclohexanone	0.177	0.108	39.0# ✓	56	0.02
65	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	79	0.00
66	P	1,1,2,2-tetrachloroethane	1.044	1.164	-11.5	89	0.00
67	T	1,2,3-trichloropropane	0.741	0.825	-11.3	88	0.02
68	T	isopropylbenzene	3.475	3.636	-4.6	83	0.02
69	T	bromobenzene	0.697	0.836	-19.9	90	0.00
70	T	2-chlorotoluene	2.683	2.780	-3.6	85	0.02
71	T	n-propylbenzene	4.952	5.055	-2.1	83	0.02
72	T	4-chlorotoluene	2.845	3.064	-7.7	87	0.02
73	T	1,3,5-trimethylbenzene	2.937	3.002	-2.2	83	0.02
74	T	tert-butylbenzene	2.715	2.991	-10.2	88	0.00
75	T	1,2,4-trimethylbenzene	2.983	2.986	-0.1	82	0.02
76	T	1,3-dichlorobenzene	1.450	1.576	-8.7	88	0.02
77	T	sec-butylbenzene	4.157	4.325	-4.0	85	0.02
78	T	1,4-dichlorobenzene	1.421	1.596	-12.3	90	0.00
79	T	4-isopropyltoluene	2.977	3.209	-7.8	90	0.02

(#) = Out of Range

Data File : C:\DATA\05-14-05\P0514002.D Vial: 1
Acq On : 14 May 2005 8:58 am Operator: MFR/HH
Sample : ,100ppb,CCV,VST050329C(5ul), Inst : MS #1
Misc : ,1,P05VS064, Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
80	T	1,2-dichlorobenzene	1.311	1.485	-13.3	90	0.02
81	T	n-butylbenzene	3.455	3.502	-1.4	85	0.00
82	T	1,2-dibromo-3-chloropropane	0.114	0.159	✓ -39.5#	94	0.00
83	T	1,2,4-trichlorobenzene	0.706	0.811	-14.9	91	0.00
84	T	naphthalene	1.660	2.181	✓ -31.4#	106	0.02
85	T	1,2,3-trichlorobenzene	0.622	0.712	-14.5	91	0.02
86	T	hexachlorobutadiene	0.266	0.330	✓ -24.1#	92	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0 0122

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-14-05\P0514002.D
Acq On : 14 May 2005 8:58 am
Sample : ,100ppb,CCV,VST050329C(5ul),
Misc : ,1,P05VS064,
MS Integration Params: rteint.p

Vial: 1
Operator: MFR/HH
Inst : MS #1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Pentafluorobenzene	1.000	1.000	0.0	92	0.04
30	S	1,2-Dichloroethane-d4	0.648	0.612	5.6	89	0.04
31	S	Dibromofluoromethane	0.586	0.612	-4.4	96	0.04
33	I	1,4-Difluorobenzene	1.000	1.000	0.0	86	0.03
34	S	Toluene-d8	1.323	1.181	10.7	91	0.02
52	I	Chlorobenzene-d5	1.000	1.000	0.0	81	0.02
53	S	4-Bromofluorobenzene	0.600	0.463	22.8#	80	0.00
65	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	76	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 6
P1104012.D PS041104.M Mon May 23 09:38:11 2005 MS-1

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-16-05\P0516002.D
Acq On : 16 May 2005 9:13 am
Sample : ,100ppb,CCV,VST050329C(5ul),
Misc : ,1,P05VS065,
MS Integration Params: rteint.p

Vial: 1
Operator: MFR/HH
Inst : MS #1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

* not target analytes HH 5/23/05

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Pentafluorobenzene	1.000	1.000	0.0	114	0.07
2	T	dichlorodifluoromethane	0.751	0.644	14.2	95	0.06
3	P	chloromethane	1.571	1.007	35.9#	77	0.08
4	C	vinyl chloride	1.127	0.919	18.5	91	0.06
5	T	bromomethane	0.456	0.492	-7.9	138	0.07
6	T	chloroethane	0.545	0.499	8.4	102	0.06
7	T	trichlorofluoromethane	0.563	0.568	-0.9	113	0.07
8	T	Ethyl Ether	0.572	0.489	14.5	103	0.08
9	T	Acrolein	0.023	0.000	*100.0#	0#	-3.13#
10	T	acetone	0.241	0.440	* -82.6#	229#	0.07
11	T	iodomethane	0.022	0.525	* -2286.4#	6938#	0.08
12	C,M	1,1-dichloroethene	0.549	0.526	4.2	109	0.07
13	T	carbon disulfide	2.653	2.091	✓21.2#	97	0.08
14	T	Acrylonitrile	0.229	0.001	* 99.6#	0#	0.08
15	T	Freon-113	0.525	0.523	0.4	111	0.08
16	T	methylene chloride	0.732	0.609	16.8	97	0.08
17	T	Tert-butanol	0.059	0.066	-11.9	116	0.08
18	T	trans-1,2-dichloroethene	0.625	0.596	4.6	109	0.08
19	M	MTBE	1.599	1.411	11.8	99	0.09
20	P	1,1-dichloroethane	1.427	1.237	13.3	94	0.09
21	T	vinyl acetate	1.918	1.671	12.9	107	0.09
22	T	Di-isopropyl ether	3.624	2.807	✓22.5#	91	0.09
23	T	Ethyl tert-butyl ether	2.543	2.069	18.6	91	0.09
24	T	2-butanone	0.083	0.151	* -81.9#	200#	0.09
25	T	cis-1,2-dichloroethene	0.773	0.684	11.5	101	0.09
26	T	Ethyl Acetate	0.120	0.103	14.2	99	0.08
27	T	2,2-dichloropropane	0.862	0.805	6.6	108	0.09
28	T	Bromochloromethane	0.292	0.274	6.2	101	0.08
29	C	chloroform	1.196	0.992	17.1	96	0.08
30	S	1,2-Dichloroethane-d4	0.648	0.279	56.9#	50#	0.07
31	S	Dibromofluoromethane	0.586	0.280	52.2#	53	0.08
32	T	1,1,1-trichloroethane	0.764	0.705	7.7	102	0.08
33	I	1,4-Difluorobenzene	1.000	1.000	0.0	105	0.06
34	S	Toluene-d8	1.323	0.583	55.9#	53	0.05
35	T	1,2-dichloroethane	0.360	0.335	6.9	96	0.07
36	T	1,1-dichloropropene	0.132	0.145	-9.8	105	0.08
37	M	benzene	1.544	1.409	8.7	98	0.07
38	T	carbon tetrachloride	0.274	0.279	-1.8	110	0.07
39	T	Tert-amyl methyl ether	1.050	0.940	10.5	95	0.07
40	C	1,2-dichloropropane	0.415	0.377	9.2	93	0.06

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-16-05\P0516002.D
Acq On : 16 May 2005 9:13 am
Sample : ,100ppb,CCV,VST050329C(5ul),
Misc : ,1,P05VS065,
MS Integration Params: rteint.p

Vial: 1
Operator: MFR/HH
Inst : MS #1
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

* not target analyte HH 5/23/05

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
41	M	trichloroethene	0.344	0.323	6.1	99	0.06
42	T	dibromomethane	0.188	0.185	1.6	99	0.06
43	T	bromodichloromethane	0.424	0.390	8.0	94	0.05
44	T	2-chloroethyl vinyl ether	0.250	0.000	* 100.0#	0#	-10.77#
45	T	cis-1,3-dichloropropene	0.618	0.573	7.3	97	0.05
46	T	trans-1,3-dichloropropene	0.512	0.471	8.0	97	0.04
47	T	4-methyl-2-pentanone	0.445	0.428	3.8	108	0.05
48	C,M	toluene	1.514	1.388	8.3	101	0.05
49	T	1,1,2-trichloroethane	0.261	0.241	7.7	98	0.04
50	T	2-hexanone	0.378	0.469	✓-24.1#	142	0.04
51	T	1,2-dibromoethane	0.257	0.261	-1.6	103	0.05
52	I	Chlorobenzene-d5	1.000	1.000	0.0	99	0.04
53	S	4-Bromofluorobenzene	0.600	0.237	60.5#	49#	0.02
54	T	1,3-dichloropropane	0.606	0.589	2.8	98	0.05
55	T	dibromochloromethane	0.208	0.221	-6.3	101	0.05
56	T	tetrachloroethene	0.278	0.309	-11.2	109	0.05
57	M,P	chlorobenzene	0.933	0.948	-1.6	102	0.04
58	T	1,1,1,2-tetrachloroethane	0.264	0.283	-7.2	102	0.04
59	C	ethylbenzene	1.818	1.745	4.0	99	0.04
60	T	m,p-xylene	1.354	1.264	6.6	98	0.04
61	P	bromoform	0.150	0.167	-11.3	106	0.04
62	T	styrene	1.077	1.080	-0.3	99	0.04
63	T	o-xylene	1.399	1.336	4.5	98	0.04
64	T	Cyclohexanone	0.177	0.109	/ 38.4#	71	0.04
65	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	98	0.02
66	P	1,1,2,2-tetrachloroethane	1.044	1.086	-4.0	102	0.02
67	T	1,2,3-trichloropropane	0.741	0.749	-1.1	99	0.04
68	T	isopropylbenzene	3.475	3.525	-1.4	100	0.04
69	T	bromobenzene	0.697	0.791	-13.5	105	0.02
70	T	2-chlorotoluene	2.683	2.693	-0.4	102	0.04
71	T	n-propylbenzene	4.952	4.883	1.4	100	0.02
72	T	4-chlorotoluene	2.845	2.927	-2.9	103	0.04
73	T	1,3,5-trimethylbenzene	2.937	2.945	-0.3	101	0.04
74	T	tert-butylbenzene	2.715	2.881	-6.1	105	0.02
75	T	1,2,4-trimethylbenzene	2.983	2.988	-0.2	101	0.04
76	T	1,3-dichlorobenzene	1.450	1.510	-4.1	104	0.04
77	T	sec-butylbenzene	4.157	4.135	0.5	100	0.04
78	T	1,4-dichlorobenzene	1.421	1.498	-5.4	104	0.02
79	T	4-isopropyltoluene	2.977	3.032	-1.8	105	0.04

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : C:\DATA\05-16-05\P0516002.D Vial: 1
Acq On : 16 May 2005 9:13 am Operator: MFR/HH
Sample : ,100ppb,CCV,VST050329C(5ul), Inst : MS #1
Misc : ,1,P05VS065, Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\HPCHEM\1\METHODS\PS041104.M (RTE Integrator)
Title : VOC 8240/8260B Advanced Technology Laboratory
Last Update : Wed Feb 09 10:45:05 2005
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
80	T	1,2-dichlorobenzene	1.311	1.386	-5.7	104	0.02
81	T	n-butylbenzene	3.455	3.386	2.0	102	0.02
82	T	1,2-dibromo-3-chloropropane	0.114	0.142	-24.6#	103	0.02
83	T	1,2,4-trichlorobenzene	0.706	0.769	-8.9	107	0.02
84	T	naphthalene	1.660	2.035	-22.6#	122	0.04
85	T	1,2,3-trichlorobenzene	0.622	0.671	-7.9	106	0.04
86	T	hexachlorobutadiene	0.266	0.311	-16.9	107	0.02

DCE is a breakdown of TCE

cis
pg. 13 1,2

Tetrachloroethene

Remove clarifiers

inject subs. & let degrade

$500K to clean

Julia

8/11/7

5381388

Implement outdoor planning

JAN PERRY
COUNCILWOMAN
NINTH DISTRICT
ASSISTANT PRESIDENT PRO TEMPORE

City Council
of the
City of Los Angeles
City Hall

ENERGY AND THE ENVIRONMENTAL
CHAIR

ARTS, PARKS, HEALTH & AGING
VICE-CHAIR

HOUSING, COMMUNITY &
ECONOMIC DEVELOPMENT
MEMBER

Monday, June 12, 2006

Mr. Lester A. Snow, Director
Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236

Ms. Celeste Cantú, Executive Director
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812

Reference: South Los Angeles Wetlands Project, PROPOSITION 50 CHAPTER 8 INTEGRATED REGIONAL WATER MANAGEMENT PROJECT IMPLEMNETATION GRANT: SOUTH LOS ANGLES WETLANDS PROJECT IMPLEMENTATION GRANT

Dear Mr. Snow and Ms. Cantu:

I am writing to inform you that my office has been in negotiations with the Metropolitan Transit Authority (MTA) board to acquire a parcel of land that is owned by the MTA. It is located in my Council District in the City of Los Angeles, on Avalon Street between 52nd and 54th Streets. The MTA Board as the current deed holder is a willing seller of the parcel. I am hopeful to complete this land transaction in the next couple of months. The parcel will be used for development and implementation of the South Los Angeles Project.

My Environmental Deputy, Jeff Catalano, has been working with the Bureau of Sanitation to develop a project for this parcel of land that is multi-purpose with multiple benefits including improvement to the water quality for the area. The project scope is detailed in the attached Prop 50 Chap 8 application.

I look forward to working with your office to make this a successful project. I believe that working together to build a viable project we can and will improve water quality. Please let me know if you need any additional information. If you have any questions please feel free to contact me at any time.

Sincerely,

Jan Perry
Councilwoman CD 9
City of Los Angeles