Reconnaissance Study
Section 905(b) (WRDA 1986) Analysis
Arroyo Seco Watershed, California
September 2002

1. STUDY AUTHORITY

This study is authorized through utilization of the Los Angeles County Drainage Area (LACDA) Review flood control study, Senate Resolution approved 25 June 1969, states, specifically reviewing "...the report of the Chief of Engineers on the Los Angeles and San Gabriel Rivers and Ballona Creek, California, published as House Document Number 838, Seventy-sixth Congress, and other pertinent reports, with a view to determining whether any modifications contained therein are advisable at the present time, in the resources in the Los Angeles County Drainage Area."

2. STUDY PURPOSE

The purpose of the reconnaissance study is to determine if there is a Federal interest in conducting a cost-shared feasibility study that will develop information and analytical tools to define water, and related resource problems and opportunities within the Arroyo Seco Watershed. The reconnaissance phase effort includes an inventory of problems and opportunities for the watershed and an estimate of the costs for preparing a feasibility study.

3. DESCRIPTION OF STUDY AREA, NON-FEDERAL SPONSOR, AND CONGRESSIONAL DISTRICT

A) DESCRIPTION OF STUDY AREA

Arroyo Seco Watershed

The Arroyo Seco Watershed is located in northeast Los Angeles, between the San Gabriel Mountains and the Los Angeles River. Lying partially within the watershed are the cities of Los Angeles, South Pasadena, Pasadena and La Cañada Flintridge, as well as the unincorporated area of Altadena (Figure 1). The headwaters of the Arroyo Seco and nearly half of its 35 kilometers (22 miles) drain steep mountainous terrain located within the Angeles National Forest. The Arroyo Seco Watershed is a sub-watershed of the Los Angeles River watershed and is located partially within the coastal zone. The upper watershed is largely undeveloped and primarily managed for recreation, watershed protection, and wildlife conservation by the Angeles National Forest. The San Gabriel Mountains, which are part of the Angeles National Forest, are among the most erodible mountains in the world, releasing large amounts of sediment into the Arroyo every year. The lower half of the watershed is distinctly different from the upper watershed. Devil's Gate Dam is located at the point where the stream emerges from the mountains into the alluvial plain. The stream is mostly channelized downstream of the dam to the confluence with the Los Angeles River. Generally, the lower watershed is highly urbanized, but a series of regional and local parks preserve areas of native habitat and open space.

Water Resources

The Arroyo Seco (Arroyo) stretches 35 kilometers (22 miles) from its headwaters in the Angeles National Forest to its confluence with the Los Angeles River just south of the I-110 Freeway bridge over the Los Angeles River. The channel is natural above Devil's Gate Dam but is channelized below the dam for a distance of eleven miles. The Arroyo Seco currently has 20 main tributaries. Upstream of Devil's Gate Dam the main Arroyo Seco tributaries (listed from upstream to downstream) include Colby Canyon, Little Bear Canyon, Bear Canyon, Long Canyon, Dark Canyon, Brown Canyon, Pine Canyon, Falls Canyon, Fern Canyon, El Prieto Canyon, and Millard Canyon. Just north of Devil's Gate gorge, Ivey Springs on the west and Thibbet Springs on the east bubble to the surface. The presence of a continual stream flow in the upper watershed even during the driest years reveals a significant contribution of groundwater (spring) supplies to the Arroyo Seco stream where these subsurface flows intersect with the surface. Mean low and high flow in the Arroyo Seco at its confluence with the Los Angeles River is indicated in Table 1.

The watershed supports the Raymond Basin Aquifer, a 40-square mile groundwater basin that provides half of the local water supply for the City of Pasadena and other local communities and sustains a water flow in the Arroyo through most of the year.

TABLE 1
Mean Monthly High and Low Flow from USGS Gauge at Arroyo Seco and the Confluence with the Los Angeles River

	Mean Monthly Flow (m^3/s)	Rough Calculation of Mean Monthly Flow (m^3/s)	Mean Monthly High Flow (m^3/s)	High-Flow Month	Mean Monthly Low Flow (m^3/s)	Low-Flow Month	Calculations Based on the Following Gauges
Arroyo Seco near Pasadena		Flow = 0.28 (10.1 cfs)	0.945 (33.4 cfs)	February	0.02 (1.0 cfs)	August	USGS11098000
Arroyo Seco-Los Angles River Confluence	2.4 (85.9 cfs)	Flow = 2.4 (85.9 cfs)	7.1 (251.8 cfs)	February	0.3 (11.57 cfs)	July	USGS11097500

Biological Resources

Vegetation. The Arroyo Seco watershed spans a diversity of habitat types and conditions ranging from relatively intact, but in some cases threatened ecosystems within Angeles National Forest, to highly degraded and fragmented habitats in urban areas. The vegetation of the upper watershed (Angeles National Forest) is characterized by Bigcone Spruce-Canyon Oak Forest, Southern Sycamore-Alder Riparian Woodlands, and Southern Mixed Chaparral. The alluvial fan deposits upstream of Hahamongna Dam support ecologically significant Alluvial Sage Scrub habitat. Near the confluence with the Los Angeles River, the Arroyo Seco is flanked by Mount Washington and the Montecito Hills, which still support

Southern California Black Walnut Woodlands. Relict stands of native grasses occur in patches associated with other native plant associations, such as the walnut woodlands at Debs Park and Elyria Canyon. A California Natural Diversity Database (CNDDB) search indicates that native grassland and scrub habitats on adjacent hills support special-status species, including Parish's gooseberry (*Ribes divaricatum* var. *parishii*), Plummer's mariposa lily (*Calochortus plummerae*), and Davidson's saltscale (*Atriplex serenana* var. *davidsonii*).

Wildlife. Historically, the Arroyo Seco and greater Los Angeles River supported a highly diverse assemblage of freshwater fishes. However, the rainbow trout (*Oncorhynchus mykiss*) may be the only native fish species that still occurs in the Arroyo Seco. The arroyo has received stocked rainbow trout of different strains and the genetic makeup of the current population is unknown. The southern steelhead (*Oncorhynchus mykiss irideus*) is a federally endangered, anadromous form of the rainbow trout. While anadromous steelhead can no longer return to the Arroyo Seco, it has been observed that individuals from the existing rainbow trout population migrate downstream during typical steelhead outmigration times. It is unknown if any of these individuals ever enter the ocean alive, become steelhead, and/or attempt to return to the Los Angeles River or other coastal streams. The unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) is a state and federally listed endangered species that is thought to have been extirpated from the watershed in the 1940's. The 1985 USFWS Recovery Plan for the unarmored threespine stickleback calls for reestablishing two viable populations of stickleback in the Los Angeles River watershed. While each native fish species exhibits unique habitat preferences, many of these species co-occur in the same aquatic habitat and have similar requirements. Restoration efforts geared towards rainbow trout, southern steelhead, and unarmored threespine stickleback would also likely benefit other species including: pacific lamprey (*Lampetra tridenta*), pacific brook lamprey (*Lampetra pacifica*), Santa Ana sucker (*Catostomus santaanae*), Santa Ana speckled dace (*Rhinichthys osculus*), and arroyo chub (*Gila orcutti*).

A six mile stretch of the Arroyo Seco extending from Hahamongna reservoir to Long Canyon has now been formally designated as critical habitat for the endangered southwestern arroyo toad (*Bufo microscaphus californicus*). Arroyo toad breeding habitat is created and maintained by fluctuating hydrological, geological, and ecological processes operating in riparian ecosystems and adjacent uplands. Such disturbance is primarily responsible for creating the friable, typically sandy soils needed by the species for burrowing, as well as for structuring its riparian and upland vegetative cover.

The southwestern pond turtle (*Clemmys marmorata pallida*) is listed as a California Species of Special Concern that prefers habitat in pools of perennial, slower moving streams. Because of its historical distribution in the Arroyo Seco watershed, habitat restoration opportunities may exist along the upper watershed tributaries (e.g., Fern or Millard Canyons).

The yellow warbler (*Dedroica petechia*) breed within the Arroyo Seco watershed in native deciduous forest with a high, contiguous canopy that is typically located

along streams. The species utilizes white alder, willow, and sycamore for breeding. The yellow warbler is a fairly common summer resident in the Arroyo Seco above the JPL (e.g., Switzer's Camp), but downstream may only occur in the willow forest at Hahamongna. A number of other wildlife species utilize riparian woodland habitat in the Arroyo Seco watershed including arboreal salamander *(Aneides lugubris)* and oak titmouse (*Baeolophus inornatus*). California quail (*Callipepla californica*) also utilize these riparian woodland areas, but can occur in shrub and grassland habitats provided there is an abundance of thick cover near permanent water.

A CNDDB search indicates that native alluvial fan scrub, coastal sage scrub, and non-grassy chaparral in the Arroyo Seco may support the coast horned lizard *(Phrynosoma coronatum blainvillei)*. The species was once abundant in the area, inhabiting fine soils with high sand fraction for burrowing. The species feeds on native ant species that in some cases have been displaced by red imported fire ants (*Solenopsis invicta*), which the lizard does not appear to eat. Native ant displacement and habitat destruction are among the greatest threats to the horned lizard. A number of other wildlife species may utilize alluvial fan scrub, coastal sage scrub, and chaparral habitat in the Arroyo Seco watershed including: lesser nighthawk (*Chordeiles acutipennis*), Plummer's mariposa lily (*Calochortis plummerae*), Behr's metalark (*Apodemia mormo virgulti*), square-spotted blue butterflies (*Euphilotes battoides*), cactus wren (*Campylorhynchus brunneicapillus*), greater roadrunner (*Geococcyx californianus*), and California gnatcatcher (*Polioptila californica*).

Recreation

There are significant park and natural areas in the upper watershed within Angeles National Forest. Elysian Park at the southern tip, across from the confluence with the Los Angeles River also provides open space and park in the lower Arroyo. The Arroyo Seco Watershed contains parks operated by the Cities of Los Angeles, South Pasadena, and Pasadena, the Santa Monica Mountains Conservancy, and the U.S. Forest Service. The Angeles National Forest provides the most significant open space and recreational opportunities in the watershed as well as the Los Angeles Region. The Angeles National Forest comprises over 80 percent of the open space in the Los Angeles Region. The Arroyo contains a number of hiking, biking, and equestrian trails that converge in the arroyo and lead to the Angeles National Forest. In additional to the existing trail systems, there are also plans to create a regional bikeway to link the San Fernando Valley and the Arroyo Seco to the Pacific Ocean via new bikeways along the Los Angeles River. In the channelized lower Arroyo Seco, the channel is bordered by parks, golf courses, parking lots, residential areas, the Rose Bowl, limited industrial areas, and the Arroyo Seco Parkway, also known as the Pasadena Freeway.

Land Use

Land use in the upper watershed is primarily composed of the Angeles National Forest, which is owned by the U.S. Forrest Service. Devil's Gate Dam and the National Aeronautics and Space Administration's (NASA) Jet Propulsion

Laboratory (JPL) are located at the point where the arroyo emerges from Angeles National Forest. Below the Devil's Gate Dam, the majority of the land is covered with residential development, which range from low density single family homes to high density multi-family housing tracts. There are commercial districts within the watershed in Pasadena, South Pasadena, and Highland Park. The watershed near its confluence with the Los Angeles River is bordered by the Lincoln Heights and Cypress Park (City of Los Angeles) communities. This area is highly industrial and commercial in nature. The communities along the Arroyo include some of the oldest neighborhoods in northeast Los Angeles.

B) NON-FEDERAL SPONSOR

The non-Federal sponsor for the feasibility phase of the study is the Los Angeles County Department of Public Works.

LACDPW is an agency authorized by the State of California, whose responsibilities include the design, construction, operation, maintenance, and repair of roads, bridges, airports, sewers, water supply, flood control, and water conservation facilities; and for the design and construction of capital projects. Additional responsibilities include regulatory and ministerial programs for the County of Los Angeles, Los Angeles County Flood Control District, other special districts, and contract cities that request services. The LACDPW is responsible for all of the unincorporated areas of Los Angeles County. The County of Los Angeles covers an area of 10,574 square kilometers (4,083 square miles) and measures approximately 106 km (66 miles) in the east - west and 117 km (73 miles) in the north - south directions.

The LACDPW owns and operates Devil's Gate Dam and maintains a flood control easement to 328 m (1,075 feet) above mean sea level (msl). The LACDPW Flood Maintenance Division is responsible for maintaining everything within the 328 m (1,075 foot) easement related to flood control and debris removal, and the City of Pasadena is responsible for maintaining recreation-related features within and outside that easement.

C) CONGRESSIONAL DISTRICT

There are three U.S. Congressional Districts within the watershed:

- 27th Congressional District of the State of California, represented by Congressman Adam B. Schiff
- 28th Congressional District of the State of California, represented by Congressman David Dreier
- 30th Congressional District of the State of California, represented by Congressman Xavier Becerra

4. PRIOR STUDIES, REPORTS, EXISTING WATER PROJECTS, AND ACTIVITIES OF OTHER AGENCIES

A) PRIOR STUDIES AND REPORTS

There are a number of relevant documents that contain information regarding the Los Angeles River Watershed and its subwatershed the Arroyo Seco; these documents are listed below. However, a number of these documents have special relevance for the Arroyo Seco Watershed and are described in Table 1.

List of Prior Studies and Reports

Arroyo Seco Foundation/Northeast Trees. *Arroyo Seco Watershed Restoration Feasibility Study Project Report.* May 2002.

California Coastal Conservancy. *Wetlands of the Los Angeles River Watershed: Profiles and Restoration Opportunities.* May 2000.

California Department of Fish and Game. *The California Natural Diversity Database.* Last updated Spring 2001.

California Department of Transportation. *Arroyo Seco Corridor Management Plan.* 2002.

California Regional Water Quality Control Board, Los Angeles Region. *Basin Plan for the Coastal Watershed of Los Angeles and Ventura Counties.* November 1994.

———. *Total Trash Maximum Daily Loads for the Los Angeles River Watershed Draft Report.* November 2000.

California State Coastal Conservancy and Santa Monica Mountains Conservancy/ Mountains Recreation and Conservation Authority. *Arroyo Seco Watershed Feasibility Study, Summary Report Phase I.* March 2001.

City of Pasadena. *Arroyo Seco Master Plan and Environmental Impact Report.* August 2002.

Cook, Jody. *Keynote Address: The Angeles National Forest: Past, Present, and Future*, Los Angeles and San Gabriel Rivers Watershed Council Conference From Drain to Dream IV Habitat: Past, Present, and Future. May 2001. Personnel notes from conference.

Department of Landscape Architecture, California State Polytechnic University, Pomona. *Connecting the San Gabriel Valley: A Planning Approach for the Creation of Interconnected Urban Wildlife Corridor Networks.* June 2000.

Deverell, William and Greg Hise. *Eden by Design: the 1930 Olmsted-Bartholomew Plan for the Los Angeles Region.* 2000.

Friends of the Los Angeles River. *Proposed Flood Control Strategy for the Los Angeles and San Gabriel River Systems.* January 1995.

TABLE 1

Related Studies

Study	Agency	Description
Los Angeles and San Gabriel River Watersheds Feasibility Study, Phase I	Los Angeles County Department of Public Works/ U.S. Army Corps of Engineers	Major mapping study and survey of the Los Angeles and San Gabriel River Watersheds including the Arroyo Seco.
Arroyo Seco Corridor Management Plan	California Department of Transportation	Comprehensive master plan to restore the historic character of the Arroyo Seco Parkway.
Arroyo Seco/Los Angeles River Confluence Park Plan	Mountains and Rivers Conservation Authority	Park Plan for the confluence region just north of downtown Los Angeles.
Watershed Hydrology Study	Los Angeles County Department of Public Works	Watershed hydrology model of the Arroyo Seco watershed.
Arroyo Seco Master Plan and Environmental Impact Report	City of Pasadena	Master Plan for the Arroyo Seco including environmental documentation.
Angeles Forest Master Plan	U.S. Forest Service	The Forest Service master plan for the Arroyo Seco.
Arroyo Seco Watershed Restoration Feasibility Study	Northeast Trees/Arroyo Seco Foundation	A Study developing an environmentally sensitive and sustainable plan to manage and restore the Arroyo Seco watershed.
Wetlands of the Los Angeles River Watershed: Profiles and Restoration Opportunities	California Coastal Conservancy	A report that identified and described significant wetland restoration opportunities in the Los Angeles River watershed.
Los Angeles and San Gabriel River Watersheds Feasibility Study	U.S. Army Corps of Engineers, Los Angeles District	Feasibility study and data collection in support of developing a Watershed Management Plan for Los Angeles and San Gabriel River watersheds including preliminary identification and analysis of potential project sites.
Arroyo Southwestern Toad Critical Habitat Designation	U.S. Fish & Wildlife Service	A six mile stretch of the Arroyo Seco extending from Devil's Gate reservoir for seven miles to Long Canyon has now been formally designated as critical habitat for the endangered southwestern arroyo toad.

Garrett, Kimball. California Department of Fish and Game. *The Biota of the Los Angeles River: An Overview of the Historical and Present Plant and Animal Life of the Los Angeles River Drainage.* March 1993.

Los Angeles and San Gabriel Rivers Watershed Council. *Current Water Quality Improvement, Land Acquisition and Restoration Projects in Los Angeles County.* August 1999.

Los Angeles County Department of Public Works. *Final Master Environmental Impact Report: Los Angeles County Drainage Area Project.* Prepared by Woodward-Clyde Consultants. 1995.

————. *Los Angeles River Master Plan.* June 1996.

————. *Los Angeles River Master Plan Update.* July 1996.

————. 1999-2000 Hydrologic Report. June 2001.

————. *Watershed Hydrology Study.* March 2001.

Los Angeles County Departments of Public Works, Parks and Recreation, Regional Planning. *National Parks Service Rivers, Trails and Conservation Assistance Program.* Los Angeles River Advisory Committee. Los Angeles River Master Plan. Los Angeles. 1996.

Mountains and Rivers Conservation Authority. *Arroyo Seco/Los Angeles River Confluence Park Plan.* 2001.

San Gabriel Mountains Regional Conservancy. *Application Part A: San Gabriel Mountains Regional Conservancy, A Watershed Management Plan for the San Gabriel River Above Whittier Narrows.* Submitted to State Water Resources Control Board. November 2000.

Simons, Li & Associates. *Los Angeles River Alternative Flood Control Study. Volume I: Baseline Conditions Report.* Los Angeles: Los Angeles County Department of Public Works. 1997.

————. *Los Angeles River Alternative Flood Control Study. Volume II: Evaluation of Alternatives.* Los Angeles: Los Angeles County Department of Public Works. 1997.

————. *Los Angeles River Alternative Flood Control Study. Volume III: Final Report Appendices.* Los Angeles: Los Angeles County Department of Public Works. 1997.

Southern California Associations of Government. *Draft Regional Transportation Plan*, 2001.

Upper Los Angeles River Area Watermaster. *Watermaster Service in the Upper Los Angeles River Area,* Los Angeles County: 1992-93 Water Year. Los Angeles. 1994.

———————. *Watermaster Service in the Upper Los Angeles River Area, Los Angeles County: Relevant Data, 1968-69 Through 1992-93.* Los Angeles. 1995.

———————. *Watermaster Service in the Upper Los Angeles River Area, Los Angeles County, 1998-99 Water Year.* May 2000.

U.S. Environmental Protection Agency. *Review of California's 1998 303(d) List.* 1998.

U.S. Fish & Wildlife Service. *Arroyo Southwestern Toad Critical Habitat Designation.* February 2001.

U.S. Forrest Service. *Angeles Forest Master Plan.* 2002.

B) U.S. ARMY CORPS OF ENGINEERS STUDIES AND PROJECTS

The U.S. Army Corps of Engineers, Los Angeles District has been involved in a number of recent planning and engineering studies for the Los Angeles River watershed. As a sub-watershed, hydrology and hydraulics information and environmental data for the Arroyo Seco are available in a number of documents including the *Los Angeles County Drainage Area* design reports and the *Los Angeles and San Gabriel Rivers Watershed Feasibility Study.*

List of Prior Studies and Reports

Los Angeles District, Corps of Engineers. *Operation and Maintenance Manual for the Los Angeles County Drainage Area Project, California.* December 1975.

———————. *Los Angeles County Drainage Area System Recreation Study.* March 1980.

———————. *Los Angeles County Drainage Area Review: Final Feasibility Study Interim Report and Environmental Impact Statement.* December 1991.

———————. *Los Angeles and San Gabriel River Watershed Feasibility Study, Plan of Study.* December 1998.

———————. *Los Angeles and San Gabriel Rivers Watershed Feasibility Study, First Phase Report.* July 2000.

———————. *Los Angeles and San Gabriel Rivers Watershed Feasibility Study, Preliminary Draft Feasibility Report.* July 2001.

5. PLAN FORMULATION

During a study, six planning steps that are set forth in the Water Resource Council's Principles and Guidelines are repeated to focus the planning effort and eventually to select and recommend a plan for authorization. The six planning steps are:

1. Specify the problems and opportunities
2. Inventory and forecast conditions
3. Formulate alternative plans
4. Evaluate effects of alternative plans
5. Compare alternative plans

6. Select recommended plan

The iterations of the planning steps typically differ in the emphasis that is placed on each of the steps. In the early iterations, those conducted during the reconnaissance phase, the specifying problems and opportunities step is emphasized. That is not to say, however, that the other steps are ignored since the initial screening of preliminary plans that results from the other steps is very important to the scoping of the follow-on feasibility phase studies. The sub-paragraphs that follow present the results of the initial iterations of the planning steps that were conducted during the reconnaissance phase. This information will be refined in the future iterations of the planning steps that will be accomplished during the feasibility phase.

A) NATIONAL OBJECTIVES

1) The national or Federal objective of water and related land resources planning is to contribute to national economic development consistent with protecting the nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. Contributions to National Economic Development (NED) are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct net benefits that accrue in the planning area and the rest of the nation.

2) The U.S. Army Corps of Engineers has added a second national objective for Ecosystem Restoration in the response to legislation and administration policy. This objective is to contribute to the nation's ecosystems through ecosystem restoration, with contributions measured by changes in the amounts and values of habitat.

B) PUBLIC CONCERNS

A number of public concerns were identified during the course of the reconnaissance study for the Los Angeles and San Gabriel Rivers Watershed (Table 2). While initial concerns were expressed in the *Plan of Study for the Los Angeles and San Gabriel Rivers Watershed Feasibility Study*, additional input was received through coordination with local agencies. There were a number of Agencies contacted to solicit comments and concerns regarding the Arroyo Seco Watershed including:

- Angeles National Forest
- Arroyo Seco Foundation (ASF)
- City of La Cañada Flintridge
- City of Los Angeles
- City of Pasadena
- City of South Pasadena
- Los Angeles County Department of Public Works
- Northeast Trees (NET)

The public concerns that are related to the establishment of planning objectives and planning constraints are:

- Restore the natural hydrological functioning of the watershed.
- Restore the Arroyo Seco stream and tributaries through widening and lengthening of streams.
- Create floodplain system allowing for periodic overflow while providing the required level of public safety and flood hazard mitigation.
- Reduce volume and velocity of stormwater runoff.
- Better manage, optimize, & conserve water resources while improving water quality.
- Improve quality of surface water for aquatic habitat and human contact.
- Restore the quality and quantity of water recharge to the Raymond Aquifer.
- Develop groundwater management strategy for optimum use of local water resources.
- Reduce dependence on imported water.
- Reinstate sediment transport.
- Restore, protect, and augment habitat quality, quantity, and connectivity.
- Restore and protect missing linkages of fragmented habitat.
- Integrate fire management into native vegetation zones.
- Restore, protect, and augment terrestrial species habitat in existing open space of foothills and floodplains.
- Enhance and strengthen the urban interface zone.
- Restore aquatic species habitat.
- Improve recreational opportunities and enhance open space.
- Improve connectivity and public access from the Angeles National Forest to the coastal shore.
- Protect and interpret natural, community, cultural, and historic resources.
- Integrate natural resources management with recreational needs.
- Protect existing open space while augmenting open space network.
- Improve visual quality of the landscape.
- Mediate conflicts between recreation and conservation and opposing recreational users.

TABLE 2
Problems within the Los Angeles and San Gabriel Rivers Watershed

Continued Flooding Impacts	Adverse Conditions for Aquatic Species
Increasing Peak Discharges	Adverse Conditions for Riparian Species
Inadequate Recreational Facilities	Increasing Invasive Species
Adverse Conditions for Water Supplies	Piecemeal Treatment of Problems
Surface Water Quality Problems	Declining Local Aesthetic Quality
Loss of Floodplain Habitat	Increasing Litigation Potential Related to Resources
Loss of Riparian Habitat	Conflicting Regulatory Actions

C) PROBLEMS AND OPPORTUNITIES

The evaluation of public concerns often reflects a range of needs, which are perceived by the public. This section describes these needs in the context of the problems and opportunities that can be addressed through water and related land resource management.

Water Resources

Development and changes in land use have drastically altered the natural cover of the watershed by shifting from a permeable landscape to a largely impermeable one. This has resulted in increased runoff in the watershed, which is causing channel degradation and reductions in natural groundwater recharge. The Arroyo Seco watershed, located in Los Angeles County, covers an area of approximately 121 square kilometers (47 square miles) from the San Gabriel Mountains south to the Los Angeles River. The headwaters and nearly half of the watershed are located in the Angeles National Forest. This multiple-use open space area is relatively free from development but the area does have some roadways, camping facilities, and crib structures/check dams. Below the Angeles National Forest, the Arroyo Seco becomes a channelized urban stream, bordered by parks, golf courses, parking lots, residential areas, the Rose Bowl, limited industrial areas, and the Pasadena Freeway.

Surface water quality in the watershed is degraded due to the effects of development and land use. The upper watershed in the Angeles National Forest is generally free of human generated pollutants, but with steep slopes and natural cycles of fire, drought, and flooding, the upper watershed can generate significant suspended solids. Below Angeles National Forest, water quality of the Arroyo Seco is impacted by horse corrals and golf courses that contribute nutrients from manure and fertilizers. In addition, development and installation of impervious materials has resulted in increased runoff from roads, commercial areas, industry, and residential neighborhoods that contains trash and a mixture of contaminants (e.g., pesticides, fertilizers, pathogens from small animal manure, and petrochemicals). Also, development within the watershed has increased runoff to receiving

channels, creating high velocity, short duration peak discharges that erode banks and channel inverts. Development in the lower watershed has increased the inflow of nutrients and toxic substances from non-point source urban runoff and reduced sediment delivery and replenishment downstream. The seasonal, perennial, and intermittent riparian habitat within many watercourses has been disturbed or destroyed by channel modification projects. Also, crib structures/check dams in the upper watershed have reduced sediment delivery from the steep, highly erosive upstream reaches.

Natural groundwater recharge in the watershed has dramatically reduced due to development and installation of impervious materials. The Raymond Basin, a 104 square kilometer (40 square mile) groundwater basin aquifer, underlies the cities of La Cañada Flintridge, Pasadena, Altadena, Sierra Madre, Arcadia, and San Marino. Currently, there are at least 15 users of pumped groundwater from the Raymond Basin, including several in the City of Pasadena, and other cities throughout the San Gabriel Valley. The aquifer supplies 40 percent of local water supplies, with the remainder coming from imported water sources provided by the Metropolitan Water District of Southern California. Currently, the aquifer is partially fed by water being diverted from the Arroyo Seco to spreading basins for percolation. Pumping rights in the Raymond Basin were determined by a court order and are managed by the Raymond Basin Management Board. There are also problems with groundwater contamination in the watershed. Sources of contamination include the National Aeronautics and Space Administrations Jet Propulsion Laboratory Superfund Site and septic systems. The Jet Propulsion Laboratory Superfund Site is a concern due to early testing of rockets, missiles and aircraft that contaminated the groundwater at the site with volatile organic compounds (VOCs). The use of septic systems in the La Cañada Flintridge area is also a potential source for degradation of groundwater quality because leakage from old or impaired systems could potentially contaminate the groundwater.

Opportunity: Reduce channel degradation resulting from increased runoff by developing watershed management strategies. These strategies could include a management plan to monitor, control, improve water quality, and prevent habitat degradation. One important component of this is to investigate the changes in the sediment transport regime and identify impacts to the ecosystem that result. As part of this work a comprehensive hydrologic model, which incorporates all tributaries of the Arroyo Seco, could be developed including an update of existing hydrologic information. The model could include runoff from all forms of precipitation and any native water found in the watershed. In addition, Best Management Practices could be developed to assist in reducing peak discharges.

Opportunity: Identify measures to protect, preserve, and restore areas of riparian and wildlife habitat including stream restoration, "daylighting" of underground drainages, and water diversion for habitat creation and water quality improvement.

Opportunity: Develop a groundwater monitoring and control plan throughout the watershed to assist in management of water resources. One focus of this plan could be to develop and identify additional groundwater recharge potential for the Raymond Basin aquifer. Evaluate existing groundwater data and groundwater monitoring programs to determine informational needs in the management of groundwater. Also, groundwater maps should be generated utilizing the existing groundwater system model. As part of this effort, groundwater contaminant sources, including non-point source pollution, should be identified and evaluated throughout the watershed. In addition, the necessary treatment required for surface waters should be identified prior to recharge into the groundwater basin to prevent degradation of the aquifer.

Opportunity: Identify and evaluate opportunities to provide treatment alternatives, including treatment wetlands, to improve the water quality of stormwater runoff and reduce non-point source pollution throughout the watershed. As part of this effort, monitoring and control plans for pollution minimization should be developed. These alternatives should include evaluation of treatment wetlands to provide ancillary benefits of groundwater recharge, habitat creation, recreation, and public education.

Opportunity: Investigate the potential multi-purpose operation of existing flood control facilities to maximize storage and groundwater recharge operations as well as environmental restoration in the Arroyo Seco. The Arroyo Seco Master Plan includes a seasonal flood management water conservation pool behind Devil's Gate Dam to allow year-round storage and groundwater recharge operations. This investigation should consider the potential of increasing groundwater recharge by constructing additional spreading basins. In addition, the investigation should consider the potential collection, storage, reuse, and improvement of the water quality of runoff to maximize recharge or percolation. The investigation should also focus on how to maximize supply of water to habitat.

Environmental Restoration

Alteration of the natural stream hydrology, removal of riparian vegetation, and invasion of exotic plant species has significantly impacted wildlife and plant diversity. Development and installation of impervious materials in the lower sections of the watershed has resulted in habitat and environmental degradation. The Arroyo Seco is mostly channelized from Devil's Gate Dam to the confluence with the Los Angeles River, a distance of eleven miles. Prior to channelization, stands of alder, willow, and sycamore lined much of the stream. The upper reaches of the Arroyo Seco watershed support a relatively high degree of native biological diversity in the Angeles National Forest. However, development downstream has degraded and fragmented habitats, resulting in extirpations of historically present

wildlife species. The Arroyo Seco is a potential corridor for wildlife passage, which could connect the San Gabriel Mountains to the Elysian Hills in the southwest.

Habitat and stream degradation has occurred in the Arroyo Seco due to alternation of sediment transport in the watershed. The San Gabriel Mountains are among the most erodible mountains in the world, releasing large amounts of sediment into the Arroyo Seco. Prior to development by humans and alteration of the natural system, sediments were transported from the mountains to the sea while being deposited along floodplains. These sediments are now caught up behind crib dams throughout the Angeles National Forest and Devil's Gate Dam.

Opportunity: Develop a plan to link existing habitat fragments along the Arroyo Seco and tributaries to preserve the integrity of natural communities/ecosystems and provide a wildlife corridor. As part of this effort, opportunities to improve habitat for multiple species including steelhead trout and the federally endangered, southwestern arroyo toad could be identified. This evaluation would include implementation of Best Management Practices throughout the watershed. Another potential component of the plan would be to investigate the potential for creating wetlands using non-point source runoff and other sources to improve water quality and wildlife habitat. An example of creating wetlands for wildlife habitat and public recreation is the Browning Ferris Industries (BFI) Low Flow Diversion Project, which currently diverts Arrow Seco flows to create wetland habitat adjacent to the concrete channel.

Opportunity: Identify methods to preserve and manage Flint Canyon, which could provide a connection between Verdugo Hills and the San Gabriel Mountains. The plan could also evaluate opportunities to restore the natural stream channel, without impacting flood protection along the Arroyo Seco.

Opportunity: Develop a basin-wide sediment management plan to protect and improve the health of the watershed and its ecosystems. As part of this management plan, an evaluation of the functionality of crib structures and operation of Devil's Gate Dam including the hydrologic flows, geomorphology, sedimentation, and potential areas of stream and floodplain restoration should be undertaken. In addition, the plan should investigate what measures can be developed for sediment erosion control that will provide opportunities for restoration of impacted native plant and wildlife species. Also, the plan should include an investigation of the potential for expanding existing floodways to allow creation of wildlife habitat along both the natural and improved channels.

Flood Control

The hydrologic, hydraulic, and sediment transport regime within the Arroyo Seco watershed has been drastically altered as a result of development, Devil's Gate Dam and other flood/sediment control structures, and improvements to the main channel and tributaries. In addition, flood control capacity in the Arroyo Seco has been reduced due to land use changes and infrastructure aging. Channelization has increased the quantity and efficiency of runoff and sediment transport to the Los Angeles River, while dams/crib structures and development have decreased sediment supply. Providing for flood control is essential in this urbanized watershed. One important component of flood control is the use of dams to lessen peak flows. A recent LACDPW study indicated that even after the rehabilitation of Devil's Gate Dam in 1998, portions of the downstream concrete channel may be under capacity due to increased runoff into the channel. In addition, the channel is aging and has serious maintenance issues.

Opportunity: Identify where flood control problems exist and where flood control mechanisms need to be put in place. As part of this effort, a comprehensive, hydrologic, hydraulic, and sediment transport analysis for the Arroyo Seco watershed could be developed. In addition, the watershed analysis must take into account existing and future development, as well as existing and future operation of flood control facilities, including channel improvements and restoration.

Recreation

There is inadequate open space and recreational opportunities in the Los Angeles area as well as fragmented open spaces within the Arroyo Seco watershed. Adequate open spaces exist within the Arroyo Seco watershed including, the Angeles National Forest, several City parks, Descanso Gardens, and undeveloped hillsides; however, these areas are unconnected and are in fragmented locations.

Opportunity: Investigate the potential for developing a comprehensive recreation plan and trail system for the watershed. This plan should also develop habitat opportunities that provide links with existing recreational and open spaces. This plan should expand upon and improve trail systems. The plan should identify recreation opportunities at existing or new basins and reservoirs, and other pubic lands. In addition, the plan should incorporate passive recreation uses such as wildlife viewing and hiking trails into environmental restoration projects.

Future Conditions

The future or without project condition of the Arroyo Seco Watershed is a serious concern to the public and the LACPW. The limited and fragmented open space and habitat along the Arroyo Seco corridor, especially in the lower watershed, will result in the continual decline of the environmental and aesthetic quality in the Los Angeles Region. In addition, natural groundwater recharge in the watershed is an

important component to water conservation in the Raymond Basin. It is the goal of the watershed study to develop the necessary baseline data and analytical tools, and a realistic set of objectives, that will encourage management decisions that help reverse negative trends or enhance positive trends to maintain or improve the health of the watershed. Without environmental restoration in the Arroyo Seco Watershed the problems identified by the public and local sponsor will continue unabated, these problems include:

1. Water supply and water quality, both for surface and groundwater
2. Loss of water conservation in the Raymond Basin
3. Fragmented and degraded habitat along the Arroyo Seco corridor
4. Localized flooding
5. Erosion and sedimentation issues
6. Limited and fragmented open space and recreational opportunities in the lower portions of the watershed

The establishment of an environmental restoration and groundwater recharge in the Arroyo Seco Watershed will address the problems listed above.

D) PLANNING OBJECTIVES

The national objectives of National Economic Development and National Ecosystem Restoration are general statements and not specific enough for direct use in plan formulation. The water and related land resource problems and opportunities identified in this study are stated as specific planning objectives to provide focus for the formulation of alternatives. These planning objectives reflect the problems and opportunities and represent desired positive changes from the without project conditions. The planning objectives are specified as follows:

- To reduce urban flood damages and property loss
- To prevent further degradation and improve water quality (both surface and groundwater)
- To increase opportunities for water conservation
- To reduce further degradation of area ecosystem
- To develop opportunities for ecosystem restoration
- To improve recreation opportunities
- To improve riparian and wetlands habitat
- To improve the riverfront aesthetic quality of the Arroyo Seco

E) PLANNING CONSTRAINTS

Unlike planning objectives that represent desired positive changes, planning constraints represent restrictions, which may include local general plan, local agency jurisdiction, community philosophy and applicable Executive Orders and other Government Regulations that may apply. The major restriction facing the Arroyo Seco Watershed is to maintain the level of flood protection provided by the existing flood control structures while incorporating opportunities for watershed enhancement such as, environmental restoration, water quality improvement or groundwater recharge.

F) MEASURES TO ADDRESS IDENTIFIED PLANNING OBJECTIVES

A management measure is a feature or activity at a site, which addresses one or more of the planning objectives. A wide variety of measures were considered, some of which were found to be infeasible due to technical, economic, or environmental constraints. Each measure was assessed and a determination made regarding whether it should be retained in the formulation of alternative plans. The descriptions and results of the evaluations of the measures considered in this study are presented below:

1) No Action

The U.S. Army Corps of Engineers is required to consider the option of "No Action" as one of the alternatives in order to comply with the requirements of the National Environmental Policy Act (NEPA). No Action assumes that no project would be implemented by the Federal Government or by local interests to achieve the planning objectives. No Action, which is synonymous with the Without Project Condition, forms the basis from which all other alternatives plans are measured.

Issues: The open space and recreation opportunities in the Arroyo Seco are limited and fragmented. In addition, there is a lack of riparian and wetland habitat along the lower Arroyo Seco corridor. Also, due to coverage of a large portion of the lower watershed with impervious material there is reduced natural groundwater recharge into the Raymond Basin. This development has degraded the channel corridor and habitat in the region. Therefore, if No Action is taken on this feasibility study a unique opportunity to provide environmental restoration, as well as, groundwater recharge will be lost.

2) Study Objective

Based on review of existing information and coordination with local interests, the desired approach to proceed with a feasibility phase study is to conduct a watershed management study to identify the problems and opportunities relative to water resources, environmental restoration, flood control, water quality and water conservation within the Arroyo Seco Watershed. The study's objective would be to evaluate the existing conditions within the watershed, identify problems and opportunities, determine the needs and goals for watershed enhancement; and to identify candidate sites for further study. Items to consider in the study should include evaluation of watershed enhancement through the creation of wetlands to provide water treatment for stormwater runoff, integration of the trails and bikeways to provide continuity along the Arroyo Seco Watershed, and the overall development of the watershed to maximize environmental restoration while protecting the various functions and use of property.

If there are measures or plans found to be implementable within U.S. Army Corps of Engineers missions, a spin-off feasibility study for developing a site-specific project will be pursued subject to a non-Federal sponsor indicating their

interest to support and provide necessary cost-sharing and other requirements for the study and project.

G) PRELIMINARY PLANS

Preliminary plans are comprised of one or more management measures that survived the initial screening. The descriptions and results of the evaluations of the preliminary plans that were considered in this study are presented below:

1) Preliminary Plans Eliminated from Further Consideration

No plans were eliminated from further consideration.

2) Preliminary Plans for further Consideration

Preliminary screening indicates that conducting a watershed management study to identify the problems and opportunities relative to water resources, environmental restoration, flood control, water quality and water conservation within the Arroyo Seco Watershed is the appropriate plan. The study's objective would be to evaluate the existing conditions within the watershed, identify problems and opportunities, determine the needs and goals for watershed enhancement; and to identify candidate sites for further study. As part of the watershed study, plans for environmental restoration through either development of riparian habitat or treatment wetlands to polish stormwater runoff will be evaluated as they likely have the greatest Federal Interest in further study and potential implementation. In addition to environmental restoration; flood control, water conservation through groundwater recharge, and passive recreation opportunities could also be incorporated into a watershed plan that is implementable and has a Federal interest. The alternatives may be combined in different scenarios to develop and define the most optimal watershed plan. These items will be developed further and evaluated as part of the feasibility phase.

H) CONCLUSIONS FROM THE PRELIMINARY SCREENING

The preliminary screening indicated what alternatives listed above have the greatest potential for implementation. At this level of the investigation, these have the best potential for net environmental benefits though environmental restoration. Additional benefits would include local flood control and associated damage reduction, improvement of water quality through wetland treatment, groundwater recharge, and recreational opportunities.

While there are a number of identified problems in the Arroyo Seco Watershed, implementing solutions in the near future to address these problems will prevent further damage to the ecosystem and start a reversal of degradation.

All alternatives including the No Action alternative will be addressed during the feasibility phase of the study. The U.S. Army Corps of Engineers study team will prepare the Project Management Plan feasibility-level cost estimates based on the analysis of the No Action plan and alternative plans. The actual number of

alternatives may vary, based on the plan formulation study plan formulation processes.

I) ESTABLISHMENT OF A PLAN FORMULATION RATIONALE

The conclusions from the preliminary screening form the basis for the next iteration of the planning steps that will be conducted in the feasibility phase. The likely array of alternatives that will be considered in the next iteration includes alternatives that do not significantly impact existing environmental habitat, but would improve the areas protection and provide restoration. Future screening and reformulation will be based on the following factors: water supply source, impacts to groundwater recharge, environmental restoration opportunities, safety issues, and optimum trade-off analysis.

6. FEDERAL INTEREST

In accordance with current administration policy, there is a federal interest in watershed based studies that provide a holistic approach to evaluating water resource problems and opportunities leading to the development of a watershed management plan that effectively balances the need for sustainable economic development with the need for protection of watershed natural resources. Since environmental restoration is a likely output of the watershed study with a high budget priority and environmental restoration, water quality, flood control, and other related issues are integral to any comprehensive watershed plans that would be evaluated in the feasibility phase, there is a strong Federal interest in developing a feasibility study for the Arroyo Seco Watershed. There is also incidental Federal interest in other benefits resulting from the study such as recreation and water conservation/supply that could be developed within existing policy. Based on the preliminary screening of alternatives, there appears to be potential watershed plan alternatives that would be consist with the U.S. Army Corps of Engineers policies, benefits, and environmental impacts.

7. PRELIMINARY FINANCIAL ANALYSIS

A local sponsor would be required to cost-share (50/50) the feasibility phase of the watershed planning effort. Up to 100 percent of this local share can be in the form of in-kind services. Knowing this requirement, Los Angeles County Department of Public Works has agreed to be the local sponsor for the feasibility study.

8. ASSUMPTIONS, EXCEPTIONS, AND QUALITY OBJECTIVES

A) Feasibility Phase Assumptions

The following critical assumptions will provide a basis for the feasibility study.

1) Without Project Conditions Assumptions

The without project condition assumptions are provided below:

- The limited, fragmented, and degraded habitat in the Arroyo Seco Watershed will continue to lower the aesthetic quality of the watershed.

- Natural groundwater recharge will continue to decline and water levels/elevations in the Raymond Basin will drop.
- Localized flooding will continue to occur and may be increased due to increased runoff as a result of development.
- Inadequate open space and recreational opportunities along the Arroyo Seco corridor will continue to exist. A unique opportunity to provide environmental restoration in a heavily urbanized setting will be lost.

2) WITH PROJECT CONDITIONS ASSUMPTIONS

The major initial assumptions used to define the scope of the feasibility study are presented below. These assumptions will be further developed upon receipt of additional funds needed to develop the Project Management Plan for the Study. The assumptions are:

1. The resulting output of this study will be a document that will provide a watershed management plan for local interests to use in directing improvements to the watershed for the purposes of future land use decision, improving flood and drainage control, water quality improvements, environmental restoration, recreation use, and water conservation and groundwater improvement.
2. An initial step in conducting the feasibility study will be to develop the Project Management Plan based on gathering and review of all pertinent reports and information associated with defining baseline conditions; problems, needs and opportunities; and applicable alternative measures and plans. This effort will include mapping using GIS data base of relevant data, identifying additional data needs, and developing scopes of work to be performed in coordination with the various stakeholders interested in the Arroyo Seco watershed.
3. The development of alternative plans will be limited to conceptual designs, and evaluation of costs, benefits, and impacts considering environmental quality, regional economic development, and other social effects.
4. The study will include identifying and reviewing procedures required for obtaining Federal, State, and local programs available for implementation of measures formulated and selected as part of the watershed management plan.
5. If there are measures or plans found to be implementable within U.S. Army Corps of Engineers missions, a spin-off feasibility study for developing a site-specific project will be pursued subject to a non-Federal sponsor indicating their interest to support and provide necessary cost-sharing and other requirements for the study and project.
6. LACDPW will be the primary local sponsor for the study, and will coordinate the desired direction and funding of other stakeholders participating in the study to the U.S. Army Corps of Engineers.
7. The cost estimate is a generalized estimate for the study. The actual cost estimate may increase or decrease depending on the level of detail of

study identified in the PMP. The study will be 50/50 cost shared with the local sponsor. Up to 100 percent of the local sponsor's share can be in-kind services or some combination of in-kind services and cash.

8. Details of the Project Management Plan will be identified based on development of the study program and coordination with local interests.

B) POLICY EXCEPTIONS AND STREAMLINING INITIATIVES

The Study will be conducted in accordance with the Principles and Guidelines and the U.S. Army Corps of Engineers regulations. There are currently no anticipated or identified exceptions to established guidelines for streamlining the study process that will not adversely impact the quality of the feasibility phase of study.

C) QUALITY OBJECTIVES

The Feasibility Phase Study will be accomplished to meet the following quality objectives:

1. Information developed and thus project recommendations will be adequately described for the local project sponsor to make an informed decision on future participation.
2. Quality Control through the feasibility study phase will be in compliance with the U.S. Army Corps of Engineers Quality Control Plan as documented in the Los Angeles District OM 1100-1-2.

9. FEASIBILITY PHASE MILESTONES

Table 3 presents an estimate of the milestone schedules for the feasibility study. The milestone schedule will be further defined upon further development of the Project Management Plan.

TABLE 3
FEASIBILITY PHASE MILESTONES

Milestone	Description	Duration (month)	Cumulative (month)	Date
Milestone F1	Initiate Study	0	0	Jan-03
Milestone F2	Public Workshops/Scoping	5	5	Jun-03
Milestone F3	Feasibility Scoping Meeting	11	16	May-04
Milestone F4	Alternative Review Conference	9	25	Feb-05
Milestone F4A	Alternative Formulation Briefing (AFB)	5	30	Jul-05
Milestone F5	Draft Feasibility Report	3	33	Oct-05
Milestone F6	Final Public Meeting	1	34	Nov-05
Milestone F7	Optional IRC	1	35	Dec-05
Milestone F8	Final Report to SPD	3	38	Mar-06

10. FEASIBILITY PHASE COST ESTIMATE

Table 4 presents an initial estimate of the cost for the feasibility study. The Los Angeles County Department of Public Works has agreed to be local sponsor for the project and cost share 50 percent of the feasibility study. LACDPW is continuing to work with local, State, and Federal officials to gain support for the project. The current estimated total study cost is $3,696,000 with the Los Angeles Department County Department of Public Works as the non-Federal sponsor. The breakdown of the Federal and non-Federal cost will be in the PMP.

TABLE 4
Arroyo Seco Watershed Project Study
Preliminary Study Cost Estimate

	Work Activity	**Total $ X1000**
JAAOO	Feas - Survey and Mapping except Real Estate	200
JABOO	Feas - Hydrology and Hydraulics Studies/Reports	950
JACOO	Feas - Geotechnical Studies/Reports	70
JAEOO	Feas – Engineering and Design Analysis Report	150
JBOOO	Feas – Socioeconomic Studies	150
JCOOO	Feas – Real Estate Analysis Report	100
JDOOO	Feas - Environmental Studies/ Report	450
JFOOO	Feas - HTRW Studies/Report	70
JHOOO	Feas - Cost Estimating	50
JIOOO	Feas - Public Involvement	120
JJOOO	Feas - Plan Formulation	100
JLOOO	Feas - Report Documentation	90
JLDOO	Feas - Technical Review Document	80
JPAOO	Feas - Project Management and Budget Documents	90
JPBOO	Feas – Supervision and Administration	270
JPCOO	Feas - Contingency	70
	Washington Level Review	70
	SUBTOTAL	3,080
	CONTINGENCY (20%)	616
	TOTAL	3,696

11. VIEWS OF OTHER RESOURCE AGENCIES

Resource agencies including the U.S. Forest Service, U.S. Army Corps of Engineers, California Coastal Conservancy, California Department of Fish and Game, Metropolitan Water District or Southern California, and the Cities of South Pasadena, Pasadena, and Los Angeles have actively participated in for the development and preparation of the *Arroyo Seco Watershed Restoration Feasibility Study and the Arroyo Seco Master Plan*. These agencies participated during the identification of issues, problems, and opportunities within the watershed. During this process the agencies weighed addressing the need for economic development while protecting and enhancing natural resources. In addition, NET and the ASF have worked with local stakeholders and environmental groups to prepare the *Arroyo Seco Watershed Restoration Feasibility Study*. In general, all of the interested groups support a watershed planning approach to addressing the problems and opportunities within the watershed.

12. POTENTIAL ISSUES EFFECTING INITIATION OF FEASIBILITY PHASE

None

13. PROJECT MAP AREA

Attachment 1 is a map of the Arroyo Seco Watershed.

14. DISTRICT ENGINEER'S RECOMMENDATION

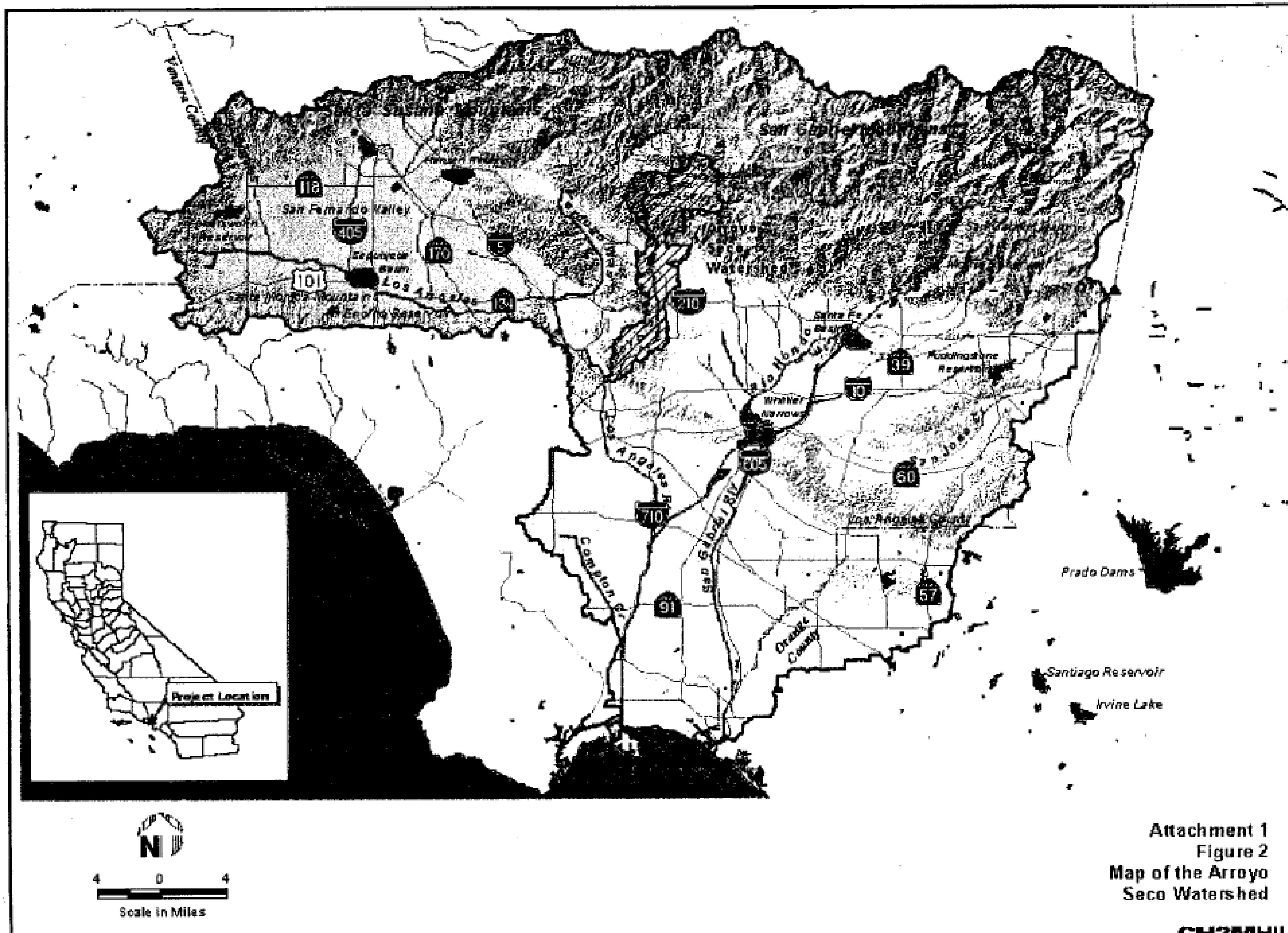
I recommend that the Arroyo Seco Watershed study proceed into the feasibility phase. The feasibility phase will continue the investigation of environmental restoration, water quality, flood control, and related issues. The Los Angeles County Department of Public Works has agreed to be the local sponsor for the feasibility study and will execute the Feasibility Cost Sharing Agreement upon completion of the PMP.

25 Sep02
Date

John V. Guenther
Lieutenant Colonel,
Corps of Engineers
Acting District Engineer

ATTACHMENT 1

Figure 2. Map of the Arroyo Seco Watershed



Attachment 1
Figure 2
Map of the Arroyo
Seco Watershed

CH2MHILL

September 3, 2002

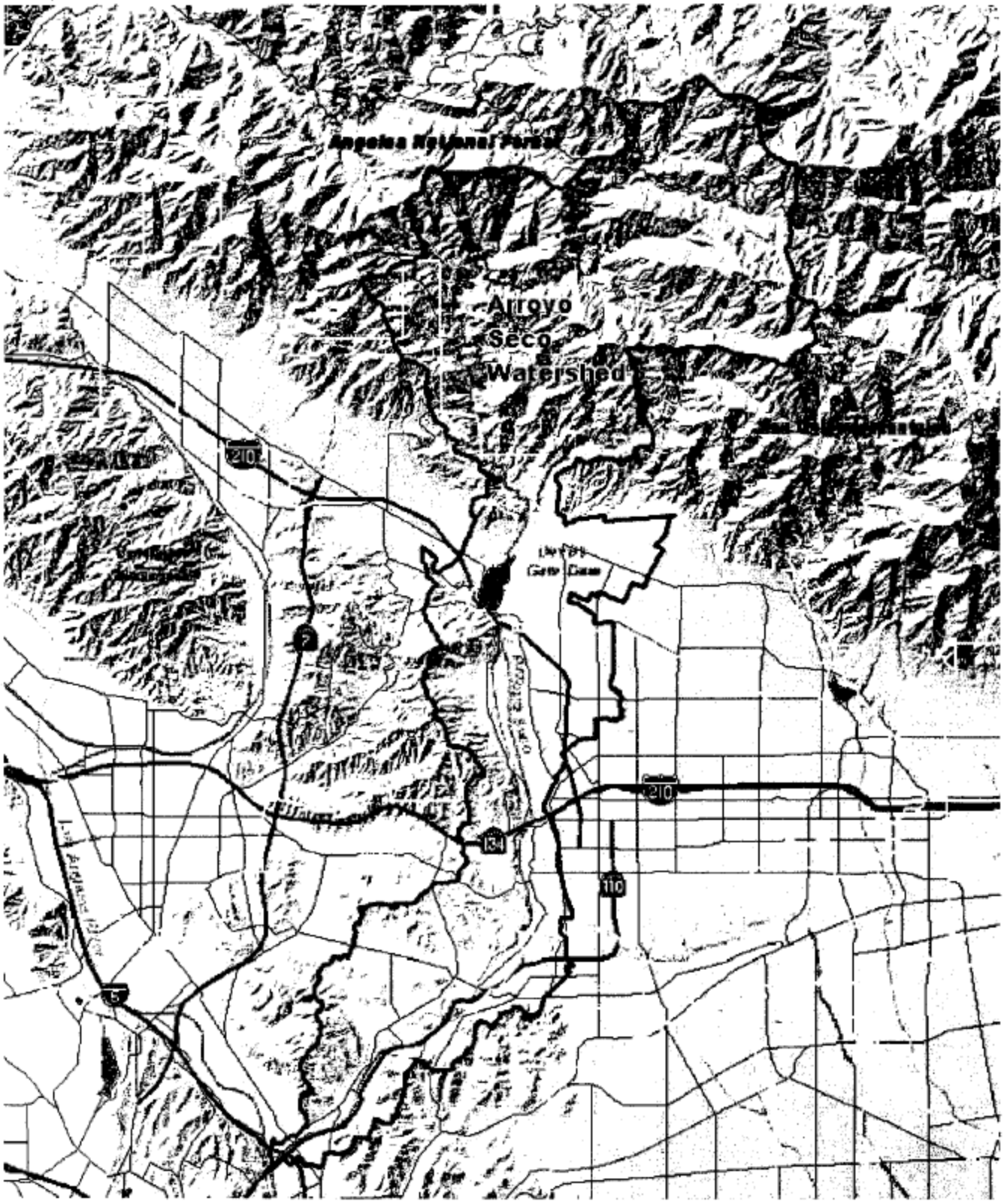


Figure 1
ArroyoSeco
Watershed
Vivinity Map

CH2MHILL

ATTACHMENT 2
Sponsor's Letter of Intent

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100

JAMES A. NOYES, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE REFER TO FILE: WM-5

March 27, 2002

Colonel John P. Carroll
District Engineer
Department of the Army
Los Angeles District, Corps of Engineers
P.O. Box 2711
Los Angeles, CA 90053-2325

Attention Ms. Ruth Villalobos

Dear Colonel Carroll:

ASSISTANCE FOR ARROYO SECO WATERSHED

Public Works is interested in proceeding with a reconnaissance study for the development of a watershed management plan for the Arroyo Seco Watershed in the County of Los Angeles, California. Public Works is also interested in serving as the lead local sponsor for the feasibility phase of the project when it is initiated by your agency and will work with other stakeholders in the watershed to provide the required funding for the development of a watershed management plan.

If you have any questions, please call me or your staff may contact Mr. Dan Sharp of our Watershed Management Division at (626) 458-4345.

Very truly yours,

JAMES A. NOYES
Director of Public Works

DBS:ro
D:\corpsreconstudy.wpd

cc: Supervisor Gloria Molina (Carrie Sutkin)
Supervisor Michael D. Antonovich (Conal McNamara)
Congressional District 27
Congressional District 28
Congressional District 30
State Assembly District 43
State Assembly District 44
State Assembly District 45
State Assembly District 59
State Senate District 21
State Senate District 22
State Senate District 29
Arroyo Seco Foundation (Tim Brick)
City of La Canada Flintridge (Steve Castellanos)
City of Pasadena (Gary Takara, Rosa Laveaga)
City of South Pasadena (Cesar Vega)
City of Los Angeles (Mike Mullin)
North East Trees (Eileen Takata)
Raymond Basin Watermaster

bc: Flood Maintenance (Cadena, Doudar, Quevedo)
Water Resources
Watershed Management (Bapna)