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Rio Hondo Watershed Management Plan

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EXECUTIVE SUMMARY

Purpose and Background

The purpose of the Rio Hondo Watershed Management Plan is to provide an organizing framework for municipalities, conservation organizations, and individuals to work together to improve the water quality, health, habitat, and recreation potential of the Rio Hondo Watershed. This Watershed Management Plan identifies goals and strategies necessary to manage the overall watershed as a healthy, life giving natural system. This plan also outlines steps to facilitate the establishment of a watershed consortium, which would be responsible for communication of information, identification of priorities, funding development, creation of new projects, and long-term implementation of watershed improvements.

The Rio Hondo Watershed Management Plan was made possible by a $200,000 grant to the San Gabriel Valley Council of Governments. The San Gabriel and Lower Los Angeles River and Mountains Conservancy facilitated the grant and application processes. The following statement is provided at the request of and in appreciation to the state funding agency:

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

To guide the development of the watershed plan, a project management team was formed among the following organizations:

- San Gabriel Valley Council of Governments (SGVCOG),
- San Gabriel and Lower Los Angeles River and Mountains Conservancy (RMC),
- Los Angeles Regional Water Quality Control Board (LARWQCB),
- County of Los Angeles Department of Public Works (LACDPW), and
- Moore, Iacofano, Goltsman, (MIG) Inc, a public policy and environmental consulting firm was selected to manage and facilitate the process.

A Policy Advisory Committee (PAC) was also formed which represented thirty-six organizations within the watershed. Key stakeholders, including cities, other public

agencies at the local, state, and federal level, as well as various private conservation groups, were represented in the PAC. The PAC met periodically and provided a forum for discussions intended to identify issues of concern, determine priorities, and develop a consensus around which a plan could be created.

Unique Characteristics of the Rio Hondo Watershed

The Rio Hondo watershed is a subwatershed of the Los Angeles River watershed, and is also linked to the adjacent San Gabriel River watershed. This link reflects both natural hydrologic processes and human intervention. Historically, the Los Angeles and San Gabriel Rivers were wide shallow rivers consisting of a braided series of channels that would periodically intermingle following large storm events. As a result of this dynamic, the Rio Hondo once formed the main bed of the San Gabriel River. Today, however, this dynamic has been engineered into three channels have been created to bring water from the San Gabriel to the Rio Hondo, making the Rio Hondo serves as a *distributary* for the San Gabriel River.

The Rio Hondo watershed is also unique in that two very different landscapes shape the overall character of the 142 square miles that fall within the boundaries of the watershed. The rugged steep terrain of the San Gabriel Mountains defines the upper reaches of the watershed, much of which lies within the Angeles National Forest. This natural undeveloped landscape changes dramatically below the foothills where the nature of the watershed is transformed by the very urban and largely built out San Gabriel Valley. Encompassing 21 different cities and unincorporated portions of Los Angeles County, this densely developed urban landscape includes only a few remaining areas of open space and isolated patches of natural habitat.

Vision for a Healthy Watershed

The vision of a healthy vital Rio Hondo watershed, as portrayed in Chapter III, is one that balances the needs of sustaining a healthy ecosystem, including habitat for animals, within the context of providing clean water and flood control in an urban environment. A healthy watershed is able to perform its natural and urban hydrologic functions, such as capturing and filtering runoff, slowing releases of runoff into streams and rivers– and groundwater recharge within the surrounding urban environment. Such a watershed is no longer hidden underneath the built environment but is integrated in ways that allows it to function in harmony with the environment and normal activities of the people who live, work, and play in the area.

Key Issues

The existing political jurisdictions and local communities do not reflect the natural landscape or the scale of the watershed.

- Numerous different political jurisdictions at the municipal, county, state, and federal level overlay the watershed.
- The communities of the watershed are demographically complex with wide ranging differences in income, population density, ethnicity, and languages spoken.
- There is a general lack of public awareness about the watershed in particular and watershed issues in general.
- There is no organization or group working on behalf of the watershed as a whole
- There is no watershed wide governance structure.

Groundwater storage and natural habitats have been heavily impacted by urban development and flood control systems:

- Impervious surfaces have reduced water percolation into the water table
- Water quality is adversely affected by non-point source pollution, especially storm water runoff, entering the watershed from multiple diverse sources in multiple land use areas.
- The lower two reaches of The Rio Hondo are designated as impaired water bodies on the states 303 (d) list because of trash, copper, lead, zinc, ammonia, pH, and coliform bacteria which requires the establishment of Total Maximum Daily Load (TMDL) standards for each of these pollutants.
- Beneficial uses of the Rio Hondo have been negatively impacted by this polluted runoff.

The developed portion of the watershed is largely built out, with consequences for both human and ecological communities.

- There is a scarcity of open space in the developed portions of the watershed.
- There are an insufficient number of parks, in terms of both acreage and accessibility, to serve the existing population.
- Most native habitat has been converted to urban uses and the small patches of remaining habitat may not be adequate to support native species.
- Native species have also been severely impacted by competition from invasive non-native species.

Goals

Nine goals are identified in this Watershed Management Plan. Seven goals further develop and articulate the Rio Hondo Watershed Vision as described in Chapter II, the Watershed Management Framework. The seventh goal emphasizes the need to achieve multiple goals in any particular project. Two additional goals address implementation priorities in Chapter IV. Together, these goals reflect the ideal that a healthy watershed is able to successfully integrate dynamic natural systems balanced with community needs and interests. The Goals stated in this plan are:

1. Improve in-stream water quality to meet or exceed Regional Water Quality Control Board standards and NPDES permitting requirements. Implement a wide array of Stormwater Best Management Practices (BMPs) to optimize local water resources and reduce dependence on imported water while increasing beneficial water uses available to the public.
2. Create, enhance, and protect open space through active acquisition of parcels that serve multiple-purpose uses, including; conservation, improvement of aesthetics, community development and connectivity.
3. Improve habitat quality, quantity and connectivity with watershed management and restoration of stream channels. Combine existing habitat and creation of new habitat where possible to strengthen habitat migration corridors. Establish habitat areas for use by wild creatures, and other habitat areas with the addition of public access and education as appropriate.
4. Improve recreational opportunities as a function of watershed management. Use interpretative opportunities afforded by recreation to enhance watershed awareness and identity.
5. Ensure that public health and safety are integrated into all aspects of watershed enhancement.
6. Maintain current minimum flood protection levels and develop new flood protection strategies to meet the multiple goals required for watershed improvement.
7. Develop priority projects that address multiple goals simultaneously.
8. Create an effective institutional framework from which to focus sustained efforts on improvement of the Rio Hondo Watershed by providing oversight, management, and measurement of recovery and restoration within the watershed.
9. Improve the long-term health of the watershed by establishing public awareness and stewardship campaigns that educate the public about their role in improving water quality and the overall health of the watershed.

Recommendations for Implementation

To initiate implementation requires action on several parallel tracks. Of particular importance is the need to establish an organizing body or Watershed Consortium to implement the Watershed Plan. The PAC should initially resume meeting under auspices of DPW, RMC, SGVCOG or other agency sponsor, and agree in principal to establish the Watershed Consortium. Then the PAC could form various action-oriented subcommittees to pursue initiatives needed to begin actual watershed management. A possible organizational framework is suggested below.

Suggested Organizational Framework

Organizational Subcommittee

- Explore formation of a Watershed Consortium

Funding Subcommittee

- Identify and pursue funding opportunities; development of a long-term funding strategy

Projects Subcommittee

- Develop priorities in each of the subwatershed target areas. Start at three priority locations and watershed-wide initiatives

Assessment Subcommittee

- Identify and implement initial studies needed for baseline existing conditions identification

Watershed Awareness Subcommittee

- Develop a watershed-wide constituency and education programs.

Tasks for an Organizational Subcommittee

- Utilize Watershed Conservation Authority (WCA), the recent JPA between LACDPW and RMC, as a possible organizational model for the watershed consortium. Investigate ways to encourage municipalities to participate, such as matching grant funding when possible.
- Pursue Proposition 50 funding under The Integrated Regional Water Management Program, as a catalyst for formation of Rio Hondo Watershed Consortium.

Tasks for a Funding Subcommittee

- Develop long-term funding strategy and fiscal mechanism for tracking funding opportunities, obtaining grants, managing existing funds, and monitoring expenditures.
- Explore feasibility of forming a special assessment district.

- Work with Organizational Subcommittee on Prop 50 and other funding opportunities.
- Perform initial cost/benefit analysis on all proposed projects.

Tasks for a Watershed Assessment and Communication Subcommittee

This subcommittee would be responsible establishing and running science-based studies of the watershed. These studies would improve the scientific baseline for the watershed and establish a comprehensive Geographic Information System (GIS) through definitive scientific studies. These studies could be used to guide and target watershed enhancement programs. Additionally communication of findings to appropriate scientific communities, and the public would also be an important role for this group. Overall the Watershed Assessment and Communication subcommittee could:

- Correlate land use data and water quality monitoring results to target water quality improvement and other related watershed enhancement efforts
- Map existing storm drain and flood control system to understand age of system and identify opportunities for replacement and possible stream restoration.
- Support Army Corps of Engineers and LACDPW efforts to complete hydrologic model of Los Angeles and San Gabriel Rivers which is scheduled for completion between 2006 and 2007. This model will provide existing hydrologic conditions for Los Angeles watershed, including the Rio Hondo and will be useful to model potential downstream impacts of proposed projects, including culvert removals, and stream daylighting.
- Review existing literature to establish historic stream and river corridor locations which could be used to identify possible individual site restoration efforts and to assist future geomorphic analysis.
- Conduct bio-assessment to identify and confirm where species of interest are located and assess feasibility of preserving through habitat enhancement and linkages.
- Develop and map soils data to identify permeable soils for infiltration, potential wetland sites, and potential for erosivitity and sedimentation.
- Inventory invasive species to establish strategic invasive species removal program

Tasks for a Projects Subcommittee

The projects subcommittee could begin with the projects that warrant immediate action based on existing watershed knowledge, sponsor(s) commitment, and funding availability. Projects for early implementation of the watershed plan include those located at or near confluences, including Peck Road Water Conservation Park, Whittier Narrows, and Rio Hondo Spreading Grounds. Projects in these existing habitat hubs support creation of a key habitat corridor from Puente Hills through Whittier Narrows and up the Rio Hondo to Peck Park and parallel efforts along the nearby San Gabriel River. Use momentum from these efforts to build support for the overall watershed enhancement effort, including future projects. Other efforts would include:

- Design and manage watershed projects and support management of the watershed.
- Assess how proposed projects will impact functioning of the watershed system
- Select projects and sequencing based on results of watershed modeling.
- Use cost/benefit projections (developed in cooperation with funding sub-committee) to further refine project prioritization and programming.

Tasks for a Watershed Awareness Subcommittee

The Watershed Awareness Subcommittee should utilize organizational resources of Watershed Consortium to plan, fund, and implement a Rio Hondo Watershed Public Awareness Campaign to promote a constituency for the watershed though public education and outreach, and stewardship programs. This group should encourage behavior changes that support watershed enhancement, including pollutant reduction and water conservation. Other activities could include:

- Deploy cost effective messages and delivery appropriate for each target audience. Consider use of print materials including; brochures, flyers, and posters. Send the public mailings and newsletters, plan events and presentations – community fairs, public forums, and community meetings. Make use of news releases and speakers engagements.
- Create a public identity for the Rio Hondo watershed by designing a logo for the watershed, and installing watershed signage at watershed boundaries, creek crossings, and confluences. Also use interpretive signage throughout watershed to promote watershed awareness.
- Assist local schools in the development and implementation of a watershed education curriculum. Establish a watershed stewardship program among residents by starting a storm drain stenciling campaign, establishing an adopt-a-stream program, developing stream clean up and monitoring program, and through training for watershed volunteers.

Timeline/Workplan

1st Quarter/Initial Organizational Development

- PAC resumes meeting
- PAC forms subcommittees to implement components of watershed plan
- Initiate Watershed Consortium formation process (*Organizational Subcommittee*)
- Pursue Proposition 50 grant application in conjunction with watershed consortium formation activities (*Funding Subcommittee*)
- Establish information collection and distribution protocols (*Watershed Assessment Subcommittee)*

2nd Quarter (but only after formation of Watershed Consortium, including completion of staff recruitment and other organizational tasks)

- Develop long-term funding strategy, including possibility of creating special assessment district (*Funding Subcommittee)*
- Identify a select number of projects as possible candidates for immediate implementation (*Projects Subcommittee*)
- Perform a cost/benefit analysis to further refine list of candidate projects for implementation in the early phase of watershed plan implementation *(Projects Subcommittees)*
- Design water quality monitoring and bio assessment programs, including sampling methodology (*Watershed Assessment Subcommittee*)

3rd Quarter

- Continue development of watershed assessment program and begin implementation of selected studies when ready. (*Watershed Assessment Subcommittee*
  - Initiate water quality monitoring and bio assessment programs
  - Expand land use data base and correlate with water quality monitoring results
  - Begin efforts to map existing storm drain and flood control system
  - Initiate inventory of invasive species
- Use initial watershed assessment results to establish a baseline of critical watershed health indicators
- Continue funding, planning and design efforts for projects selected for immediate implementation

- Begin development of watershed public outreach and education campaign (*Watershed Awareness Subcommittee*)

4th Quarter

- Use initial findings from watershed assessment to begin process of identifying and/or confirming future project opportunities *(Projects and Watershed Assessment Subcommittees)*
- Continue watershed assessment activities
- Initiate market analysis study to assess public awareness of watershed

2nd Year

- Use initial watershed assessment results to develop a model of watershed functioning
  - Continue to refine and develop watershed model as additional assessment analysis and findings become available
  - Use results from ACE and LACDPW hydrologic model when available
- Begin funding, planning, and design efforts for initial projects developed on the basis of ongoing watershed assessment studies
- Assess extent of progress for all projects selected for immediate implementation
  - Is implementation on schedule, and if not determine what actions are required to push forward on implementation.
- Use results from market analysis to tailor watershed awareness message and develop public outreach materials
  - Begin initial public outreach activities

Success Indicators

Over time progress toward achieving these goals and the overall vision of a healthy watershed can be assessed through the following performance measures:

Water Conservation

- Reduced water imports
- Increase in overall groundwater recharge
- Reduction of impervious surfaces
- Increase in miles of daylighted creeks over permeable surfaces

Water Quality

- Elimination of impaired status for Rio Hondo Reaches 1 and 2 and Peck Road Lake
- BMPs implemented for reduced runoff speeds, reduced volumes, and improved quality.
- Incorporation of BMPs into municipal codes and permit evaluations
- Timely and reasonable establishment of TMDL standards for pollutants of concern
- Improvements in runoff water quality

Open Space

- Increased in acreage of open space
- Increased connectivity and access for all communities
- Accumulation of acquisition and long-term maintenance funds for open space
- All future development – new or retrofits – incorporates multi-objective design principles
- Open space and habitat increases even as population grows

Habitat

- Creation of habitat linkages and corridors
- Increased acreage of native habitat areas
- Ecologically significant areas protected
- Reduction of invasive species
- Increases in native plant and animal species

Recreation

- Increases in park area per 1000 residents
- Increased miles of trails
- Interconnected trail network
- Facilities sited to meet multiple objectives
- Cultural and historical resources database compiled and updated

Public Health and Safety

- Personal contact with water allowed
- Secure river environments encourage public use
- Vector control incorporated into BMPs
- Building codes improve water quality

Flood Protection

- Hydrographs for new flow conditions migrate closer to that of natural watershed
- Peak flows measurably reduced
- Urban streams restored – measured in miles
- Stormwater infrastructure upgraded

Watershed Awareness

- Increase in number and scale of literature mailings, and other watershed-related social marketing activities.
- Watershed signs installed at watershed entry points and stream crossings
- School children involved in watershed education curriculum
- Surveys confirm increased public awareness of the watershed

Institutional Framework

- A watershed consortium coordinates interests and resources of the watershed
- Sustainable funding established for research, planning, project implementation, monitoring, and management activities
- Sub-watershed collaborative units established

CHAPTER 1: INTRODUCTION

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1.1 PROJECT OVERVIEW

The Rio Hondo Watershed Management Plan (RHWMP) provides an organizing framework for cities, public agencies, private groups, community members, and other stakeholders working together to develop a healthy watershed within the densely developed urban environment of the San Gabriel River Valley. The RHWMP contains an overview of existing conditions within the watershed, discusses how these conditions should shape the selection and design of watershed improvement strategies, and presents recommended projects, programs and other opportunities including those proposed by community stakeholders.

1.2 PURPOSE OF RIO HONDO WATERSHED MANAGEMENT PLAN

The RHWMP was made possible by a $200,000 grant to the San Gabriel Valley Council of Governments (SGVCOG) from the State Water Resource Control Board's Proposition 13 grant program. This watershed protection program encourages the development of comprehensive, collaborative strategies for management and enhancement of environmental resources throughout a watershed, rather than focus solely on single-purpose individual projects or specific site solutions to water quality problems that may have been customary in the past. The watershed management approach is driven by a wider perspective where, sub-sub watershed solutions at the local level work together with larger inter-community projects as part of an overall plan; an integrated region-wide solution designed to effectively address the shared, interrelated problems and opportunities that are present in the watershed.

In conformance to these planning principles, the RHWMP is a multi-objective plan designed to "restore" the beneficial properties of the Rio Hondo Watershed by exploring the potential to integrate and balance opportunities in water quality, water conservation and supply, flood protection, recreation, open space, habitat preservation, public health and safety, and the stewardship of the watershed (see insert on next page– *Watershed Restoration Terminology*). This integrative, multi-objective approach to watershed planning operates on the premise that more can be accomplished by jointly pursuing these many important community interests rather than one at the expense of the others.

A multi-objective approach requires that stakeholders have a forum in which to come together to present and solve shared issues, from which they can then identify high priority projects for both regional and local benefit. Although this was the first time that Rio Hondo stakeholders had come together on a watershed-wide basis to collectively address shared issues and concerns, it will not be the last. One of the other primary purposes of the RHMP was to develop a watershed constituency, individuals and organizations that will continue to work together on behalf of the entire watershed. In addition, by demonstrating a shared commitment and partnership among the many communities within the watershed, the RHMP will also help secure future funding and other resources needed to implement projects, as well as other short and long-range actions for watershed restoration.

Also, the RHWMP does not exist in isolation from other nearby watershed planning efforts. The partnerships necessarily extend beyond the geographic boundaries of the

Rio Hondo watershed to other rivers and watershed, such as the Los Angeles River of which it is a tributary, and the San Gabriel River to which it is also integrally linked. For these reasons, efforts to restore the Rio Hondo Watershed will be part of an even larger coordinated effort including other sub-watershed management plans and overall plans for the Los Angeles and San Gabriel Rivers.

Finally, the RHWMP is an initial watershed management plan that is meant to serve as a foundation for future planning efforts throughout the watershed. Watershed planning is necessarily an iterative process in which each subsequent plan builds upon the results of the preceding planning and implementation process. However, there are no limits to the possibilities of what can be achieved if there is a commitment and a desire to improve the watershed.

Watershed "Restoration" Terminology

Since "restore" and other similar terminology will be used throughout the Plan, it is presented here to clarify valuable distinctions that should be kept in mind when assessing this watershed plan and the individual projects contained within it. This terminology is largely derived from the experience of wetlands projects but is applicable to the remedial efforts undertaken to improve the functioning of all ecological systems, including watersheds:

Restoration – the return of a watershed (or other ecological system) from a disturbed or altered condition by human activity to a previously existing condition. (1)

Creation – the construction of an ecological system, such as a wetland or lake, in an area that was not a wetland or lake in the recent past (within the last 100-200 years) and that is isolated from existing similar natural systems. (2)

Enhancement – improving the structure or function(s) of an already existing ecological system, such as a watershed. (3)

Preservation – the protection of an existing and well-functioning ecological system; such as a watershed, wetland, etc; from prospective future threats. Preservation does not involve alteration of the site. (1)

Mitigation – the creation, restoration, enhancement, or preservation of an ecological system designed to offset permitted losses to the natural ecological functioning of another site. (1)

Although the term "restore" is frequently used to describe all activities intended to improve watershed functioning, when the term is used more precisely it would apply to only a small subset of all watershed projects. As the definition for "restoration" makes clear, it will not be possible or desirable to return the Rio Hondo Watershed to its pre-human conditions. Instead, the overall effort stemming from this watershed plan can be characterized as a watershed "enhancement" program. In some instances, however, individual projects within this watershed plan may be characterized as "creation," "mitigation", or "restoration" efforts depending upon the specific opportunities present at those sites and their intended goals.

The above definitions are based upon wetlands restoration terminology found in the following sources:

(1) Compensating for Wetland Losses Under the Clean Water Act, National Academy of Sciences, 2001.

(2) Gwin, S. E., M.E. Kentula, and P.W. Shaffer. 1999. Evaluating the Effects of Wetland Regulation through Hydrogeomorphic Classification and Landscape Profiles. Wetlands

(3) Middleton, B. 1999. Wetland restoration, flood pulsing, and disturbance dynamics. John Wiley & Sons, Inc., New York.

1.3 WHY ORGANIZE AROUND WATERSHEDS?

Environmental resources typically do not fall within traditional political boundaries. Instead water, wildlife and other natural resources respond to more fundamental pre-existing, contours defining the natural environment. This reality requires separate political jurisdictions establish collaborative relationships to deal with environmental problems that cross over the lines of their administrative territories. This interconnectivity also requires cities to recognize that local actions within the boundaries of their jurisdictions can have consequences in the larger environment.

The best example interconnectivity in the natural world is in a watershed, an area of land (or drainage basin) from which all surface water drains downhill to a shared destination such as a river, pond, lake or stream. Landforms, such as mountain ranges, hills, ridgelines and other high grounds, as well as storm drains and other conveyance structures, direct water one way or another, forming the boundary of the watershed. Watersheds can be tiny or immense and are often composed of smaller watersheds.

Although a watershed is natural system of flowing water, human activities within a watershed will often impact and modify these natural conditions. Dams and flood control structures have been seen as necessary to protect communities, but they have altered the natural courses of rivers and streams. Urban development covers land areas with buildings, pavement and other impermeable surfaces, eliminating natural percolation into the groundwater, while also limiting opportunities to improve water quality. Rather than being slowly absorbed into the soil, water now runs off the land in larger amounts and at higher velocities, testing the limits of flood control systems and limiting the ability of the former natural system to absorb pollutants and clean the water.

The interconnectivity of a watershed makes it difficult for any single city or administrative unit acting alone to effectively address water quality, water supply, or other natural resource problems that may arise from human activities. Watershed management is a response to this reality. That encourages all those who live and work within a watershed to think in terms of the watershed when considering the potential impacts of their actions. The watershed management approach can encourage individual cities to look within their own jurisdictions for opportunities to create a healthy watershed, and when the opportunities arise to also pursue broader watershed-wide collaborations with other cities. Whether acting at the local, level or acting in concert with others, watershed management represents a rational approach to develop solutions that reflect the natural interdependencies within the watershed.

1941 Aerial Photo of Rio Hondo Watershed from Garvey Bridge looking Northeast.

1.4 A SNAPSHOT OF THE RIO HONDO WATERSHED

The Rio Hondo ("Deep River") River, along with its headwaters in the Angeles National Forest, and its tributaries in the San Gabriel Valley form a 142 square mile sub-watershed of the much larger 834 square mile Los Angeles River Watershed. The Rio Hondo River also links the double watersheds of the Los Angeles and San Gabriel Rivers. Although it is now a major tributary of the Los Angeles River, its channel once formed the main bed of the San Gabriel River The six major tributaries of the Rio Hondo are the Alhambra, Rubio, Eaton, Arcadia, Santa Anita, and Sawpit Washes (*See Map 1-1 Main Subwatersheds)*

The major portion of the Rio Hondo Watershed is located within the heart of the San Gabriel Valley. The geographic reach of the watershed also extends further south beyond the San Gabriel Valley to the Rio Hondo's confluence with the Los Angeles River, located within the City of South Gate, several miles southeast of downtown Los Angeles. Outside of its headwaters in the Angeles National Forest, the watershed is a densely developed area that encompasses 21 cities, and unincorporated portions of Los Angeles County. The watershed includes all or portions of the foothill cities of Pasadena, Sierra Madre, Arcadia, Monrovia, Bradbury, and Duarte. The central belt of the watershed includes the cities of South Pasadena, Alhambra, Monterey Park, San Marino, San Gabriel, Temple City, Rosemead, El Monte, South El Monte and Irwindale. Further south where the watershed narrows, it includes the cities of Montebello, Pico Rivera, Commerce, Bell Gardens, Downey and South Gate (*see Map 1-2 Cities of Rio Hondo Watershed*).

The Rio Hondo Watershed can also be viewed in terms of its six main subwatersheds created by the tributaries identified above. Five of these subwatersheds encompass most of the central and upper portions of the Rio Hondo Watershed. Most of these subwatersheds have headwaters in the undeveloped mountains of the Angeles National Forest, but enter highly urbanized areas just below the foothills. The sixth "watershed" includes all those areas that drain directly into the Rio Hondo, primarily areas in the lower portions of the overall watershed and along its eastern border with the San Gabriel River watershed.

- ***Alhambra Wash***, including its tributary San Pasqual Wash, is a highly urbanized watershed extending from its headwaters in northwestern Pasadena

just above the 210 Freeway southeast to its confluence with the Rio Hondo at Whittier Narrows in Rosemead.

- ***Rubio Wash*** is primarily an urbanized subwatershed except for its headwaters in the foothills of the San Gabriel Mountains just above Altadena. These headwaters are divided among several tributaries including Las Flores Canyon and Rubio Canyon. Its confluence with the Rio Hondo is in South El Monte just above Whittier Narrows.
- ***Eaton Wash*** is a long linear subwatershed extending from its headwaters deep in the San Gabriel Mountains above eastern Pasadena and then south through unincorporated portions of Los Angeles County, Temple City to its confluence with the Rio Hondo near the border of El Monte and South El Monte. Its headwaters form an extensive network of tributaries including Pasadena Glen and Harvard Branch, in addition to Eaton Wash.
- ***Arcadia Wash*** is primarily an urban subwaterhed. Its headwaters do extend into the foothills of the San Gabriel Mountains above Sierra Madre, but these lie just below the more extensive headwaters of both Eaton Wash and Santa Anita Wash. In the City of Arcadia, the main trunk of Arcadia Wash divides into two tributaries, Arcadia Wash and the East Branch of Arcadia Wash.
- ***Santa Anita Wash*** is similar to Eaton Wash in having a very extensive network of headwater tributaries in the undeveloped portions of the San Gabriel Mountains lying above Sierra Madre, Arcadia, and Monrovia. These include Sierra Madre Wash, Little Santa Anita Canyon, Santa Anita Canyon, and many other additional smaller tributaries. The smaller urbanized portion of the subwatershed extends south to its confluence with the Rio Hondo at Peck Park in Arcadia.
- ***Sawpit Wash*** features many headwater tributaries in the undeveloped portions of the San Gabriel Mountains and foothills above Monrovia and Bradbury, including Sawpit Canyon and Sycamore Canyon. From there it flows south to its confluence which forms the beginning of the main channel of Rio Hondo at Peck Park.

Major flood control structures within the Rio Hondo Watershed include the Whittier Narrows Dam, Eaton Wash Dam, and Santa Anita Dam

The Rio Hondo watershed is a key resource for groundwater recharge activities within Los Angeles County, playing a major role in the replenishment of potable groundwater supplies. . Several groundwater recharge basins are operated throughout the Rio Hondo Watershed. This includes the Rio Hondo Coastal Basin Spreading Basins (Rio Hondo Spreading Grounds) located south of the Whittier Narrows, the largest and most productive spreading grounds in Los Angeles County, as well as

other groundwater recharge basins at Eaton Canyon, Big Santa Anita, and Peck Road Water Conservation Park.. The County of Los Angeles Department of Public Works (LACDPW) has engineered channels to divert water from the San Gabriel River to the Rio Hondo River, enabling it to take full advantage of these productive resources.

These many recharge basins were developed to help replenish groundwater supplies. These facilities help compensate for the loss of natural percolation throughout the watershed due to the pervasive spread of impermeable surfaces such as buildings, parking lots and other forms of urban sprawl.. These basins were constructed per the Los Angeles County Flood Control Act and are legally mandated.

As a result of these groundwater recharge activities in the unlined reaches of the watershed, the amount of water flow in the Rio Hondo that reaches the Los Angeles River is minimal during the dry season. Flow from the Rio Hondo is only expected to reach the Los Angeles River during rain events when the spreading facilities are bypassed or when flows exceed recharge capacities.

Bosque del Rio Hondo stream

Images of the Rio Hondo

a.

b.

c.

a. Eaton Wash Overlook
b. Alhambra Wash at Rio Hondo Confluence
c. Rubio Canyon Homes

Channelized sections of the Rio Hondo

a.

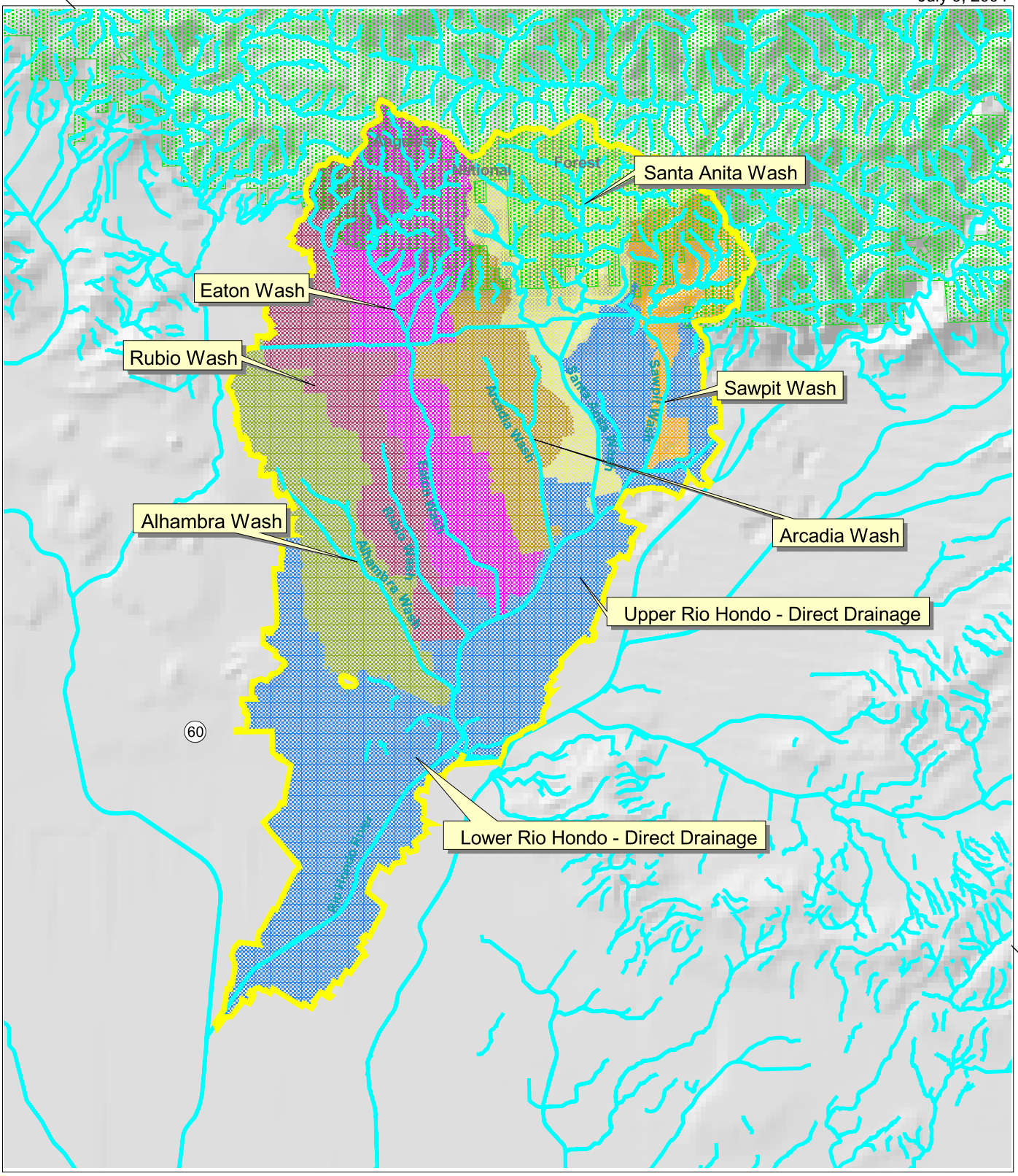
b.

a. Rio Hondo Downstream at Arcadia Wash
b. Rio Hondo at Slauson looking north

Rio Hondo River Watershed Management Plan

Main Subwatersheds

July 9, 2004



Rio Hondo River Watershed
Rivers, channels and streams.shp
Angeles National Forest
Rio Hondo Direct Drain
Alhambra Wash Watershed
Rubio Wash Watershed
Eaton Wash Watershed
Arcadia Wash Watershed
Santa Anita Wash Watershed
Sawpit Wash Watershed

Map created by the Rivers and Mountains Conservancy

3 0 3 Miles

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San Gabriel Valley Council of Governments

State of California – The Resources Agency
San Gabriel & Lower Los Angeles
Rivers & Mountains Conservancy
Belinda Faustinos, Executive Officer
Rivers & Mountains Conservancy
900 So. Fremont St., Annex 2nd Floor
Alhambra, California 91802
(626) 458-4315 ; Fax (626) 979-5363
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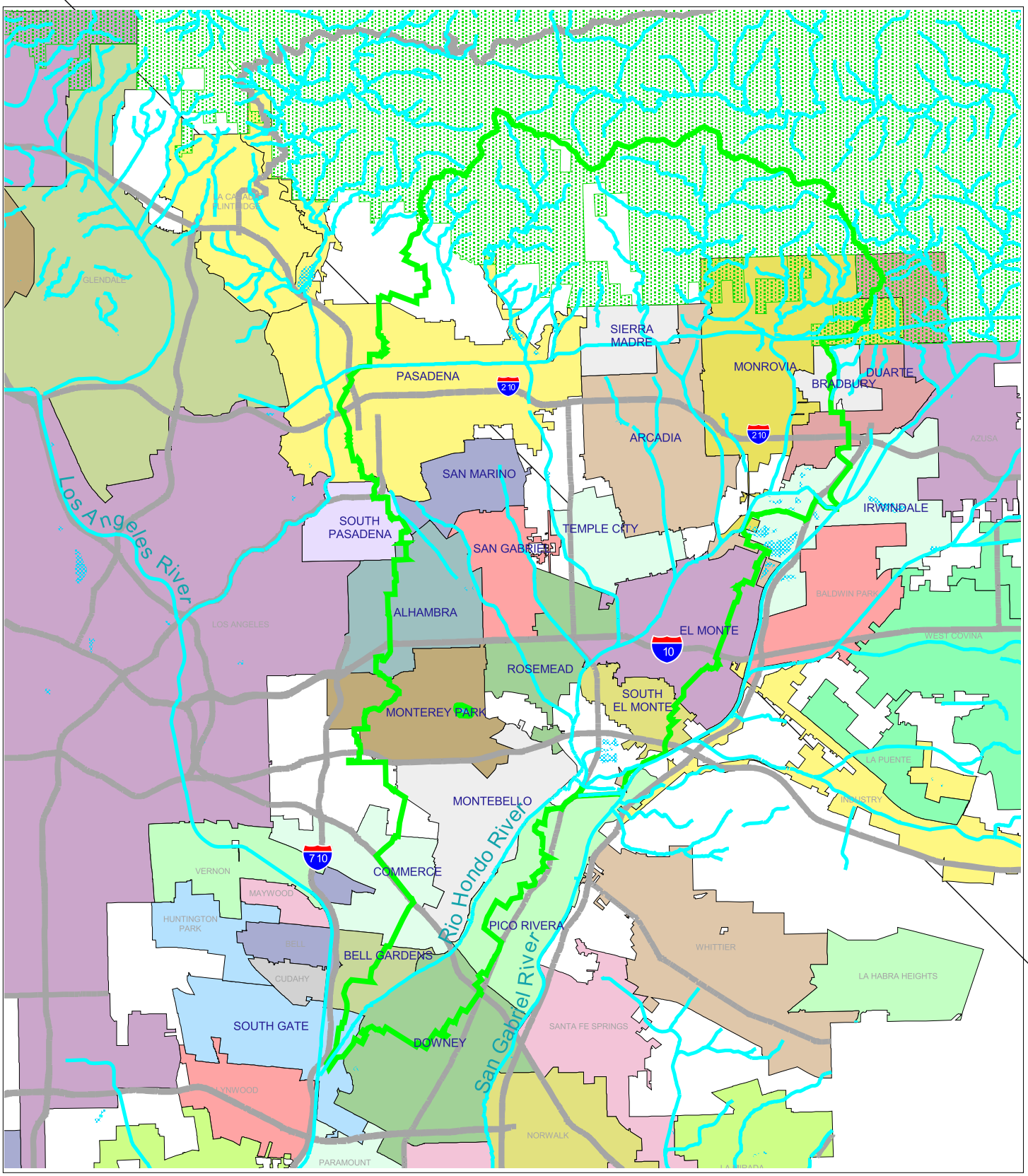
Rio Hondo Hydrology

State of California -- The Resources Agency

San Gabriel & Lower Los Angeles

Rivers & Mountains Conservancy



Los Angeles - Channels, Rivers, Streams
Rio Hondo River Watershed
Los Angeles - Freeways and Highways
Angeles National Forest
Los Angeles - Lakes and Reservoirs

Rio Hondo River Watershed City Boundaries

3 0 3 Miles

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1.5 Regulatory Context For Rio Hondo Watershed Management Plan

The Rio Hondo Watershed Management Plan is part of a much larger shift now taking place nationwide in how communities approach water quality improvement. Since 1972 when the U.S. Congress passed the Clean Water Act (CWA), most efforts at improving water quality focused on regulating pollutant discharges from sewers, factory pipes, construction sites, and other end-of-pipe "point sources." (See insert for overview of water quality regulatory tools) During this period, the National Pollutant Discharge Elimination System (NPDES) program served as the primary regulatory framework for pollutant discharges. Under this program significant progress was made in cleaning up rivers, streams, lakes, and other water bodies, but it has not achieved all the required water quality standards. Most point sources are now highly regulated. During the 1990's it became increasingly clear that it would not be possible to generate further significant improvements in water quality by continuing an exclusive focus on point sources.

In recent years another approach for water quality improvement has been receiving increased attention. It focuses on all water pollution sources and not just those that can be easily traced to specific, discrete sources. Instead this watershed-based approach also encompasses polluted water runoff emanating from countless, diverse non-point sources within a watershed that are very hard to track much less to control by traditional means. Although this approach to target pollution reduction from all sources in a watershed, known as Total Maximum Daily Loads (or TMDLs) was an original element of the Clean Water Act, it did not receive much attention during the first few decades in which the CWA was in effect. The extent to which TMDLs are required varies depending upon the degree of progress still needed to achieve local water quality standards.

As part of their comprehensive water quality improvement programs, states are required to establish specific quality standards for their lakes, rivers, streams and other water bodies depending on the "beneficial uses" of that water body. In California there are up to 24 potential beneficial uses that may be designated, including groundwater recharge, municipal and domestic water supply, water contact recreation, and multiple habitat-related uses. Depending upon the actual or potential beneficial uses that exist for a water body, these will determine the water quality standards that are applied to that water body.

If an assessment of the water body determines that it is not achieving water quality standards under traditional point source controls, it is listed as an impaired water body under Section 303(d) of the Clean Water Act. The TMDL establishes a pollutant watershed budget, defining the maximum amount of pollutants that can be received by the water body and still meet its water quality objectives. If the sum of allowable pollutants from both point and non-point sources exceeds this maximum amount, then a TMDL implementation (or clean-up) plan is required.

The effort to address non-point source pollution via TMDLs encourages a watershed-wide approach involving multiple stakeholders implementing cost-effective strategies that will assist cities with contributing to watershed sustainability while maintaining regulatory requirements. Since watershed management acknowledges the environmental impacts of a range of activities, it requires a broad, holistic perspective that will integrate goals and strategies beyond just those directly tied to improving water quality. These include programs designed to restore and enhance habitat, ensure water supply reliability, maintain flood protection, create open space, expand recreational resources, and public stewardship of the watershed as well as others depending upon the nature and characteristics of the watershed.

In the Basin Plan developed by the Los Angeles Regional Water Quality Control Board (RWQCB), several water bodies within the Rio Hondo Watershed are listed as impaired under Section 303(d) of the Clean Water Act. Many of the impairments that have been identified within water bodies located within the Rio Hondo watershed include among others trash, copper, lead, zinc, ammonia, pH, and coliform bacteria. Storm water runoff is known to be a major source of the pollution within the watershed. Although several water bodies located within the Rio Hondo watershed are impaired, much of its water is recharged directly into the groundwater, where it becomes a major source of the local water supply. Given these and other sensitive beneficial uses, the designated water quality standards for the Rio Hondo are high. Many local cities and water districts are very concerned about the stringency of the standards proposed for addressing pollution attributed to urban runoff and the costs associated with achieving these regulatory standards.

Many stakeholders of the Rio Hondo Watershed want to do all that is reasonably possible to achieve improved water quality, and still address other important community goals. For this reason local cities and other Rio Hondo stakeholders have actively joined together in a process to develop a consensus-based watershed management plan that can achieve measurable environmental improvements for the benefit of the entire region. Since the Rio Hondo Watershed is a sub-watershed of the larger Los Angeles River Watershed, then as a result of this cooperative effort all water quality improvements that are achieved within the Rio Hondo Watershed will also have a benefit to downstream Los Angeles River impairments.

Water Quality Regulations

Clean Water Act (CWA) is the principal federal law that governs pollution in the nation's lakes, rivers, and coastal waters. Originally enacted in 1972 as a series of amendments to the Federal Water Pollution Control Act of 1948 the Act was last amended in 1987. The overriding purpose of the CWA is to "restore and maintain the chemical, physical and biological integrity of the nation's waters." The statute employs a variety of regulatory and nonregulatory tools to eliminate the discharge of pollutants into the nation's waters and achieve water quality that is both "swimmable and fishable".

Porter-Cologne Water Quality Control Act is the principal state law that governs water protection efforts in California. Enacted in 1969, sections of the state law served as the basis for the federal Clean Water Act of 1972. Porter-Cologne establishes the State Water Resources Control Board and each of the nine Regional Water Quality Control Boards as the principal state agencies for coordinating and controlling water quality in California. The Regional Boards issues CWA NPDES permits (see below) to selected point-source discharges and either waste discharge requirements or conditional water quality certifications for other discharges.

National Pollutant Discharge Elimination System (NPDES) (Section 402 of CWA) – is the Clean Water Act's primary point source control program. This permit program controls water pollution by regulating point sources that discharge pollutants into the "waters of the United States." The latter is defined to include rivers, lakes, streams, ponds, and wetlands that are, or could be, used in interstate commerce. In response to 1987 Amendments to the CWA, the EPA broadened the focus beyond point source discharges by developing a two-phased NPDES permit program to regulate contaminated storm water (non-point source) discharges.

Nonpoint Source Program (Section 319 of CWA) – provides grants to states, tribes, and territories for the development and implementation of nonpoint source (NPS) management programs. NPS represents the most significant source of water pollution in the country. Section 319 funds can be used for the development and implementation of TMDLs in watersheds where nonpoint sources are a substantial contributor of loadings of the pollutant(s) causing impairment.

Water Quality Standards (Section 303 of CWA) – requires that states establish ambient water quality standards for water bodies, consisting of the beneficial use or uses of a water body (e.g. recreation, public water supply, etc.), and the water quality criteria necessary to protect the use or uses. **Section 303(d)** requires states to identify waters that are impaired by pollution, even after application of pollution controls. For those waters states must establish TMDLs (as discussed above) to ensure that water quality standards can be achieved.

Water Quality Standards Certification (Section 401 of CWA) – requires that before issuing a license or permit that may result in any discharge to waters of the United States, a federal agency must obtain from the state in which the proposed project is located a certification that that the discharge is consistent with the CWA, including State Water Quality Standards. In California, the Regional Water Quality Control Boards, with oversight from the State Water Quality Control Board, are responsible for reviewing Section 401 applications. A Section 401 Water Quality Certification must be issued before the Corps will issue a final Section 404 permit.

Section 404 of the CWA – regulates the discharge of dredged or fill materials into the waters of the United States, including wetlands. Such discharges are prohibited unless authorized by a permit from the U.S. Army Corps of Engineers.

Sections 1600 to 1616 of California Fish and Game Code – requires any person, state, or local government agency or public utility to notify the California Department of Fish and Game before beginning any activity that will substantially modify a river, stream, or lake. If is is determined that the activity could substantially adversely impact an existing fish and wildlife resource, a Lake or Streambed Alteration Agreement is required.

Rivers and Harbors Act of 1899 – prohibits the creation of any obstruction to the navigable capacity of any waters of the United States without specific approval of the U.S. Army Corps of Engineers. Section 10 permits are required along with permits issues under Section 404 of the CWA when the affected wetlands are defined as navigable.

1.6 Summary Of Rio Hondo Watershed Planning Process

One of the defining characteristics of the Rio Hondo Watershed, and a critical aspect in its future "restoration" is the current overall lack of awareness about the watershed. Most members of the public have only recently begun to recognize the presence of the Los Angeles and San Gabriel Rivers, and are even less cognizant of smaller tributaries like the Rio Hondo. The challenge for the Rio Hondo is the need to develop a constituency around something that most people do not even know exists, or if they are aware of it have only a vague sense of its location, size, and character.

The development of this watershed plan presented the first opportunity to bring people together to focus on the Rio Hondo watershed as a distinct geographic entity that requires their recognition, understanding, and active support. For this reason, much of the planning process focused on building awareness among those key organizations and individuals in a position to affect the future direction of the watershed; creating the firm foundation for a constituency that can later implement plan recommendations and manage the watershed.

This watershed planning process operated on two parallel but interrelated tracks. The first track was facilitating a dialogue among key stakeholders within the watershed. This was needed to establish the watershed as a necessary focus of public attention, to share divergent perspectives, to create understanding among different organizations, and to chart a course for future change. The second track within the watershed planning process involved compiling existing data to pull together what could be learned about the watershed and to use that information to inform the more public aspect of the endeavor.

Planning Process Participants

A Project Management Team (PMT) was created to ensure the effective and efficient implementation of the watershed management planning project. The PMT served as a key resource source for the planning process, providing policy guidance, access to relevant historical and GIS data, as well as providing essential technical support during key steps in the planning process. It consisted of key staff from the:

- San Gabriel Valley Council of Governments (SGVCOG);
- San Gabriel and Lower Los Angeles River and Mountains Conservancy (RMC);

- Los Angeles Regional Water Quality Control Board;
- County of Los Angeles Department of Public Works (LACDPW); and
- Moore, Iacofano, Goltsman, Inc. (MIG) consultant team, including Phillip Williams and Associates (PWA) and the Chambers Group, Inc.

A Policy Advisory Committee (PAC) consisting of representatives from key stakeholders in the Rio Hondo Watershed was established as the principal instrument for carrying out the watershed planning process. The PAC met periodically and provided a forum for divergent interests to share their perspectives, forge a common vision for the future of the watershed, and to identify the strategies and actions that will be required to make that vision a reality. In addition to the full meetings of the PAC, two subcommittees were formed; one to address water quality and the second to explore in more depth project opportunities identified during full meetings of the PAC.

Invitations to join the PAC were sent out to a cross-section of stakeholders throughout the watershed. The preliminary list of stakeholders included all 22 cities located within the watershed, water agencies, federal and state agencies, county and regional groups, non-profit groups, and elected officials at the federal and state level. (See Appendix for a list of all stakeholder organizations that received an invitation) Thirty-four organizations responded to the invitation to participate in the PAC and together they provided a representative cross-section of stakeholder interest in the Rio Hondo Watershed.

RIO HONDO POLICY ADVISORY COMMITTEE PARTICIPANTS

Local Governments

- City of Alhambra
- City of Arcadia
- City of Bell Gardens
- City of Duarte
- City of Downey
- City of Irwindale
- City of Monrovia
- City of Pasadena
- City of Pico Rivera
- City of Rosemead
- City of San Gabriel
- City of San Marino
- City of Sierra Madre
- City of South Gate
- City of South Pasadena

County/Regional Groups

- Los Angeles County Sanitation District
- County of Los Angeles Department of Public Works
- County of Los Angeles Department of Parks and Recreation
- San Gabriel Valley Council of Governments

State Agencies

- Regional Water Quality Control Board – Los Angeles
- San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC)

Federal Agencies

- US Army Corp of Engineers
- US Forest Service
- US National Park Service

Water Agencies

- Upper San Gabriel Valley Municipal Water District
- Water Replenishment District of Southern California

Private and Non-Profit Groups

- Amigos de los Rios
- Los Angeles and San Gabriel Rivers Watershed Council
- North East Trees
- San Gabriel Mountains Regional Conservancy
- Sierra Club

Staff of Elected Officials

- Congresswoman Hilda Solis
- Senator Gloria Romero
- Senator Jack Scott

Existing Conditions Assessment

Water quality emerged as the most significant issue to be tackled by the PAC during the early phases of the project. Representatives from many of the cities that participated in the PAC expressed concerns that compliance with current storm water permit requirements and other water quality improvement regulations would require very costly solutions that local city budgets could not handle. They envisioned the watershed plan as a way to make a strong case for more cost-effective watershed-wide solutions to be approved by the Regional Board as a reasonable way to achieve local water quality standards. These PAC members also needed assurance that water quality sampling undertaken as part of the watershed planning process would not inadvertently impose additional 303(d) listings in the watershed.

Since existing water quality data for the Rio Hondo was needed to assess future progress, a sampling event was carried out in August 2003. A water quality sampling methodology was reviewed and approved by the PAC to ensure its objectivity and reliability. This was considered an essential first step in developing a watershed plan trusted by all involved in the process. The sampling event was carried out by staff from LACDPW at nine different locations in the watershed. An overall analysis of water quality in the Rio Hondo Watershed was subsequently prepared which integrated information from the water quality sampling event with pre-existing historical data (*see Appendix for the Water Quality Sampling Methodology.)*

Following the sampling event, the focus of the watershed planning process broadened to encompass other issues and topics. Preliminary observations of existing conditions in the watershed were made using currently available data and visits to a few selected sites of interest in the watershed. Maps were generated from a GIS database which examined the watershed from multiple perspectives, including flood control, water supply, water quality, recreation, open space, habitat, and land use. In conjunction with information provided by the site visits and input from stakeholders, these maps provide a broad initial view of existing conditions as well as potential opportunities for improvement in the watershed. However, in the future a more thorough assessment of the Rio Hondo watershed, including GIS analysis and modeling, on the ground mapping, biological mapping and assessment, and hydrologic/geomorphologic assessment, will need to be carried out in the next phase of the watershed planning process.

Initial Proposed Solutions

Concurrent with the existing conditions assessment, the consultant team conducted a series of six focus groups in the late summer 2003. The purpose of the focus groups was to hear from a wide range of stakeholder perspectives on strategic issues

impacting the watershed. Each focus group was set up for a specific set of stakeholders, i.e. affinity groups. Despite the different composition of the focus groups, certain ideas and themes kept recurring suggesting the potential for an emerging consensus around which the watershed plan could be developed *(See Focus Group Summary in the Appendix*) Most significantly, each focus group suggested the same three sites – Peck Road Water Conservation Park, Whittier Narrows Area, and the Rio Hondo Spreading Grounds - as ideal locations for the development of a variety of multi-objective projects that would benefit the overall watershed. These strategic locations reflected the shared desire for a collaborative, watershed-wide approach that encompassed both inter-jurisdictional and local, sub-watershed projects working together to achieve the overall goals of the watershed plan.

The multi-project potential of these three sites was further explored in subsequent meetings of the PAC, as well as its "Solutions Subcommittee." As discussions continued, the initial consensus around these three sites became more complex. Some members of the PAC believed these three sites should be core elements in the final plan, as storm water could be treated at these locations in a regional, consolidated manner. They believed this would be the most cost-effective approach, but it would require a degree of regulatory flexibility from the Regional Board.

Other members of the PAC observed that an exclusive focus on these three project areas, by failing to develop significant opportunities for improvement elsewhere in the watershed, would prove insufficient to achieve the goal of a healthy watershed. While agreeing that there was an opportunity to do multi-benefit projects in these locations, the second group believed a watershed plan that focused primarily at key sites near confluences and where there is ample open space would be fundamentally flawed. Regional solutions implemented at these three sites would allow all of the streams and waterways above these locations to remain impaired. Any restoration activities planned in the upper watershed would continue to be subject to degradation and poor watershed health, conflicting with the holistic vision of a healthy watershed. Smaller projects scattered at local sub-sub-watershed sites throughout the watershed and in every city would be far more feasible and would more closely mimic the natural functions of a fully functioning, healthy watershed.

To resolve these differences, it was suggested that a detailed menu of solutions be developed that could address the needs of the overall watershed.

Public Participation

A high level of stakeholder participation in the watershed planning process emerged through both the meetings of the PAC and its two subcommittees – Water Quality, and Solutions. This represents a significant milestone in the development of a

constituency working on behalf of the Rio Hondo Watershed, as these and other stakeholders are the ones who will ultimately share responsibility for raising public awareness.

In November 2003, in an effort to build further awareness about the Rio Hondo Watershed and development of the watershed plan, a public forum was held at the Garvey Community Center in the City of Rosemead. The purpose of the public forum was to generate public feedback on initial findings and plan recommendations, which would be used to further develop the draft watershed plan. Although well-publicized, low attendance at the forum re-emphasized the general lack of public awareness about the Rio Hondo Watershed and its importance.

Raising public awareness about the watershed through outreach programs and volunteer activities will be a key task coming out of the watershed plan. The stakeholders on the PAC who participated in the watershed planning process represent the core of a new constituency that can work on behalf of the watershed. That constituency barely existed before this planning process began. Through further watershed planning and implementation, there is an opportunity to expand beyond this core constituency to include more of the general public.

Next Steps

The most significant and also essential outcome of the Rio Hondo watershed planning process was successfully establishing a level of trust among the cities and other stakeholders who participated in both the PAC and subcommittee meetings. This primarily came about through efforts of the PAC to devise a water quality sampling methodology that would satisfy the needs and concern of all the stakeholders, and also by directly addressing the overall water quality issue. The presence of a representative from the Regional Board during these sessions, clarifying issues raised by the PAC, helped to foster a more open dialogue. This further demonstrated the essential need for consistent communication between all involved interests, a willingness to be flexible, and transparency in all transactions.

This initial success allowed the stakeholder group to then focus on the watershed as a whole, placing them in a better position to recognize other potential opportunities to collaborate on behalf of the entire watershed. Hence, the shared excitement and interest in developing multi-objective projects throughout the watershed and at the three locations independently identified by so many of the stakeholders as being of strategic importance to the watershed.

Much more work remains to sustain and strengthen this trust among the stakeholders of the Rio Hondo watershed. In the short-term, a way must be found that will allow the PAC to continue to meet on a regular, on-going basis for the purpose of

developing and refining the project proposals and recommendations contained in this initial watershed plan. This continued dialogue among cities and other constituents of the watershed can lay the necessary foundation for a more formal institutional framework that is willing to take the lead in pushing for progress by implementing this plan.

Confluence of the Rio Hondo and the Los Angeles River.

1.7 Relationship To Other River And Watershed Planning Studies

Efforts to restore the Rio Hondo Watershed should be undertaken as part of a broader coordinated effort involving other watershed and sub-watershed management plans, as well as river corridor master plans for the Los Angeles and San Gabriel Rivers. For this reason, the Rio Hondo Watershed Management Plan incorporates the Guiding Principles of *Common Ground from the Mountains to the Sea*, *the Watershed and Open Space Plan for the San Gabriel and Los Angeles Rivers*, developed by the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC), with the support of the Santa Monica Mountains Conservancy (SMMC). *Common Ground* is intended to provide guiding principles for planning efforts, offer support, and inform planning efforts by other public agencies, cities, and community groups. This includes ongoing and pending sub-watershed plans, such as this one developed for the Rio Hondo. *(See Insert – Common Ground Guiding Principles)*

Common Ground Guiding Principles

- **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

- **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 and 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

Given the strategic location of the Rio Hondo as a link between the Los Angeles and San Gabriel Rivers, the Watershed Management Plan developed for the Rio Hondo must draw upon and support those larger related efforts. By establishing clear goals and priorities, the Rio Hondo Watershed Plan will provide stakeholders the means to coordinate their efforts with stakeholders working in other sub-watersheds and along the main river corridors and tributaries of the Los Angeles and San Gabriel Rivers.

For instance, although there are differences between river corridor plans and watershed plans, they should be designed to work together to achieve their shared and linked goals. River plans are more focused on the relatively narrow corridor of land through which the river flows. Such plans will strive to form working partnerships among all the cities and other public agencies that lie along the river. In contrast, a watershed plan will encompass all the jurisdictions that lie within a watershed, and not just those located along the riverbanks. As a watershed includes all the land area that drains into a river, benefits stemming from the implementation of a watershed plan

will positively impact efforts to improve the river that forms the main stem of a watershed. In the case of the Rio Hondo Watershed, however, there is no distinct plan for the corridor of the Rio Hondo. Instead, efforts focused on the Rio Hondo corridor are most likely to be an integral subset of the Rio Hondo Watershed Management Plan. However, since the Rio Hondo is a tributary of the Los Angeles River, benefits stemming from the Rio Hondo Watershed are likely to benefit the planning efforts of the Los Angeles River Master Plan (see below).

In addition to *Common Ground*, the following is a summary of other recent and ongoing planning studies that can serve as a resource for the Rio Hondo Watershed Management Program.

Los Angeles River Master Plan

County of Los Angeles Department of Public Works, June 1996

The Los Angeles River Master Plan identifies issues specific to the corridors of the Los Angeles River and Tujunga Wash, articulates a vision for the future of the river corridors, and makes specific recommendations on how to make that vision a reality.

San Gabriel River Corridor Master Plan

LA County Department of Public Works, Projected Adoption - July 2004

The Master Plan is a multi-objective plan for the San Gabriel River, integrating goals of habitat, recreation, and open space while also maintaining and enhancing flood protection, water supply, and water quality.

Puente Hills Corridor: Greenspace Connectivity for Wildlife and People

California State Polytechnic University Pomona, June 1997

This study explored the issues facing the development of a habitat corridor within the context of a regional greenspace system

Reconnecting the San Gabriel Valley: A Planning Approach for the Creation of Interconnected Urban Wildlife Corridor Networks

California State Polytechnic University Pomona, June 2000

This study, prepared for the San Gabriel Mountains Regional Conservancy, presents recommendations for creating habitat networks within the San Gabriel Valley to support wildlife connectivity

Los Angeles and San Gabriel Rivers Watershed Feasibility Study

US Army Corps of Engineers, July 2001

The Army Corp of Engineers and LADCPW undertook this study as a partnership "to gather and evaluate available information, to look for improvements for watershed improvement, and to initiate thinking on a future integrated Watershed Management Plan."

San Gabriel Confluence Park: A River Based Urban Nature Network

California State Polytechnic University Pomona, June 2000

This planning study was prepared for the Sierra Club, and examines the potential for an 8-mile long open space corridor along both the Rio Hondo and San Gabriel Rivers above the Whittier Narrows.

Forest Master Plan Update

USDA Forest Service-Angeles National Forest, Expected Completion - 2004

The US Forest Service is updating its Forest Plans for Southern California, including the Angeles National Forest. The Forest Plans set policies for the types of activities and special designations that can occur within each forest. The headwaters of the Rio Hondo are within the Angeles National Forest.

San Gabriel River Watershed Special Resource Study

US Department of the Interior, Expected Completion - 2007

Legislation enacted in July 2003 directed the Secretary of the Interior to conduct a special resource study of the San Gabriel River and sections of the San Gabriel Mountains, to consider whether any portion of the area should be added to the national park system

Rivers/Tributaries Parkway Plan

San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy

Building from the *Common Ground* planning report, RMC is developing a rivers and tributaries parkway plan. This effort will largely draw upon the relevant portions of the San Gabriel River Master Plan to avoid duplicative efforts and expense.

Watershed Management Plan for the San Gabriel River Above Whittier Narrows

San Gabriel Mountains Regional Conservancy

This planning effort focuses on the upper half of the San Gabriel River Watershed, including three important sub-watersheds: Upper San Gabriel River, Walnut Creek, and San Jose Creek.

San Gabriel River Watershed Non-Point Source Pollution Reduction Program

Upper San Gabriel Municipal Water District

This program will address non-point source pollution issues such as trash, nutrients and coliform. It will focus on two locations in the Angeles National Forest - San Gabriel Canyon and Chantry Flats

Water Quality Control Plan: Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties

Los Angeles Regional Water Quality Control Board

This plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. The Basin Plan designates beneficial uses for surface and groundwaters, sets narrative and numerical objectives, and describes implementation programs to protect all waters in the Region.

Watershed Management Initiative (WMI) Chapter – December 2001

Los Angeles Regional Water Quality Control Board

The WMI is designed to integrate various surface and ground water regulatory programs while promoting cooperative, collaborative efforts within a watershed. It is also designed to focus limited resources on key issues and use sound science.

Southern California Wetlands Recovery Project

California Coastal Conservancy

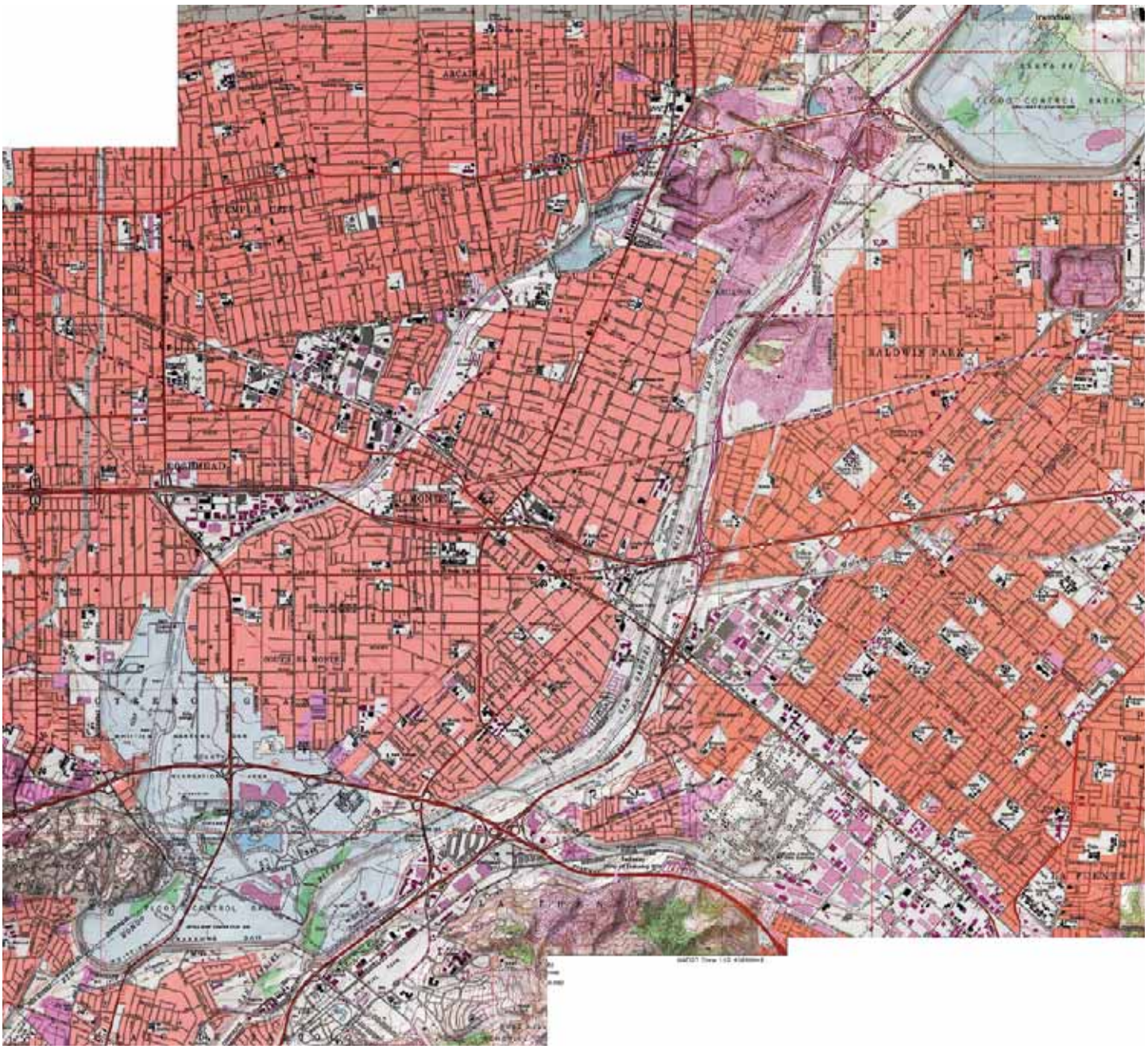
A partnership of public agencies working cooperatively to acquire, restore and enhance coastal wetlands between Point Conception and the border with Mexico. The goal is to develop and implement a regional prioritization plan that will accelerate acquisition and restoration.

Sediment Management Plan

County of Los Angeles Department of Public Works and California State Polytechnic University Pomona

Sedimentation deposits at the three dams in the upper San Gabriel River have drastically reduced the capacity of these reservoirs. This study will evaluate the potential adverse effects resulting from the current sluicing method for removing sediments and assess the feasibility of alternate sediment management plans.

USGS Map of Rio Hondo & San Gabriel Rivers upstream of Whittier Narrows



Map of Rio Hondo to South of Whittier Narrows
(Courtesy of Rivers and Mountains Conservancy)

1.8 PLAN ORGANIZATION

The Rio Hondo Watershed Management Plan is organized into five chapters and Appendices:

Chapter I: Introduction

The introduction preceding this page provides background information, explains the purpose of the Plan, discusses reason for organizing around watersheds, and provides an introductory profile of the Rio Hondo Watershed. It discusses the water quality regulatory environment and how it has recently encouraged the development of watershed management plans. A summary of the planning process is also presented. This chapter concludes by discussing the relationship between the Rio Hondo Watershed Management Plan and other nearby river and watershed planning studies.

Chapter II: Existing Watershed Conditions

This chapter discusses the current context within which the Watershed Management Plan will be implemented. This includes a review of the existing conditions within the broad topic areas of water, land, social context, and political context.

Chapter III: Watershed Management Plan Framework

This chapter presents the overall vision for the Rio Hondo Watershed that emerged from the planning process, the goals that will support that Vision, and the key strategies identified by the PAC for achieving them.

Chapter IV: Implementation Strategy / Action Plan

The Implementation Strategy addresses the need for an ongoing watershed consortium to oversee studies, funding, and watershed awareness in the community. Three priority projects at Peck Water Conservation Park, Whittier Narrows, and Rio Hondo Spreading Grounds are emphasized. A detailed list of preliminary projects that are supported by the PAC, is presented to carry out strategies presented in Chapter III. Additional opportunities for improvement are also identified.

Chapter V: Bibliography and Glossary

References and commonly used watershed terms are presented in this chapter.

Appendices

The appendices provide technical background information on water quality, summaries of all Rio Hondo Watershed planning meetings and focus groups.

CHAPTER II – EXISTING WATERSHED CONDITIONS

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2.1 INTRODUCTION

The interwoven natural, built and social fabric of the Rio Hondo Watershed creates a complex planning situation. To understand the watershed, each of the different elements must be examined individually. This includes the land uses and water infrastructure as well as the political and social context. Ultimately, all aspects of the watershed, both physical and social, will need to be integrated through plans, projects, policies and programs to truly restore watershed health.

Dialog about watershed issues is improved if that dialog is informed by accurate knowledge of existing conditions in the watershed and the factors that over time shaped those conditions.

Although the Rio Hondo is a major tributary of the Los Angeles River, its channel once formed the main bed of the San Gabriel River. This is a legacy of its complicated relationship between the Los Angeles and San Gabriel Rivers. Historically, both the Los Angeles and San Gabriel Rivers were wide, shallow rivers consisting of a braided series of channels that utilized a large flood plain to disperse sediment and slow velocity. This was an unpredictable river system that, in large storm events, would often create new channels. The San Gabriel and Los Angeles Rivers would have periodically intermingled as a result of this dynamic. Over time, the river system would return to a natural equilibrium where sediment deposition and erosion were balanced.

Today's Rio Hondo Watershed is the result of change from natural processes combined with the local structure of the landscape. In general, human influence on the landscape of the Rio Hondo has attempted to stabilize the river's naturally braided tendencies, as well as the inherently dynamic conditions common to all river systems. This trend toward human engineered stability combined with imported inputs to the watershed and river system from urban processes and natural resource use has led to the many challenges that are detailed below – including: water supply availability and reduced opportunities for natural percolation; reduced water quality in streams and groundwater basins; habitat decline; and recreation-poor communities.

2.2 WATER

The Rio Hondo is one of the major tributaries of the Los Angeles River Watershed. All runoff from the Rio Hondo is only a dozen miles from the ocean. The Rio Hondo is also a "distributary" to the San Gabriel River for water conservation purposes. Three channels bring water from the San Gabriel to the Rio Hondo to be percolated into the groundwater at spreading facilities in the watershed. Historically, the Rio Hondo was intertwined with both the Los Angeles and San Gabriel Rivers. Essentially, the Rio Hondo was an integral part of the stream braiding within the floodplain for both rivers, sometimes miles wide. Once the river was contained in flood control channels, its role as a tributary to the Los Angeles River became more clearly defined.

The Rio Hondo serves several key roles for Southern California. The first is to protect residents from flood hazards. During flood events, if left entirely in its natural state, the Rio Hondo and its tributaries would tend to meander throughout the watershed. The flood control infrastructure eliminates this natural tendency; allowing residences and businesses to be built adjacent to the Rio Hondo, maximizing available land use. Having succeeded in this capacity, the flood control system has been adapted to serving additional roles. A complex system initially constructed for the single purpose of flood control, the storm water management infrastructure now accommodates recreational improvements as well as native landscaping along those corridors that can provide habitat.

The creation of this storm water management system was a tremendous engineering feat that made possible much of the growth and development of Southern California. Despite this achievement, however, there have also been some unintended secondary negative effects, such as the destruction of habitat. In addition, following some storm events, the flood control system can spread the negative effects of water degradation created by existing upstream land uses by all too quickly transporting pollutant loads to the ocean. Over the years LACDPW has striven to remedy and/or mitigate these and other negative impacts. . For instance, where the bottom of the river channel is encased in concrete, there is a loss of infiltration capacity. Together with the spread of impervious surfaces throughout the watershed, this effect had the potential to constrain another of the Rio Hondo's key roles, providing drinking water for millions of area residents. To compensate for this potential reduction of infiltration, spreading facilities were constructed, avoiding a loss of groundwater storage. Within the Rio Hondo Watershed are now some of the county's most productive local water conservation facilities, the Rio Hondo Spreading Grounds. These and other spreading

grounds within the watershed allow for urban runoff, imported water, and reclaimed water to be percolated to groundwater storage aquifers for future use.

While these spreading ground facilities were also developed as single-purpose facilities that at first did not allow for habitat and recreation, this is now changing. Recently completed and ongoing projects have provided within these facilities native landscaping and habitat, as well as recreational amenities, such as bike paths and rest areas. .

Recreational opportunities have also been afforded by the cool waters of the Rio Hondo, most particularly in the Whittier Narrows area, which offers a restful escape from the densely developed communities of the San Gabriel Valley. Unfortunately, these waters are currently not clean enough for safe body contact, although this does not discourage everyone from entering the waters. Finally, although the Rio Hondo provides critical habitat for aquatic species, this function has been compromised by the channelization of the river and its tributaries.

2.2.1 Flood Protection

Early communities established along the Rio Hondo and San Gabriel river systems were subject to periodic major flooding. Due to severe flooding, the founding Franciscan Missionaries of the original San Gabriel Mission were forced to move the mission site in 1775 after only four years at the original site (near where San Gabriel Boulevard now crosses the Rio Hondo River, in the city of Montebello). Major debris flows out of the canyons of the San Gabriel Mountains often accompanied these floods in the upper valley.

Flood control was discussed by Los Angeles County officials as early as 1893 to address the unpredictable, and often damaging, storm flow off the San Gabriel Mountains. Major storms in 1914 and 1916 led to the creation of the Los Angeles County Flood Control District and ultimately the implementation of flood control measures on the Rio Hondo and tributaries.

As urbanization has expanded within the watershed, increasing the percentage of impervious land, less storm runoff is able to infiltrate, increasing runoff rates and decreasing the time for storm runoff to reach the channels. In response to these increasing flows, the Army Corps of Engineers and the County of Los Angeles have provided protection to the communities along the river from flood damage to the extent possible. Over time, a series of dams, debris basins, and river channels were built within the Rio Hondo and its tributaries to protect against flood flows and sediment transport. The dams and detention basins are designed to decrease the peak

flood flow and to discharge the detained water at controlled release rates. The debris basins trap debris carried by floodwaters. Although engineered channels encase most of the Rio Hondo in concrete, four miles of the river stretching from South El Monte to Whittier Narrows retain natural unchannelized river banks, retaining the illusion of a still natural river system.

The channelization of all but four miles of the Rio Hondo - the engineered modification of the natural river channel by deepening, widening, or straightening and lining it with rock or concrete – has been the traditional flood control method. Concrete channels were constructed to handle increased runoff flow rates created by urban development within the watershed, particularly within the historic floodplain, and to convey this runoff away from properties that would otherwise be threatened. Given the current level and form of land use development in the watershed, natural systems in most areas would not be able to adequately convey design flood events away from threatened properties.

Although it has achieved these objectives, others view channelization as detrimental to the overall well-being of rivers and streams. By removing water more quickly from a channelized area, the faster flows can cause problems of erosion or flooding downstream. Channelization also eliminates suitable habitat. For instance, channelization, and associated maintenance practices required to provide the authorized level of flood protection, restrict the growth of riparian vegetation, eliminating a natural water quality filtering mechanism and reducing shade cover, which leads to increased stream water temperatures. This lowers the ability of water to carry oxygen, which can kill fish. For these reasons, alternative flood control methods that work with rather than against natural hydrologic functions of rivers and streams are being considered by some flood control agencies for possible use in the future. However, to ensure the functional viability of these alternative flood control designs, a reduction of incoming flows from substantial changes in upstream land use patterns would have to take place first.
The primary flood control structures within the Rio Hondo watershed include the following facilities:

- ***Eaton Wash Dam*** - Located on Eaton Wash, in the headwaters of the watershed. Contributing drainage area 12.4 mi2 and 956 AF capacity.
- ***Santa Anita Dam*** - Located in the headwaters of the Santa Anita Wash. Contributing drainage area is 10.8 mi^2 with 1,376 AF capacity.
- ***Sawpit Dam*** - Located in the headwaters of Sawpit Wash. Contributing drainage area of 3.2 mi^2 with 476 AF capacity.

- ***Peck Road Lake*** - Located at the confluence of Santa Anita Wash and Sawpit Wash in former quarry pits. Capacity of 3,347 AF. The two tributary washes combine in the lake and the outflow is renamed the Rio Hondo. An outflow pipe regulates discharge flow from the lake up to spillway elevation, enabling the large lake area to provide some flood control, in addition to ground water recharge.
- ***Whittier Narrows Dam*** - The dam is owned by the U.S. Army Corps of Engineers and captures water flowing within the San Gabriel River and Rio Hondo. Inflow is managed such that if the inflow exceeds the groundwater recharge capacity of the Rio Hondo Spreading Grounds, the San Gabriel Coastal Basin Spreading Grounds, and the San Gabriel River channel, the water is stored in a water conservation pool. Storage capacity behind the dam is 67,060 acre-ft.

Recently, the Corps, with County sponsorship, completed the Los Angeles County Drainage Area (LACDA) Project, modifying structures and improving levees along the Rio Hondo (as well as the lower Los Angeles River and a downstream reach of Compton Creek) to accommodate the 100-year flood event. As a result of this project, 133-year storm flood protection was restored to 500,000 residents, 177,000 structures, and 14 communities in Los Angeles County. Flood insurance requirements were relieved following successful completion of the project, eliminating $32 million annually in mandatory flood insurance premiums.

Along with the dams, the existing storm drain system is designed to capture and convey stormwater through a network of gutters, drainage structures, and underground pipes. These systems are designed to rapidly transport stormwater from urban areas to downstream outfalls, eventually entering the Rio Hondo. Six major tributaries or washes flow into the Rio Hondo, making up the 142 square mile watershed including Sawpit, Santa Anita, Arcadia, Eaton, Rubio and Alhambra Washes. The location of many of the storm drains mimics the historic location of Rio Hondo tributaries, as topography dictates surface flow direction.

Our current storm drain system was initially designed and developed to serve a single-purpose: to swiftly carry storm water away from urban areas out to the ocean. Over time, and without having to make any fundamental changes in the manner in which this primary function is carried out, this system has been modified to include recreational corridors and, in some cases, habitat value along portions of the channel with native landscaped banks. To an extent, efforts such as these have mitigated some of the problems created by channelization, while still maintaining the required design performance levels of the flood control system. However, the underlying single-

purpose nature of the current storm drain system, and what some perceive as the problems and risks associated with it, remains unchanged.

Achieving a multi-objective flood control system that instead incorporates non-traditional technical solutions blending ecology and engineering will require increased stakeholder education regarding the benefits of these types of solutions. To work toward this end, smaller-scale storm water projects deployed throughout the watershed, including those that mimic natural drainage functions, would first be required in order to significantly reduceg storm water volumes and improvewater quality before flows reach the principal tributaries and main channel of the Rio Hondo. As a first step, research by cities and other stakeholders can be used to assess the true orientation of each tributary, from which storm drains in each jurisdiction that follow the natural drainage patterns of the watershed can then be identified.

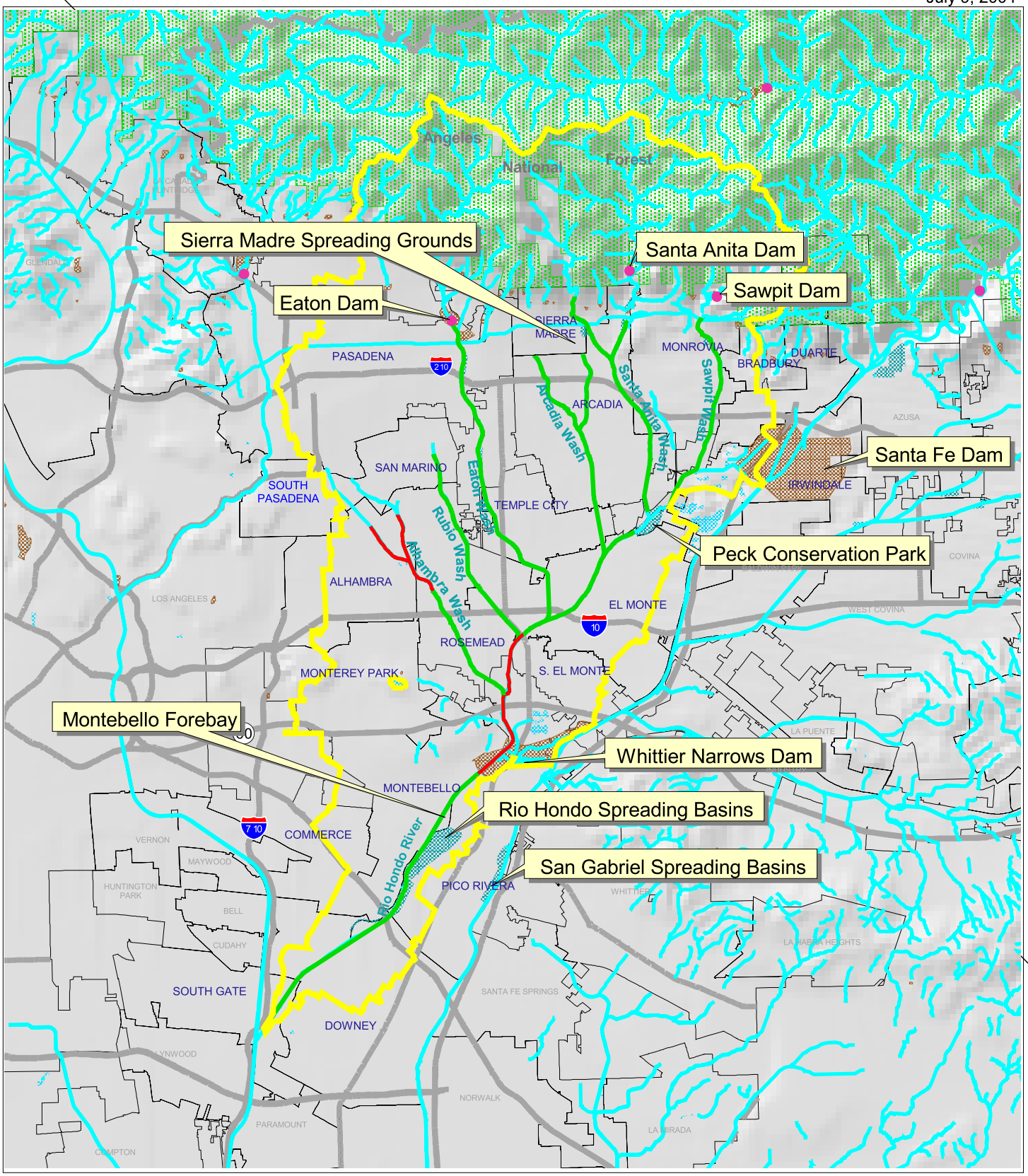
Findings

- Any measures undertaken by the Rio Hondo Watershed Management Plan must maintain or improve flood protection
- The present state of impermeability in the watershed increases flood hazards by increasing the frequency and intensity of floods
- Natural habitat has been severely impaired by traditional flood control methods
- There is a community perception that flood control means only flood channels and concrete; concrete channels may give a false sense of security
- There is a need for more local flood control projects that incorporate naturalization
- Opportunities to capture stormwater for groundwater recharge are diminished by the efficiencies of concrete tributaries and channels designed to rapidly carry stormwater out to sea. ,
- Although water impairments are created by upstream land uses, the concrete tributaries and channels serve as all too efficient mechanisms for transporting those pollutant loads to the ocean.
- Concrete tributaries and channels also greatly diminish the ability of the river channel to support habitat.

Rio Hondo River Watershed Management Plan

Flood Control Structures

July 9, 2004



Map created by the Rivers and Mountains Conservancy

- Rio Hondo River Watershed
- Dams

Major Channels
- LACDPW
- US ARMY CORPS
- Rivers, channels and streams.shp
- Debris Basins
- Los Angeles - Lakes and Reservoirs
- Spreading Grounds
- Los Angeles - Freeways and Highways
- Angeles National Forest

3 0 3 Miles

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San Gabriel Valley Council of Governments

State of California – The Resources Agency
San Gabriel & Lower Los Angeles
Rivers & Mountains Conservancy
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Rio Hondo Hydrology

a.

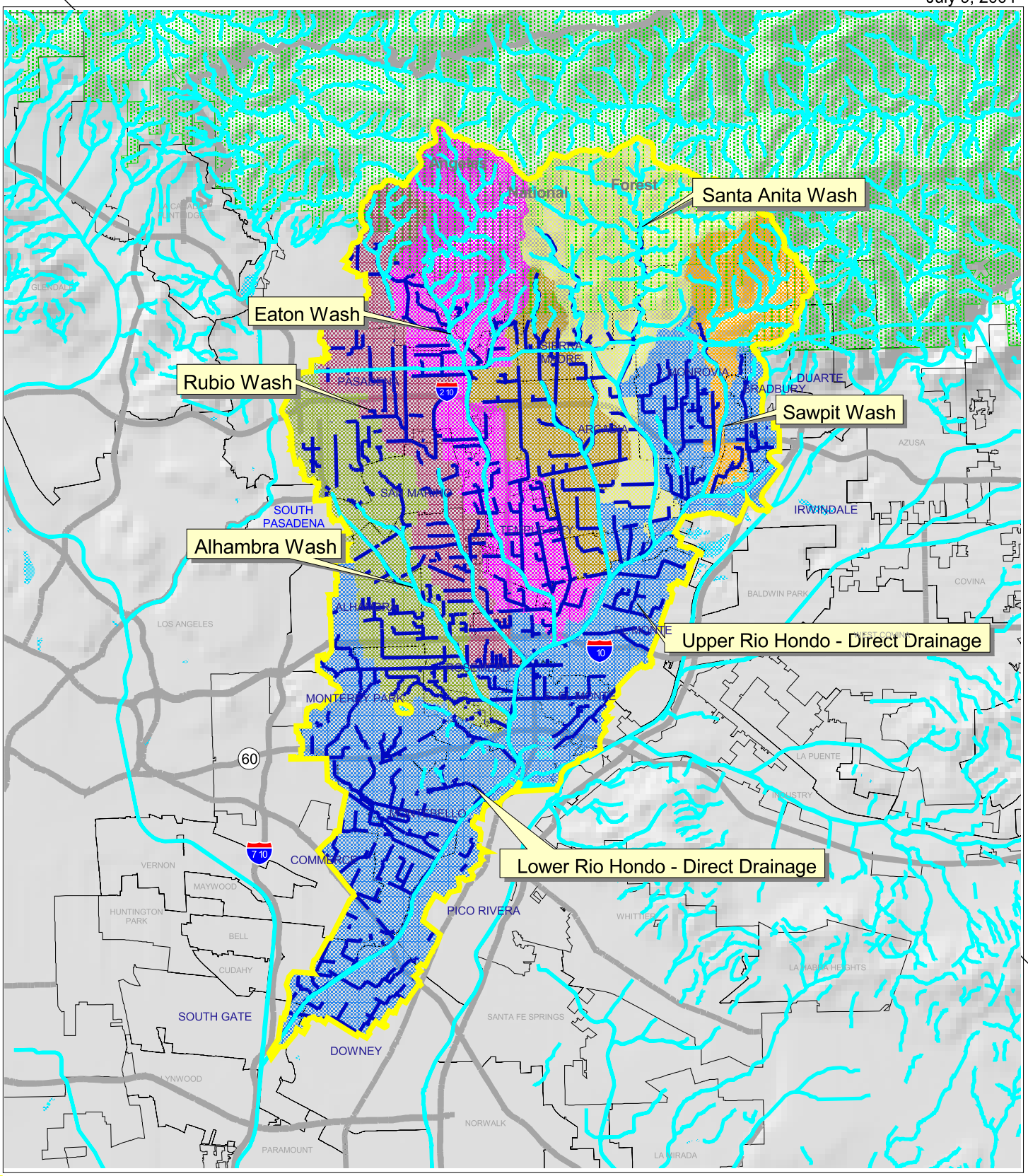
b.

a. Channelized Flood Control on Acadia Wash above Rio Hondo Confluence
b. 1934 Aerial Photo of flooding at Peck Road & Arrow Highway

Rio Hondo River Watershed Management Plan

Storm Drains

July 9, 2004



Rio Hondo River Watershed
Rivers, channels and streams.shp
Rio Hondo Storm Drains
Los Angeles - Lakes and Reservoirs
Rio Hondo Direct Drain
Alhambra Wash Watershed
Rubio Wash Watershed
Eaton Wash Watershed
Arcadia Wash Watershed
Santa Anita Wash Watershed
Sawpit Wash Watershed
Los Angeles - Freeways and Highways
Angeles National Forest

Map created by the Rivers and Mountains Conservancy

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Rio Hondo Hydrology

2.2.2 Water Conservation And Supply

In the region's Mediterranean climate, water is a precious resource. Mark Twain once said, "Whiskey's for drinking, and water's for fighting over." Water yield, and more so reliability, is a growing concern of water purveyors. Los Angeles has already seen supplies cut from sources in the Owens Valley, and future reductions are on the horizon for Colorado and Sacramento Delta water. There is increased interest in protecting local water supplies, increasing water reliability, controlling dependence on imported water, and increasing the use of recycled water. In dealing with all these issues, existing water rights must also be considered. Prior to 1868, the Rio Hondo functioned as the primary channel for the San Gabriel River. Historically, a majority of the channel flows, and much of the Rio Hondo basin water supply was derived from the upstream Angeles National Forest surface water runoff. Today, the Rio Hondo is partially fed by the San Gabriel River from three channels: the Buena Vista, Lario Creek/Zone 1 Ditch, and Crossover channels. Much of the water is received as urban runoff via storm drains and overland flow.

Development has converted former pervious open space and agricultural lands to urbanized land uses. Increased urban residential, industrial and commercial land uses have corresponded with increased impervious surfaces, thereby reducing the opportunity for stormwater to percolate into the groundwater table within the watershed. Despite enhanced infiltration in localized regions, the watershed's natural capacity to provide sufficient water supply to users has long since been exceeded. Therefore, the watershed imports significant quantities of water from the State Water Project and the Colorado River through local agencies via the Metropolitan Water District of Southern California.

The local water supply within the Rio Hondo watershed is also threatened by non-native invasive plants such as Arundo (*Arundo donax*), also known as giant reed, which can grow four inches a day, and up to 30 feet tall. Due to its rapid growth, Arundo has a huge appetite for water, consuming as much as three times the amount used by native plants. In addition to wasting water, by displacing native plants it destroys fish and wildlife habitat, and creates significant erosion and flooding problems along streams and channels. Efforts to eradicate Arundo and other invasive plants have become a priority for a number of public and private organizations, including Team Arundo del Norte.

Concrete channelization of the Rio Hondo and its tributaries has also contributed to water loss. Not only is water trapped by a concrete channel unable to infiltrate into the groundwater basin, it is subject to higher evaporation rates than in a cool vegetated

channel. It should be noted that spreading facilities were constructed to account for the reduction of permeability.

Groundwater Basins & Recharge

The groundwater basins (aquifers) underlying the Rio Hondo watershed include the Main San Gabriel Basin, the Central Basin, and the Raymond Basin. Groundwater basins are natural underground formations filled with sediments, including sand and gravel, which serve as underground water reservoirs. Wells drilled into the basins provide water for municipal use. The Main San Gabriel Basin is upstream of Whittier Narrows. The highly permeable Montebello Forebay exists within the Central Basin, downstream of Whittier Narrows. These groundwater basins or aquifers are a part of the geologic occurrence known as the Los Angeles Basin, which is over three miles deep in some locations (*California Geology, p.390).* These three groundwater basins are also adjudicated entities, i.e. "water rights" to each of the basins have been established by court orders, which are then managed by watermasters (*see "water rights" section below)*

The Main San Gabriel Basin underlies the San Gabriel Valley, with boundaries reaching beyond those of the Rio Hondo Watershed. It is bounded on the north side by the base of the San Gabriel Mountains, on the east side by the San Jose Hills, on the south by Whittier Narrows and Puente Hills, and on the west by a series of hills and the Raymond fault. This groundwater aquifer has a different hydrologic basin or "watershed" than surface watersheds. It sits underneath two different surface watersheds, the upper portion of the San Gabriel River Watershed and the eastern portion of the Los Angeles River Watershed, of which the Rio Hondo is a subwatershed. The surface area of the Main San Gabriel Basin is about 167 square miles, and it provides approximately 80 percent of local groundwater supplies. The fresh water storage capacity of the basin is about 8.6 million acre-feet.

Whittier Narrows is an area of geologic uplift located between the Puente-Chino Hills complex on the east and the Montebello Hills on the west. Acting as a natural barrier to groundwater movement, this geologic formation is what separates the San Gabriel Basin to the north and the Central Basin to the south. As a result, Whittier Narrows is a natural collection and convergence point for both surface water and groundwater.

The Central Basin underlies approximately 277 square miles of the sourtheastern Los Angeles County Coastal Plain and can cumulatively store more than 1.3 million acre-feet of water. The basin is bounded by the southern San Gabriel Valley on north, Orange County on the east, and the West Coast groundwater basin to the southwest. Approximately 50 percent of local water needs are supplied by groundwater produced from the Central Basin.

The Raymond Basin is a 40 square mile groundwater basin that extends from La Canada and the San Rafael Hills on the west to Santa Anita Canyon on the east, from the foothills of the San Gabriel Mountains to its southern boundary on the Raymond fault, which separates it from the Main San Gabriel Basin. The long-term average yield of the Raymond Basin is about 30,000 acre-feet per year. The Raymond Basin underlies portions of portions of Eaton, Rubio, and Arcadia Wash sub-watersheds. The Eaton, Santa Anita, and Sierra Madre spreading grounds recharge this groundwater basin.

As urbanization has reduced naturally occurring groundwater recharge, percolation and settling basins have been introduced. These facilitate groundwater recharge, i.e. the process of replenishing water supplies by pumping or percolating storm water runoff, imported water and reclaimed water into the groundwater basins. These basins concentrate recharge within known regions of highly permeable formations. Principal water-bearing formations of the basin consist of unconsolidated and semi-consolidated sediments, ranging in size from coarse gravel to fine-grained sands.

These three groundwater basins are also adjudicated entities, i.e. "water rights" to each of the basins have been established by court orders, which are then managed by watermasters. These water rights determine who can pump water from the basins, and how many acre-feet can be allocated to each end user each year. The Main San Gabriel Basin Watermaster is the agency charged with administering adjudicated water rights and managing groundwater resources for the Main San Gabriel Basin. The Central Basin Watermaster manages water rights for the Central Basin, and the Raymond Basin Management Board performs a similar function for the Raymond Basin.

Spreading Grounds

Groundwater percolation used to take place everywhere in an undeveloped watershed. With development, the need to protect open areas was recognized and several groundwater recharge basins were constructed to ensure our local water supply was continually replenished. Several groundwater recharge basins, owned and operated by the Los Angeles County Flood Control District, are located throughout the Rio Hondo Watershed including:

- Buena Vista Spreading Basin
- Eaton Wash Spreading Grounds
- Eaton Wash Spreading Basin
- Santa Anita Spreading Grounds

- Peck Road Water Conservation Park
- Rio Hondo Spreading Grounds
- Sawpit Spreading Grounds

Another groundwater recharge basin within the Rio Hondo Hondo Watershed, this one owned and operated by the City of Sierra Madre, are the Sierra Madre Spreading Grounds.

All of these spreading grounds are supplied by uncontrolled local runoff from the Rio Hondo and/or its tributaries. The Rio Hondo Spreading Grounds are also supplied by additional multiple sources of surface water, including:

- Controlled releases from the Santa Fe and Whittier Narrows Dams
- Reclaimed water from the County Sanitation District's two Water Reclamation Plants (WRP) effluent (purchased by the Water Replenishment District of Southern CA)
  - Whittier Narrows WRP
  - San Jose Creek WRP
- Imported water

The Montebello Forebay, located just south of Whittier Narrows, is an important area for groundwater recharge due to its highly permeable soils, allowing deep percolation of surface waters. The Rio Hondo Coastal Basin Spreading Grounds, located within the Forebay have been in use since 1937. The Spreading Grounds in Pico Rivera are the DPWs' largest spreading facility, covering approximately 570 acres and consisting of 20 infiltration basins and 3,694 acre-feet of surface water storage capacity.

The LACDPW estimates that approximately 53,428 acre-ft of imported and reclaimed water was conserved at the Rio Hondo Spreading Grounds during Water Year 2002-2003 (*Preliminary data from the LACDPW website)*. This amount does not included additional water from storm water runoff. Due to the productive nature of the Spreading Grounds, water from the San Gabriel River is conveyed to the Rio Hondo to provide further opportunities for recharge. San Gabriel River water enters the Rio Hondo through one of three channels, the Buena Vista Channel diversion from Santa Fe Dam, the Lario Creek/Zone 1 Ditch or the Crossover Channel just above Whittier Narrows Dam. Table 2-1, *Imported and Reclaimed Water Delivered in Acre Feet,* from LACDPW provides a summary of imported and reclaimed water diversions, including those directed to the Rio Hondo.

The amount of water being recharged within the Montebello Forebay, which includes the Rio Hondo and San Gabriel Coastal Spreading Grounds as well as the unlined reaches of the San Gabriel River is established in Order 91-100, which establishes the water reclamation requirements for the recharge project and was issued by the Los Angeles Regional Water Quality Control Board. Per the permit, the average quantity of reclaimed water spread, based on a running three-year average, shall not exceed 50,000 AF per year. Also, the maximum quantity of reclaimed water spread in any one year shall not exceed 60,000 AF or 50 percent of the total inflow into the Montebello Forebay for that year, whichever is less. Additionally, the maximum quantity of reclaimed water spread in any three-year period shall not exceed 150,000 AF and 35 percent of the total inflow from all sources into the Montebello Forebay during that period.

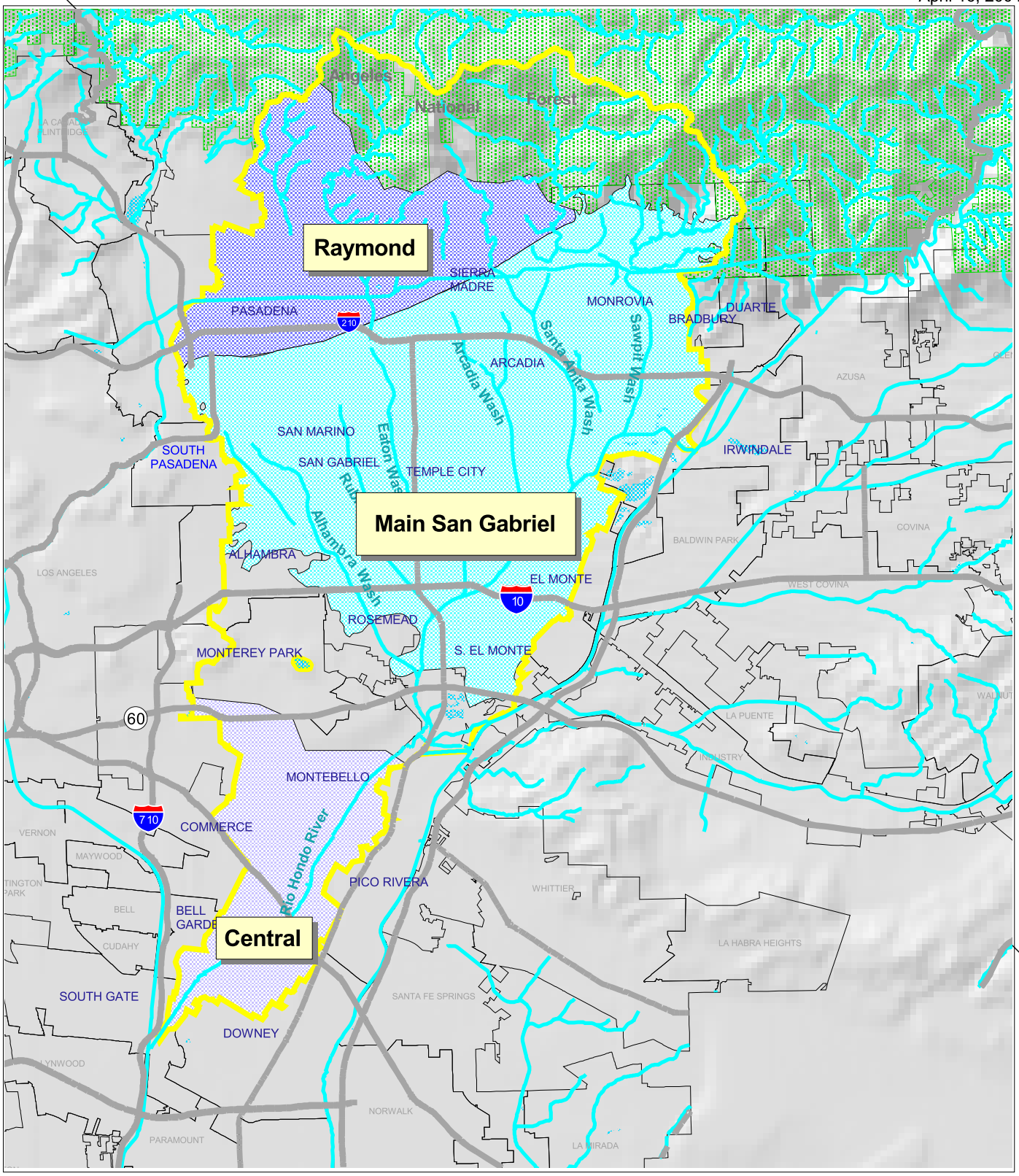
LACDPW is currently working with the City of Pico Rivera to beautify and open the Rio Hondo Spreading Grounds to increased passive recreational uses. Stakeholders have also suggested utilizing spreading ground facilities for habitat uses, but possible losses in recharge into the groundwater basin would need to be addressed and compensated for. If the basins are converted to provide more habitat areas, there is a perception they will lose some of the capacity for recharge. The scientific basis for this perception, if any, will have to be verified. This is an issue for water purveyors, the County, and water users. The interest is in identifying the degree of recharge loss, if any, and to then identify additional areas for recharge to compensate or augment lost recharge.

The quality of water recharged into these basins is another concern to water purveyors and the County. Groundwater pollutants, if left untreated, can further reduce the capacity of the local water supply to serve local needs. Contaminated groundwater plumes are present in the lower Main San Gabriel River Basin, including portions underlying the Rio Hondo Watershed, which have been moving southward toward the Central Basin. A groundwater treatment facility has been built in the Whittier Narrows Area to treat the contaminated plume in that area. This includes a groundwater extraction barrier ¼ mile north of the Whittier Narrows Dam to halt the flow of contamination traveling towards the Central Basin. Other remedial efforts are planned for contaminated plumes in the El Monte and South El Monte areas.

Rio Hondo River Watershed Management Plan

Groundwater Basins

April 16, 2004



Map created by the Rivers and Mountains Conservancy

Los Angeles - Freeways and Highways
Los Angeles - Channels, Rivers, Streams
Los Angeles - Lakes and Reservoirs
Rio Hondo River Watershed
Groundwater basins.shp
Central
Main San Gabriel
Raymond
Angeles National Forest

3 0 3 Miles

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Rio Hondo Hydrology

Table 2-1

Los Angeles County, Department of Public Works
Water Resources Division

Imported and Recaptured Water Deliveries in Acre-Feet
WATER YEAR 2000-2003

MONTHLY WATER DELIVERY BASIS

	San Dimas Canyon DELIVERIES	Thompson Creek DELIVERIES	Airport DELIVERIES	USGS WSGW Service Area	USGS San Gab. Cty. S.G.	MWD Line Deliv PVDS	Other Bases LA 699	SGVMWD SG Canyon Basin	SGVMWD Bonita Canyon	SGVMWD Big Dalton Canyon	SGVMWD San Dimas WSGW	SGVMWD San Dimas Pomona	Waste Water Deliv	MONTHLY TOTAL SPREAD
OCT	0.0	0.0	0.0	2,889.1	1,355.5	345.0	0.0	1,828.3	0.0	0.0	550.3	295.9	0.0	9,164.5
NOV	5,884.3	4,046.0	0.0	3,760.2	2,156.0	401.5	0.0	2008.9	0.0	0.0	524.8	31.5	0.0	18,888.2
DEC	6,424.4	1,888.8	0.0	4,490.0	1,324.2	0.0	0.0	1,745.5	0.0	0.0	735.7	0.0	0.0	17,200.6
JAN	0.0	0.0	0.0	74.2	1,654.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,848.5
FEB	0.0	0.0	0.0	0.0	350.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	350.6
MAR	0.0	0.0	0.0	1,336.9	355.5	0.0	0.0	710.4	0.0	0.0	0.0	0.0	0.0	2,403.9
APR	0.0	0.0	0.0	784	1,114.5	0.0	0.0	102.2	0.0	0.0	0.0	0.0	0.0	2,400.5
MAY	0.0	0.0	0.0	1,303.6	1,654.2	0.0	0.0	2,7[illegible].0	0.0	0.0	0.0	0.0	0.0	6,3[illegible].8
JUN	0.0	0.0	0.0	4,250.0	1,143.4	0.0	0.0	390.0	0.0	0.0	1,275.0	0.0	0.0	8,0[illegible]
JUL	0.0	0.0	0.0			0.0	0.0	242.0	0.0	0.0	1,229.9	37.5	0.0	2,10[illegible].4
AUG	0.0	0.0	0.0			0.0	0.0	2[illegible].6	0.0	0.0	1,542.6	18.7	0.0	2,5[illegible].6
SEP	0.0	0.0	0.0			0.0	0.0	7[illegible].0	0.0	0.0	1,750.0	3[illegible].5	0.0	2,[illegible].6
TOT	[illegible]	[illegible]	0.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.0	0.0	[illegible]	[illegible]	[illegible]	[illegible]

MONTHLY WATER DELIVERY

	WHITTIER NARROWS PLANT DELIVERIES Rio Hondo	WHITTIER NARROWS PLANT DELIVERIES San Gabriel	WHITTIER NARROWS PLANT Wastewater Recovery	WHITTIER NARROWS PLANT MONTHLY TOTAL SPREAD	SAN JOSE CREEK PLANT DELIVERIES Rio Hondo	SAN JOSE CREEK PLANT DELIVERIES San Gabriel	SAN JOSE CREEK PLANT Wastewater Recovery	SAN JOSE CREEK PLANT MONTHLY TOTAL SPREAD	POMONA PLANT DELIVERIES Rio Hondo	POMONA PLANT DELIVERIES San Gabriel	POMONA PLANT Wastewater Recovery	POMONA PLANT MONTHLY TOTAL SPREAD	MONTHLY TOTAL WATER	MONTHLY TOTAL SPREAD
OCT	320.8	0.0	0.0	929.6	1,[illegible]	4,897.5	0.0	6,70[illegible]	25.2	730.9	0.0	75[illegible]	0.0	8,[illegible]
NOV	[illegible]	0.0	62.8	98[illegible].3	3,555.6	1,[illegible]	[illegible]	5,000.4	296.1	53.3	2.0	[illegible]	5.0	5,211.[illegible]
DEC	658.2	0.0	49.9	853.9	2,[illegible]	[illegible]	[illegible]	4,3[illegible]	280.1	757.2	5.0	1,[illegible]	32.4	6,[illegible]
JAN	385.0	0.0	0.0	383.1	3,[illegible]	2,[illegible]	0.0	6,0[illegible]	2[illegible]	58.2	0.0	3[illegible]	0.0	6,[illegible]
FEB	890.2	0.0	36.1	38[illegible]	2,[illegible]	3,[illegible]	82.4	4,2[illegible]	3[illegible]	[illegible]	8.4	3[illegible]	28.5	5,3[illegible]
MAR	[illegible]	[illegible]	[illegible]	888.3	2,[illegible]	[illegible]	330.4	4,3[illegible]	453.1	80.1	59.7	1[illegible]	49.8	6,438.9
APR	[illegible]	82[illegible]	0.0	1[illegible]	7[illegible]	3,[illegible]	0.0	4,[illegible]	29.[illegible]	58.7	0.0	88.6	0.0	5,2[illegible]
MAY	[illegible]	0.0	[illegible]	2[illegible]	[illegible]	[illegible]	100.4	[illegible]	39.3	[illegible]	31.6	8.6	[illegible]	[illegible]
JUN	69[illegible]	0.0	59[illegible]	0.0	1,[illegible]	[illegible]	2,[illegible]	[illegible]	0.0	[illegible]	0.1	0.0	2,[illegible]	[illegible]
JUL	65[illegible]	0.0	88[illegible]	3.0	[illegible]	[illegible]	[illegible]	[illegible]	5.0	0.0	0.0	0.0	[illegible]	[illegible]
AUG	[illegible]	0.0	[illegible]	0.0	1,3[illegible]	[illegible]	3,3[illegible]	[illegible]	16.5	0.0	15.0	0.0	3,[illegible]	[illegible]
SEP	[illegible]	0.0	95[illegible]	0.0	1,3[illegible]	[illegible]	[illegible]	90.[illegible]	2[illegible]	0.0	2[illegible]	3.[illegible]	2,[illegible]	[illegible]
TOT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Recharge Basin at Peck Road Water Conservation Park

Water Rights

As described above, water is conveyed to the Rio Hondo from the San Gabriel River for water supply purposes. Since the Rio Hondo is an integral part of the San Gabriel River water supply conveyance system, it falls within the water rights institutional framework of the San Gabriel River. Water rights are important because they dictate who can draw water from the river and from the groundwater basins, and how many acre-feet they can use each year. The three groundwater basins underlying the Rio Hondo Watershed, the Main San Gabriel Basin, the Central Basin, and the Raymond Basin are adjudicated basins, i.e. rights to extract groundwater have been allocated to various users by a court order. Agencies and organizations involved in administering these water rights include the following:

- ***Main San Gabriel Basin Watermaster*** - the agency charged with administering adjudicated water rights and managing groundwater resources for the Main San Gabriel Basin.
- ***Central Basin Watermaster*** - manages water rights for 146 parties holding rights to the Central Basin.
- ***Raymond Basin Management Board*** – manages groundwater resources for the Raymond Basin
- ***San Gabriel River Watermaster*** - responsible for tracking the amount of surface water and groundwater that passes through the Whittier Narrows from the Main San Gabriel Basin to the Central Basin.
- ***San Gabriel River Water Committee (SGRWC)*** - formed in 1889 to settle disputes among nine local water interests and was originally called the "Committee of Nine." SGRWC members are entitled to the first 135 cfs of flow in the San Gabriel River.
- ***San Gabriel Valley Protective Association*** – formed in 1919 to safeguard the rights of 22 water users from Azusa to Whittier. These members are entitled to water from the San Gabriel River in excess of 135 cfs, beyond the SGRWC allocation. They use the water solely for groundwater recharge at LACDPW facilities.

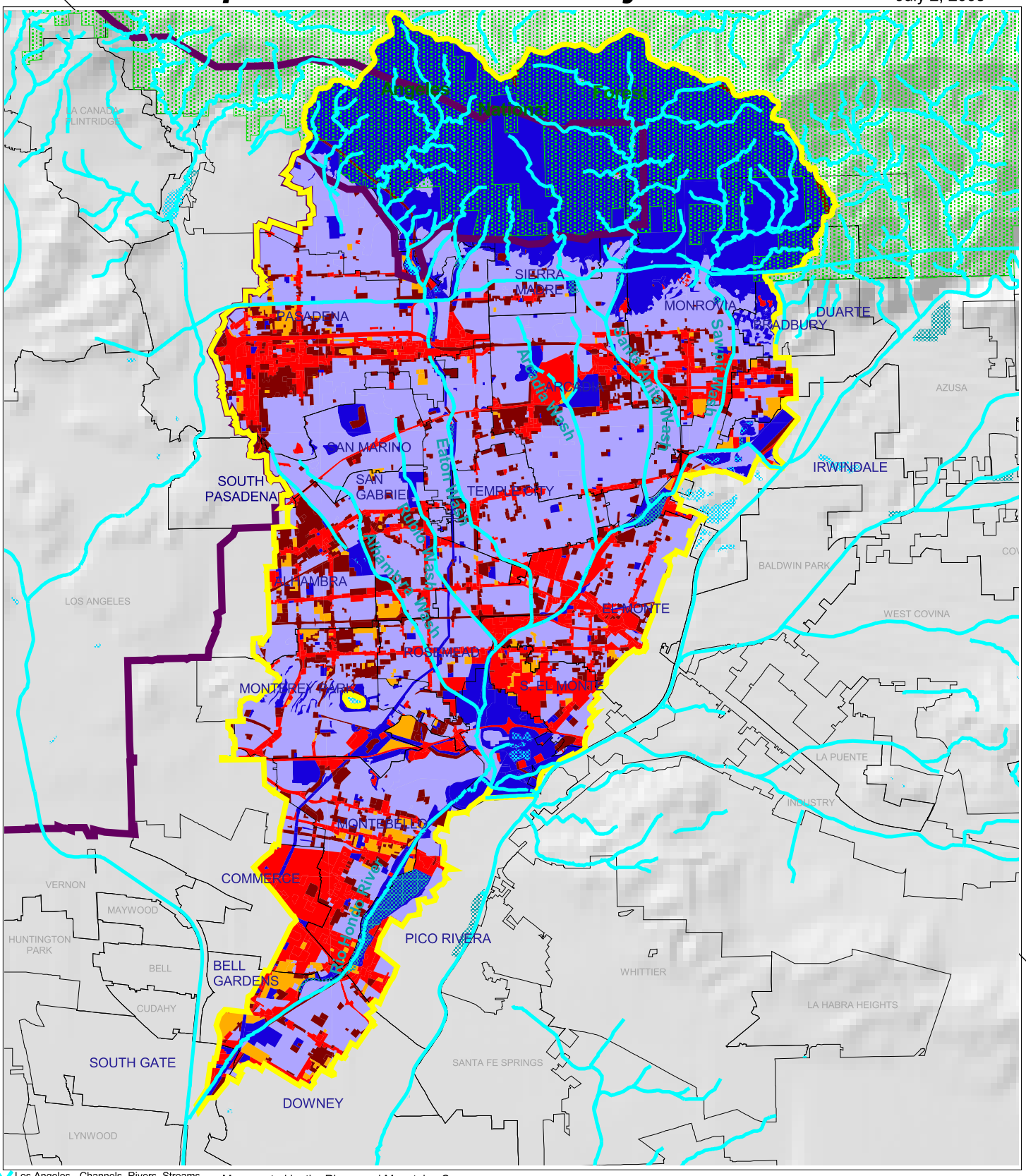
Findings

- In coming years, the reliability of imported water may decrease as the demand for water increases throughout the western United States.
- Imported water can be up to ten times more costly than water from locally derived sources
- Diversions and alteration of natural and artificial hydrology
- Impervious surfaces throughout the watershed created by pervasive urban development has significantly reduced percolation into the groundwater table
- Contaminated groundwater plumes are present in the lower Main San Gabriel Basin and are moving southward toward the Central Basin.
- Lack of reclaimed water for recharge beyond the current 50,000 AFY cap.
- If left untreated, groundwater pollutants will diminish the quality of recharged water
- Concrete channels' are contributing to water loss f by preventing infiltration and through high evaporation rates
- There are a scarcity of commercial, industrial and residential properties that use native plants for water consumption reduction
- There is an overgrowth of invasive and non-native plants that propagate quickly and waste valuable water
- The practice of relying on pervious surfaces and stormwater runoff Best Management Practices to capture and treat stormwater is significantly under utilized.
- Any modifications to existing recharge facilities must maintain for improve water replenishment rates into the underground aquifer.

Rio Hondo River Watershed Management Plan

Impervious Land Area by Land Use

July 2, 2003



Los Angeles - Channels, Rivers, Streams
Rio Hondo River Watershed
RMC Boundary
Spreading Grounds
Angeles National Forest
Los Angeles - Lakes and Reservoirs

Rio Hondo Land Use (% Impervious)
- Very High (1-.9)
- High (.9-.75)
- Medium (.75-.5)
- Low (.5-.35)
- Very Low (.35-0)

Map created by the Rivers and Mountains Conservancy

3 0 3 Miles

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San Gabriel Valley Council of Governments

State of California – The Resources Agency
San Gabriel & Lower Los Angeles
Rivers & Mountains Conservancy

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2.2.3 Water Quality

The Rio Hondo River is impaired for trash, copper, lead, zinc, ammonia, pH, and coliform bacteria, along with high temperature, which is also considered a "pollutant." A large portion of water draining from the upper creeks and from Whittier Narrows Dam is recharged directly into the groundwater. So much so, that at low-flow times, little to no water enters the Los Angeles River. Yet, when rains come pollutants that have collected on streets and in channels are washed into spreading basins and into the Los Angeles River. As Los Angeles continues to grow, and limitations are placed on Colorado River and other water supplies, the region's groundwater quality will become increasingly important. The cost of developing new water supplies or cleaning up contaminated ones is rising (*Rio Hondo Watershed Convening Report*). Since 1993, the San Gabriel Basin Water Quality Authority has been implementing groundwater treatment programs, including the active interception of contaminated groundwater flowing toward Whittier Narrows. Much, if not all of this contamination stems from industrial uses and other impacts stemming from urban development that have degraded watershed functioning.

The natural role of a healthy watershed in maintaining water quality is critical in this respect. A healthy watershed reduces water pollution by filtering out sediment, chemicals, and nutrients from runoff. However, urbanization of a watershed creates impervious surfaces that prevent water from infiltrating into the soil in a way that allows the natural environment to filter out pollutants that otherwise make their way into the water supply.

This urban runoff occurs during both wet and dry weather seasons. Wet weather urban runoff, typically referred to as storm water runoff, occurs when there is precipitation that flows across the ground during and after a rain event, flowing into the storm drain system and from there discharging into rivers and streams. Dry weather runoff can occur throughout the year even when there is no measurable precipitation, as it is caused by human activities. These include car washing, watering lawns, and street washing, among others. Dry weather runoff contains high levels of pollutants, but the relatively low volume levels compared to wet weather runoff, and the fact that it results directly from human behavior, means it is theoretically 100% correctable. Of course, achieving this goal would require very significant changes in human behavior and the costs for doing so are unknown.

As a consequence, cities, water districts and other stakeholders now have concerns over nonpoint source pollution carried in urban runoff, including both wet weather and dry weather runoff. As authorized by the Clean Water Act, the National Pollution

Discharge Elimination System (NPDES) permit program regulates point sources of pollution into water bodies. Storm water runoff in the watershed is an identified point source of pollution, although it is more commonly called 'nonpoint source' pollution because it originates throughout the watershed. Water quality associated with the Rio Hondo Watershed can best be understood in terms of three related concepts; "beneficial uses," "impaired water bodies", and "total maximum daily loads."

Beneficial Uses

The State Water Resources Control Board has designated "Beneficial Uses" for lakes, rivers, streams and other surface waters. In California, there are up to 24 potential beneficial uses that may be designated including groundwater recharge, municipal and domestic water supply, and water contact recreation, among others. Beneficial uses serve as water quality milestones that need to be attained and maintained over time. Depending upon the actual or potential beneficial uses that exist for a water body, these will determine the water quality standards that are applied to that water body.

The following is a list of Rio Hondo's known beneficial uses and their definitions (1994 Basin Plan). These uses may be existing, potential, and intermittent for the Rio Hondo and/or the watebodies within the Rio Hondo Watershed and are not necessarily applicable to all water bodies or reaches: :

- ***Municipal and Domestic Water Supply*** – uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply
- ***Groundwater Recharge*** – uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
- ***Water Contact Recreation*** – Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing or use of natural hot springs.
- ***Non-contact Water Recreation*** – Use of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
- ***Warm Water Habitat*** – Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

- ***Cold Water Habitat*** – Uses of water that support cold water ecosystems including but not limited to preservation, or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
- ***Wildlife Habitat*** – Uses of water that support terrestrial ecosystems including but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g. mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
- ***Wetland Habitat*** – Use of water that support wetland eco-systems, including, but not limited to, preservation or enhancement of wetland habitats, vegetation, fish, shellfish, or wildlife, and other unique wetland functions which control, stream bank stabilization, and filtration and purification of naturally occurring contaminants.
- ***Spawning, Reproduction and/or Early Development*** - Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish
- ***Rare, Threatened, or Endangered Species*** – Uses of water that support habitats necessary, at least, in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.

Impaired Water Bodies and Total Maximum Daily Loads

Section 303(d) of the Clean Water Act (CWA) requires each state to develop a list of "impaired water bodies", i.e. water bodies that are not achieving water quality standards. These impaired water bodies required additional work beyond traditional point source controls to achieve or maintain water quality standards. The additional work includes the establishment of Total Maximum Daily Loads (TMDLs) of pollutants that have impaired the water body. TMDL is defined as the maximum amount of a particular pollutant that a water body can receive from various sources without violating the water quality standard. Once a TMDL is established for a specific water body, responsibility for reducing pollution is assigned among both point sources and non-point sources that discharge to the target body.

A number of individual water bodies or their reaches within the Rio Hondo Watershed are among those designated as impaired water bodies on the state's 303(d) list because of impairments such as trash, copper, lead, zinc, ammonia, pH, and coliform bacteria. The table below shows the proposed updated 303(d) list for the Rio Hondo and its tributaries. This list was approved by the State Water Resources Control Board on February 4, 2003, and was also subsequently approved by the U.S. Environmental Protection Agency in July 2003. It should be noted that the priority status indicated by the table is a reflection of the Water Board's direction to staff to address the pollutant based on the criteria listed below.

"High" priority - waterbodies targeted for TMDL development in the next 2 to 5 years:

- There is current involvement in watershed planning activities affecting the waterbody, pursuant to the current December 2001 edition of the Regional Board's Watershed Management Initiative
- TMDL development activities are currently underway
- There is litigation that is driving the TMDL development process
- The waterbody is of significant concern because of its regionally important beneficial uses, including municipal drinking water supply (MUN), habitat for rare or endangered species (RARE) or body contact recreation (REC1), one or more of which may be affected by the pollutants(s) of concern
- There is a high degree of public concern
- There is high potential for beneficial use recovery upon implementation of the TMDL
- There is a high potential for state or federal funding or stakeholder funding to support TMDL development

"Medium" priority waterbodies targeted for TMDL development in the next 5 to 10 years:

- Board staff is planning to conduct watershed planning activities involving the waterbody in the next 3 to 4 years, pursuant to the Watershed Management Initiative adopted by the Regional Board in March 2001
- There is a moderate potential for beneficial use recovery
- There is a moderate degree of public concern
- There is a moderate potential for state or federal funding or stakeholder funding to support TMDL development in the future

"Low" priority waterbodies – targeted for TMDL development in the next 9-11 years:

Data collection efforts to be undertaken in these waterbodies and watersheds may ultimately result in the delisting of many of these waterbodies from the 303(d) list. For this reason, a more thorough monitoring and assessment program is required before effort should be spent developing TMDLs for the "Low" priority waterbodies.

Table 2-2 303(d) Listing*				
Pollutant/ Stressor	**Potential Sources**	**TMDL Priority**	**Estimated Size Affected**	**Proposed TMDL Completion**
Legg Lake				
Ammonia	Nonpoint/	Medium	25 acres	-
Copper	Nonpoint/	Medium	25 acres	-
Lead	Nonpoint/	Medium	25 acres	-
Odors	Nonpoint/	Medium	25 acres	-
PH	Nonpoint/	Medium	25 acres	-
Trash	Nonpoint/	Low	25 acres	-
Monrovia Canyon Creek				
Lead	Nonpoint/	High	3.4 miles	2003/4
Peck Road Park Lake				
Chlordane (tissue)	Nonpoint	Low	103 acres	-
DDT (tissue)	Nonpoint	Low	103 acres	-
Lead	Nonpoint	Low	103 acres	-
Odors	Nonpoint	Low	103 acres	2010/11
Organic Enrichment / Low Dissolved Oxygen	Nonpoint	Low	103 acres	2010/11
Trash				2010/11
Rio Hondo Reach 1 (Confluence. LA River to Santa Ana Fwy.)				
Copper	Nonpoint/Point Source	High	4.6 miles	2003/4
High Coliform Count	Nonpoint/Point Source	High	4.6 miles	2001/2
Lead	Nonpoint/Point Source	High	4.6 miles	2003
pH	Nonpoint/Point Source	High	4.6 miles	2001/2
Trash	Nonpoint/Point Source	Low	4.6 miles	2001
Zinc	Nonpoint/Point Source	High	4.6 miles	2003
Rio Hondo Reach 2 (At Spreading Grounds)				
High Coliform Count	Nonpoint/Point Source	High	4.9 miles	2001/2

**Table 2-2 Derived from two sources –*

(1) 2002 CWA Section 303 (d) List of Water Quality Limited Segment – Los Angeles Regional Water Quality Control Board, Approved by USEPA: July 2003

(2) Los Angeles River Watershed 303(d) listed Waters; November 2003

As indicated by the table above, TMDLs also dictate in addition to the amount allowable the length of time given to cities and other permitted agencies to reduce specific constituents from storm water. As some of these dates have passed, new timetables for TMDL completion will be provided in the future.

LARWQCB, SWRCB, and EPA share responsibilities for the development of TMDLs for the Los Angeles River Watershed, and its tributaries, which include the Rio Hondo. The first TMDL developed for the Los Angeles River Watershed was the Trash TMDL for the Los Angeles River. Implementation of the Trash TMDL has been postponed to allow the Regional Board time to conduct a cost benefit analysis that will consider the economic impacts of this pending requirement. It is expected that local municipalities and the Regional Board will be able to work together successfully to establish TMDL requirements for trash and the other higher priority pollutants listed above. In July 2003, a Nitrogen Compounds TMDL was developed for the Los Angeles River and another TMDL for metals is currently in progress. These and other future TMDLs will also include requirements for municipalities to reduce pollutant loads from stormwater runoff.

As storm water carries a variety of pollutants, different strategies will be needed to cleanse each constituent. The following table summarizes the major pollutant groups and the issues surrounding them.

Table 2-3 Pollutants Summary		
Pollutant	**Impacts**	**Potential Sources**
Sediment	Detrimental to aquatic life by interfering with photosynthesis, respiration, growth, reproduction, and oxygen exchange in water bodies. Sediment can transfer other pollutants. Total suspended solids (TSS) measures sediments in water quality tests.	Sedimentation is a natural process of the highly erodable San Gabriel Mountains. Stream banks, bridge pilings, vacant lots, construction sites, automobile traffic are other potential sources. Although sedimentation is a natural and necessary process within the watershed, the problem occurs when there is excessive sedimentation and/or erosion created by human induced changes to the watershed.
Nutrients	Presence of nitrogen and phophorus results in accelerated growth of algae, resulting in loss of oxygen and decreased water clarity. Un-ionized ammonia, a form of nitrogen, can be toxic to fish.	Commonly derived from fertilized landscapes in residential communities, commercial landscapes (including nurseries), golf courses & parks, and horses and other livestock. Household cleaners containing phosphates, such as dishwashing and laundry detergents, are another major source
Bacteria & Viruses	High levels of bacteria are a public health hazard and have led to beach closures. Many streams in urbanized Southern California are not safe for direct body contact.	Commonly found in stormwater runoff but hard to pinpoint to a single source. Most likely derived from sanitary sewer leaks and spills, illicit connections of sanitary lines to the storm drain system, runoff from homeless encampments, illegal discharges from recreational vehicle holding tanks, malfunctioning septic tanks, and fecal matter from animals and birds.
Oil & Grease	Some hydrocarbon compounds included in oil and grease are toxic to aquatic organisms at low concentrations.	Sources include automobile leakage, spills, vehicle and equipment engine maintenance, leaks and breaks in hydraulic systems, restaurants and waste oil disposal.

Table 2-3 Pollutants Summary		
Pollutant	**Impacts**	**Potential Sources**
Metals	Metals include lead, zinc, cadmium, copper, chromium and nickel. They are toxic to aquatic organisms and can bioaccumulate to toxic levels in fish. They can potentially contaminate drinking water as well.	Many building surfaces such as galvanized metal, paint, preserved wood and automobiles contain metals which enter runoff when surfaces corrode, flake, dissolve, decay or leach.
Organics	Found in low concentrations in stormwater and can cause harm to aquatic organisms.	Synthetic organic compounds found in adhesives, cleaners, sealants, solvents, etc., are widely applied and often improperly stored and disposed. Spills and dumping occur.
Pesticides	Pesticides include herbicides, fungicides, rodenticides and insecticides. They are a health hazard and can bioaccumulate in plankton, ultimately elevating toxins in fish, birds and possibly people. This was especially true of older pesticides, but most pesticides in use today are water-soluble organic compounds that are not especially bioaccumulative and could be viewed as a subset of the preceding "organics" category	Applied to many landscapes throughout the watershed, including household lawns, public parks and golf courses.
Legacy Pollutants	Chemicals whose use has been banned or severely restricted but still remain in the environment. These are chemicals such as the older pesticides (DDT, toxaphene, and chlordane) and PCBs which are persistent and very bioaccumulative, even though they are, for the most part, no longer in use.	Pollutants that were widely used in agricultural, industrial, and mining activities before their negative impacts were recognized.

Table 2-3 Pollutants Summary		
Pollutant	**Impacts**	**Potential Sources**
Gross Pollutants	Gross Pollutants includes trash, debris, floatables, plant debris such as lawn clippings, animal feces, street litter and other organic matter. These items can carry bacteria, viruses, vectors, and lower oxygen levels, resulting in fish kills and human sicknesses. As the primary visible pollutant, trash creates an eyesore and a situation where waterways are seen as a public nuisance as opposed to a resource.	Human use within the entire urban environment, no matter the land use, is the source for these pollutants. Certainly areas of commercial activity, residential activity such as dog walking, industrial areas, and construction sites are key source areas.
Vector Production	Vectors are potential disease-carrying organisms including mosquitoes and rats. This is of grave concern, now that the West Nile Virus has finally reached the San Gabriel Valley and can have a public health impact.	Water left standing for 72 hours or longer are prime mosquito-breeding grounds. Proper BMP design, construction and maintenance are essential to prevent vector habitat and reproduction.

(Table adapted from "Table 1-1: Pollutant Impacts on Water Quality," California Stormwater BMP Handbook, January 2003)

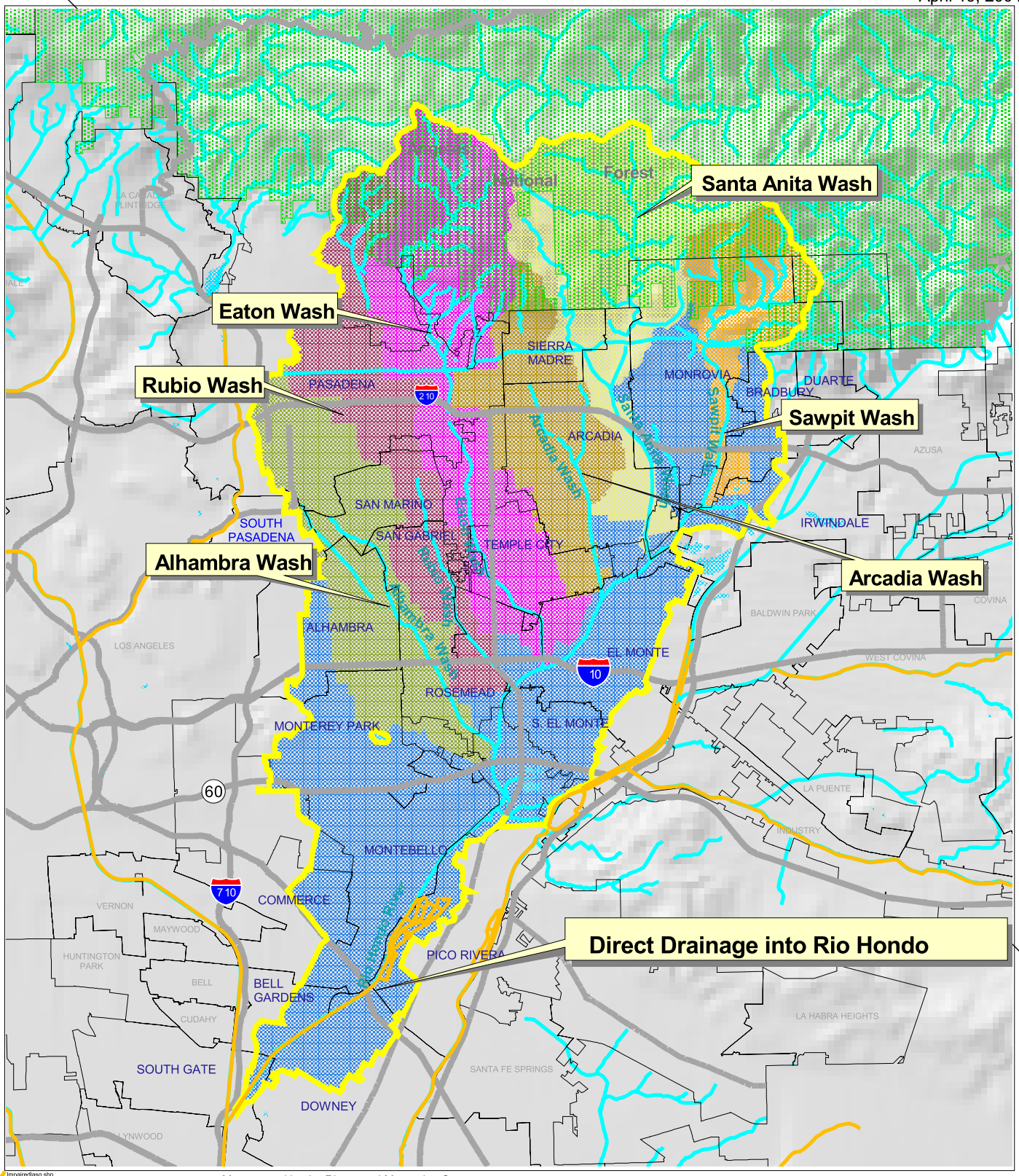
The wide range of pollutants that can be found in stormwater runoff require a spectrum of practices to cleanse these pollutants. These include control practices that reduce or eliminate pollutants at the source keeping them from entering storm water in the first place. Others practices deploy treatments that remove pollutants which have already entered the stormwater.

Trash at Santa Anita

Rio Hondo River Watershed Management Plan

Impaired Reaches

April 19, 2004



Impairedlasg.shp
Rio Hondo River Watershed
Los Angeles - Lakes and Reservoirs
Los Angeles - Freeways and Highways
Angeles National Forest
Los Angeles - Channels, Rivers, Streams
Rio Hondo Direct Drain
Alhambra Wash Watershed
Rubio Wash Watershed
Eaton Wash Watershed
Arcadia Wash Watershed
Santa Anita Wash Watershed
Sawpit Wash Watershed

Map created by the Rivers and Mountains Conservancy

3 0 3 Miles

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San Gabriel Valley Council of Governments

State of California – The Resources Agency
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Rio Hondo Hydrology

Water Quality Sampling Data

For the Rio Hondo Watershed, there is a lack of comprehensive water quality data. What water quality data that is available on the Rio Hondo was provided to the SGVCOG by Shirley Birosik of the Los Angeles Regional Water Quality Control Board. A summary assessment of this existing data was developed by The Chambers Group (See Appendix A). Essentially, this data was collected out of necessity by regulated agencies including LACDPW, the Los Angeles County Sanitation District, the California Department of Water Resources as well as the Regional Board. The locations of these sampling sites reflect the immediate needs of the agencies and do not reveal patterns of conditions watershed-wide.

For this reason, the County of Los Angeles Department of Public Works agreed to take a "snapshot" of water quality in the watershed. The results of this data are summarized in the same report developed by The Chambers Group (See Appendix A). It is known that just one sampling event cannot possibly provide the range of data needed to properly assess the water quality conditions of the watershed. However, this sampling scope provides a framework from which a comprehensive sampling program can be implemented in the future.

Location is a key factor in developing a successful watershed-wide sampling program. By sampling at the bottom of each subwatershed, specific pollutants can be isolated to a specific subwatershed. For the LACDPW sampling event, nine locations were plotted throughout the entire watershed. This geographically strategic design provided the minimum number of sampling sites needed to understand water quality at a subwatershed level.

The principal findings from the analysis of historical water quality data and the results of the water sampling event conducted by LACDPW are presented below. It should be noted that the "standard" for copper and other metals used in this analysis is the California Toxic Rule (CTR). However, the CTR was only developed for point sources and does not apply to stormwater. In the absence of an established point of reference, the CTR was simply used here as a necessary convenience.

- The Rio Hondo Watershed appears to have an ongoing and widespread problem with pH, copper, and bacteria
  - Analysis of historical water quality measurements in the Rio Hondo Watershed indicated that pH, copper and bacteria have exceeded standards on numerous occasions in various locations throughout the watershed

- The Rio Hondo Watershed is on the 303(d) list for pH, copper and coliform bacteria
- Water quality parameters that exceeded standards in the August 2003 survey included pH, copper and coliform bacteria
- In the August, 2003, survey exceedance of pH and coliform bacteria standards was fairly widespread throughout the watershed. The copper standard was exceeded at three stations.

- Although the Rio Hondo Watershed is also on the 303(d) list for lead and zinc, this initial event did not detect concentrations above the CTR limit (lead – 65 ug/l; zinc – 120 ug/l) in any of the reaches sampled. Further sampling will be required before judgments can be made regarding pollutant concentration trends. It should be noted that the California Toxics Rule (CTR) does not apply to stormwater, but is being used as a guide to develop TMDLs.
  - Lead and zinc did not exceed California Toxics Rule criteria at any station sampled in August, 2003
  - Exceedence of criteria for lead and zinc only occurred on one occasion for each metal in the historic database

Although water quality is an important indicator, a biological assessment will also be needed to determine the health of the watershed system, as well as to monitor ongoing progress.

Findings

- The continued growth of the local population will increase the need to improve, monitor and protect the quality of the local water supply
- The quality of water in the watershed is threatened by point source and non-point source pollution from multiple land uses within the watershed: industrial, commercial, high-density single family residential, recreational use, and equestrian uses.
- Many water bodies in the Rio Hondo Watershed are impaired for trash, copper, lead, zinc, ammonia, pH, and coliform bacteria
- Beneficial uses of the Rio Hondo, such as recreation and habitat, are negatively impacted by polluted runoff
- There is a lack of local identifiable cost-effective water quality improvement solutions
- TheRegional Board and local municipalities need to agree on what they believe will be the best approach for improving water quality:

- Some municipalities prefer the development of regional solutions rather than local solutions required by the current regulatory approach.
- Some municipalities see a fear of possible litigation as a constraint on their water quality improvement efforts.

- A comprehensive water quality monitoring program will be required to assess progress over time
- There is a lack of city ordinances and incentives related to stormwater runoff controls and pollution control
- Dry weather runoff pollution has led to habitat type conversion and degradation.

2.3 LAND

In the Rio Hondo, developable land is at a premium. Future growth patterns and land use choices must combine in ways that will effectively serve a multiplicity of different needs. These include not only the vital needs for more housing to serve a growing population and with that continued economic growth, but also the concurrent need to improve and protect the vital hydrologic functions of the watershed, as well as habitat for plants and animals. The necessity to integrate seemingly competing needs requires a new way of thinking about and managing growth that ensures the quality of life for all who live in the watershed.

2.3.1 Land Use & Regulations

Land uses show the patterns in the urban fabric revealing where we live, work and play in the watershed. By understanding land use, social and physical patterns emerge. For example, there are many toxic chemicals as well as sediments that are transported from industrial areas, creating potential nonpoint source pollution problems. With regards to recreation and habitat, the distribution of parks and open space is spotty with little connectivity throughout the watershed. Within commercial and industrial areas there may be underutilized spaces that can present an opportunity for improvements.

This watershed is largely "built out" with very little new development taking place. However, redevelopment of existing land uses into housing or commercial development is taking place in urban areas.

The key is to balance needs of a diverse and growing population while protecting watershed resources. This will ultimately require innovative solutions to watershed protection while managing growth pressures. Among these solutions are growth management that concentrates development in certain areas (creating less imperviousness for an equivalent number of residences and businesses), transportation-oriented design, conservation and performance zoning, buffers and open space preservation, brownfield development and infill redevelopment. Among the best opportunities to address storm water runoff from urban development is in the planning and design stage. This planning principle underlines the Standard Urban Storm Water Mitigation Plan (SUSMP) that requires that permanent post-construction BMPs be incorporated into the site designs of all new developments and redevelopments. Until recently, however, many building and land use codes were often counter-productive. Rather than reduce impermeable land uses and expand open

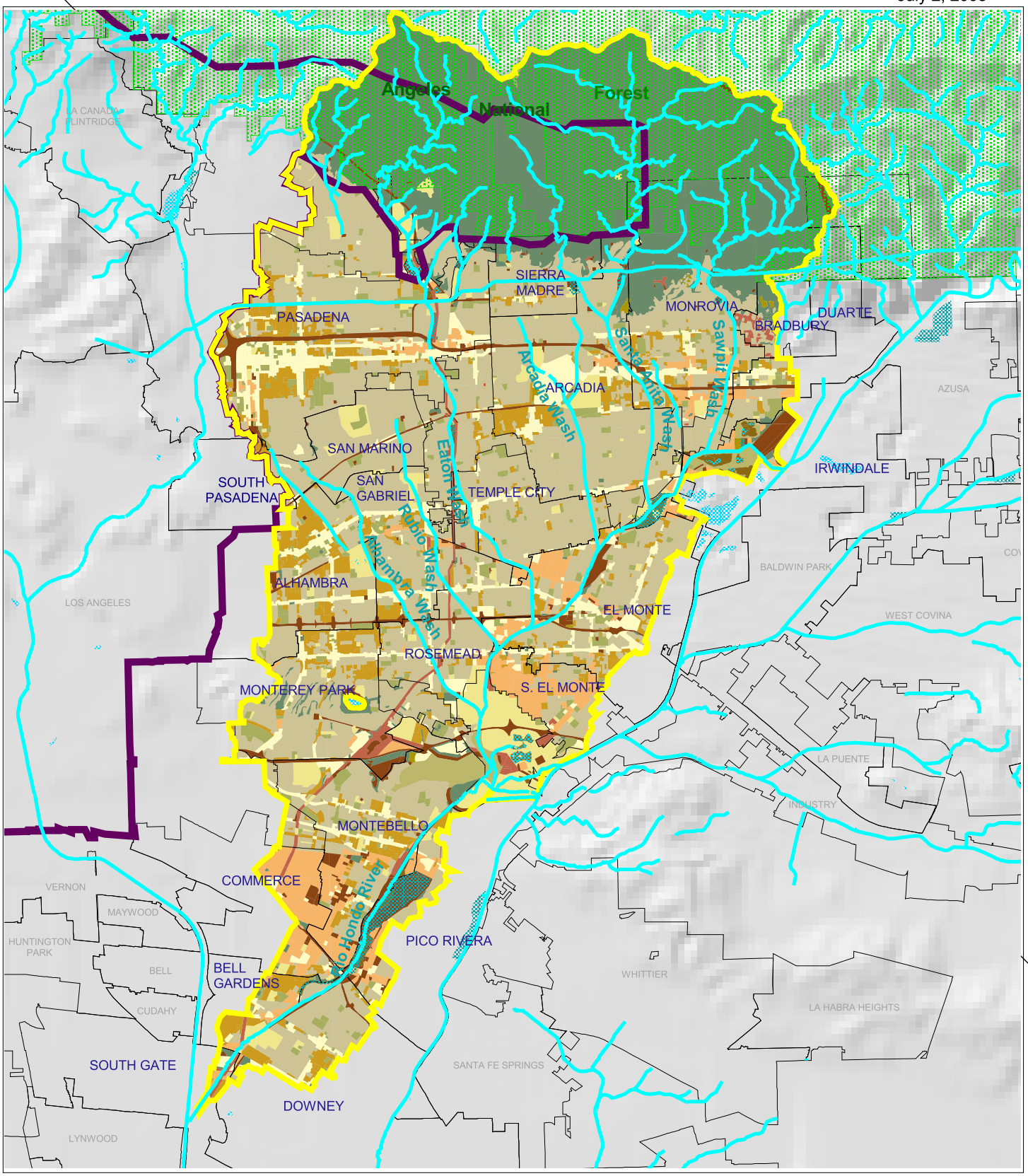
space, land use codes and development standards encouraged excessively wide streets, expansive parking lots, and large lot residential developments. In addition, developers and property owners were rarely provided incentives to pursue alternative land use approaches that are less damaging to the watershed. Variations in land use codes between local jurisdictions within the watershed further complicate the goal of achieving a balance between development and resource protection.

The Land Use map (*Map 2-6*) shows 13 land use types, based on Southern California Council of Governments (SCAG) GIS data derived from aerial photographs circa 2000.

Rio Hondo River Watershed Management Plan

Land Use

July 2, 2003



Los Angeles - Channels, Rivers, Streams
Rio Hondo River Watershed
RMC Boundary
Spreading Grounds
Angeles National Forest
Los Angeles - Lakes and Reservoirs

Rio Hondo Land Use (% Impervious)
- Agriculture
- Commercial
- Extraction
- Industrial
- Low Density Residential
- Medium to High Density Residential
- Open Space & Recreation
- Public Facilities & Institutions
- Rural Density Residential
- Transportation & Utilities
- Under Construction
- Vacant
- Water & Floodways

Map created by the Rivers and Mountains Conservancy

3 0 3 Miles

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San Gabriel Valley Council of Governments

State of California – The Resources Agency
San Gabriel & Lower Los Angeles
Rivers & Mountains Conservancy

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a.

b.

a. Aerial of Whittier Dam and surrounding land use
(Courtesy of Army Corps of Engineers)
b. 1941 Aerial Photo of Wittier Narrows before the dam looking south.
Rio Hondo River is on the right and San Gabriel River is on the left.

The following descriptions summarize what specific land uses occur in this watershed and what percent of the watershed they cover. There are two predominant land uses in the watershed covering almost 75% of surface area. Over 41% of the watershed is considered "Vacant" or open space lands. This is largely the Angeles National Forest and privately owned lands that are adjacent to the forest. The second largest land use is "Low Density Residential" covering almost 33% of the watershed.

Table 2-4 summarizes the acreage of each land use type that occurs within the watershed, and provides a percent coverage for that land use type. If only urban land uses were factored in, residential areas make up 63% of urbanized areas, whereas industrial and commercial land uses only take up 15% of developed areas. Transportation, utilities and waterways cover 10% of urbanized areas in the watershed.

Table 2-4 – Land Use Summary

Land Use Description	Acres	% of Watershed
Agriculture	1,142	0.65%
Commercial	6,908	3.91%
Extraction	1,780	1.01%
Industrial	6,935	3.92%
Low Density Residential	57,981	32.81%
Medium to High Density Residential	7,393	4.18%
Open Space & Recreation	4,219	2.39%
Public Facilities & Institutions	3,635	2.06%
Rural Density Residential	33	0.02%
Transportation & Utilities	9,707	5.49%
Under Construction	107	0.06%
Vacant	3,331	1.88%
Vacant (Angeles NF + adjacent open space)	73,011	41.31%
Water & Floodways	545	0.31%
TOTAL ACRES	176,726	100.00%

The following descriptions of each land use type are derived from the SCAG database.

Agriculture (0.65% of the watershed)

Agriculture in the Rio Hondo Watershed is primarily present in the form of plant nurseries and horse ranches. Nurseries account for 80% of agricultural land use, including greenhouses, plants and flowers and Christmas tree production. Many of the

nurseries in the watershed are leased on transmission line right-of-ways owned by Southern California Edison or the City of Los Angeles Department of Water and Power. The horse ranches are located primarily in the community of Bradbury, near Whittier Narrows, and above the western banks of the Rio Hondo in Montebello. A few irrigated croplands or improved pasturelands as well as orchards and vineyards are also present in the watershed.

Commercial (3.91% of the watershed)

Approximately one dozen major commercial corridors or centers criss-cross the watershed. They make up about 7% of the urbanized landscape of the watershed. Most of the corridors run from east to west. Key commercial districts include Old Town Pasadena and the Colorado Boulevard corridor, downtown Arcadia and Santa Anita Fashion Mall, Valley Boulevard corridor running through Alhambra, San Gabriel and Temple City. Old and modern strip developments are the predominant types of commercial development in the watershed, making up over one-third of this land use type. There are a few dozen recreational centers including bowling alleys, miniature golf, amusement parks and other facilities. Other types of commercial development include low and high-rise office buildings, regional shopping centers and local retail centers with grocery or other magnet stores, commercial storage, hotels and motels and pay public parking facilities.

Extraction (1.01% of the watershed)

Sand and Gravel mining operations are situated in and near Irwindale. There is also oil and gas extraction near Whittier Narrows. There are approximately 1,780 acres under extraction in the watershed. Twice as much land is used for sand and gravel excavation than for oil extraction. Sand and gravel mines include storage and distribution facilities.

Industrial (3.92% of the watershed)

There are several pockets of industrial activity, the largest being in Commerce and lower Montebello. Industries of the watershed include manufacturing, packing houses, research and development, petroleum refining, oil processing, open storage, wholesaling and warehousing. There are also areas that integrate commercial, industrial and residential areas. The second and third largest pockets of industrial land uses are in South El Monte and El Monte. Monrovia and Duarte have a few areas of industrial activity, as does east Pasadena. By far the most predominate industries are manufacturing, assembly and industrial services companies, taking up over 3% of the entire watershed.

Low Density Residential (32.81% of the watershed)

Other than the "vacant" open space of Angeles National Forest, low density residential is the predominant land use in the watershed. These are single family homes, often six or more to an acre. Many are older single family homes built between 1920 and 1970. There are some low density single family homes, where lot sizes are up to two acres.

Medium to High Density Residential (4.18% of the watershed)

This land use type primarily features multi-family buildings, including clusters of apartment buildings surrounding commercial areas or corridors. Central Pasadena contains many neighborhoods of apartment buildings. Denser housing is also in lower east Arcadia, and along the 210 Freeway in east Arcadia and Monrovia. Large concentrations of dense housing are located in Alhambra, Rosemead, north Monterey Park and Montebello. Bell Gardens has large pockets of dense housing, relative to its size. Housing types include duplexes, triplexes, low and high-rise apartments, townhouses and trailer home parks.

Open Space & Recreation (2.39% of the watershed)

This is a relatively small percentage of the watershed, less than 3%. It does not include the Angeles National Forest, which is classified under the "Vacant" category. Regional recreation areas include Peck Road Water Conservation Park and Whittier Narrows Recreation Area. Golf courses take up almost one-third of this land use type. Local parks and regional parks each cover about 800 acres. Other open space and recreational facilities include botanical gardens, cemeteries, wildlife preserves or sanctuaries and shooting ranges.

Public Facilities & Institutions (2.06% of the watershed)

Of all the public facilities, schools make up the majority at 64% of this land use type. Schools include public and private day care centers, pre-schools, elementary, intermediate, high schools, colleges, and trade schools. Also included in this land use are government offices, public health and safety facilities including fire and police stations, correctional facilities, hospitals, and nursing homes. Religious facilities take up about 12% of this land use type. Also included are museums, community centers, auditorium and other cultural institutions. Special use facilities such as YMCA, youth organizations or shelters as also listed in this category.

Rural Density Residential (0.02% of the watershed)

These dozen or so rural residential properties are primarily located in the Angeles National Forest. Generally these are isolated ranches, farmsteads or homes in a rural setting. These homes may have been in existence in the forest for a long time.

Transportation & Utilities (5.49% of the watershed)

Freeways and major corridor make up almost half of this land use type. The flood control and water conservation system make up about one-quarter of this category and includes channels, debris basins, detention ponds and percolation basins including the Rio Hondo Coastal Spreading Grounds. Electrical power facilities including transmission corridors make up almost 14% of this land use type. Other transportation and utility uses include the El Monte Airport, railroad yards and right-of-ways, bus and truck terminals and yards, communication facilities, the Montebello Landfill, water storage facilities, natural gas and petroleum facilities and maintenance yards.

Under Construction (1.88% of the watershed)

There were only 107 acres under construction at the time of aerial photography and/or field verification for this database.

Vacant (41.31% of the watershed)

The Angeles National Forest in the upper watershed is the largest "vacant" area, occupying over 41% of the watershed. On the Land Use map, the area of the Angeles National Forest appears to occupy a smaller portion of the watershed, but that is only because the 2-dimensional surface of the map cannot accurately convey the full land area existing within the steep topography of the mountains. This category also include undeveloped lands within the urban fabric, abandoned orchards and vineyards and open bodies of water, as well as other open spaces that are in an "unimproved" state.

Findings

- With the exception of the Angeles National Forest, the watershed is largely "built out"
- Excluding Angeles National Forest, less than 3% of the watershed is available for open space or recreation
- There are a lack of ordinances supportive of sustainable site designs that mitigate water degradation from storm water runoff
- Since much of the watershed is already developed, there is a need to create non-traditional forms of open space that can be integrated into this urban landscape.
- There is a need to find ways to integrate the seemingly competing land use needs of housing, economic growth, water supply & quality, habitat, and recreation.

2.3.2 Habitat

Habitat in the Rio Hondo watershed ranges from the relatively extensive natural habitat in the Angeles National Forest in the upper part of the watershed to small disconnected patches of native vegetation in the highly urbanized lower watershed. In the foothills and mountains the tributaries to the Rio Hondo are natural streams. They have been impaired by invasive plant species, intense recreation, and flood control structures. The Rio Hondo and its tributaries are concrete-floored from the base of the foothills to the Whittier Narrows Basin, except at the Peck Road Basin at the juncture of Santa Anita Wash and Sawpit Wash.

Historically, many large predatory species of wildlife inhabited the watershed. The largest of which was the grizzly bear. Other significant predators included mountain lion, bobcat, grey fox and coyote. While the grizzly bear is now extirpated from this region, the mountain lion, bobcat, and coyote continue to live in the Angeles National Forest and are known to periodically frequent the foothills of the San Gabriel Mountains. The diverse environments of the watershed also supported many other species, both terrestrial and aquatic. Many hundreds of bird species are known to have frequented the watershed and even today more than 350 bird species utilize the rich habitat found within the Whittier Narrows alone. Steelhead trout, Pacific lamprey, unarmored threespine stickleback, arroyo chub, Santa Ana sucker, and Santa Ana speckled dace are among the species that once lived in the rivers of Southern California, including the Rio Hondo. Without today's impediments to wildlife movement, populations of wildlife were able to disperse from this watershed into other habitats. This provided the opportunity to maintain a healthy gene flow between populations. The ability to disperse also provided opportunities for seasonal migration and escape during episodic disturbance such as fire and flood.

Today, the Rio Hondo channel is unconfined by levees through the Whittier Narrows Basin and thus comprises a unique remnant of the natural drainages that crossed the valley floor of the watershed prior to urbanization. Despite its location in the middle of a dense urban area, the Whittier Narrows area maintains considerable habitat value. But larger species requiring a wider habitat range cannot sustain healthy populations in the long term without adequate access to nearby individuals and habitat areas. The main channel of the Rio Hondo, and some of its tributaries, offers an opportunity to restore a critical wildlife linkage from the Puente Hills (a virtual habitat island to the east), through Whittier Narrows, and up the Rio Hondo to the Angeles National Forest. Restoring this habitat linkage will improve biodiversity by increasing open space available for wildlife movement

Today, however, the Whittier Narrows, as well as much of the rest of Rio Hondo and its tributaries, have been invaded by a variety. of non-native exotic species, which can endanger native species in many different ways. For instance, invasive non-native species such as *Arundo donax* (giant reed), which has also infested the upper portions of the watershed, displaces native vegetation; provide little value to wildlife, and consume very large amounts of water. Hardy, urban adapted non-native species such as house mice and European starlings have also displaced native wildlife, which tend to be less aggressive and more sensitive to humans.

Sensitive Species

The California Natural Diversity Database (CNDDB) keeps records of observations of sensitive species, providing a glimpse into remaining existing natural habitat based on CNDDB records, Table 2-5 lists sensitive plant species observed in or near the Rio Hondo watershed. Most of the recent observations of sensitive plant species within the watershed were within the upper watershed in the Angeles National Forest. Parish's gooseberry (*Ribes divaricatum* var. *parishii*) was observed at Whittier Narrows as recently as 1980. Since the CNDDB database is derived only from "sightings" rather than comprehensive biological mapping, however, it can only provide an incomplete picture of the watershed.

Table 2-5
Sensitive Plant Species Potentially Occurring in Rio Hondo Watershed

Scientific Name/ Common Name	Status	Habitat and Habit
Astragalus brauntonii Braunton's milk vetch	Fed: FE State: none CNPS: 1B	Chaparral in brushy places. Perennial herb.
Calochortus plummerae Plummer's mariposa lily	Fed: none State: none CNPS: 1B	Coastal sage scrub, chaparral woodlands and grasslands in dry rocky places. Perennial herb.
Centromdia parryi ssp. *australis* Southern tarplant	Fed: none State: none CNPS List: 1B	Marshes and swamp margins, valley and foothill grassland, vernal pools. Often in disturbed sites near the coast; also in alkaline soils sometimes with saltgrass
Chorizanthe parryi var. *parryi* Parry's spineflower	Fed: none State: none CNPS: 3	Coastal scrub, chapparal. Dry slopes and flats; sometimes at interface of 2 vegetation types; dry, sandy soils

Dudleya multicaulis Many-stemmed dudleya	Fed: none State: none CNPS: 1B	Coastal sage scrub and chaparral in dry, stony places in heavy clay soils. Perennial herb.
Galium grande San Gabriel bedstraw	Fed: none State: none CNPS: 1B	Chaparral and oak woodlands. Shrub.
***Scientific Name/* Common Name**	**Status**	**Habitat and Habit**
Lepidium virginicum var. *robinsonii* Robinson's pepper grass	Fed: none State: none CNPS: 1B	Chaparral and coastal scrub in dry soils. Annual herb.
Linanthus concinnus San Gabriel linanthus	Fed: none State: none CNPS: 1B	Lower/upper montane coniferous forest, rocky. Annual herb.
Linanthus orcutti Orcutt's linanthus	Fed: none State: none CNPS: 1B	Chapparal, lower montane coniferous forest
Navarretia prostrate Prostrate navretta	Fed: none State: none CNPS: 1B	Coastal scrub, valley and foothill grassland, vernal pools
Ribes divaricatum var. *parishii* Parish's gooseberry	Fed: none State: none CNPS: 1B	Willow swales in riparian habitat
Oreonana vestita Wolly mountain-parsley	Fed: none State: none CNPS: 1B	Lower/upper montane coniferous forest, subalpine forest, gravel or talus. Perennial herb.
Rorippa gambellii Gambel's watercress	Fed: FE State: CT CNPS: 1B	Freshwater marshes in undisturbed areas. Perennial herb.
Thelypteris puberula var. *sonorensis* Sonoran maiden fern	Fed: none State: none CNPS: 3	Meadows along streams and seepage areas. Perennial herb.

STATUS:

Federal

FE = Taxa is listed as an endangered species

FT = Taxa is listed as a threatened species

Status

CE = Taxa listed by the State of California as endangered

CT = Taxa listed by the State of California as threatened

California Native Plant Society (CNPS)

1B = Taxa is rare, threatened, or endangered in California and elsewhere

3 = Taxa about which more information is needed

Source: California Natural Diversity Data Base (CNDDB), Baldwin Park, El Monte, Los Angeles, Mt. Wilson, Pasadena, South Gate, and Whittier 7.5 minute quads, 2003

Table 2-6 shows sensitive wildlife that may occur in the watershed. Four wildlife species listed as either federal or endangered may occur in the Rio Hondo Watershed. There are historic records of the federal endangered mountain yellow-legged frog (R*ana muscosa*) in the watershed and it may still occur in the upper watershed in the Angeles National Forest. The State endangered southwestern willow flycatcher (*Empidonax trailli extimus*) passes through the watershed in migration. Although there are no recent breeding records within the watershed, there is a possibility that breeding could occur in the better riparian areas. The federal threatened coastal California gnatcatcher (*Polioptila californica californica*) breeds in the Montebello Hills. As recently as the Fall 2002, the California gnatcatcher has been observed several times in the Rio Hondo basin, including the Whittier Narrows natural area, probably as dispersing individuals from the Montebello Hills population (Long). The Montebello Hills have been designated as Critical Habitat for the California gnatcatcher. The federal and State endangered least Bell's vireo (*Vireo belli pusillus*) breeds in riparian habitat. This species has been recorded annually in Whittier Narrows Natural Areas lake habitat with as many as five individuals present, and breeding was confirmed as of this year 2004 t . Also,four territorial, singing males were found on the Rio Hondo near Bosque del Rio Hondo (Dan Cooper, July 8, 2004) Several other sensitive wildlife species that are not officially listed but that have been designated California Species of Special Concern have been reported in the Rio Hondo Watershed inn the CNDDB and still occur there (Table 2-6).

Table 2-6

Sensitive Wildlife Species Potentially Occurring Rio Hondo Watershed

Scientific Name	Common Name	Listing	Comments
Endangered And Threatened Species			
Rana muscosa	Mountain yellow-legged frog	FE, CSC	Always encountered within a few feet of water. Historic records from watershed
Empidonax traillii extimus	southwestern willow flycatcher	CE	Occurs in riparian woodlands. No recent breeding records in watershed
Polioptila californica californica	coastal California gnatcatcher	FT, CSC	Occurs in coastal sage scrub. A large breeding population is located in the Montebello Hills near the Rio Hondo in the Whittier Narrows area
Vireo bellii pusillus	least Bell's vireo	FE, CE	Occurs in willow woodlands and moist bottomlands. Several observations at Whittier Narrows
Other Sensitive Species			
Taricha torosa torosa	Coast range newt	CSC	Coastal drainages from Mendocino County to San Diego County. Several records for Angeles National Forest
Clemmys marmorata pallida	southwestern pond turtle	CSC	Inhabits permanent or nearly permanent bodies of water. Requires basking sites and suitable nesting sites
Phrynosoma coronatum blainvillei	San Diego horned lizard	CSC	Inhabitant of coastal sage scrub and chaparral in arid and semi-arid climates. Prefers friable, rocky, or shallow sandy soils
Thamnophis hammondii	two-striped garter snake	CSC	Highly aquatic. Found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.

Scientific Name	Common Name	Listing	Comments
Phalacrocorax auritus	double-crested cormorant	CSC	Aquatic species associated with lakes, streams, and coastal shores. Suitable habitat present in lakes within watershed
Accipiter cooperii	Cooper's hawk	CSC	Inhabits broken woodlands or streamside groves, especially deciduous
Accipiter striatus	sharp-shinned hawk	CSC	Found in mixed woodland.
Lanius ludovicianus	loggerhead shrike	CSC	Forage in open, brushy areas
Antrozous pallidus	pallid bat	CSC	Prefers rocky habitat with small crevices and trees

STATUS CODES:

Federal

FE = Taxa is listed as an endangered species
FT = Taxa is listed as a threatened species

State

CE = Taxa is listed by the State of California as *endangered*
CT = Taxa is listed by the State of California as threatened
CSC = California Species of Special Concern

Source: California Natural Diversity Data Base (CNDDB), Azusa, Baldwin Park, El Monte, Los Angeles, Mt. Wilson, Pasadena, South Gate, and Whittier 7.5 minute quads, 2003

Upper Watershed

The headwaters of the Rio Hondo's major tributaries including Eaton Wash, Santa Anita Wash, and Sawpit Wash are in the San Gabriel Mountains in the Angeles National Forest. In these upper portions of the watershed, the steep canyons and north facing slopes that extend from west of Mount Wilson to just east of Monrovia Peak contain the region's highest and most continuous stands of big cone Douglas fir (*Psedotsuga macrocarpa*), a tree that is endemic to southern California (Stephenson and Calcarone 1999).

These upper areas of the watershed contain the greatest amount of natural habitat and are most likely to support sensitive plant species. Dominant plant communities include

montane hardwood conifer and mixed chaparral (see map of Vegetative Cover (2-9) on page 2-61). The foothills of the San Gabriel Mountains are characterized by five general plant communities: coastal sage scrub, chaparral, riparian, oak woodland and annual grassland (Barber et al 2000). Invasion by the exotic giant reed *Arundo donax* has been a problem in Eaton Canyon.

Chaparral is the dominant community on the foothills and lower mountain slopes in the Rio Hondo watershed (Chambers Group 1995). Coastal sage scrub dominates hillsides below 1,500 feet in elevation on the coastal side of the San Gabriel Mountains. This community has several phases, depending on the substrate, elevation, and depth to groundwater (Hanes 1976). Southern oak woodlands commonly are found on clay benches and lower slopes of the coastal San Gabriel Mountains (Hanes 1976). Riparian woodlands are associated with watercourses that either have flows on the surface throughout the year or subsurface moisture (Hanes 1976).

Coastal sage scrub dominates hillsides below 1,500 feet in elevation on the coastal side of the San Gabriel Mountains. This community has several phases, depending on the substrate, elevation, and depth to groundwater (Hanes 1976). The dominant species in the community is California sagebrush (*Artemesia californica*), which is associated with true sages such as white sage and black sage (*Salvia apiana* and *S. mellifera*) and subshrubs such as California buckwheat (*Erigonum fasiculatum*), California encelia

a.

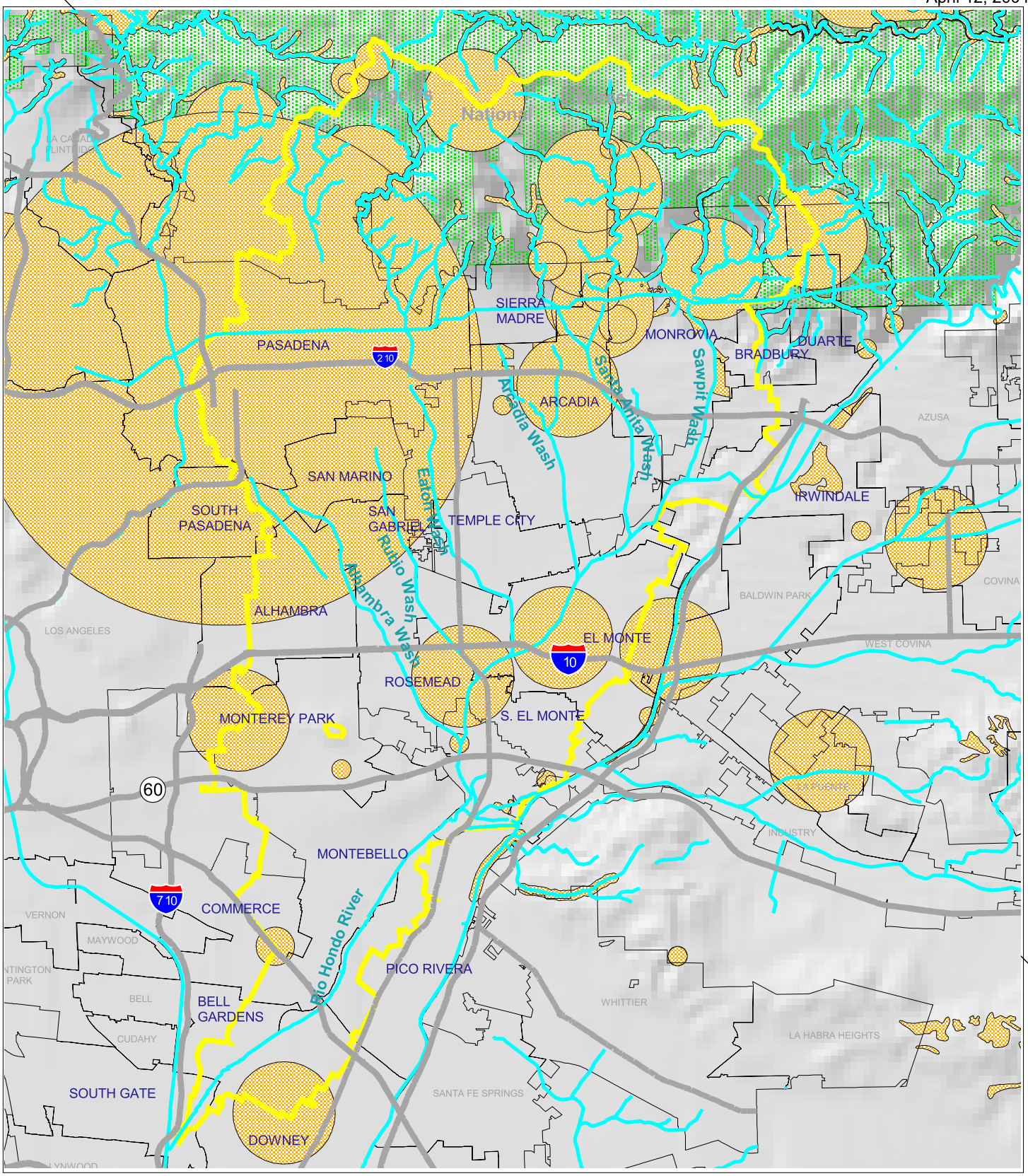
b.

a. Sunflowers
b. Castor Bean

Rio Hondo River Watershed Management Plan

California Natural Diversity Database

April 12, 2004



Map created by the Rivers and Mountains Conservancy

Los Angeles - Freeways and Highways
Los Angeles - Channels, Rivers, Streams
Rio Hondo River Watershed
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Angeles National Forest

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San Gabriel Valley Council of Governments

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Rio Hondo-Habitat

(*Encelia californica*), and golden yarrow (*Hazardia squarrosa*). Other commonly occurring species in the coastal sage community include perennial ryegrass (*Leymus condensatus*) and laurel sumac (*Malosoma laurina*).

Southern oak woodlands commonly are found on clay benches and lower slopes of the coastal San Gabriel Mountains (Hanes 1976). This community is dominated by coast live oak (*Quercus agrifolia*) and in some locations California walnut (*Juglans californica).* The understories in southern oak woodlands can range from grasslands to scrub to chaparral. Common understory species include non-native brome grasses (*Bromus* spp.), sugar bush (*Rhus ovata*), squawbush (*Rhus trilobata*), poison oak, coffeeberry (*Rhamnus californica*), and fuchsia-flowering gooseberry (*Ribes speciosum*).

Riparian woodlands are associated with watercourses that either have flows on the surface throughout the year or subsurface moisture (Hanes 1976). Dominant species in Sawpit Canyon in the Rio Hondo watershed include western sycamore (*Platanus racemosa*), black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), mulefat (*Baccharis salicifolia*), arroyo and red willow (*Salix lasiolepis* and *S.lasiandra*), and white alder (*Alnus rhombifolia*)(Chambers Group 1995).

Chambers Group (1995) described the vegetation surrounding Sawpit Reservoir in the foothills of the San Gabriel Mountains within the Rio Hondo watershed. The upland area was occupied by a relatively undisturbed chaparral community with coastal sage elements. The community was dominated by laurel sumac, toyon, California buckwheat, and black sage. Oak woodlands dominated by canyon oak (*Quercus chrysolepis*) and coast live oak, with an understory of California rose (*Rosa californica*), dead nettle (*Lamium amplexicaule*) and lovegrass (*Eragrostis* sp.) occurred at the base of some of the slopes. Sawpit Reservoir itself exhibited a distinctive set of vegetational zones typical of shallow ponds with aquatic species predominating in deeper water and persistent emergent species occurping the edges of the pond. Riparian zones at Sawpit Reservoir included an aquatic zone dominated by the nonnative eupatorium (*Ageratina adenophora*), an emergent zone supporting cattails (*Typha latifolia*) and smartweed (*Polygonum* sp.), a California native, a red willow (*Salix laevigata*) scrub/shrub zone and a white alder - western sycamore woodland zone. The Sawpit Reservoir area has supported southwestern pond turtles (*Clemmys marmorata pallida*), a California Species of Special Concern.

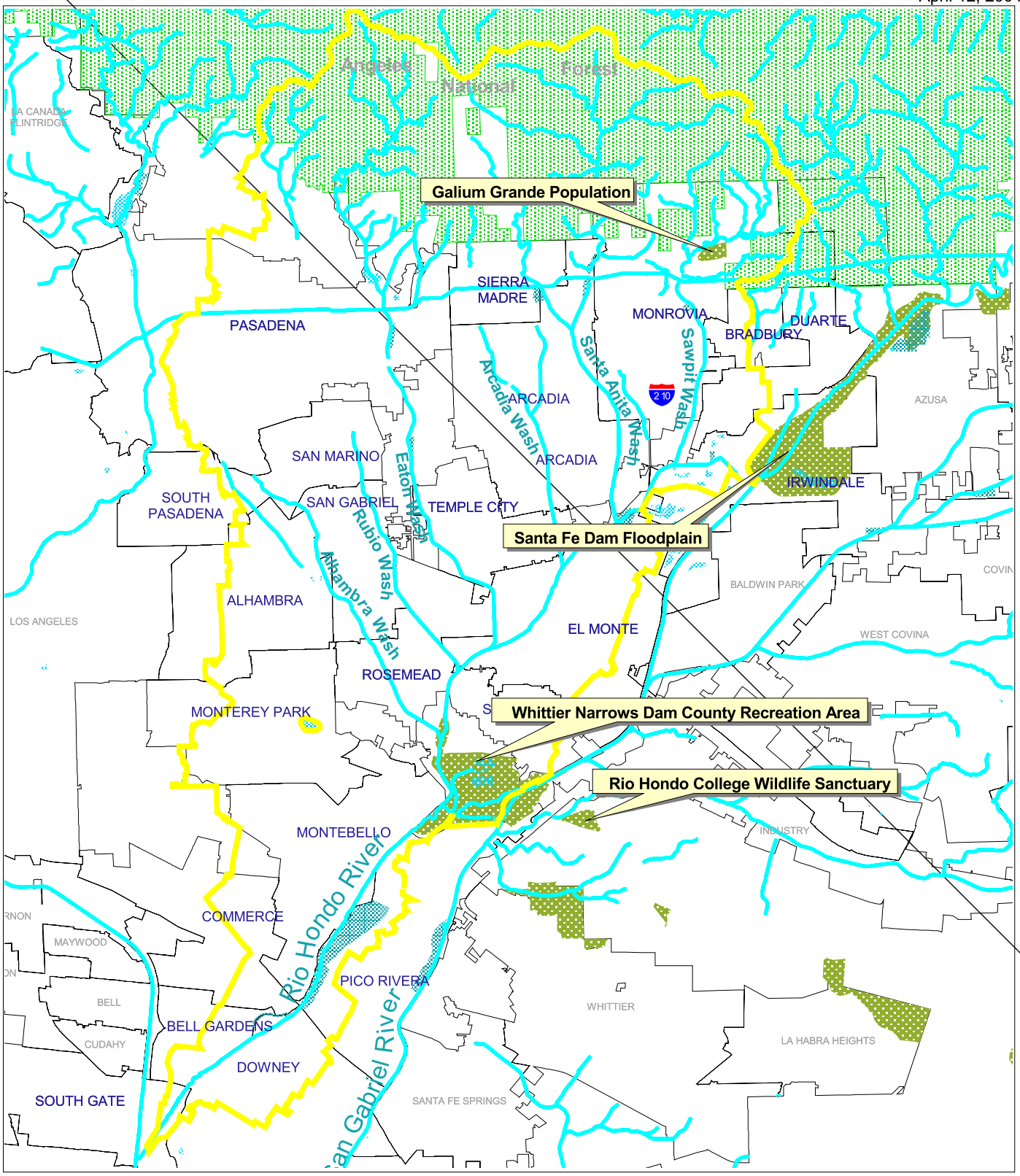
Lower Watershed

Below the foothills, the Rio Hondo watershed is highly urbanized and most of the Rio Hondo itself is concrete lined with minimal habitat value. Fragmented habitat, mostly degraded, occurs throughout the lower watershed. The most significant natural habitat

Rio Hondo River Watershed Management Plan

Significant Ecological Areas

April 12, 2004



Map created by the Rivers and Mountains Conservancy

- Rio Hondo River Watershed
- Los Angeles - Channels, Rivers, Streams
- Los Angeles - Channels, Rivers, Streams
- Spreading Grounds
- Angeles National Forest
- Los Angeles - Lakes and Reservoirs
- LA County SEA Areas

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Rio Hondo- Open Space View

occurs at Whittier Narrows. Whittier Narrows Dam County Recreation Area has been designated by the County of Los Angeles Department of Regional Planning as a Significant Ecological Area (SEA). The Los Angeles County General Plan defines SEAs as "ecologically important fragile land and water areas that are valuable as plant or animal communities and often important to the preservation of threatened or endangered species."

The Whittier Narrows Dam County Recreation Area SEA is 4,145 acres and includes both the San Gabriel River and the Rio Hondo. The Whittier Narrows Dam was constructed in 1957 as part of a comprehensive plan for flood control in the Los Angeles County Drainage Area. The Whittier Narrows County Recreation Area surrounds the Rio Hondo channel on the north and east. In addition to flood control and water conservation, the Whittier Narrows Dam County Recreation Area provides a variety of recreational opportunities and also contains significant natural habitat. This large area of open space, bordered by the cities of South El Monte, Rosemead, Montebello, Pico Rivera, and Industry contains landscaped and recreational areas including a golf course and four man-made lakes as well as natural habitat of varying quality. Plant communities include coastal sage scrub, freshwater marsh, riparian scrub, riparian woodland and non-native grassland. Much of the riparian habitat in the area has been invaded by arundo.

The Whittier Narrows County Recreation Area is known to support a wide diversity of wildlife species. In 1939, the National Audubon Society established a nature center along the west bank of the San Gabriel River, approximately 1 mile east of the Rio Hondo Channel. The Los Angeles County Department of Parks and Recreation acquired the nature center from Audubon in 1971 and continues to operate it as a nature center.

Since the mid-1930's approximately 259 species of birds have been recorded within the Recreation Area boundaries (Chambers Group 1994). However, the most current figure is 292 species and 5 additional subspecies of birds recorded (Long 2004). Wintering waterfowl rest and feed on the lakes while shorebirds use the mudflats and sandbars along the rivers. Spring and fall migrant birds rely on the riparian vegetation during migration, and a number of hawk species hunt over the open fields and clearings. In general, the entire Whittier Narrows area is considered open space but the most important open space for wildlife occurs in the Wildlife Refuge, located 1 to 2 miles east of the Rio Hondo Channel. Wildlife movement occurs within the Rio Hondo Channel and through the connecting drainage channel leading to the wildlife refuge area. Mammals within the Whittier Narrows area include a variety of rodents as well as several larger mammals including raccoon (*Prycyon lotor*), opossum (*Didelphis*

virginiana), long-tailed weasel (*Mustela frenata*), striped skunk (*Mephitis mephitis*) and coyote (*Canus latrans*). In general, the Rio Hondo Channel within Whittier Narrows is a significant ecological area based on the diversity of plant and wildlife species that occur there.

Recognizing What Has Been Lost

As a remnant of the rich habitat that use to exist within much of the Rio Hondo Watershed, Whittier Narrows provides a glimpse of what has been lost. Urban development has largely eliminated and/or degraded habitat and significantly impacted habitat in large portions of the entire watershed over the last 150 years. The majority of the valley above Whittier Narrows as well as lower elevation foothill areas within the San Gabriel River Watershed has long been developed for urban uses. Changes in the hydrological functioning in the watershed, such as channelization, dams, and importation of water, has altered the historic vegetation patterns and increased barriers to wildlife movement.

Like other river corridors and tributaries, the Rio Hondo once functioned as a major habitat corridor between the Montebello-Puente-Chino Hills, Santa Ana Mountains, and the San Gabriel Mountains. Remaining habitat today along the Rio Hondo and throughout the watershed is largely fragmented by urban development. None of these habitat patches are currently well connected, thereby limiting the plant and wildlife species gene pool due to isolation and potential long-term viability of regional habitat communities and remaining wildlife.

Another variable that has affected native vegetation patterns in the watershed is the introduction and spread of invasive non-native plant species. While over an evolutionary timescale the distribution of plan species shifts, this process has been accelerated, largely from human activities. Invasive plants have been brought to southern California via livestock, agricultural practices, movement of goods, and landscaping practices. Many of the tenacious species that have become problematic have adapted to disturbed areas which abound in areas of extensive human use. Invasive plants can displace native vegetation, affect hydrologic patterns, and in turn, impact habitat quality for wildlife. The introduction of invasive aquatic animals has also disturbed the habitat of native species. African clawed frog and the common bullfrog, catfish, sunfish, crawdads and other invasive species all directly compete with native amphibians and fish. These can all be attributed to introduction by humans through the stocking of artificial ponds and lakes, as well as type conversion to perennial streams and transport.

Riparian communities mapped by Chambers Group (1994) within the Rio Hondo Channel in Whittier Narrows were dominated by willows, mulefat, Mexican elderberry (*Sambucus mexicanas*) and poison oak. Cottonwoods (*Populus fremonti*) and western sycamores were present in lower densities. Non-native species included arundo,

eucalyptus, and olive trees. Significant coastal sage scrub habitat that supports breeding California gnatcatchers occurs in the Montebello Hills just west of the Rio Hondo Channel.

An aquatic life survey of the Rio Hondo Channel within Whittier Narrows collected four species of introduced fishes but no native fish species. (Chambers 1994) Non-native fish often compete with native fish for food and space. Others are efficient predators that eat or harm small or young native fish. The fish species collected included mosquito fish (Gambusia affinis), fathead minnow (Pimephales promelas), bluegill (Lepomis macrochirus) and largemouth bass (Micropterus salmoides). Two species of native amphibian, Pacific chorus frog (*Pseudacris regila*) and western toad (*Bufo boreus*) were observed. Non-native amphibians in the Rio Hondo Channel included bullfrogs (*Rana catesbeiana*) and African clawed frogs (*Xenopus laevis*).

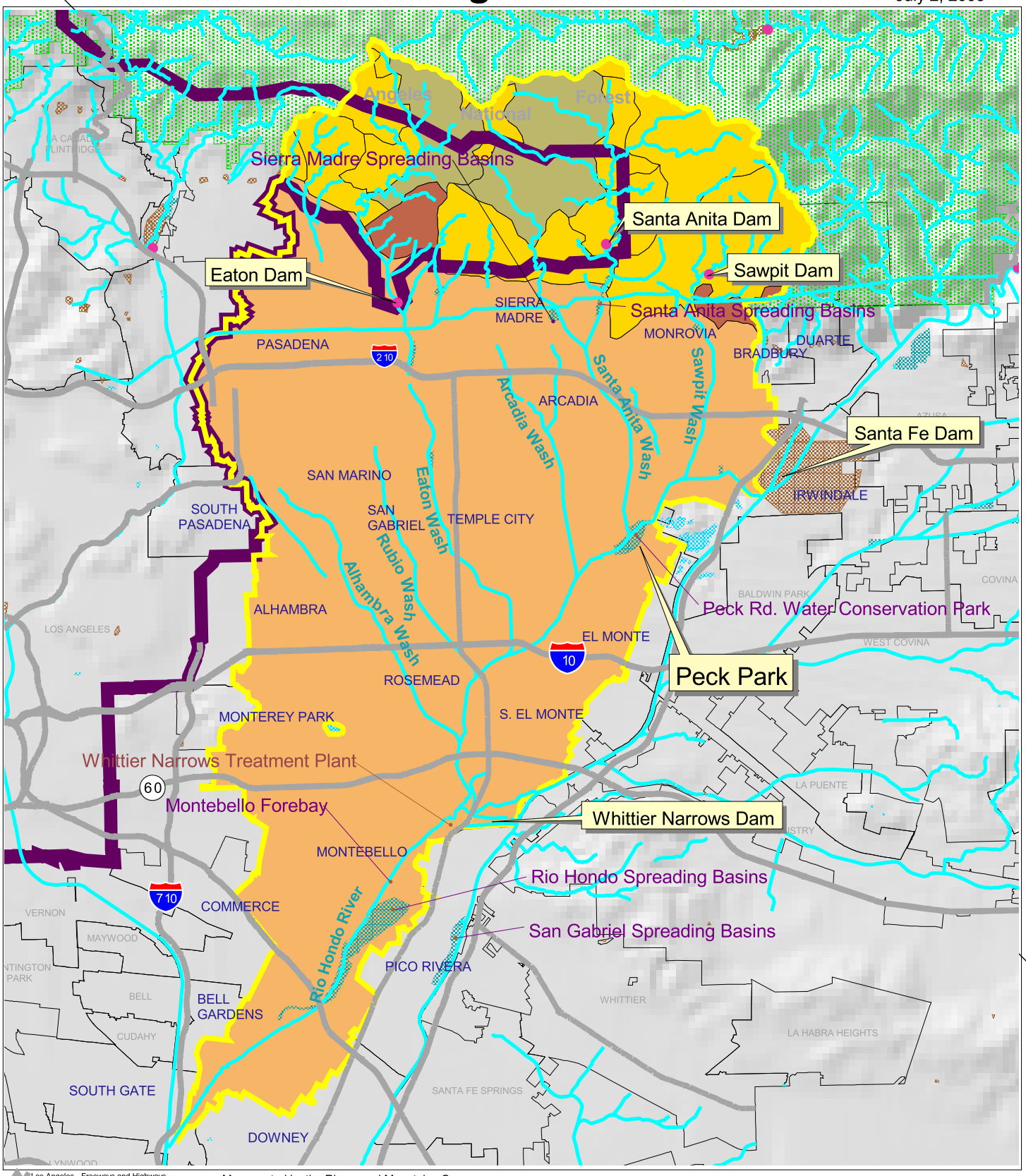
With the exception of the Whittier Narrows area, other areas of open space within the lower Rio Hondo watershed are degraded but represent potential opportunities for habitat restoration. Peck Park where Santa Anita Wash and Sawpit Wash join contains abandoned gravel pits that have been converted to lakes. Peck Park presents one of the better opportunities for habitat restoration in the lower Rio Hondo Watershed. The shores of the lakes currently support riparian vegetation including willows and mulefat. The open waters of the lake are used by waterfowl, herons, and egrets.

Arundo

Rio Hondo River Watershed Management Plan

GAP Vegetative Cover

July 2, 2003



Los Angeles - Freeways and Highways
Dams
Los Angeles - Channels, Rivers, Streams
Spreading Grounds
Rio Hondo River Watershed
RMC Boundary
UCSB GAP Vegetative Cover
Coastal Scrub
Mixed Chaparral
Montane Hardwood Confier
Urban
Debris Basins
Angeles National Forest
Los Angeles - Lakes and Reservoirs

Map created by the Rivers and Mountains Conservancy

3 0 3 Miles

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Considerable open space also exists in the Rio Hondo Spreading Grounds. However, existing habitat and habitat restoration opportunities are limited because the Los Angeles County Department of Public Works overturns the soil on a regular basis to increase infiltration. Other open areas within the lower Rio Hondo watershed include various parks and golf courses. These areas are landscaped for recreational use but provide opportunities for habitat enhancement by the planting of native species and potentially removing concrete from the channels.

Findings

- Existing natural habitat within the watershed are threatened by many factors.
- An increase in non-native and invasive species has displaced native vegetation, affected hydrologic patterns, and disturbed habitat quality for native wildlife
- The prevalence of non-native fish has contributed to a decline in native fish species.
- The intentional stocking of lakes with non-native fish is problematic, as are efforts to create more lakes within a watershed in which year-round bodies of surface water are not a natural feature of this environment
- At the urban-wildlife interface there is increased interaction between domesticated animals and native species.
- With the exception of Whittier Narrows, the highly urbanized character of the watershed below the foothills has left only a few small habitat patches to support wildlife species
- A lack of connectivity between remaining habitat patches prevents movement for some native species
- Although infrastructure must be protected from flooding, some existing maintenance plans for controlling vegetation in channels and flood control basins may actually reduce the capacity of channels and basins to convey and/or retain water.
- There is a lack of perspective among some community members regarding vector control, nuisances, and public health and safety and its potential impact on habitat enhancement and restoration projects.
- Open space areas with habitat potential are also needed for other active recreational uses
- The main channel of the Rio Hondo offers an opportunity to restore a critical wildlife linkage from the Puente Hills to the San Gabriel Mountains

- The use of insecticides, herbicides, and larvicides within the watershed can negatively impact native habitat
- Local residents are largely unaware of the habitat potential in their backyards and personal gardens.
- There is a lack of municipal projects incorporating native vegetation for habitat purposes
- A degradation of native habitat occurs when projects simulate a perennial environment, where historically the environment has been an intermittent one.
- Too few cities are developing a commitment to native plant palettes
- There is a lack of understanding by residential, commercial and industrial property owners regarding the importance of using gardens as backyard/community habitats.
- There is alck of understanding and acceptance for animals and insects that are found here naturally.

Birds in Legg Lake

2.3.3 Open Space

Open space includes a variety of land forms that offer people a respite from the manmade urban environment. Although open space typically is seen as encompassing undeveloped natural areas and seemingly "vacant" lands, it can also includes parks, school playgrounds, greenways, and utility corridors, among other land uses.

With the exception of Angeles National Forest, existing open space within the watershed is very limited, as this is primarily a built up urban environment. Although 3 to 4 acres of open space is generally needed for every 1000 people, the San Gabriel Valley overall has less than one-half acre per resident. As previously stated, less than 3% of the Rio Hondo watershed is officially classified in the SCAG GIS database as open space and recreation. This includes regional recreation areas such as Peck Road Water Conservation Park and the Whittier Narrows Recreation Area. In the watershed, golf courses make up almost one-third of this land use type. In addition, local parks and regional parks, each cover about 800 acres of open space. Other open space areas within the watershed include botanical gardens, such as those at the Huntington Art Library in San Marino, as well as several cemeteries

The relative scarcity of open space within the watershed has been exacerbated by the past practice of reserving available open space for single purpose exclusive functions rather than complementary multiple uses that combine recreation and/or habitat with other vital social functions. The recent efforts of the LACDPW to open up portions of the Rio Hondo Spreading Grounds for passive recreation is a rare exception within the watershed.

For instance, most public schools within the watershed still operate as single purpose facilities even though schoolyards and playgrounds could provide additional open space if made accessible to the larger community on weekends and evenings. Currently, the City of El Monte is working on developing an agreement between its Parks and Recreation Department and the local school district.

Another example of single purpose "open space" within the watershed are utility rights-of-way and easements. A Southern California Edison easement bisects much of the watershed from near Eaton Canyon south to Downey where it crosses the Rio Hondo and then runs along its east bank just before its confluence with the Los Angeles River. Much of this open space would likely have been developed for other purposes had it not been reserved for use as a utility corridor. Having successfully preserved this open space corridor, however, it still allows for only limited public use due to safety, maintenance, PUC-mandated fiscal responsibilities, and operational

requirements. Regulatory and fiscal issues will have to be addressed to determine the feasibility of creating new open space opportunities along this corridor.

Potential open space has also been lost due to inefficient land use development patterns that separate residential from retail and other compatible functions. Multi-use building and communities that integrate residential with retail and business functions are better able to maximize land resources and integrate open space into site designs. A current example within the watershed is Paseo del Colorado in Pasadena, a shopping and entertainment complex that includes apartments and an open space plaza. Monrovia and other cities located along the planned extension of the Gold Line, a light rail line extending from downtown Los Angeles into the San Gabriel Valley, are planning multi-use projects around the transit corridor.

The undeveloped open space areas in the foothills of the San Gabriel Mountains play a crucial role in the overall hydrologic functioning of the watershed. However, not all these open space areas, some of which is privately held, is protected from future development. In response to growing pressures to develop these open space areas, the citizens of Monrovia agreed to tax themselves to purchase the last remaining open space areas in the foothills adjacent to the city and hold it in trust as a wilderness preserve. The Monrovia Mountains Conservancy could serve as a model for other similar land acquisition efforts among foothill communities of the watershed.

Although existing open space is relatively scarce, some areas of the watershed have underutilized properties currently zoned for commercial, industrial, and residential purposes. Some of these areas could be converted to open space. in the future. Contaminated properties, classified as brownfield sites, represent another related open space opportunity. Landfills, such as the Peck Road Gravel Pit, constitute another land reclamation opportunity that offers significant future open space potential.

Most of the "recreational" open space areas, such as parks and golf courses, are cataloged in section 3.4.4 on recreation, which follows this open space section. Additional notable open space features include:

Cemeteries

- San Gabriel Cemetery, San Gabriel
- Live Oak Memorial Park, Duarte
- Resurrection Cemetery, Montebello
- Russian Molotan Christian Cemetary/Mount Olive Memorial Park, City of Commerce

- Mount Carmel Cemetery/Park Lawn Memorial Park, City of Commerce

Findings

- There is a scarcity of open space in the developed portions of the watershed
- The acquisition and preservation of remaining open space areasthroughout the watershed is needed.
- Most existing open space has been set aside for single purposes rather than multiple uses
- There has been a lack of interest in The potential to recycle abandoned commercial and industrial sites to create new open space
- There is a need to catalog potential open space opportunities throughout the watershed
- Some recreational areas are contributing to problems with sustainability (e.g. golf courses and parks that use pesticides and fertilizers)

a.

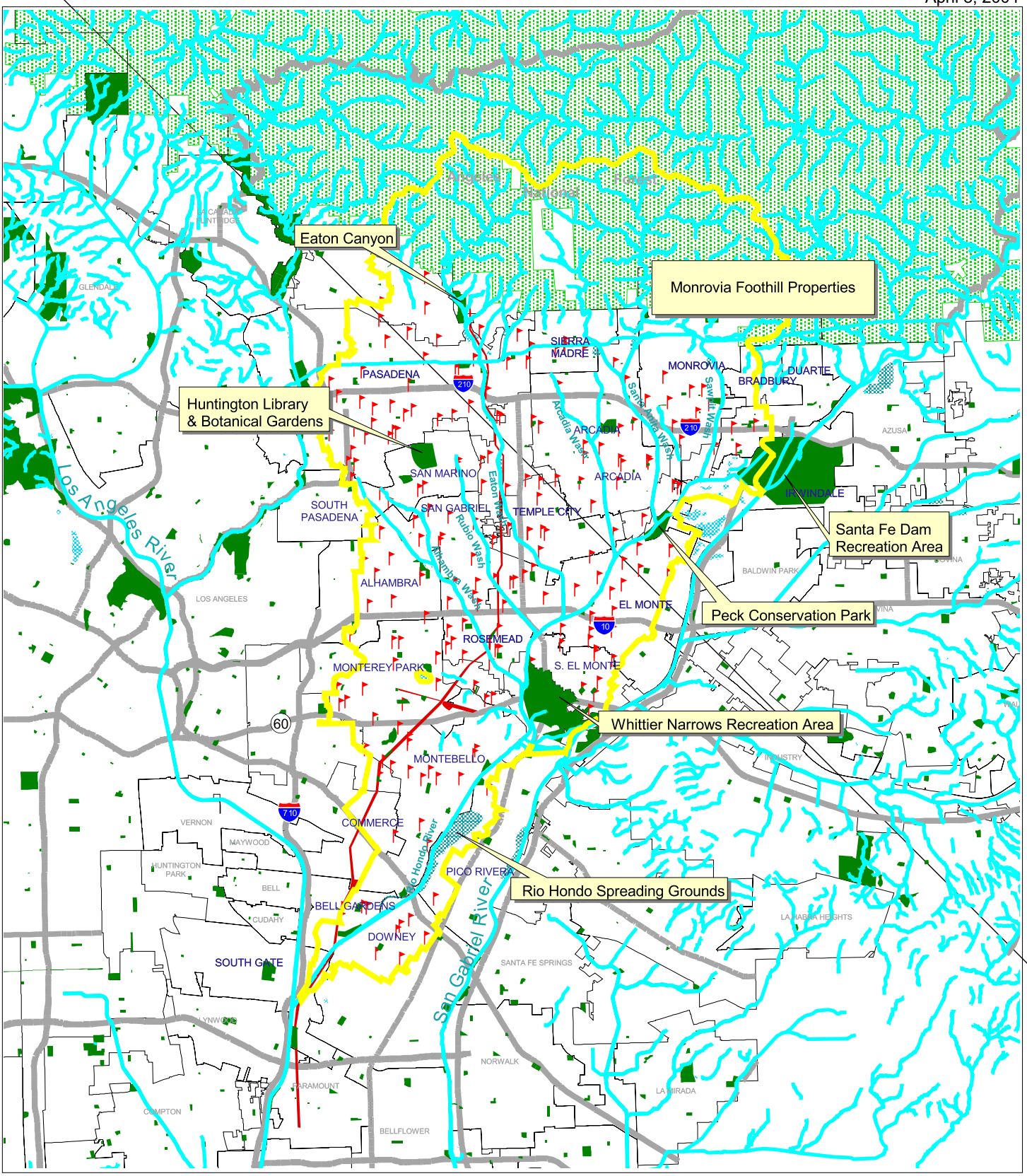
b.

a. Open Space and surviving remnant habitat behind Whittier Narrows Dam
b. Channelized section of the east branch of the Acadia Wash bisecting parkland

Rio Hondo River Watershed Management Plan

Parks, Schools, Open Space & Utility Right of Way

April 8, 2004



Map created by the Rivers and Mountains Conservancy

- Rio Hondo River Watershed
- Rivers, channels and streams.shp
- Existing Open Space
- Schools
- Edisin ROW
- Los Angeles - Lakes and Reservoirs
- Spreading Grounds
- Los Angeles - Freeways and Highways
- Angeles National Forest

3 0 3 Miles

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Rio Hondo- Open Space View

2.3.4 Recreation

Within the Rio Hondo Watershed are significant recreation opportunities, most notably within the Angeles National Forest and Whittier Narrows Recreation Area. Throughout the urbanized watershed are systems of parks within each city and parks operated by the Los Angeles County Department of Parks and Recreation (LACDPR). The USDA Forest Service is the largest landowner in the watershed. LACDPR maintains many park and recreation facilities for county residents. There are other significant recreational opportunities including the Santa Anita Park and Racetrack, the Huntington Library Art Gallery and Botanical Gardens, and several public and private golf courses.

Although many parks exist in most communities, there are areas that do not meet the goal of 1 acre of park space per 1,000 residents. In some cases, these occur in areas of high population density, such as parts of El Monte and South El Monte along the eastern edge of the watershed. Other areas of relatively high population density that appear to lack needed park and recreational facilities include areas of Temple City and San Gabriel along Eaton Wash and portions of Rubio Wash. This gap extends further north through unincorporated parts of Los Angeles County into east Pasadena. Very few cities within the watershed meet the California state criteria of at least 5 acres of park space per 1,000 residents. The only two cities that exceed the ratio are San Marino, at 18 acres per 1000 residents, and Irwindale, at just over 5 acres per resident. Only two other cities are approaching that standard – Arcadia, and Monrovia.

The relative lack of parks in the developed portions of the watershed also encourages increased recreational use of the undeveloped portions of the upper watershed. However, human induced impacts on the watershed from recreation can be a significant problem. Natural areas in the upper watershed that should be pristine are being degraded by off road vehicles, horses, litter and other activities.

Trails are located throughout the watershed. Both mountain and surface street biking trails are interlaced by hiking and equestrian trails. Many trails are up in the Angeles National Forest, with trailheads beginning at the top of the foothill communities of Altadena, Pasadena, Sierra Madre and Monrovia. The Lario or Rio Hondo Trail runs along most of the eastern levee of the Rio Hondo, connecting Peck Road Water Conservation Park with the Los Angeles River Bikeway in South Gate. This is a mountains-to-the-sea trail.

There are many issues related to trails including lack of access, connectivity, signage, safety, water quality and habitat conflicts, conflicts between user groups and lack of

maintenance dollars. In a survey of its residents, Pico Rivera found that what its residents most wanted were secure walking trails that would connect them with larger trail networks (Rio Hondo Watershed Convening Report).

Conflicts often arise between fast moving bicyclists and slow moving equestrians who prefer not to share trails. Bicyclists speeding down mountain trails have difficulty slowing down for oncoming pedestrians or other obstacles, thus creating a potentially dangerous situation. With the extensive trail system in place, patrolling for safety is often more feasible. Riders on horses in groups can act as de facto safety patrols by their mere presence. On the other hand, equestrian trails along a soft-bottom portion of a river can be a potential fecal source.

The following is a catalog of the principal park and recreational facilities located within the watershed.

USDA Forest Service

The Angeles National Forest contains 650,000 acres of open space, most of which is accessible for recreation. Although only a small portion of the forest is contained within the watershed, the gateway to the forest on Highway 39/San Gabriel Canyon Road is just a few miles to the east of the watershed. Local gateways to the forest trails are located at the Eaton Canyon Nature Center and Monrovia Canyon Nature Center. Access to the Angeles NF is also available from local trails leading from foothill communities such as the Mount Wilson Trail in Sierra Madre.

Major recreational activities available within the Angeles NF include:

- Camping
- Picnicking
- Fishing
- Hunting
- Target Shooting
- Off-Highway Vehicle
- Hiking Trails
- Boating
- Swimming
- Wilderness Areas
- Cross-Country Skiing
- Downhill Skiing

Trails within the Angeles NF include but are not limited to:

- Fish Canyon to Mount Waterman Trail
- Gabrielino National Recreation Trail
- Henninger Flats to Shohone Trace Trail
- Mount Wilson Toll Road

- Mountain Wilson Trail Shoshone Trace Trail
- Santa Anita Canyon Trail to Gabrielino Trail

County of Los Angeles Department of Parks and Recreation

The County of Los Angeles Department of Parks Recreation operates a wide variety of facilities within the watershed. These include:

- Local parks in unincorporated communities (5), with the exception of Arcadia Park which is a County facility in the City of Arcadia:
  - Charles C. Farnsworth Park, Altadena
  - Arcadia Park, Arcadia
  - Pamela Park, Duarte
  - Michillinda Park, Pasadena
  - Saybrook Park, East Los Angeles

- Golf courses (5):
  - Santa Anita
  - Eaton Canyon
  - Altadena
  - Whittier Narrows
  - Alhambra

- Natural areas with nature centers (4) – two operated by County, and two by cities
  - Eaton Canyon Nature Center, Pasadena
  - Whittier Narrows Nature Center, Whittier Narrows
  - Arcadia Wilderness Park
  - Monrovia Canyon Park

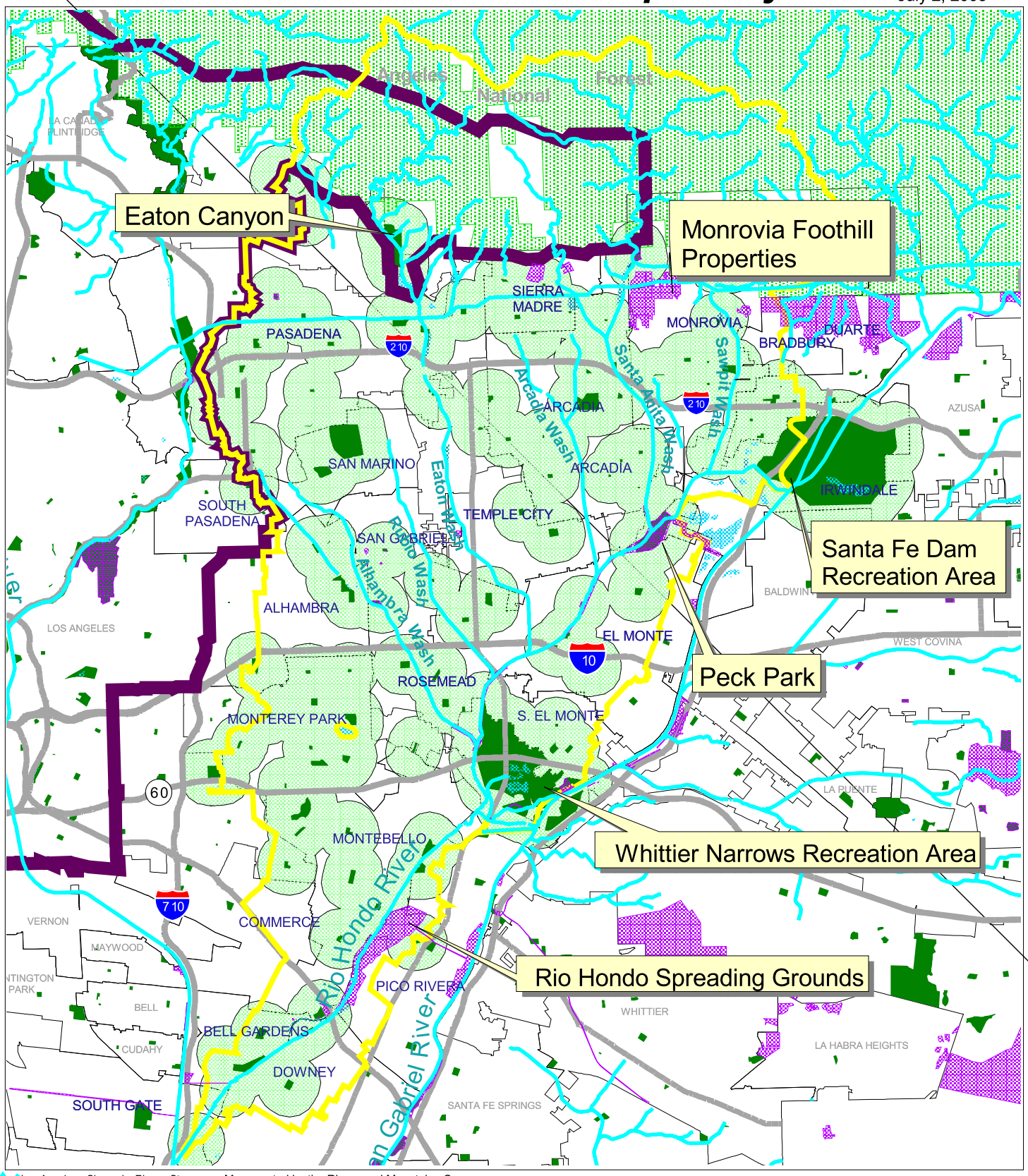
- Camp Trask Boy Scout Reservation

Potential Open Space Connection along Rio Hondo Under Freeway

Rio Hondo River Watershed Management Plan

Parks and Recreation Gap Analysis

July 2, 2003



Los Angeles - Channels, Rivers, Streams
RMC Identified Projects
Los Angeles - Channels, Rivers, Streams
Rio Hondo River Watershed
RMC Boundary
Spreading Grounds
Los Angeles - Freeways and Highways
Angeles National Forest
Los Angeles - Lakes and Reservoirs
Existing Open Space
1/2 mile Buffer of Existing Open Space

Map created by the Rivers and Mountains Conservancy

3 0 3 Miles

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a.

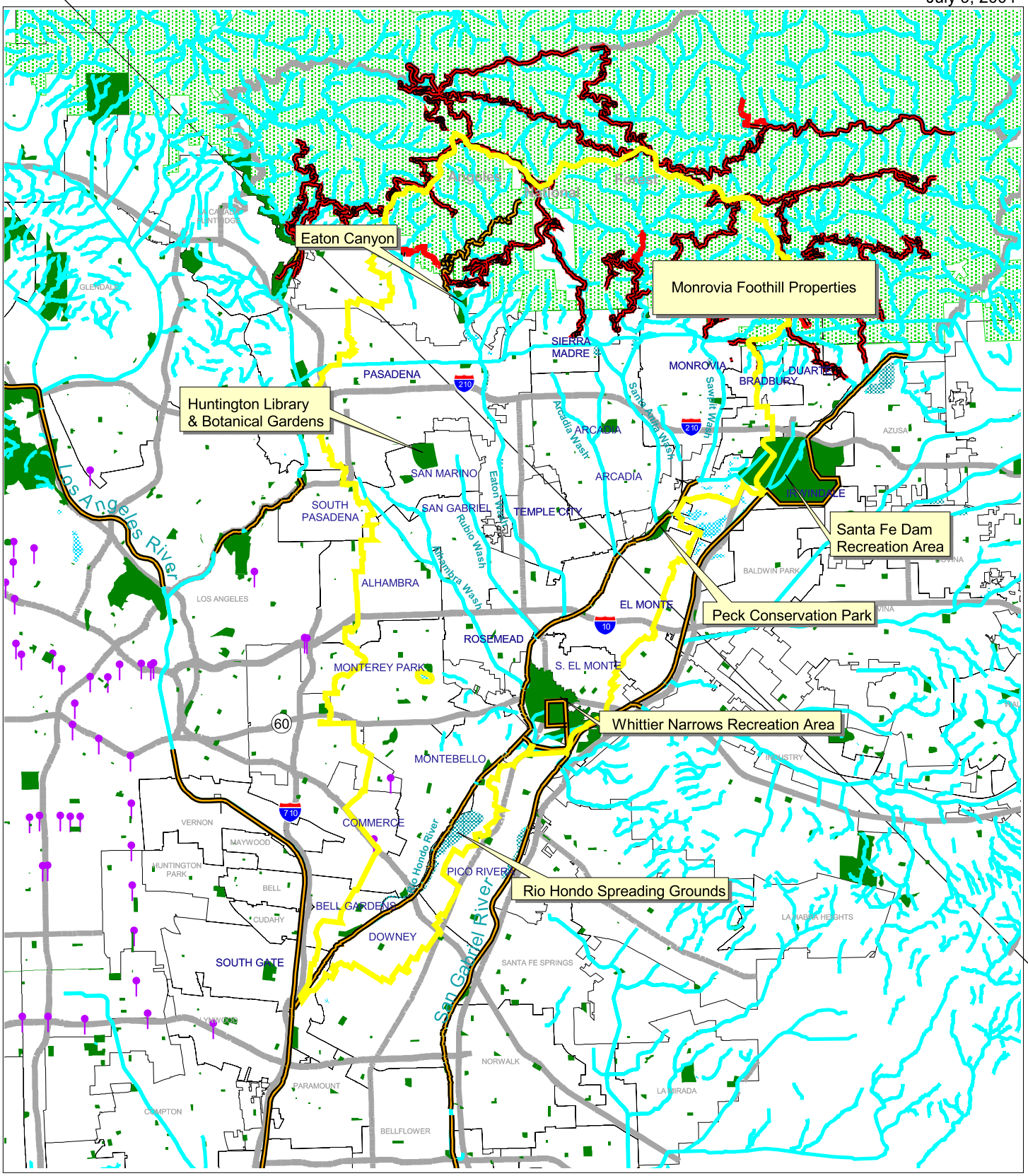
b.

a. Bicyclist's at Bosque del Rio Hondo
b. Pedestrian Bridge at Bosque de Rio Hondo

Rio Hondo River Watershed Management Plan

Mountain Road/Trails and River Trails

July 9, 2004



Rio Hondo River Watershed
Mountain Roads and Trails
River Bike Trails
Rivers, channels and streams.shp
Existing Open Space
Transit Centers
Los Angeles - Lakes and Reservoirs
Spreading Grounds
Los Angeles - Freeways and Highways
Angeles National Forest

Map created by the Rivers and Mountains Conservancy

3 0 3 Miles

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Rio Hondo- Open Space View

- Regional parks (3)
  - Santa Fe Dam Recreation Area – Although only a small portion of this park lies within the watershed, its adjacency presents a significant recreational opportunity for area residents. This 836-acre park includes a 70-acre lake for sailing, swimming, and fishing; trails for biking and hiking; the newly opened Santa Fe Dam Nature Center (formerly known as the Peter Schabarum Nature Center) as well as picnic areas; and campsites for youth groups. A popular children's water area is a distinctive feature. North of the lake is a 400 acre natural area. The San Gabriel River Bike Trail runs through the park from the San Gabriel Mountains to the coast.
  - Peck Road Water Conservation Park, Arcadia - This County park, containing a 105-acre lake that is utilized for groundwater recharge, exists on the site of an abandoned gravel quarry. The park provides opportunities for fishing, biking, hiking, bird watching, and picnicking. The park is located at the headwaters of the Rio Hondo corridor and directly serves the communities of Arcadia, Monrovia, El Monte, Irwindale, unincorporated County, and nearby Temple City.
  - Whittier Narrows Recreation Area - this 1400- acre park provides fishing lakes, picnic areas, playgrounds, an equestrian facility, trails, multi-purpose athletic complex, a military museum, soccer fields, volleyball courts, and archery, skeet, pistol and trap ranges. The park also features the Whittier Narrows Nature Center, which includes over 200 acres of natural woodland including four lakes for migrating waterfowl.
- Botanic garden (1)
  - Arboretum of Los Angeles County, Arcadia is a 127- acre botanical garden and historical site jointly operated by the Los Angeles Arboretum Foundation and the Los Angeles County Department of Parks and Recreation. Plant tours via tram are available as well as numerous classes and programs for the community. The historic Queen Anne Cottage was built in 1885 on the edge of the natural cienega or lagoon known as Baldwin Lake. There were once many of these cienega's along the Raymond Fault, which serves as a subterranean dam underneath the San Gabriel Valley.

New Class I Bikeway at Rio Hondo Spreading Grounds

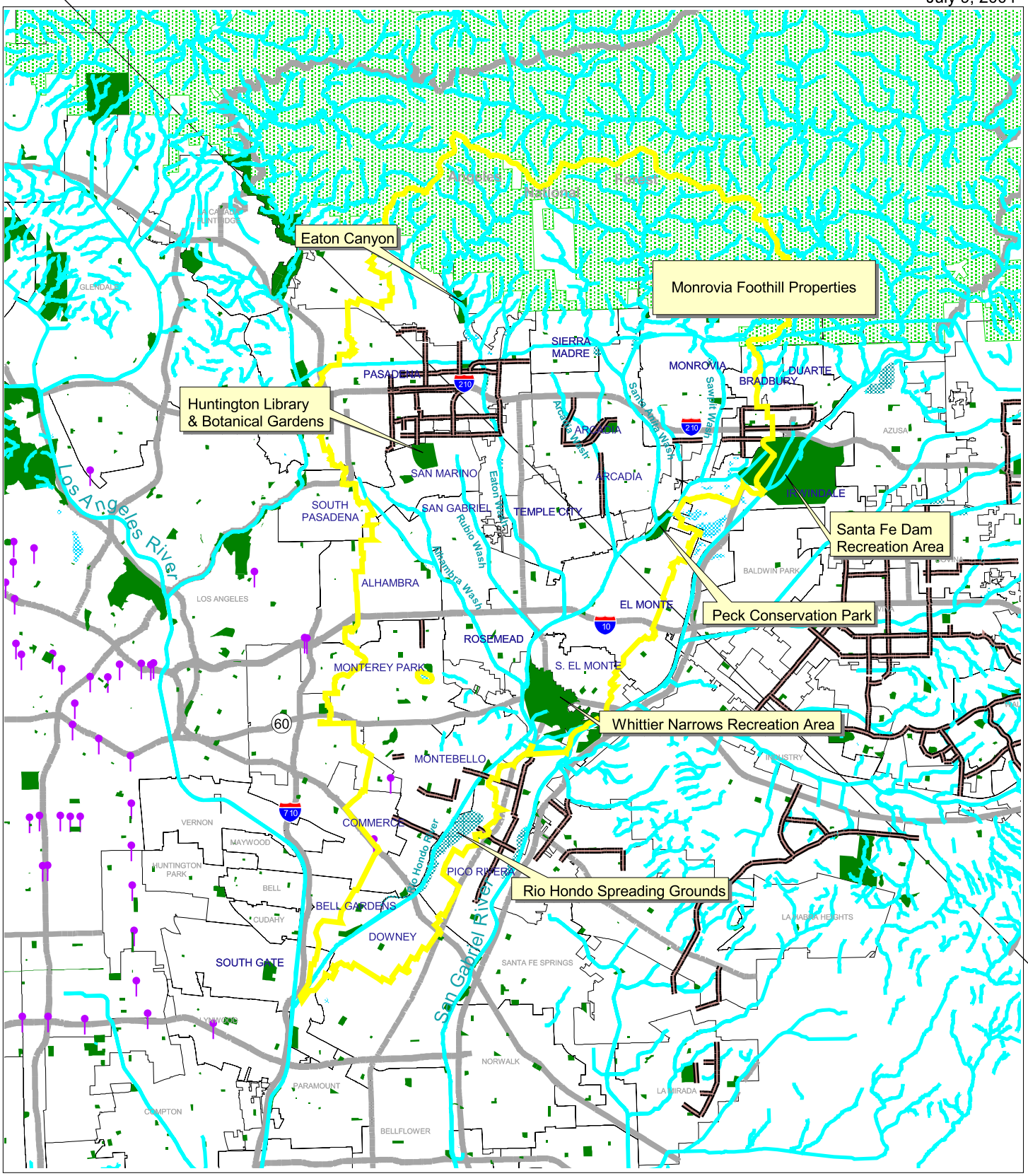
County trails include:

- Los Angeles River Trail or LARIO Trail
- Rio Hondo River Trail or Lario Trail
- Santa Anita Wash Trail
- Santa Anita Wash Trail Extension
- Hastings Debris Basin Trail
- Altadena Crest Trail
- Eaton Canyon Park Trail

Rio Hondo River Watershed Management Plan

Class 2 & 3 Bicycle Lanes

July 9, 2004



Rio Hondo River Watershed
Class 2 & 3 Bike Lanes
Rivers, channels and streams.shp
Existing Open Space
Transit Centers
Los Angeles - Lakes and Reservoirs
Spreading Grounds
Los Angeles - Freeways and Highways
Angeles National Forest

Map created by the Rivers and Mountains Conservancy

3 0 3 Miles

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Rio Hondo- Open Space View

Municipal or Private Golf Courses

- San Gabriel Country Club, San Gabriel (private) the oldest golf course in Los Angeles and Orange Counties
- Montebello Country Club, Montebello (public)
- Pico Rivera Municipal Golf Course
- Rio Hondo Country Club, Downey (public)
- Arcadia Par 3 Golf Course

Notable Recreational Facilities

- Santa Anita Park and Racetrack, Arcadia – This popular tourist attraction opened to the public in 1934. The Art Deco buildings recently underwent an extensive renovation. The racetrack is open from December through April of each year. There are landscaped grounds with picnic areas and strolling gardens. A bronze statue of Seabiscuit is a focal point, commemorating the racetracks' most famous thoroughbred. During World War II, 20,000 Japanese-Americans were held here, living in the horse stables, waiting to be transferred to distant internment camps. In 1980, The Santa Anita Assembly Camp was designated a California Historical Landmark.
- Huntington Library Art Gallery and Botanical Gardens, San Marino – This rich Southern California 150-acre cultural resource houses a library, art collection, botanical gardens and is a research institution. A private, nonprofit institution, The Huntington was founded in 1919 by railroad and real estate developer Henry Edwards Huntington and opened to the public in 1928. Famed works of art and literature include the Ellesmere manuscript of Chaucer's The Canterbury Tales (c.1410), a Gutenberg Bible (c.1455) and Thomas Gainsborough's masterpiece The Blue Boy (c. 1770). Over 14,000 species of plants grow in the gardens, which include the 12-acre desert garden and popular Japanese garden.

City Parks

Each of these cities maintains a network of parks and other recreational facilities to serve their residents and visitors.

Pasadena	Bradbury	Montebello
South Pasadena	Duarte	Pico Rivera
San Marino	Irwindale	City of Commerce
Alhambra	El Monte	Bell Gardens
San Gabriel	South El Monte	Downey
Sierra Madre	Temple City	South Gate
Arcadia	Rosemead	
Monrovia	Monterey Park	

Findings

- There are a wide variety of parks and other recreational facilities in the watershed, but in terms of acreage less than the amount required to adequately serve the current population
- Some of the more densely populated communities include areas that are not within walking distance of a park.
- Trails are a significant recreational resource but improvements in access, connectivity, safety, and signage are needed
- The need for parks and other recreational amenities must be balanced and integrated with habitat enhancement and water quality requirements.
- There is no database currently available of all the trails (pedestrian, equestrian and bike) existing in the watershed
- The redevelopment of linear areas into pedestrian walkways, such as highway medians, rails to trails) has not taken full advantage of all creative possibilities.

2.4 SOCIAL CONTEXT

Understanding how people and communities relate to and interact with the watershed environment defines the existing social context of the watershed. This includes the extent to which people are aware of the watershed and how their daily activities impact the health of the watershed. Just as it is important to assess and analyze the existing hydrologic and biological aspects of the watershed, it is also necessary to know the numbers, concentrations, and characteristics of the population that lives within the watershed. This knowledge is required for development of a watershed plan that can successfully integrate the many needs and aspirations of residents, with the conditions required for the development of a healthy, well-functioning watershed.

2.4.1 Demographics

The Rio Hondo Watershed is a land of extremes with wide ranging differences in population density, income, ethnicity, and languages spoken. This wide-ranging diversity mirrors the many diverse communities that characterize much of Los Angeles County.

The estimated total population of the Rio Hondo Watershed is roughly between 700,000 and 800,000, based on 2000 Census data. *(This estimate is based on the percentage of city areas within the watershed, and that same percentage applied to the total population, although the actual percentage of residential areas within the watershed may be somewhat lower or higher depending on land use distributions. The estimated total based on this method is 747,701.)* This includes the 22 cities and 6 unincorporated county communities.

Three cities located within the Rio Hondo watershed have populations greater than 100,000. However, the political boundaries of these three cities - Pasadena (133,396), El Monte (115,965), and Downey (107,323) – extend beyond the boundaries of the watershed. Rosemead (53,505) is the city with the largest population that lies entirely within the watershed, followed by Arcadia (53,054). The City of Bradbury is the smallest city with a population of only 855.

Some of the densest cities in the nation are located within the lower half of the watershed. The densest area of population lies across the center of the watershed in the cities of Alhambra, north Monterey Park, Rosemead, Temple City, El Monte & South El Monte. These areas have anywhere from 7,500 to 17,500 people per square mile.

Pasadena is also densely populated, as is lower Monrovia and Duarte. Within Montebello and Downey are large areas of dense population. Bell Gardens has an extremely high population density, between 17,500 and 29,200 people per square mile.

Areas of low density, less than 3,000 people per square mile, are predominantly large lot single family homes in the foothill communities of upper Pasadena, Sierra Madre, Monrovia and Bradbury. San Marino is generally low in density as well. Other areas that show low population density are commercial areas in Arcadia, industrial areas in South El Monte and Commerce, and open space areas in the Angeles National Forest, Whittier Narrows and Montebello hills.

The 22 cities in the Rio Hondo Watershed include both some of the wealthiest and poorest communities in Los Angeles County. The watershed also houses some of the oldest communities in California and some of the nation's newest immigrant communities. As a result, the watershed is both ethnically and linguistically diverse, encompassing many languages other than English, including Spanish, Chinese, Vietnamese, Thai, Japanese, and Cantonese.

The two tables on the following pages provide a demographic breakdown for each of the cities located within the Rio Hondo Watershed, as well as for the watershed overall. As the political boundaries of 15 of these 22 cities extend beyond the boundaries of the watershed, these percentages are based on overall population totals that exceed actual amounts within the watershed by approximately 30%. Still, these population figures provide a valuable picture of the demographic mosaic within the watershed.

Percent of Total Population

Hispanic	53%
Asian	21%
White	21%
African American	3%
All Other*	2%

Cities with a majority Hispanic population tend to lie along the lower (southern) portions of the watershed and along its eastern boundary. These include Commerce (94%), Bell Gardens (93%), South Gate (92%), Irwindale (88%), Pico Rivera (88%), South El Monte (86%), Montebello (75%), El Monte (72%), and Downey (58%). As noted previously, this also includes some of the most densely populated communities of the watershed.

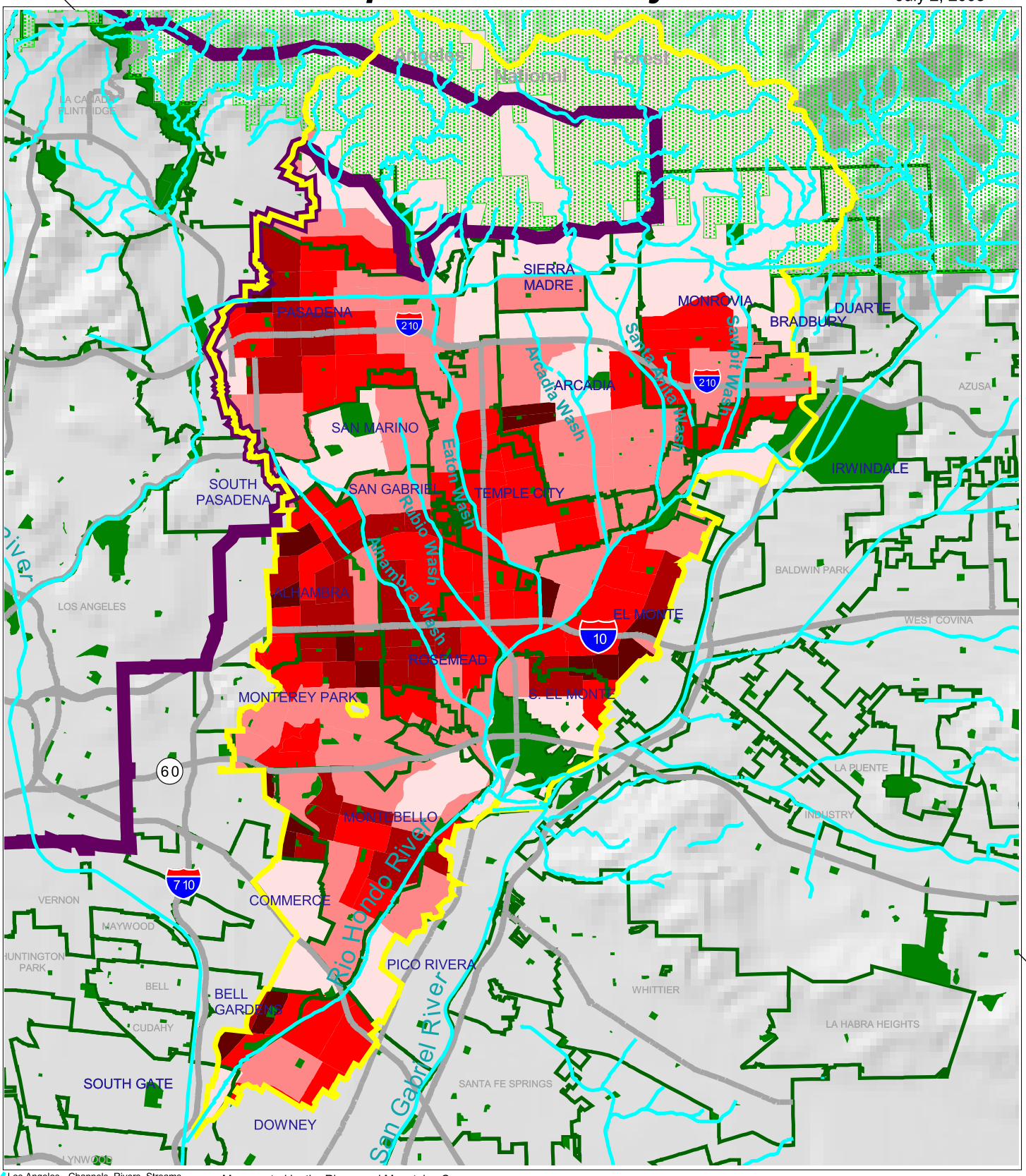
Cities with the largest Asian populations tend to lie within the central portion of the developed areas of the watershed and its northeastern area extending up to the foothills. These include Monterey Park (61%), Rosemead (49%), San Gabriel (49%), San Marino (48%), Alhambra (47%), Arcadia (45%), and Bradbury (20%).

Cities with the largest White populations lie within the northern foothill communities and in some central areas of the watershed. These include Sierra Madre (80%), Bradbury (63%), South Pasadena (51%), Monrovia (47%), San Marino (45%), Arcadia (40%), Pasadena (39%), and Temple City (38%).

Rio Hondo River Watershed Management Plan

Population Density 2000

July 2, 2003



Los Angeles - Channels, Rivers, Streams
Rio Hondo River Watershed
RMC Boundary
Los Angeles - Freeways and Highways
Angeles National Forest
Existing Open Space Areas
Population Density 2000 (people/sq mile)
2.1 - 2966
2966 - 7546.2
7546.2 - 11695.2
11695.2 - 17504.9
17504.9 - 29174.7

Map created by the Rivers and Mountains Conservancy

3 0 3 Miles

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San Gabriel Valley Council of Governments

State of California – The Resources Agency
San Gabriel & Lower Los Angeles
Rivers & Mountains Conservancy

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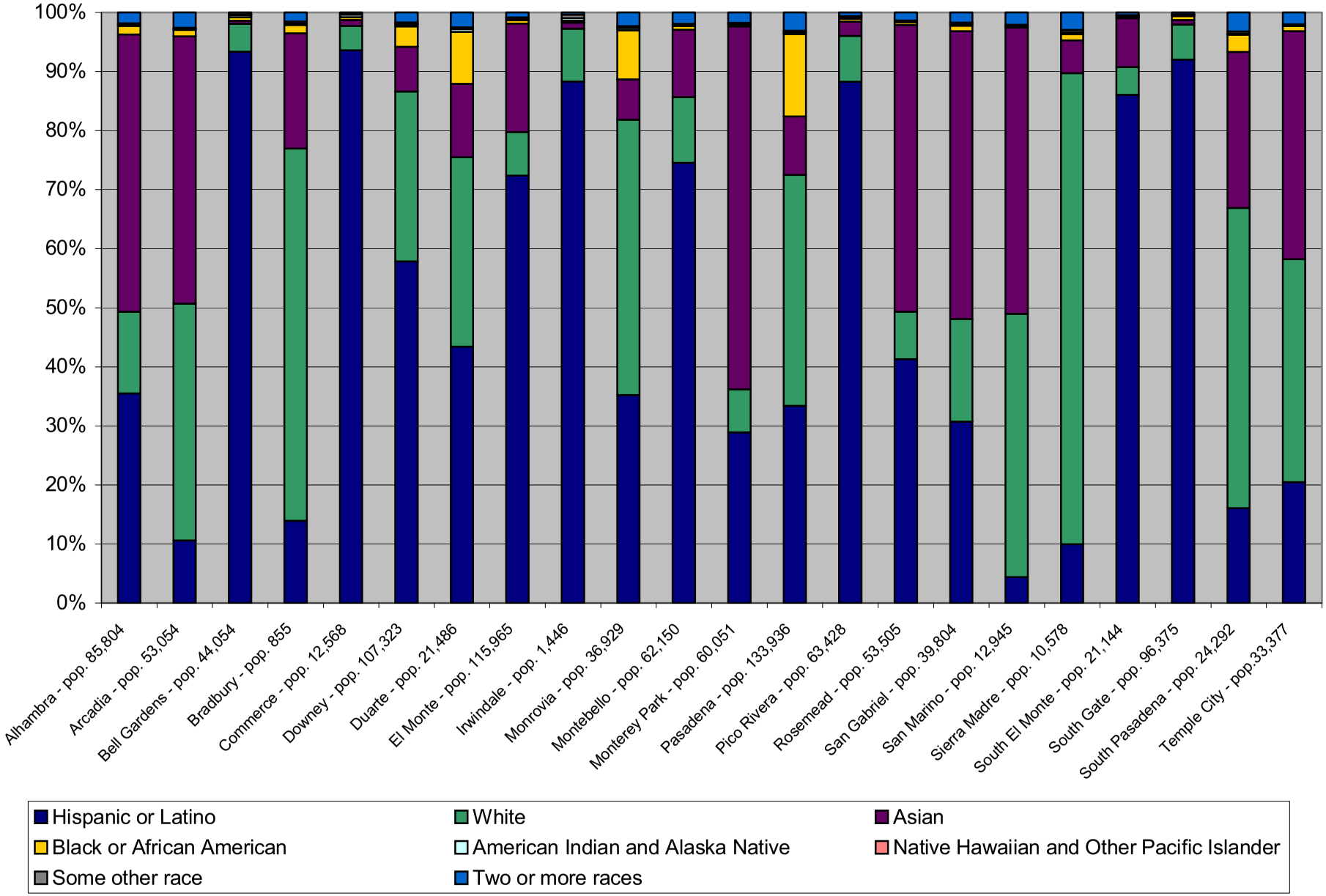
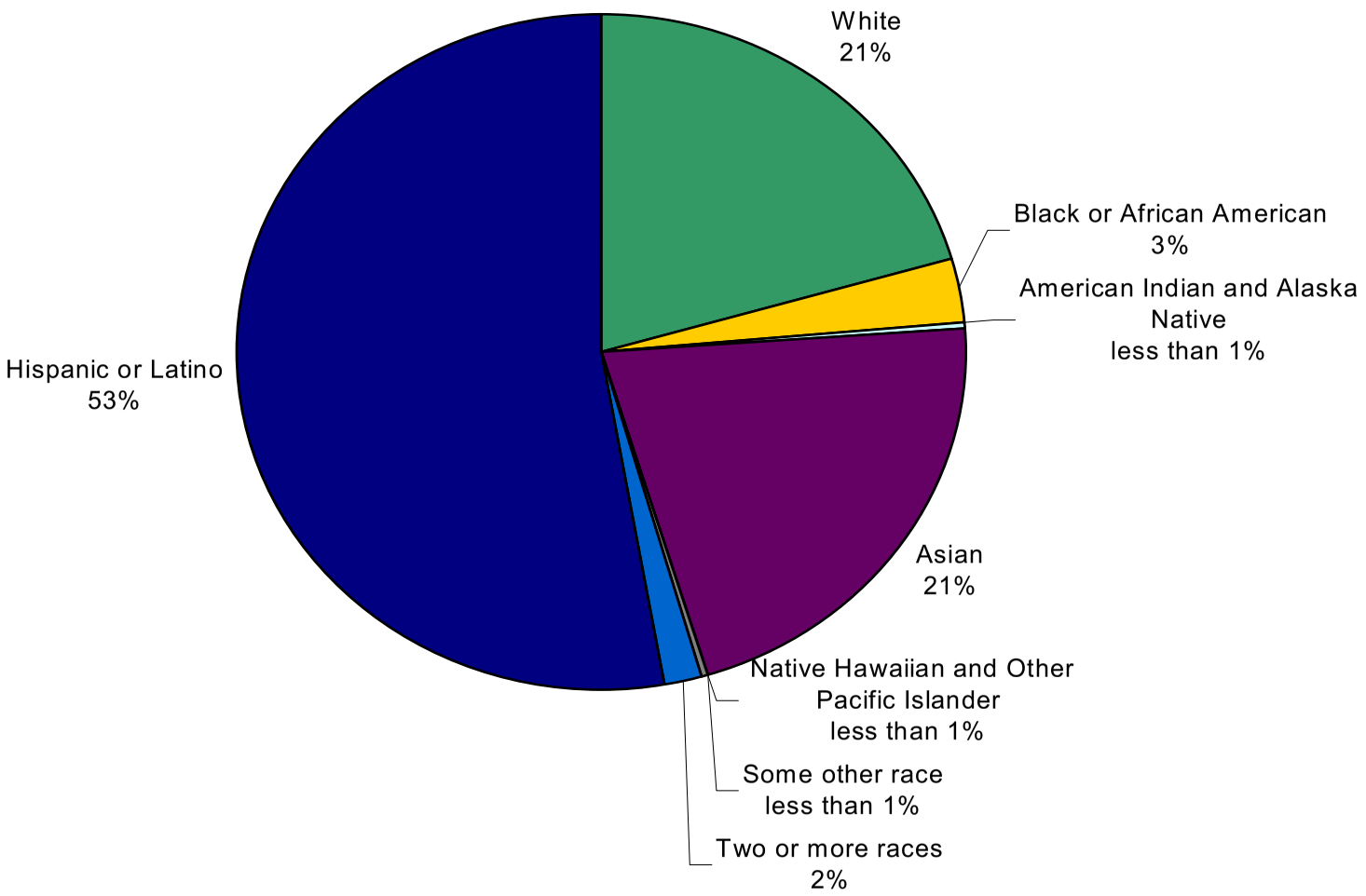
Houses near Whittier Narrows Dam

Ethnic Breakdown by City



Ethnicity Breakdown of Rio Hondo Watershed



White	Black or African American
American Indian and Alaska Native	Asian
Native Hawaiian and Other Pacific Islander	Some other race
Two or more races	Hispanic or Latino

There are only two cities with relatively large African American communities and both are located within the northern portion of the watershed. Cities with the largest African American populations include Pasadena (14%) and Duarte (9%).

The cultural and demographic diversity of the watershed will be a significant factor in the design and implementation of projects and programs designed to restore the health of the watershed. In planning for future parks and recreational facilities it will be important to understand how the cultural differences within and between communities might affect preferences for recreational activities and amenities. This has implications for park design as well as outreach efforts designed to increase watershed awareness and stewardship. . The multiple languages being spoken in the watershed will also challenge watershed education programs. Although it may be possible to translate communication materials into several languages, it may also be necessary to communicate through graphic rather than rely exclusively on verbal elements.

Balancing watershed protection with the projected population growth for the Los Angeles region, will in the coming years prove to be a significant challenge. Population forecasts for Los Angeles County, from the Southern California Association of Governments (SCAG), project a nearly 25% growth (from 9.8 million to 12.25 million) between 2000 and 2020. If the Rio Hondo Watershed, as a part of Los Angeles County, should experience a similar growth rate, then its population will increase from the current estimate of 747,701 to nearly 935,000. Greater population and population densities will impact the watershed by further straining water supply and water quality, while increasing pressures on remaining habitat and wildlife. Managing these growth pressures will involve a broad spectrum of inter-related watershed issues, including the need to provide housing, schools, and recreational resources for a growing population but in ways compatible with the healthy hydrological and biological functioning of the watershed.

Findings

- The demand for parks and open space will increase as the population continues to grow.
- Projects and programs need to take into account the diverse characteristics of the various peoples and communities that lie within the watershed.
- Cultural patterns for outdoor and nature-based recreation will significantly impact park design and watershed outreach efforts.
- Meaningful engagement with all communities will be required to assess their needs and concerns.

2.4.2 Stewardship

Empowering communities to care for watershed resources is a core requirement for restoring the health of the watershed, since all who live and work in the watershed impact it's functioning through their daily activities. Generating stewardship for the watershed is a complex process. It requires first that people become aware of the watershed and how their day-to-day decisions impact it. Once awareness is established, the goal of watershed stewardship is to encourage active participation by residents, property owners, businesses, public leaders, and other organizations in good pollution prevention practices where they live, work, and play. To be effective, stewardship must be operational at both the level of the constituents and the cities.

Stewardship of the Rio Hondo Watershed is currently limited by two significant factors; a lack of overall public awareness and the absence of an organization devoted to the watershed a whole. In recent years there have been increasing stewardship activities on both the Los Angeles and San Gabriel Rivers, accompanied by increasing media attention. Through this work, the general public is slowly becoming reacquainted with the presence of these major rivers flowing through the urban fabric of Los Angeles County. This heightened public profile has not yet extended to the Rio Hondo or other tributaries, which remain largely invisible to most individuals. Likewise, watershed thinking, including the concept of sub-watersheds such as the Rio Hondo Watershed, are unknown realities. This will eventually change as the many different subwatershed plans currently being developed, including this one, raise the public profile of watersheds in general and this one in particular.

Environmental education programs to promote awareness and stewardship of the watershed will be needed. According to the Center for Watershed Protection, "a basic premise of watershed stewardship is that we must learn two things – that we live in a watershed and that we understand how to live within it." Such a watershed education program should be designed to target four groups: municipal officials, business owners, the general public, and youth. Although there are already watershed educational programs that can be drawn upon as a resources, such as the national Non-Point Pollution Education for Municipal Officials (NEMO) program, an organized program for the Rio Hondo should be developed to ensure that a consistent message is being provided to all targeted groups.

Until this situation can be corrected, however, the low level of public awareness regarding the Rio Hondo Watershed, will significantly constrain watershed restoration efforts. Creating a constituency for the Rio Hondo will require leadership from various cities and other stakeholder organizations in the watershed. This process has begun in

the work of the Policy Advisory Committee and its subcommittees, which have exhibited a high degree of interest in the watershed and in working on its behalf. This work should include the creation of a watershed group or consortium that could either actively pursue stewardship activities or serve as an umbrella organization to coordinate different activities occurring within the watershed, including public education to increase watershed awareness.

Although there is now no single organization devoted to the Rio Hondo Watershed as a whole, the watershed - is rich with organizations devoted to stewardship activities, like docent programs at the Eaton Canyon Nature Center and arundo removal near Alhambra Wash. Stewardship activities are undertaken by both public agencies and community-based organizations around the watershed. Many programs are run out of the nature centers. For example, in addition to County-run programs at Eaton Canyon Nature Center, other groups run programs as well including the Audubon Society, California Native Plant Society, and the Sierra Club. The work of these and other similar groups, in coordination with the PAC, can provide the foundation needed to create an organization dedicated to the Rio Hondo and its tributaries.

The list below is representative of the types of organizations that are now active in the watershed. In addition, there are federal, state, regional and county agencies and cities have numerous public information and education programs available to citizens of the watershed. Non-profit or community-based organizations provide many stewardship and education opportunities. What is missing is an organization dedicated to the Rio Hondo and its tributaries

Non-Profit Groups

- Altadena Foothills Conservancy
- Amigos de los Rios
- Building Industries of America
- Chambers of Commerce
- Foothill Wildlife Conservancy
- Friends of the Los Angeles River
- Los Angeles and San Gabriel Rivers Watershed Council
- Monrovia Mountains Conservancy
- North East Trees
- Pasadena Audubon Society

- Rio Trust
- San Gabriel Mountains Regional Conservancy
- San Gabriel Valley Economic Partnership
- Sierra Club (Angeles Chapter, San Gabriel Valley Task Force, Groups: Pasadena, East San Gabriel Valley, Central, Rio Hondo)
- Sierra Madre Mountains Conservancy
- Transportation and Land Use Collaborative (formerly Southern California Land Use and Transportation Coalition)
- The River Project

Findings

- There is a need to find a balance between societal needs and the vision of a more natural watershed
- There is no specific organization or group devoted to the watershed as a whole.
- There is no watershed wide governance structure to provide a framework for developing policies, and implementing consistent outreach and educational programs
- A lack of watershed awareness and coupled with perceived problems related to flood control and West Nile Virus, etc. are a barrier to efforts to create a more healthy watershed.
- Public awareness of water supply and watershed issues is inadequate; although the problem is now and not in the distant future most are not yet aware of this
- There is currently a low level of environmental awareness and understanding
  - Lack of understanding of the water cycle
  - Lack of understanding of how pollutions enters the water system
- A stronger environmental education curriculum for students is needed
  - Limited future funding devoted to environmental education
- There is a perception that environmental education and implementation of watershed improvement measures will be costly
- Some fears impede the search for solutions; whether it is the public's fear of recycled water, or public agency fear of data regarding pollution levels.

2.4.3 Public Health And Safety

The issue of public health relating to vector control is part of the watershed and must be considered. California's Health and Safety code defines a vector as "Any animal capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including, but not limited to, mosquitoes, flies, other insects, ticks, mites, and rats, but not including any domestic animal.". Public concern about malaria outbreaks in the early 1900's catalyzed malaria control program, which eventually evolved into vector abatement and control legislation in 1915. Now, a variety of public agencies are responsible for protecting the residents of Los Angeles County from vectors of human disease such as mosquitoes, rodents, fleas, ticks, etc.

Mosquito and vector control districts (MVCDs) play a significant role in public health. State vector control law dates back to the Mosquito Abatement Act of 1915, which was enacted in response to public health concerns associated with waterbourne diseases such as malaria. These districts are authorized through the Mosquito Abatement and Vector Control District Law (§2000 of California Health and Safety Code), which creates and continues a broad statutory authority for a class of special districts with the power to conduct effective programs for the surveillance, prevention, abatement, and control of mosquitoes and other vectors. Through this legislation, MVCDs are encouraged to cooperate with other public agencies to protect the public health, safety, and welfare. This broad authority also includes provisions for recovering costs, including penalties, associated with necessary abatement actions to protect public health. There are five independent MVCDs in Los Angeles County, three of which overlap the Rio Hondo Watershed.

It is critical that these mosquito and vector control agencies be consulted in the planning and design of watershed projects, particularly when the project has the potential to result in new vector breeding and disease transmission:

- ***Greater Los Angeles County Vector Control District (GLACVCD)*** is a special district serving 1,300 square miles of Los Angeles County. The district's mission is to reduce populations below nuisance levels of the following vectors: mosquitoes, midges, black flies, and Africanized Honey Bees; to prevent human infection associated with mosquito-transmitted disease; to guard against human infection associated with other vector-transmitted diseases; an to prevent the loss of property values and commercial enterprise as the result of vector occurrence and activity.
- ***San Gabriel Valley Mosquito and Vector Control District*** is a special district that serves communities in the San Gabriel Valley. The District was

founded in 1989 to protect residents from mosquito-borne disease through public education, surveillance, and control of mosquitoes. As the District evolved, additional programs were added. In 1997, the Board of Trustees approved a full vector surveillance and control program.

- ***County of Los Angeles Department of Health Service***s maintains a Vector Management Program within the Department of Health. This program consists of three units: Vector-Borne Disease Surveillance, Entomology and Vector Control. The historic objectives of the Vector-Borne Disease Surveillance Unit have always been the reduction of the risks of exposure to the pathogens of vector-borne disease through early detection and abatement of those factors which enhance the transmission of disease to humans. Routine surveillance of such diseases as sylvatic plague, murine typhus, Lyme borreliosis, the various hantaviruses and arenaviruses is conducted. Vector Control is responsible for rodent abatement activities and licensed animal keeper premises inspection and enforcement throughout Los Angeles County (except for the Mountain & Rural Program and District Environmental Services-Antelope Valley Districts).

The negative ecological consequences stemming from efforts to eradicate parts of the ecological system (such as mosquitoes and black flies) must be considered as well as the potential hazards to humans from the use of chemical controls. For instance, specific chemical control methods are sometimes employed to reduce vector populations. Although it is believed that larvicides, pesticides that kill the organisms in their larval stage, have little or no effect on non-target organisms, no pesticide is 100% safe. For instance, B.t., a biological control agent, is considered safe by some because it poses little direct threat to human health, but some believe it has significant effects on ecosystems. By killing non-targeted vertebrates such as caterpillars, B.t. reduces the food supply of fish, and birds, and predatory insects, and can kill non-target beneficial species that actually help control pests. For this reason, B.t. and other larvicides should only be used after all other prevention methods have been used, and in the smallest quantities possible. (*Sierra Club, B.t. fact sheet*).

Although vector control is essential, other aspects of public health and safety must be considered as well. For instance, less than 1% of people who become infected with West Nile Virus will develop severe illness and most people who become infected do not develop any disease at all. At the same time, however, the latest Los Angeles County Health Survey indicates that over half (55%) of the county's adult population are either overweight or obese. In the El Monte health district, 21% to 25% of children in grades 5, 7, and 9 are overweight. Although a healthy diet and increased daily physical activity are essential, for some local watershed communities exercise and

other physical activity is constrained by limited access to parks and recreational facilities.

Opportunities for physical activity can also be constrained by public safety concerns. For instance, a four-mile stretch of the Rio Hondo above Whittier Narrow still includes natural banks and genuine river habitat, but some residents avoid taking advantage of this resource due to safety issues. Although this non-channelized portion of the river is a tremendous natural asset, these same qualities have also attracted homeless encampments and other illegal activities such as prostitution and drug abuse. The development of new parks and other attractive open spaces may draw in larger numbers of families and other recreational visitors. This new influx could help remedy the problem by making the area less viable for illegal and other undesirable activities.

This same area along the Rio Hondo also attracts families on weekends to swim, although it is not legal to do so and it may not be healthy to do so either. As a result of this practice and the potential to open up the river for visitors, there is a need to clarify where and when public access to the Rio Hondo and its tributaries is both safe and compatible with flood control, water quality, and habitat protection.

Findings

- The lack of parks and open space may be contributing to the rising numbers of people affected by obesity and Type II diabetes
- Although the West Nile Virus represents only a minimal threat to young children, older adults, and those with weakened immune systems, it is perceived as a much greater threat than it is in reality
- Loitering and illegal activities along the Rio Hondo and tributaries further limits access to parks and open space
- There are unclear guidelines and locations regarding public access to the Rio Hondo.

Trail at Eaton Nature Center

2.4.4 Cultural & Historical Resources

The Rio Hondo is rich in history. The current San Gabriel Mission lies at the center of the watershed, and its original location lies on its banks near Whittier Narrows. Up to the beginning of the 20th century, creeks flowed from the San Rafael hills and were used by mills and farms in the San Gabriel Valley. The San Gabriel Mountains were a center for weekend activity in the 19th century. City dwellers would arrive by cart, train, or Red Car, to hike up the Mount Wilson Trail to camps and hideaways. Artists still live in small cabins on Big Santa Anita Creek and have their supplies brought in by mule train. History is our link between our past and our future, especially in the Rio Hondo.

The RMC undertook a survey to assess existing Cultural and Historical Resources within their jurisdictional area. Because the Rio Hondo Watershed fits within their territory, many points of interest can be derived from this database. However, not all cities responded to their initial survey, so many additional local resources are not shown on this map.

Cultural and Historical Resources within the watershed that are derived from the RMC database includes:

- National Historical Landmarks
- State of California Historical Landmarks
- City Landmarks (not all cities responded to the RMC's survey)
- RMC Projects

National Historical Landmarks

- Hale Solar Laboratory, Pasadena
- Hubble House, San Marino
- Mission San Gabriel Arcangel, San Gabriel
- Upton Sinclair House, Monrovia

City Landmarks

- Anita Baldwin Property, Montebello
- Arboretum Of Los Angeles, Arcadia
- Aztec Hotel, Monrovia

- Casa De Rancho San Antonio (Henry Gage Mansion), Bell Gardens
- Gay's Lion Farm, El Monte
- Juan Matias Sanchez Adobe, Montebello
- Leven Oaks Hotel, Monrovia
- Monrovia Canyon Park, Monrovia
- Monrovia Depot, Monrovia
- Monrovia Library Park, Monrovia
- Monrovia Recreation Park, Monrovia
- Osmund House, El Monte
- Rio San Gabriel Battlefield, Montebello
- The Petterson Farm House, Bell Gardens
- The Valley Mall, El Monte
- Tony Arceo Memorial Park, El Monte
- Whittier Narrows Nature Center, South El Monte
- Woodworth House, Bell Gardens

State Of California Historical Landmarks

- Casa De Rancho San Antonio (Henry Gage Mansion), Bell Gardens
- E.J. Baldwin's Queen Anne Cottage, Arcadia
- El Monte-First Southern California Settlement By Immigrants From United States, El Monte
- Governor Stoneman Adobe, Los Robles, San Marino
- Hugo Reid Adobe, Arcadia
- Mission San Gabriel Archangel, San Gabriel
- Old Mill, San Marino
- Pacific Asia Museum (Grace Nicholson's Treasure Huse Of Oriental And Western Art), Pasadena
- Pasadena Playhouse, Pasadena
- Rio San Gabriel Battlefield, Montebello
- Site Of Mission Vieja (Original San Gabriel Mission), Montebello
- Temporary Detention Camps For Japanese Americans - Santa Anita Assembly Center, Arcadia

- The Ortega-Vigare Adobe, San Gabriel

RMC - Cultural/HistoricProjects

- Rancho Los Tunas Adobe, San Gabriel

Findings

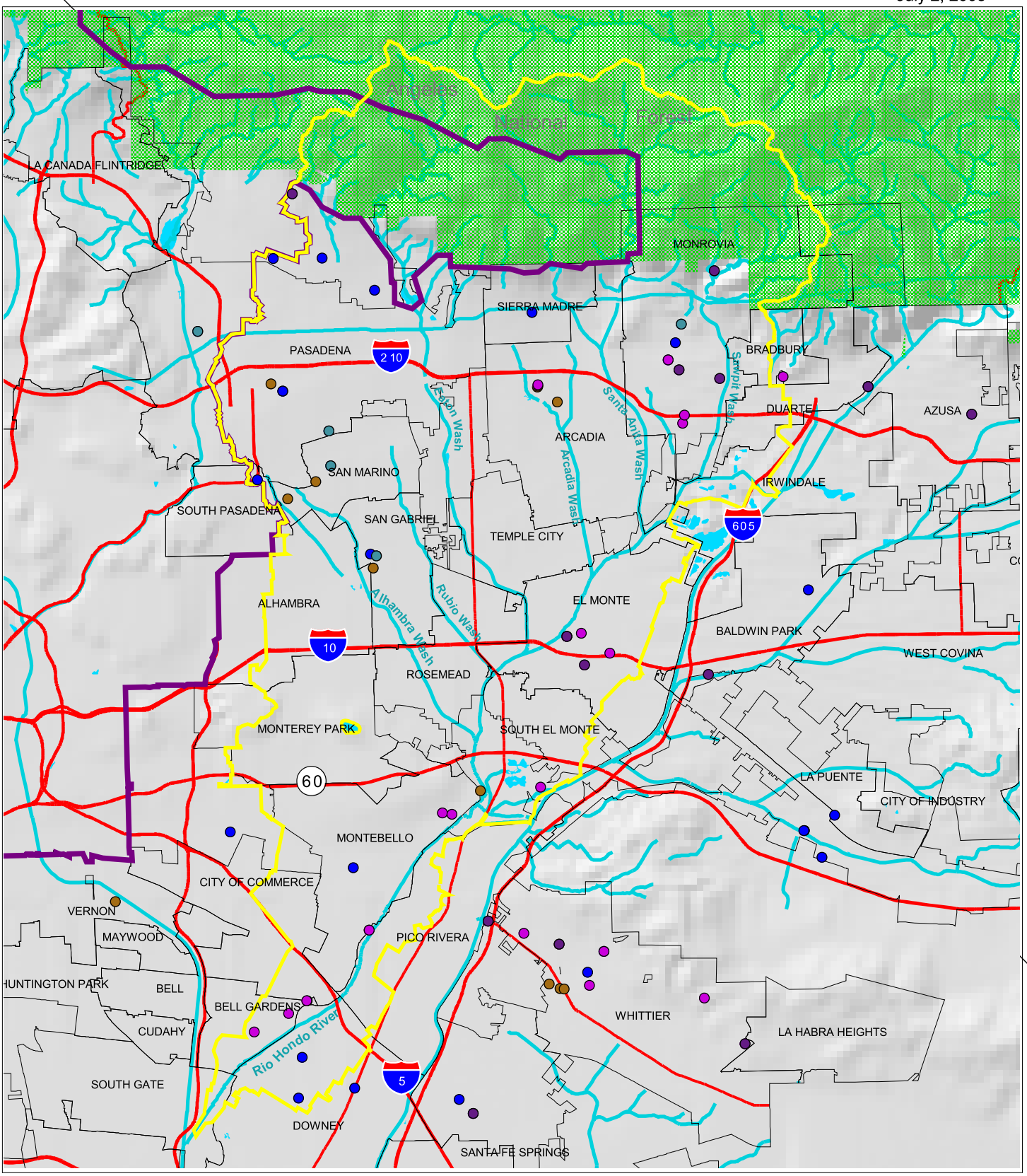
- The correlation between past water use patterns by indigenous peoples and early settlers and our present day dependence upon water is not sufficiently explored by present-day cultural and historical facilities
- A need to better identify cultural and historical resources along pedestrian trails
- The opportunity to use cultural and historical resources to promote awareness of the watershed through interpretive signage, native gardens, and other media has not been sufficiently utilized.

Rio Hondo 1932 Aerial of Peck Road at Arrow Highway

Rio Hondo River Watershed Management Plan

Cultural and Historical Resources

July 2, 2003



- Landmarks within Parks
- Local landmarks
- National Historic Landmarks
- National Register Landmarks
- California State Historic Landmarks
- Rio Hondo River Watershed
- RMC Boundary
- Los Angeles - City Boundaries
- Angeles National Forest
- Los Angeles - Freeways and Highways
- Los Angeles - Channels, Rivers, Streams
- Los Angeles - Lakes and Reservoirs

Map created by the Rivers and Mountains Conservancy

3 0 3 Miles

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San Gabriel Valley Council of Governments

State of California – The Resources Agency
San Gabriel & Lower Los Angeles
Rivers & Mountains Conservancy

Belinda Faustinos, Executive Officer
Rivers & Mountains Conservancy
900 So. Fremont St., Annex 2
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(626) 458-4315 ; Fax 458-7353
www.rmc.ca.gov

2.5 POLITICAL CONTEXT

Simply stated, political boundaries, with the exception of the Rivers and Mountains Conservancy, do not align with watershed boundaries. This discrepancy in jurisdictional territories complicates the discussion on management of natural resources in the watershed, including water rights, water quality and habitat. Some cities drain into multiple watersheds. Habitat areas cross political boundaries. Nonpoint source pollution from upstream cities affect water quality downstream, so multiple parties need to take responsibility to clean up surface water runoff. By identifying current jurisdictional responsibilities, a foundation is provided for discussion and collaboration. More coordination is needed to find win-win solutions that bring together diverse interests while also avoiding territorial conflicts.

2.5.1 Cities & Communities Of The Watershed

The watershed includes parts of the Angeles National Forest, sixteen cities of the San Gabriel Valley, six Gateway Cities and six unincorporated Los Angeles County communities. Approximately 65% of the watershed is developed, and the remaining 35% is largely open space within the Angeles National Forest. Of the developed areas, approximately half is residential. In fact, the Rio Hondo Watershed is (verify) one of the densest areas of Los Angeles County.

Seven cities are completely within the watershed, including Arcadia, Montebello, Rosemead, San Gabriel, San Marino, Sierra Madre and Temple City. The majority of six cities drain into the Rio Hondo watershed including Alhambra, El Monte, Monrovia, Monterey Park, Pasadena and South El Monte. The following list of cities that lie within the Rio Hondo Watershed is divided into the two Council of Governments or COG jurisdictions.

San Gabriel Valley COG Cities:

- Alhambra
- Arcadia
- Bradbury
- Duarte
- El Monte
- Irwindale
- Monrovia
- Montebello
- Monterey Park
- Pasadena
- Rosemead
- San Gabriel
- San Marino
- Sierra Madre
- South El Monte
- South Pasadena
- Temple City

Gateway COG Cities:

- Bell Gardens
- Downey
- Pico Rivera
- City of Commerce
- South Gate

Unincorporated Los Angeles County Communities:

- Community surrounded by Arcadia, Monrovia, Duarte, Irwindale, El Monte and Temple City
- Community surrounded by Pasadena, Arcadia, Temple City, San Gabriel and San Marino
- Altadena
- East Los Angeles
- South San Gabriel
- Whittier Narrows

2.5.2 Federal, State, And County Jurisdictions

The jurisdictional complexity of this watershed includes layers of boundaries for the various county, state and federal elected officials. This includes the United States Congressional Districts, State of California Senate Districts, State of California Assembly Districts and County of Los Angeles Supervisorial Districts. Representatives for elected officials have been involved in the PAC and Subcommittee meetings.

It is important for elected officials to know about the watershed planning that is taking place for this area. Decisions that are being made by the PAC and recommendations that come out of the Plan affect their constituents and the land within their jurisdictions. Greater participation and involvement by elected officials and their field representatives ensure that priority projects get underway.

United States Congressional Districts

The six United States Congressional Districts within the watershed include:

District 29 – Adam B. Schiff (Pasadena, South Pasadena, Alhambra, San Gabriel, Temple City)

District 26 – David Drier (Angeles National Forest, Altadena, Sierra Madre, Monrovia, Bradbury, San Marino, Arcadia)

District 32 – Hilda L. Solis (East Los Angeles, Rosemead, El Monte, South El Monte

District 38 – Grace F. Napolitano (Montebello, Pico Rivera)

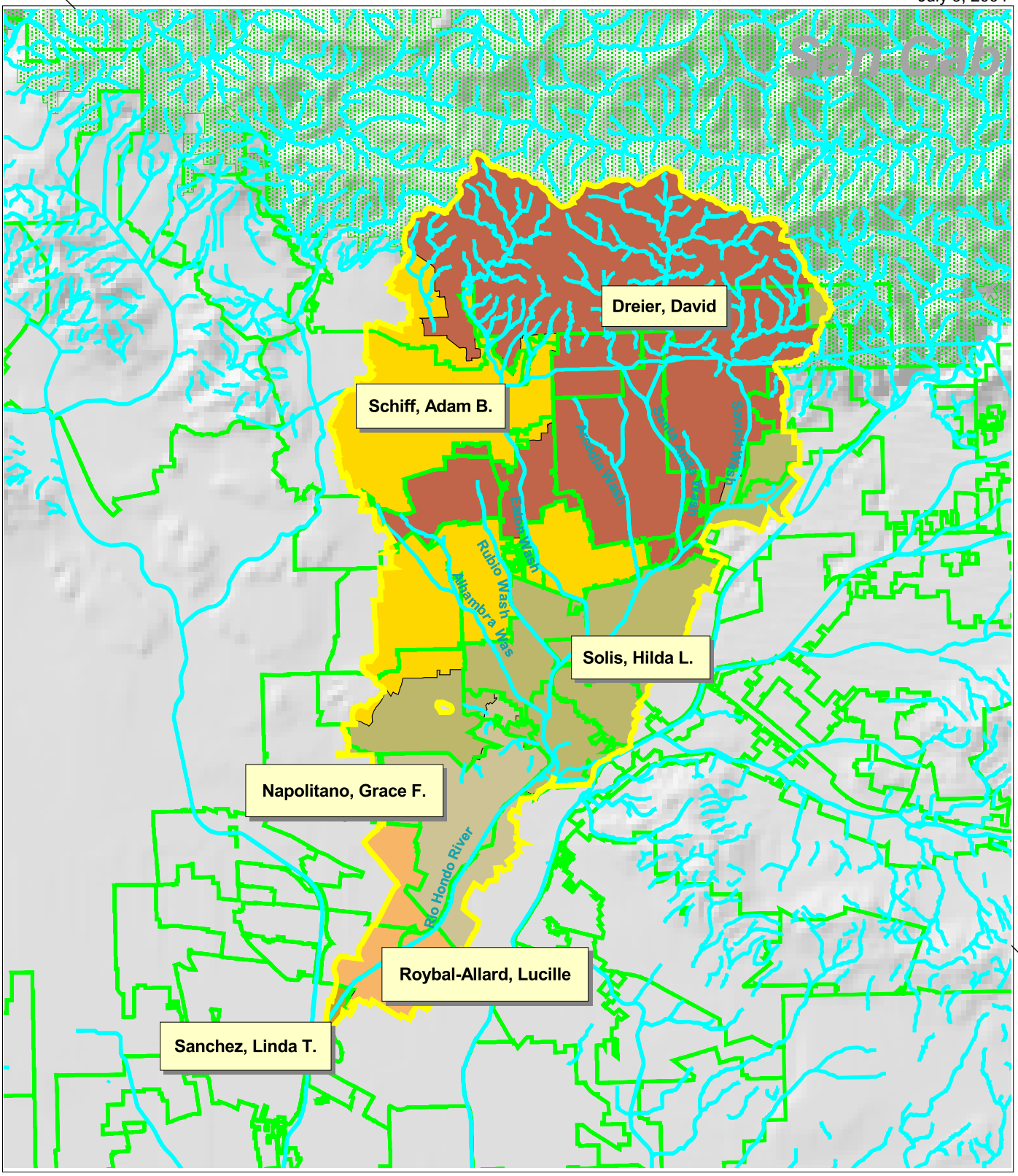
District 34 – Lucille Roybal-Allard (Commerce, Bell Gardens, Downey)

District 39 – Linda T. Sanchez (South Gate)

Rio Hondo River Watershed Management Plan

Congressional Districts 2001

July 9, 2004



Map created by the Rivers and Mountains Conservancy

Rio Hondo River Watershed
Rivers, channels and streams.shp
Los Angeles - City Boundaries
Congressional districts.shp
26
29
32
34
38
39
Angeles National Forest

3 0 3 Miles

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San Gabriel Valley Council of Governments

State of California – The Resources Agency
San Gabriel & Lower Los Angeles
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www.rmc.ca.gov

Rio Hondo- Political

State of California Senate Districts

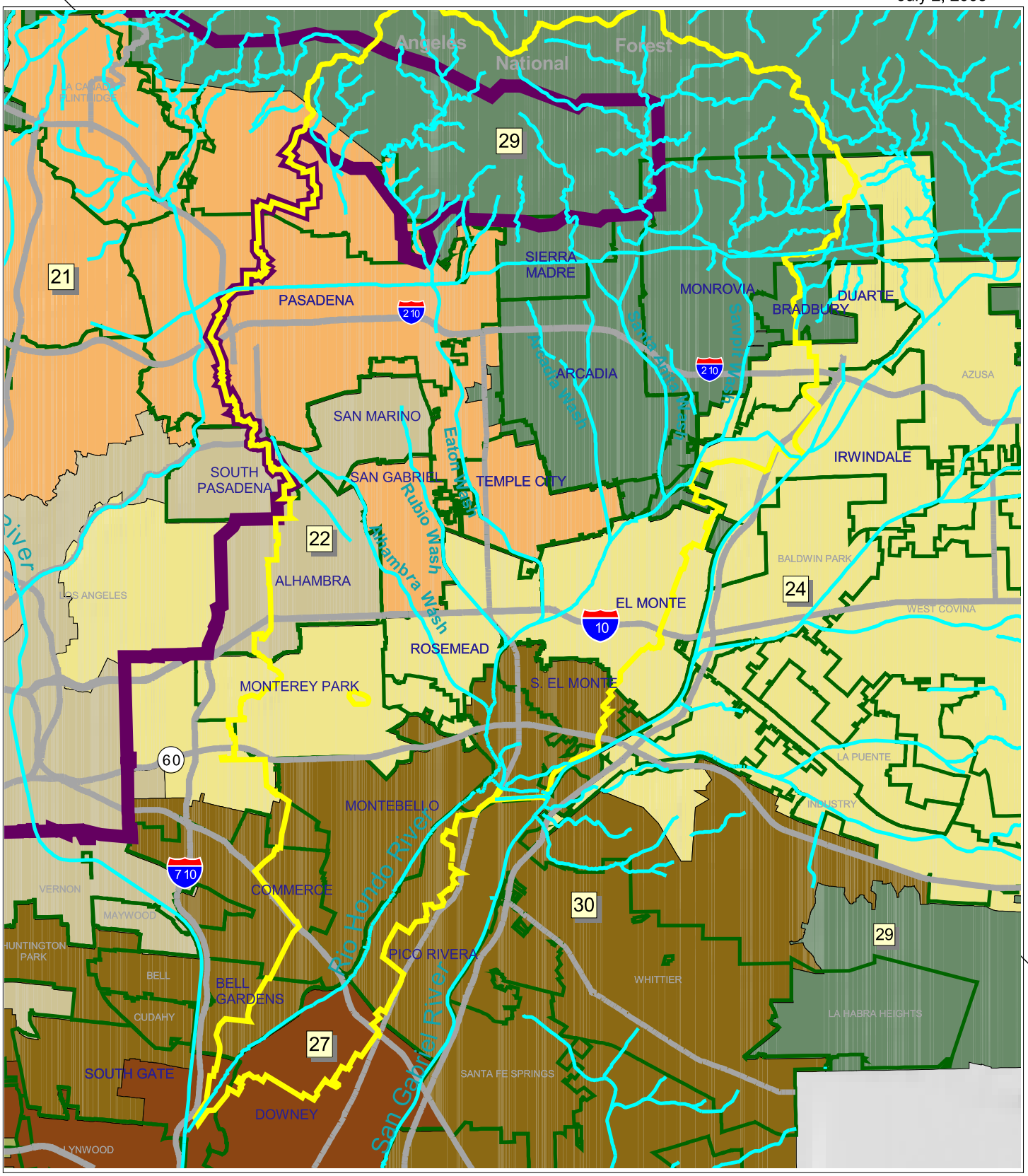
The six State of California Senate Districts within the watershed include:

- District 21 – Jack Scott (Pasadena, Altadena, Temple City, San Gabriel)
- District 22 – Gil Cadillo (Alhambra, San Marino, South Pasadena)
- District 24 – Gloria Romero (El Monte, Monterey Park, East Los Angeles, Rosemead)
- District 27 – Betty Karnette (Downey, South Gate)
- District 29 – Bob Margett (Angeles National Forest, Arcadia, Bradbury, Monrovia, Sierra Madre)
- District 30 – Martha Escutia (Bell Gardens, Commerce, Montebello, Pico Rivera, South El Monte)

Rio Hondo River Watershed Management Plan

State Senate Districts 2000

July 2, 2003



Los Angeles - Channels, Rivers, Streams
Rio Hondo River Watershed
RMC Boundary
Los Angeles - Freeways and Highways

State Senate Districts 2000
- 21 Hon. Jack Scott
- 22 Hon. Gil Cedillo
- 24 Hon. Gloria Romero
- 27 Hon. Betty Karnette
- 29 Hon. Bob Margett
- 30 Hon. Martha Escutia

Map created by the Rivers and Mountains Conservancy

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San Gabriel Valley Council of Governments

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State of California Assembly Districts

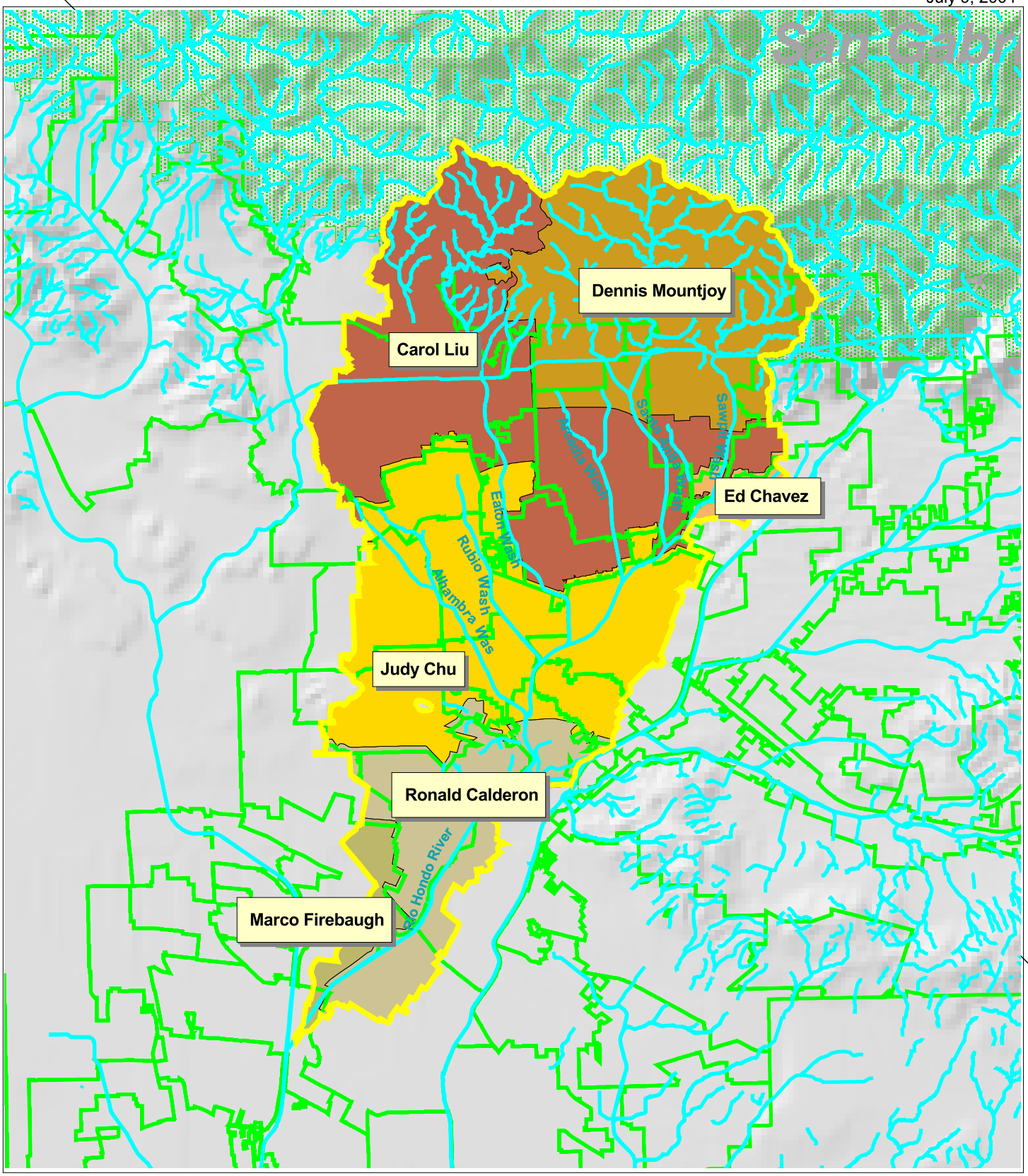
The six State of California Assembly Districts within the watershed include**:**

- District 44 – Carol Liu (Angeles National Forest, Altadena, Pasadena, South Pasadena, Arcadia, Temple City, Duarte, Monrovia)
- District 49 – Judy Chu (Alhambra, East Los Angeles, El Monte, Rosemead, San Gabriel, San Marino)
- District 50 – Marco Antonio Firebaugh (Bell Gardens, Commerce, South Gate)
- District 57 – Ed Chavez (Irwindale)
- District 58 – Ronald S. Calderon (Downey, East Los Angeles, Montebello, Pico Rivera)
- District 59 – Dennis Mountjoy (Angeles National Forest, Sierra Madre, Bradbury, Monrovia, Arcadia)

Rio Hondo River Watershed Management Plan

Assembly Districts

July 9, 2004



Map created by the Rivers and Mountains Conservancy

- Rio Hondo River Watershed
- Rivers, channels and streams.shp
- Los Angeles - City Boundaries

Assembly districts.shp

- 44
- 49
- 50
- 57
- 58
- 59
- Angeles National Forest

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San Gabriel Valley Council of Governments

State of California – The Resources Agency
San Gabriel & Lower Los Angeles
Rivers & Mountains Conservancy
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Rivers & Mountains Conservancy
900 So. Fremont St., Annex 2nd Floor
Alhambra, California 91802
(626) 458-4315 ; Fax (626) 979-5363
www.rmc.ca.gov

Rio Hondo- Political

County Of Los Angeles Supervisorial Districts

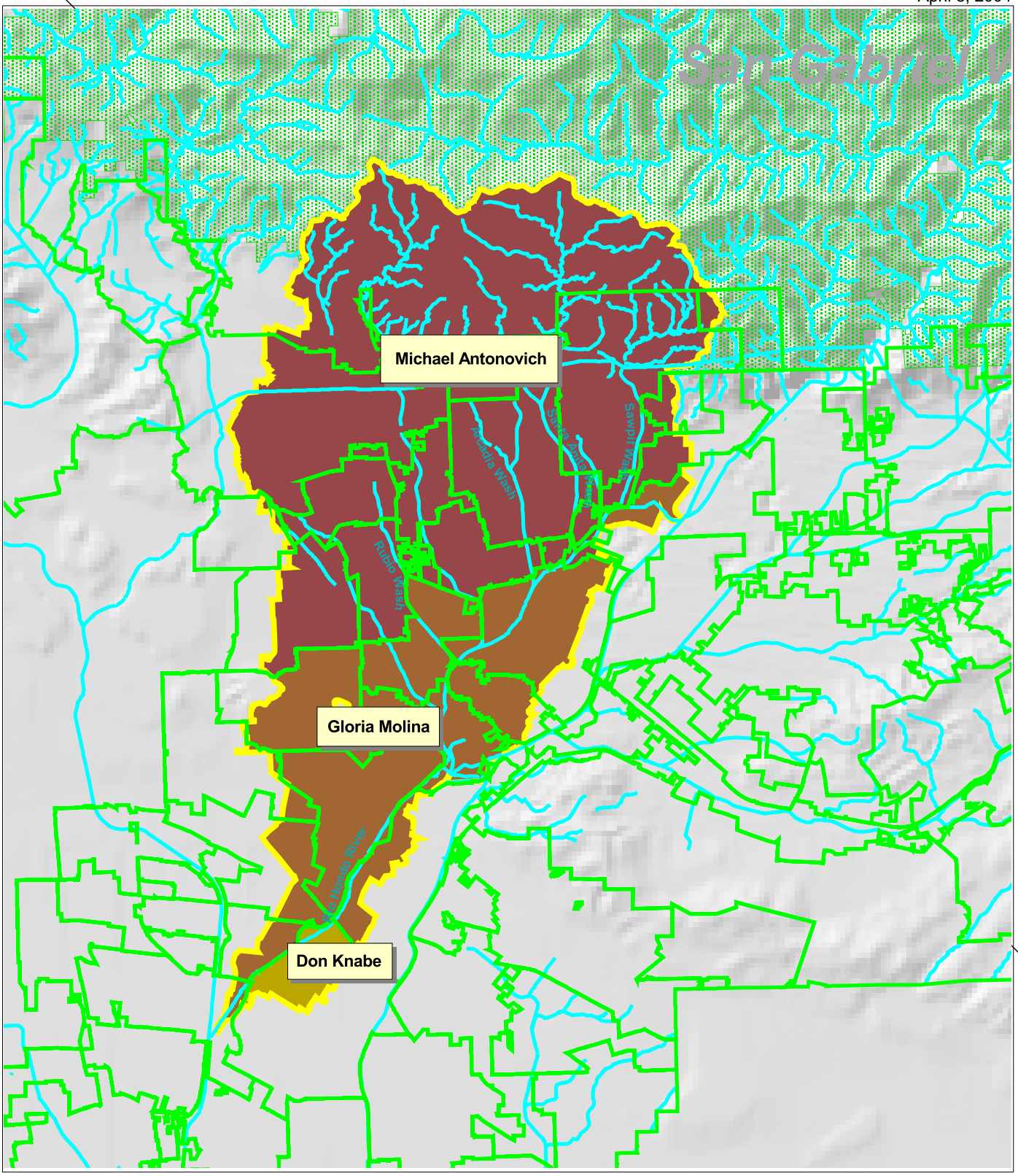
The three Supervisorial Districts within the watershed include:

- District 1 – Gloria Molina (Bell Gardens, City of Commerce, El Monte, Irwindale, Montebello, Monterey Park, Pico Rivera, Rosemead, South Gate, South El Monte)
- District 4 – Don Knabe (Downey)
- District 5 – Michael Antonovich (Alhambra, Arcadia, Bradbury, Duarte, Monrovia, Pasadena, San Gabriel, San Marino, Sierra Madre, South Pasadena, Temple City)

Rio Hondo River Watershed Management Plan

County of Los Angeles Supervisorial Districts

April 8, 2004



Map created by the Rivers and Mountains Conservancy

- Los Angeles - City Boundaries
- Los Angeles - Channels, Rivers, Streams
- Rio Hondo River Watershed
- La county district 5.shp
- La county district 4.shp
- La county district 1.shp
- Angeles National Forest

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Rio Hondo- Political

2.6 OVERALL FINDINGS

This initial watershed Plan has started the process of determining the existing baseline condition of the watershed with the intent of using that understanding to identify strategies and initiate projects that will work to improve the overall health and functioning of the watershed. The following is a brief overview of some of the principal findings that emerged from this initial assessment of the watershed.

Existing Conditions and Characteristics

- The essential functions of the Rio Hondo watershed, including groundwater storage and habitat support, were severely impacted by extensive urbanization
  - Impervious surfaces throughout the watershed have significantly reduced percolation into the groundwater table.
  - The present state of impermeability in the watershed also increases flood hazards
  - Water quality is threatened by non-point source pollution (storm water runoff) from multiple land uses within the watershed
  - Beneficial uses of the Rio Hondo have been negatively impacted by this polluted runoff.
  - The Rio Hondo is designated an impaired water body on the states 303 (d) list because of trash, copper, lead, zinc, ammonia, pH, and coliform bacteria.
- The Los Angeles County Drainage Area (LACDA) Project was recently completed for the purpose of providing flood protection for ½ million people in 14 communities, including areas along the Rio Hondo downstream of Whittier Narrows
- The Rio Hondo Watershed plays a critically important water storage function in the region; its spreading grounds are among the most productive in Los Angeles County
  - This water supply function will continue to grow in importance as the population increases and the supply of imported water declines.
- The watershed is largely built out, with very little new development taking place;
  - Competing land uses – housing, economic, habitat, etc – are not well integrated
  - There is a scarcity of open space in the developed portions of the watershed
  - In terms of acreage and accessibility, there are an insufficient number of parks to serve the existing population within the watershed

- Most native habitat has been converted to urban uses;
  - The small patches of remaining habitat may not be adequate to support native species
  - Native species have also been negatively impacted by an invasion of non-native species.
  - Lack of local flood control projects incorporating naturalization
- The communities of the watershed are demographically complex with wide ranging differences in income, population density, ethnicity, and languages spoken
- The Rio Hondo is rich in a variety of cultural and historic resources.

Potential Constraints

- Any measures undertaken to improve the overall functioning and health of the watershed must maintain or improve flood protection.
- Projects affecting water supply will have to recognize existing water rights and the limitations they impose on water use.
- Mosquito and vector control drove many of the changes that negatively impacted the watershed; efforts to improve watershed health and functioning must be coordinated with vector control
- There is a general lack of public awareness about the watershed in particular and watershed issues in general
- Community perception that flood control only means flood channels and concrete
- A lack of city ordinances and incentives related stormwater runoff controls and pollution control
- There is no organization or group working on behalf of the watershed as a whole.
- Numerous different political jurisdictions at the local, state, and federal level overlay the Rio Hondo Watershed.
- Perceived high costs associated with implementation of watershed improvement measures
- Lack of a watershed wide governance structure

Opportunities

- Redevelopment and recycling of existing land uses offer the best opportunity to introduce site designs and other land use practices that mitigate water degradation from storm water runoff

- Simple, small-scale storm water projects located throughout the watershed may offer an opportunity to recreate and mirror many of the natural functions of a healthy watershed.
- The main channel of the Rio Hondo offers an opportunity to restore a critical wildlife linkage from the Puente Hills to the San Gabriel Mountains

Improving watershed conditions will require cooperation and partnerships between the many different constituents that exist within the watershed. Such cooperation can help generate the funding that will be needed to plan, design, implement, and maintain the various projects and programs required to achieve the goals of the watershed plan. It will also require that constituents of the watershed propose projects that are multi-objective in design and purpose, creating a competitive advantage in the pursuit of existing watershed-related funding sources. To maximize available resources it will also be important for cities to not only work together on joint projects, but to also individually implement water quality improvement Best Management Practices (BMPs) within their respective jurisdictions. Such a comprehensive effort can help spread the costs of watershed plan implementation, ensuring that no one city is burdened with the costs of improving the watershed and achieving water quality goals.

Columns at Bosque del Rio Hondo

CHAPTER III

WATERSHED MANAGEMENT PLAN FRAMEWORK

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CHAPTER III: WATERSHED MANAGEMENT PLAN FRAMEWORK

The core of the watershed planning effort is reflected in this chapter of the Watershed Plan. The Plan Framework presented in this chapter serves as a bridge between the existing conditions detailed in Chapter III and the projects and programs described in Chapter IV the watershed implementation plan.

Information collected throughout the planning process has been developed, refined, and organized into this Plan Framework. The result is an easy to use reference for assessing how the projects described in the Implementation Plan can support the Vision, Goals, and Strategies presented here.

Four elements comprise the Watershed Management Plan Framework:

A. Purpose of this Watershed Management Plan
B. Vision for a Healthy Rio Hondo Watershed
C. Goals necessary to articulate the vision
D. Strategies and potential actions needed to achieve the Goals for a healthy watershed

A. Purpose of the Watershed Management Plan

The purpose of the Rio Hondo Watershed Management Plan is to provide an organizing framework for municipalities, conservation organizations, and individuals alike to work together to improve the water quality, health, habitat, and recreation potential of the Rio Hondo Watershed. This Watershed Management Plan identifies goals and strategies necessary to manage the overall watershed as a healthy, life giving natural system. This plan also outlines steps to facilitate the establishment of a watershed consortium, in which communication of information, identification of priorities, funding development, creation of new projects, and ultimately implementation of watershed improvements can occur.

B. Vision for a Healthy Rio Hondo Watershed

The vision statement below describes the Rio Hondo Watershed as it is envisioned by this plan, sometime in the future. How far into the future is not yet clear. Projects and planning can start today, and continue for some time into the future. Continuous improvement within the watershed can be achieved by establishing a watershed oversight committee or consortium, by establishing good baseline information and monitoring programs, and utilizing adaptive management techniques. Over time, a collaborative watershed-wide approach will protect the water, open space and habitat and will come to make substantial positive changes within the watershed.

Future Vision of the Rio Hondo Watershed

The Rio Hondo is a vital, healthy watershed where water managers balance the needs of sustaining a healthy ecosystem within the context of providing water and flood control for an urban environment. The banks of the Rio Hondo and its tributaries provide a visually appealing, green environment offering visitors new trails, parks, and open space reconnecting the river to the economic and social fabric of the communities through which it flows. The newly restored natural landscape is visible in schoolyards and in public open spaces. Single family residences have planted native plants in their backyards, creating a mosaic of habitat across the watershed. Particularly rich riparian environments along the river also provide a series of supportive environments for native species, including habitat linkages extending from the Angeles National Forest to the bottom of the watershed and southward to the Puente Hills. New parks elsewhere in the watershed serve as detention areas during storm events, maximizing groundwater recharge, while providing additional habitat sanctuaries throughout the year.

Where possible, historic streams and their associated floodplains have been restored through the innovative use of alternative stormwater management techniques while essential flood control systems remain in place to ensure public safety and property protection. To accommodate both habitat and human populations, cities in the watershed have developed sustainable planning and building practices and have codified Best Management Practices and using their own activities as examples of stewardship. Throughout the urban environment are signs of the previously hidden hydrologic system as many miles of hidden stormdrains have been daylighted and water flows along inventive surface streams. The daylighted stormdrain system is able to "breathe" and is more porous once again after systematic removal of many acres of concrete, and asphalt.. Imported water needs have been reduced by 10%, saving the region tens of millions of dollars a year. Most parking lots in the watershed have the ability to capture all of its runoff, filter and percolate it into the ground.

The Rio Hondo River will be more visible in the community where there will be increased awareness of the vital role that it and the entire watershed play in supporting an improved quality of life while maintaining a quality local water supply. There is a strong desire among residents to protect the watershed and to.participate in water conservation and improvement programs. There is a sense of stewardship and trust among the cities, public agencies, and conservation organizations charged with the responsibility of deploying science-based, cost effective strategies to improve water quality, habitat and recreation opportunities in the Rio Hondo watershed. This collaborative approach enabled inter-jurisdictional programs that mirror the interdependent communities within the watershed.

C. Goals to Articulate the Vision

Six goals have been identified to further develop and articulate the Rio Hondo Watershed Vision, and a seventh goal was added to encourage achievement of multiple goals in any particular project. Together, they reflect the ideal that a healthy watershed is one that is able to successfully integrate and balance multiple community needs and interests. Although the goal statements do not specify how each goal is to be achieved, strategies and objectives do, and the need to balance all uses rather than focus on each separately, will insure a broader range of success within the watershed.

1. Improve in-stream water quality to meet or exceed Regional Water Quality Control Board standards and NPDES permitting requirements. Implement a wide array of Stormwater Best Management Practices (BMPs) to optimize local water resources and reduce dependence on imported water while increasing beneficial water uses available to the public.
2. Create, enhance, and protect open space through active acquisition of parcels that serve multiple-purpose uses, including; conservation, improvement of aesthetics, community development and connectivity.
3. Improve habitat quality, quantity and connectivity with watershed management and restoration of stream channels. Combine existing habitat, and creation of new habitat where possible to strengthen habitat migration corridors. Establish habitat areas for use by wild creatures, and other habitat areas with the addition of public access and education as appropriate.
4. Improve recreational opportunities as a function of watershed management. Use interpretative opportunities afforded by recreation to enhance watershed awareness and identity.
5. Ensure that public health and safety are integrated into all aspects of watershed enhancement.
6. Maintain current minimum flood protection levels and develop new flood protection strategies to meet the multiple goals required for watershed improvement.
7. Develop priority projects that address multiple goals simultaneously.

Two additional goals which are incorporated into Chapter 4 discussing Implementation. These goals are mentioned here so the reader will be aware they are considered priorities during implementation. They are:

8. Create an effective institutional framework from which to focus sustained efforts on improvement of the Rio Hondo Watershed by providing oversight, management, and measurement of recovery and restoration within the watershed.
9. Improve the long-term health of the watershed by establishing public awareness and stewardship campaigns that educate the public about their role in improving water quality and the overall health of the watershed.

D. Strategies and Potential Actions Needed To Achieve the Goals for a Healthy Watershed

The Watershed Management Plan that follows examines each of the goals and promotes a series of strategies and potential actions to achieve these goals. Each strategy is numbered for easy reference and is supported with a number of related potential actions.

3.1 WATER QUALITY AND CONSERVATION STRATEGIES

Restoring the hydrologic system as much as possible is the key to improving watershed health. This will require the eventual*, and very well considered*, replacement of sections of the existing stormwater management infrastructure, many of which were designed to accommodate intense peak runoff flows, such as certain sections of channelized streambeds. The current system of channels and storm drains was designed to protect the public from intense peak flows and has simultaneously enabled/protected additional development within the Rio Hondo flood plain. This additional development has created more impervious surfaces, more runoff in the flood channels, and reduced the natural capacity of the soils to recharge the underground aquifers. The establishment of spreading grounds has become an important component in recovering some of that runoff for groundwater recharge, a somewhat centralized fashion. The current system however fails to integrate natural open space in any useful way, and has eliminated much of the natural riparian habitat that once supported diverse animal communities and the region's aesthetic quality. The system as it exists also fails to address the capacity of riparian vegetation to absorb pollutants and improve water quality, or the capacity of certain land uses to accommodate temporary flooding and to slow runoff before entering the stream channels. Stakeholders have identified long-term stormwater management strategies as a way to improve water quality, decrease flood risks, increase groundwater recharge, and improve habitat. This chapter amplifies those ideas and describes additional short-term ways to maintain flood protection while improving management of stormwater runoff.

3.1.1 The Need for Water Conservation and Quality Improvement

In Chapter II, Existing Conditions, it was stated that the essential functions of the Rio Hondo watershed, including groundwater storage and habitat support, were heavily affected by development of flood control systems. The effects of urbanization and flood control projects on the watershed include:

- Impervious surfaces have reduced water percolation into the water table
- Water quality is adversely affected by non-point source pollution, especially storm water runoff, entering the watershed from multiple diverse sources in multiple land use areas.

- The lower two reaches of The Rio Hondo are designated as impaired water bodies on the states 303 (d) list because of trash, copper, lead, zinc, ammonia, pH, and coliform bacteria which requires the establishment of Total Maximum Daily Load (TMDL) standards for each of these pollutants.
- Beneficial uses of the Rio Hondo have been negatively impacted by this polluted runoff.

Because of these findings, a comprehensive approach to improving stormwater within the Rio Hondo Watershed is of primary importance.

The continued supply of high quality water is a central issue of concern in Southern California. Watershed planning can address the issue through implementation of additional water conservation programs and increased groundwater recharge, as well as creative approaches to water resource management. In accordance with objectives described in the Common Ground document, this Watershed Plan addresses various strategies to achieve it's goal.

GOAL: *Improve in-stream water quality to meet or exceed Regional Water Quality Control Board standards and NPDES permitting requirements. Implement a wide array of Stormwater Best Management Practices (BMPs) to optimize local water resources and reduce dependence on imported water while increasing beneficial water uses available to the public.*

STRATEGIES AND POTENTIAL ACTIONS

3.1.2 Expand Water Supplies Through Conservation and Increased Groundwater Recharge

Increased groundwater recharge can occur in centralized municipally owned facilities such as the spreading grounds and in a more decentralized fashion on many different parcels throughout the watershed. Recharge efforts should be concentrated where soils are particularly permeable and specifically away from obstructions such as the Bellflower Aquaclude. Any known or suspected contaminated plumes should be

avoided. Most of the valley regions of the Rio Hondo Watershed are in potentially productive recharge areas above the Raymond, Main San Gabriel, and Central Basins.

There are numerous **benefits** to decentralized groundwater recharge throughout the permeable soil areas (generally the foothills and valley floors) of the watershed. Using runoff for aquifer recharge requires slowing of the runoff such that it can have time to percolate into the soil and the aquifer. This slowing of runoff reduces flood volumes in periods of high rainfall thereby reducing the scale of needed flood control facilities. This ultimately could allow for more beneficial uses in the floodway, such as habitat and recreation. Reduction of more typical runoff volumes that might be intercepted by future treatment facilities would mean smaller treatment facilities would be required and construction and maintenance costs would be lower. Additionally the natural filtering of aquifer recharge water would be occurring over a broader area and would be less susceptible to intentional contamination.

3.1.3 Recommendations for Increased In-Stream Infiltration

- Assess potential to increase infiltration through removal of concrete channel walls
- Explore partial diversion of Rio Hondo channel discharge into high or low flow natural channels
- Pursue selective restoration of soft-bottom Rio Hondo channel to enhance recharge. Consider the need for sediment management.
- Initiate selective daylighting of buried and culvertized streams, particularly in areas of highly permeable soils, and restore natural channels for recharge.

3.1.4 Utilize Natural Systems Approach to Enhance Water Conservation

- Utilize open spaces and pesticide/herbicide free landscaped areas to filter and cleanse runoff.
- Systematically prevent pollutants from entering the groundwater. Consider new practices for keeping pollutants out of the groundwater
- See more on this topic in the following section on land.

3.1.5 Implement Watershed-wide Water Conservation Programs

Opportunities to examine alternative approaches to water resource management, such as the development of new pricing strategies that better reflecting the true cost of importing expensive water supplies. These true costs would make conservation and water retention more desirable. Conservation programs could publicize opportunities and potential paybacks for on-site water retention and water conservation.

Watershed-wide Recommendations:

- Explore opportunities for new groundwater recharge to increase water supplies while simultaneously providing water for other beneficial uses such as habitat restoration.
- Identify zones of highly permeable soils. Provide increased opportunities to slow channel water and overland flow to promote infiltration within these zones
- Construct infiltration basins to capture and store water for infiltration into the surrounding soil. Prevent reduction of water conservation facilities.
- Encourage onsite collection of storm water for irrigation and percolation, where consistent with water rights
- Implement Best Management Practices (BMPs) for, parking lots, parks, roof runoff, etc. to reduce impermeable surfaces and increase on site clean-water infiltration for groundwater recharge in all land use types.

Sample Conservation Programs

- Extend the distribution and range of uses for reclaimed water
- Develop new water pricing strategies, including higher prices, which better reflect the true value of water and by doing so help conserve its use.
- Establish a credit system for implementation of BMPs, such as removal of roof downspouts that are directly connected to street gutters or other portions of the stromwater system.
- Establish a stream setback ordinance.[1]

Success Indicators / Performance Measures for Water Conservation

- Decrease in overall imported water purchases

[1] See City Oakland Stream Setback Ordinance.

- Increase in overall groundwater recharge from local rainfall
- Reduction of impervious surfaces
- Increase in number of miles of daylighted creeks over permeable soils

3.1.6 Promote the Beneficial Uses of the Rio Hondo River

The beneficial uses for various water bodies, including separate reaches and lakes within the Rio Hondo watershed were established in the 1994 Basin Plan. The areas of beneficial use may be existing uses, potential or intermittent uses. While beneficial uses are theoretically desirable they would not necessarily be appropriate for certain water bodies, such as typical flood protection channels as they currently exist. However along carefully selected water bodies expansion of beneficial uses may be possible after a Use Attainability Analysis (UAA) has been completed and agreed upon by all parties. Knowledge and focus on the actual attainability of beneficial uses will help in restoration efforts. The summary of beneficial uses, for multiple water bodies within the watershed, are listed below and more fully described in Chapter II, Existing Conditions.

- Municipal and Domestic Water Supply
- Groundwater Recharge
- Water Contact Recreation
- Non-Contact Recreation
- Warm Water habitat
- Cold Water Habitat
- Wildlife Habitat
- Wetland Habitat
- Spawning
- Rare, threatened, and Endangered Species Habitat

3.1.7 Stormwater Management Plans for All Communities in the Watershed

Each community within the watershed should have a stormwater management plan. These should be reviewed and updated to be sure they are relevant to the goals of watershed improvement. The process for developing stormwater management plans should be coordinated to systematically to address non-point pollution sources as well as opportunities for water quality improvement.

- Assess Site Conditions
- Understand Hydrologic Conditions of Concern
- Evaluate Pollutants of Concern
- Identify Candidate BMPs
- Determine BMP Size/Capacity
- Develop Plan for BMP Maintenance

3.1.8 Identify Pollutants of Concern

Tests of the water quality have confirmed the pollutants of concern in the Rio Hondo watershed since it has been designated an impaired water body on California's 303(d) list because of trash, copper, lead, zinc, ammonia, pH, and coliform bacteria.

Other pollutants that are typically of concern in urban development are shown in Table 2.1. These are pollutants that are *anticipated* as result of urban development as well as those that are a *potential* result of urban development. Anticipated in this sense would mean a pollutant likely to be found in areas of urban development and a potential pollutant would mean that it is possible to find these pollutants in unban watersheds. Their absence from the 303(d) list means that these pollutants are not present in quantities enough to penetrate the identified threshold for contamination. The pollutants described in the table probably are present in the Rio Hondo Watershed but not currently in quantities that break federal thresholds.

Table 2.1 Anticipated and Potential Pollutants Generated by Land Use Type									
Priority Project Categories	General Pollutant Categories								
	Pathogens	Heavy Metals	Nutrients	Pesticides	Organic Compounds	Sediments	Trash & Debris	Oxygen Demanding Substances	Oil & Grease
Detached Residential Development	X		X	X		X	X	X	X
Attached Residential Development	P		X	X		X	X	P(1)	P(2)
Commercial/ Industrial Development >100,000 ft2	P(3)		P(1)	P(5)	P(2)	P(1)	X	P(5)	X
Automotive Repair Shops		X			X(4)(5)		X		X
Restaurants	X						X	X	X
Hillside Development >5,000 ft2 In SDRWQCB			X	X		X	X	X	X
Hillside Development >100,000 ft2 In SARWQCB			X	X		X	X	X	X
Parking Lots		X	P(1)	P(2)		P(1)	X	Ps	X
Streets, Highways & Freeways		X	P(1)		X(4)	X	X	P(5)	X

X = anticipated or Likely
P = potential or Possible
(1) A potential pollutant if landscaping exists on-site
(2) A potential pollutant if the project includes uncovered parking areas
(3) A potential pollutant if land use involves food or animal waste products
(4) Including petroleum hydrocarbons
(5) Including solvents

This table from *Stormwater Best Management Practice Handbook*, Produced by the California Stormwater Association January 2003, Page 2.7

3.1.9 Establish BMP Standards for the Watershed

For the purpose of conveying the intent of Best Management Practices (BMPs) this Watershed Management Plan has adopted the standard set by the California Stormwater Quality Association which has produced a series of four BMP Handbooks for various applications. These handbooks are available for free downloading at www.cabmphandbooks.com. The four handbooks include information and BMPs for:

- New Development and Redevelopment
- Construction
- Industrial and Commercial
- Municipal Activities

3.1.10 Which is Best: Site Design, Source Control or Treatment Control?

Planning and design for water quality protection employs three basic strategies in the following order of relative effectiveness[2]. See Figure 2.1

- Reduce or eliminate post-project runoff through Planning and Design
- Control sources of pollutants
- Treat contaminated stormwater runoff before discharging to natural water bodies

Some communities have identified opportunities for water treatment facilities that have potential to improve downstream water quality (see following Chapter describing proposed projects). As the diagram demonstrates, these treatment facilities provide the least benefit to the overall watershed, because they do not treat the water contamination problem at the source. The benefit of water treatment strategies is that they do improve downstream water quality fairly immediately once treatment has begun. The drawback is that increased water volumes that carry pollutants from urban runoff in the upper watershed remain unchecked and the need for treatment increases over time. However, used in combination with source control, the treatment volumes can be reduced, and upstream water quality can be improved. **A combination of all strategies will provide the maximum benefit to the watershed.**

[2] California Stormwater Quality Association, January 2003

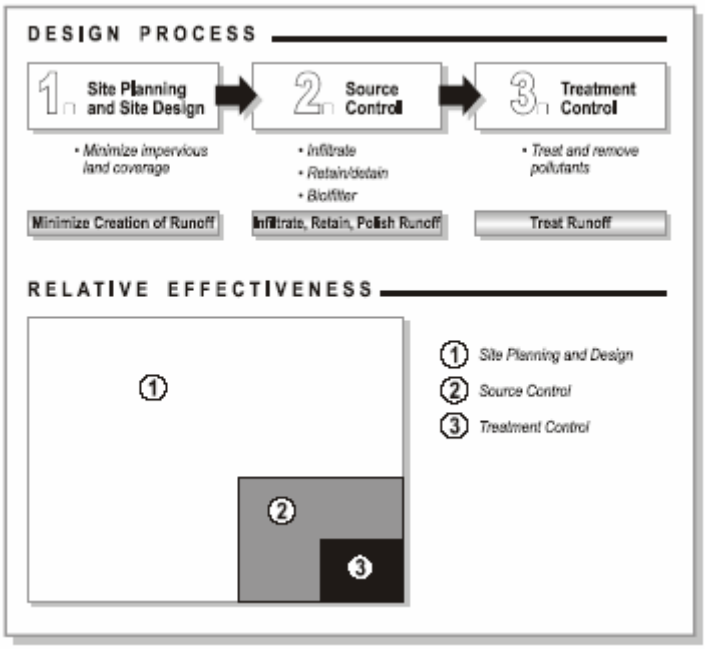


Figure 2.1 Relative Effectiveness of Three Types of BMPs

3.1.11 BMPs for Site and Facility Design

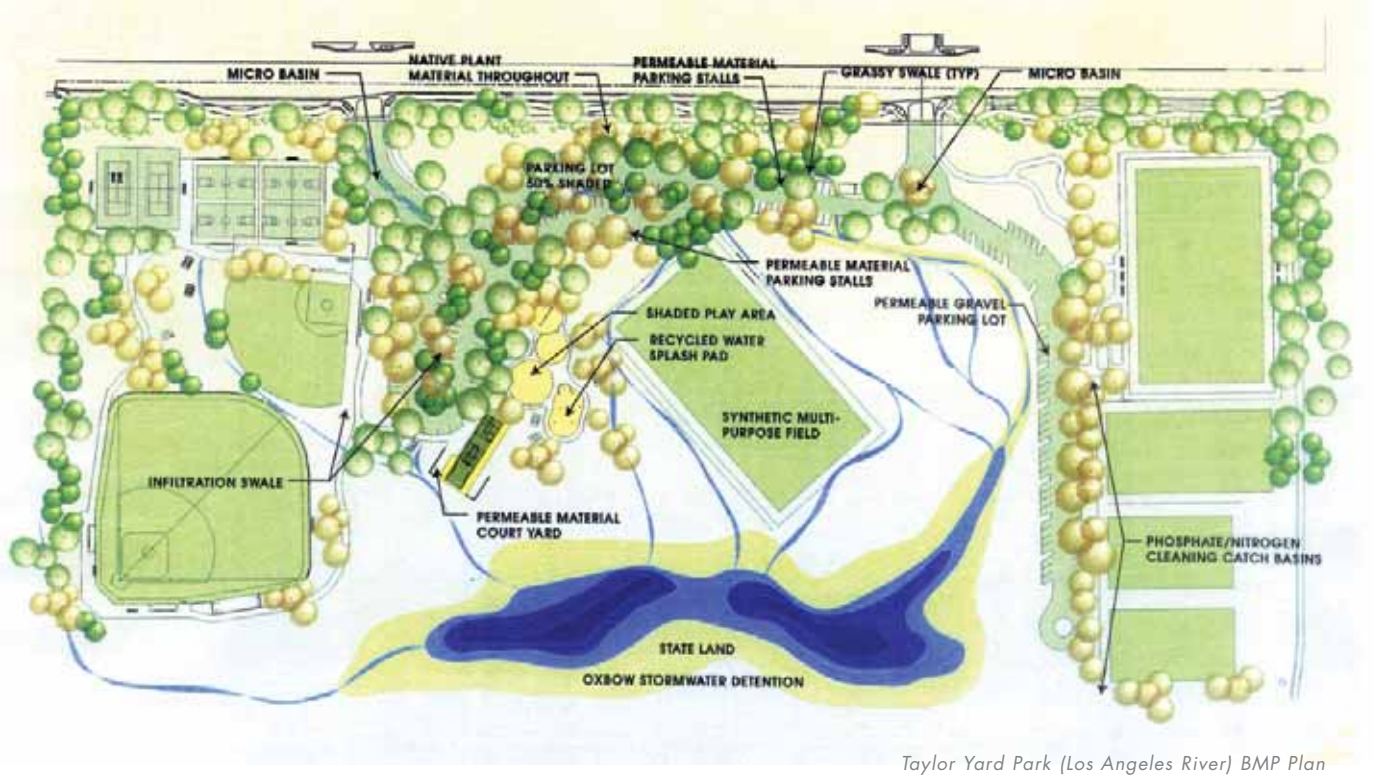
Because the mid and lower Rio Hondo Watershed is largely built out new construction opportunities are fairly limited. However there are opportunities for improving water quality through site planning and design and in building permit review of new and redevelopment plans to insure incorporation of proper site and facility design BMPs. In the upper watershed, site planning and incorporation of BMPs for hillside construction and development will be of particular importance. In reviewing plans for redevelopment projects implementation of numerous multi-purpose site design BMPs will encourage at-the-source treatment of storm water runoff. If implemented in a systematic basis, these BMPs will provide the longest term benefits to overall improvement of water quality within the watershed.

Site and Facility design can improve water quality within the watershed and streams derived by filtration through vegetation, most ideally as close as possible to the source of the runoff[3]. It is possible to make this happen throughout the watershed in many places, including:

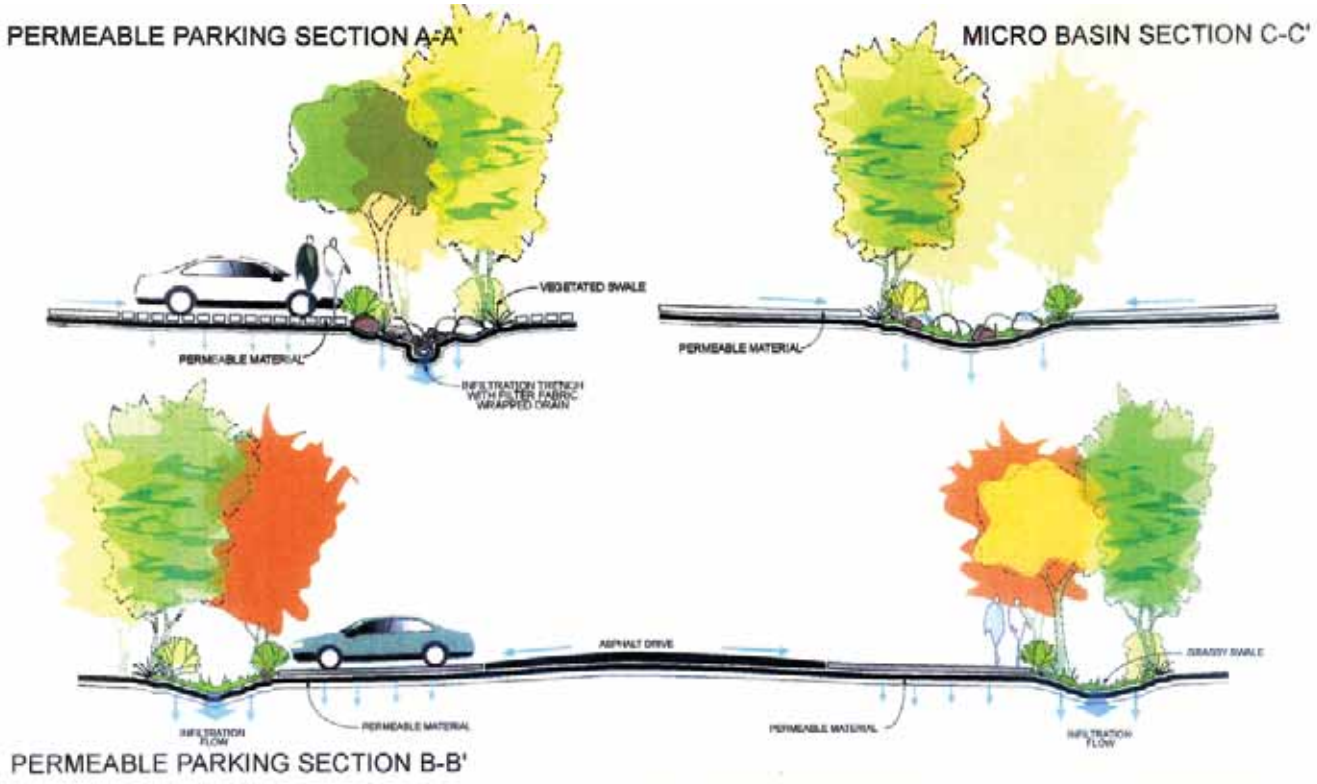
- Along streets and highways in parking areas, parkways, and medians
- Parking lot edges or landscaped dividers
- Residential backyards
- In leftover open spaces such as vacant lots or underutilized lands
- Along utility corridors
- Outdoor Work Areas
- Maintenance and Storage Areas
- Vehicle and Equipment Washing Areas
- Loading Area
- Trash Storage Area
- Wash Areas
- Fueling Areas

3 For more information see The Stormwater and Best Mangement Practice Handbook for New Development and Redevelopment, Section 3- Site and Facility Design for Water Quality Protection, produced by the California Stormwater Quality Association, Jan. 2003

Conceptual BMP Integration at Taylor Yard Park



Taylor Yard Park (Los Angeles River) BMP Plan
(Courtesy of Rivers and Mountains Conservancy)



Taylor Yard Park Parking Lot BMP Cross Section
(Courtesy of Rivers and Mountains Conservancy)

3.1.12 BMPs for Source Control of Stormwater Runoff

Source Control BMPs offer the best opportunities for overall improvement of water quality within the watershed because they treat water contaminates before they enter the stream system. Source Control BMPs are typically small scale and decentralized. The cost of implementing any individual project is low, yet their combined benefit to the watershed over time is among the highest. Established communities in the Rio Hondo watershed are continually redeveloping and it is during these redevelopment applications that implementation of Source Control BMPs can be easily incorporated into permit requirements.

- All municipalities incorporate Source Control BMPs in their permit application requirements.

Site Designed (SD) BMPs for Source Control of stormwater runoff are well documented. The typical BMP titles are provided here, for a complete description please refer to Section 4 of the Stormwater Best Management Practices Handbook, as previously referenced.

Site Design
SD-10 Site Design & Landscape Planning
SD-11 Roof Runoff Controls
SD-12 Efficient Irrigation
SD-13 Storm Drain Signage

Material Selection
SD-20 Pervious Pavements
SD-21 Alternative Building Materials

Commercial and Industrial Area Considerations
SD-30 Fueling Areas
SD-31 Maintenance Bays & Docs
SD-32 Trash Storage Areas
SD-33 Vehicle Washing Areas
SD-34 Outdoor Material Storage Areas
SD-35 Outdoor Work Areas
SD-36 Outdoor Processing Areas

3.1.13 Stormwater Pollution Prevention Plans for Construction

The Stormwater Pollution Prevention Plan or SWPPP is a document that addresses water pollution control during construction. A SWPPP must be prepared before construction begins, ideally during the project planning and design phases. The information required by the SWPPP may need the design to be modified to incorporate controls during construction and post-construction.

In many communities a construction project is subject a SWPPP only if it disturbs one acre or more of soil. However, the local municipality or Regional Water Quality Control Board (RWQCB) *could* require the development of a SWPPP for all projects that require a grading permit or if it is determined that the project poses a significant water quality risk threat.

Soil laboratory analysis may be required should prior contamination be suspected. The selection and implementation of construction BMPs would be affected by what existing features need to be protected or mitigated during construction. The grading and drainage plan should identify areas of cut and fill, slope during and after grading, protection of existing vegetation, and areas of soil disturbance. They also form the technical basis for selection of erosion and sediment control BMPs.

Implementation of the SWPPP begins when construction begins, typically before the initial clearing, grubbing, and grading operations, since these activities can usually increase erosion potential on the site.

- Municipalities should review policies regarding SWPPP preparation for projects disturbing areas of less than one acre.
- Require incorporation of stormwater BMPs for all projects.

3.1.14 BMPs for Erosion and Sediment Control During Construction

This section outlines those BMPs that are appropriate to new construction that could be permitted within the Rio Hondo watershed. BMPs for new construction differ from those within existing neighborhoods in that they focus on erosion control and sediment reduction on the construction site. The **benefits** derived from implementation of these BMPs will exhibit themselves in areas where new construction is most prevalent, typically on the urban fringe, or in the upper portion of the

watershed. This is good because anything that benefits the upper watershed also benefits the water quality the lower watershed.

Erosion control is any source control practice that protects the soil surface and prevents soil particles from being detached by rainfall, flowing water, or wind. Erosion control is also referred to as soil stabilization. Erosion control consists of preparing the soil surface and implementing one or more of the BMPs, to disturbed soil areas.

All inactive soil disturbed areas on the project site, and most active areas prior to the on set of rain, must be protected from erosion. Soil disturbed areas may include relatively flat areas as well as slopes. BMPs to reduce erosion from construction sites include:

EC-1 Scheduling
EC-10 Velocity Dissipation Devices
EC-11 Slope Drains
EC-12 Streambank Stabilization
EC-13 Polyacrylamide
EC-2 Preservation of Existing Vegetation
EC-3 Hydraulic Mulch
EC-4 Hydroseeding
EC-5 Soil Binders
EC-6 Straw Mulch
EC-7 Geotextiles and Mats
EC-8 Wood Mulching
EC-9 Earth Dikes and Drainage Swales

Sediment control BMPs include those practices that intercept and slow or detain the flow of stormwater to allow sediment to settle and be trapped. Sediment control practices can consist of installing linear sediment barriers (such as silt fence, sandbag barrier, and straw bale barrier); providing fiber rolls, gravel bag berms, or check dams to break up slope length or flow; or constructing a sediment trap or sediment basin. Linear sediment barriers are typically placed below the toe of exposed and erodible slopes, down-slope of exposed soil areas, around soil stockpiles, and at other appropriate locations along the site perimeter.

SE-1 Silt Fence
SE-10 Storm Drain Inlet Protection
SE-11 Chemical Treatment
SE-2 Sediment Basin
SE-3 Sediment Trap
SE-4 Check Dams
SE-5 Fiber Rolls
SE-6 Gravel Bag Berm

SE-7 Street Sweeping and Vacuuming
SE-8 Sandbag Barrier
SE-9 Straw Bale Barrier

Tracking control consists of preventing or reducing the tracking of sediment off-site by vehicles leaving the construction area. Attention to control of tracking sediment off site is highly recommended, as dirty streets and roads from a construction site drain into nearby stormdrains and nearby creeks. BMPs for Tracking Control include:

TC-1 Stabilized Construction Entrance/Exit
TC-2 Stabilized Construction Roadway
TC-3 Entrance/Outlet Tire Wash

Wind erosion control consists of applying water or other dust palliatives to prevent or alleviate dust nuisance. The wind erosion control best management practice (BMP) is referenced. Other BMPs are sometimes applied to disturbed soil areas to control wind erosion (BMPs EC-2 through EC-7).

WE-1 Wind Erosion Control

Temporary concentrated flow conveyance control BMPs:

EC-9, Earth Dikes and Drainage Swales
EC-10, Velocity Dissipation Devices
EC-11, Slope Drains

Seattle Street Swale BMP Project

a.

b.

c.

d.

a. Seattle Street Before Creating Swale
b. Seattle Street After Creating Swale
c. Seattle Street Swale Aerial Photo
d. Seattle Street Swale Detail
(All Courtesy of Seattle Public Utilities)

Case Study 2: T.R.E.E.S. and Hall House B.M.P. Demonstration Site

A Template for Retrofitting Los Angeles

In 1997, the T.R.E.E.S. (Trans-Agency Resources for Environmental and Economic Sustainability) brought together a coalition of Los Angeles public agencies and environmentalists "…to design the retrofit of Los Angeles as a living watershed." The group developed a series of Best Management Practices for (BMPs) for industrial sites, commercial buildings, schools, multi-family housing, and single family homes resulting in a "blueprint for an ecologically, socially, and economically sustainable Los Angeles."

T.R.E.E.S created The Hall House demonstration site, a single-family residence in south central Los Angeles. The site uses lot-level low impact development practices designed to capture and treat all the runoff from this residential site. These include a cistern collection system, redirection of roof-top runoff, vegetated/mulched swales, and retention upgrading to reduce runoff pollution. Most of the BMPs are relatively inexpensive.

The T.R.E.E.S demonstration site uses natural systems to reduce the increased runoff from urbanization. The techniques have significant potential to reduce water pollution when applied throughout a watershed. The BMPs are cost effective and successful at capturing, cleaning, and storing runoff, reusing water, to reduce runoff while improving urban forests and watershed management. If applied throughout Los Angeles, project managers anticipate significant reduction in the need for water imports.

The Project has also developed detailed BMP site designs for other specific locations throughout the City of Los Angles, with the goal of demonstrating the viability of treating every site in the region as a mini-watershed. These site proposals include:

- A multi-housing site BMP design for the Harbor Vista Apartments in the Wilmington District of Los Angeles, which features graywater irrigation, filter beds to pre-treat runoff, and a subsurface infiltration basin under the parking area to capture and treat all rainwater that falls on the site.
- A public school site BMP design for Crenshaw High School. Stormwater on the site is slowed and cleansed through the use of porous parking areas, soil filtration through lengthy vegetated swales, and use of more shade trees. The large open areas of this and other school sites, could be used to improve both on-site runoff but also runoff from surrounding streets at little additional cost.
- A commercial site BMP design for Jiffy Lube and Convenience Commercial in Santa Monica. 90% of the site area is pavement and roof surface. The design makes site surfaces more permeable to facilitate water infiltration and enhance flood control; while capturing and removing pollutants from stormwater runoff.

- An industrial site BMP design for Conjunctive Points, Culver City and Los Angeles. Strategies proposed include modification of the existing flood control channel on the site to increase capacity and provide recreation space close to water. Concrete removal could allow for regarded vegetated areas and partial reconstruction the site, using permeable materials such as gabion walls and vegetated areas.

Excerpted from:

Natural Resources Defense Council (www.nrdc.org), Stormwater Strategies: Community Responses to Runoff Pollution.
Tree People (www.treepeople.org/trees) T.R.E.E.S. Project Overview

3.1.15 BMPs for Source Control at Industrial and Commercial Facilities

The following BMPs have been established by the California Stormwater Quality Association (CASQA) for Industrial and Commercial facilities. These BMPs are intended to reduce the potential of pollutants from entering the stream system. They are taken from the CASQA handbook on the subject, which is available at www.cabmphandbooks.com : The **benefits** derived from incorporation of these BMPs will exhibit themselves as soon as they are implemented in the various pockets of industrial and commercial land uses throughout the middle and lower portions of the watershed. Bacause of the nature and volume of potential pollutants from industrial and commercial facilities the benefits derived from incorporation of Best Management Practices could be fairly immediate. The BMPs for Industrial and Commercial land uses are as follows:[4]

Non Stormwater Management
SC-10 Non-Stormwater Discharges
SC-11 Spill Prevention, Control and Cleanup

Vehicle and Equipment Management
SC-20 Vehicle and Equipment Fueling
SC-21 Vehicle and Equipment Cleaning
SC-22 Vehicle and Equipment Repair

Material and Waste Management
SC-30 Outdoor Loading/Unloading
SC-31 Outdoor Liquid Container Storage

[4] For more information see *The Stormwater and Best Mangement Practice Handbook* for Industrial and Commercial Facilities, Section 3- Source Control BMPs, produced by the California Stormwater Quality Association, Jan. 2003

SC-32 Outdoor Equipment Operations
SC-33 Outdoor Storage of Raw Materials
SC-34 Waste Handling and Disposal
SC-35 Safer Alternative Products
SC-40 Contaminated or Erodible Areas

Building and Grounds Management
SC-41 Building and Grounds Maintenance
SC-42 Building Repair and Construction
SC-43 Parking/Storage Area Maintenance
SC-44 Drainage System Maintenance

3.1.16 Implementation of Design, Source Control, and Erosion Control BMPs

Municipalities that issue building permits have the best ability to affect the quality of stormwater over time. With regulations to require integration of BMPs into the issuance of building permits *all* waters within the watershed will improve over time. Please see the inset for some early case studies about the design and implementation of BMPs in the Los Angles Area.

3.1.17 Establish Recurring Maintenance Schedule for Treatment Control Facilities

Designing treatment control facilities is the first step in creating a treatment protocol for the watershed. Integral to that process is planning for the long-term maintenance of the treatment facility. Inspection and maintenance are required wherever treatment control BMPs have been implemented. These maintenance and inspection activities are needed to insure that the treatment control facilities continue to work efficiently and effectively throughout their design lives.

- A schedule of maintenance and inspection activities should be established to insure effective performance of treatment facilities in the watershed.

Two types of treatment control facilities are typically utilized, those in the public domain and those that are proprietary. The BMPs cited here are so segregated. For more information about these Maintenance Control Fact Sheets please reference the California Stormwater Quality Association's is website at http://www.cabmphandbooks.com/Documents/Industrial/Section_4.pdf.

Maintenance for Public Domain Treatment Control Facilities

TC-10 Infiltration Trench
TC-11 Infiltration Basin
TC-12 Retention/Irrigation
TC-20 Wet Pond
TC-21 Constructed Wetland
TC-22 Extended Detention Basin
TC-30 Vegetated Swale
TC-31 Vegetated Buffer Strip
TC-32 Bioretention
TC-40 Media Filter
TC-50 Water Quality Inlet
TC-60 Multiple Systems

Maintenance for Manufactured (Proprietary) Treatment Control BMPs

Manufacturers typically have recommended inspection schedules and maintenance requirements for each treatment control device. If proprietary treatment control devices are utilized, a maintenance agreement and detailed maintenance plan should be developed. For many manufactured devices owners can contract with the manufacturer or representative to provide maintenance.

MP-20 Wetland
MP-40 Media Filter
MP-50 Wet Vault
MP-51 Vortex Separator
MP-52 Drain Inlet

3.1.18 Development and Implementation of TMDLs

TMDLs or Total Maximum Daily Loads for certain specific pollutants are established for impaired reaches of streams that have not been able to comply with EPA standards of section 303d of the Federal Clean Water Act. (Please see the preceding existing conditions section for location of the impaired reaches). In California the local Regional Water Quality Control Board (RWQCB) is responsible for establishing the TMDLs.

The RWQCB is in the process of establishing goals for the reduction of pollutants in impaired reaches. When the TMDL goals are ultimately established, municipalities will have the responsibility to achieve them. Implementation of the previously described BMPs will help to achieve the new TMDL goals.

3.1.19 Ways to Reduce Key Pollutants of Impaired Reaches

On the Rio Hondo reaches have been identified as impaired because of the presence of trash and bacteria. An actual trash removal program, or creek clean-up program, through the riparian corridors of the watershed is an effective way to both clean the stream channels and to establish baseline information on the structure and condition of the stream reaches. Other opportunities to reduce trash in the streams include fines for littering and public education campaigns.

Bacteria is another prevalent problem that exhibits itself throughout the watershed. Its presence, along with other contaminants, reduces the quality of water available for groundwater recharge and the ultimate water supply for Los Angles County. Bacteria in streams typically results from three potential sources which could be controlled:

1. Food or animal by-products that enter the stream channel
2. Cross connections or leaking of the sewer system into the stormwater system.
3. Fecal matter from human encampments and/or pet waste that enters streams.

Reduction of other key pollutants from the stream system can take many forms, utilizing creative ways to provide labor and oversight. Some suggestions include:

- Establish stream cleaning teams to remove trash, to perform baseline data collection and to visually inspect the stromwater conveyance system.
- Utilize the California Conservation Corps (CCC) or other entity to provide labor while providing educational opportunities for those involved.
- Educate the public on the structure of the watershed and the location of streams
- Continue BMP requirement for restaurant wash down areas to prevent food products from entering the stream channels.
- Track down cross connections and leaking sewer systems promptly.
- Require pet owners to clean up after their pets no matter where they are in the watershed. Provide signs and plastic bags at trailheads and in public areas.

Compliance for the TMDL program for municipalities could be eased by establishing collaborative efforts to implement a water quality improvement program and to improve opportunities for funding.

Success Indicators / Performance Measures for Water Quality

- Incorporation of BMPs into municipal codes and permit evaluations.
- Incorporation of BMPs into municipal maintenance yards and along state and federal highways, with public promotion of the benefits derived from pilot projects.

- Timely and reasonable establishment of TMDL standards for pollutants of concern in the Rio Hondo watershed. These include: Nitrogen and related effects, pH, coli form, Trash, Chromium, Zinc, and persistent pesticides (DDT and Chlordane) in Peck Road Lake.
- Compliance with newly established TMDL standards and elimination of impaired status for Rio Hondo Reaches 1 and 2 and Peck Road Lake.
- Increased use of the beneficial aspects of riparian buffers in restoration efforts along reaches of the Rio Hondo Watershed.
- Improvements in runoff water quality so as to alleviate concern about contamination of groundwater resources from local rainfall.
- Reduction of impervious surfaces

3.2 ACQUIRE, DEVELOP AND MAINTAIN MULTI-USE OPEN SPACE

The lack of sufficient open space is a significant issue for the highly urbanized Rio Hondo Watershed, especially given projected increases in the future population. Although open space can take many different forms – parks, greenways, natural areas, and "vacant" lands – many value the presence of this land use type. The Plan includes a variety of strategies designed to preserve existing open space areas, as well as opportunities to reclaim land that could become open space in the future.

GOAL: *Create, enhance, and protect open space through active acquisition of parcels that serve multiple-purpose uses, including; conservation, improvement of aesthetics, community development and connectivity.*

The conversion of underutilized lands currently zoned for commercial, industrial, and residential uses may represent a long-term opportunity to create new open space. Although many cities will evaluate the economic development potential of such sites, the value of such properties can be enhanced where there is an open space component. This approach may be especially valuable in what are now heavily developed areas, as older buildings and facilities reach the end of their useful lifespan. The expansion of existing parks is another strategy well suited for heavily developed areas. Opening up selected portions of utility corridors by providing community and habitat-friendly uses such as gardens, parks, and trails can significantly expand open space resources.

The overall strategy underlying these actions is improving overall access to open space areas and recreation facilities in a heavily developed urbanized area. The Rio Hondo and its tributaries offer significant opportunities for achieving that goal in both the short-term and long-term future.

3.2.1 The Need For Open Space, Habitat Connectivity, and Recreation

In the previous chapter describing the Existing Conditions of the Rio Hondo Watershed the following findings were established.

Communities

- The watershed is largely built out, with very little new development taking place;
- The communities of the watershed are demographically complex with wide ranging differences in income, population density, ethnicity, and languages spoken
- The Rio Hondo is rich in a variety of cultural and historic resources.

Open Space

- There is a scarcity of open space in the developed portions of the watershed. Also because of the absence of open space, the management infrastructure necessary to support them is also absent.

Habitat Condition

- Most native habitat has been converted to urban uses and the small patches of remaining habitat may not be adequate to support native species.
- Native species have been negatively impacted by an invasion of non-native species.

Recreation

- In terms of acreage and accessibility, there are an insufficient number of parks to serve the existing population within the watershed.

3.2.2 Establish Land Use Policies and Development Standards to Encourage Open Space in the Watershed

- Define open space as infrastructure designed to support the health of the watershed.
- Promote the benefits of converting land to open space to cities and the public
- Create more livable communities by integrating open space near to where people live
- Promote and design for multi-modal transportation modes with less impact on the watershed
- Acquire and utilize open space for multiple purposes including, water retention, habitat protection and enhancement, and recreation.

- Establish a mitigation bank to focus mitigation efforts and leverage other projects within the watershed
- Review, revise, and update local land use, zoning, and building codes to encourage open space in strategic locations so as to mitigate impacts of urbanization in the watershed.
- Coordinate land management policies and procedures among jurisdictions
- Work with local utilities to explore the potential for opening up utility corridors as public open space.

3.2.3 Actively Acquire Open Space Through Strategic Land Acquisition

- Utilize GIS information resources to support resource management and land acquisition planning.
  - Create property map to show opportunity sites for possible acquisition.
  - Identify a portfolio of potential projects to draw from when funding becomes available.
  - Compile list of projects needing possible mitigation plans
  - Consider potential open space uses such as trails and bike paths, as well as small -scale opportunities, such as community gardens.
- Establish priorities for land acquisition, coordinating targeted land acquisitions with land use planning including protection of upland areas as a priority acquisitions.
- Establish a permanent source of funding for open space acquisition, development, AND maintenance.
- Utilize conservation easements in lieu of fee title agreements where appropriate.
- Plan for new open space acquisitions to meet multiple objectives

3.2.4 Open Space Supporting Combined Needs of the Watershed

- Identify land acquisition opportunities in urban areas, along river and tributaries, and in the foothills.
- Recycle brownfields properties and abandoned commercial and industrial sites as new open space.
- Examine the potential of gravel quarries for future open space and other beneficial watershed uses.

- Improve the aesthetic quality of the river corridor, along tributaries, and in other open space areas of the watershed.

3.2.5 Improve Access to Open Space and Recreation for all Communities

- Evaluate access by population density, distance and time for each type of open space
- Expand and improve existing facilities
  - Meet site design standards for special user needs
  - Include in all site programming adequate parking, access via public transportation, and facilities for buses
- Provide for active and passive recreational uses
- Incorporate passive/low impact recreational uses and storm water re-capture
- Create a network of trails to provide connections between open space areas.

Preserve, Enhance and Restore Native Habitats Within Open Space

- In areas where habitat values predominate avoid improvements that would jeopardize those values.

3.2.6 Promote Stewardship of the Landscape

- Utilize drought tolerant and native plant materials
- Supply best Management Practices that support habitat and water quality goals
- Identify historical sites and cultural landscapes
- Support community gardens and water-wise and native plant gardens.
- Create a process to ensure consistent management and staff for all open space areas, including existing and future parks.

Success Indicators / Performance Criteria for Open Space

- Increased open space protection by conservancies in perpetuity
- Increase in acreage of open space areas for public use through land use conversion of abandoned transportation corridors or underutilized industrial or commercial properties
- Increased connectivity and access for all communities
- Ability for all neighborhoods to have easy access to some form of open space such as parks, creeks or community gardens via trails, low-cost transportation, walking distance
- Accumulation of acquisition and long-term maintenance funds through local bond measures, endowments, capital campaigns and other means
- Development of stewardship and maintenance plans for as long as open space is to remain open, in many cases, in perpetuity
- Active participation by and creation of local stewardship groups in all communities
- The development of livable communities integrates open space, habitat, and water conservation principles
- All future development, new or retrofits, incorporate multi-objective design principles
- Open space and habitat increases even as population grows; water quality improves and imported water quantity is reduced
- All cities in the watershed and Los Angeles County adopt healthy watershed development standards.
- The watershed is cited as a model of "green development"

Case Study 3: Blackberry Creek

Berkeley, California

"Daylighting" A Stream

In 1995, a 250-foot reach of creek was taken out of a culvert underneath a schoolyard. This stream daylighting project turned an asphalt lot into a well-used outdoor science classroom. The creek was planted with native willows, dogwood, alders, and wild rose. Neighbors enjoy the running water and surrounding park in the schoolyard. Collaboration between many private and public organizations, state funding, and labor from a job-training program made the project possible.

Blackberry Creek runs to the San Francisco Bay from the hills in the northern part of Berkeley. The creek flows through a dense single-family-home neighborhood in a narrow but relatively natural riparian corridor upstream from the school. At that point it ducks into a culvert running under the school. This culvert had a history of backing up in large storms, with the excess water flooding out onto nearby streets through its catch basins.

In 1992, a local PTA member proposed improving the school park and broaching the idea of daylighting Blackberry Creek there. The idea of providing an outdoor environmental education classroom and living lab for the school was a key selling point, as was the opportunity to address the flooding problem and provide a better park for the neighborhood.

In 1995, a heavy equipment contractor dug out the 1950's era culvert and roughed out banks and meanders for the new stream channel. The restoration effort created 250 feet of new channel. It drops two feet between the culverts upstream and downstream. To control velocities and orient the channel, the designers specified four shallow rock weirs, each anchored deeply in the streambed. Because the stream channel is 10 to 13 feet below the surrounding level of the land, the designs gave close attention to erosion control on the banks. Crews placed large rocks on th outside banks of each meander and stabilized other banks with a variety of bioengineering techniques; fascines, brush layering, pole cutting, and natural or biodegradable erosion-control fabrics. The surrounding neighborhood now enjoys a restored 0.6 acre park with a lawn, creek, creekside path, and picnic area.

A $144,000 grant from the California Department of Water Resources Urban Stream Restoration Program paid for planning, grading, hauling away fill, burying the excavated culvert on site, installing irrigation for the park, and conservation corps labor. If all funds and donations and foregone fees are totaled, the project probably cost about $200,000. A significant portion of this went toward the playground and park amenities, not just the stream restoration.

Excerpted from: Richard Pinkham, Rocky Mountain Institute*, Daylighting: New Life for Buried Streams,* 2000.

3.3 HABITAT ENHANCEMENT STRATEGIES

Many opportunities to enhance habitat currently exist in the watershed. The overall strategy is to implement smaller projects today, such as integrating habitat into school and park improvement projects, while beginning long-term planning for the creation of habitat linkages along the Rio Hondo and tributaries. There are also existing habitat areas that need immediate protection through land acquisition or removal of exotic invasive plants such as *Arundo donax*. Implementation of both short-term and long-term measures will help to ensure biodiversity not only within the Rio Hondo Watershed, but for also the South Coast Ecoregion.

The major long-term strategies include the re-establishment of habitat connectivity between Whittier Narrow and the San Gabriel Mountains, restoration of aquatic species to the Los Angeles River system, the protection of existing habitat, creating connections between small habitat fragments, and enlarging these fragments.

GOAL: *Improve habitat quality, quantity and connectivity with watershed management and restoration of stream channels. Combine existing habitat, and creation of new habitat where possible to strengthen habitat migration corridors. Establish habitat areas for use by wild creatures, and other habitat areas with the addition of public access and education as appropriate.*

3.3.1 Identify and Protect Existing High Quality Habitat and Ecologically Significant Areas

Identification and protection of habitat for threatened and endangered species' and significant natural areas' requires clarification of biological priorities.

- Protect significant remaining open space habitat, particularly in the upper watershed.
- Extend habitat into urban areas particularly along stream corrdiors
- Encourage native plantings for bird and butterfly habitat in back yards

- Incorporate areas of native habitat into development on private and public lands
- Protect habitats from incompatible human uses
  - Balance wildlife with human uses, such as recreation
  - Soften the urban edges of habitat areas by planting trees between streets and habitats, directing lighting away from habitat areas, and other methods
- Control litter and dumping
- Enforce Significant Ecological Areas protection measures

3.3.2 Reduce Habitat Fragmentation by Establishing Wildlife Corridors and Nodes

- Enhance connections between remaining wildlife populations so genetic exchange between populations can resume between Puente Hills, Whittier Narrows Recreation Area, Santa Fe Dam floodplain, and Angeles National Forest
- Minimize the effects of barriers and choke points that create impediments to wildlife movement
- Establish habitat area design standards for the most sensitive species that might possibly use a corridor
- Discourage urban development in floodplain & habitat areas
- Improve connectivity by planting native species in unvegetated areas such as the levees of flood control channels. Appropriate native species would depend on the amount of water available for plant growth
  - Riparian plants such as willows and mulefat in regularly saturated soils,
  - Riparian/coastal sage scrub edge species such as coyote brush in areas that receive some water,
  - Coastal sage scrub species such as California sagebrush and buckwheat in dry areas on steep slopes above basins and channels
- Improve connectivity and habitat values in watershed by replacing non-native trees in landscaped areas such as parks and golf courses with native trees such as sycamores and live oaks

3.3.3 Coordinate Efforts to Remove Invasive Species

- Prohibit planting of listed invasive/exotic plant species in parks, recreation, open space or habitat areas
- Encourage use of native plants in parklands or river corridor and adjacent areas
- Educate private landowners at edge of habitat areas on benefits of native plants and limiting exotic invasive plant species
- Remove invasive non-native species such as arundo, castor bean, and Russian thistle and prevent their spread or migration upstream
  - Focus on arundo removal as an important priority activity where it is possible to enhance the habitat value of existing non-develop areas
  - Manage exotic species such as arundo infestation in soft-bottom segments of stream
- Utilize Best Management Practices for management of habitat areas
- Engage in long term maintenance and management to ensure invasive species do not return

3.3.4 Restore and Enhance Degraded Aquatic and Terrestrial Riparian and Upland Habitat Areas

- Protect native vegetation & encourage native plant restoration
- Require mitigation efforts for impacts to existing habitats
  - Pursue regulatory opportunities to avoid degradation related to development.
  - Identify offsetting mitigations within the watershed that could be used if on-site mitigation is impossible.
  - Incorporate monitoring and maintenance procedures into restoration plans
  - Pursue habitat restoration in balance with other watershed goals
  - Ensure sufficient and appropriate flow conditions to support riparian river habitats, and aquatic species/fisheries while maintaining existing water rights
  - Restore and enhance habitats without compromising flood protection or public health
  - Reconcile habitat enhancement with water quality issues
  - Increase acreage of coastal wetland habitats while minimizing vector breeding
  - Landscape levees with native riparian vegetation wherever possible without compromising flood control capabilities

- Landscape spreading facilities without compromising recharge capabilities

3.3.5 Manage the Introduced and Native Wildlife Populations to Ensure a Healthy Balance

- Enhance specific species that have experienced decline
- Identify indicator species and develop standards and monitoring systems based on these key indicators.
- Maintain or reduce populations of wildlife meso-predators (raccoon, feral cats, opossum, skunk) and rodents that may transmit vector-borne diseases
- Discourage wildlife encroachment into surrounding urban areas
- Maintain or increase the population of prey species (amphibians, reptiles, small mammals and birds)

3.3.6 Educate the Public About Living with Wildlife

- Encourage residents to use native plants and materials that reflect the river/watershed identity and provide some habitat value
- Provide guidelines to coordinate habitat preservation efforts between agencies, jurisdictions, and private lands
- Educate residents on the urban-wild land interface on living with wildlife
- Educate visitors to natural areas on how to safely be in wildlife habitat areas
- Form business partnerships to encourage nurseries to sell native plant species

Success Indicators / Performance Criteria

- Creation of habitat linkage between Whittier Narrows/Puente Chino Hills and San Gabriel Mountains with plant and animal movement tracking
- Connectivity of smaller habitat patches with linkages
- Enlargement of small habitat areas to larger ones
- Increase of biodiversity
- Increased populations of sensitive species, resulting in lowering or eliminating of sensitive, rare, threatened or endangered classifications
- Self-sustaining habitat areas that requires little to no maintenance or exotic plant and animal removal, only occasional monitoring
- Return of habitat disturbances that have been altered including seasonal flooding, sediment transport, and small patch fires
- Increased acreage of native habitat areas
- Widespread knowledge of co-habitating with wildlife
- Return of aquatic species such as steelhead trout
- Return of other extirpated species of plants and wildlife

3.4 Recreation Development Strategies

Recreation is a highly valued community resource that is directly impacted by the health of the watershed. Due to the dense populations of the watershed and currently limited open space resources, recreational opportunities need to be maximized. Park-poor communities need funding and technical assistance to provide recreational resources for their residents. Cost-sharing agreements between neighboring cities or public landowner (such as the Angeles National Forest) can optimize recreational opportunities by providing additional resources required to maintain parkland for visitors.

Improving recreational opportunities within the watershed by enhancing existing parks and trails can also enhance watershed awareness and identity. Currently there are numerous bicycle and equestrian trails, but few are well marked, and connections are tenuous. Projects to improve signage, create multi-lingual maps, and an integrated system of amenities will result in a more attractive and safe trail experience. Increased access to trails, including safe urban trail linkages along surface streets or utility corridors are needed. In addition, although the Rio Hondo is rich in cultural and historic resources these have not yet been used to promote watershed awareness and support.

GOAL: *Improve recreational opportunities as a function of watershed management. Use interpretative opportunities afforded by recreation to enhance watershed awareness and identity.*

STRATEGIES AND POTENTIAL ACTIONS

3.4.1 Plan Recreation Facilities to Meet Multiple Objectives

Recreational facilities should be planned from a watershed-wide perspective to best integrate recreation needs, water quality and habitat requirements. An additional benefit would be the ability to leverage funding for multi purpose projects.

- Build low-impact recreational opportunities, in combination with water management facilities, at strategic locations in the watershed
- Optimize water flow and maintenance activities for wildlife habitat to support environmental education activities
- Provide for groundwater infiltration where possible to meet water quality goals
- Provide recreational site design, planting, lighting and maintenance that support habitat goals and objectives
    - Provide habitat where possible and minimize impacts to adjacent sensitive areas;
    - Design recreational sites to also serve as wildlife corridors, where appropriate
    - Optimize water flow and sediment removal activities for fish habitat to support fishing activities.

3.4.2 Improve Access to Recreation for all Communities

- Provide both active and passive recreation opportunities throughout the watershed
- Use the natural areas of the Rio Hondo as a resource for passive recreational opportunities
    - Provide access to the Rio Hondo River, especially for nearby communities
    - Enable densely developed and park-poor communities to have access to these resources
- Improve the aesthetic quality of the Rio Hondo corridor and its tributaries
- Establish interpretive centers at key natural areas in the watershed, providing a link between environmental education, recreation, habitat and open space
- Maintain and establish recreational resources for an active equestrian community

3.4.3 Connect Open Space and Recreation Areas with a Network of Trails

- Provide a continuous bike trail, equestrian and public access system along the Rio Hondo, its tributaries, and other key watershed corridors
  - Connect LA County trails with the Rio Hondo River Trail
  - Provide trail connections between the Rio Hondo and the San Gabriel rivers
  - Connect recreation areas to transit access points
- Provide for public security, safety, and amenities along waterways and trails
  - Establish design standards for trails to safely accommodate multiple users of all ages and abilities
  - Include shade, river access, rest areas, maps/signs, mile markers, landmarks, lighting, emergency call boxes and other amenities for trail users
  - Provide trails that are designed for low maintenance
  - Provide access for routine maintenance and emergency use
- Establish landmarks and signage that allows trail users to experience a positive awareness of the watershed

3.4.4 Develop the Cultural and Historic Assets of the Rio Hondo Watershed

- Building on work by RMC, complete survey to fully identify and assess the cultural and historic resources in the watershed.
- Develop a watershed recreation and education program centered on the rich historic legacy of the Rio Hondo
- Incorporate cultural and historic programs in watershed interpretive centers.
- Create a signage program featuring cultural and historic landmarks of the watershed
- Provide signage on trails marking nearby cultural and historic landmarks

3.4.5 Coordinate Recreational Programming to Reinforce Other Goals and Objectives

- Provide diverse recreational opportunities (horseback riding, environmental education, fishing, nature walks, clean-up activities, etc.) and engages individuals, interest groups, school groups and families with the Rio Hondo and the watershed.
- Provide programming, site design and signage to increase public awareness about riparian systems and engender stewardship of the land.
- Encourage Parks and Recreation Departments to incorporate community gardens and pocket parks, demonstration and restoration projects
- Educate public about catch and release fishing

3.4.6 Clearly Identify Recreation Destinations Adjacent To Trails and Other Watershed Corridors

- Provide site signage and design details to orient visitors throughout the watershed
- Provide interpretive opportunities, including informative signage (explaining topics such as natural history, historic landscapes, fire, habitat, stewardship, pollution, hydrology, water supply, etc.) which are integrated with recreational facilities

Success Indicators / Performance Criteria

- Increased park land, especially in park-poor communities
- Ability for every neighborhood to have access to park and recreational facilities
- Increased miles of trails
- Interconnected trail network, making it possible for commuters to use bike trails safely to/from work for example
- Increased partnerships that result in more creative recreational programs and funding
- Compile database of all cultural and historic resources, continually updated.

Bimini Slough Ecology Park

Four Images of Stream Daylighting
(Courtesy of Rivers and Mountains Conservancy)

Case Study 4:

The Bresee-Bimini Slough Ecology Park

City of Los Angeles, California

A "Natural" Water Treatment Solution

Bresee-Bimini Slough Ecology Park was financed by the Bresee Foundation along with a new community center in Koreatown to offer local youth a safe place for after-school activities.

The Bresee- Bimini Slough Ecology Park was designed by the non-profit North East Trees to provide space for play, reflection, and group gatherings while also cleansing stormwater runoff through a biofiltration swale running through the site. The project located adjacent to the community center also involves a street closure; a one-block stretch of 2nd Street is being closed to vehicular traffic for the creation of this park. The project is a unique example where a city-owned street right-of-way was deeded over to a private foundation on the condition that it be developed and maintained solely as a public park.

The park development has achieved multiple purposes: 1) public community open space in a park poor urban neighborhood, 2) demonstration of a water quality bio-swale as a focal park element and other sustainable concepts, 3) environmental education and 4) improved pedestrian circulation and traffic-calming.

Several sustainable elements have been incorporated into the park design including a state-of-the-art drip irrigation system, a native/low flow water usage plant palette, recycled broken concrete, permeable surfaces, a 180 foot bio-filtration vegetated swale, and a trash interceptor. The environmentally friendly irrigation and indigenous vegetation minimizes water usage. The bio-swale filters storm water runoff from a 5.85 acre local drainage area, which eliminates some of the gross pollutants and toxins from the water that flows out to the ocean, addressing the Total Maximum Daily Load (TMDL) for trash established for the Ballona Creek watershed, where the park is situated.

The structural design of the swale needed to ensure permeability and swale alignment eliminates the need for concrete retaining walls. The swale banks are retained by the placement of boulders.

The Bresee–Bimini Slough Ecology Park (continued)

This park, equipped with two custom designed interpretive signs supports an environmental education agenda to highlight the multiple benefits of drip irrigation and native planting and ecology. Together with the design elements and program, the park is meant to inspire environmentally-conscious design and construction by example. Many of the concepts such as drip irrigation, native/low water usage landscaping, permeable paving and bio-filtration can be implemented on various scales from commercial to residential. By promoting these concepts and illustrating their regional implications and cost-effectiveness this park educates homeowners and builders to incorporate these types of elements into existing or future landscape improvement projects.

What is a bio-swale and how does it work?

A major, visually pleasing component of the park is a stream-like feature surrounded by a landscape of boulders. This streambed is called a "bio-swale" because it performs an important ecological function. The bio-swale is lined with an open lattice of cement bricks and plantings of indigenous plants in the open spaces. At the west end of the swale, a storm drain from the street opens into it.

During rainstorms, storm water from the street drainage system pours out and passes through a metal strainer to capture large pieces of trash before the water flows into the swale. The open spaces of the cement lattice in the swale allow water to soak into the ground and the plants act as a natural filtration system before the water flows back into the city storm drain system at the east end of the swale.

Sources:

North East Trees (http://northeasttrees.org); *The Bresee-Bimini Slough Ecology Park*.

park2parkLA (www.park2parkla.com), *E-Park for LA: Hi-Tech Enjoyment and Low-Tech Environmental Solutions*.

Case Study 5: Cheonggyecheon River Restoration Project

Seoul, South Korea

"Daylighting" A River

The largest urban renewal project in Korean history and possibly the largest daylighting project in the world, the Cheonggyecheon Restoration Project in Seoul, began in 2003 and is expected to be completed in 2006. The Cheonggyecheon is a stream that flowed through the central part of Seoul until it was covered four decades ago by a concrete roadway and later an elevated expressway. The $307 million project has been described as the equivalent of rearranging downtown Manhattan so a river could flow through the middle. Restoration of the river will enable residents of Seoul to enjoy a stream that for centuries had figured prominently in the life of the capital until 20th century urbanization pressures literally forced it underground.

According to the plan, the city will take down the six-lane highway, remove the asphalt, decontaminate the river, and create a park and wide pedestrian corridor on the shores of the river in its place. As many as 21 bridges, each reflecting the character of their neighborhoods, will be built over the 6 kilometer stream. A Bus Rapid Transit Line will replace the 120,000 cars that use the corridor daily.

Landscaped revetments will create curves in the stream and irregularities in the streambed for fish habitat. In addition, "swamps" along the lower reaches will also provide wildlife habitat.

The river restoration is seen as the catalyst for an even larger economic redevelopment strategy in which the Seoul Metropolitan Government is striving to transform Seoul into a high-tech, environmental friendly city that will attract both locals and tourists.

Excerpted from:

Car Busters-Monthly Bulletin Issue 46 (from ITDP Sustainable Transport E-Update) *Seoul to Raze Elevated Highway, Revitalize City Centre*, May 2003.

Katherine Redding, SFGate.com, *Water Warriors – United Creek Council Quietly Fights to Bring Streams to Light,* April 4, 2003.

Korea Now, *Seoul Unveils Master Plan to Revive Derelict Stream*, February 2003.
Tai Sik Lee, Civil Engineering Magazine, *Buried Treasure*, December 2003

3.5 Incorporate Public Health and Safety Priorities

Much of the current watershed infrastructure has been shaped by sustained efforts over past decades to ensure public health and safety. This includes the concrete channelization of the Rio Hondo for flood control purposes, and the elimination of wetlands as a breeding ground for mosquitoes. These past strategies were largely successful in their single purpose aims but at the cost of undermining the health of the watershed. New, multi-objective approaches to flood and vector control are proposed as a way of restoring the health of the watershed while still maintaining and enhancing the health and safety of the community.

GOAL: *Ensure that public health and safety are integrated into all aspects of watershed enhancement.*

Strategies and Potential Actions

3.5.1 Create a Safe and Secure Environment Along the River and Other Open Spaces

Public safety is of paramount importance to the current and future anticipated use of the Rio Hondo. New parks, trails, and other physical improvements along the river and in other watershed venues will only be fully utilized by the public if they are perceived as safe and secure environments. Establishing a watershed-wide constituency for the Rio Hondo requires that people have the opportunity to enjoy its benefits without fear of crime or other physical hazards.

- Develop a cross-jurisdictional safety and maintenance program
- Establish public safety measures to prevent crime along the river and its tributaries
- Request regular patrols by uniformed officers and trained citizen watch groups to increase both real and perceived safety

- Provide security lighting where appropriate (many sensitive species do not like night- lighting) at trailheads and recreational areas.
- Ensure that adequate signage is in place

3.5.2 Initiate Municipal Stormwater Infrastructure Age and Capacity Evaluations

Undertake a comprehensive evaluation of the existing storm drainage system. Convey the results to the watershed consortium to use in baseline evaluations.

3.5.3 Establish Consistent Stream Setback Ordinances

Some municipalities, particularly those with naturalized or restored stream channels, have implemented stream setback ordinances to protect flowing water[5]. Communities could identify streams to be protected and work within the watershed consortium to establish consistent language for protection.

3.5.4 Modify Municipal Activities to Minimize Pollutants in Stormwater

Municipal maintenance operations, oftentimes the ones that provide stewardship for watersheds, have a direct impact on the quality of stormwater leaving their sites. It is important for these corporation yards to 'practice-what-they-preach' and to potentially be models to prove the feasibility to the community of fleet and maintenance operation to be done in a new way. It is recommended that these municipal facilities establish a program for self evaluation, improvement, and ultimately promotion of BMPs.

- Identify and select appropriate BMPs for all fixed facilities and field programs
- Eliminate sources of stormwater pollutants at all facilities
- Implement long-term maintenance programs for BMPs once they are implemented
- Evaluate effectiveness of BMPs through site inspections, monitoring, record-keeping and BMP modifications

[5] City Of Oakland Stream Setback Ordinance

3.5.5 Update Land Use, Zoning and Building Codes To Improve Water Quality

- Identify needed changes in land use, zoning codes, and development standards and ways to implement local enforcement of these codes. For reference see:http://www.epa.gov/owow/nps/ordinance/index.htm
- Explore ways to mitigate impacts on the watershed related to population growth.
- Ensure that the design and construction of all new developments (project sites, parking lots, streets, buildings, etc.) reflect and apply water quality best management practices.

3.5.6 Pursue Legislation to Encourage Water Quality Improvements by Cities

- Pursue legislation to encourage cities to implement good faith water quality improvement efforts and curtail the current litigious legal environment surrounding water quality improvement.
- Pursue one time establishment of *all* TMDL standards for the Rio Hondo watershed rather than the current staged implementation of TMDL standards for individual pollutants. The current system creates an atmosphere of uncertainty under which planning objectives are constantly changing.
- Establish a more rational, transparent process based on an agreed set of graduated steps and goals that will reward rather than penalize such efforts.

3.5.7 Incorporate Vector Control Into All Watershed Projects

It is critical that mosquito and vector control agencies be consulted in the planning, design, construction, and ongoing maintenance of watershed projects, particularly where the project has the potential to result in new vector breeding and diseases transmission. There is a significant body of knowledge regarding innovative approaches to designing and managing constructed wetlands for vector abatement that could be valuable in future watershed projects. If wetland and open space projects are poorly designed with regard to mosquito and vector control, the potential exists for significant social and financial impacts. This is now even more important given that West Nile Virus is expected in the near future to migrate into the San Gabriel Valley

- Reduce vector breeding potential and encourage public education of vector-borne diseases and precautions
- Coordinate planning at the watershed-wide level and the project level with local mosquito and vector control agencies
- Ensure that vector control parameters are fully integrated into the design of wetlands, parks, and other open space projects.
- Utilize appropriate construction methods to guard against mosquito breeding and other vectors
- Ensure that sufficient funding is established for ongoing continued maintenance to mitigate vector breeding.

Success Indicators / Performance Measures

- Implementation of TMDLs and concurrent reductions in all listed pollutants, including trash and bacteria levels, nitrogen, copper, zinc and certain persistent pesticides (Chlordane and DDT) within impaired reaches of the watershed.
- Removal of waterbodies from 303(d) list as a result of clean up efforts.
- Restoration of aquatic and riparian wildlife and habitat to streams
- Experience safe body contact with water
- Maintain working relationship between regulators and permittees
- Identification and elimination of sources of pollution based on data collected by water quality monitoring program
- On-going participation by stakeholders in watershed organization
- On-going participation by technical experts to guide the process

3.6 Ensure Continued Flood Protection And Safety

The design and implementation of all watershed projects must fully integrate the essential overriding goal of flood protection. It is a fundamental requirement of a multi-objective watershed planning process in an urban environment. Although there is often a desire to provide more public access to the river, this must be balanced with the need to keep people away from the flood control channel, especially during and following storm events.

In the Rio Hondo watershed the existing impervious surfaces of urbanization do require flood protection. Still there is a general understanding and interest by stakeholders that flood protection can be modified to integrate natural processes and achieve multiple goals while still providing protection to the public. There are examples of this approach where BMPs have been initiated, encroachment on the flood channel reduced, and riparian habitat increased. (Please see inset on Napa River.) These strategies also echo the Guiding Principles from *Common Ground from the Mountains to the Sea, the San Gabriel and Los Angeles Rivers Watershed and Open Space Plan.*

GOAL: *Maintain current minimum flood protection levels and develop new flood protection strategies to meet the multiple goals required for watershed improvement.*

A few proposed Best Management Practices involve concrete removal on tributaries of the Rio Hondo. While greening the river corridors, existing flood protection needs to be maintained. Appropriate hydrologic and hydraulic studies would be necessary to ensure that flood hazards would be minimized and that current design criteria are met. Future projects should improve flood protection where feasible. Where excess capacity can be identified, or generated through implementation of BMPs, then the feasibility of floodplain restoration should be assessed.

3.6.1 Understand and Maintain Existing Flood Protection Capacities

The hydrology of flood control is complex science. Numerous evaluations, calculations, and modeling have been done to build the existing flood control system. Knowing the background on the existing system will help identify constraints and opportunities within the hydrologic system. In some cases where excess flood control

capacity is identified, then candidate sites for habitat enhancement or recreation might be identified. Public education, warning signs, and other safeguards must be integrated into any plans to open up the river to greater public access.

- Promote flood safety awareness, especially the dangers created by fast moving runoff in flood control channels
- Install and maintain fencing, especially at known danger spots.
- Ensure that warning signs are installed and maintained at regular intervals along the river and its tributaries
- Sign explaining how urban development creates more flood waters and what you can do about it

3.6.2 Reduce Runoff in the Watershed to Generate Flood Control Capacity

Reduction of impervious surfaces will work to reduce peak flows throughout the watershed to minimize flood hazards. This in combination with strategically placed retention basins above permeable soils will reduce peak flows upon implementation. Planners should look for parks, schools, open spaces, or parking areas above these permeable soils to begin implementing a network of storm water retention basins. As projects are developed access to the water must be carefully evaluated to ensure that liability has not increased.

3.6.3 Daylight Storm Drains and Restore Urban Streams

The existing storm drain system can also integrate natural processes when municipalities or other organizations daylight creeks from their concrete culvert enclosures. The key is to properly configure the channel slope and allow for revegetation. When done over permeable soils there is the added benefit of aquifer recharge in the new channel.

3.6.4 Improve Flood Protection Using Natural Processes

When modifying existing flood control facilities use of non-structural flood control elements is encouraged, where feasible. Often the modified design must provide equal or greater strength of the structural options, but must do it in such a way as to be supportive of natural habitats and to be visually pleasing. Sometimes the modified

flood control design must incorporate or protect habitat for species of specific concern. For example certain aquatic species require naturalized low-flow streambeds.

Natural sedimentation in the streams has been highly modified. In the upper reaches sedimentation may be higher than normal as a result of poorly constructed roads and forest practices. In lower reaches, particularly below dams, sedimentation is typically lower as a result of pooling. In these lower reaches water with little sediment is called hungry water, because it wants to pick up the sediment load that it is missing. In a concrete lined channel this is not an issue, but in a restored creek bed it could cause erosion as it picks up it's natural sediment load. Sluicing and maintenance operations should incorporate sedimentation demand or reduction where appropriate.

3.6.5 Model for Decreased Flood Volumes

As BMPs for water retention and aquifer recharge are implemented flood volumes will begin to decrease and hydrographs will come closer to resembling natural environments. As this occurs more areas of the channel will begin to have excess capacity. Investigate opportunities to enhance floodplains where the channel has excess capacity by modeling how reductions in peak volumes translate into previously inundated areas. This may be done by considering varying degrees of implementation of BMPs, such as early phases (low BMP implementation), developing phases (showing increased or moderate benefits of BMP implementation), and advanced phases (showing benefits of maximum implementation of BMPs).

3.6.6 Coordinate Maintenance of the Flood Protection System with Habitat Needs

Vegetation in the flood control channel is viewed completely differently depending on a persons perspective. For flood control it is traditionally bad in that it slows down and encumbers floodwaters. Trees break, floating logs take out bridges, etc. For habitat on the other hand vegetation is a requirement. Somewhere in the middle are maintenance crews clearing the stream channel while protecting habitat.

3.6.7 Improve Multi-Use Characteristics and the Visual Aesthetics of Flood Control Elements

In proposed projects foster multi-purpose flood control infrastructure to accommodate recreation, trails, open space and habitat. Incorporate visual consideration in adapting single purpose flood control channels into multi-purpose environments for people and animals.

Success Indicators

- Best Management Practices (BMPs) are implemented throughout the watershed
- Reduction in the overall percentage (and actual acres) of impervious surfaces
- Retention basins on permeable soils are preserving open space and providing recreation
- Hydrographs for new flow conditions migrate closer to that of a natural watershed
- Peak flows are measurably reduced and flood risks are quantifiably reduced
- Urban streams are restored – measured in miles
- Floodplains and riparian habitat are restored where feasible – measured in acres
- Flood safety and educational materials reach as many households as possible – measured in pieces of literature distributed or website hits
- Flood safety programs, including the dangers of floodways, reach as many people in as many languages as possible – measured in number of people in attendance

Napa "Living" River Project

a.

b.

a. Napa River Oxbo
b. Napa River Boats

Case Study 6: The Napa River Flood Management Plan

Napa County, California

Blending Engineering and Ecology

The Napa River Flood Management Plan, designed by a unique Community Coalition, is a creative solution, to an age-old problem: How to provide flood protection and watershed management to the Napa River Valley while meeting environmental restoration and economic revitalization goals? The Community Coalition's plan was built on a set of "living river" principles, developed and refined by an unprecedented coalition of political and community leaders, private industry, natural resource agencies, non-profit groups, local governments and private citizens.

The Napa River Watershed historically supported a dense riparian forest, significant wetland habitat and spawning areas for fish such as salmon and steelhead. The pressures of urbanization, agriculture, and grazing have degraded the watershed's habitats and drastically increased the rates of erosion and sedimentation. Since 1800, an estimated 6,500 acres of historical valley floor wetlands have been drained or filled, 19,700 acres of the watershed are now under hardened pavement or rooftops and another 26,000 acres have been developed to intensive cultivated agriculture. At the same time, much of the river system has been altered by straightening channels, hardening banks, changing the flow, and constructing levees. These alterations made the natural drainage system insufficient to prevent extensive flooding in the area. Since 1862, more than 27 major floods have plagued Napa Valley, resulting in significant loss of life and property. The 1995 flood damaged 277 businesses and residences at a cost of over $100 million.

In response the U.S. Army Corp of Engineers offered a new plan in 1995 to address the flood control problem. The plan's traditional approach –enlarging the channel and constraining the river within the channel – was met with an underwhelming response in Napa. The Community Coalition came together in 1996, and using the Army Corp as a resource, began the extensive process of formulating an alternative flood control approach. Thousands of hours of meetings later, a "living river" design achieved consensus. Less than one year later, in March 1998, a proposal to add a half-cent to the Napa County sales tax to fund the local share of this Flood Project was put before the voters. A two-thirds majority was required to approve the tax increase. More than 27,000 voters cast a ballot on that election day, and Measure A passed with just 308 votes to spare.

Major objectives of the "Living River" design include reconnecting the River to its historic flood plain; maintaining the natural slope and width of the River; allowing the River to meander as much as possible; retaining natural channel features like mud flats, shallows and sandbars; and supporting a continuous fish and riparian corridor along the River.

The measures designed to provide 100-year flood protection include some traditional

approaches and many innovative concepts. Old dikes have been breached to restore tidal marshlands; bridges are being replaced to remove obstacles to water flow; riverbank terracing is creating more room for large volumes of water; a new dry bypass channel will provide a shortcut for the River through the slow moving Oxbox; new dikes, levees and floodwalls will be built; bank stabilization will be used in specific areas; and detention basins and pump stations will accommodate runoff behind the floodwalls.

The project is viewed as having three inter-locking elements:
Increased public safety through flood protection
Watershed stewardship through environmental remediation and restoration
Enhanced prosperity through the reduction of insurances costs and flood risk, and stimulation of economic development

The end result is a Living River that can sustain migrating fish and wildlife and a system that will help protect all County residents from damages caused by regular flooding.

Excerpted from:

Clean Water Action Plan (www.cleanwater.gov), *Watershed Success Stories: Applying the Principles and Spirit of the Clean Water Action Plan.*

Napa County Flood Control and Water Conservation District, *The Napa River Flood Protection Project – Progress and Plan Summary 2004*

U.S Army Corp of Engineers and Napa County Flood Control and Water Conservation District, *A Citizen's Guide to the City of Napa, Napa River, and Napa Creek Flood Protection Project.*

3.7 Develop Priority Projects that Address multiple Goals Simultaneously

In the preceding sections six goals have been addressed in detail with strategies and objectives for achieving each of them. To review, those goals include the following:

1. Improve Water Quality and Supply
2. More Multi-use Open Space
3. Improve and Connect Habitats
4. More Recreation Facilities
5. Continued Concern for Public Health and Safety
6. New Flood Protection Strategies

The seventh goal is intended to **benefit** the Rio Hondo Watershed by leveraging the efforts and financing of all the participating agencies, individuals, and organizations to achieve multiple benefits with within each project. The consortium of interested entities, the willingness to address problems on multiple fronts, the acknowledgment of complexity, and the long-term commitment to resolving the issues will all position the watershed consortium favorably before funding entities and enable rapid progress towards these goals. For these reasons the ninth goal is brought forward to encourage imaginative and integrative projects that address multiple issues.

GOAL: *Develop priority projects that address multiple goals simultaneously*

An initial set of projects have been brought forward by many of the participating entities for consideration in this watershed management plan. They are described in the following chapter, and they represent an important first step in achieving this goal. A sustained focus on achieving multiple goals in all projects is the key paradigm shift necessary to enable rapid progress towards this noble effort of restoring the Rio Hondo Watershed.

CHAPTER IV

IMPLEMENTATION STRATEGY / ACTION PLAN

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4.1 INTRODUCTION

The Rio Hondo Watershed has been significantly impacted by urban development; still it retains the real potential to function once again as a healthy watershed system. Ultimately, a healthy watershed will have a system of streams and tributaries supporting aquatic and terrestrial habitat and clean water as well as greater quantities of local groundwater recharge, reducing the need for costly imported water. All aspects of the watershed, both physical and social, will need to be integrated through plans, projects, policies and programs to truly restore watershed health.

4.2 CREATE LONG-TERM WATERSHED-WIDE INSTITUTIONAL FRAMEWORK

An institutional framework will be necessary to implement the Watershed Management Plan, it's various studies, projects, and long term monitoring. The institution should reflect the diversity of the watershed within it's physical boundaries, rather than just the political boundaries of the multiple jurisdictions that intersect and overlay the watershed. This geographic approach is intended to address the multiple issues and goals of the watershed that are beyond the scope and interest of most single jurisdictions. The formation of this watershed institutional framework will evolve over time but begins out of the development of this plan, where collaborative relationships have been built and have the potential to manage the many strategies, actions, and programs necessary to achieve the vision of a healthy watershed\

GOAL: *Create of an effective institutional framework from which to focus sustained efforts on improvement of the Rio Hondo Watershed by providing oversight, management, and measurement of recovery and restoration within the watershed.*

STRATEGIES AND POTENTIAL ACTIONS

4.2.1 Establish a Watershed Consortium

The complex matrix of stakeholders in the Rio Hondo Watershed emphasizes the importance of engaging all in a collaborative approach to successfully implement the Watershed Management Plan. Formation of a watershed consortium, in the form of a Joint Powers Agreement (JPA) or other entity, will reinforce collaborative efforts that could also include a range of partnership tools including informal information exchanges, ad hoc cooperation between cities, and memorandums of understanding. Participating party's collaboration will enhance the common purpose of watershed improvement while developing projects for mutual benefit. Formation of a JPA would also focus the approach to project development, funding, and implementation.

The JPA agreement between DPW and RMC that formed the Watershed Conservation Authority (WCA) for the development of this plan could be used as a model for expanding the complementary partnerships in the watershed. The JPA could be

instrumental in initiating some of the following coordinated actions within the watershed.

- Create a special assessment district to identify, prioritize, and fund watershed improvements
- Establish standards (e.g. Best Management Practices) that cities must adopt as their own to qualify for membership in the JPA.
- Utilize the special assessment district to involve stakeholders in setting priorities
- Identify regulatory offsets that might be provided in recognition of cities water quality improvement actions.
- Apply for grant funding to further planning and implementation programs.

The JPA will also help reinforce the identity of the Rio Hondo Watershed Management Plan as compared to similar efforts within the Los Angles and San Gabriel River Watersheds. A watershed organization could ensure a collaborative and provide the organizational framework needed by cities to pursue shared, cost-effective programs beyond their individual resources.

4.2.2 Establish Sustainable Funding for Watershed Research, Planning and Implementation

This strategy is to identify diversified funding opportunities that would help achieve the goals of the watershed management plan and sustain the institutional framework established for implementation of plan activities. Long-term funding actions ensure that the management of the Rio Hondo Watershed continues as a community-driven process.

- Develop a long-term funding strategy and fiscal mechanism for tracking funding opportunities and obtaining grants, managing existing funds, and monitoring expenditures.
- Establish a watershed consortium or other organizational partnership to provide leverage regarding watershed issues at the regional, state, and federal level.
- Encourage and support state/local agencies and special districts to apply for Propositions 13, 40, 50 and other potential state funds or bonds to provide an integrated approach for watershed development.
- **Proposition 50,** The Integrated Regional Water Management Program will be soon providing grants to watersheds, such as the Rio Hondo. **Planning**

Applications are due for the first round of grants in February 2005. All planning applications must meet their program objectives, which are reflective of those for the Rio Hondo, and include:

- Protect Communities form Drought
- Protect and Improve Water Quality
- Reduce Dependence on Imported Water
- Promote Integrated Regional Planning
- Achieve Multiple Benefits and Objectives
- More information on Proposition 50 is available at http://www.swrcb.ca.gov/funding/irwmgp/index.html

- Analyze the costs and potential benefits of proposed watershed enhancements to define projects that are technically feasible, cost-effective, and fiscally sound
- Consider ongoing maintenance and operational costs, not just upfront capital costs.
- Assess the optimum balance between high-leverage, regional scale, inter-jurisdictional projects and local level, local jurisdictional projects.
- Establish a self-assessment district to provide a single management structure for funding and implementation of projects throughout the watershed, especially high leverage, inter-jurisdictional projects.

4.2.3 Develop Watershed Wide and Sub-Watershed Collaborative Units

The collaborative units will be more successful in identifying multi-benefit projects and in seeking grant funding for sub-watershed improvement projects.

- Develop tributary-based (sub-watershed) stewardship groups with partnerships between cities, non-profits, and regulatory agencies to address multiple interests within each sub-watershed
- Create venues for "cross-boundary" communication involving multiple sub-watersheds, and stakeholders within the broader watershed
- Enhance coordination, and collaboration between all public agencies within the watershed, including U.S. Forest Service, DPW, RMC, Regional Water Board, Health Service, and water agencies.

Municipalities by Sub-watershed

Lower Rio Hondo	Alhambra Wash	Rubio Wash	Eaton Wash
Downey Bell Gardens Pico Rivera Montbello	Monterey Park Rosemead Alhambra South Pasadena San Marino Pasadena	 Rosemead San Gabriel San Marino Pasadena Altadena Angeles NF	 Temple City Rosemead Unincorp.LA County Pasadena Altadena Angeles NF

Arcadia Wash	Santa Anita Wash	Sawpit Wash	Upper Rio Hondo
Unincorp.LA County Temple City Arcadia Monrovia Sierra Madre Angles NF	Unincorp.LA County Arcadia Monrovia Sierra Madre Angeles NF	Unincorp.LA County Buena Vista Channel Bradbury Monrovia Duarte Angeles NF	Unincorp.LA County El Monte South El Monte

4.2.4 Understand Current Motivations to Act Within the Watershed

Presently there are numerous agencies, organizations, and individuals with interests and responsibilities that affect the health of the watershed. At the risk of stereotyping consider that flood control agencies want to keep the flood waters flowing; Public Works Departments need to maintain an aging infrastructure; Property owners want their privacy; and non-profit organizations have their missions. Developing a clear understanding of current obligations, and finding the common ground, is the first step

in developing strategic alliances for the benefit of the watershed. Often the best solutions result from the most peculiar associations.[1]

Success Indicators

- An institutional framework coordinates the interests and resources of the watershed.
- Funding is available for research, planning, project implementation, monitoring and management activities.
- An Integrated Regional Water Management Program directs activities within the Rio Hondo Watershed and Proposition 50 funding supports implementation projects.
- Sub-watershed collaborative units have been established for all areas within the watershed with participation from all stakeholders including interested individuals, non-profits and municipalities.
- The different motives for agency and individual participation in the Rio Hondo Watershed Consortium are known among stakeholders. The resulting difference in perspective among stakeholders is sought out by the group to appropriately identify and prioritize watershed improvements.
- Watershed restoration and improvement efforts are regularly recognized by the Watershed Consortium. These acknowledgements help to raise the visibility of the watershed improvements in the community.

1 Consider Natural Resources Defense Council association with McDonalds to reduce trash in the 1990s.

4.3 Broaden Watershed Awareness and Stewardship Participation

The effective implementation of the Rio Hondo Watershed Management Plan is largely dependent upon success in building a constituency for the Rio Hondo. As many residents are unaware of its existence, public awareness strategies are a crucial first step in the process of producing a group of watershed advocates that will work together to protect and restore the Rio Hondo. This campaign should be supported by a watershed-wide institutional framework (introduced above) to provide information, funding, resources, and an organizational focus for the development and implementation of watershed management and protection projects, programs, and activities. A clear institutional structure composed and created by watershed stakeholders, with well-defined operational processes and established funding mechanisms, will enable the watershed plan to fulfill its vision of a healthy Rio Hondo Watershed and sustain its mission over time.

GOAL: *Improve the long-term health of the watershed by establishing public awareness and stewardship campaigns that educate the public about their role in improving water quality and the overall health of the watershed.*

4.3.1 Promote Watershed Awareness Through Public Education and Outreach

Increased outreach and collaboration to implement watershed enhancement activities are the focus of this strategy, with the goal of promoting awareness and stewardship of the watershed. Public forums and dissemination of educational materials related to the watershed are intended to increase awareness among residents, their elected officials and policy-makers about watershed enhancement activities. Coordination with existing educational and outreach efforts, such as are presently available through the California Regional Environmental Education Community (CREEC at www.creec.org) would ensure that materials and forums evolve in conjunction with the development of existing education materials and new watershed protection approaches. The goal is to foster an environment where people learn about the benefits of caring for the environment and feel their effort contributes to the health of the watershed.

- Promote greater public awareness of the Rio Hondo Watershed and the public's effect on water quality, water supply, flood protection, habitat, and recreation.
- Clarify geographic distinctions between watersheds; identify boundaries
- Install watershed boundary signs ("Now entering the Rio Hondo Watershed")
- Install name signs at creek crossings with Rio Hondo Watershed Logo
- Use interpretive signage at watershed boundaries, parks and open space, trail and transit nodes to promote watershed awareness
- Develop easy-to-understand and multi-lingual educational programs to increase awareness about the interrelated components and issues within the watershed.
- Provide "step-by-step" descriptions of how landowners and homeowners can implement water conservation and re-use practices on private properties, and in homes and local businesses to minimize negative impacts on the watershed.
- Establish a watershed information center that serves as a central dispatch location providing press kits and public information materials to increase overall understanding of watershed issues.
- Develop a watershed-based curriculum for grades K through 12

4.3.2 Establish Stewardship Programs

- Establish pollution prevention programs such as spill prevention and waste reduction practices to reduce the amount of pollutants entering storm water.
- Conduct public education and outreach on storm water impacts
- Encourage public involvement and participation in water quality improvement through various activities:
  - Encourage storm drain stenciling
  - Develop stream clean up and monitoring program
  - Establish an adopt-a-stream program
  - Speakers Bureau program to maximize outreach to classrooms and community groups

4.3.3 Establish a Rio Hondo Watershed Information Network

Monitoring of water quality requires data be collected from diverse locations throughout the watershed over long periods of time. Creating a centralized database into which input can be reviewed and distributed will help communicate information quickly to a selected audience. This type of system will enable a broader overview of the data patterns as they emerge. Agency staff and water quality experts should help to

ensure that the data is reliable and useful by establishing protocols for data collection and measurement. Citizen participation, with proper training and the absence of advocacy, could promote a better appreciation of the watershed and better management practices.

- Establish an **internet based Rio Hondo watershed network** to facilitate data collection and distribution[2].
  - Provide a document sharing portal for all, or selected individuals to share.
  - Provide GIS technical capacity over the internet to facilitate spatial data collection and distribution over the internet:
  - Utilize Global Positioning System (GPS) to facilitate mapping of storm drains, wetlands, invasive species, virtually anything of spatial importance
  - Encourage stream monitoring, photo-inventories & mapping of all significant features such as areas of existing vegetation, dams, patches of invasive plants (Arundo donax and others), large areas of trash, locations of activities, channel construction changes…
  - Increase resident and property owner involvement in the long-term monitoring of water quality by providing consistently updated information on the status of the watershed.

Ultimate watershed health depends not only on restoration of the physical environment, stream naturalization, or a more permeable urban environment. Long-term ecosystem functioning also needs long term advocacy and management. Management of the watershed will need to acknowledge that disturbances such as flooding, drought and fire are a part of a healthy ecosystem. For this reason, incorporating fire and flood management techniques into open space areas and stream habitat will be critical to the long-term health of the watershed. Further studies on better ways to manage the watershed will need to take place. Some of these are included among the projects listed in the sections to follow; others will emerge as more understanding is developed.

4.3.4 Reward Stakeholders for Watershed Improvement Activities

This Watershed Management Plan establishes a set goals and strategies to achieve various improvements within the Rio Hondo Watershed. The Watershed Consortium could establish a transparent process to reward cites and all stakeholders for watershed restoration activities, including water quality improvement. This recognition could provide added incentive and knowledge sharing among participants, as well as added visibility of watershed improvements in the community.

[2]For an example see the Russian River Watershed Information System at http://rriis.migcom.com

Success Indicators

- The public is aware of which sub-watershed they live in. They have received mailings about watershed identity and the benefits that watershed restoration will bring them. Signs have been installed at watershed entry points and at stream crossings.
- School children will have participated in a watershed education curriculum.
- A Rio Hondo Watershed Information Network will be available on the internet for various levels of investigation. Project mangers will use the network to post and distribute information in a secure environment, while the public will be able to access appropriately verified information.
- GIS will be regularly used to pinpoint conditions and evaluate relationships among different resources and programs within the watershed.
- Watershed restoration and improvement efforts are regularly recognized by the Watershed Consortium. These acknowledgements help to raise the visibility of the watershed improvements in the community.

4.4 ESTABLISH A SCIENTIFIC BASELINE FOR WATERSHED IMPROVEMENT

One of the priorities for The New Rio Hondo Watershed Consortium will be to establish a scientific baseline of existing conditions from which to establish priorities and measure improvement. The baseline studies recommended in this section will address specific conditions within the watershed for which additional information is needed to make informed decisions regarding appropriate actions for improvement.

While these studies will refine our knowledge, these are not recommended in any way to hinder immediate actions to address obvious conditions within the watershed. The objective is to avoid the 'paralysis by analysis' syndrome that can slow organizations operating in complex environments. **Both approaches, addressing immediate issues, and studying more complex issues, are appropriate in the Rio Hondo Watershed.**

There ARE obvious conditions that can be addressed and improved without a defined baseline. For example, six focus groups met over 3-day period form August 26 to 28, 2003 and identified sites that they believed would yield maximum results for multi-objective projects. Those three opportunity sites are

- Peck Road Water Conservation Park
- Whittier Narrows
- The Rio Hondo Spreading Grounds

Projects at these sites are described in the subsequent section, but these priority locations are worth reiterating here as known locations where improvements could immediately benefit water quality, habitat, recreation and open space objectives. In addition they will focus the Watershed Consortium's energy into visible results. The successes achieved at these priority locations will be an important focus for the consortium and establishing watershed visibility in the public eye.

Addressing the Broader Questions

While developing the more visible priority projects another important role for the Rio Hondo Watershed Consortium will be to collect and improve upon the existing scientific baseline information for the watershed. A number of watershed-wide information based studies should become a priority in upcoming implementation efforts.

A more in depth technical assessment should be a top priority project for the purpose of being able to manage the Rio Hondo watershed from a firm base of reliable information. This data-driven watershed survey should encompass hydrologic, fluvial geomorphologic, and biological assessments of the watershed, among other elements, resulting in a model of how the watershed historically functioned and currently functions and how projects both individually and together will impact the system.

As the watershed is a complex ecological system, single-purpose projects; and projects that have not been designed in the context of the broader geomorphic system; may lead to unintended negative impacts elsewhere in the watershed. For instance, the hydrologic effects of daylighting certain stream segments should be considered in the context of the overall stream hydrology, particularly when certain other segments may be left unchanged. In what sequence should restoration be done to move closer to a fully functioning healthy watershed? How will each project individually and collectively change the way the watershed responds to rainfall events, altering the degree and nature of water discharge and infiltration? How will each project individually and collectively affect sediment transport, what pollutants will each project type be designed to remove, what is the necessary maintenance regime to sustain a desired level of pollutant removal, and how will that affect habitat? In effect, an understanding of watershed functioning in this urban environment should be applied to each proposed project and to the interactions between multiple hydrological systems. The outcomes of such analysis will lead to many modifications in the location, design and type of proposed projects.

To get started with watershed improvements a series of information based studies are recommended below.

4.4.1 Establish Information Collection and Distribution Protocols

Decisions related to the watershed should be based on solid scientific information and meaningful analyses of data and research. An agreed upon and reliable data collection and analysis protocol will ensure that credible and useful information is available to monitor and track watershed health on an ongoing basis. Information protocols will be essential for tracking progress and providing feedback needed to adapt and update the watershed plan over time. The existing GIS database and GIS-based mapping methodology used to prepare this report should be expanded upon to track & analyze resource data.

4.4.2 Expand GIS Database to Fill Data Gaps

A Geographic Information System (GIS) has been prepared by RMC as part of this watershed management plan. It has been used to prepare all the maps for this plan and is an important information resource for future watershed planning. The GIS should become the main repository for new spatially referenced information since GIS is the preferred tool for evaluating large land areas, such as watersheds. In part, the studies below are recommended because there are identified data gaps in the current GIS coverages.

- Develop a comprehensive water quality-monitoring and bio assessment program for the watershed.
- Develop an objective science based water quality sampling methodology that will satisfy all involved parties that isolates sub-watersheds and sub-sub-watersheds
- Determine locations and frequency of monitoring activities.
- Develop a program for data collection that assures objective research with well trained participants.
- The bio assessment program should be a part of long term adaptive management utilizing water quality and bio assessment databases. Analyze trends for all projects completed. Use monitoring data to consistently review the progress of the watershed management plan.

4.4.3 Integrate Stormdrain / Flood Control System Into GIS

The location, size, and type of stormdrain and flood control structures should be mapped through out the watershed. It is likely that this information already exists as part of previous Los Angles watershed flood control studies and/or hydrologic modeling. This information should to be integrated into the comprehensive Rio Hondo GIS and made available for subsequent hydrologic studies. Additional information should be added regarding the age, condition, and maintenance requirements and costs for the facilities. The maintenance requirements and cost data will be helpful in future cost benefit analyses.

4.4.4 Soils Studies

Soils should be integrated into the GIS so that their characteristics can be queried for key attributes such as permeability and saturation, among many others. Unfortunately Los Angles County has limited soils data from traditional sources such as the Natural

Resource Conservation Service (NRCS), so soils data may have to be mapped for the watershed, unless other sources can be found.

Knowledge of soils will be the key natural factor in a strategy for water conservation in the watershed. Once available, soil characteristics will assist in prioritizing concrete channel removal projects and will enable optimal siting of retention basins and infiltration channels. Certain soils will help to slow runoff and encourage water recharge within the watershed. Numerous other soil characteristics will also benefit biological restoration of natural habitats.

4.4.5 Regional Meteorological Data

Rainfall and meterological data will assist in evaluating the water production capacity for the watershed. Potential water losses could also be calculated based on temperature and humitidy when combined with water areas exposed to direct sunlight.

4.4.6 Existing Hydrology/Hydraulic Studies

Hydrologic processes in the watershed are drivers for creation of channels, floodplains, and other geologic features. Success of the watershed management plan requires an understanding of historic and existing runoff conditions. It is also necessary to understand the hydraulic conditions of the existing channel and floodplain system, and have engineering tools to support analysis of alternative channel/floodplain configurations.

The Army Corps of Engineers (ACOE) and LA County Department of Public Works (LACDPW) are in the process of preparing a hydrologic model for both the LA and San Gabriel Rivers. The 2 to 2 ½ year effort is will provide an existing conditions model for both watersheds, including the Rio Hondo portion of the LA watershed. The project is due to be completed by 2007 or 2007, depending on available funding.[3] This model could become the basis for modeling potential downstream impacts of various projects, such as channel or culvert removals.

Hydrologic data for the watershed should include streamgage data, the Hydrologic modeling described above, and flood insurance study reports. Other hydrologic reports could include as-built drawings for channels, channel capacity calculations, floodplain maps, and other hydrualic analysis reports. Historic documents, such as aerial photographs and historical topographic maps should also be reviewed.

[3] Mickey Chaudhuri, LACDPW, at August 25, 2004 Rio Hondo Project Advisory Committee Meeting.

4.4.7 Historic Hydrology/Hydraulic Studies

A review of existing literature on the historic hydrology and hydraulics of the watershed will attempt to establish historic locations and conditions of the Rio Hondo and it's tributaries. Historic documents, such as aerial photographs and historical topographic maps, can assist in identifying the locations of the Rio Hondo and tributaries prior to channelization. Despite the built-up urban qualities of the watershed and the amounts of current runoff, there may be opportunities to restore the hydrologic function of the watershed at various creek and stormdrain locations. The historic analysis could also assist with present day geomorphic analysis and may be useful in individual site restoration efforts.

4.4.8 Invasive Species Management Plan

The purpose of the Invasive Species Management Plan is to provide a blueprint for action to prevent the introduction of invasive species, provide for their control, and minimize their economic, environmental, and human health impacts. Identification of the locations and types of invasive species, both plant and animal, will be necessary. A report should be produced outlining leadership and potential coordination, prevention, early detection and rapid response, control and management, restoration, information management, and education and public awareness. Resources such as the Los Angeles County Weed Management Area should be used contacted for existing information and collaboration.

4.4.9 Habitat Linkages Between Puente Hills And Rio Hondo

The Rio Hondo has been identified as an important link in reestablishing a wildlife corridor that links the San Gabriel Mountains with the Santa Ana Mountains via Puente Hills and Chino Hills State Park. Restoration of the Rio Hondo corridor should consider opportunities to make this linkage with appropriate land uses, selection of habitat types and public access protection methods.

4.4.10 Sedimentation Study

Given the state of the watershed with both concrete and natural over straigtened channlees and highly concentrated flow and sediment detention basins and dams, serious consideration needs to be given to the sediment budget within the natural systems to ensure self sustaining viable habitat. Assess the rate of erosion from the watershed, and identify influencing factors such as land use, engineering and natural processes. A study should include, but not be limited to, identifying and ranking high

erosion source areas, evaluating the magnitude of sediment delivery, and developing and evaluating BMP's for management of sediment production and reduction of sediment load.

4.4.11 Education/Outreach Study

A comprehensive educational plan for the area should be developed to address non-point source pollution. It should include key messages and techniques for disseminating those messages throughout the Rio Hondo Watershed. The study should include techniques for effectively reaching and engaging various audiences, including the general public, land use decision makers, and elected officials.

4.4.12 Establish Indicators for Regular Watershed Audits

This watershed management plan sets in motion a series of actions focused on improving the quality of the watershed in several key areas. Indicators of watershed health should be established to measure progress towards the stated goals. Indicators could take many forms, for example:

- Number of municipal maintenance yards that have implemented BMPs.
- Sub-watersheds that achieve compliance with TMDLs for pollutants of concern.
- Number of municipal of creek clean up programs measured in annual miles of cleanup or tons of trash collected.
- Bio-assessments of stream channels showing increased health with more diversity, and abundance of benthic macro invertebrates.
- Decrease in percentage of impervious surface cover within any municipal jurisdiction
- Number of sightings of species of concern
- Acres of habitat protection in key areas such as wetlands, uplands, and riparian corridors
- Increase in the number of acres of parks and recreation available per 1000 people.

Whatever the indicators chosen, they should be selected by the watershed management organization established to oversee long term improvement of the watershed. This single entity should coordinate data collection and the audit process to establish consistent baseline and change indicator data for all reaches and municipalities.

4.5 SUMMARY OF PRELIMINARY PROJECTS

This section includes a preliminary list of watershed enhancement projects. This list is meant to be a "living document," continually updated with new information as it becomes available. Included in this current list are projects proposed by stakeholders and members of the Project Management Team, including the RMC and LACDPW.

The projects listed in this watershed plan constitute a limited number of current projects and preliminary proposals from participating agencies and other stakeholders. Other projects will definitely emerge as the Watershed Consortium matures. The development of a more comprehensive listing of projects throughout the watershed however would not have been appropriate without the knowledge and understanding of engaged constituencies in the watershed, whose support will be needed to fund and implement the Plan. This initial list of watershed projects reflects the current level of general awareness regarding the Rio Hondo Watershed.

This watershed plan currently includes a variety of project types. Many of the projects are multiple-objective, maximizing benefits such as stream naturalization projects that address water quality, supply, habitat and open space issues. For this reason, multi-objective restoration projects should be a priority as these offer a more ecologically sensitive, and sustainable approach to achieving a healthy watershed. Such projects should be pursued as a core element of the watershed plan both in the short-term and as a strategy for long-term watershed restoration.

Three project areas, as mentioned earlier, were identified by a series of focus groups held in support of this plan. High priority opportunity sites were identified by these groups to maximize early efforts at improving the watershed, at three locations:

- Peck Road Water Conservation Park
- Whittier Narrows
- Rio Hondo Spreading Grounds

Projects at these three sites are described in the following section and are considered and are considered a priority for establishing visible and meaningful results early in the process.

Other projects are decentralized and short-term, addressing the pressing needs of the Los Angeles River Trash TMDL or other Total Maximum Daily Load implementation requirements. These projects are a result of jurisdictions needing to meet numerical limits for water quality, which are recognized as a top priority for these jurisdictions. Still, a more comprehensive solution will be required to address the underlying causes

of trash within the urban environment. This plan therefore pays attention to and addresses the real need of jurisdictions faced with pressing demands to achieve more immediate water quality objectives through some single-purpose solutions, such as the trash BMP projects. This plan also addresses the need for visible and meaningful results in the near term, while structuring long-term emphasis on multi-objective sustainable solutions compatible with the emergence of a healthy watershed.

Prioritizing Preliminary Projects by Cost Benefit Analysis

More detailed information on the size and scope of each preliminary project will be needed to determine actual costs and benefits of individual projects. The costs will need to be weighed against the potential net benefits of these projects to determine actual project priority. Also with a more detailed evaluation of baseline conditions other projects will emerge as priorities within the watershed. Potential benefits for each project could be measured by:

- The actual area of open space acquired
- Area of habitat preserved or enhanced
- Miles of concrete channel removed
- Acre-feet of former runoff water redirected into aquifer recharge.
- Water available for other beneficial uses such as habitat, recreation, and recharge
- Area of watershed improved by BMPs
- As well, as many other possible benefits.

Introduction to Preliminary Projects by Sub-Watershed

These preliminary projects are divided into nine sections of the watershed, including six tributary subwatersheds of the Rio Hondo Watershed. As areas of the watershed that drain directly into the Rio Hondo cover such a large area, it has been sub-divided into northern and southern sections. Finally, the headwaters of the Rio Hondo Hondo Watershed presented unique conditions for projects, so they were included as a separate sub-region of the watershed. Moving from the top of the watershed to its confluence with the Los Angeles River, the nine sections of the watershed are:

- Mountain Zones (Mz)
- Sawpit Wash (Sp),
- Santa Anita Wash (Sa),
- Arcadia Wash (Ar),
- Rubio Wash Ru),
- Eaton Wash (Ea),
- Alhambra Wash (Al)
- Rio Hondo North (RhN)
- Rio Hondo South (RhS).

SUMMARY TABLE

PROJECTS OF RIO HONDO WATERSHED MANAGEMENT PLAN

Project ID #	Project Name	Goals Targeted by Project							
		Water Quality & Conservation	Open Space	Habitat	Recreation	Public Health & Safety	Flood Protection	Institutional Framework	Stewardship
WATERSHED-WIDE PROJECTS									
WW1	Comprehensive Invasive Species Removal Program	O		X					
WW2	System-wide Trash BMP Plan	X							
MOUNTAIN ZONES									
Mz1	Bradbury Habitat and Open Space Connectivity, Bradbury	O	X	X	O				
Mz2	Wilderness Park Nature Center Refurbishment, Arcadia				X				X
Mz3	Expansion of Hillside Wilderness Preserve Management Plan,	X	X	X	X				
Mz4	Sedimentation Management & Erosion Control Study	X		X		X	X		
Mz5	Debris Basin Removal Feasibility & Management Study	X		X		X	X		
Mz6	Stream and Habitat Restoration Projects	X		X					
Mz7	Recreation Impacts Assessment & Management Plan			X	X				
SAWPIT WASH SUBWATERSHED									
Sp1	Quarry Reclamation/Water Storage/ Recreational Facilities Development Study, Irwindale	X	X	X	X		X		
Sp2	Buena Vista Wetlands, Irwindale	X	O	X					
Sp3	Sawpit Wash Trash Subregional Solution, Monrovia	X							
Sp4	Buena Vista/Rio Hondo Stream Naturalization Feasibility Study (from Santa Fe Dam to Peck Park Lake), Irwindale	X	O	X	O				
Sp5	Treatment Wetland(s) along Buena Vista Channel/Sawpit Wash, Irwindale	X		X					
Sp6	Storm Drain Daylighting Projects (Sawpit Wash)	X	O	X		O	X		
SANTA ANITA WASH SUBWATERSHED									
Sa1	Santa Anita Wash Trash Subregional Solution, Monrovia and Los Angeles County	X							
Sa2	Stream Naturalization Project (below Santa Anita Spreading Grounds Dam), Arcadia	X	O	X	O		O		
Sa3	Storm Drain Daylighting Projects (Santa Anita Wash)	X	O	X		O	X		
ARCADIA WASH SUBWATERSHED									
Ar1	Arcadia Wash Concrete Removal and Restoration Project at Santa Anita Golf Course, Arcadia	X	X	X	X		X		
Ar2	Santa Anita Park & Shopping Mall Parking Lot BMP, Arcadia	X							O
Ar3	Los Angeles County Arboretum Stream Naturalization Feasibility Study, Arcadia	X		X	X				O
Ar4	Storm Drain Daylighting Projects (Arcadia Wash)	X	O	X		O	X		
EATON WASH SUBWATERSHED									
Ea1	Eaton Wash at Eaton Canyon Golf Course, Pasadena, Los Angeles County	X	X	X	X		X		
Ea2	Victory Park Treatment Wetland Study, Pasadena	X		X					O
Ea3	Storm Drain Daylighting Projects (Eaton Wash)	X	O	X		O	X		
RUBIO WASH SUBWATERSHED									
Ru1	Washington Park Project, Pasadena	X	X	X	X				O
Ru2	Rancho Los Tunas Adobe, San Gabriel	O	X	O	X				O
Ru3	Altadena Golf Course Stream Naturalization Feasibility Study, Altadena	X	X	X	X		X		
Ru4	San Gabriel Country Club Stream Naturalization, San Gabriel	X	X	X	X		X		
Ru5	Storm Drain Daylighting Projects (Rubio Wash)	X	O	X		O	X		

X = Priority
O = Secondary

Project ID #	Project Name	Goals Targeted by Project							
		Water Quality & Conservation	Open Space	Habitat	Recreation	Public Health & Safety	Flood Protection	Institutional Framework	Stewardship
RIO HONDO NORTH									
RhN1	Stormwater Treatment at Peck Park	X		X					
RhN2	Habitat Restoration at Peck Park		X	X	O				
RhN3	Recreational Enhancements at Peck Park				O				X
RhN4	Groundwater Recharge Expansion at Peck Park	X							
RhN5	Rio Vista Park, El Monte		X	X	X				
RhN6	Lashbrook Park, El Monte	O	X	X	X				
RhN7	El Monte Airport Stormwater Runoff BMP Implementation, El Monte	X		X					
RhN8	Habitat Restoration and Arundo Removal behind Whittier Narrows Dam	O		X			O		
RhN9	Water Conservation Pool	X							
RhN10	Rio Hondo Floodplain Habitat Restoration, Los Angeles County	O		X			O		
RhN11	Rio Hondo at Whittier Narrows Golf Course	X	X	X	X		X		
RhN12	Lario Creek/Zone 1 Ditch	X	X	X	O		X		O
RhN13	San Gabriel River Discovery Center at Whittier Narrows Regional Park	X	X	X	X				X
RhN14	Whittier Narrows Dam Treatment Wetlands	X		X	O				X
RhN15	Lake System/Wetland Habitat Creation (Whittier Narrows Nature Center Ecosystem Restoration)	O	X	X	X				X
RhN16	Whittier Narrows Wildlife Lakes			O	X				
RhN17	Whittier Narrows Legg Lakes Improvements			O	X				
RhN18	Storm Drain Daylighting Projects (Rio Hondo North)	X	O	X		O	X		
ALHAMBRA WASH SUBWATERSHED									
Al1	Vincent Lugo Park Project, Alhambra	O	X	O	X		X		X
Al2	Alhambra Wash Stream Naturalization Project	X	X	X	X		X		X
Al3	Huntington Botanical Gardens Treatment Wetlands Study, San Marino	X		X					X
Al4	Whittier Narrows County Golf Course Stormdrain (#5, #1109) Daylighting/Treatment Wetlands Study, Los Angeles County	X	X	X	X		X		
Al5	Storm Drain Daylighting Projects (Alhambra Wash)	X	O	X		O	X		
RIO HONDO SOUTH									
RhS1	Rio Hondo Stream Naturalization Feasibility Study Between Whittier Narrows Dam & Foster Bridge Avenue/Rio Hondo, Montebello, Pico Rivera, City of Commerce	X	X	X	X		X		
RhS2	Bike Trail and Amenities at Paseo Del Rio at Rio Hondo Spreading Grounds		X	X	X				
RhS3	Habitat Enhancements at Rio Hondo Spreading Grounds, Pico Rivera		X	X	X				
RhS4	Vegetated Bypass Channel from Intake, Montebello	X		X					
RhS5	Wetlands Restoration at Southern-Most Basin Below 5 Freeway, Bell Gardens	X	X	X					
RhS6	Groundwater Recharge Basin Expansion to the North, Montebello, Pico Rivera	X							
RhS7	Mines Avenue Bike Trail Connection to the San Gabriel Spreading Grounds, Pico Rivera		X		X				
RhS8	Slope Restoration/Trail Enhancement, Montebello		X	X	X				
RhS9	Rio Hondo Golf Course Stream Naturalization Study at #3103, Downey and Treatment Wetland, Bell Gardens	X	X	X	X		X		
RhS10	Hannon Scout Neighborhood Park, Bell Gardens			X	X				
RhS11	Veterans Memorial Park Expansion, Commerce		X	X	X				
RhS12	Confluence Wetland at #7850, South Gate	X	X						
RhS13	Storm Drain Daylighting Projects (Rio Hondo South)	X	O	X		O	X		

X = Priority
O = Secondary

WATERSHED–WIDE PROJECTS

A table providing an overview of all the projects and their relationship to the goals is presented beginning on the next page. Although projects are listed by subwatershed, some projects, such as "comprehensive invasive species removal program" are watershed-wide in both scope and benefits. Other watershed-wide projects include:

WW1 – Comprehensive Invasive Species Removal Program

The removal of arundo and other invasive weeds is more successful in the long term if carried out in a coordinated, systematic manner rather than solely by separate local efforts. For this reason, a comprehensive invasive species removal program, coordinated from the headwaters to the bottom of the watershed, is needed. Of particular note is the area behind the Witter Narrows Dam which is in particular need or Arundo removal.

WW2 - System-wide Trash BMP Plan

The Trash BMP projects in subwatershed have been preliminarily identified as potential sites to remove floatables in tributary stormdrains. These would be similar to the screens that will be built at the outlets of Santa Anita and Sawpit Washes above Peck Road Water Conservation Park by the Cities of Monrovia, Sierra Madre and Arcadia. Sufficient area is required adjacent to the channel to install a trash screen diversion, with adequate room for equipment to maintain this facility. The County storm drain identified with each project drains an urbanized area of at least a few square miles. These sites were chosen throughout each subwatershed and are evenly distributed throughout the Rio Hondo Watershed. A thorough assessment needs to occur if these are developed system-wide, to avoid unnecessary projects and to ensure "hot spots" are adequately identified.

Potential locations for subregional Trash reduction BMP implementation projects are listed below. Each location would require project specific evaluation:

Sawpit Wash

- #521 @Mountain Ave. & Buena Vista Channel, Irwindale, LA County
- #30 @Buena Vista St. & Buena Vista Channel, Irwindale
- Sawpit Wash @Buena Vista Channel, LA County

- #25 @Myrtle Ave. & Buena Vista Channel, LA County

Acadia Wash

- Arcadia Wash @ Rio Hondo, El Monte

Eaton Wash

- #24 @ Encinita & Pentland, Temple City
- Eaton Wash @ Encinita & Pentland, Temple City
- #27 @ Valley and Strang, El Monte
- Eaton Wash @ Rio Hondo, El Monte

Rubio Wash

- Rubio Wash @ N. Sierra Bonita & Del Mar, Pasadena
- #187 @ N. Allen & Del Mar, Pasadena
- #563 @ N. Sierra Madre & Canterbury, San Marino
- Rubio Wash @ Rio Hondo, El Monte
- #529 @ Rio Hondo, Rosemead

Rio Hondo North

- #522 @ Azusa Ave. & Rio Hondo, El Monte
- #23 @ Rio Hondo, El Monte
- #430 @ Rio Hondo, El Monte
- Rain Gage #259 @ Rio Hondo, South El Monte
- #1225 at Rio Hondo, LA County

Alhambra Wash

- #186 @ Canon Drive, Pasadena
- #726 @ Arroyo Pkwy. Above Glenarm, Pasadena
- #190 @ Monterey & Oak Knoll, San Marino
- #5 @ Emerson & Eckhart, Rosemead
- #1109 @ E. Garvey & San Gabriel, Rosemead

Rio Hondo South

- #5701 @ Date Way & Rio Hondo Spreading Grounds, Montebello
- #DDI-23 @ Rio Hondo, Montebello
- #1109 @ Rio Hondo, Montebello
- Telegraph Rd. Drain @ Rio Hondo, City of Commerce
- #555 @ Rio Hondo, Montebello
- #990 @ Rio Hondo, Montebello
- #20 @ Rio Hondo, Downey
- #18 @ Rio Hondo, South Gate

Mountain Zone

The upper portion of the Rio Hondo Watershed, an area lying within the San Gabriel Mountains and its foothills, defines the Mountain Zone. This undeveloped mountainous area includes the Angeles National Forest, most of which is within the jurisdiction of the U.S. Forest Service. It also includes a belt of privately owned lands that lie between the boundary of the Angeles National Forest and the developed communities at the base of the mountains. From west to east, these are the communities of Altadena, Pasadena, Sierra Madre, Arcadia, Monrovia, Bradbury, and Duarte.

This zone also encompasses the upper reaches of several of the subwatersheds of the Rio Hondo. These include the headwaters of the tributaries that form Rubio Wash, Eaton Wash, Arcadia Wash, Santa Anita Wash, and Sawpit Wash.

Currently Proposed or Active Projects

Mz 1 Bradbury Habitat and Open Space Connectivity, Bradbury

There are several undeveloped parcels within the City of Bradbury jurisdiction that are a part of the wildlife corridor connection along the San Gabriel Foothills. It is also possible that these parcels are necessary for an east-west trail corridor. This project would ensure protection of open space and habitat along the urban-wildland interface. Proposed by RMC

Mz 2 Wilderness Park Nature Center Refurbishment, Arcadia

The currently proposed project consists of structural and aesthetic improvements and expansion of nature displays and exhibits.

The proposed project could be enhanced by expanding its role beyond that of a traditional nature center to encompass broader watershed-wide themes with the goal of enhancing educational opportunities and promoting stewardship of the watershed. As a newly configured interpretive center, it could focus on watershed and water-related topics, including the crucial role of the upper watershed inthe hydrologic cycle, while also providing information about the canyon areas, the national forest, and native habitat. "Green" building practices and watershed sensitive design principles should be incorporated into any physical improvements made at the site.

Mz 3 Expansion of Hillside Wilderness Preserve Management Plan, Monrovia

In a city-wide vote in 2000 the citizens of Monrovia agreed to tax themselves to acquire privately owned parcels in the foothills above the city that could be set aside as protected land. Since the creation of this wilderness preserve, the City of Monrovia has continued the process of acquiring hillside open space that preserves wildlife corridors, endangered native plant life and riparian habitat. The 1,100 acre preserve is now more than 80% complete. Additional properties have been identified for acquisition based on location and connectivity. Acquisition of these properties will also enhance public access for passive recreational uses and preserve significant watersheds and the headwaters of the Lower Clamshell Canyon:

- Bowder Property Acquisition
- Butcher Property Acquisition
- Elkins Property Acquisition
- Emigh Property Acquisition
- Kissinger Property Acquisition
- Leonard Property Acquisition
- Oldson Property Acquisition
- Seibert Property Acquisition
- Pokrajac Property Acquisition
- Sartwell Property Acquisition
- Woodward Property Acquisition

Additional Project Opportunities

Mz 4 Sedimentation Management & Erosion Control Study

Study impacts of future increased sediment transport by the Rio Hondo and its tributaries. Understand role of sedimentation and erosion systems within hydrologic functioning of the watershed. Develop future cross-jurisdictional management recommendations for optimum balance of sediment transport, flood protection, in-stream water quality and aquatic habitat. Recommend range of best practices for erosion control where appropriate including road and trail-cuts, and streams. This study should be conducted in conjunction with "Debris Basin Removal Feasibility & Management Study" below

Mz 5 Debris Basin Removal Feasibility & Management Study

Study the impacts of the potential for removing debris basins as part of greater geomorphologic functioning restoration. Examine feasibility for a range of alternatives from allowing partial sediment transport to take place from debris basins to complete basin removal. As with "Sedimentation Management & Erosion Control Study," recommendations will balance the needs of sediment transport, flood protection, in-stream water quality and aquatic habitat. Develop creative alternatives for sediment use.

Mz 6 Stream and Habitat Restoration Projects

Identify and prioritize potential restoration projects for habitat enhancement in both aquatic and terrestrial environments. Special attention should be given to high recreation impact areas. Project will include removal of exotic invasive plants in riparian corridors and in upland habitat areas. Ensure habitat corridors remain unblocked. These projects should be coordinated with the U.S. Forest Service's Forest Master Plan Update. Implementation of these projects ensures that habitat of the San Gabriel Mountains remains high quality despite its adjacency to one of the nation's most heavily urbanized areas.

Mz 7 Recreation Impacts Assessment & Management Plan

Assess impacts of recreation on habitat in the San Gabriel Mountains, and develop management guidelines to minimize future impacts. Survey areas of highest impact and develop recommendations that address these areas. Anticipate future recreational and habitat needs and coordinate with the Forest Master Plan Update. This Plan can ensure a balance is maintained between recreational needs of 8 million visitors a year from the Los Angeles metropolitan region and habitat needs of flora and fauna native to the mountains for generations to come

SAWPIT WASH SUBWATERSHED

This is the eastern-most subwatershed, and also the smallest. Sawpit Wash begins up in the Angeles National Forest and ends at the top of Peck Road Water Conservation Park's upper lake.

Opportunities to Improve Water Quality by Land Use

The major land uses, by area, within Sawpit Wash are described below[4]. Because much of Sawpit Wash is in the mountainous zone there is considerable vacant undifferentiated land, which is the largest of the land use areas. Some of the uplands and riparian reaches in this zone are likely to provide opportunities for habitat protection, which fortunately is where much of the open space acquisition is proposed. Strategic opportunities for habitat protection should be pursued. Also, in this zone there is the potential for extensive impacts from sedimentation if future development is allowed in this area, given the difficulty of constructing on steep slopes and the erosive soils.

Detached single family residential housing is the next largest land use category in Sawpit Wash. Programs to improve water quality in this zone could include education programs for homeowners to address proper use of fertilizers and pesticides in landscape
maintenance combined with recommendations for installation of BMPs for the slowing of runoff, such as removal of direct connects and use of grassy swales. These programs would assist in removing nutrients, pathogens, pesticides, and sediment from the storm water system.

Schools, parks and recreation facilities provide much of the existing open space within the watershed. These open spaces could also be used to implement BMPs to slow runoff where they are coincident with storm drain facilities or stream reaches. Use of these areas could assist surrounding land uses with reductions in pollutant loads.

[4] The source for all land use tables in Chapter 4 is the Southern California Council of Governments (SCAG) GIS data which is derived from aerial photographs circa 2000.

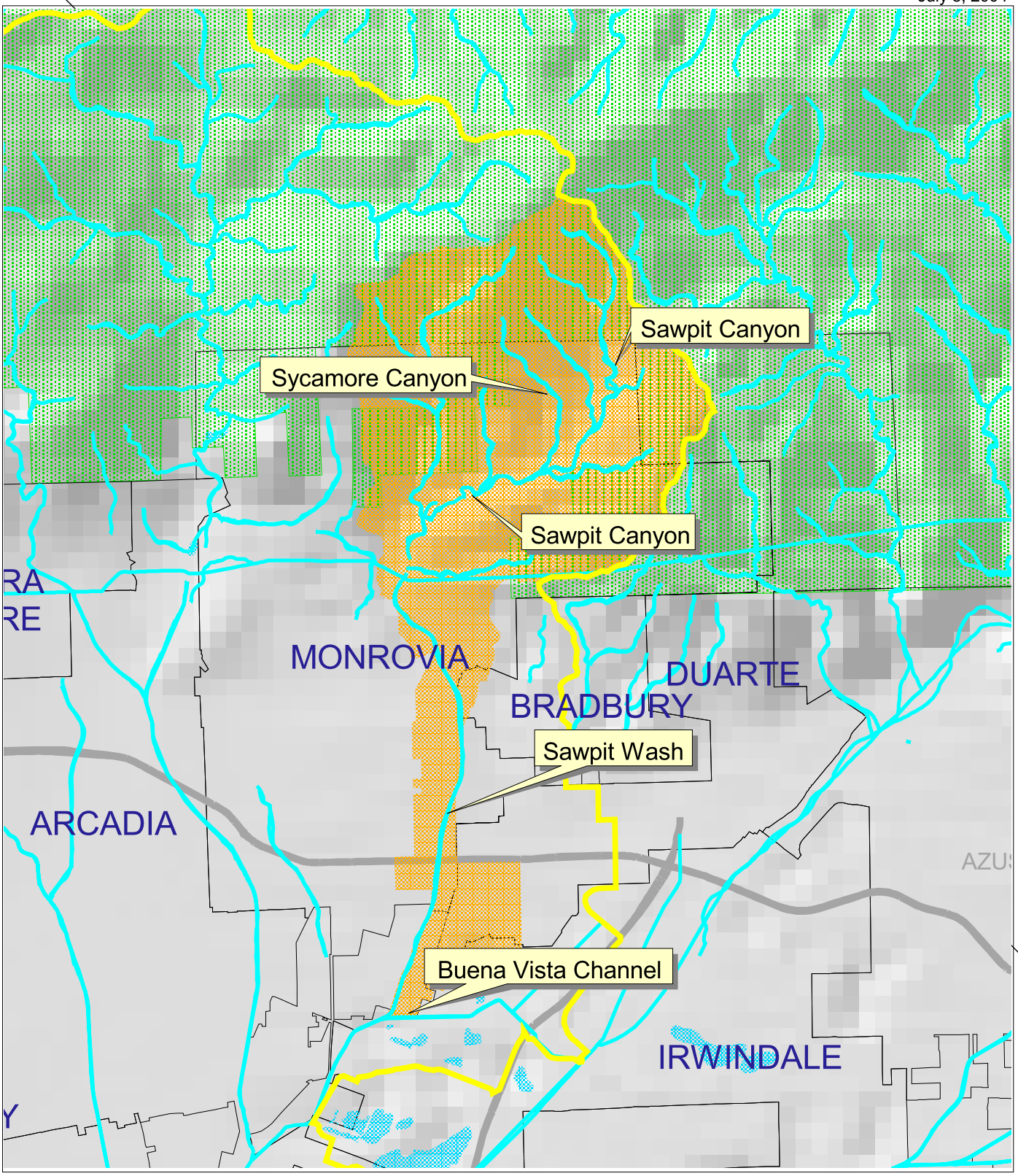
ACRES	Sawpit Wash - Largest Land Uses by Area Land Use
4,121.9	**Vacant Undifferentiated** (open vacant land; steep vacant land in urban areas; terraced erosion control embankments;creeks and stream areas in an unimproved state)
584.0	**High Density Single Family Residential**; 2 units/acre (detached dwellings)
164.8	**Manufacturing;** Assembly; and Industrial Services factories; assembly plants; breweries; wineries; food processing plants)
79.0	**Low Density Single Family Residential**; <2 units/acre (detached dwellings; estates included)
57.0	**Electrical Power Facilities** (electrical power; generating stations; substations and rights-of-way with two or more towers of minimum 66KV; non-vacant use underlying a transmission
50.0	**Water;** Undifferentiated (open water bodies; open reservoirs of >5 acres; golf course ponds; lakes; rivers; estuaries; channels)
46.8	**Mineral Extraction -** Other Than Oil and Gas(sand; gravel; and rock quarries; open pit mines and talus piles; and aboveground structures of below ground mines; sand and gravel storage
26.5	**Elementary Schools** (public and private)
26.4	**Modern Strip Development** (retail stores; restaurants; service shops; and offices along traffic corridors; contains off-street parking with easy access; newer style business corridors built
25.7	**Local Parks and Recreation** (neighborhood or community parks; and playgrounds)
20.6	**Freeways and Major Roads** (freeways; interchanges; major roadways that meet the minimum mapping resolution; rest areas; weight stations; border patrol stations; agricultural
18.9	**Improved Flood Waterways and Structures** (flood control channels; flood control and debris dams; settling basins; detention ponds; percolation basins; and debris basins)
102.7	**OTHER**
5,324.3	**#TOTAL#**

Sawpit Wash

Rio Hondo River Watershed Management Plan

Sawpit Wash

July 8, 2004



Map created by the Rivers and Mountains Conservancy

Rio Hondo River Watershed
Rivers, channels and streams.shp
Sawpit Wash Watershed
Los Angeles - Lakes and Reservoirs
Los Angeles - Freeways and Highways
Angeles National Forest

0.3 0 0.3 0.6 Miles

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Rio Hondo - Subwatersheds

Ironically, freeways and improved floodways are also in the large land use category for Sawpit wash. Implementation of CalTrans Best Management Practices along freeways should help to remove pollutants, such as heavy metals and organic compounds, typical of freeway runoff. The floodways, many of which are currently concrete lined, may be capable of being daylighted or being converted into soft-bottomed channels.

Currently Proposed or Active Projects

Sp 1 Quarry Reclamation/Water Storage/Recreational Facilities Development Study, Irwindale

The Upper San Gabriel Valley Municipal Water District, Sierra Club, and the Rivers and Mountains Conservancy (RMC) initiated an overall study to examine using gravel quarries for multiple purposes after mining is completed, including stormwater capture and cleanup, recharge of stormwater and imported water, flood reduction, recreation and habitat restoration, as well as improving aesthetic appearances. The creation of new open space at the site of these gravel quarries could also provide habitat and recreational connectivity between Peck Park at the eastern edge of the Rio Hondo Watershed and nearby San Gabriel River Bike Trail. The study will require several years to conduct.

Sp 2 Buena Vista Wetlands, Irwindale

This project will create bio-engineered wetlands for habitat restoration in a LADPW spreading basin west of Santa Fe Dam. A conveyor line, operated by United Rock Products, runs across the westerly part of this property. It has been in operation since 1983 and is scheduled to be in use until about 2035. The design and implementation of the wetlands will have to ensure the continued safe operation of this conveyor. Proposed by LACDPW.

Sp3 Sawpit Wash Trash Subregional Solution, Monrovia

This project seeks to construct a trash collection device at the downstream end of Sawpit Wash to treat 100% of the regulated storm design, 1 year, 1 hour rainfall duration, and all nuisance flows and/or first flush rain events. This project located upstream of Peck Road Water Conservation Park, is a multi-agency sub-regional Pilot Program which could be used in other reaches of the flood control system to address trash control.

Additional Project Opportunities

Sp 4 Buena Vista/Rio Hondo Stream Naturalization Feasibility Study (from Santa Fe Dam to Peck Park Lake), Irwindale

Assess feasibility of naturalizing the Buena Vista Channel without compromising flood safety, and respecting existing water rights. This would include a study of potential floodplain restoration for increased stream and riparian habitat opportunities. Benefits would include water resources, water quality and habitat. As an example, Lario Creek/Zone 1 Ditch is currently being studied for naturalization potential in one or two parallel streams. Feasibility of project will have to be assessed in context of current operations- the Buena Vista Channel functions as a diversion channel which handles major velocity flows even during the dry season due to releases from Santa Fe Dam for flood control and water conservation purposes.

Sp 5 Treatment Wetland(s) along Buena Vista Channel/Sawpit Wash, Irwindale, Monrovia

In available open space areas as small as one acre (although larger spaces 10 acres or greater may provide more cost benefit), create a two-step treatment wetland that can settle out sediments and other insoluble pollutants, then allow for plant take-up of soluble pollutants including bacteria and nutrients, before sending it back .

Sp 6– Storm Drain Daylighting Projects (Sawpit Wash)

Opportunities to daylight portions of the storm drain system can be pursued by mapping the network of buried streams that lie underneath the concrete surface of the developed portions of the watershed. Developing an understanding of the natural hydrologic system that existed before the urban buildup can facilitate identification of those segments of the storm drain system where daylighting is feasible and where such actions can benefit water quality, augment groundwater resources, help reduce flooding risks, and restore native riparian habitat. The feasibility of storm drain daylighting can be explored at sites throughout the watershed.

Santa Anita Wash Subwatershed

Santa Anita Wash begins in the Angeles National Forest as two separate stream systems, Santa Anita Canyon flowing into Arcadia and Little Santa Anita Canyon flowing into Sierra Madre. These streams merge in upper Arcadia, not far above the 210 freeway. A portion of the wash runs through Monrovia, then unincorporated Los Angeles County communities by southeast Arcadia. *(See Map 4-2 Santa Anita Wash)*

Opportunities to Improve Water Quality by Land Use

The major land uses, by area, within Santa Anita Wash are shown below. Because much of Santa Anita Wash is in the mountainous zone there is considerable vacant undifferentiated land, which is the largest of the land use areas. As with the other Sub-watersheds some of the uplands and riparian reaches in this zone are likely to provide opportunities for habitat protection. Strategic opportunities for habitat protection should be pursued. In the undifferentiated vacant land zone there is also the potential for extensive impacts from sedimentation if future development is allowed in this area, given the difficulty of constructing on steep slopes and the erosive soils.

The next largest category, and the largest land use category in the lower watershed by far, is extensive high-density residential land use, nearly 2,000 acres. This suggests extensive urbanized development with impervious land cover in the forms of streets, parking lots and roof tops. Pollutants typical of these areas include trash and debris, oil and grease.

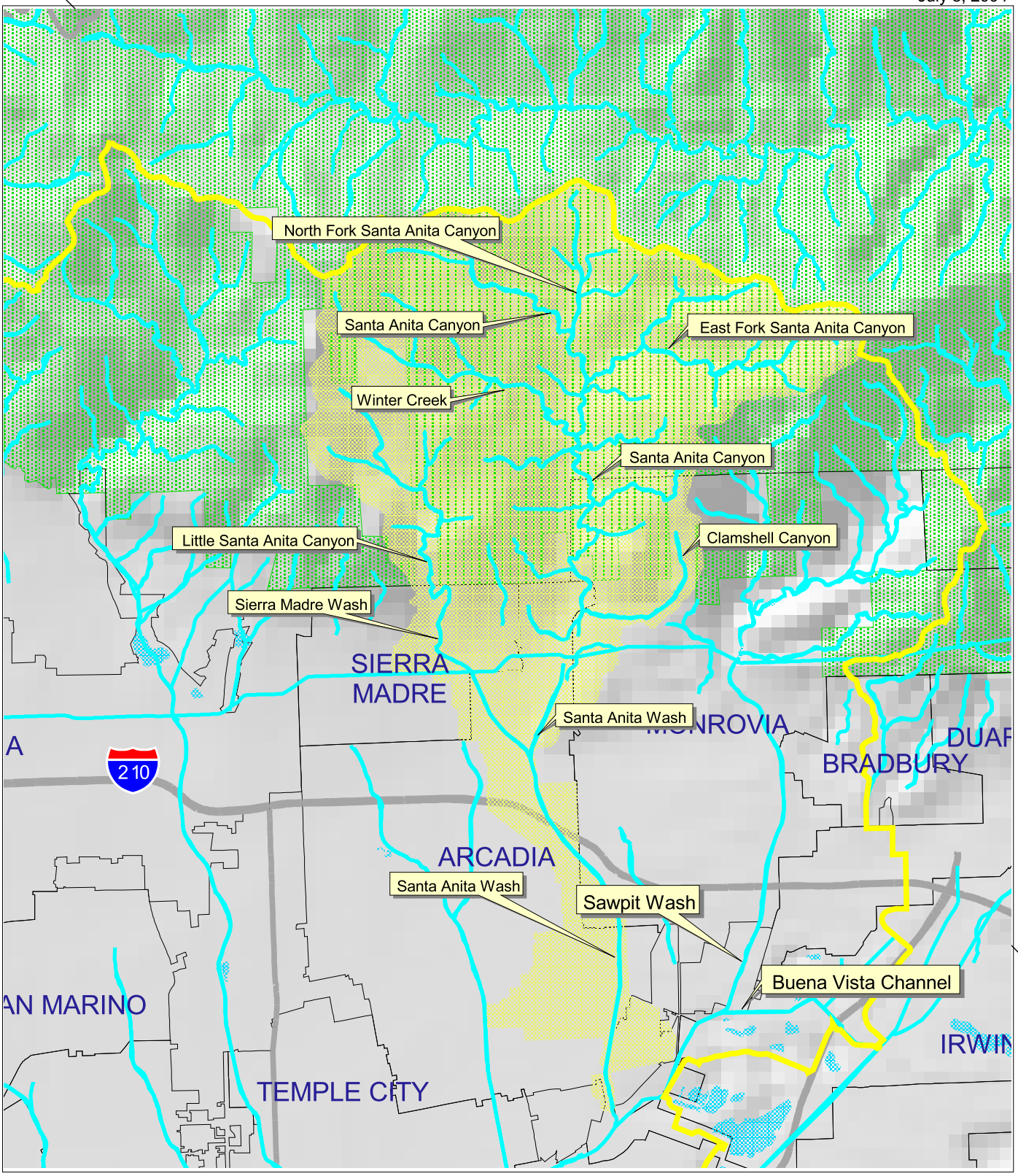
Parking lots associated with modern strip development and the freeways supporting these more dense urban populations typically produce heavy metals and oil and grease in very rapid runoff events. Efforts should be focused on cleaning streets, slowing and treating runoff. Because of the lack of available room in this urbanized setting there will be the need to look to adjoining land uses, such as parks, parking lots or vacant urban land opportunities, to implement BMPs to remove pollutants from these intensive land use areas. If treatment is successful infiltration could be encouraged in downstream areas where soil permeability is high.

ACRES	Santa Anita Wash - Largest Land Uses by Area Land Use
9,980.6	**Vacant Undifferentiated** (open vacant land; steep vacant land in urban areas; terraced erosion control embankments;creeks and stream areas in an unimproved state)
1,957.8	**High Density Single Family Residential**; 2 units/acre (detached dwellings)
91.7	**Low Density Single Family Residential;** <2 units/acre (detached dwellings; estates included)
90.3	**Low-Rise Apartments;** Condominiums; and Townhouses (attached dwellings; one to two stories; of approximately 10 to 18 units/acre)
63.7	**Improved Flood Waterways and Structures** (flood control channels; flood control and debris dams; settling basins; detention ponds; percolation basins; and debris basins)
49.2	**Electrical Power Facilities** (electrical power; generating stations; substations and rights-of-way with two or more towers of minimum 66KV; non-vacant use underlying a transmission
48.7	**Local Parks and Recreation** (neighborhood or community parks; and playgrounds)
38.6	**Modern Strip Development** (retail stores; restaurants; service shops; and offices along traffic corridors; contains off-street parking with easy access; newer style business corridors built
38.4	**Manufacturing;** Assembly; and Industrial Services factories; assembly plants; breweries; wineries; food processing plants)
35.6	**Freeways and Major Roads** (freeways; interchanges; major roadways that meet the minimum mapping resolution; rest areas; weight stations; border patrol stations; agricultural
34.7	**Urban Vacant** (vacant land within an urban area)
312.6	**OTHER**
12,742.0	**#TOTAL#**

Rio Hondo River Watershed Management Plan

Santa Anita Wash

July 8, 2004



Map created by the Rivers and Mountains Conservancy

Rio Hondo River Watershed
Rivers, channels and streams.shp
Santa Anita Wash Watershed
Los Angeles - Lakes and Reservoirs
Los Angeles - Freeways and Highways
Angeles National Forest

0 2 Miles

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San Gabriel Valley Council of Governments

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Rio Hondo - Subwatersheds

Currently Proposed or Active Projects

Sa1 – Santa Anita Wash Trash Subregional Solution, Monrovia and Los Angeles County

This project seeks to construct a trash collection device at the downstream end of Santa Anita Wash to treat 100% of the regulated design storm (1 year, 1 hour rainfall duration) and all nuisance flows and/or first flush rain events. This project located within Peck Road Water Conservation Park, is a multi-agency sub-regional Pilot Program which could be used in other reaches of the flood control system to address trash control

Project Opportunities

Sa2 Stream Naturalization Project (below Santa Anita Spreading Grounds Dam), Arcadia

Assess feasibility of naturalizing a portion of the Santa Anita Wash below the dam, without compromising flood safety, and respecting existing water rights. This would include a study of potential floodplain restoration for increased stream and riparian habitat opportunities. Benefits would include water resources, water quality and habitat.

Sa 3 – Storm Drain Daylighting Projects (Santa Anita Wash)

Opportunities to daylight portions of the storm drain system can be pursued by mapping the network of buried streams that lie underneath the concrete surface of the developed portions of the watershed. Developing an understanding of the natural hydrologic system that existed before the urban buildup can facilitate identification of those segments of the storm drain system where daylighting is feasible and where such actions can benefit water quality, augment groundwater resources, help reduce flooding risks, and restore native riparian habitat. The feasibility of storm drain daylighting can be explored at sites throughout the watershed.

ARCADIA WASH SUBWATERSHED

Arcadia Wash begins in the Angeles NF, as the others do, but is much smaller than Santa Anita Wash to the east and Eaton Wash to the west. It runs through Sierra Madre, Arcadia, Temple City and in El Monte confluences with the Rio Hondo.

Opportunities to Improve Water Quality by Land Use

The largest land use in Arcadia Wash Subwatersehd, is high-density single family residential, comprising nearly half of the watershed. Clearly programs to address homeowner practices in incorporating BMP into landscape design and maintenance practices will be most effective in reducing the wide variety of pollutants associated with this land use category specifically; nutrients, and pesticides, trash, oxygen demanding substances, and oil and grease. Also campaigns to encourage pet owners to consistently clean up after animals will reduce fecal bacteria from cats and dogs in runoff.

Vacant undifferentiated land falls into a distant second place, suggesting a more built out watershed and fewer opportunities for open space protection. Commercial Recreation tends to have large parking lots associated with it where the installation of pervious paving or grassy swales would slow and clean oil, grease and potentially heavy metals associated with these parking areas. Similar treatments could be considered in commercial developments and office parks.
Golf Courses and Specimen Gardens are also in the largest land use categories and potentially offer opportunities to slow runoff in open space / recreation settings.

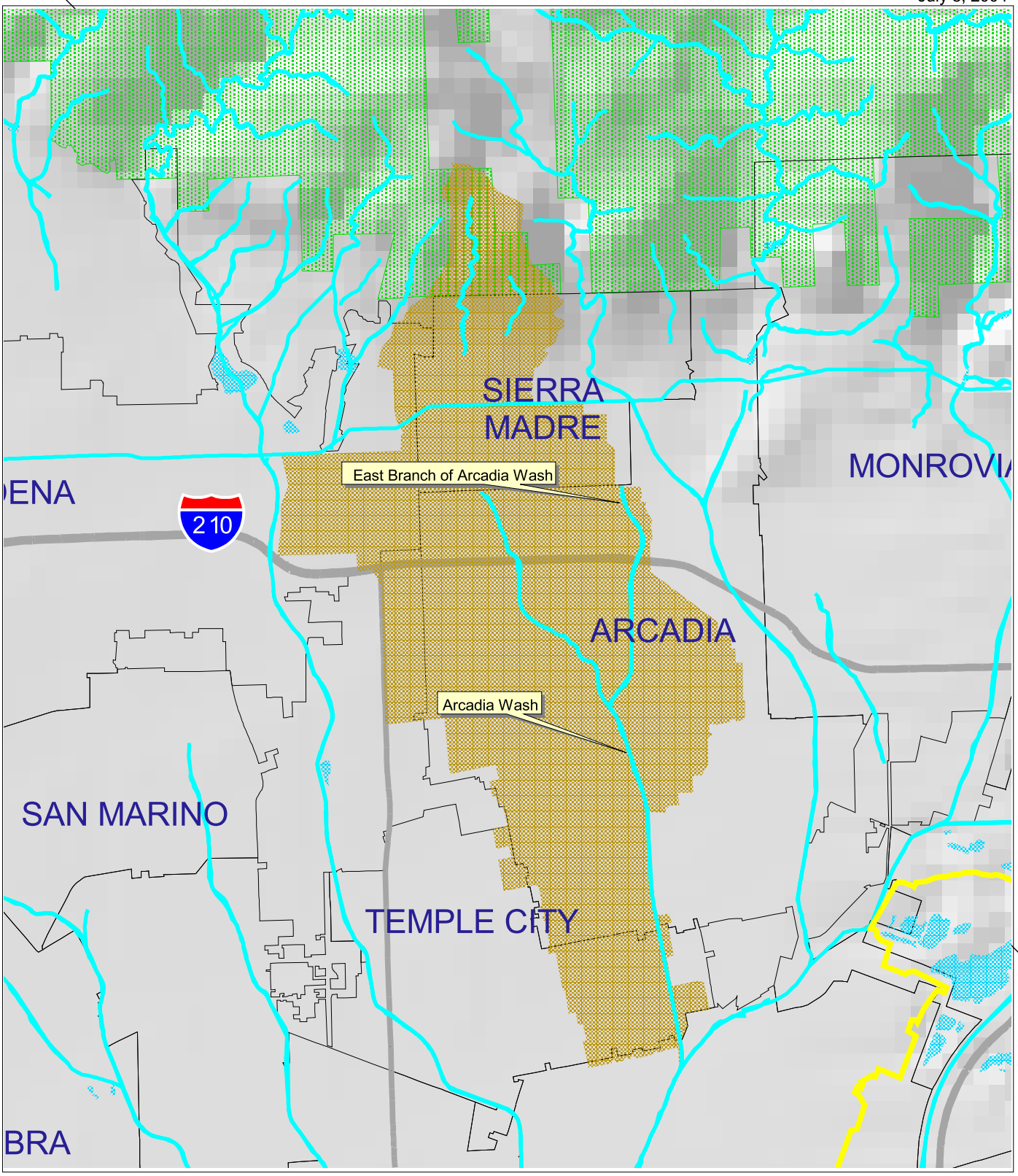
Arcadia Wash at Santa Anita Golf Course

ACRES	Arcadia Wash - Largest Land Uses by Area Land Use
3,685.4	High Density Single Family Residential; 2 units/acre (detached dwellings)
684.8	Vacant Undifferentiated (open vacant land; steep vacant land in urban areas; terraced erosion control embankments;creeks and stream areas in an unimproved state)
567.0	Low Density Single Family Residential; <2 units/acre (detached dwellings; estates included)
456.9	Low-Rise Apartments; Condominiums; and Townhouses (attached dwellings; one to two stories; of approximately 10 to 18 units/acre)
337.5	Commercial Recreation (bowling alleys; ice rinks; roller rinks; miniature golf; isolated driving ranges; amusement parks; commercial stadia; fairgrounds; gambling facilities; drive-in theaters; movie theaters not
144.8	Golf Courses (public and private; developed portions only; includes driving ranges; clubhouses; and other recreational facilities associated with the golf course; isolated driving range not included)
120.2	Specimen Gardens and Arboreta (botanical gardens; developed areas within wildflower preserves)
119.5	Older Strip Development (retail stores restaurants; service shops; and offices along traffic corridors; contains little or no parking in front; units usually attached; with storefront on sidewalk; older style business
111.3	Low-and Medium-Rise Major Office Use (one-to ten-story professional office buildings; business; medical; dental; and public service offices)
98.2	Local Parks and Recreation (neighborhood or community parks; and playgrounds)
95.8	Modern Strip Development (retail stores; restaurants; service shops; and offices along traffic corridors; contains off-street parking with easy access; newer style business corridors built since the 1950's)
89.5	Mixed Transportation (highway and railroad rights-of-way; when occurring together and meeting the minimum mapping resolution)
690.6	Subtotal Other
7,201.3	#TOTAL#

Rio Hondo River Watershed Management Plan

Arcadia Wash

July 8, 2004



Map created by the Rivers and Mountains Conservancy

Rio Hondo River Watershed
Rivers, channels and streams.shp
Arcadia Wash Watershed
Los Angeles - Lakes and Reservoirs
Los Angeles - Freeways and Highways
Angeles National Forest

0.8 0 0.8 Miles

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Rio Hondo - Subwatersheds

Currently Proposed or Active Projects

Ar1 Arcadia Wash Concrete Removal and Restoration Project at Santa Anita Golf Course, Arcadia

Assessment into the feasibility for removing approximately 2400 linear feet of concrete lining in Arcadia Wash where it parallels W. Huntington Drive along the Santa Anita County Golf Course. This initial assessment will include a hydrologic assessment, geomorphologic study, assessment of golf course impacts, and hydraulic design. A conceptual landscaping plan and stream configuration (cross sections), along with presentation renderings will be prepared for presentation to community members. Project as first phase of proposed program to naturalize the full length of the channel, including addition of a trail, benches, educational signage, golf course bridges, and other amenities. All landscaping will be locally appropriate native plants, providing additional habitat value to the region. This project will also contribute significantly to improving water quality and recharge in the area. If the detailed feasibility study is favorable, the project will continue to the development phase where detailed project plans will be completed and implemented. Amigos de Los Rios is the lead organization.

Additional Project Opportunities

Ar2 Santa Anita Park & Shopping Mall Parking Lot BMP, Arcadia

This privately owned shopping mall is an opportunity site due to its large impervious cover. Large scale retail complexes surrounded by parking lots and other paved areas can be retrofitted for a variety of storm water runoff BMPs. Such projects can be integrated into future capital improvements as they are being planned.

Specifically, capture, filter and recharge runoff from both the rooftops and parking lot through the construction of additional tree wells, planter medians and perimeter landscape. Integrate water conservation techniques through low-water plants and natives, as well as drip irrigation when needed. Retrofitting this site with these BMPs would promote water conservation, reduce peak flows of stormwater runoff, improve water quality, decrease the urban heat island effect of large expanses of parking lots with shade trees, and possible recharge groundwater pending soils testing.

Ar3 Los Angeles County Arboretum Stream Naturalization Feasibility Study, Arcadia

Arcadia Wash flows through the Arboretum, but can be naturalized to become more of an asset rather than a hidden watercourse. Stream naturalization would address habitat, water quality, water flows and increase visual quality and experience.

Ar4 – Storm Drain Daylighting Projects (Arcadia Wash)

Opportunities to daylight portions of the storm drain system can be pursued by mapping the network of buried streams that lie underneath the concrete surface of the developed portions of the watershed. Developing an understanding of the natural hydrologic system that existed before the urban buildup can facilitate identification of those segments of the storm drain system where daylighting is feasible and where such actions can benefit water quality, augment groundwater resources, help reduce flooding risks, and restore native riparian habitat. The feasibility of storm drain daylighting can be explored at sites throughout the watershed.

EATON WASH SUBWATERSHED

This is the longest subwatershed, running from the Angeles NF through Altadena, Pasadena, an unincorporated Los Angeles County community east of San Marino, Temple City, Rosemead and merges with the Rio Hondo in El Monte.
(See map 4.4 Eaton Wash)

Opportunities to Improve Water Quality by Land Use

The upper portion of Eaton Wash is the foothills of the San Gabriel Mountains and is classified as vacant undifferentiated land in the table below. As mentioned previously in discussions about the Santa Anita and Sawpit Washes these steep areas are difficult to develop and if they are developed often cause excessive sedimentation in the water. Protection of these areas through open space acquisition would support clean water efforts, as well as opportunities to protect habitat and the natural visual backdrop of the foothills.

Detached single family residential represents approximately a third of the land use in the Eaton subwatershed. Programs to address homeowner practices encouraging incorporation of BMPs into landscape design and maintenance will be effective in reducing pollutants associated with residential land use, specifically nutrients, and pesticides, trash, oxygen demanding substances, and oil and grease. Also campaigns to encourage pet owners to consistently clean up after animals will reduce fecal bacteria from cats and dogs in runoff.

Project Opportunities

Ea1- Eaton Wash at Eaton Canyon Golf Course, Pasadena, LA County

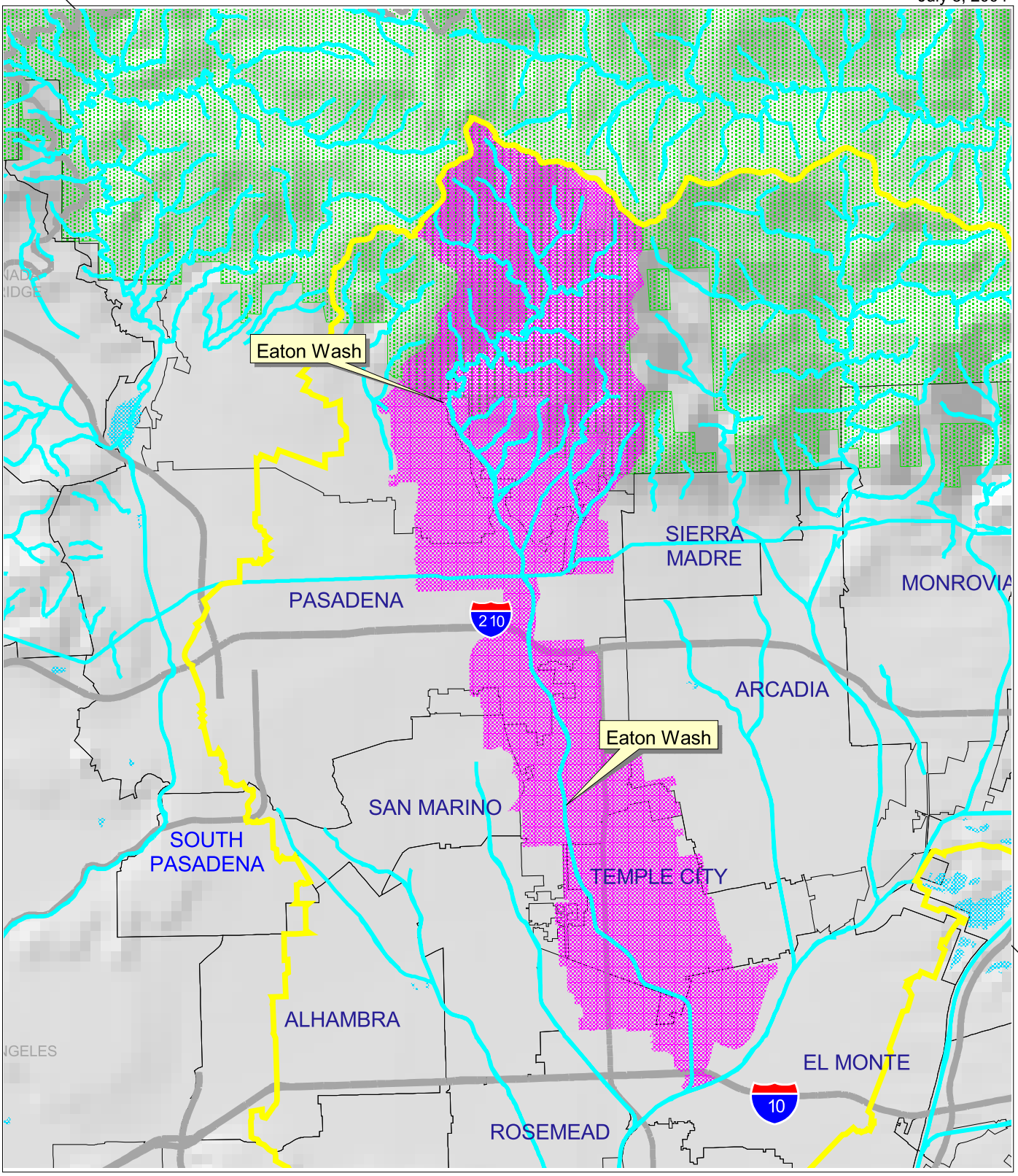
At this location, Eaton Wash is a concrete channel running through the golf course. Just upstream from the golf course, visible from the driving range, is the Eaton Canyon Reservoir. A feasibility study is recommended to assess the potential for stream and habitat restoration along this channel. Potential opportunities include either full or partial removal of the concrete to restore riparian channel and vegetation and to increase infiltration. A portion of the adjacent golf course can be used as a floodplain. These improvements would permit the stream to meander through the golf course, along with the creation of a high or low flow natural channel through the golf course. These restoration activities should integrate with the design of the golf course.

ACRES	Eaton Wash - Largest Land Uses by Area Land Use
5,831.8	**Vacant Undifferentiated** (open vacant land; steep vacant land in urban areas; terraced erosion control embankments;creeks and stream areas in an unimproved state)
5,015.4	**High Density Single Family Residential**; 2 units/acre (detached dwellings)
842.6	**Low Density Single Family Residential;** <2 units/acre (detached dwellings; estates included)
382.0	**Low-Rise Apartments; Condominiums; and Townhouses** (attached dwellings; one to two stories; of approximately 10 to 18 units/acre)
378.5	**Manufacturing;** Assembly; and Industrial Services factories; assembly plants; breweries; wineries; food processing plants)
312.3	**Modern Strip Development** (retail stores; restaurants; service shops; and offices along traffic corridors; contains off-street parking with easy access; newer style business corridors built
179.6	**Nurseries** (greenhouses; sod farms; seed farms; seedling farms; land used for the production of ornamental trees; plants and flowers; Christmas trees)
169.4	**Elementary Schools** (public and private)
149.4	**Regional Park**; Undeveloped
136.0	**Improved Flood Waterways and Structures** (flood control channels; flood control and debris dams; settling basins; detention ponds; percolation basins; and debris basins)
117.4	**Senior High Schools** (public and private; adult schools; continuation high schools)
113.5	**Older Strip Development** (retail stores restaurants; service shops; and offices along traffic corridors; contains little or no parking in front; units usually attached; with storefront on
97.3	**Electrical Power Facilities** (electrical power; generating stations; substations and rights-of-way with two or more towers of minimum 66KV; non-vacant use underlying a transmission
92.4	**Freeways and Major Roads** (freeways; interchanges; major roadways that meet the minimum mapping resolution; rest areas; weight stations; border patrol stations; agricultural
882.7	**Subtotal - OTHER**
14,700.3	**#TOTAL#**

Rio Hondo River Watershed Management Plan

Eaton Wash

July 8, 2004



Map created by the Rivers and Mountains Conservancy

Rio Hondo River Watershed
Rivers, channels and streams.shp
Eaton Wash Watershed
Los Angeles - Lakes and Reservoirs
Los Angeles - Freeways and Highways
Angeles National Forest

1 0 1 Miles

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Rio Hondo - Subwatersheds

Ea2-Victory Park Treatment Wetland Study, Pasadena

This project would explore the feasibility of constructing a treatment wetland in a portion of an existing recreational park located in a residential neighborhood. The constructed treatment wetland would be designed to mimic the natural water purification process of wetland vegetation, soils, and microorganisms by sending urban runoff through a natural filter that cleanses the water before entering the groundwater or flowing further downstream.

Ea3 – Storm Drain Daylighting Projects (Eaton Wash)

Opportunities to daylight portions of the storm drain system can be pursued by mapping the network of buried streams that lie underneath the concrete surface of the developed portions of the watershed. Developing an understanding of the natural hydrologic system that existed before the urban buildup can facilitate identification of those segments of the storm drain system where daylighting is feasible and where such actions can benefit water quality, augment groundwater resources, help reduce flooding risks, and restore native riparian habitat. The feasibility of storm drain daylighting can be explored at sites throughout the watershed.

RUBIO WASH SUBWATERSHED

Rubio Wash subwatershed begins just a mile inside the Angeles National Forest boundary then travels through Altadena, Pasadena, San Marino, San Gabriel, Rosemead and joins the Rio Hondo in El Monte *(See Map 4-5 Rubio Wash)*.

Opportunities to Improve Water Quality by Land Use

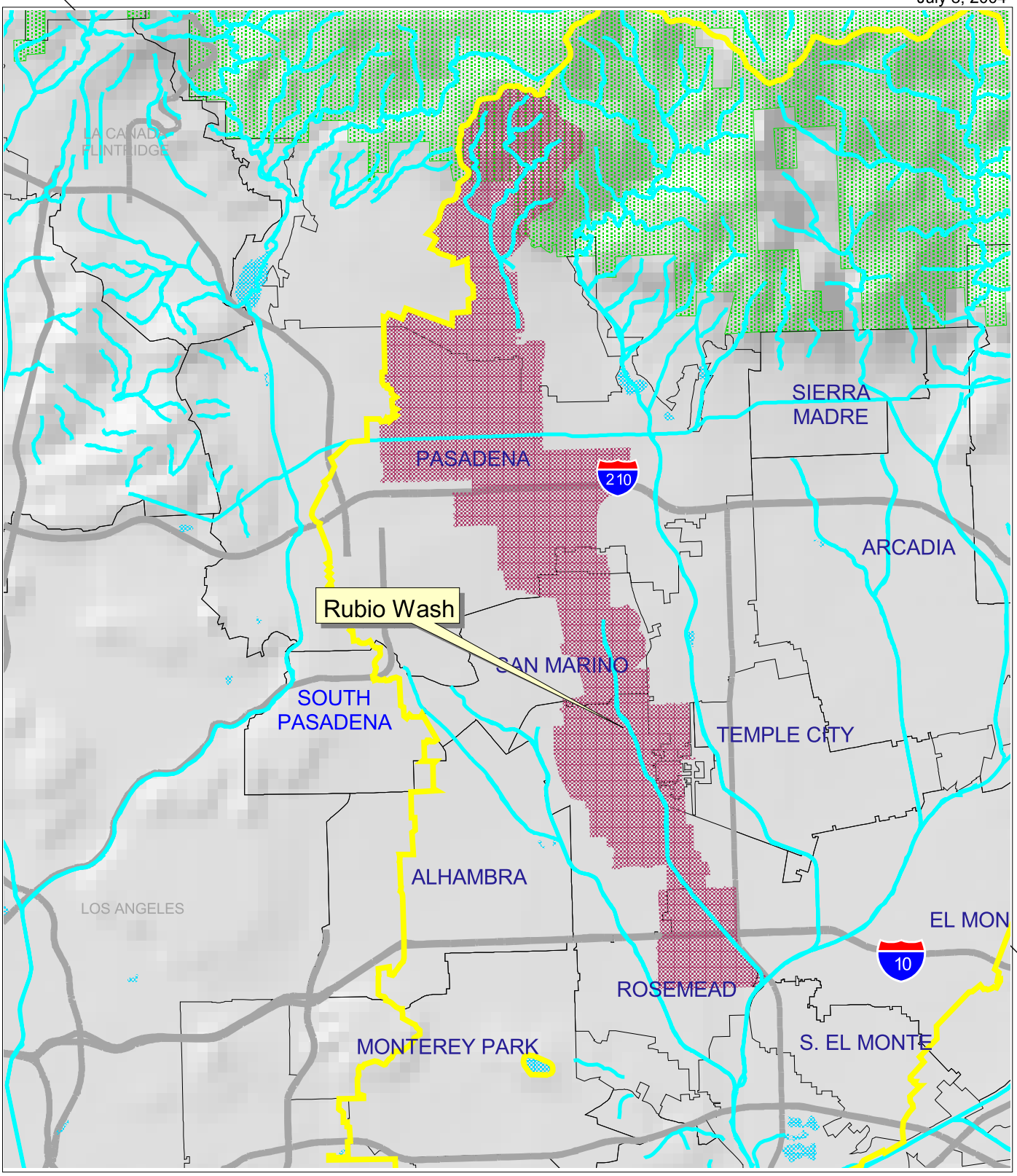
High density single family residential comprises nearly half of the Rubio subwatershed (similar condition to Arcadia Subwatersehd). Here, as in other similar watersheds programs to address homeowner practices in landscape design and maintenance will be effective in reducing the wide variety of pollutants associated with this land use category; specifically nutrients, and pesticides, trash, oxygen demanding substances, and oil and grease.

ACRES	**Rubio Wash - Largest land Uses by Area** Land Use
5,387.0	High Density Single Family Residential; 2 units/acre (detached dwellings)
1,197.1	Vacant Undifferentiated (open vacant land; steep vacant land in urban areas; terraced erosion control embankments;creeks and stream areas in an unimproved state)
544.2	Low-Rise Apartments; Condominiums; and Townhouses (attached dwellings; one to two stories; of approximately 10 to 18 units/acre)
360.4	Older Strip Development (retail stores restaurants; service shops; and offices along traffic corridors; contains little or no parking in front; units usually attached; with storefront on sidewalk;
310.4	Low Density Single Family Residential; <2 units/acre (detached dwellings; estates included)
219.6	Mixed Residential (single family detached and multi-family attached dwellings of any type occurring together and no one type dominates)
217.3	Modern Strip Development (retail stores; restaurants; service shops; and offices along traffic corridors; contains off-street parking with easy access; newer style business corridors built since
182.2	Golf Courses (public and private; developed portions only; includes driving ranges; clubhouses; and other recreational facilities associated with the golf course; isolated driving range not included)
143.5	Freeways and Major Roads (freeways; interchanges; major roadways that meet the minimum mapping resolution; rest areas; weight stations; border patrol stations; agricultural inspection
107.1	Elementary Schools (public and private)
99.1	Manufacturing; Assembly; and Industrial Services factories; assembly plants; breweries; wineries; food processing plants)
81.0	Colleges and Universities (public and private)
567.3	Subtotal OTHER
9,416.2	#TOTAL#

Rio Hondo River Watershed Management Plan

Rubio Wash

July 8, 2004



Map created by the Rivers and Mountains Conservancy

Rio Hondo River Watershed
Rivers, channels and streams.shp
Rubio Wash Watershed
Los Angeles - Lakes and Reservoirs
Los Angeles - Freeways and Highways
Angeles National Forest

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Rio Hondo - Subwatersheds

Currently Proposed or Active Projects

Ru1 -Washington Park Project, Pasadena

Implementation Phase I focuses on the development, including rehabilitation and restoration, of portions of Washington Park pursuant to the Washington Park Master Plan. The scope of the project includes the rehabilitation of an arroyo, the development of an interpretive center, development of the historic El Molino Walkway, restoration of a historic picnic area and the construction of a demonstration garden. The project was developed in partnership with Friends of Washington Park and the Theodore Payne Foundation. City of Pasadena is the lead agency.

This park rehabilitation project could be further enhanced by incorporating storm water BMPs, such as vegetated swales, in an urban residential neighborhood, in conjunction with interpretive signage that could provide information on the process being used to clean the storm water.

Ru2 - Rancho Los Tunas Adobe, San Gabriel

The Cranston family has informed the city that they would, upon their demise, consider deeding their 13,600 square feet of property and the historic Rancho las Tunas Adobe, built in 1790, to the city. The Cranstons would like the city to investigate acquiring properties on Mission Road, fronting the adobe, to open the adobe to be viewed by the public and provide open space for the community. The City of San Gabriel is the lead agency.

As the oldest continuously occupied home in Southern California (1769), the acquisition of this cultural asset also provides a unique watershed educational opportunity. A watershed interpretive exhibit, in conjunction with native, drought tolerant landscaping, at this site could be designed to provide a vivid picture of what the Rio Hondo watershed was like at the time this home was first occupied, prior to the subsequent waves of increased settlement and urbanization.

Ru3 - Altadena Golf Course Stream Naturalization Feasibility Study, Altadena

Rubio Wash is a concrete box channel at this location. The Altadena Golf Course is located on the western edge of the wash as it parallels Winrock Avenue. Potential opportunities at this location include partial concrete removal on the western edge of

the wash to create a riparian channel and habitat and to increase infiltration through the golf course. A portion of the adjacent golf course can be used as a floodplain.

Ru4 - San Gabriel Country Club Stream Naturalization, San Gabriel

Rubio Wash is a concrete box channel at this location. The wash cuts through the San Gabriel Country Club south of Langdon Road. Potential opportunities at this location include concrete removal, either full or partial, to create a riparian channel and habitat and to increase infiltration through the golf course. A portion of the adjacent golf course can be used as a floodplain. These improvements would permit the stream to meander through the golf course, along with the creation of a high or low flow natural channel through the golf course. Such a project would require initiation by the current owners and the inspiration of an internal champion.

Ru5 – Storm Drain Daylighting Projects (Rubio Wash)

Opportunities to daylight portions of the storm drain system can be pursued by mapping the network of buried streams that lie underneath the concrete surface of the developed portions of the watershed. Developing an understanding of the natural hydrologic system that existed before the urban buildup can facilitate identification of those segments of the storm drain system where daylighting is feasible and where such actions can benefit water quality, augment groundwater resources, help reduce flooding risks, and restore native riparian habitat. The feasibility of storm drain daylighting can be explored at sites throughout the watershed.

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ALHAMBRA WASH SUBWATERSHED

Alhambra Wash, including its tributary San Pasqual Wash, is a highly urbanized watershed extending from its headwaters in northwestern Pasadena just above the 210 Freeway southeast to its confluence with the Rio Hondo at Whittier Narrows in Rosemead *(See Map 4-7 Alhambra Wash)*.

Opportunities to Improve Water Quality by Land Use

Alhambra Wash is a residential subwatersehd with all the related land uses typical of suburban development. Nearly half of the watershed is detached single family housing. As with other subwatersheds with similar land uses that feed into the Rio Hondo, programs to address homeowner practices encouraging incorporation of BMPs into

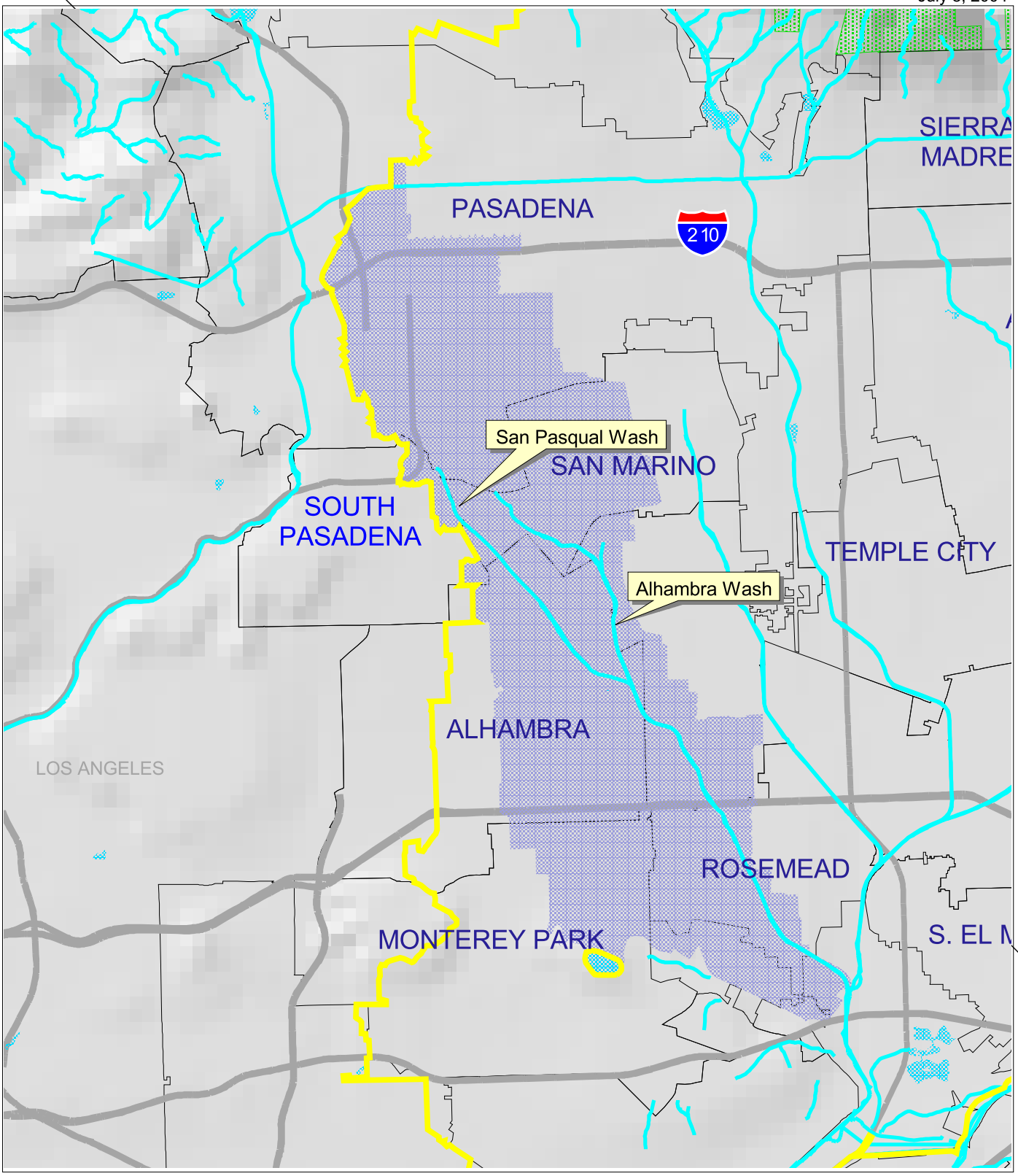
Alhambra Wash - Largest Land Uses by Area

ACRES	Land Use
3,788.5	High Density Single Family Residential; 2 units/acre (detached dwellings)
1,437.1	Low-Rise Apartments; Condominiums; and Townhouses (attached dwellings; one to two stories; of approximately 10 to 18 units/acre)
1,176.8	Low Density Single Family Residential; <2 units/acre (detached dwellings; estates included)
636.6	Older Strip Development (retail stores restaurants; service shops; and offices along traffic corridors; contains little or no parking in front; units usually attached; with storefront on sidewalk; older style business corridors built prior to the 1960's)
324.4	Low-and Medium-Rise Major Office Use (one-to ten-story professional office buildings; business; medical; dental; and public service offices)
263.0	Freeways and Major Roads (freeways; interchanges; major roadways that meet the minimum mapping resolution; rest areas; weight stations; border patrol stations; agricultural inspection stations and toll plazas)
243.4	Mixed Residential (single family detached and multi-family attached dwellings of any type occurring together and no one type dominates)
234.2	Modern Strip Development (retail stores; restaurants; service shops; and offices along traffic corridors; contains off-street parking with easy access; newer style business corridors built since the 1950's)
215.5	Golf Courses (public and private; developed portions only; includes driving ranges; clubhouses; and other recreational facilities associated with the golf course; isolated driving range not included)
174.6	Senior High Schools (public and private; adult schools; continuation high schools)
167.7	Local Parks and Recreation (neighborhood or community parks; and playgrounds)
158.5	Specimen Gardens and Arboreta (botanical gardens; developed areas within wildflower preserves)
155.6	Elementary Schools (public and private)
148.0	Colleges and Universities (public and private)
138.3	Mixed Transportation (highway and railroad rights-of-way; when occurring together and meeting the minimum mapping resolution)
1,001.3	Subtotal OTHER
10,263.4	#TOTAL#

Rio Hondo River Watershed Management Plan

Alhambra Wash

July 8, 2004



Map created by the Rivers and Mountains Conservancy

Rio Hondo River Watershed
Rivers, channels and streams.shp
Alhambra Wash Watershed
Los Angeles - Lakes and Reservoirs
Los Angeles - Freeways and Highways
Angeles National Forest

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Rio Hondo - Subwatersheds

landscape design and maintenance will be effective in reducing pollutants associated with residential land use, specifically nutrients, and pesticides, trash, oxygen demanding substances, and oil and grease. Also campaigns to encourage pet owners to consistently clean up after animals will reduce fecal bacteria from cats and dogs in runoff.

Approximately ten percent of the subwatershed is associated with older store-front or strip development, office development and freeways that support the suburban population. These land uses typically produce heavy metals and oil and grease in very rapid runoff events because of the impervious nature of the land cover. Efforts should be focused on cleaning streets, slowing and treating runoff. Office developments and parkways may provide room in this suburban setting to implement BMPs to improve water quality near to the source. It may also be appropriate to look to adjoining land uses, such as parks, schools and college campuses, that also compose nearly ten percent of the subwatershed, to slow runoff and to implement BMPs to remove pollutants from nearby land use areas. If treatment is successful close to the source, infiltration could be encouraged in downstream areas where soil permeability is high.

Current or Proposed Projects

Al1 - Vincent Lugo Park Project, Alhambra

The Vincent Lugo Park Renovation is a proposed Master Plan project that will explore renovation of the park, enhance the interface with the Alhambra Wash and provide environmental education opportunities for the community and the neighboring McKinley Elementary School. The Master Plan would consist of three phases: 1) needs assessment, 2) conceptual design and 3) design development. Partnerships have been established with the San Gabriel Unified School District and the Los Angeles County Flood Control District.

The feasibility of integrating the park with the natural flood plain of Alhambra Wash by the full or partial removal of the concrete in the current channel at this location should be explored.

Al2 - Alhambra Wash Stream Naturalization Project

The ¾ mile, 21-acre project is located on the southwest corner of Walnut Grove Avenue and Rush Street in the City of Rosemead. The project will consist of performance of an initial feasibility assessment of removing the concrete channel in the area east of Walnut Grove Avenue, where the channel is located within the flood plain behind the Whittier Narrows dam. The assessment will look at hydrology, Whittier

Narrows golf course impacts, geomorphology, and hydraulic design. A conceptual landscaping plan and stream configuration along with presentation renderings will be prepared for presentation to stakeholders. The plan will include naturalizing the full length of the channel and pond located at the end of the existing channel, trail reconfiguration, and location of benches, educational signage, golf course and trail bridges, and other amenities. Ulitimate goals include eliminate the concrete channel throughout the full project area possibly using a transition structure and a native landscape plan developed for the naturalized stream channel. Amigo de los Rios is the lead organization.

Al3 - Huntington Botanical Gardens Treatment Wetlands Study, San Marino

The feasibility of integrating a treatment wetland in a small portion of the 150 acres that make up these botanical gardens should be explored, as well as broader implementation of BMPs and interpretive elements. There may also be potential for a storm drain daylighting project on this site.

Al4 - Whittier Narrows County Golf Course Stormdrain (#5, #1109) Daylighting / Treatment Wetlands Study, LA County

The open space provided by the golf course suggests the feasibility of daylighting the storm drain system at this location in conjunction with treatment wetlands. As public-owned and operated golf course, it also offers potential as a demonstration site for other golf courses within the watershed

Al5 – Storm Drain Daylighting Projects (Alhambra Wash)

Opportunities to daylight portions of the storm drain system can be pursued by mapping the network of buried streams that lie underneath the concrete surface of the developed portions of the watershed. Developing an understanding of the natural hydrologic system that existed before the urban buildup can facilitate identification of those segments of the storm drain system where daylighting is feasible and where such actions can benefit water quality, augment groundwater resources, help reduce flooding risks, and restore native riparian habitat. The feasibility of storm drain daylighting can be explored at sites throughout the watershed.

Direct Drainage Into The Rio Hondo

The area that drains directly into the Rio Hondo is the largest of the subwatersheds, covering over 30,000 acres of intensively developed urban land. This section will address the entire area of the drainage in terms of land use and opportunities to improve water quality within each of those land uses. In the second half of this discussion, for purposes of project identification the subwatershed will be broken into two different categories; the North Drainage and the South Drainage, as divided by the River itself.

The *map (see Map 4-8 Rio Hondo Watershed)* shows the lower and upper drainages, which relate to Reach 1 and Reach 2 respectively. Each of these reaches are impaired, as defined by The Clean Water Act, and are listed as such under Section 303(d) by The Los Angeles Regional Water Quality Control Board. High Coliform counts exceed thresholds in both of these reaches and the TMDL listing for this pollutant is considered a high priority by the board.

Other pollutants that exceed thresholds in the lower reach, or Reach 1, are heavy metals such as Lead, Zinc, and Copper as well as abnormal pH factors, (all of which are considered a high priority for establishment of TMDL) and the presence of Trash.

Opportunities to Improve Water Quality by Land Use

One third of the watershed is detached single family housing. As with other subwatersheds, programs to address homeowner practices encouraging incorporation of BMPs into landscape design and maintenance will be effective in reducing pollutants associated with residential land use, specifically nutrients, and pesticides, trash, oxygen demanding substances, and oil and grease. Also campaigns to encourage pet owners to consistently clean up after animals will reduce fecal bacteria (Coliform) from cats and dogs in runoff.

Unlike any of the other subwatersheds, manufacturing represents the second largest land use area, covering 3,100 acres, or ten percent of the subwatershed area. Since most manufacturing process are covered by point source NPDES permits it is not likely that the manufacturing processes are the source of most pollutants. Yet manufacturing land uses have typically large percentages of impervious cover from roofs, storage yards and parking lots. Integration of BMPs into this land use area

would help to slow runoff and generally reduce urban pollution, particularly heavy metals as well as oil and grease.

Floodways cover over 1,000 acres and contribute to the imperviousness of the sub-watershed. Depending on the hydrologic conditions of flood control channels, soft bottom channels, and low flow channels could be considered to improve water quality.

Freeways and major roads are likely contributors of heavy metals into the watershed and should be considered as a priority for implementation of BMPs to slow and treat runoff.

Current or Proposed Projects

For project identification purposes, the area that drains directly the Rio Hondo River is broken into two categories; the North Drainage and the South Drainage. The northern portion of the direct drainage area into the Rio Hondo begins at Peck Road Water Conservation Park and extends south to include the Whittier Narrows. The southern portion of the area that directly drains into the main channel of the Rio Hondo starts just below Whittier Narrows and continues southward to the confluence with the Los Angeles River.

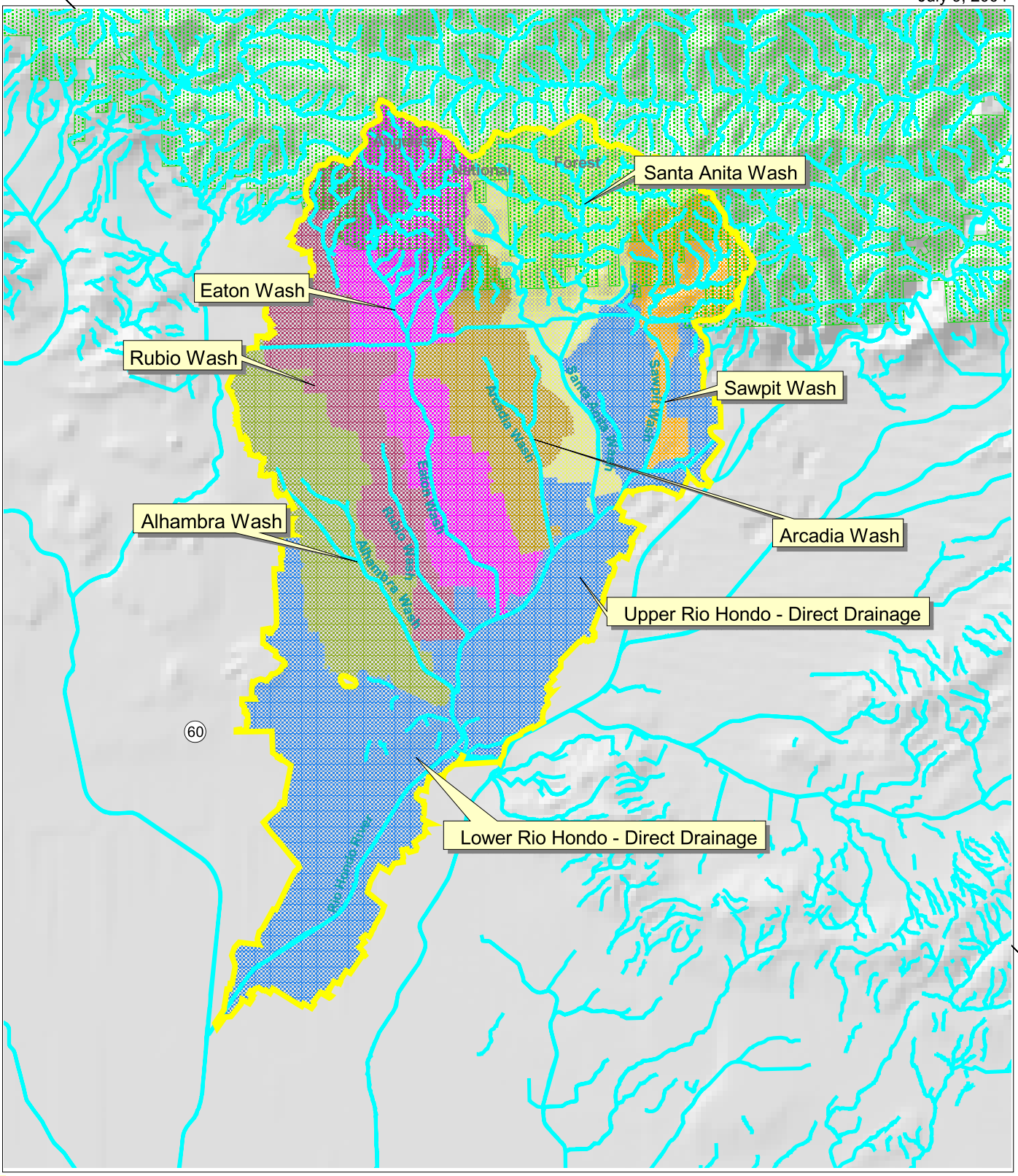
Rio Hondo Direct Drainage - Largest Land Uses by Area

Acres	Land Use
11,728.0	High Density Single Family Residential; 2 units/acre (detached dwellings)
3,162.2	Manufacturing; Assembly; and Industrial Services factories; assembly plants; breweries; wineries; food processing plants)
1,610.9	Low-Rise Apartments; Condominiums; and Townhouses (attached dwellings; one to two stories; of approximately 10 to 18 units/acre)
1,129.2	Vacant Undifferentiated (open vacant land; steep vacant land in urban areas; terraced erosion control embankments;creeks and stream areas in an unimproved state)
1,061.5	Improved Flood Waterways and Structures (flood control channels; flood control and debris dams; settling basins; detention ponds; percolation basins; and debris basins)
1,002.2	Modern Strip Development (retail stores; restaurants; service shops; and offices along traffic corridors; contains off-street parking with easy access; newer style business corridors built since the 1950's)
790.4	Mixed Residential (single family detached and multi-family attached dwellings of any type occurring together and no one type dominates)
633.3	Mineral Extraction - Oil and Gas (Oil and gas extraction facilities; oil fields; pumps; and localized storage facilities)
572.3	Regional Park; Undeveloped
552.3	Freeways and Major Roads (freeways; interchanges; major roadways that meet the minimum mapping resolution; rest areas; weight stations; border patrol stations; agricultural inspection stations and toll plazas)
544.6	Regional Parks and Recreation (national; state; county regional; or city regional parks; includes campgrounds; boating facilities within the park)
512.1	Older Strip Development (retail stores restaurants; service shops; and offices along traffic corridors; contains little or no parking in front; units usually attached; with storefront on sidewalk; older style business
7,837.7	Subtotal OTHER
31,136.7	#TOTAL#

Rio Hondo River Watershed Management Plan

Main Subwatersheds

July 9, 2004



Rio Hondo River Watershed
Rivers, channels and streams.shp
Angeles National Forest
Rio Hondo Direct Drain
Alhambra Wash Watershed
Rubio Wash Watershed
Eaton Wash Watershed
Arcadia Wash Watershed
Santa Anita Wash Watershed
Sawpit Wash Watershed

Map created by the Rivers and Mountains Conservancy

3 0 3 Miles

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Rio Hondo Hydrology

RIO HONDO NORTH

Peck Road Water Conservation Park, Arcadia

Located at the confluence of Santa Anita Wash and Sawpit Wash, this largely unimproved park has the potential to encompass a variety of projects, which working together can provide restored native habitat, enhanced recreation, greater groundwater recharge, and improved water quality. The two tributary washes join at the site of a former gravel quarry to form a lake, the outflow of which joins the Rio Hondo. The County of Los Angeles Department of Parks and Recreation operates the site as an LA County park, while LACDPW owns and operates the lake as a recharge basin.

RhN1 - Stormwater Treatment at Peck Park

Peck Park provides a significant storm water infiltration point for the upper Rio Hondo, and water quality treatment at this site will improve the quality of water being recharged at Peck Lake. Specifically, the creation of wetlands, approximately 5 acres in size, on the upland east side of the lake would provide bioremediation treatment of urban runoff and enhance local habitat. These wetlands could work in conjunction with the nearby Santa Anita Wash Trash Capture BMP (project -Sa1) on which the cities of Monrovia, Sierra Madre, and Arcadia are working together.

RhN 2- Habitat Restoration at Peck Park

Peck Park presents one of the better opportunities for habitat restoration in the lower Rio Hondo Watershed. Although there is some park landscaping, much of the quarry site remains unimproved. Some native trees and shrubs grow in sporadic areas around the lake, but most slopes remain largely bare. Despite this, the open waters of the lakes attract many resident and migrant bird species, including herons and egrets. Habitat restoration project opportunities include:

- Grading the shores of the lakes to a gentler slope and replanting with riparian vegetation such as willows and mulefat (on upper portions of slope) and emergent wetlands vegetation such as bulrush and cattails in areas of standing water on lower portions of slope. In addition to improving the attractiveness of the lakes, this will provide habitat for a greater abundance of birds and other native species.
- Planting bare upland areas with native terrestrial vegetation. Because most of these areas are flat and coastal sage plants usually grow on slopes, appropriate species would be coyote brush and oaks
- Increasing length of lakeshore by undulating the edge and developing islands. This will provide additional edge habitat, reduce erosion, and enhance visual interest.

Peck Road
Water Conservation Park

(Courtesy of LACDPW)

Peck Road
Water Conservation Park

a.

b.

a. Reflection of San Gabriel Mountains in Spreading Basin
b. Potential habitat improvement area

RhN3 - Recreational Enhancements at Peck Park

Peck Park provides beautiful vistas of the San Gabriel Mountains and is strategically located at the north end of the Rio Hondo Bike Path, but remains a diamond in the rough with only a few scattered picnic tables, restrooms, and other amenities. Park facilities can be improved to provide enhanced recreational and educational benefits for park visitors:

- Create a more inviting, decorative, and visible park entrance from Peck Road.
- Improve entrance to the Rio Hondo Bicycle Path, with landscaping, decorative metalwork and informational signage. The entrance is currently unmarked, but is the beginning of a regional bicycle path extending south on the Rio Hondo to the Los Angeles River.
- Provide educational displays/signage at strategic locations with information about the gravel industry (acknowledging the origin of the park as a gravel quarry), natural history, and water conservation. As part of the educational program create a drought-tolerant landscape demonstration garden.
- Construct a multi-purpose trail loop around all or a portion of the lake. A floodable lake bridge could be constructed as a part of this project; located at a point where two peninsulas that extend from both sides of the lake narrow the width of the lake. This bridge would provide improved access to park facilities from adjacent neighborhoods, and would allow the multi-purpose trail to encircle only the southern portion of the lake; leaving the northern portion relatively undisturbed for breeding by bird species using restored habitat areas.
- Create a 15-mile trail loop linking both the Rio Hondo and San Gabriel River Bike Trails at two points. The north connection can be made from Peck Park east to join the San Gabriel River Bike Trail near Santa Fe Dam. The southern connection already exists in the Whittier Narrows along Lario Creek.
- Create viewing areas as part of lakeshore grading and habitat enhancements.

RhN4 - Groundwater Recharge Expansion at Peck Park

The lake provides only limited groundwater recharge. Currently the lake bottom is silted and percolation only occurs through the sides of the lake.

- The potential to increase groundwater recharge could be incorporated into the design and implementation of shoreline grading and lengthening efforts.

RhN5- Rio Vista Park, El Monte

Restoration of native vegetation to the park, increase access to the park via pedestrian and bicycle trails, construction of an outdoor environmental education amphitheatre,

restructuring and design of ADA pathway leading from a nearby school, and development of interpretive displays on the historical significance of the area surrounding the park and the adjacent Rio Hondo River. The City of El Monte is the lead agency.

RhN6 - Lashbrook Park, El Monte

This land is owned by the US Army Corp of Engineers. Lashbrook Park will be developed into a neighborhood park and rest stop for the bike trail on the Rio Hondo River. The existing vacant property will be landscaped with trees and turf, new fencing, security lighting and picnic benches. Planting native vegetation would further enhance the project by contributing wildlife habitat connectivity. Incorporating BMPs into the park design would also facilitate water conservation.

RhN7- El Monte Airport Stormwater Runoff BMP Implementation , El Monte

Explore feasibility of implementing BMPs along area between Rio Hondo Bike Trail beside the runway at El Monte Airport that would capture, filter, and recharge runoff from runway. Integrate water conservation technologies through low-water plants and natives, as well as drip irrigation when needed. Retrofitting this area with these BMPs would promote water conservation, reduce peak flows of stormwater runoff, improve water quality, and possible groundwater recharge pending soils testing.

Whittier Narrows Dam and Recreation Area

The Whittier Narrows Dam, operated by the U.S. Army Corp of Engineers, captures water flowing in the San Gabriel River and the Rio Hondo. Behind the dam exists one of the largest open space areas in the developed portion of the San Gabriel Valley. Straddling the San Gabriel River and Rio Hondo, the area is a major collection point for surface and groundwaters from throughout the San Gabriel River and Rio Hondo watersheds. It is also a large, rich habitat area, supporting approximately 300 bird species and providing essential habitat for resident species and native plant communities. A 1,400-acre regional park operated by the County of Los Angeles Department of Parks and Recreation and the City of Pico Rivera includes a wide variety of active and passive recreational facilities. This large open space and recreation area offers multiple project opportunities for habitat restoration, recreation, groundwater recharge, and flood management.

Given multiple project opportunities and initiatives in this area, an overall master plan is needed in which to integrate all the following projects as well as others that may be

identified in the future. Such a planning effort should begin with the Whittier Narrows Dam Master Plan developed by the Army Corps of Engineers.

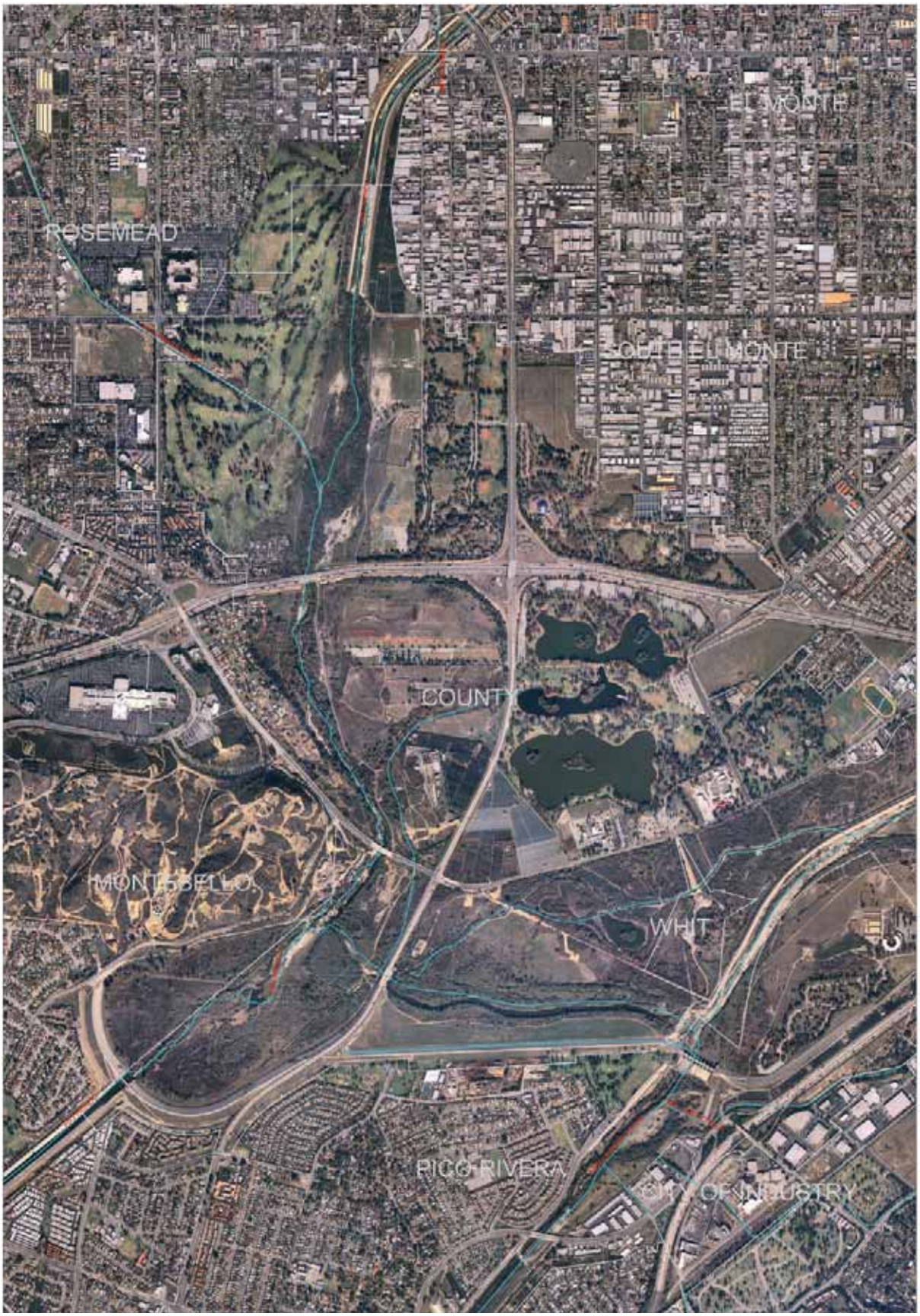
RhN8 - Habitat Restoration and Arundo Removal behind Whittier Narrows Dam

Arundo in this location is pervasive. In areas maintained for flood control, native riparian habitat and arundo may need to be removed to maintain flood control functions. In areas designated as habitat, arundo can be removed and the areas revegetated with native riparian vegetation such as willows and mulefat. In addition to the very invasive arundo, Whittier Narrows is infested with many other non-native plant species, including pepper trees, sow thistle, castor bean, and Russian thistle. This non-native vegetation should be removed and replaced with native species such as willows, mulefat, and coyote brush. Planting native vegetation will also improve habitat connectivity. Patches of native or ruderal habitat now occur throughout the Whittier Narrows. Ruderal areas now dominated by non-native species could be revegetated with native species. Habitat connectivity could also be improved by planting native trees such as sycamores and oaks in landscaped areas and, where possible, replacing non-native trees with natives.

RhN9 - Water Conservation Pool

The Los Angeles ACE office completed a feasibility study to expand the current water conservation pool behind the Whittier Narrows Dam from 2,500 acre feet at elevation 201.6 feet up to as high as 209 feet. The poolwill increase groundwater percolation for increased water supply. Currently, under review, the proposed expansion could affect other projects proposed within the Whittier Narrows flood control basin. Opportunities to integrate recreational and habitat uses in the design of the ponding area need to be explored, especially as increased flooding is likely to severely impact wildlife.

Whittier Narrows



(Courtesy of LACDPW)

RhN10 - Rio Hondo Floodplain Habitat Restoration, LA County

Restore the floodplain habitat where necessary in this already naturalized segment of the Rio Hondo. This would include short-term exotic vegetation removal including arundo, longer-term floodplain widening where feasible for increased stream braiding and habitat islands, without compromising flood safety and water resources concerns. The Whittier Narrows Golf Course and Whittier Narrow Recreation Area are county-owned public lands. Since this area is located in the middle of the watershed, arundo removal at this site should only begin after a comprehensive arundo removal program starting at the top of the watershed has reached this point.

RhN11 - Rio Hondo at Whittier Narrows Golf Course

The concrete channel terminates at this location. Remove the right concrete bank for approximately 1000 feet upstream of the current terminus to create a wider channel and floodplain with expanded habitat. The expanded soft channel bottom can also provide additional infiltration for groundwater recharge. Daylight storm drains through the golf course, and enhance existing shallow swales within the golf course to create natural channels. Acquire adjacent plant nursery and create high or low flow channel or remove left concrete bank to create a natural floodplain.

Whittier Narrows Country Golf Course

RhN12 - Lario Creek/Zone 1 Ditch

Lario Creek is a man-made waterway created in the 1950's and operated by LACDPW to divert imported water from the San Gabriel River to the Rio Hondo, where it can flow into spreading grounds for groundwater recharge. Historically, the San Gabriel River and Rio Hondo commingled here – creating braided streams, wetlands, and sandbar islands supporting a rich habitat. North East Trees, LACDPW, and the California State Department of Water Resources have partnered to revitalize the channel. Improvements will demonstrate new bioengineering techniques, increase the creek's capacity to enhance downstream spreading grounds, divert high flows to treatment wetlands, expand high quality habitat, and link regional multi-use trails

RhN13 - San Gabriel River Discovery Center at Whittier Narrows Regional Park

Los Angeles County Department of Parks and Recreation, RMC, and the Upper San Gabriel Valley Municipal Water District are jointly developing a new regional indoor/outdoor museum and conference center on site of the existing Whittier Narrows Nature Center. It will focus on watershed and water-related topics, historical information and wildlife education. The project's innovative building design will demonstrate green building technologies and watershed-appropriate site development.

RhN14 – Whittier Narrows Dam Treatment Wetlands

This will be a pilot project to measure the effectiveness of treatment wetlands in removing nutrients from reclaimed water as well as measuring the impact different levels of nutrient loading have on habitat. This project models itself after the Prado Dam Treatement Wetlands and San Joaquin Treatment Wetlands found in the Santa Ana Watershed. A percentage of reclaimed water from the Whittier Narrows Treatment Plant will be routed through a network of constructed wetlands (riverine and lacustrine) to remove nutrients to an acceptable level before routing the water into a habitat mitigation wetland currently in the planning stage near the Discovery Center. After testing has confirmed this treatment wetland train of wetlands has improved water quality enough to support the healthy mitigation wetland and meet water quality standards, the clean outflow of water is proposed for groundwater. The project will also provide trails and educational opportunities for the public, as well as habitat, water quality improvement, and high quality groundwater recharge. This area is also one of the few places within the watershed that has sufficient space to accommodate a project of this type.

RhN15 – Lake System/Wetland Habitat Creation (Whittier Narrows Nature Center Ecosystem Restoration)

This project, supported by LADPR, has been in development for six years. The U.S. Army Corps of Engineers prepared a study of various project options. Because the project is located at the northern most boundary of the Montebello Forebay, this area is subject to rising waters, so it is not the best site for groundwater recharge. The selected option includes creation of a man-made Lake System consisting of approximately 0.25-acre of permanent open water habitat surrounded by a minimum of 3.50-acres of wetland/riparian habitat next to the Whittier Narrows Nature Center. The lakes could be interconnected to Lario Creek and water in the lakes would flow through the system and down to the Rio Hondo Spreading Grounds. The arc-shaped lake and the wetland habitat will both be lined with a layer of fine clay (and/or a geomembrane fabric) to reduce water loss through percolation. Native wetland vegetation will be established throughout the wetland area. LADPR intends to construct a boardwalk and educational signage around the western end of the lake and wetlands to facilitate nature walks and other educational/recreational activities.

RhN16 - Whittier Narrows Wildlife Lakes

LADPR believes it is important to preserve these two large lakes (20 acres x 1 acre) as wetlands. The lakes at the Nature Center should be lined to reduce water percolation.

RhN17 -Whittier Narrows Legg Lakes Improvements

These three recreational lakes are 78 acres and should be considered for recreational activities. They should be upgraded to improve ADA accessibility and reduce erosion.

RhN18 - Storm Drain Daylighting Projects (Rio Hondo North)

Opportunities to daylight portions of the storm drain system can be pursued by mapping the network of buried streams that lie underneath the concrete surface of the developed portions of the watershed. Developing an understanding of the natural hydrologic system that existed before the urban buildup can facilitate identification of those segments of the storm drain system where daylighting is feasible and where such actions can benefit water quality, augment groundwater resources, help reduce flooding risks, and restore native riparian habitat. The feasibility of storm drain daylighting could be explored at the following sites and other sites throughout the watershed:

#MTO844 at Legg Lake, LA County

#529 at Legg Lake, LA County

#6850 at Whittier Narrows, Golf Course

#1115 at Rio Hondo, LA County

#1226 at Whittier Narrows Golf Course/Rio Hondo, LA County

RIO HONDO SOUTH

The southern portion of the area that directly drains into the main channel of the Rio Hondo starts just below Whittier Narrows and continues south ward to the confluence with the Los Angeles River.

Rio Hondo Spreading Grounds

These Spreading Grounds lie on the east side of the Rio Hondo, and are located within the Montebello Forebay, an important area for groundwater recharge due to its highly permeable soils, allowing for percolation of surface waters. These are the largest and most productive spreading basins operated by LACDPW, covering approximately 570 acres and consisting of 20 infiltration basins with storage capacity of 3,694 acre-feet of surface water. The provide a significant amount of open space that is surrounded by the densely developed residential communities of Pico Rivera. Until recently, most spreading basins did not allow for public access, but newly opened trails with the Rio Hondo Spreading Grounds now provide some access. The potential exists to enhance both habitat and passive recreational opportunities within these grounds, while maintaining its important groundwater recharge functions. Give multiple project opportunities and initiatives in this area, an overall master plan is needed in which to integrate all the following projects as well as others that may be identified in the future

RhS1 - Rio Hondo Stream Naturalization Feasibility Study Between Whittier Narrows Dam & Foster Bridge Ave./Rio Hondo, Montebello, Pico Rivera, City of Commerce

Survey the Rio Hondo from the Whittier Narrows Dam south to Foster Bridge Avenue to evaluate potential open space opportunities and the feasibility of naturalizing portions of the main Rio Hondo channel or creating a more natural appearance as the Rio Hondo flows by the spreading basins which chiefly characterize this section of the river.

RhS2 - Bike Trail and Amenities at Paseo Del Rio at Rio Hondo Spreading Grounds

A multi-objective 570-acre project by LACDPW will provide a bike path/walking trail, new native and drought tolerant landscaping, irrigation lines, rest area enhancements including shade structures and lighting, interpretive signage, improved park entrances, and other park-like amenities to beautify open space surrounding the existing spreading grounds.

Rio Hondo Spreading Grounds

(Courtesy of LACDPW)

RhS3 - Habitat Enhancements at Rio Hondo Spreading Grounds, Pico Rivera

There is an opportunity to expand habitat areas by planting native vegetation on the banks of the spreading basins above the high water mark. This will increase habitat potential and may aid with erosion prevention.

RhS4 - Vegetated Bypass Channel from Intake, Montebello

Create a vegetated braided bypass channel for habitat and infiltration to be located between the main channel of the Rio Hondo and the Rio Hondo Spreading Grounds.

RhS5 - Wetlands Restoration at Southern-Most Basin Below 5 Fwy., Bell Gardens, Downey

Redesign this existing "ox-bow" basin to become a treatment wetlands for large quantities of storm water runoff from the Rio Hondo. This current spreading basin is in the transition area of the Montebello Forebay that is not as productive for recharge as the basins more to the north. In exchange, another basin or additional groundwater recharge would have to take place higher up in the Forebay.

RhS6 - Groundwater Recharge Basin Expansion to the North, Montebello, Pico Rivera

A parking lot located to the north of the Rio Hondo Spreading Basins is situated over a very productive recharge area. Thirty acres need to be acquired to create this potential recharge area. Can provide both groundwater recharge and runoff reduction benefits.

RhS7 - Mines Avenue Bike Trail Connection to the San Gabriel River Spreading Grounds, Pico Rvera

This City of Pico Rivera bike trail will provide a two-mile connection from the Rio Hondo Spreading Grounds east to the San Gabriel Spreading Grounds and from there to the San Gabriel River Bike Trail.

RhS8 - Slope Restoration/Trail Enhancement, Montebello

The project involves the construction of a crib wall that will stabilize the existing slope on the west side of the Rio Hondo Coastal Spreading Grounds. The crib wall will create 8-acres of open space on top, along Bluff Road for a parkway. The parkway will contain a 15-mile bike/pedestrian path, irrigated native species, landscaping and ornamental iron fencing.

RhS9 - Rio Hondo Golf Course Stream Naturalization Study @ #3103, Downey and Treatment Wetland, Bell Garden

At this location the Rio Hondo flows between the Rio Hondo Golf Club on its east bank and the John Anson Ford Park on its west bank. Explore the feasibility of reconnecting the Rio Hondo to its flood plain at this location by removing the concrete on one or both sides of the channel. Also at this location, explore the feasibility of constructing a treatment wetland on the John Anson Ford side of the river channel.

RhS10 - Hannon Scout Neighborhood Park, Bell Gardens

Expand and develop the existing Hannon/Scout Neighborhood Park to add office/restroom facilities and picnic areas.

RhS11 - Veterans Memorial Park Expansion, Commerce

Acquisition and development of 8 acres of vacant industrial property located adjacent to the park and the Rio Hondo. Although the City is planning for active recreation on the site; they have expressed a willingness to incorporate native landscaping and provide an enhanced connection to the Rio Hondo through this site from the improvements planned in Montebello to the north and Bell Gardens to the south. The City of Commerce is the lead agency.

This project could be further enhanced by the incorporation of appropriate BMPs and treatment wetlands. The feasibility of these potential enhancements should be explored.

RhS12 - Confluence Wetland @ #7850, South Gate

Explore the feasibility of creating a treatment wetland at the confluence of the Rio Hondo and the Los Angeles River to capture stormwater runoff.

RhS13 – Storm Drain Daylighting Projects (Rio Hondo South)

Opportunities to daylight portions of the storm drain system can be pursued by mapping the network of buried streams that lie underneath the concrete surface of the developed portions of the watershed. Developing an understanding of the natural hydrologic system that existed before the urban buildup can facilitate identification of those segments of the storm drain system where daylighting is feasible and where such actions can benefit water quality, augment groundwater resources, help reduce flooding risks, and restore native riparian habitat. The feasibility of storm drain daylighting can be explored at sites throughout the watershed.

Improvements at Rio Hondo Spreading Grounds

a.

b.

c.

a. Pedestrian path and landscaping
b. Picnic area and shelter
c. West side of Rio Hondo Channel

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GLOSSARY

BMPs (Best Management Practices) – a state-of-the art method for achieving a desired benefit such as improved water quality or infiltration

Beneficial Uses – Uses of water identified in state and regional water quality control plans that must be achieved and maintained. Designated uses, together with water quality objectives, form water quality standards as mandated under the California Water Code and the federal Clean Water Act

Channelization – Human engineering of river channels to enlarge, straighten, embank, or protect existing channels, create new channels, or protect adjacent structures.

Creation (wetland, etc.) – The construction of a wetland in an area that was not a wetland in the recent past and that is isolated from existing wetlands.

Daylight – The excavation and restoration of a stream channel from an underground culvert, covering, or pipe – in other words, opening it up to the daylight.

Enhancement (wetland, etc.) – Improving the structure or function(s) of an existing wetland

Floodplain – 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.

Groundwater – The water that collects and is stored underground into basins defined by the underlying geology.

Groundwater Recharge – Surface water that filters into the ground and reaches underground reservoirs, providing replenishment and/or increased storage for groundwater basins.

Habitat- The living and non-living environment where a population (e.g., human, animal, plant, microorganism) lives. Habitat includes all things an organism needs to survive – food, water, space, and protection from predators.

Impaired Water Body – Waters that fail to meet applicable water quality standards or to protect designated uses (such as fishing or swimming).

Impervious Surface – Hard surfaces within a watershed including rooftops, parking lots, streets, sidewalks, and driveways that do not allow rainfall to infiltrate underlying soils

Infiltration – The process by which water moves downward through the earth's surface, replenishing soil moisture and groundwater basins.

Mitigation (wetland, etc) – the creation, restoration, enhancement, or preservation of a wetland designed to offset permitted losses of wetland functions in response to special conditions of a permit

National Pollution Discharge Elimination System (NPDES) – The Environmental Protection System's permitting system to control and monitor all point sources of pollution.

Native Species – An animal or plant that originated in a particular place or region.

Non-Native (or Invasive, Exotic) Species – Any animal or plant that is not native to a particular ecosystem whose introduction does or is likely to cause economic or environmental harm, or harm to human health.

Non-Point Source Pollution – Pollution that does not come from a single point of origin but from many diffuse sources and land use types; the pollutants are generally carried off the land by stormwater runoff.

Point Source Pollution – Water pollution that can be traced to a single point or a discrete source, such as water discharge pipe.

Preservation –The protection of an existing and well-functioning wetland from prospective future threats.

Restoration – the return of a wetland or other ecological system from a disturbed or altered condition by human activity to a previously existing condition.

Riparian – The riverside or riverine environment that lies next to a stream channel. There is no specific measured distance constituting the riparian area; instead it refers to the extent of habitat on either side of a river or stream that is clearly dependent on that river or stream

Sediments – Soil, sand, and minerals washed from land into water, usually after rain that collects in reservoirs, rivers, and harbors.

Site Design BMPs – site planning and design techniques that reduce runoff volumes and rates by seeking to improve or minimize the project footprint.

Source Control BMPs – operational practices that stop or reduce potential pollutants at the source or structural devices that prevent pollutants from contacting stormwater

Spreading Grounds – A land area specifically designed to be flooded so that the water will percolate or soak into the ground, recharging the groundwater.

Storm Water Runoff – Rain that falls off the surface of the land without entering the soil.

Subwatershed – A component drainage area within a larger, local watershed; typically defined as the land draining to a point where two second-order streams combine to

form a third-order stream. A subwatershed may be a few square miles in area, and are the key geographic unit for urban stream classification and watershed-based zoning.

Total Maximum Daily Loads (TMDL) – The maximum amount of pollutants that can be received by a water body and still meet its water quality objectives.

Treatment Control BMPs – Refers to any engineered systems, such as detention basins and grass swales, designed, and constructed to remove pollutants from stormwater runoff.

Upland – An area that is not an aquatic, wetland, or riparian habitat. An area that does not have the hydrologic regime necessary to support hydrophytic vegetation.

Vector - any animal capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including, but not limited to, mosquitoes, flies, other insects, ticks, mites, and rats, but not including any domesticated animal.

Watershed – The land area that drains into a single body of water such as a stream, river, lake, or wetland. Large watersheds may be composed of several smaller nested watersheds.

Water Quality Standards –A law or regulation that consists of the beneficial use or uses of a waterbody, the numeric and narrative water quality criteria that are necessary to protect the use or uses of that particular water body, and an anti-degradation statement

Wetlands – An area that is inundated or saturated by surface water or groundwater with a frequency and duration sufficient to support, and under normal circumstances supporting, vegetation adapted for life under those conditions. Swamps, bogs, fens, and marshes are examples of wetlands.

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APPENDICIES

Section

A - Analysis Of Water Quality Data

B - Water Quality Sampling Of Work

C - Water Quality Laboratory Analysis

D - PAC Meeting #1

E - Water Quality Subcomm Meeting #1

F - PAC Meeting #2

G - Focus Group Summaries

H - Water Quality Subcommittee #2

I - PAC Meeting #3

J - Regional Projects Subcommittee Meeting

K - PAC Meeting #4

L - Public Forum

M - Solutions Subcommittee

N - Stakeholders Invited

Appendix A
Rio Hondo Watershed Management Plan
Analysis of Water Quality Data from the Rio Hondo Watershed
By Noel Davis, Chambers Group Inc.

1.0 INTRODUCTION

This report presents an analysis of recent and historical water quality data in the Rio Hondo watershed. The Rio Hondo is a major tributary to the Los Angeles River in eastern Los Angeles County. The watershed encompasses 142 square miles that includes most of the San Gabriel Valley from Pasadena in the west, to Duarte in the east, and then south to the City of South Gate. The six major Rio Hondo tributaries are the Alhambra, Rubio, Eaton, Arcadia, Santa Anita and Sawpit Washes .

The Rio Hondo watershed has been listed as an impaired waterbody under Section 303(d) of the Clean Water Act. Section 303(d) requires that states develop a list of waterbodies that need additional work beyond existing controls to achieve or maintain water quality standards. The additional work includes the establishment of total maximum daily loads of pollutants that have impaired the waterbody. Table 1-1 shows the proposed updated 303(d) list for the Rio Hondo and its tributaries. This list was approved by the State Water Resources Control Board on February 4, 2003, and approved by the U.S. Environmental Protection Agency July 2003.

Table 1-1
303(d) Listing*

Pollutant/Stressor	Potential Sources	TMDL Priority	Estimated Size Affected	Proposed TMDL Completion
Legg Lake				
Ammonia	Nonpoint/	Medium	25 acres	-
Copper	Nonpoint/	Medium	25 acres	-
Lead	Nonpoint/	Medium	25 acres	-
Odors	Nonpoint/	Medium	25 acres	-
PH	Nonpoint/	Medium	25 acres	-
Trash	Nonpoint/	Low	25 acres	-
Monrovia Canyon Creek				
Lead	Nonpoint/	High	3.4 miles	2003/4
Peck Road Park Lake				
Chlordane (tissue)	Nonpoint	Low	103 acres	-
DDT (tissue)	Nonpoint	Low	103 acres	-
Lead	Nonpoint	Low	103 acres	-
Odors	Nonpoint	Low	103 acres	2010/11
Organic Enrichment / Low Dissolved Oxygen	Nonpoint	Low	103 acres	2010/11
Trash				2010/11

Rio Hondo Reach 1 (Confluence. LA River to Santa Ana Fwy.)				
Copper	Nonpoint/Point Source	High	4.6 miles	2003/4
High Coliform Count	Nonpoint/Point Source	High	4.6 miles	2001/2
Lead	Nonpoint/Point Source	High	4.6 miles	2003
pH	Nonpoint/Point Source	High	4.6 miles	2001/2
Trash	Nonpoint/Point Source	Low	4.6 miles	2001
Zinc	Nonpoint/Point Source	High	4.6 miles	2003
Rio Hondo Reach 2 (At Spreading Grounds)				
High Coliform Count	Nonpoint/Point Source	High	4.9 miles	2001/2

*Derived from two sources –

(1) 2002 CWA Section 303 (d) List of Water Quality Limited Segment – Los Angeles Regional Water Quality Control Board, Approved by USEPA: July 2003

(2) Los Angeles River Watershed 303(d) listed Waters; November 2003

This report presents and analyzes the results of a recent dry weather sampling event in the Rio Hondo watershed. The report also summarizes and analyzes a variety of historical water quality data in the watershed. Finally, the report compares the results of the recent sampling event to the historic data. For both data sets, water quality data are compared to objectives in the Water Quality Control Plan Los Angeles Region ((LARWQCB 1994), the California Toxics Rule (USEPA 2000), and water quality thresholds known to have adverse effects (USEPA 1986).

2.0 AUGUST 2004 DRY WEATHER SAMPLING EVENT

2.1 Methods

The Los Angeles County Department of Public Works sampled water constituents in the Rio Hondo watershed on August 12, 2003. One station, Sawpit Wash at Buena Vista Channel (Station 8a), was sampled on August 18, because the station was flooded on August 12. Dry weather sampling was conducted because it is the more common annual condition. Sampling procedures followed those described in the Quality Assurance/Quality Control Plan from the *Los Angeles County 2001-2002 Storm Water Quality Monitoring Report.*

Water samples were collected at 10 locations (Table 2-1). The downstream Rio Hondo sampling site is just above its confluence with the Los Angeles River. The second site is on the Rio Hondo at Beverly Boulevard, above the Rio Hondo Spreading Grounds. The next six sites are at the confluence of the six major tributaries to the Rio Hondo, right before they flow into the main channel. The upper Eaton Canyon site, at creek crossing bridge, has been proposed as a "reference site" for comparing natural and urban watershed influences.

Table 2-1
August 2003 Sampling Sites

No.	Location
1	Rio Hondo at Los Angeles River Confluence
2	Rio Hondo (DPW automated sampling station @ Beverly Blvd.)
3	Alhambra Wash (above the confluence w/Rio Hondo)
4	Rubio Wash (above the confluence w/Rio Hondo)
5	Eaton Wash (above the confluence w/Rio Hondo)
6	Arcadia Wash (above the confluence w/Rio Hondo)
7	Santa Anita Wash (at Peck Road Conservation Park)
8	Sawpit Wash (at Peck Road Conservation Park)
8a	Sawpit Wash (at Buena Vista Channel)
9	Eaton Wash (Eaton Canyon ; bridge crossing off Pinecrest Drive)

Water samples were analyzed for fourteen parameters at the County of Los Angeles Department of Agricultural Commissioner/Weights and Measures laboratory. Table 2-2 lists those parameters, the analytical method, and the detection limits.

Table 2-2
Water Quality Parameters, Analytical Methods and Detection Limits

Analyte	Method	Detection Limits
Nitrate – N	Standard Method B429	0.1 mg/L
Nitrite – N	Standard Method B429	0.1 mg/L
Ammonia – N	EPA 350.3	0.1 mg/L
Hardness	EPA 310.2	2 mg/L
PH	EPA 150.1	0-14
Turbidity	EPA 180.1	0.1 NTU
Conductivity	EPA 120.1	1 μmhos/cm
DO	SM 4500-OG	1 mg/L
Copper Dissolved	EPA 200.8	0.5 μg/L
Copper Total	EPA 200.8	0.5 μg/L
Lead Dissolved	EPA 200.8	0.5 μg/L
Lead Total	EPA 200.8	0.5 μg/L
Zinc Dissolved	EPA 200.8	1.0 μg/L
Zinc Total	EPA 200.8	1.0 μg/L
Total Coliform	Standard Methods, 18th ed. 9221	20 mpn/100 mL
Fecal Coliform	Standard Methods, 18th ed. 9221	20 mpn/100 mL
E. Coli	Quanti-Tray Method	10 mpn/100 mL

2.1 Results of Sampling Event

2.1.1 Nutrients

In all samples, nitrate and nitrite were below the limits of 10 milligrams per liter (mg/l) and 1 mg/l respectively specified in the Los Angeles Region Basin Plan (LARWQCB 1994). Ammonia was below detection limits in all samples except in Sawpit Wash at the Buena Vista Channel (Station 8a), where it was 0.41 mg/l. The lowest nitrogen levels were at Santa Anita Wash at Peck Road Park (Station 7), at Sawpit Wash at Peck Road Park (Station 8) and at Eaton Wash above the bridge crossing off Pinecrest Drive (Station 9). The highest nitrate measurements were in the duplicate Alhambra Wash sample (Station 3 dup), Rubio Wash (Station 4), and Eaton Wash above the confluence with Rio Hondo (Station 5). The highest nitrite measurements were in Rubio Wash (Station 4) and Rio Hondo at the Los Angeles River confluence (Station 1).

2.1.2 Hardness

Water hardness is caused by metallic ions dissolved in water (USEPA 1986). In fresh water these are primarily calcium and magnesium although other metals such as iron, strontium and manganese may contribute. Hardness commonly is reported as an equivalent concentration of calcium carbonate. No applicable water quality standards exist for hardness. High concentrations of calcium carbonate may reduce the toxicity of heavy metals (USEPA 1986). Hardness in the recent Rio Hondo watershed samples ranged from 110 mg/l at Santa Anita Wash (Station 7) to 280 mg/l in Arcadia Wash (Station 6). Water with calcium carbonate concentrations in this range would be considered moderately hard to hard (USEPA 1986).

2.1.3 pH

The hydrogen ion activity of water (pH) is measured on a logarithmic scale from 0 to 14. A pH of 7 is neutral, less than 7 is acidic, and greater than 7 is basic. The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) specifies that the pH of inland surface waters should not be depressed below 6.5 or raised above 8.5. The recent pH measurements in the Rio Hondo watershed exceeded the Los Angeles Region Basin Plan standard of 8.5 in all samples except Rubio Wash (Station 4), Sawpit Wash (Stations 8 and 8a), Eaton Wash above the bridge crossing off Pinecrest Drive (Station 9), and the Alhambra Wash duplicate sample (Station 3 Dup). The highest pH measurement was 9.79 in the Rio Hondo at Beverly Blvd (Station 2). None of the water samples taken in August, 2003, had a pH below the standard of 6.5. Legg Lake and the Rio Hondo from its confluence with the Los Angeles River to the Santa Ana Freeway are on the 303(d) list for pH.

2.1.4 Turbidity

Turbidity is an expression of the optical property that causes light to be scattered in water due to particulate matter such as clay, silt, organic matter and microscopic organisms (LARWQCB 1994). The only numerical standard the Los Angeles Region Basin Plan sets for turbidity is 5 nephlometric turbidity units (NTU) for drinking water. Municipal water supply is a potential

beneficial use throughout the Rio Hondo watershed (LARWQCB 1994), but is an existing beneficial use only in Santa Anita Canyon Creek and an intermittent beneficial use in Sawpit Wash and Monrovia Canyon Creek. In general the August, 2003, turbidity measurements were very low. Only two measurements exceeded the drinking water standard of 5 NTU These were a measurement of 11.4 NTU in Santa Anita Wash at Peck Road Park (Station 7) and a measurement of 8.52 NTU in Sawpit Wash at Peck Road (Station 8).

2.1.5 Conductivity

Conductivity is an indirect measurement of the amount of dissolved solids in the water. Water with high dissolved mineral content has a high conductivity. The Los Angeles Region Basin Plan does not set a numerical objective for conductivity. Conductivity during the August 2003 survey ranged from 359 micromhos per centimeter (umhos/cm) in Sawpit Wash at Peck Road Conservation Park (Station 8) to 1144 umhos/cm in Arcadia Wash (Station 6). These conductivity measurements indicate a somewhat high dissolved solids concentration in the Rio Hondo watershed.

2.1.6 Dissolved Oxygen

The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) specifies that at a minimum, the mean annual dissolved oxygen concentrations of all waters shall be greater than 7 milligrams per liter (mg/l) and no single determination shall be less than 5 mg/l. Depression of dissolved oxygen can lead to anaerobic conditions resulting in odors or, in extreme cases, in fish kills. All dissolved oxygen measurements made in the Rio Hondo watershed in August, 2003, were above 7 mg/l. Dissolved oxygen concentrations ranged from 8.12 mg/l in Sawpit Wash at the Buena Vista Channel (Station 8a) and 17.12 mg/l in the Rio Hondo at Beverly Blvd. (Station 2). The very high (> 10 mg/l) dissolved oxygen measurements at Stations 1 through 6 are likely related to photosynthesis by algae.

2.1.7 Metals

Three metals (copper, lead and zinc) were measured in August, 2003. The California Toxics Rule (USEPA 2000) sets a standard of 13 micrograms per liter (ug/l) for copper to protect freshwater aquatic life. As the CTR was developed for point sources and does not apply to stormwater, it is used here as a point of reference. A dissolved copper concentration of 13.7 mg/l was recorded in Sawpit Wash at the Buena Vista Channel (Station 8a), a dissolved copper concentration of 15.5 mg/l was recorded in Arcadia Wash (Station 6) and a dissolved copper concentration of 32 mg/l was recorded in Santa Anita Wash (Station 7). Within the Rio Hondo watershed, Legg Lake and the Rio Hondo from the Los Angeles River to the Santa Ana Freeway are on the 303(d) list for copper. Legg Lake, Monrovia Canyon Creek, Peck Road Park Lake and the Rio Hondo between the Los Angeles River and the Santa Ana Freeway also are on the 303(d) list for lead. However, all dissolved lead concentrations in water samples collected in August 2003 were well below the Califonia Toxics Rule limit of 65 ug/l. The highest lead measurement was 15.7 ug/l in Sawpit Wash at Peck Road Park (Station 8).

2.1.8 Bacteria

The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) states that for areas designated for non-water contact recreation, the fecal coliform concentration shall not exceed 4000 most probable number (MPN)/100 milliliters (ml) in more than 10 percent of the samples in a 10 day period. Most of the Rio Hondo watershed has non-water contact recreation as either an existing or intermittent beneficial use. The fecal coliform standard for water contact recreation is 400MPN/100ml in not more than 10 percent of the samples in a 30-day period. The Rio Hondo watershed does have some intermittent water contact recreation as well as some existing water contact recreation in the upper reaches of some of the tributaries. In August, 2003, water samples exceeded the standard for non-water contact recreation at six of the ten stations. The stations that did not exceed this standard were the two stations in the Rio Hondo itself (Stations 1 and 2), Santa Anita Wash at Peck Road Park (Station 7), and Sawpit Wash at Peck Road Park (Station 8). In addition, the Alhambra Wash duplicate sample had fecal coliform bacteria concentrations below detection limits even though the first sample at this station had a very high concentration (50,000MPN/100ml). The Santa Anita Wash sample (Station 7) had a fecal coliform concentration of 1100MPN/100ml, which did not exceed the standard for non-water contact recreation but did exceed the standard for water contact recreation. Water contact recreation is a potential but not existing beneficial use for lower Santa Anita Wash.

The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) does not have a standard for total coliform bacteria except for shellfish harvesting (a beneficial use that does not occur in the Rio Hondo watershed.). However, California Assembly Bill 411 sets a single sample total coliform standard of 10000 MPN/100 ml. for public water-contact sports areas. The Rio Hondo watershed does not have any areas that are designated as public water contact recreation areas. Therefore, the AB 411 standard does not technically apply to the Rio Hondo watershed but is used as a standard to identify high total coliform levels. This standard for total coliform was exceeded at seven of the ten stations sampled in August 2003. Stations with high total coliform concentrations were the same as those with high fecal coliform concentrations and again the duplicate sample for Alhambra Wash (Station 3) had very low coliform levels even though the first sample at this station had coliform levels that exceeded criteria.

No standard exists for *E. coli* bacteria. The concentrations of *E.coli* were high at the stations that had high concentrations of total and fecal coliform.

In general, the Rio Hondo watershed had high bacteria levels in August, 2003. The only locations where bacteria concentrations were not elevated were the two stations in the Rio Hondo itself (Stations 1 and 2) and Sawpit Wash at Peck Road Park (Station 8). The highest bacteria concentrations were in Eaton Wash above the bridge crossing off Pinecrest Road (Station 9). His station was designed as a reference station and had the lowest concentrations of other contaminants. The high bacteria concentrations were probably because the samples were taken immediately downstream of an area that is used as a "swimming hole."

4.0 HISTORICAL WATER QUALITY DATA

Water quality data in the Rio Hondo Watershed from a variety of sources were analyzed. Data on various water quality parameters were collected by the Los Angeles County Department of Public Works, the Los Angeles County Sanitation District, the Los Angeles Regional Water Quality Control Board and the United States Geological Services Department of Water Resources between 1955 and 2000. At various times and various locations, data were collected on conventional parameters, salts, nutrients, bacteria, metals, and organics. No specific details regarding the sampling or analytical methods are available. This report focuses on contaminants and water column parameters known to be toxic or to have adverse effects.

4.1. Conventional Parameters

Table 4-1 summarizes the range of measurements of conventional parameters in the Rio Hondo Watershed.

Table 4-1
Range of Historical Measurements of Conventional Parameters

	Low Value	High Value
Dissolved Oxygen	0	23.6 mg/l
PH	3.2	10.7
Chlorine	<0.1 mg/l	0.2 mg/l
Phenols	ND	ND
MBAS	0.1 mg/l	0.4 mg/l
Cyanide	ND	0.022 mg/l
Flow	6 CFS	12,430 CFS
Temperature	52^0 F	84^0 F
Biochemical Oxygen Demand	13.9 mg/l	71.3 mg/l
Chemical Oxygen Demand	ND	149 mg/l
Oil and Grease	ND	4.1 mg/l
Settleable Solids	0	52 mg/l
Suspended Solids	ND	700 mg/l
Total Organic Carbon	5.3 mg/l	60.6 mg/l
Turbidity	0	200 mg/l

ND = below detection limits

4.1.1. Dissolved Oxygen

Historical dissolved oxygen measurements in the Rio Hondo watershed range from 0 to 23.6 mg/l. The low value of 0 mg/l was recorded at the Rio Hondo Spreading Grounds in September,1971. Other very low dissolved oxygen measurements include measurements of 0.6 mg/l in 1978 and 0.8 mg/l in 1968 in the Rio Hondo near Montebello and 0.2 mg/l in the Rio Hondo at the Pomona Freeway in September 1971. Although dissolved oxygen measurements in the Rio Hondo are usually over 5 mg/l, measurements below this threshold have been recorded

on many occasions. Recent low dissolved oxygen measurements (below 5 mg/l), including one reading of 3.6 mg/l on January 17, 1997, have been reported in the Rio Hondo Flood Control Channel 1000 feet upstream from San Gabriel Blvd. Peck Road Park Lake is on the 303(d) list for low dissolved oxygen.

4.1.2. pH

Historical measurements of pH in the Rio Hondo watershed range from a low of 3.2 to a high of 10.7. Most pH measurements were between 6.5 and 8.5. Measurements at the high end of the specified range were more common than measurements below 6.5. The high value of 10.7 was recorded in the Rio Hondo Spreading Grounds on December 12, 1992. High pH measurements above the standard of 8.5 have been found in various locations on the Rio Hondo on numerous occasions and in Eaton Wash north of Broadway (9.1) in May, 1992.

The very low pH value of 3.2 was recorded in the Rio Hondo at the Pomona Freeway on May 21, 1968. A pH of 5.3 was recorded in the Rio Hondo Spreading Grounds on February 9, 1976, and a pH of 6.4 was recorded there on June 17, 1970. A value of 6.1 was recorded at this location on February 17, 1971. A value of 6.2 was recorded in the Rio Hondo near Downey on that same date. All other pH measurements were above 6.5. Legg Lake and Reach 1 of Rio Hondo from the Los Angeles River to the Santa Ana Freeway is on the Clean Water Act Section 303(d) list for pH.

4.1.3. Chlorine

The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) specifies that chlorine shall not be present in surface water discharges at concentrations that exceed 0.1 mg/l. All historical measurements of chlorine in the Rio Hondo watershed were less than 0.1 mg/l with the exception of three measurements of 0.2 mg/l in the Rio Hondo Flood Control Channel 1000 feet upstream of San Gabriel Blvd. on April 10, May 23, and May 31, 1996.

4.1.4. Phenols

The California Toxics Rule (USEPA 2000) has a threshold of 21 mg/l for phenols. Historical phenol measurements in the Rio Hondo Watershed were all below detection limits or below practical quantification limits.

4.1.5. Methylene Blue Activated Substances (MBAS)

Methylene Blue Activated Substances (MBAS) tests for the presence of detergents in water. Positive results can indicate the presence of domestic wastewater. The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) specifies that waters shall not have an MBAS concentration greater than 0.5 mg/l. Historical measurements of MBAS in the Rio Hondo watershed range from 0.1 to 0.4 mg/l and thus do not exceed the threshold in the Los Angeles Basin Plan.

4.1.6. Other Conventional Parameters

Historical measurements are also available for cyanide, flow, biochemical oxygen demand, chemical oxygen demand, oil and grease, settleable solids, suspended solids, total organic carbon, turbidity, and temperature. Numerical objectives have not been set for these parameters. Historical high and low values are shown in Table 4-1.

4.2. Salts

Table 4-2 shows the range of historical salt measurements in the Rio Hondo watershed.

Table 4- 2
Range of Historical Measurements of Salts

	Low Value	High Value
Alkalinity	7 mg/l	371 mg/l
Chloride	1 mg/l	1220 mg/l
Sulfate	1.1 mg/l	2390 mg/l
Total Dissolved Solids (TDS)	2.5 mg/l	2684 mg/l
Bicarbonate	32.1 mg/l	35 mg/l
Boron	ND	7 mg/l
Calcium	4 mg/l	2410 mg/l
Fluoride	0	629 mg/l
Magnesium	1 mg/l	360 mg/l
Potassium	2 mg/l	325 mg/l
Sodium	4 mg/l	7100 mg/l
Specific Conductance	108 umhos/cm	1848 umhos/cm

ND = below detection limits

4.2.1. Alkalinity

Alkalinity is a measure of the buffering capacity of the water. The Environmental Protection Agency recommends an alkalinity of 20 mg/l or more to protect freshwater aquatic life (USEPA 1986). Historical alkalinity measurements in the Rio Hondo watershed range from 7 mg/l to 371 mg/l. Only two measurements below the threshold of 20 mg/l have been recorded. The low alkalinity of 7 mg/l was recorded in the Rio Hondo near the Pomona Freeway on February 17, 1971. An alkalinity of 15 mg/l was recorded in the Rio Hondo near Montebello on March 6, 1975.

4.2.2. Chloride

The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) sets a limit of 150 mg/l for chloride concentrations in the Rio Hondo above the Santa Ana Freeway. Historical measurements of chloride range from 1 to 1220 mg/l. The high chloride concentration of 1220 mg/l was recorded in the Rio Hondo near Downey on April 1, 1976. A chloride concentration of 922 mg/l was recorded in Rio Hondo near Montebello in Montebello Hills on April 28, 1967. Other historical measurements of chloride concentrations that exceeded 150 mg/l have been

made at the previous two locations and in the Rio Hondo Spreading Grounds and at Whittier Narrows Dam.

4.2.3. Sulfate

The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) sets a limit of 300 mg/l for sulfate concentrations in the Rio Hondo above the Santa Ana Freeway. Historical measurements of sulfate in the Rio Hondo Watershed range from 1.1 to 2390 mg/l. The historic high sulfate value of 2390 mg/l was recorded at the Rio Hondo Spreading Grounds on August 2, 1971. Two other measurements just above the 300 mg/l threshold were recorded at this location. The second highest sulfate measurement of 2050 mg/l was recorded in the Rio Hondo near Montebello in Montebello Hills on November 21 1975. There were numerous other sulfate measurements that exceeded 300 mg/l at this station. Other locations where sulfate concentrations sometimes exceeded 300 mg/l were Whittier Narrows Dam (310 to 473 mg/l), the Rio Hondo near the Pomona Freeway (301 to 407 mg/l) and the Rio Hondo near Downey (301 to 810 mg/l). Most historical sulfate concentrations were below 300 mg/l.

4.2.4. Total Dissolved Solids (TDS)

The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) sets a limit of 750 mg/l for total dissolved solids (TDS) in the Rio Hondo above the Santa Ana Freeway. Historical TDS measurements in the Rio Hondo watershed range from 2.5 to 2684 mg/l. The highest measurement of 2684 mg/l was recorded in the Rio Hondo near Downey on April 1, 1976. Numerous other measurements of TDS in excess of 750 mg/l also have been recorded at various locations and times in the Rio Hondo watershed.

4.2.5. Other Salts

Other salts for which historical measurements in the Rio Hondo watershed are available include bicarbonate, boron, calcium, fluoride, magnesium, potassium, sodium, and specific conductance. There are no applicable numerical thresholds for these parameters. Table 4-2 summarizes the historical high and low measurements for each of these parameters in the Rio Hondo Watershed.

4.3. Nutrients

Table 4-3 shows the range of historical nutrient measurements in the Rio Hondo watershed. Nutrients are inorganic compounds required for plant growth. The primary nutrients are nitrogen and phosphorous. Excessive nutrients can lead to excessive plant growth and, eventually, excessive oxygen demand. Nitrogen in the form of ammonia can be toxic at high concentrations

Table 4-3
Range of Historical Measurements of Nutrients in the Rio Hondo Watershed

	Low Value	High Value
Nitrate nitrogen	ND	82.6 mg/l
Nitrite nitrogen	ND	1.2 mg/l
Ammonia nitrogen	ND	10.7 mg/l
Kjeldahl nitrogen	1 mg/l	7.4 mg/l
Total organic nitrogen	0.2 mg/l	7.7 mg/l
Total phosphorus	ND	0.9 mg/l
Phosphate	ND	2.5 mg/l

ND = below detection limits

4.3.1. Nitrate Nitrogen

The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) sets a limit of 10 mg/l for nitrogen in the form of nitrate. Historical nitrate measurements in the Rio Hondo watershed range from undetectable to 82.6 mg/l. The high value of 82.6 mg/l was recorded at the Rio Hondo Spreading Grounds on April 1, 1977. Numerous other measurements of nitrate at a concentration greater than 10 mg/l have been recorded at various locations and various times in the Rio Hondo watershed.

4.3.2. Nitrite Nitrogen

The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) sets a limit of 1 mg/l for nitrogen in the form of nitrite. Historical nitrite measurements in the Rio Hondo watershed range from undetectable to 1.2 mg/l. Three nitrite measurements of 1.2 mg/l were recorded in the Rio Hondo Flood Control Channel 1000 feet upstream from San Gabriel Blvd. on November 27, 1996, February 22, 1999, and February 29, 2000. All other historical nitrite measurements in the Rio Hondo watershed were at or below 1 mg/l.

4.3. Ammonia Nitrogen

The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) sets limits of ammonia based on temperature and pH. Historical ammonia measurements in the Rio Hondo watershed range from undetectable to 10.7 mg/l. It was not possible to determine the pH and temperature measurements at these dates and locations. However, Basin Plan ammonia limits for the pH and temperature range in the Rio Hondo run from about 2.3 to 23 mg/l. No ammonia concentrations over 23 mg/l were recorded. Ammonia concentrations over 2.3 mg/l were recorded on 16 occasions at various locations.

4.4. Other Nutrients

Historical nutrient measurements in the Rio Hondo watershed are also available for Kjeldahl nitrogen, total organic nitrogen, phosphate, and total phosphorous. Applicable numerical thresholds are not available for these nutrients. Table 4-3 shows the range of historical measurements for these parameters in the Rio Hondo watershed.

4.4. Metals

Table 4-4 shows the historical range of metal concentrations in the Rio Hondo watershed.

Table 4-4
Range of Historical Measurements of Metals

Metal	Low Value	High Value
Antimony	ND	ND
Arsenic	ND	14 ug/l
Barium	ND	260 ug/l
Beryllium	ND	ND
Cadmium	ND	3 ug/l
Total chromium	ND	47 ug/l
Copper	ND	70 ug/l
Lead	ND	186 ug/l
Mercury	ND	ND
Nickel	ND	41 ug/l
Selenium	ND	32 ug/l
Silver	ND	ND
Zinc	ND	340 ug/l
Thallium	ND	ND

ND = below detection limits

4.4.1. Antimony

The California Toxics Rule (USEPA 2000) sets a human health standard of 14 ug/l for antimony. All historic measurements of antimony in the Rio Hondo watershed were below detection limits.

4.4.2. Arsenic

The California Toxics Rule (USEPA 2000) sets a standard of 340 ug/l for arsenic for the protection of freshwater aquatic life. Historical measurements of arsenic in the Rio Hondo watershed range from below detection limits to 14 ug/l. Therefore, historic measurements do not indicate any exceedance of standards for arsenic.

4.4.3. Barium

The California Toxics Rule does not have any standard for barium. Environmental Protection Agency water quality criteria (USEPA 1986) recommend a limit of 1000 ug/l for domestic drinking water. Historical barium measurements in the Rio Hondo watershed range from below detection limits to 260 ug/l.

4.4.4. Beryllium

The California Toxics Rule does not have any standard for beryllium. Environmental Protection Agency water quality criteria (USEPA 1986) note that chronic toxicity to freshwater organisms has been observed at beryllium concentrations as low as 5.3 ug/l. Historical beryllium measurements in the Rio Hondo watershed range were all below detection limits.

4.4.5. Cadmium

The California Toxics Rule (USEPA 2000) sets a standard of 4.3 ug/l for the protection of freshwater aquatic life. Historical cadmium measurements in the Rio Hondo watershed range from below detection limits to 3 ug/l. Therefore, historic measurements do not indicate any exceedance of standards for cadmium in the watershed.

4.4.6. Chromium

The California Toxics Rule (USEPA 2000) sets a standard of 550 ug/l for Chromium (III) and 16 ug/l for Chromium (VI) for the protection of freshwater aquatic life. Historic measurements of chromium (VI) were all 0. Total chromium measurements range from below detection limits to 47 ug/l. Only two of the historic measurements detected chromium. A total chromium concentration of 47 ug/l was detected in the Rio Hondo at the Valley Blvd. suspension bridge on April 8, 1988. A chromium concentration of 32 ug/l was recorded in the Rio Hondo at Beverly Blvd on December 23, 1995.

4.4.7. Copper

The California Toxics Rule (USEPA 2000) sets a standard of 13 ug/l for copper to protect freshwater aquatic life. Historical copper measurements in the Rio Hondo watershed range from below detection limits to 70 ug/l. The high value of 70 ug/l was recorded in the Rio Hondo at Beverly Blvd. on December 23, 1995. Several other copper measurements that exceeded the 13 ug/l standard have been made in various locations in the Rio Hondo watershed on several occasions. Legg Lake and the Rio Hondo from the Los Angeles River to the Santa Ana Freeway are on the Clean Water Act Section 303(d) list for copper.

4.4.8. Lead

The California Toxics Rule (USEPA 2000) sets a standard of 65 ug/l for lead to protect freshwater aquatic life. Historic lead measurements in the Rio Hondo watershed range from below detection limits to 186 ug/l. The high lead value was recorded in the Rio Hondo at Beverly Blvd. on December 23, 1995. All other lead measurements in the historic database were below the California Toxics Rule lead standard. Legg Lake, Monrovia Canyon Creek, Peck Road Park Lake and the Rio Hondo from the Los Angeles River to the Santa Ana Freeway are on the Clean Water Act Section 303(d) list for lead. The historical database reviewed in this report does not contain any lead measurements in Legg Lake, Monrovia Canyon Creek, or Peck Road Park Lake.

4.4.9. Mercury

The California Toxics Rule (USEPA 2000) sets a standard of 0.05 ug/l for mercury for the protection of human health. All mercury measurements in the Rio Hondo historical database were below detection limits.

4.4.10. Nickel

The California Toxics Rule (USEPA 2000) sets a nickel standard of 470 ug/l for the protection of freshwater aquatic life. Historic nickel measurements in the Rio Hondo watershed range from below detection limits to 41 ug/l. Therefore, none of the nickel measurements in the historic database exceeded the California Toxics Rule nickel standard.

4.4.11. Selenium

The California Toxics Rule (USEPA 2000) does not have an instantaneous maximum concentration for selenium but sets a continuous concentration of 5 ug/l for the protection of freshwater aquatic life. Historic selenium measurements in the Rio Hondo watershed range from below detection limits to 32 ug/l. The high concentration of 32 ug/l was detected in the Rio Hondo at Rush Street on November 20, 1996. A selenium concentration of 7 ug/l was detected in the Rio Hondo at Beverly Blvd. on January 9, 1996 and a concentration of 6 ug/l was detected at that location January 21, 1996. All other selenium measurements in the Rio Hondo historic database were below detection limits.

4.4.12. Silver

The California Toxics Rule sets a silver threshold of 3.4 ug/l for the protection of freshwater aquatic life. All silver measurements in the Rio Hondo historical database are below detection limits.

4.4.13. Zinc

The California Toxics Rule (USEPA 2000) sets a zinc standard of 120 ug/l for the protection of freshwater aquatic life. Historic zinc measurements in the Rio Hondo watershed range from below detection limits to 340 ug/l. The high measurement of 340 ug/l was recorded in the Rio Hondo at Beverly Blvd. on December 23, 1995. All other zinc measurements in the Rio Hondo historical database were at or below the California Toxics Rule threshold of 120 ug/l. The Rio Hondo from the Los Angeles River to the Santa Ana Freeway is on the Clean Water Act Section 303(d) list for zinc.

4.4.14. Thallium

The California Toxics Rule (USEPA 2000) sets a thallium standard of 1.7 ug/l for the protection of human health. All of the thallium measurements in the Rio Hondo historical database were below detection limits.

4.5. Bacteria

Table 4-5 summarizes the range of historical measurements of bacteria in the Rio Hondo watershed.

Table 4-5
Range of Historical Bacteria Measurements

	Low Value	High Value
Fecal coliform	ND	1,700,000MPN/100ml
Total coliform	ND	3,000,000 MPN/100ml
Enterococcus	40 MPN/100ml	280,000 MPN/100ml
Fecal streptococcus	40 MPN/100ml	9,000,000 MPN/100ml

ND = below detection limits

4.5.1. Fecal Coliform

Historical measurements of fecal coliform bacteria in the Rio Hondo watershed range from below detection limits to 1700000 MPN/100 ml. The highest value was recorded in the Rio Hondo at Beverly Blvd. on December 21, 1995. Fecal coliform levels exceeding 4000 MPN/100 ml were recorded on several other dates. The Rio Hondo is on the Clean Water Act Section 303(d) list for high coliform count.

4.5.2. Total Coliform

Historical total coliform measurements in the Rio Hondo range from below detection limits to 3000000 MPN/100 ml. The high value was recorded in the Rio Hondo at Beverly Blvd. on December 12, 1995. The AB 411 single sample total coliform standard was exceeded at several locations on several other dates within the Rio Hondo watershed.

4.5.3. Enterococcus

The Water Quality Control Plan for the Los Angeles Region (LARWQCB 1994) does not have a standard for enterococcus bacteria. California Assembly Bill 411 sets a single sample enterococcus standard of 104 MPN/100 ml. for public water-contact sports areas. The Historical database contains only 10 enterococcus bacteria measurements all made in the Rio Hondo at Beverly Blvd. in 1995 and 1996. The enterococcus concentrations in these samples ranged fronm 40 MPN/100 ml to 280000 MPN/100 ml. All but two of the samples exceeded the AB 411 standard. The high value was recorded on December 12, 1995.

4.5.4. Fecal Streptococcus

The Rio Hondo historical data base also contains 10 measurements of fecal streptococcus done during the same time and at the same location as the enterococcus measurements. Fecal streptococcus concentrations ranged from 40 to 9000000 MPN/100 ml. There is no numerical standard for fecal streptococcus.

4.6. Organic Pollutants

The Rio Hondo historical database contains information on a wide variety of organic contaminants including volatile organic compounds, polyaromatic hydrocarbons, polychlorinated biphenyls, and pesticides. Almost all of these were either below detection limits or were detected at very low levels. The only organic compound that exceeded a standard in the historical database was bis(2-ethylhexyl)phthalate. The California Toxics Rule (USEPA 2000) sets a standard for this compound of 1.8 ug/l for the protection of human health. Concentrations of bis(2-ethylhexyl)phthalate in the Rio Hondo ranged from below detection limits to 99.4 ug/l. This compound is a common laboratory contaminant that frequently turns up at elevated concentrations.

5. Conclusions

With one exception, all water quality parameters measured in August, 2003, were within the range of values for the parameters in the historic data base. This exception was a very high total coliform count of 16,000,000 MPN/100ml in Eaton Canyon (Station 9). This station was below an area used as a swimming hole. The high total coliform count in the historic database is 3,000,000 MPN/100ml.

Water quality parameters that exceeded standards in August, 2003, included pH, copper, and coliform bacteria. There have numerous historical measurements of these parameters that exceeded standards and the Rio Hondo watershed is on the 303(d) list for pH, copper, and coliform bacteria. In the August, 2003, survey, exceedance of pH and coliform bacteria standards were fairly widespread in the watershed. The copper standard was exceeded at 3 stations. Therefore, the Rio Hondo watershed appears to have an ongoing and widespread problem with these parameters. Although the Rio Hondo also is on the 303(d) list for lead and zinc, these metals did not exceed California Toxics Rule criteria at any station sampled in August, 2003. Exceedance of criteria for these metals also only occurred on one occasion in the historic database. However, the historic database analyzed in this report has a limited number of metal measurements in it.

6. Literature Cited

Regional Water Quality Control Board Los Angeles Region 1994 Water Quality Control Plan Los Angeles Region

United States Environmental Protection Agency 1986 Quality Criteria for Water. EPA 440/5-86-001

United States Environmental Protection Agency 2000 The California Toxics Rule. Federal Register 65 (97): 31682-31715

Appendix B
MEMORANDUM
Rio Hondo Watershed Management Plan

To: **Project Advisory Committee**
Re: **Water Quality Sampling - Scope of Work Report**
From: Eileen Takata, Moore Iacofano Goltsman, Inc.
Date: June 26, 2003

I. Introduction

The San Gabriel Valley Council of Governments (COG), in partnership with the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) and the Los Angeles County Department of Public Works (DPW) has received a Proposition 13 Watershed Program Grant to develop the Rio Hondo Watershed Management Plan. The Rio Hondo is a major tributary to the Los Angeles River in eastern Los Angeles County. The watershed encompasses 142 square miles that includes most of the San Gabriel Valley from Pasadena in the west, to Duarte in the east, and then south to the City of South Gate. The six major Rio Hondo tributaries are the Alhambra, Rubio, Eaton, Arcadia, Santa Anita and Sawpit Wash. The Rio Hondo Watershed Management Plan (Plan) will develop recommendations to integrate water quality, hydrologic functioning, habitat and land use issues.

II. Purpose of Sampling Program

The purpose of implementing a sampling program is to provide a "snapshot" of dry weather water quality in the watershed to support preparation of the watershed management plan. The table below lists the current 303(d) Listings of impairments to the Rio Hondo and its tributaries (2002 CWA Section 303(d) List of Water Quality Limited Segment). Note, although this 303(d) List has been approved by the State Water Resources Control Board on February 4, 2003, it has not yet been approved by the U.S. Environmental Protection Agency.

303(d) Listing Approved February 4, 2003				
Pollutant/Stressor	**Potential Sources**	**TMDL Prority**	**Estimated Size Affected**	**Proposed TMDL Completion**
Legg Lake				
Ammonia	Nonpoint/Point Source	Medium	25 acres	-
Copper	Nonpoint/Point Source	Medium	25 acres	-
Lead	Nonpoint/Point Source	Medium	25 acres	-
Odors	Nonpoint/Point Source	Medium	25 acres	-
pH	Nonpoint/Point Source	Medium	25 acres	-
Trash	Nonpoint/Point Source	Low	25 acres	-
Monrovia Canyon Creek				
Lead	Nonpoint/Point Source	High	3.4 miles	2003
Peck Road Park Lake				
Chlordane (tissue)	Nonpoint/Point Source	Low	103 acres	-
DDT (tissue)	Nonpoint/Point Source	Low	103 acres	-

Lead	Nonpoint/Point Source	Low	103 acres	-
Odors	Nonpoint/Point Source	Low	103 acres	-
Organic Enrichment / Low Dissolved Oxygen	Nonpoint/Point Source	Low	103 acres	-
Rio Hondo Reach 1 (Confl. LA River to Santa Ana Fwy.)				
Copper	Nonpoint/Point Source	High	4.6 miles	2003
High Coliform Count	Nonpoint/Point Source	High	4.6 miles	2002
Lead	Nonpoint/Point Source	High	4.6 miles	2003
pH	Nonpoint/Point Source	High	4.6 miles	2002
Trash	Nonpoint/Point Source	Low	4.6 miles	-
Zinc	Nonpoint/Point Source	High	4.6 miles	2003
Rio Hondo Reach 2 (At Spreading Grounds)				
High Coliform Count	Nonpoint/Point Source	High	4.9 miles	2002

Dry weather sampling is proposed since it is the more common annual condition and introduces less risk to those conducting the sampling. It is anticipated that the conclusions from this sampling event will not result in the isolation of specific land use areas as a source. Instead, general land use patterns from each subwatershed will be summarized as part of the final Plan. The sampling data will be used to propose a future course of action and monitoring for the watershed.

III. Constituents for Sampling

The following parameters and water constituents have been proposed for analysis during the event

CONSTITUENTS					
Nutrients		**Metals**		**Physical Parameters**	
1	Ammonia-Nitrogen	6	Copper, Total	12	Hardness
2	Nitrate-Nitrogen	7	Copper, Dissolved	13	Air temperature
3	Nitrite-Nitrogen	8	Lead, Total	14	Water temperature
4		9	Lead, Dissolved	15	pH
Bacteria		10	Zinc, Total	16	Dissolved Oxygen
4	Fecal Coliform	11	Zinc, Dissolved	17	Turbidity
5	E. coli			18	Conductivity
				19	Flow
				20	Trash (photographs)

IV. Overview of Sampling Event

As of June 11, 2003, DPW has agreed to carry out the sampling effort using their in-house staff and to assume the laboratory costs associated with a one-time sampling event for nine sites. They currently sample in the Rio Hondo and will utilize sampling procedures as stated the Quality Assurance/Quality Control Plan from the *Los Angeles County 2001-2002 Storm Water Quality Monitoring Report*, August 15, 2002. A permit from the U.S. Army Corps of Engineers may also need to be secured. Once the Sampling Scope of Work is approved by the PAC, the Sampling Event will be scheduled to take place later this summer, perhaps in August. Because the sampling locations are within a

7-mile stretch of the Rio Hondo, it is anticipated that the samples will be taken in one day.

V. Proposed Sampling Locations

There are nine proposed sites. The downstream Rio Hondo sampling site is just above its confluence with the Los Angeles River, however there is typically insufficient flow at this site to effectively collect. The second site is on the Rio Hondo at Beverly Boulevard, above the Rio Hondo Spreading Grounds. DPW has monitored at this site as recently as April 2003. The next six sites are at the confluence of the six major tributaries to the Rio Hondo, right before they flow into the main channel. The upper Eaton Canyon site, at creek crossing bridge, has been proposed as a "reference site" for comparing natural and urban watershed influences.

Below are the locations per Thomas Bros. (2003). Locations #3-#8 are meant to collect flows from the six major tributaries to the Rio Hondo. Samples need to be collected just before the tributary flow joins Rio Hondo flow. These are all concrete box channels accessible from the Lario Bike Trail, which is maintained by the County. During the site visit in late April 2003, there was ample flow from five of the tributaries.

SAMPLING SITE LOCATIONS		
No.	**Thomas Bros.**	**Location**
1	Page 705, F6	Rio Hondo at Los Angeles River Confluence
2	Page 676, F2	Rio Hondo (DPW automated sampling station)
3	page 636, H4	Alhambra Wash (above the confluence w/Rio Hondo)
4	Page 636, J2	Rubio Wash (above the confluence w/Rio Hondo)
5	page 637, A1	Eaton Wash (above the confluence w/Rio Hondo)
6	page 597, D5	Arcadia Wash (above the confluence w/Rio Hondo)
7	page 597, F3	Santa Anita Wash (at Peck Road Conservation Park)
8	page 597, H1	Sawpit Wash (at Peck Road Conservation Park)
9	page 536, D5	Eaton Wash (Eaton Canyon ; bridge crossing off Pinecrest Drive)

Appendix C
Results of August 12, 2003, Water Quality Sampling in Rio Hondo Watershed

	1	2	3	3 dup.	4	5	6	7	8	8a	9
Nitrate – N (mg/L)	2.66	2.56	2.60	5.44	5.13	4.90	1.61	ND	0.51	0.725	0.36
Nitrite – N (mg/L)	0.30	0.26	0.20	0.17	0.34	0.17	0.26	ND	ND	0.149	ND
Ammonia – N (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.141	ND
Hardness (mg/L)	150	190	190	140	125	230	280	110	180	140	190
PH	9.24#	9.79#	9.10	7.58	7.42	8.63#	8.65#	9.71#	7.89	8.34	7.74
Turbidity (NTU)	1.63	1.19	1.68	2.10	2.43	1.94	3.40	11.4#	8.52#	4.81	0.45
Conductivity (pmhos/cm)	866	928	798	432	440	541	1,144	494	359	414	425
DO (mg/L)	15.3	17.12	13.6	9.96	11.32	11.30	11.32	9.26	9.09	8.12	8.3
Dissolved Copper (pg/L)	4.87	5.05	7.03	6.15	4.87	7.39	15.5*	32.0*	10.7	13.7*	2.03
Total Copper (pg/L)	10.9	9.09	11.1	8.97	7.26	12.6	19.8	38.2	15.4	25.5	6.0
Dissolved Lead (pg/L)	1.24	1.27	2.0	1.49	1.72	1.65	2.34	2.98	15.7	9.71	1.03
Total Lead (pg/L)	2.97	1.58	2.22	1.59	1.99	1.95	2.61	3.17	15.7	10.0	1.03
Dissolved Zinc (pg/L)	44.2	27.4	32.0	20.8	16.8	27.1	26.4	44.8	47.5	68.1	11.3
Total Zinc (pg/L)	44.2	27.4	32.0	20.8	16.8	27.1	26.4	44.8	47.5	71.4	11.6
Total Coliform (mpn/100mL)	300	300	90,000+	<20	5,000,000+	130,000+	130,000+	24,000+	3,000	900,000+	16,000,000+
Fecal Coliform (mpn/100mL)	300	230	50,000#	<20	500,000#	8,000#	50,000#	1,100	<20	300,000#	500,000#
E. Coli (mpn/100mL)	<10	20	1,086	<10	19,863	1,904	19,863	631	10	6,867	12,997

ND = not detected
 # = exceeds limits in Los Angeles Basin Plan
*** = exceeds limits in California Toxics Rule**
+ = exceeds limits in AB 411

Appendix D
Meeting Summary
Rio Hondo Watershed Management Plan
Project Advisory Committee Meeting #1
May 7, 2003

MEETING PURPOSE AND OPENING REMARKS

- The purpose of this first meeting of the Project Advisory Committee was to provide an overview of the project followed by a discussion among Committee members to identify issues and opportunities that should be addressed by the Plan.
- The meeting was attended by 24 individuals, including representatives from 12 cities located in the Rio Hondo Watershed, other state and local public agencies, as well as private and non-profit organizations.
- The meeting was facilitated by Daniel Iacofano of Moore Iacofano Goltsman (MIG), Inc., the consulting firm contracted by the San Gabriel Valley Council of Governments (SGVCOG) to manage the development of the Plan. Other members of the MIG Team include Phillip Williams & Associates, and the Chambers Group, Inc.
- Following introductions among all those in attendance, Belinda Faustinos, Executive Officer of the Rivers and Mountains Conservancy (RMC), began the meeting with a brief presentation explaining that the RMC is the primary partner with the SGVCOG in overseeing the development of the Rio Hondo Watershed Management Plan. Among the points she made:
    - It is important to develop a comprehensive plan for the Rio Hondo so it meets multiple needs
    - This will require a collaborative and strategic effort that is both realistic and visionary over the long term.
    - This can be done by balancing the many interests sitting around this table. Your participation will be needed to create a balanced plan.
    - This Plan will help provide cities with the best possible way to deal with water quality.
    - The Plan will help activate funding for projects that might not otherwise be available.
- Mr. Iacofano then provided an overview of the project. This included a review of project goals, the workplan, timeline, other background information, and the role of the Project Advisory Committee. (see attached copy of Power Point presentation). Additional points included:
    - The importance of integrating multiple objectives in the Plan; that more can be accomplished by pursuing several interests rather one at the expense of others.
    - It was also emphasized that this will be a 4-dimensional planning effort; i.e. a plan with time in mind. In the short term, there are limits to what can realistically be achieved, but incremental changes in the right direction over a long time frame can add up to significant positive impacts.

- The Plan will fill some information gaps with new data but given a limited grant and scope the Plan will also identify what we do not yet know and provide suggestions on how to get it

PROJECT ADVISORY COMMITTEE DISCUSSION

The following is a summary of comments made by meeting participants, organized by topic.

Desired Outcomes

- It will be important to improve recreational opportunities along the Rio Hondo by enhancing existing resources, including parks and trails. Such enhancements can also be designed to take into account water conservation.
    - Would like to see a trail connection from Peck Park to the San Gabriel River, and much better access to nearby communities. A 15-mile trail loop can be created with a connection to the San Gabriel River. Essentially, taking steps that tie together all these recreational resources for the benefit of nearby communities.
- A much greener corridor is envisioned for the Rio Hondo
    - Greening the river can detract from flood control unless you expand capacity to compensate for the greening.
    - Does an enhanced greenway include the river channel itself? – No.
    - I have never been told how you can restore a stream that has homes right next to the river.
- Sustainability has to be a part of the Plan. It needs to take into account not just upfront capital costs but also ongoing maintenance and operational costs. It takes a lot of dollars to maintain natural areas so they still look natural. Many parks look like parks because they are relatively easy to maintain vs. more natural parks like the Long Beach natural area where people are not allowed to walk. So, whatever we plan on doing it needs to be practical, implementable, and fundable.
    - A good plan can attract the funds needed to implement and sustain the plan over time. For instance, the LA River Master Plan has succeeded in attracting $100 million to fund projects
- Groundwater recharge – we need to make sure no pollutants enter the groundwater. . There are creative approaches for accomplishing this vs. the way things have been done in the past. For instance, permeable parking lots such as the auto lots in Cerritos along the San Gabriel River.
- Education should be an important outcome of the Plan. To promote public awareness about clean water so people don't throw out trash or other activities that impact water quality. Also, local cities and other stakeholders need to take ownership of the river.
- The Federal government needs to be involved in the education process. National primetime TV campaigns are what is required to change people's behavior. Local ground up messages simply do not reach people.
- Jurisdictional responsibilities need to be identified in the document

- Land use, zoning changes, and development standards should be addressed as part of the Plan. City requirements for new driveways now still require concrete. We are still doing things the wrong way.

Water Quality

- How do the pollutants (listed in the project overview handout) impair the beneficial uses of the Rio Hondo? The Regional Board has not drawn a connection between these pollutants and the beneficial uses of the river. First, identify the problem and then document whether there is a connection with these "pollutants." It will be important to ask the Regional Board why they have designated these pollutants as such.
- Water quality and TMDLs- most local city public works departments are now taking major fiscal hits. So, it will be important to determine how to treat water quality cost-effectively. Suggested the need to collaborate on Best Management Practices
- It will be more cost effective to handle TMDL's regionally rather than city by city. So, will the Plan focus on regional or local solutions?
- How we handle water quality TMDLs is a major concern.
- Where is this document headed? Will it focus on regional solutions vs. solutions required of municipal jurisdictions. Cities are now being driven by stormwater permit requirements that are not cost effective. The document should apprise the Regional Board of regional solutions. The law as it now stands will require within 10 years that all water be cleaner than drinking water before it enters the stormwater system. We need the Regional Board to allow more flexibility or all our resources will be consumed by this.

Context Questions/Issues

- What is the definition of a river vs. a flood control channel? The answer to that question might change the degree of oversight and regulation. The Federal definition of a river is a navigable waterway that can carry commerce. However, none of our local rivers meet that definition. We need cost-effective solutions.
    - These solutions need to be integrated into your capital improvement programs. A positive outcome requires that all players be at the table developing cost-effective solutions.
- How does this interface with other similar efforts in the San Gabriel Watershed and the LA River?
    - The RMC will play a large role in coordinating these respective sub-watershed efforts.
- How is the Rio Hondo watershed distinct from the San Gabriel River Watershed or the LA River Watershed?
    - The Rio Hondo is a subwatershed of the LA River.
    - In past years, during flood events, these watersheds mixed together, but they are separate, connected systems
    - Political boundaries are not aligned with watershed boundaries.
    - Local cities could be confused by what they perceive as similar competing efforts.

    - Need maps and exhibits to clarify the distinctions between these watersheds and various planning efforts

Stakeholder Participation Process

- Since the Regional Board is the agency imposing these regulations it will be important for them to also be at this table.
    - The Regional Board is a member of the Planning Team for this project and are going to be regular participants in these meetings.
- To what extent will cities from the Gateway COG be involved in this process?
    - They will be involved to the same extent as the SGVCOG cities. Four of the six Gateway COG cities invited to today's meeting are here today.
- I am disconcerted that I did not know about this project during its incubation stage.
    - The invitation letter had to be sent to the top of each organization invited to participate and in some instances it took time to circulate to the right person within each organization.
- The San Gabriel Water Quality Control Board has not yet designated a representative but they have been invited.
- Both COGs will make sure this is an inclusive process
- Have any Federal or State elected officials been invited to participate in this process?
- Will Plan document just go to the Project Director or to the full PAC? I want to make sure that we have not missed anything here.

Other Comments

- The Sun Valley Watershed Management Plan integrates water quality, recreation, and flood control. Uses wetlands in quarry for water quality treatment and as a means for holding stormwater, and habitat enhancement.
- Coordinated, collaborative efforts are needed for river restoration efforts, with especially high standards for projects along the river. A document being developed for the Upper San Gabriel River Watershed will have guidelines and tools for the right way to do these things.
- Although this is a balanced process that is focused on developing a watershed plan for the long term it is ok to also address short term projects
- To what extent does this project entail property acquisition? – There is no way to know at this time.

Potential Opportunities

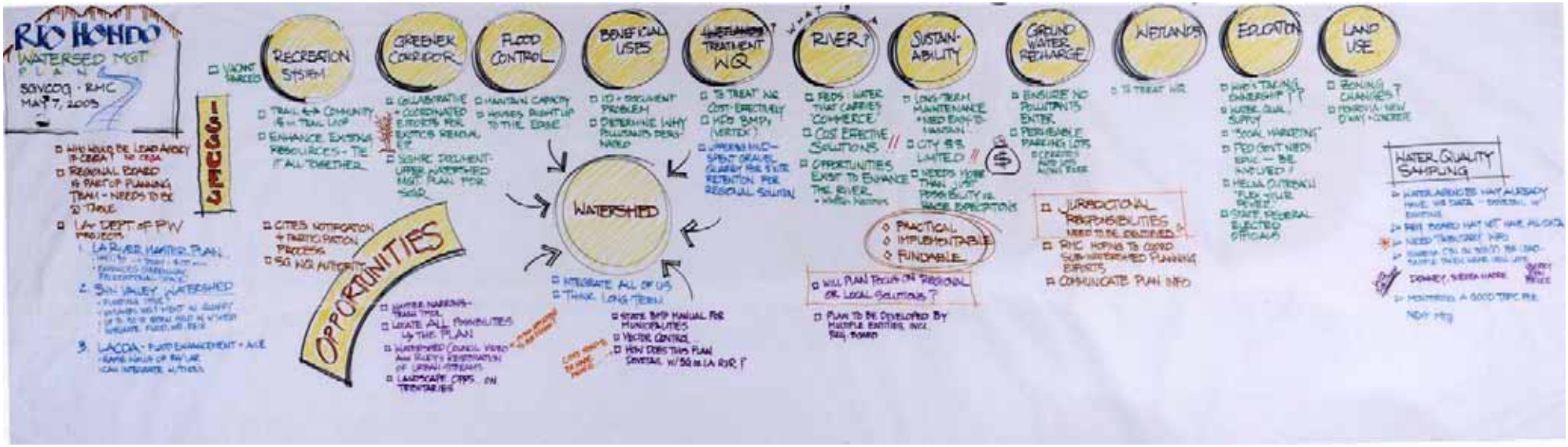
- Whittier Narrows/Lario Creek TMDLs
- The Plan should include an inventory of all possibilities – the greatest opportunities or leverage points – for achieving the objectives of the Plan.
- There is a Watershed Council video (Ann Riley) on urban stream restoration that may be applicable to this study.
- Since the watershed is much more than just the corridor along the river, you may be surprised at the number of potential opportunities.

- In Downey, we saw only one slim possibility applicable to our city among the many methods presented in that video. Many seemed designed only to address 5-year floods and would be washed out by larger 25-year events.
- We should definitely refer to the State BMP manual so we don't reinvent the wheel
- What is the lead agency responsible for CEQA clearance? –RMC.

Water Quality Sampling

- All water purveyors already do water quality monitoring. We should talk with them so to avoid unnecessary re-testing. We need to use existing water quality data.
- Regional Board may not have all data.
- It is important to get tributary data.
- Monrovia Canyon on 303(d) list for lead. It takes only one sample to get on the list, but then 12 clean samples are required to get off the list.
- Department of Health Services may also have water quality data that would be useful
- Asked for volunteer help from city and other stakeholder representatives to assist with water quality monitoring effort –a water quality subcommittee. Those who responded at this time:
    - John Alderson, City of San Marino
    - Gerry Greene, City of Downey
    - Bruce Inman, City of Sierra Madre
- Water quality monitoring will be a topic for discussion at the next meeting

The next PAC meeting is scheduled for July 2.


RIO HONDO
WATERSED MGT
PLAN
SGVCOG · RMC
MAY 7, 2003
CHALLENGES
RECREATION SYSTEM
GREENER CORRIDOR
FLOOD CONTROL
BENEFICIAL USES
TREATMENT WQ
RIVER?
SUSTAIN-ABILITY
GROUND WATER RECHARGE
WETLANDS
EROSION
LAND USE
WATERSHED
OPPORTUNITIES
PRACTICAL
IMPLEMENTABLE
FUNDABLE
JURISDICTIONAL RESPONSIBILITIES
WATER QUALITY SAMPLING

Appendix E
Rio Hondo Watershed Management Plan

Water Quality Subcommittee Meeting Summary

June 16, 2003

San Gabriel Valley Council of Governments

10:00 am – 12:00 pm

Attendees:
Gerry Greene, City of Downey
Douglas Benash, City of Monrovia
Shirley Birosik, LA Regional Water Quality Control Board
Valerie Carrillo, LA Regional Water Quality Control Board
Belinda Faustinos, Rivers and Mountains Conservancy
Cathie Chavez, Rivers and Mountains Conservancy
Bobby Cochran, Rivers and Mountains Conservancy
Vik Bapna, LA County Department of Public Works
Roland Romain, LA County Department of Public Works
Eileen Takata, Moore Iacofano Goltsman, Inc.

Purpose of Meeting: To review and refine the Draft Water Quality Sampling Scope of Work Report (Report) in order to present it to the Project Advisory Committee (PAC) for their approval at the July 2, 2003 meeting.

I. Introductions

Introductions were made. Purpose of this meeting was stated. Note, only one of the three original Water Quality Subcommittee members were in attendance, that was the City of Downey. The representatives from the Cities of Sierra Madre and San Marino were unable to attend, therefore the City of Monrovia was invited to attend. The three WQ Subcommittee members volunteered to join this group at the first Project Advisory Committee meeting held on May 7, 2003.

II. Overview – Water Quality Sampling

The group determined that TMDL development is NOT a goal of this Watershed Plan and sampling event. Rather, this Plan seeks to integrate and address TMDLs, for example, by sampling for current 303(d) Listed pollutants, but not to specifically add to or de-list a particular TMDL. For assurance, perhaps as early as late July, the Regional Board will be able to provide documentation to the PAC on recommended procedures for 303(d) listing and de-listing. This is to clear up any doubts as to whether or not this sampling event and Watershed Plan will result in additional TMDLs.

Shirley Birosik of the Regional Board suggested bioassessment, or macroinvertebrate collection and analysis, as an alternative to water chemistry testing, which this Sampling program involves. The conclusion to this discussion was, although considered a valid and important methodology to understanding water quality, bioassessment is out of the question at this time due to time and budget constraints. The group recommended moving forward with the water quality sampling as outlined in the Report and integrating bioassessment monitoring into the final recommendations of the Watershed Plan.

The use of volunteers is a part of the Watershed Plan Scope of Work. It was determined that DPW, because they are contributing in-kind monitoring and laboratory analysis services, they are "volunteers" for this project. However, the Project Team will consider the inclusion of volunteers in a future event such as a Rio Hondo trash pick-up or some other event. This is to fulfill the broader goal to begin the process of building a constituency for the Rio Hondo Watershed, which is currently missing.

. Land use will be reported for each of the tributary subwatersheds in order to make general recommendations for Best Management Practices. However, due to lack of more specific water quality sampling results, a direct correlation between land use and the data collected this summer can not be made.

III. DRAFT Sampling Scope of Work

The group recommended revisions to the Report, including refinements to the 303(d) Listings, to the list of constituents, and to the sampling locations.

IV. QAPP – Monitoring Protocol

Because DPW has agreed to undertake this sampling event and pay for the laboratory analysis costs, their QAPP is sufficient for the group. Copies of the QAPP were handed out. It is part of their *Los Angeles 2001-2002 Storm Water Quality Monitoring Report,* August 15, 2002, available on their website.

V. Next Step Recommendations

The Report will be revised per the discussion of the group, sent out within the next day for final review to the group, and then sent out to the entire PAC for their review approximately one week prior to the July 2 meeting. At the July 2 meeting, the PAC will discuss the Report and the Water Quality Subcommittee's recommendation to approve the Report and Sampling Scope of Work.

VI. Conclusion

The meeting adjourned at 12pm.

Reported by Eileen Takata, Moore Iacofano Goltsman, Inc.

Appendix F
Meeting Summary
Rio Hondo Watershed Management Plan
Project Advisory Committee Meeting #2
July 2, 2003

MEETING OVERVIEW

- The primary purpose of this second meeting of the Project Advisory Committee was to review the proposed Water Sampling Scope of Work. This draft document had been previously reviewed and refined by the Water Quality Subcommittee at a meeting on June 16. In addition to the proposed Water Quality Sampling Scope, PAC members were provided a written summary of the Water Quality Subcommittee meeting and a map identifying proposed sampling locations in the Rio Hondo Watershed.

- After addressing Water Quality Sampling, the PAC members also had questions regarding the overall Watershed Plan and received a brief presentation on the mapping process that is helping with the Watershed Existing Conditions Analysis.

WATER QUALITY SAMPLING

- The meeting began with an overview of the proposed Water Quality Sampling Scope by Eileen Takata from MIG. This was followed by a discussion facilitated by Daniel Iacofano.

- It was stated by Shirley Birosik from the Regional Water Quality Control Board – LA that a one time sampling event will not lead to new listings. She also stated that the State Regional Board has been looking at the process for listing and de-listings. A policy report from the State Regional Board is almost out, which will document the process for listing and de-listing TMDLs.

- The map of proposed sampling locations should be revised. Sample sub-drainages only at their confluences with the Rio Hondo.

- Gerald Greene from the City of Downy stated the proposed water sampling scope reflected a generally correct approach. However, there was still concern of TMDL's being created from one sampling event, even just a snapshot. In contrast, it takes a year of samplings to be de-listed.

- It would be great if we had correspondence from the Regional Board assuring us that if we find something it won't come back to bite us later.

- A sampling event is not rigorous enough to provide a complete picture of water quality. It is only one input. Cannot generalize from one sample at one time to the whole watershed.

- The watershed management plan will not be based on this sample. The final watershed plan will include recommendations for more complete sampling.

- If we were not doing this (the water quality sampling), then who would be doing it? - No one, the Watershed Plan would rely on existing data.

- Still nervous about doing this since there could be multi-billions of dollars in question.

- It was stated by one stakeholder that while it was important to be concerned about the regulations, at the same time we don't want to lose the focus on water quality.

- An acute toxicity test with bad results is the only one time event that could remotely trigger a TMDL listing. The proposed water quality sampling scope is not sampling for toxicity events.

- The proposed scope is testing constituents based on the 303d listing. Are there constituents that are not listed but are coming up?

- The proposed methodology minimizes the risks to the cities. If we put it in writing and all parties agree to it, including the Regional Board, then the sampling event won't come back to haunt us at a later time. The bottom-line is that we need an agreement from the Regional Board that they buy-off on this methodology.

- If the grantor is requiring that we do this, then we need to move beyond this. Instead, it is important that we focus on the overall goals and strategies of this Plan.

- We are better off doing this as a group, rather than individually. Our data points should be pooled with other monitoring events.

- Sampling standards should be the same for all. Instead, there is a higher standard to de-list, than being placed on the list in the first place.

- Once the water quality control policy document comes out, the process will be clearer than it has been before.

- It is very helpful and important for the Regional Board (Shirley Birosik) to be at all the PAC meetings.

- Existing water quality sampling data for the Rio Hondo is from the late 80's and early 90's. It provides more of a historic timeline that is outside the window of the

TMDLs. If there is anything significantly different from this historic baseline (a sampling data spike), then we will go back to resample.

- All the water quality sampling data (both existing and from the sampling event) will be brought back to the PAC for their review.

- The sampling event included in this project contract was proposed by the COG and the RMC and was not required by the Regional Board.

- DPW will carry out the sampling event with one-weeks notice.

- What is the minimum number of sampling events required for a listing? What is in the de-listing document? What is the listing process by which constituents will be listed?

- When the approved draft water quality control policy is released it will be circulated to the PAC.

- It was also agreed that the PAC will send a letter to Dennis Dickerson of the Regional Board addressing the concerns of the PAC requesting clarification from the Regional Board. The sampling event can be done in parallel with the letter as it will take time to get a response from the Regional Board.

- It was pointed out that we are better off with a one-time event versus volunteers going out there five times in a year. This approach gives us more control over the situation.

WATERSHED PLAN QUESTION AND ANSWER

- Since a significant amount of flows is from imported water coming into the Rio Hondo for recharge, I assume the sampling event will not be affected by this imported water?
    - LA County Sanitation District releases water in the Rio Hondo
    - Requested that Gary Hildebrand from LA Count DPW provide a presentation to the PAC describing the Rio Hondo system.

- Which beneficial uses are appropriate?
    - Rec-1 needs further study.

- When will existing data analysis be done? The Chambers Group will conduct the data analysis. A summary of the results from this analysis will be provided for the next PAC meeting and the Water Quality Subcommittee will review it.

MAPPING/EXISTING CONDITIONS ANALYSIS

- Eileen Takata reviewed the GIS Map Production Matrix. It lists the various maps under development that will be used to draw conclusions and provide input into the

Watershed Management Plan. Bobby Cochran from the Rivers and Mountains Conservancy presented 15 maps that have already been completed to aid existing conditions analysis. Some of the comments and questions included:

- Map 4-A: Biking, Hiking, Equestrian Trails – Are you able to distinguish these different types of trails? – The map features Class I Bikeways, mountain trails, and trail information provided by LA County Parks and Recreation. Trail information from individual cities is not yet available.

- Maps 2-C: Groundwater and 2-D: Water Supply Opportunities – what is the information source for these maps? - Possible sources could be:
    - San Gabriel Valley Water Quality Authority
    - San Gabriel Municipal Water District

- Map 3-C: Storm Drains should be a part of Map 1-A: Flood Control & Water Diversion Structures

- What happened to Map 2-A? – It is not relevant to this project. This matrix was derived from San Gabriel River project, therefore maps will be re-numbered for Rio Hondo.

- How will the maps be made available to the PAC? – these maps will all be featured in the report and can be posted on a website.

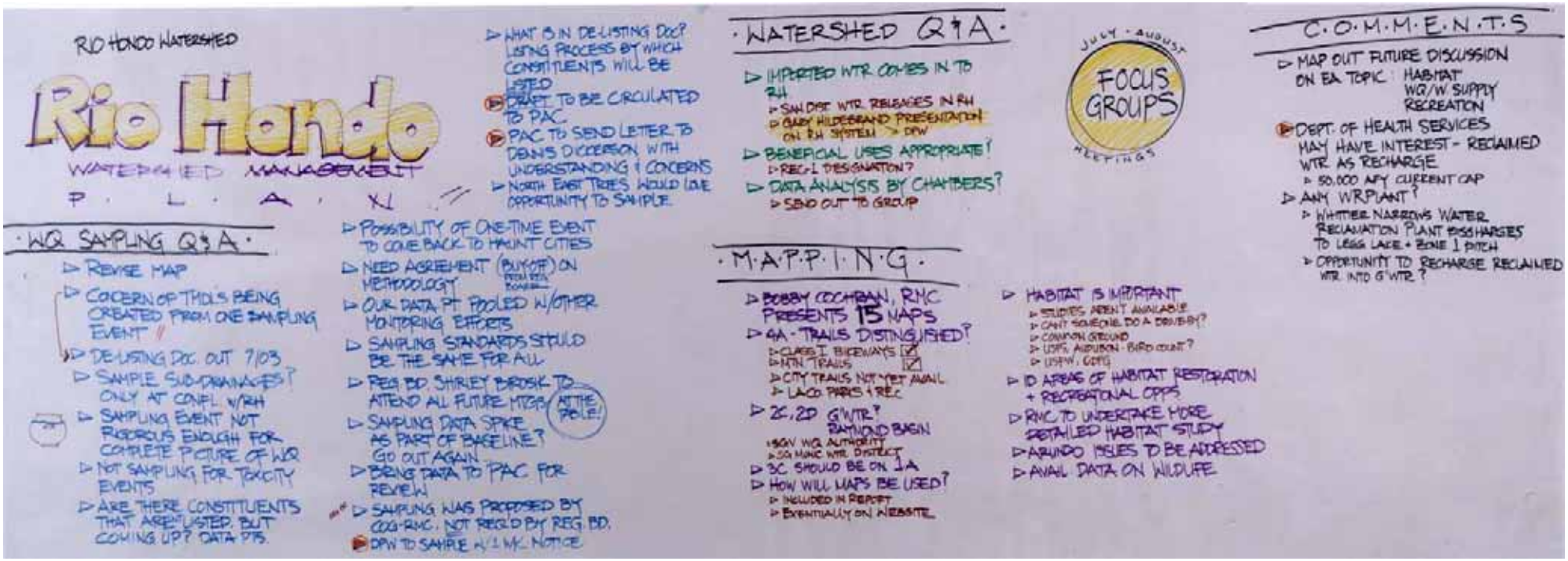
- Map 6-F: Habitat Restoration and Connectivity Opportunities – This map not feasible as the relevant studies are not available to draw upon. Other potential information sources to draw upon:
    - Common Ground report
    - U. S. Forest Service, Audobon Society (bird count)
    - US Fish and Wildlife, California Department Fish and Game

- There should be more emphasis placed on this area (habitat restoration). The RMC is conducting a more detailed habitat study for the whole area.

- It will be important to identify known concentrations of Arundo

- Should we include the Department of Health Services in these meetings, as especially there may be conflicting objectives. The WRD wants to use all available reclaimed water for recharge beyond the current 50,000 AFY cap.

- Are there any water reclamation plants in the Rio Hondo watershed?
    - The Whittier Narrows Reclamation Plant is not in the watershed, but it returns water to it (discharges to Legg Lake and Zone 1 Ditch)
    - Opportunities to recharge reclaimed water into groundwater?


RIO HONDO WATERSHED
Rio Hondo
WATERSHED MANAGEMENT
P · L · A · N
WQ SAMPLING Q&A
REVISE MAP
CONCERN OF THOLS BEING CREATED FROM ONE SAMPLING EVENT
DE-LISTING DOC. OUT 7/03
SAMPLE SUB-DRAINAGES? ONLY AT CONFL. W/RH
SAMPLING EVENT NOT RIGOROUS ENOUGH FOR COMPLETE PICTURE OF WQ
NOT SAMPLING FOR TOXICITY EVENTS
ARE THERE CONSTITUENTS THAT AREN'T LISTED, BUT COMING UP? DATA PTS.
WHAT IS IN DE-LISTING DOC? LISTING PROCESS BY WHICH CONSTITUENTS WILL BE LISTED
DRAFT TO BE CIRCULATED TO PAC
PAC TO SEND LETTER TO DENNIS DICKERSON WITH UNDERSTANDING & CONCERNS
NORTH EAST TRIES WOULD LIKE OPPORTUNITY TO SAMPLE
POSSIBILITY OF ONE-TIME EVENT TO COME BACK TO HAUNT CITIES
NEED AGREEMENT (BUY-OFF) ON METHODOLOGY
OUR DATA PT POOLED W/OTHER MONITORING EFFORTS
SAMPLING STANDARDS SHOULD BE THE SAME FOR ALL
REG. BD. SHIRLEY BRUSK TO ATTEND ALL FUTURE MTGS (AT THE POLE!)
SAMPLING DATA SPIKE AS PART OF BASELINE? GO OUT AGAIN
BRING DATA TO PAC FOR REVIEW
SAMPLING WAS PROPOSED BY COG-RMC, NOT REQ'D BY REG. BD.
DPW TO SAMPLE W/1 WK. NOTICE
WATERSHED Q&A
IMPORTED WTR COMES IN TO RH
SAN DIST. WTR. RELEASES IN RH
GARY HILDEBRAND PRESENTATION ON RH SYSTEM → DPW
BENEFICIAL USES APPROPRIATE?
REG-L DESIGNATION?
DATA ANALYSIS BY CHAMBERS?
SEND OUT TO GROUP
JULY - AUGUST
FOCUS GROUPS
MEETINGS
MAPPING
BOBBY COCHRAN, RMC PRESENTS 15 MAPS
GA - TRAILS DISTINGUISHED?
CLASS I BIKEWAYS
MTN TRAILS
CITY TRAILS NOT YET AVAIL.
LACO PARKS & REC
2C, 2D G'WTR? RAYMOND BASIN
SGV WQ AUTHORITY
SG MUNC WTR. DISTRICT
3C SHOULD BE ON 1A
HOW WILL MAPS BE USED?
INCLUDED IN REPORT
EVENTUALLY ON WEBSITE
HABITAT IS IMPORTANT
STUDIES AREN'T AVAILABLE
CAN'T SOMEONE DO A DRIVE-BY?
COMMON GROUND
USFS, AUDUBON - BIRD COUNT?
USFW, CDFG
ID AREAS OF HABITAT RESTORATION + RECREATIONAL OPPS
RMC TO UNDERTAKE MORE DETAILED HABITAT STUDY
ARUNDO ISSUES TO BE ADDRESSED
AVAIL. DATA ON WILDLIFE
COMMENTS
MAP OUT FUTURE DISCUSSION ON EA TOPIC: HABITAT WQ/W SUPPLY RECREATION
DEPT. OF HEALTH SERVICES MAY HAVE INTEREST - RECLAIMED WTR AS RECHARGE
50,000 AFY CURRENT CAP
ANY WRPLANT?
WHITTIER NARROWS WATER RECLAMATION PLANT DISCHARGES TO LEGG LAKE + ZONE 1 PITCH
OPPORTUNITY TO RECHARGE RECLAIMED WTR INTO G'WTR?

Appendix G
Rio Hondo Watershed Management Plan

Stakeholder Focus Groups Summary

August 26 to 28, 2003

San Gabriel Valley Council of Governments

The following is a summary of each of six stakeholder focus groups addressing the development of the Rio Hondo Watershed Management Plan that were held over a 3-day period in late August. The purpose of the focus groups was to hear from a wide range of perspectives on strategic issues impacting the Rio Hondo Watershed. For this reason each focus group was set up for a specific set of stakeholders, or affinity group, as follows:

- Non-Profits and Public Agencies
- Gateway COG cities and SGVCOG cities
- Non-Profits
- Public Agencies
- SGVCOG cities
- Water Agencies

Each focus group session was structured around three key questions or themes:

- What is your vision of a healthy watershed?
- What issues and challenges must be addressed in order to achieve this vision?
- What strategies, opportunities, and projects should be pursued to resolve these issues and make this vision a reality?

The twenty-eight individuals who participated in the focus groups represented a wide range of cities and other organizations with a stake in the Rio Hondo Watershed.

RIO HONDO WATERSHED MANAGEMENT PLAN

Non-Profits & Public Agencies - Focus Group #1

Key findings from the August 26, 2003, Non-Profits & Public Agencies Focus Group are presented below:

VISION

- *Strive for a Balanced, More Natural Watershed:* Create more natural waterways with less concrete in the river and throughout the watershed, including greater reliance on alternative flood control techniques,
- *Restore Multi-Use Habitat Areas*: Integrate native habitat with nearby communities
- *Enhance Watershed Visibility and Awareness:* Use interpretive elements and signage at key locations such as parks, transit stations, and trailheads to promote watershed awareness and stewardship
- *Use the River to Transform and Define Communities:* Reconnect the river to the economic and social fabric of the communities along its banks. The Rio Hondo is seen as an asset to be promoted for the benefit of all residents and the economic well-being of the community rather than a forgotten, hidden liability.
- *Protect and Expand Open Space:* Identify existing open space that can be preserved as well as industrial and other temporary facilities with future potential for conversion to other land uses. Government agencies can take a more pro-active role to concentrate development
- *Promote Water Quality through Education:* Use greater public understanding of watershed hydrologic functions to change individual behavior and build support for regional water quality improvement efforts

ISSUES AND CHALLENGES

- The cost of funding these solutions can be high. Economic incentives along with clear, measurable returns on the proposed investments will be required to sustain progress.
- Population growth will further increase pressures on the watershed, making solutions even more difficult.
- Some current building and land use codes are counter-productive and need revision. Homeowners landscaping with native plants are sometimes fined for failing to maintain “weed-free” manicured lawns.
- A balance must be found between societal needs and the vision of a more natural watershed. The public should be provided more choices (in housing types, alternative landscaping, etc) but cannot be forced to make changes they do not accept.
- There is a need to find win-win solutions that bring together diverse interests. Patience will be required along with ways to measure progress toward short-term and long-term goals.

STRATEGIES

- Create a balanced approach by listening to and working with all parties.
- Develop constructed wetlands for stormwater retention and treatment at key regional locations, including Peck Park and Whittier Narrows. These same locations can function as multi-use parks during dry weather.
- Assess the potential of using the parking lots at Santa Anita Park and the LA County Arboretum for tangible, multi-use demonstrations in capturing parking lot runoff, water quality improvements, and use of native plants.
- Use interpretive signage at train stations and watershed boundary lines to promote watershed awareness along with complementary educational programs to emphasize the rich cultural and historic landscape of the Rio Hondo watershed.

RIO HONDO WATERSHED MANAGEMENT PLAN

Gateway COG & SGVCOG Cities - Focus Group #2

Key findings from the August 27, 2003, Gateway COG & SGVCOG Cities Focus Group are presented below:

VISION

- *Build Trust:* Develop shared understandings and agreements so that all stakeholders are working together in an atmosphere of trust.
- *Ensure Public Safety and Flood Control:* Provide sufficient drainage to ensure public safety and the protection of property.
- *Involve the Cities in Coordinated Efforts to Develop a Healthy River:* Leverage city initiatives to improve the watershed through science-based, reasonable, and cost effective solutions. Support cities in joining together in collective efforts that leverage their efforts. Recognize cities for the initiatives they develop.
- *Focus on Key Sites:* Maximize results by targeting improvements at key sites. Start with the Rio Hondo Spreading grounds, Whittier Narrows, and Peck Park.
- *Promote Watershed Goals by Responding to City Issues:* The cities support the promotion of habitat protection, stewardship and open space. However, their primary responsibilities are to ensure flood control and fulfill their fiduciary responsibility to minimize financial risk to their citizens.
- *Develop Science-Based, Cost-Effective Strategies:* Use improvement approaches that achieve the greatest result for each dollar spent and based on a full scientific analysis.

ISSUES AND CHALLENGES

- The Rio Hondo has a major role in flood control. A more natural model will require major changes.
- Improvement efforts create significant capital and ongoing costs and can create legal liability.
- Regulatory requirements change frequently, making it difficult for cities to plan
- Policies are not consistent. Implementation and enforcement are not linked created risk for cities.

STRATEGIES

- Create a special assessment district to identify, prioritize and fund watershed improvements. The district would involve stakeholders in setting priorities. Focus should be on highest cost-benefit projects. The district should only be established if regulatory offsets are included in recognition of cities' efforts to make improvements. Such a district would create community agreements on improvements.
- Explore regional and subregional collaborative approaches by cities to seek grants. This will increase the chances of success and reduce competition between cities.
- Focus improvements at targeted opportunity sites – the Spreading Grounds, Whittier Narrows, and Peck Park
- Build trust by developing a multi-stakeholder group to identify beneficial uses for each reach.
- Develop a strategic approach that prioritizes cost-effective approaches and uses both preventative and "end-of-pipeline" solutions. There is a limit to cities' ability to control citizens' behavior.
- Phase projects starting with mandates and building toward discretionary enhancements.

RIO HONDO WATERSHED MANAGEMENT PLAN

Non Profits - Focus Group #3

Key findings from the August 27, 2003, Non Profits Focus Group are presented below:

VISION

- *Develop Habitat and Natural Systems:* Green the channel margins to provide habitat. Remove invasive species. Reduce impervious surfaces. Use sustainable natural systems to address pollution.
- *Promote Broad Awareness of the River and Watershed Benefits:* Create a clear identity for the River through clear signage and a coordinated approach to accessing the river. Educate stakeholders and the public about the benefits open space creates for property values and tax revenues. Communicate our area's reliance on local ground sources to meet water supply needs. Keep the focus on the watershed through better technical analysis and development of criteria that focus on the watershed impacts of policies and development actions. Encourage the next generation to become watershed stewards.
- *Protect and Steward Water Supply:* Conduct "ground water repair" to ensure the viability of local water supply. Preserve the upper watershed.
- *Coordinate Restoration Efforts Across Watersheds:* Ensure watershed efforts in the San Gabriel and Rio Hondo are aligned.
- *Develop Long-Range High-Quality Projects:* Go beyond small "window dressing" projects to achieve substantial improvements to the watershed.
- *Create Trails and Low Impact Recreation:* Provide opportunities for recreation and use of paths along the river. Develop the river trail system to promote walking and biking a transportation alternatives.

ISSUES AND CHALLENGES

- We need better dialog about watershed issues. There is not a common vision and set of goals. Fragmented jurisdictional control in the watershed and water rights issues complicate discussions.
- Financing projects is always a major hurdle.
- There is a need to educate cities about the financial and other benefits of converting land to open space.
- Creating effective natural flood control is a challenge, as is dealing with existing controls technologies.
- Developing innovative solutions can be difficult, in particular being responsive to the needs of a growing population for jobs and housing, etc., while protecting the watershed.
- Poor understanding of watersheds, coupled with concerns about flood and West Nile, etc. are a barrier.
- Concern about pollution in the first 3 hours of storm run-off limits the storage of water.

STRATEGIES

- Develop tributary-based stewardship groups.
- Provide incentives for cities to develop solutions.
- Identify projects with multiple benefits, e.g., supply, quality, flood control, recreation, etc.
- Reduce peak flood run-off, through cisterns and other storage devices.
- Create demonstration models to show how transformation of the watershed can happens: Lashbroke Park could be an example.

- Develop partnerships between cities, non-profits, agencies to address multiple interests and build trust.
- Conduct education on the uses and value of watersheds, including the benefits communities currently derive from the River, and the reasons why we should preserve the watershed for the future.
- Create venues for “cross boundary” communication involving multiple stakeholders and spanning watersheds.
- Integrate alternative transportation improvements along the river to provide public amenities and connect the watershed to parks.
- Develop planning tools: GIS mapping with natural and social information (cultural/ethnic patterns, crime, etc.). Compile existing research and planning models, including international examples and River Walks. Identify a range of protection strategies, from zoning, to easements to acquisition. Develop an inventory of opportunities along the river.

RIO HONDO WATERSHED MANAGEMENT PLAN

Public Agencies - Focus Group #4

Key findings from the August 27, 2003, Public Agencies Focus Group are presented below:

VISION

- *Promote Native Biological Diversity:* Minimize human impacts to the watershed and create a supportive environment for native species. Create landscaping linkages from the top to the bottom on the watershed to provide habitat connectivity.
- *Enhance Water Supply:* Increase the recharge of run-off and develop new storage options.
- *Implement Non-Traditional Flood Control:* Use the existing GIS list of unmet local flood control needs to identify opportunity sites for innovative flood control solutions, such as detention basis. These can be integrated in a regional solution to free up downstream capacity.
- *Establish Efficient Hydrological Cycles:* Develop strategies to maximize rainfall recharge in the watershed.
- *Enhance Water Quality:* Reduce pollution.
- *Promote Stakeholder Buy-In:* Address property issues, flood control and operations and maintenance.
- *Develop Multiple Objective Initiatives:* Address water supply, water quality, and habitat issues, while addressing flood control and new public health concerns such as vector control (e.g., West Nile virus).
- *Provide Recreational Opportunities:* Develop environmentally sensitive recreational uses in tandem with other beneficial uses such as flood control, water quality, and conservation.
- *Support the Renewal of Adjacent Watersheds:* Develop coordinated approaches that support the watershed enhancements in the Los Angeles and San Gabriel rivers.

ISSUES AND CHALLENGES

- Stakeholder acceptance of flood control and property protection levels is critical.
- We need to maintain current levels of water conservation in any new approach.
- A key issue is securing adequate capital and operations/maintenance funding.
- There is a challenge in documenting the economic value of a healthy watershed system.
- Neighborhood opposition to wetlands, due to fumes and nuisances related to animals.
- Lack of trust is an issue, as is lack of agreement on TMDL standard setting process (e.g., trash).
- One issue is creating a manageable set of projects, and consistency across projects, given the many needs.
- The long timeframe of some solutions will require patience on the part of stakeholders.

STRATEGIES

- Assess unmet local drainage needs and develop multi-objective regional solutions. Alternatives to storm drains are more expensive, but have many more benefits.
- Enhance the Rio Hondo spreading grounds and creating a linkage to the San Gabriel spreading grounds. A major project including greenways, bike paths and rest areas would draw people in and create an important educational opportunity to learn about the watershed.

- Develop information resources to support planning: Create property map to show opportunity sites for possible acquisition. Identify a portfolio of potential projects to draw from when funding becomes available. Compile possible mitigations (see Santa Monica Conversancy model as a resource).
- Pursue regulatory opportunities to avoid degradation related to development. One option is to identify offsetting mitigations within the watershed that could be used if on-site mitigation is impossible.
- Develop options based on successes in other watershed efforts. Examples include Arroyo Seco, Ballona Creek, Compton Creek, Dominquez Channel, Sun Valley, San Diego Creek, and San Juan Creek.
- Use the LA River Master Plan documents as guidelines for maintenance, signage, and landscaping. Move toward regional consistency.
- Create improvement demonstration sites at Peck Park, Whittier Narrows, and Alario Creek. At Peck Park, install trash collections control and enhance habitat using a flow through wetlands.
- Create a greenway from Peck Park to Alhambra Wash.

RIO HONDO WATERSHED MANAGEMENT PLAN

SGVCOG Cities - Focus Group #5

Key findings from the August 28, 2003, San Gabriel Valley COG Cities Focus Group are presented below:

VISION

- *Create A Safe and Visually Attractive Environment Along the Rio Hondo:* Make the river a more appealing, safe public place by removing trash, providing greenery, adding lighting, and addressing the transient problem.
- *Develop A Cohesive Regional Trail System:* A potential network of trails along the Rio Hondo and its tributaries can be linked to nearby recreational resources, including the San Gabriel Mountains.
- *Implement Reasonable Water Quality Solutions.* Use a cost-effective, cooperative, approach at common "choke points," rather than shifting the entire cost for a clean Rio Hondo to individual city efforts.
- *Form a Watershed Consortium to Ensure A Collaborative Approach:* Led by the RMC, SGVCOG, SGV Water Quality Authority or other neutral entity, it would provide the organizational framework needed by cities to pursue shared, cost-effective programs beyond their individual resources.
- *Eliminate Liability:* Use a commitment to implement the Rio Hondo Watershed Management Plan as the basis for a hold harmless agreement with the state and federal governments on water quality improvements.

ISSUES AND CHALLENGES

- Substantial resources are being misdirected to deal with water quality litigation instead of being more productively used to implement feasible watershed enhancement solutions.
- There is a lack of rigorous technical analysis to support current regulatory and fiscal requirements for implementation of recommended water quality improvements
- There is a critical funding shortage to carryout these improvements. Political support must be developed along with greater public understanding and acceptance for these programs. Leadership is required.
- Operational and maintenance costs for these programs can be unpredictable. Population growth will increase impacts and with it the costs of improving water quality.
- The Rio Hondo Watershed Management Plan has the potential to increase costs for the cities. It will need to be reviewed by the Board of the SGVCOG.

STRATEGIES

- Analyze the costs and potential benefits of proposed watershed enhancements to define projects that are technically feasible, cost-effective, and fiscally implementable.
- Inventory all existing and planned improvement projects, as well as potential enhancement opportunities, to determine where resources should best be directed to achieve watershed improvement goals.
- Explore ways to mitigate impacts related to population growth. Those responsible for development should assume a greater share of responsibility for water quality improvements.
- Pursue legislation to encourage cities to implement good faith water quality improvement efforts. The current litigious legal environment is now a disincentive for doing the right thing. A more rational, transparent process based on an agreed set of graduated steps and goals would reward rather than penalize such efforts.
- Develop the leadership around which a viable watershed consortium can be formed.

RIO HONDO WATERSHED MANAGEMENT PLAN

Water Agencies - Focus Group #6

Key findings from the August 28, 2003, Water Agencies Focus Group are presented below:

VISION

- *Remove SuperFund Site:* Clean up the Upper Basin toxic groundwater plume and prevent its migration to the Central Basin.
- *Maximize Local Groundwater Supply*: Reduce dependence on imported water by expanding capacity to capture treat and store storm water, improving water conservation programs, and encouraging recycled water usage.
- *Enhance Public Understanding of Water Supply Processes:* Increase community awareness of groundwater as a major water supply source, and of how their actions impact the watershed and water quality
- *Build Public Trust;* Improve public perception of local water agencies and the quality of the local water supply, including uses and risks associated with recycled water.
- *Create Community Connection to the Watershed:* Use recreational, educational, and volunteer programs to build community awareness of the Rio Hondo Watershed as a critical local resource.

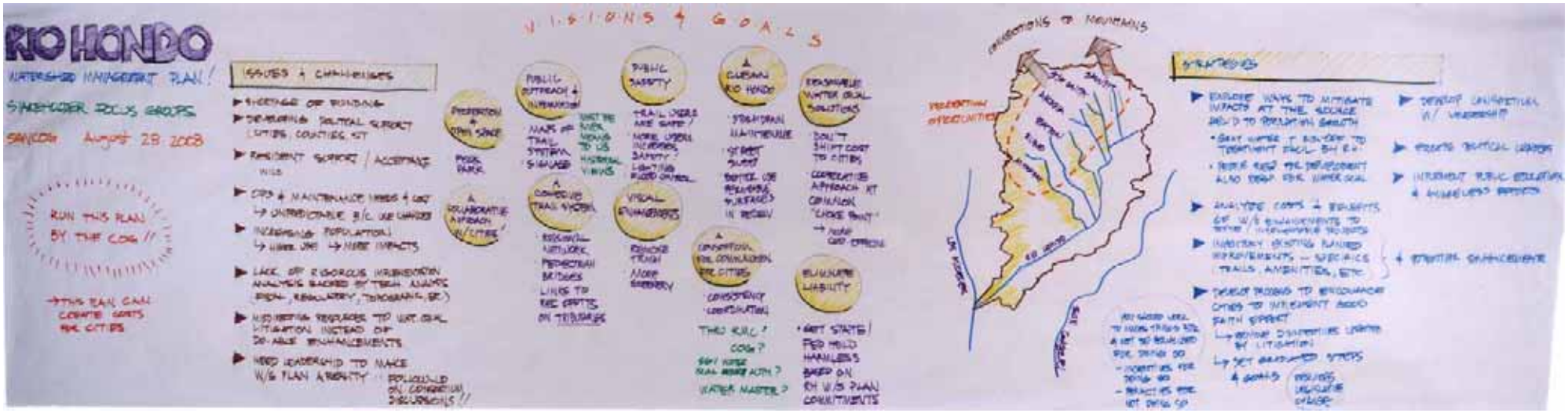
ISSUES AND CHALLENGES

- Trust between customers and water agencies, between agencies on matters of supply and quality, and with the regulatory agencies needs to be re-established
- The cost of meeting water quality standards, including groundwater cleanup, is high, and this greatly complicates deciding who should pay for the clean up
- Establish good science on contaminants to define what is meant by “clean water;" use this information to create a firm consensus among all involved public agencies.
- Public awareness of water supply and watershed issues is inadequate; the problem is now and not in the distant future but most are not yet aware of this
- Some fears impede the search for solutions; whether it is the public’s fear of recycled water, or public agency fear of data regarding pollution levels.

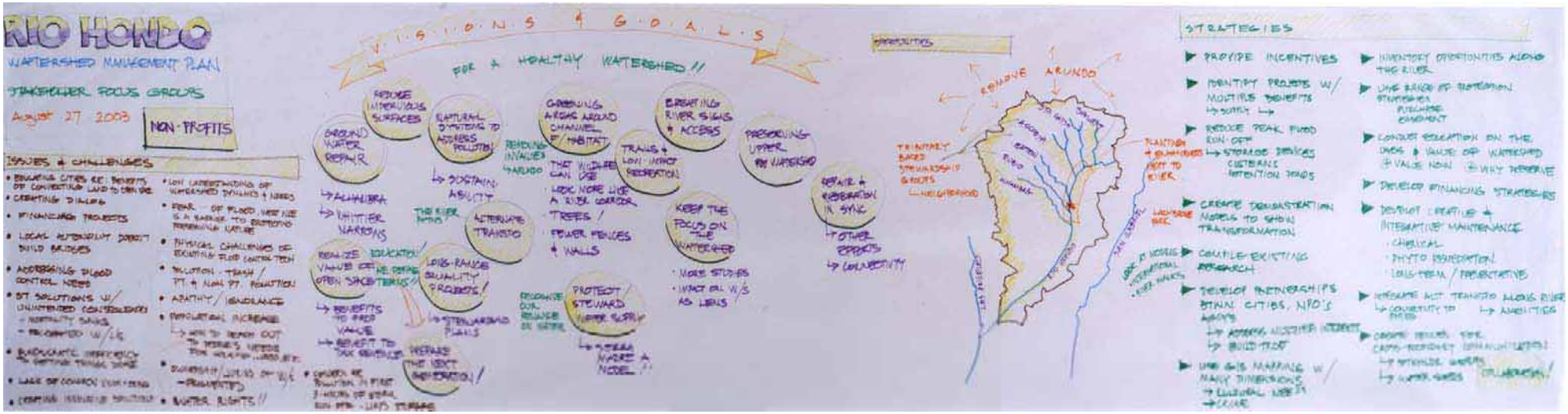
STRATEGIES

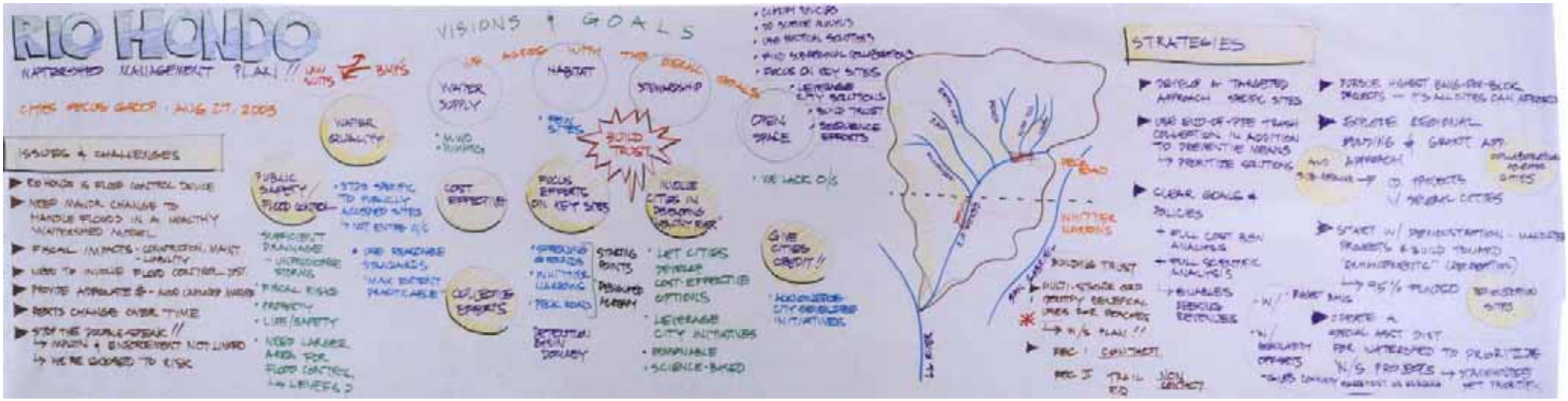
- Enhance communication, coordination, and collaboration between agencies, including the Department of Health Services and the water agencies.
- Pursue multi-agency projects that address inter-related benefits of the watershed rather than narrowly-defined single-focus projects that overlook the overall context of the watershed.
- Develop new water pricing strategies, including higher prices, which better reflect the true value of water and by doing so help conserve its use
- Build low-impact recreational opportunities, in combination with water management facilities, at strategic locations like Peck Park that can attract people to the river while also having educational value.
- Promote water conservation technologies
- Conduct a joint study on the health impacts of recycled water
- Develop a watershed-based curriculum for grades K through 12.

RIO HONDO
WATERSHED MANAGEMENT PLAN
AUGUST 28, 2003
WATER AGENCIES
ISSUES & CHALLENGES
VISIONS & GOALS
STRATEGIES, OPPORTUNITIES & PROJECTS


RIO HONDO
WATERSHED MANAGEMENT PLAN!
SGVCOG August 28 2003
RUN THIS PLAN BY THE COG!!
ISSUES & CHALLENGES
VISIONS & GOALS
PUBLIC SAFETY
STRATEGIES

RIO HONDO
WATERSHED MANAGEMENT PLAN
AUGUST 27, 2003
GROUP #4
PUBLIC AGENCIES
BARRIERS + ISSUES
VISIONS + GOALS
STRATEGY IDEAS


RIO HONDO
WATERSHED MANAGEMENT PLAN
STAKEHOLDER FOCUS GROUPS
August 27 2003
NON-PROFITS
ISSUES & CHALLENGES
VISIONS & GOALS
FOR A HEALTHY WATERSHED!!
GROUND WATER REPAIR
REDUCE IMPERVIOUS SURFACES
NATURAL SYSTEMS TO ADDRESS POLLUTION
GREENING AREAS AROUND CHANNEL F/ HABITAT
BREATHING RIVER SIGNS & ACCESS
PRESERVING UPPER RH WATERSHED
REPAIR & RESTORATION IN SYNC
ALHAMBRA
WHITTIER NARROWS
SUSTAINABILITY
ALTERNATIVE TRANSPO
TRAILS & LOW-IMPACT RECREATION
KEEP THE FOCUS ON THE WATERSHED
OTHER EFFORTS
COMMUNITY
STRATEGIES
PROVIDE INCENTIVES
IDENTIFY PROJECTS W/ MULTIPLE BENEFITS
REDUCE PEAK FLOW RUN-OFF
CREATE TRANSITION NODES TO SHOW TRANSFORMATION
COUTILE EXISTING RESEARCH
DEVELOP PARTNERSHIPS BTWN CITIES, NPO'S
USE GIS MAPPING W/ MANY DIMENSIONS
INVENTORY OPPORTUNITIES ALONG THE RIVER
LONGOUT EDUCATION ON THE DAMS & VALUE OF WATERSHED
DEVELOP FINANCING STRATEGIES
DEVELOP CREATIVE & INTEGRATIVE MAINTENANCE
CHEMICAL
PHYTO REMEDIATION
LONG-TERM / PREVENTATIVE
INTEGRATE WCT TRANSPO ALONG RIVER
COMMUNITY TO ANCILLARY
CREATE VISUAL FOR CROSS-PROJECT COORDINATION
WATER RIGHTS!!


RIO HONDO
WATERSHED MANAGEMENT PLAN
VISIONS & GOALS
WATER SUPPLY
HABITAT
STEWARDSHIP
WATER QUALITY
BUILD TRUST
OPEN SPACE
COST EFFECTIVE
FOCUS EFFORTS ON KEY SITES
GIVE CITIES CREDIT!!
ISSUES & CHALLENGES
STRATEGIES

RIO HONDO
WATERSHED
FOCUS GROUP #1
AUGUST 26, 2003
1:30-3:30 pm
NON-PROFITS
PUBLIC AGENCIES
CHALLENGES
VISION
TRANS. HEALTHY WATERSHED
NATURAL RIVERS
HEALTHY WATERSHED
OPEN SPACE
TRANSPORTATION + TRAILS
STEWARDSHIP
OPPORTUNITIES
STRATEGIES

SUMMARY OF WATERSHED FOCUS GROUPS

Six focus groups met over a three day period, form August 26 to 28, 2003 and identified three opportunity sites for most immediate maximized results:

- Peck road Conservation Park
- Whittier Narrows
- Rio Hondo Spreading Grounds

Peck Road Water Conservation Park Opportunities

The Upper San Gabriel MWD is interested in more groundwater capture

Treatment wetland in lake (± 5 acres) is possible

Create wetland on upland east side of lake

- Water supply would include urban runoff and possibly lake water
- Wetland would provide urban runoff treatment

Enhance open space area on peninsula

- Plant native vegetation (coyote brush & oaks)
- Create viewing areas with interpretive signage and other park amenities

Trash capture gate to be placed at end of Santa Anita and Sawpit Washes

- Proposed by Monrovia & other Cities
- Uses Best Management Practice (BMP) approach
- EPA funded, placed adjacent to channel
- Series of bar grates, ¼" capture floatables & other trash
- Requires only about 15' of space
- Storm water is diverted through BMP, comes out cleaner

Grade lake edges to increase available habitat & reduce erosion

- Develop peninsulas and islands to increase edge habitat
- Vegetate with riparian plants
- Maintain percolation capacity
- Coordinate restoration efforts with the Sierra Club
- Create viewing areas with interpretive signage

Tie Hanson Quarry in to park lakes opportunities

- 460 acres just east of park
- Potential recharge & urban runoff clean-up opportunity

Opportunity for a sediment and debris trap near the inlet channel to the lake

Potential park enhancements include

- Bike trail signage, Improved entry with decorative gate, and a trail loop
- Demonstrate water conservation technologies

Whittier Narrows Key Issues

Challenge is to achieve balance between multiple issues:

- Recharge - Habitat - Flood management - Recreation

Proposed water conservation pool by the Water Replenishment District (WRD)

- Provide additional water for recharge
- Pool would flood habitat and recreation areas for up to 2 weeks
- WRD has worked to move oil companies out of the area
- WRD using 1998 ACE study as baseline
- Money and buy-in needs to occur for conservation pool to move forward

- Hollywood Beautification Team (HBT) to remove Arundo north of 60 Freeway and golf course
- Examine cross-section for Ele. 209 (from ACE Study) for recharge and habitat/recreation opportunities
- Identify critical and non-critical habitat areas
- Next steps for WRD/ACE project implementation
  - Agree on habitat and recreational needs
  - RMC, LA County Parks, WRD, ACE, and others
- Alhambra wash (1,000-1,500 ft) concrete removal with 100 ft wide floodplain
- Pico Rivera Golf Course expansion behind dam
- Mission Creek is moving forward (RMC and Parks)
- Lario Creek/Zone 1 Ditch habitat restoration project is also moving forward (North East Trees)
- Site of original San Gabriel Mssion – historic & cultural value
- La Fiesta property for sale
- Investigate upcoming TMDL's and appropriate BMP's

Habitat Restoration Needs

Needs to be consistent with 1996 Master Plan by U.S. Army Corps of Engineers

In some areas maintained for flood control, native riparian habitat may need to be removed to maintain flood control functions

Remove non-native invasive species and replace with natives

- In areas designated as habitat, arundo should be removed and the areas revegetated with native riparian vegetation such as willows and mulefat
- Remove other non-native plant species such as Pepper trees, sow thistle, castor bean, Russian thistle, and replace with natives such as willows, mulefat, and coyote brush
- Plant native trees such as sycamores and oaks in landscaped areas and, where possible, replacing non-native trees with natives.

Improve habitat connectivity by planting native vegetation

- Patches of native or ruderal habitat occur throughout Whittier Narrows are often dominated by non-native species that could be revegetated with native species

Whittier Narrows Opportunities

- Development of additional habitat behind dam
- Increasing infiltration behind dam with creation of pools

Aerial View of Whittier Narrows

Rio Hondo Spreading Grounds

- In the City's of Pico Rivera, Montebello, Bell Gardens & Downey
- 20 basins that cover 570 acres
- Owned and operated by the Los Angeles County Department of Public Works
- Water Replenishment District (WRD) responsible for groundwater recharged
- Upper areas more productive than lower areas
- No habitat creation unless additional recharge area is found

- Parking lot at north is potential recharge area
  - 30 acres needs to be acquired
  - site is over very productive recharge area

- "Oxbow" spreading basin to the south as potential wetlands
  - Southern basins not as productive for recharge as northern ones
  - Need to compensate for loss of recharge

- Montebello developing an equestrian trail master plan
  - From Whittier Narrows Dam to Spreading Grounds

- Pico Rivera received Proposition A funds for bike path improvements

- Gate upgrade
  - Potential opportunity to include trash screens

Appendix H
Rio Hondo Watershed Management Plan

Water Quality Subcommittee Meeting Summary

September 2, 2003 DRAFT

San Gabriel Valley Council of Governments

1:00 pm – 3:00 pm

Attendees:
Gerry Greene, City of Downey
Douglas Benash, City of Monrovia
Shirley Birosik, LA Regional Water Quality Control Board
Belinda Faustinos, Rivers and Mountains Conservancy
Cathie Chavez, Rivers and Mountains Conservancy
Mickey Chaudhuri, LA County Department of Public Works (DPW)
Eileen Takata, Moore Iacofano Goltsman, Inc. (Producer of this report)

Purpose of Meeting: To review draft report by Chambers Group of existing water quality data, water quality sampling results taken by DPW on August 12, 2003, and the State Board's draft Water Quality Control Policy, July 1, 2003.

I. Introductions & Purpose of Meeting

Introductions were made. Purpose of this meeting was stated.

II. Water Quality Monitoring

Existing Data Analysis - The Chambers Group developed a report summarizing existing water quality data compiled by the Regional Board. The Regional Board compiled data over the last few decades from different agencies including the Board (compliance), LA County Department of Public Works (compliance), Sanitation Districts of Los Angeles County (compliance & water supply), and the CA Department of Water Resources (water supply). The group noted that this data is limited and was taken for specific water resource needs and the sampling locations were limited to a few sites. The Regional Board views this data as historical data, useful for observing changes over time. This data summary report is currently available in draft format.

Water Quality Sampling Event - DPW conducted a sampling event on August 12, 2003, sampling at nine locations, including the bottom of the watershed, at the confluence of the Los Angeles River. Due to releases from Santa Fe Dam at the time of sampling, high flows were experienced in Sawpit Wash at Peck Road Water Conservation Park. These flows originated from the Upper San Gabriel River reservoirs and released into Sawpit Wash via the Buena Vista Channel. A sample was taken in Sawpit Wash at Peck Road Water Conservation Park. However, to obtain results representative of the Sawpit Wash subwatershed, an additional sample was taken upstream of Buena Vista Channel on Sawpit Wash on August 18, 2003. The laboratory results are currently available.

Upon scanning the laboratory results, it was noted that there were high levels of pollutants for constituents already listed on the current 303(d) List, so no new surprises. Shirley Birosik made initial observations regarding results of the laboratory analysis. She looked for "patterns" in the data. For example, she noted that the coliform levels in the reference site were surprisingly high. Through discussion, it was determined that this site was downstream of a popular swimming hole by the water falls upstream. Lowest levels of coliform were at the confluence with the Los Angeles River. She noted that zinc is almost all dissolved, and copper showed up as a combination of dissolved and suspended.

Additional Discussion - There was a discussion regarding the need to address Beneficial Uses, as defined by the State Water Resources Control Board. These Beneficial Uses need to be balanced with the goals of this Watershed Plan for best possible City buy-off on the Plan. Specifically, there are specific locations within the watershed with Beneficial Uses including all canyons for recreation, Peck Road Water Conservation Park for groundwater recharge and recreation, Whittier Narrows for recreation, and the Rio Hondo Spreading Grounds for groundwater recharge and recreation.

Water quality standards that currently are not being met imply that treatment is needed. Treatment could be biological (treatment wetlands), mechanical (manufactured BMPs such as trash or oil traps, or treatment plants), or preventative (education programs). The message needs to be clear that treatment of polluted urban runoff needs to occur! There is a need for marketing and education of the public and agencies. Agencies need solutions tied to funding strategies. Current City Ordinances will be examined for their potential to improve not only water quality, but other watershed management measures as well. For example, the MS-4 Permit regulates water quality stemming from new development, but does not necessarily address runoff from existing land uses. Also, enforcement of this permit is a factor of staff time and available budget.

III. State Water Resources Control Board - Policy Guidelines

Overall, the Subcommittee is satisfied with the fact that guidelines for listing are outlined in the Draft "Water Quality Control Policy: for Guidance on Assessing California Surface Waters," July 1, 2003. It was noted that the number of exceedances to list was low in comparison to de-listing (see Table 5.2, pg. 21). The guidelines state that three (3) samples out of ten to eleven for a constituent must exceed the limit before it is listed on the 303(d) List (see Table 4.2, pg. 15). Because we carried out only one sampling event, we have not met the minimum criteria for listing a new constituent on the 303(d) List. Toxicity has the most stringent criteria, but we did not sample for toxicity at this time. We will state our understanding in a letter from the Water Quality Subcommittee, addressed to Mr. Dennis Dickerson, Executive Officer of the Los Angeles Regional Water Quality Control Board. Pending further review of sampling data, this letter will be drafted and circulated to members of the PAC for review and comment.

We clarified that any Land Use assessment of the watershed will not be directly correlated to the data collected from the one sampling event. Instead, the Land Use for each subwatershed will be summarized for percent land use type, and correlated to Land Use Monitoring data collected by DPW as an MS-4 Permit requirement, as reported in the 1994-2000 Integrated Receiving Water Impacts Report, July 31, 2000.

IV. **Conclusion**

V. The meeting adjourned at 3 pm.

Appendix I
Rio Hondo Watershed Management Plan

Project Advisory Committee Meeting #3
Meeting Summary

September 10, 2003

MEETING PURPOSE AND OPENING REMARKS

- The primary purpose of the meeting was to review findings from the stakeholder focus groups and to then review and discuss the preliminary plan framework. The latter provides an overview of the developing watershed plan, as defined by its vision of a healthy watershed, eight goals that support the vision, and strategies designed to achieve those goals.

- The meeting began with a brief overview of key findings from the stakeholder focus groups, as presented by Mark Sillings from MIG. In all the focus group sessions, three sites – the Rio Hondo Spreading Grounds, Whittier Narrows, and Peck Park – kept coming up as possible areas for multi-objective, regional projects.

- These findings, along with input from the two preceding PAC meetings was used to develop the preliminary plan framework, which was the basis for the subsequent discussion facilitated by Daniel Iacofano.

MEETING OVERVIEW

Much of the discussion focused on the opportunity to implement regional solutions at the three key sites but also how to balance these potentially high-impact, multi-objective projects with other local efforts that are also needed. Other related issues concerned whether the Regional Board would accept this proposed regional approach, and how the watershed plan would help leverage funding for both regional and local projects. A Regional Projects subcommittee was formed to deal with these questions in more detail.

The following summarizes major points raised by stakeholders during the course of the discussion:

- It was observed that while it was commendable to identify multiple goals, as outlined in the plan framework, there was concern that this would diffuse overall efforts within the watershed. Instead, there was a need for regional solutions, especially for water treatment, rather than hundreds of small, local solutions.

- High-leverage, regional projects at major, strategic locations – such as using the spreading grounds as water quality treatment wetlands – would be far more cost effective and have more of a significant, measurable impact than multiple cities trying to do it on their own.

- The expertise, leverage, and political support to make the regional projects happen is already in this room.

- It was commented that the Upper Water District is looking at the gravel quarries as possible future sites for regional, multi-objective project, including water quality treatment, recreation, and habitat restoration.

- The question for the PAC to consider is where should we first focus our efforts?

- Belinda Faustinos from the RMC observed that the Rio Hondo Watershed Plan will help set priorities and determine future funding allocations. They would like to see the emergence of regional, high-impact projects from the watershed plan, rather than the complete dispersion into separate, small projects, but local projects also need consideration. It will be important to evaluate projects in terms of which ones can deliver the greatest benefits for the most area.

- It was asked, have we as a group agreed to this overall approach; meaning to focus our efforts on three regional sites? After that in 5 to 10 years we can then tackle the concrete channel.

- Channelization is an imprecise science; so it makes sense to first tackle the three sites so we are not putting dirty water into a channelized river.

- Three to four regional high-leverage projects can be designed in multi-objective ways

- We should initiate a technical and feasibility study of the three sites, looking at environmental issues, political considerations, budget, construction costs, technical aspects and the scale of the projects. All of these sites are on publicly held lands, so we are just talking about different uses for this land.

- We should use an approach similar to what is being done to develop the San Gabriel River Master Plan – first look at all the possibilities and then zero in on a few sites. We can't lose sight of local solutions.

- All of the gravel quarries are privately owned. A feasibility study would need to look at what it would take to make the private owners financially whole.

- Do we really need a detailed feasibility study at this point, because we already know that these sites will work; we should move ahead with implementation as soon as possible.

- It is important for the Water Replenishment District (WRD) to identify priorities within these sites, especially at Whittier Narrows, one of the three regional sites under discussion. The WRD with the Army Corp of Engineers is developing a water conservation pool behind the Santa Fe Dam. Since it will enable us to save $1 million annually, we will be moving ahead with this in the coming year.

- We need your input now to integrate other projects and benefits into the design of the water conservation pool. So, this is a time-sensitive issue and we do not want to miss the boat on an implementation that is likely to be underway a year from now.

- The question is how can the water conservation pool project be modified to achieve these other benefits (habitat restoration, recreation, etc.)?

- Will you be able to collect trash before it gets to the water conservation pool?

- The cities of Monrovia, Sierra Madre, and Arcadia are working together on a device to screen out trash at the Peck Road Water Conservation Park. It is a prototype design that could be used on other Rio Hondo tributaries.

- The three key areas are important but do not lose sight of local scale opportunities, such as retrofitting parking lots, etc. Both regional and local solutions should be elements of the watershed plan.

- We will need to come up with a proportional distribution of funds for regional and local projects, especially if the local efforts complement and support the larger scale regional projects.

- If we go to the Regional Board with regional economically feasible options, then they might listen to this approach especially given the current public fiscal situation

- All of this sounds like a great idea, but it won't fly if we do not have buy-off from the regulators. We could succeed in cleaning up Whittier Narrows to the

nth degree but it is no good if the Regional Board says you still have to clean up everywhere in the watershed.

- This is a general approach discussed in lots of watersheds. The question is whether regional solutions will always work in large storm events? There is stuff happening upstream that may overwhelm regional projects downstream.

- From our work on the Arroyo Seco, we realized that watershed-wide solutions were required, because cities not even along the river corridor will impact the river with their long-term growth plans.

- We need to avoid a scattergun approach by focusing on regional solutions. But the question we have for the RMC is what happens to current projects?

- The watershed plan will help leverage more funding in coming years, plus we have more funding in coming years. Prop 40 funding requires that we balance water quality projects with other important goals.

- It will be important to strike a balance between larger regional projects and the smaller local ones that keep coming up before city councils and that require our attention. There is a need to integrate city planning with regional solutions.

- We need a regional projects sub-committee to explore these questions in more detail and to then report back to the full PAC at its next meeting. Volunteer members of the Regional Projects Sub-committee identified at this time include:
    - John Alderson, City of San Marino
    - Doug Benash, City of Monrovia
    - Mickey Chaudhuri, LA County Department of Public Works
    - Cathie Chavez, Rivers and Mountains Conservancy
    - Jim Donovan, National Park Service
    - Jeff Haltiner, PWA
    - David Jallo, LA County Parks and Recreation
    - Phyllis Trabold, US Army Corp of Engineers

- Peck Park Trash Collection in catch basins will comply with TMDLs in three years

- Is there any sympathy from the Regional Board for these ideas?

- Water quality as a goal implies treatment of stormwater

- We will need to send our proposal to the Regional Board, and then invite them to a roundtable discussion

- It is not one or the other – regional vs. local solutions – but a balance of both. We need to look at which catch basins need help; conduct an inventory, because we know that 90% of the trash comes out of only 10% of the basins. Once it is in the streams from those 10%, it then impacts the whole stream system.

- As we implement these new solutions, hopefully the old, historic problems will not recur. What is a “natural” clean area in Southern California as a reference? Horses and ducks may be encouraged but they can create their own set of problems.

- Important to think about long-term maintenance – perhaps support from youth conservation groups and other partnerships.

RIO HONDO
WATERSHED
PROJECT ADVISORY COMMITTEE #3
RUSHHEAD SEPTEMBER 10, 2003
WATER QUALITY
LOCAL SOLUTIONS
REGIONAL PROJECTS
PROJ PARKS
WATER HARDINGS
SPREADING GROUNDS
BALANCE
CITY PLANNING
REGIONAL SOLUTIONS
Existing Open Space with Trails
MAJOR SITES APPROACH
GRAVEL QUARRIES
LOOK @ POTENTIAL REGIONAL SOLUTIONS
ID PRIORITIES WITHIN REGIONAL SITES
TREATING FRESH WATER THAT REMOVAL
LOCAL PROJECTS
USE A PROPORTIONAL FUNDING APPROACH
REGIONAL PROJECTS

Appendix J
Rio Hondo Watershed Management Plan

Regional Projects Subcommittee Meeting Summary

October 2, 2003 DRAFT

Los Angeles County Department of Public Works, Alhambra

1:00 pm – 3:00 pm

Attendees:
John Alderson, City of San Marino
Douglas Benash, City of Monrovia
Jeff Yann, Upper San Gabriel Municipal Water District
Nancy Matsumoto, Water Replenishment District
Bruce Mowry, Water Replenishment District
Cathie Chavez, Rivers and Mountains Conservancy
Mickey Chaudhuri, LA County Department of Public Works (DPW)
Phyllis Traböld, US Army Corps of Engineers
Jim Donovan, National Park Service Rivers Trails & Conservation Assistance Program
Erik Fonseca, Congresswoman Hilda Solis
Chi Mui, Senator Gloria Romero
Jeff Haltiner, Philip Williams & Associates
Amy Stewart, Philip Williams & Associates
Mark Sillings, Moore Iacofano Goltsman, Inc.
Eileen Takata, Moore Iacofano Goltsman, Inc.

I. Introductions & Purpose of Meeting

Mark Sillings gave an overview of the meeting which was to review issues and opportunities within three key regional project areas.

II. Overview of Regional Opportunities

The three regional project areas include:

(1) Peck Road Water Conservation Park
(2) Whittier Narrows Area
(3) Rio Hondo Spreading Grounds

Key Issues

There were several overarching key issues that were expressed at the opening of the meeting. Coordination among groups was a key message, as conflicting issues need to be addressed. An interest in continuing meeting regularly was expressed. There was a definite interest in the formation of site-specific subcommittee's to address concerns at a local level. One planning approach was to examine the watershed in subwatershed regions.

- Need coordination by stakeholders – agencies, non-profits – to achieve goals
- Flexibility by Regional Board to allow water movement through different jurisdictions

- Groundwater recharge may be in conflict with some other interests
- On-going structure to meet & coordinate (Project Advisory Committee, watershed council or projects subcommittee) is necessary
- Need structure – perhaps a semi-annual watershed stakeholder meeting
- Integrate efforts at project area
- Site specific – need to address jurisdictional constraints
- Make recommendations on who participates on these committee's
- Spin-off group to meet regarding Whittier Narrows
- Example of watershed planning approach – Ballona Creek Watershed is broken up into subwatersheds
- Identify potential projects per subwatershed

III. Program Elements Identification

Each of the three project areas are actually multiple projects in one area, ranging from simple entry improvements to trail loops to habitat and stream restoration projects. This meeting was an opportunity to examine both issues and opportunities at each site. Many exciting opportunities were identified. During the course of the meeting, it became apparent that continued discussions would need to occur for each of these project areas. There are conflicts that will take additional discussion for resolution to occur such as the need for habitat & trails versus the need to create a water conservation pool behind the Whittier Dam.

1. PECK ROAD WATER CONSERVATION PARK

Located in unincorporated Los Angeles County, Peck Road Water Conservation Park is nested between Monrovia, Irwindale, Arcadia, Temple City & El Monte. Los Angeles County Department of Parks & Recreation operates the county park while Public Works owns and operates the lake which serves as a recharge basin. A model BMP is to filter out trash is proposed by Monrovia.

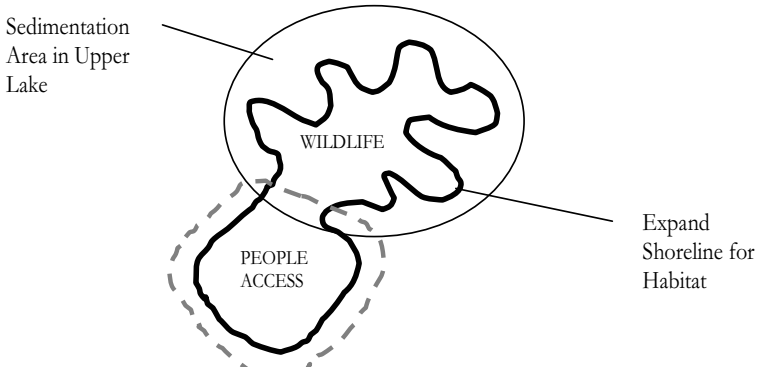
Key Issues

- The effectiveness of storm water treatment wetlands is in question
    - Conflict with habitat
    - Very land-intensive
- Lakes percolate through sides – bottom is silted
- Need buy-in from environmental groups
- Monrovia et al is proposing to install a trash capture Best Management Practice (BMP) at end of Santa Anita and Sawpit Washes
    - EPA funded
    - Adjacent to channel
    - Series of bar grates, ¼" capture floatables & other trash
    - Requires only about 15' of space
    - Storm water is diverted through BMP, comes out cleaner

Opportunities

- Potential enhancements to the park include:
    - Habitat restoration around the perimeter of the lake
    - Demonstrate water conservation technologies
    - Bike trail signage
    - Decorative gate
    - Trail loop

- Improve entry
- The Upper San Gabriel Municipal Water District is interested in more groundwater capture
- Hanson Quarry just east of park is 460 acres and has potential urban runoff clean-up opportunity – tie in to park lakes
- Treatment wetland in lake (± 5 acres) is possible to treat water in lake
- Lakes offer some treatment themselves

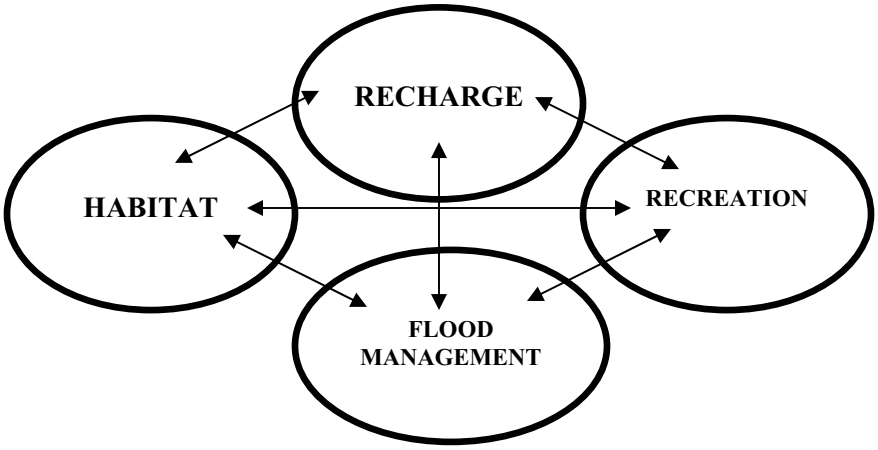


2. WHITTIER NARROWS

Whittier Narrows is defined by the Whittier Narrows Dam, holding back a large open space and recreation area between the San Gabriel River and the Rio Hondo at the 60 Freeway. Much of the area is part of the Whittier Narrows Recreation Area run by Parks & Recreation, although the land is owned by the US Army Corps as floodplain. Whittier Narrows Nature Center is a popular school and regional destination. The Whittier Narrows County Golf Course is on the west bank of the Rio Hondo.

Key Issues

- Challenge to achieve balance between recharge, recreation, habitat & flood management issues



- Proposed water conservation pool by the Water Replenishment District (WRD) to flood habitat and recreation areas for up to 2 weeks
- Oil company's are out of the area now
- WRD using 1998 ACE study as baseline

- Money and buy-in needs to occur for conservation pool to move forward

Opportunities
- Hollywood Beautification Team (HBT) to remove Arundo north of 60 Freeway and golf course
- Examine cross-section for Ele. 209 (from ACE Study) for recharge and habitat/recreation opportunities
- Identify critical and non-critical habitat areas
- Next steps for water conservation pool project implementation
    - Agree on habitat and recreational needs
    - RMC, LA County DPW & Parks, WRD, ACE, and others
- Alhambra wash (1,000-1,500 ft) concrete removal with 100 ft wide floodplain
- Pico Rivera Golf Course expansion behind dam
- Mission Creek is moving forward (RMC and Parks)
- Lario Creek/Zone 1 Ditch habitat restoration project is also moving forward (North East Trees, DPW)
- Site of original San Gabriel Mission – historic & cultural value
- La Fiesta property for sale
- Investigate upcoming TMDL's and appropriate BMP's

3. RIO HONDO SPREADING GROUNDS

The Rio Hondo Spreading Grounds are almost completely in the City of Pico Rivera, partly within Montebello and an "oxbow" shaped basin that straddles Bell Gardens and Downey to the south. There are 20 basins that cover 570 acres, owned and operated by the Los Angeles County Department of Public Works.

Key Issues
- No habitat creation within basin unless additional recharge area is found
- Upper areas more productive than lower areas
- 3-week cycle, 2 wet, 1 dry
- October 1 is the New Water Year

Opportunities
- Spreading grounds has great potential
    - Need to compensate for loss of recharge
- Pico Rivera got Proposition A funds for bike path improvements
- Parking lot at north is potential recharge area
    - 30 acres needs to be acquired
    - site is over very productive recharge area
- "Oxbow" spreading basin to the south as potential wetlands
    - southern basins not as productive for recharge as northern ones
- Montebello – west side, equestrian trail master plan from Whittier Narrows Dam to Spreading Grounds
- Gate upgrade
    - Potential opportunity to include trash screens

IV. Additional Project Opportunities

- Number of project opportunities throughout watershed
- Involve community to beautify rivers

- Trail access and connections
- Golf course improvements – take advantage of facility upgrade
- Slope stabilization and bike trail on top in Montebello
- Phased stream restoration
- Sediment management in upper watershed
- Eaton Wash – Water Replenishment District (WRD) to construct Metropolitan Water District (MWD) turn-outs
    - Possibility for demonstration project
    - Timeline within 12 months
    - Pipe and valve
    - 270 AF/day
- Little Arcadia wash stream restoration in golf course
- Utility easement opportunity
- Education centers
- Trash bars at bottom of <u>all</u> tributaries

V. Conclusion & Next Steps

We will report back to the entire Project Advisory Committee (PAC) at the next meeting, October 22, 2003. There is no follow-up meeting scheduled at this time. Communication will take place via email. Meeting adjourned at 3:00pm.

Appendix K
Rio Hondo Watershed Management Plan

Project Advisory Committee Meeting #4
Meeting Summary

October 22, 2003

MEETING OVERVIEW

The meeting began with a two-part Powerpoint presentation from Eileen Takata. The first part was a summary of results from the first meeting of the Regional Projects Sub-committee, detailing issues and opportunities at three proposed projects – Peck Road Water Conservation Park, Whittier Narrows, and Rio Hondo Spreading Grounds. The second part presented preliminary findings on water quality and habitat enhancement. The presentation was followed by an extensive discussion among PAC members facilitated by Daniel Iacofano. This discussion is summarized below. The meeting concluded with a presentation from LA County Department of Public Works on the current Rio Hondo Flood Control and Water Conservation System.

DISCUSSION SUMMARY

Much of the discussion focused on the three proposed multi-objective regional projects. Although there is a general consensus that these three sites should be core elements in the final plan, others observed these need to be adequately balanced by other local smaller scale-projects throughout the watershed. Coordination with the Regional Board remains a foremost concern, especially the need for a degree of regulatory flexibility. It was suggested that the regional projects sub-committee meet again to develop a more detailed menu of solutions, addressing the needs of the overall watershed, from which the PAC could more carefully assess and choose alternative approaches.

- Need to select our priorities and action plans as soon as possible.
- Will need to overcome regulatory hurdles, i.e. flexible regulations from the Regional Board that will allow storm water to be treated in a more regional, consolidated and cost-efficient, common sense-way vs. all gutters as waters of U.S.
- Prioritize the 3 major target areas (Peck Park, Whittier Narrows, and Spreading Grounds) as 1st phase of multi-decade project (restoration of natural streambed a long term goal)
    - All the different groups that have something planned in these three areas need to talk and coordinate with each other to avoid unnecessary conflicts/potential overlaps; opportunity to develop an

integrated, multi-objective approach at each of these three regional sites.
    - RMC vote will enable us to leverage dollars; collectively identify priority projects, and coordinate effort with Regional Board (preceded by some communications that this is a valid path)
    - Perceived strength if we present an alliance of both environmentalists and brick and mortar groups.
- These three project sites on everyone's radar for some time, but do not lose sight of more local projects; these need to be addressed in the Plan, especially so cities can see similar opportunities within their jurisdictions
- Write-up our proposed projects in contexts of our collective strategy/solution; test with Regional Board; include both short and long-range solutions; funding and priorities.
    - Regional Projects Sub-committee needs to meet again to brainstorm proposal to take to the Regional Board
    - May need to give the Regional Board something in return for accepting this approach, such as concrete removal along Alhambra Wash
- We need to concentrate on what makes sense; the final document will have to be what everyone agrees to.
    - Will need to stimulate more examples; MIG as clearinghouse
    - Develop a menu of project options/alternatives/solutions catalog – concept characteristic, cost, timeframe, priority, rate as L, M, S
- Will need a definitive concept for the 3 sites and Regional Board saying it will be ok for trash to come down the channel to these 3 points.
- Need to consider all the options before we start throwing them out
- May need a model that brings together bricks and mortar perspective with that of the environmentalists – i.e. produce a wide range of options that get us the flexibility we need for approval from the regulators.

OTHER ISSUES

- Clarify water access
- Compatibility of bike and equestrian trails;
    - County Parks and Recreation trail maintenance budget cut;
    - need to look at how best to accommodate all users
- Need strategy; native plantings along concrete channels – do not vegetate top of levee if later you are going to tear out the channel.
    - Plant/vegetation dilemmas – native plants (not good looking) but provide important habitat, versus non-native/ornamental (good looking plants), versus drought tolerant (which are not necessarily native plants)
- Equestrian trails, especially if along soft-bottom of river; a fecal source
- Role of wetlands for stormwater treatment- latest information suggests that wetland construction near the river will not be allowed; also would preclude future river restoration; wetlands preferred in upland areas away from the river

    - Large scale wetlands may not be as effective as many smaller ones scattered throughout the watershed
    - But many small wetlands throughout the watershed will not be supported by the community
    - The Plan will need to focus on solid solutions; we do not want to be too far out on the leading edge
- Semantics – language structures reality, so a “concrete channel” should not be labeled as being “improved”

Appendix L
Rio Hondo Watershed Management Plan

Public Forum

November 20, 2003

Garvey Community Center, Rosemead

7:00 pm – 9:00 pm

Attendees:
Barbara Andrews, Downey resident
Jerry Andrews, Downey resident
Suzanne Avila, Think River Educational Program
Kimberly Bahnsen, Pasadena resident
Cathie Chavez, Rivers and Mountains Conservancy
Mickey Chaudhuri, LA County Department of Public Works (DPW)
Grace Eng, San Gabriel Valley Council of Governments
Belinda Faustinos, Rivers and Mountains Conservancy
Ed Flores, Pasadena resident
Gerry Greene, City of Downey
Rick Harter, Los Angeles and San Gabriel Watershed Council
Mike Hughes, Hacienda Heights Improvement Association
Daniel Iacofano, Moore Iacofano Goltsman, Inc.
David Jallo, LA County Parks and Recreation
Cindy G Rowlan, LA County Department of Public Works
Mark Sillings, Moore Iacofano Goltsman, Inc.
Nate Springer, Amigos de los Rios
Eileen Takata, Moore Iacofano Goltsman, Inc.
Rick Thomas, San Gabriel Mountains Regional Conservancy
Suzanne Turney, City of Arcadia

Exhibitors:
LA County Department of Public Works
Rivers and Mountains Conservancy
San Gabriel Mountains Regional Conservancy (Think River)
Whittier Narrows Nature Center

Meeting Purpose and Overview

The primary purpose of the Public Forum was to present the project and solicit public feedback and discussion regarding the proposed Plan. The meeting began with a presentation from Daniel Iacofano of MIG, during which he provided an overview of the project and then presented initial findings and recommendations. This was followed by an extensive discussion and feedback session, facilitated by Mr. Iacofano.

Project Overview Highlights

- A watershed management plan requires thinking in terms of watershed boundaries instead of just political boundaries; effective watershed management requires working with neighboring cities

- Geographic Information Systems (GIS) is being used to develop a series of spatial analysis maps of the watershed; enables a better understanding of the opportunities and constraints that are present in the watershed; these maps are on display for your review and comment

- A project advisory committee (PAC) representing cities in the watershed, other public agencies, water agencies, non-profit environmental groups and other organizations/stakeholders with an interest in the watershed, has been meeting on a regular basis to guide the watershed plan development process. The final Plan cannot be approved until the PAC agrees to it.

- Improving water quality has been a major consideration in the development of the watershed plan; need to deal effectively with sources of water pollution that are hard to identify (non-point source pollution)

- Conceiving of the watershed as a managed system; one where it is essential that flood control and existing water rights are maintained while also achieving other important beneficial goals such as recreation, habitat, open space, etc. Development of the watershed plan is a multi-goal/multi-objective process.

Public Discussion and Feedback

<u>Flood Control</u>

- The potential to pursue naturalization of the Rio Hondo river channel was discussed. Questions raised during the discussion included:
  - Is it a practical goal worth pursuing?
  - What amount of funding is required and what are the potential funding sources?
  - Is there a sufficient amount of undeveloped space next to the river?
  - Does the political will exist to make this happen?

- Examples of river naturalization projects from around the country were cited. It was pointed out that complete naturalization of rivers in Los Angeles is a much bigger challenge here than elsewhere in the country. The potential for high intensity and high velocity stormwater flows is much greater. However, a few selected opportunities to tear down or terrace river channels do exist, such as along Alhambra Wash and Arcadia Wash. The latter runs next to a golf course that can be integrated into a renaturalized river channel.

- One participant questioned the wisdom of removing concrete river channels, especially as he lives near the LA River and Rio Hondo where they recently completed significant efforts to raise the sides of the channel and levees. This effort was required to address flood insurance. It was again explained that removing concrete flood control channels can only be done at a few select locations; all such efforts have to be analyzed carefully to make sure they can handle a 100-year flood event.

- Another participant pointed out that there are other advantages to removing some of the concrete channel. With too much concrete, stormwater flows much too quickly through the channel. By taking some concrete out, allows for water percolation, which expands the local water supply. This is an important advantage especially in coming years as the imported water supply is gradually reduced.

- It was pointed out that most major rivers around the world have been channelized but as a result we have had some of the worst flooding in history. Also, concrete has only a useful life of 20 to 50 years.

Water Quality

- How does the watershed plan fit in with the Federal Clean Water Act, including keeping trash from the rivers out of the ocean? Wouldn't new plants growing along the river's edge simply end up in the ocean after a good rainstorm?
    - Trees are not classified as trash.
    - Vegetation management is an ongoing management problem; vegetation removal follows a regular maintenance schedule to make sure floating vegetation does not create dams during storm events. Increasing vegetation for habitat must be balanced with flood control considerations.

- Storm water regulatory issue is a big challenge for local cities. How to use our tax base dollars correctly to deal with this issue? By supporting the sub-regional projects being considered for this Plan?
    - Advantage – biggest bang for our buck, as opposed to separate isolated efforts on the part of each city.

- It is never going to be just one solution. Instead, a multiplicity of approaches will be required.

- Current rules do not support inter-jurisdictional projects that collect/trap trash at certain strategic points as proposed by the Peck Road Water Conservation Project. Instead, require that trash be collected at all points in the watershed in upstream locations; very tough standards + eventually mandating zero trash in tributaries and rivers.

- Important that we get out of the courtroom so we can make real progress by working together on common goals; the clean-up process will work much better without a regulatory deadline.

- Important that we coordinate with the Regional Board; will need to give the Regional Board something in return for accepting our inter-jurisdictional approach.

Plan Development and Project Funding

- Package short and long term solutions and prioritize funding.
    - Brainstorm concepts to take to Regional Board.
    - Develop a menu of project options, with cost, timeframe and priorities outlined
    - Do not overlook smaller, short term projects
    - Develop a long term funding strategy

- It was pointed out that projects written into a watershed management plan are more likely to be funded, than if they are single, stand-alone efforts.
    - So, one of the goals of the watershed plan development effort is to identify and catalog all existing and proposed projects that fit the vision and goals of the watershed plan.
    - We can more effectively leverage funding for the Rio Hondo if all the jurisdictions and stakeholders in the watershed pull together to support multi-benefit projects

- Total cost includes not just capital costs but also operational and maintenance costs

<u>Build Public Support and Awareness</u>

- Solicit volunteers for labor and public support; river and watershed cleanup efforts; create connections to the river that enhance awareness of the river and watershed; better signage.

- Encourage people to see the river and watershed as a recreational resources instead of having to travel to the beach and the mountains

- Give the river an identity; create a Rio Hondo brand

- Cited the community center in which the public forum was taking place as a missed opportunity; there is no design connection between the community center and the Rio Hondo River even though it lies directly adjacent to the river; at the very least the center should have been designed to face toward the river.

- Los Angeles River as a model for what could be done in the Rio Hondo – media events, support from Hollywood actors and other celebrities, river walks and runs.

- The Rio Hondo is less industrial than the LA River; the Rio Hondo still has capacity to become a neighborhood asset; need to look at what the river can provide each community; what works in Cerritos may not work in Pico Rivera.

<u>Other Proposed Actions</u>

- Create a master vision for all open space areas; remove all impervious surface parking lots and replace with pervious concrete that allows water to percolate into the ground soil; cited Cerritos parking lot as example.

- Focus on trail development along river and tributaries as a project; both bike and equestrian trails;
    - Need to consider trail maintenance funds; LA County trail maintenance funding has been cut
    - Invite trail coordinator for LA County to next PAC meeting
    - Recognize that equestrian trails are a fecal source that impacts water quality

- Be strategic in Plan implementation; for example do not plant vegetation along river channels if river restoration is planned for that location in the future

- Wetlands are best situated in upland areas away from the river

    - Need smaller wetlands throughout the watershed; that is far more effective than a few large wetlands

- Peter's Canyon Reservoir cited as a good model for habitat restoration

- Ann Reilly's approach to stream restoration is another good model to refer to.

Appendix M
Rio Hondo Watershed Management Plan

Solutions Subcommittee Meeting Summary

December 2, 2003

Los Angeles County Department of Public Works, Alhambra

1:00 pm – 3:00 pm

Attendees:
John Alderson, City of San Marino
Kathy Avina, LA County Parks and Recreation
Louis Celaya, City of Arcadia (for Douglas Benash, City of Monrovia)
Mickey Chaudhuri, LA County Department of Public Works (DPW)
Cathie Chavez, Rivers and Mountains Conservancy
Jim Donovan, National Park Service Rivers Trails & Conservation Assistance Program
Belinda Faustinos, Rivers and Mountains Conservancy
Erik Fonseca, Congresswoman Hilda Solis
Gerry Greene, City of Downey
Daniel Iacofano, Moore Iacofano Goltsman, Inc.
David Jallo, LA County Parks and Recreation
Mickey Long, LA County Parks and Recreation
Barbara Park, Senator Jack Scott
Mark Sillings, Moore Iacofano Goltsman, Inc.
Amy Stewart, Philip Williams & Associates
Tom Tait, City of Arcadia
Eileen Takata, Moore Iacofano Goltsman, Inc.
Phyllis Traböld, US Army Corps of Engineers
Rob Welch, LA County Parks and Recreation
Jeff Yann, Upper San Gabriel Municipal Water District

I. Introductions & Purpose of Meeting

To examine more closely the three priority sites previously identified by the subcommittee and to develop a more detailed menu of solutions, addressing the needs of the overall watershed.

II. Watershed Project and Program Priorities

- Eileen Takata began the discussion by providing a re-cap overview of the three regional projects previously identified:
  (1) Peck Road Water Conservation Park
  (2) Whittier Narrows Area
  (3) Rio Hondo Spreading Grounds

- The initial discussion then focused on determining the right balance between high-leverage, regional scale, inter-jurisdictional projects and local level, local jurisdictional projects. It was determined that the proper balance would have two-thirds of watershed funding directed toward the inter-jurisdictional projects, and one-third toward local jurisdictional projects.

- It was suggested that (1) detailed planning area maps for each of the three sites are needed, and (2) sub-watershed maps to locate the sites of all local jurisdictional projects.

- Two additional multi-jurisdictional projects were proposed:
  (4) Montebello Hills – an opportunity to preserve open space + recreational benefits
  (5) Monrovia Open Space Protection – contributes to watershed health

- Cities may have difficulty seeing the upland areas as a priority, but represents an inclusive, strategic element of the watershed management plan that can facilitate resource generation; a multi-objective planning system can provide more funding options.

- Other priorities include:
  - Arundo removal – an important priority activity where it is possible to enhance the habitat value of existing non-developed areas
  - Attempting to expand habitat in already developed areas was considered too difficult to be a priority; better to enhance the natural areas we already have.

- Arcadia, Monrovia, and San Marino need support for their proposed trash BMP at Peck Road Conservation Park
  - Peck Park seen as prototype demonstration project; an inter-jurisdictional project with regional benefits throughout the watershed that could encourage a relaxation of water quality rules by the Regional Board

- The final Plan should also include all existing city-level projects, both current and proposed.

III. Organizational and Funding Strategies

- A self-assessment district was seen as the best way to work together as a region. It would provide a single management structure for funding and implementation of projects throughout the watershed, especially the high leverage, inter-jurisdictional projects.

- A two-thirds vote of all property owners in proposed self-assessment district would be required.

- Other funding options discussed include real estate parcel tax (requires 50% vote in favor); a ¼ cent sales tax

- Given the current financial status of the State, these organizational and funding options should be considered as part of a long-term financial strategy.

- Funding for ongoing operations and maintenance has be addressed early on

- A local assessment district provides added leverage for state and federal funding; increases competitiveness

- A strategic framework of individual projects shared by neighboring cities will generate greater support

- Will need to develop a process to track watershed health on an ongoing basis; need a data collection and analysis protocol to ensure credible and useful information is available; a crucial component of the governance process.

- Other organizational/funding options –
  - Adhoc cooperation between cities to fund regional capital projects
  - MOU between cities; prorate share of regional funding
  - The formation of a joint powers authority can then work toward creation of an assessment district; act when economy and timing is right; need governance structure in place before an assessment district or other similar funding mechanism can be seriously considered.

- JPA provides a more consolidated approach for project and funding implementation; especially if JPA adopts certain standards (BMPs) that cities must adopt as their own before they can join the JPA. Raises the level of the lowest performing cities; plus creates additional incentives that benefit the overall watershed
  - Work through BMP checklist

- The federal property in the Whittier Narrows might create complications for formation of a JPA, but a cooperative agreement or MOU might be a solution.

Next Steps

- Prepare maps of major project areas
- Prepare maps of sub-watershed areas showing detailed projects
- Write up governance and funding options
- Assist cities and LADPW with Peck Road project – go to COG, Sierra Club, and RMC for endorsements.

APPENDIX N
STAKEHOLDER ORGANIZATIONS INVITED TO PARITIPATE IN THE PROJECT ADVISORY COMMITTEE

Federal Agencies

US Army Corps of Engineers
US Forest Service
US National Park Service

State Agencies

Regional Water Quality Control Board
Rivers and Mountains Conservancy
Dept. of Toxic Substances Control
Dept. of Health Services
CA Coastal Conservancy
Wildlife Conservation Board

County/Regional Groups

LA County Public Works
Southern California Association of Governments
Whittier Narrows Nature Center
San Gabriel Valley Council of Governments
Gateway Cities Council of Governments

Local Governments

City of South Gate
City of Bell Gardens
City of Downey
City of Pico Rivera
City of Commerce
City of Montebello
City of Monterey Park
City of Rosemead
City of South El Monte
City of Alhambra
City of San Gabriel
City of Temple City
City of El Monte
City of San Marino
City of Pasadena
City of Sierra Madre
City of Arcadia
City of Monrovia
City of Bradbury
City of Duarte
City of Irwindale
City of South Pasadena

Water Agencies

Main San Gabriel Basin Watermaster
Water Replenishment District
Upper San Gabriel Valley Municipal Water District
San Gabriel Valley Water Association
Central Basin Water Association

Non-Profit Groups

Los Angeles and San Gabriel Rivers Watershed Council
Southern California Land Use and Transportation Coalition
San Gabriel Mountains Regional Conservancy
Altadena Foothills Conservancy
Sierra Madre Mountains Conservancy
Foothill Wildlife Conservancy
Monrovia Mountain Conservancy
Sierra Club
The River Project
San Gabriel Valley Economic Partnership
Chambers of Commerce
Building Industries of America

Elected Officials

US Congress

Adam Schiff
David Dreier
Hilda Solis
Lucille Roybal-Allard
Grace F. Napolitano
Steve Horn

State Senate

Jack Scott
Bob Margett
Gloria Romero
Martha M. Escutia
Betty Karnette

State Assembly

Carol Liu
Dennis Lee Mountjoy
Edward Chavez
Judy Chu
Thomas M. Calderon
Marco A. Firebaugh
Sally M. Havice