a common thread rediscovered

san gabriel river corridor master plan

JUNE 2006

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chapter 1 Introduction

1.1 PURPOSE OF THE MASTER PLAN

For many decades, the San Gabriel River effectively served the region by quietly performing essential flood protection, groundwater recharge and stormwater conservation functions. In recent years, there has been a growing desire to rediscover the river and offer more of its benefits to all the communities along its route, as well as to visitors from throughout the region. Communities want to establish and enhance habitat, recreational and open space resources along the river—in ways compatible with its core flood and water management functions.

In 1999, the County of Los Angeles Board of Supervisors directed the Department of Public Works to prepare a plan for the San Gabriel River corridor. During the past three years, a Steering Committee representing cities, other public agencies, water groups, and community and environmental groups has been meeting to develop a shared vision of the river and a plan for how to achieve it.

Figure 1-1. The San Gabriel River offers spectacular views as it travels through the Angeles National Forest.

The consensus-based Master Plan that emerged from this stakeholder-driven process integrates many objectives: habitat, recreation, open space, flood control, water supply and economic development. In the past, planning had focused on only one or two of these elements and could not adequately address the inherent complexities of a river system. This new multi-objective and multi-user perspective to planning the long-term future of the San Gabriel River is the foundation and purpose for this Master Plan.

The Master Plan identifies priorities, provides guidance, and coordinates multiple goals of the many jurisdictions and other stakeholders that share the river—reflecting the consensus of all these stakeholders. It integrates over 130 independently sponsored enhancement projects that were identified by the 19 cities along the river, the County of Los Angeles and the public agencies and community organizations that participated in developing the Master Plan. It summarizes projects and programs already underway or proposed, enabling the entire river community to see what's being done and what remains to be done in the future.

The Plan also provides suggestions on the types of projects to pursue, as well as how to design a project that reflects the agreed on vision and principles. This includes performance criteria that project sponsors can use to assess potential projects and, once implemented, to measure their progress in meeting the goals and objectives. Finally, the Master Plan includes five Concept Design Studies that demonstrate the multi-objective approach applied at the project level—providing lessons that project sponsors can use to guide their own efforts.

This framework is meant to guide the efforts of all cities along the river, encouraging them to join with the County of Los Angeles, other public agencies, non-profit groups, business interests, community organizations and other stakeholders in designing and planning projects that will make their shared vision of the river a reality.

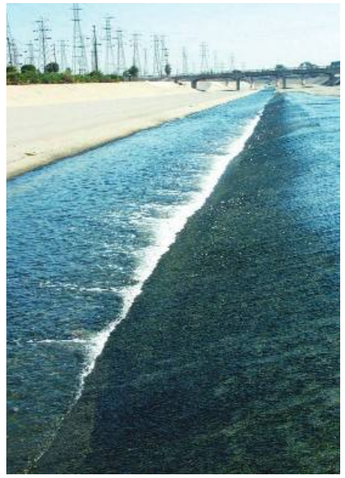


Figure 1-2. The river is encased in concrete for 10 miles.

Figure 1-3. Enhancement of the pedestrian and bicycle trail along the San Gabriel River corridor is one of the Master Plan's primary objectives.

This combination of what is possible and the Master Plan's overarching multi-objective framework are more likely to achieve the shared vision than many unrelated, independent efforts, no matter how well-conceived each might be.

A coordinated plan will also help establish eligibility for federal, state and local funding. Funding agencies are more likely to support projects linked to a larger, comprehensive plan than they are to individual, disconnected ones. To facilitate the funding process, the Master Plan also includes a catalog of funding resources, which project sponsors will want to explore further.

A final note. The integrated planning process that guided the Master Plan during the past few years is as important as the plan itself. By working together to craft this vision and plan, a diverse group of people, interests and organizations have developed a better understanding of each other and of each other's respective goals. This mutual understanding and respect establish the foundation for collective action that will ensure lasting, positive benefits and the future of this great river.

Figure 1-4. The County of Los Angeles Department of Public Works hosted dozens of Steering Committee meetings, bringing together diverse groups and developing this consensus-based Master Plan.

PLAN ORGANIZATION

Starting with this introductory chapter, the San Gabriel River Master Plan consists of five chapters and appendices.

Chapter One

This chapter introduces concepts underlying the planning process and provides the overall context for this planning effort. It describes the geographic setting of the San Gabriel River, including the seven reaches that define the changing characters of the river throughout the project area. It also discusses how thinking about rivers has changed and how this new way of thinking directed this planning effort. The chapter concludes with a history of the Master Plan development process and explains how the Master Plan complements and relates to other ongoing planning efforts in the San Gabriel River watershed and the region at large.

Chapter Two

The first half of this chapter describes the natural processes that created and shaped the river over millions of years and how human habitation and the effort to manage and control the river changed those natural conditions—reaping many benefits while setting the stage for new challenges to be solved.

The second half of the chapter presents the river as it exists today, the starting point for reaching the ideal future of the river as envisioned by the stakeholders.

Chapter Three

This is the heart of the Master Plan. It details current and proposed projects, programs and policies that can close the gap between present reality and a future that reflects the aspirations of those who have shaped this plan. The plan framework includes the vision statement and goal statements developed by the Steering Committee, the objectives that underlie each goal, and performance criteria used to assess progress toward those goals and objectives.

Each of the 134 projects along the San Gabriel River, as proposed by project sponsors, is listed by the seven reaches, beginning in the San Gabriel Mountains near the river's headwaters and ending near its mouth at the Pacific Ocean. Additional corridor-wide projects, policies and programs reinforce the efforts underlying the more site-specific projects, and forge an identity for the river as a whole.

The chapter concludes with five Concept Design Studies, selected by the Steering Committee to illustrate how a multi-objective planning approach can be applied at the project level.

Chapter Four

Chapter Four builds on the projects outlined in the preceding chapter, identifying additional opportunities for river enhancement that can be pursued in the near- and long-term future. These opportunities complement the many stakeholder-driven projects described in Chapter Three.

Chapter Five

This chapter introduces the organizational and financial strategies that will be required to shift from planning to implementation of the Master Plan. It includes a summary of the full Environmental Impact Report that accompanies the Master Plan, and concludes with ideas to support the Master Plan and its vision over the long term.

Appendices

The appendices provide resources that will be useful for project sponsors and all those interested in the future of the San Gabriel River: a Project Action Grid of all 134 projects and other reference material.

1.2 THE RIVER SETTING

The San Gabriel River is the central backbone of the San Gabriel River Watershed—an area that is drained by the river and its tributaries. The watershed for the San Gabriel River is one of several coastal watersheds in Southern California that drain hundreds of square miles of mountainous and urban lands to the Pacific Ocean. The character of the river changes dramatically during its 58-mile journey from Cogswell Dam, near the headwaters of the San Gabriel's West Fork in the San Gabriel Mountains, to its mouth at the Pacific Ocean.

The Regional Context

The San Gabriel River Master Plan focuses on the main corridor and the West Fork of the San Gabriel River. It is a north-to-south oriented river system, flowing from its headwaters in the San Gabriel Mountains to the Pacific Ocean. On its run to the sea, it passes through 19 different cities. It traverses the rugged, diverse terrain of the San Gabriel Mountains and San Gabriel Canyon, major flood management and water conservation facilities, densely populated and ethnically-rich suburban communities of the inland valleys and coastal plain, and Southern California beach communities. Major historical, economic, natural and cultural resources

COURTESY OF GABI MCLEAN ©2003

Figure 1-5. Downtown Los Angeles, as viewed from the San Gabriel Mountains above the City of Duarte.

COURTESY NASA/JPL-CALTECH

Figure 1-6. Los Angeles and vicinity from space.

along this corridor have had and continue to have profound impacts on all of Southern California.

The San Gabriel River is one of seven major watersheds partly or completely within Los Angeles County. Most of the river lies in southeastern Los Angeles County, bordering San Bernardino County, but a small section crosses northern Orange County. The other major watersheds in Los Angeles County are the Los Angeles River, the Santa Clara River, Antelope Valley/Mojave Basin, Malibu Creek, Ballona Creek/Santa Monica Bay, and Dominguez Channel Watersheds.

Three watersheds immediately surround the San Gabriel River Watershed. To the west is the Rio Hondo, a tributary and sub-watershed of the Los Angeles River Watershed, which totals 834 square miles. The Antelope Valley/Mojave Basin to the north covers 1,200 square miles within Los Angeles County and additional land in Kern and San Bernardino Counties. To the east, is the 2,800-square-mile Santa Ana River Watershed, which encompasses parts of Los Angeles, San Bernardino, Riverside and Orange Counties.

San Gabriel River Watershed

The entire San Gabriel River Watershed covers more than 640 square miles and includes portions of 37 cities in Los Angeles and Orange Counties, as well as communities in unincorporated Los Angeles County. More than one-third of the upper watershed falls within the Angeles National Forest, including significant portions of the San Gabriel Mountains. The watershed also contains the Merced and San Jose Hills, and the Puente-Chino Hills,

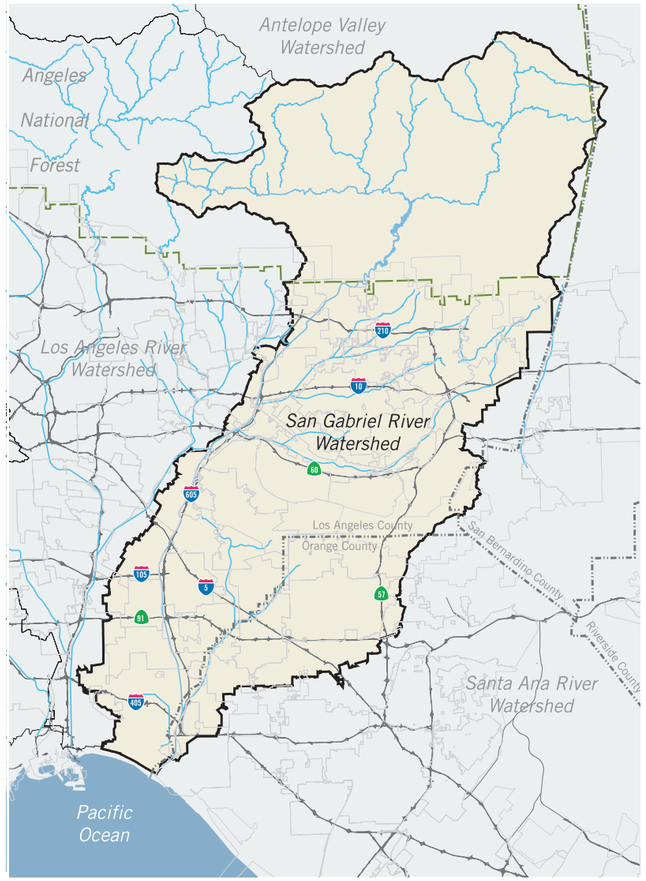


Figure 1-7. The 640 square miles of the San Gabriel River Watershed connect the San Gabriel Mountains and 37 communities with the Pacific Ocean.

PHOTO COURTESY OF ELIZABETH KARMAN

Figure 1-8. In La Habra Heights, houses coexist side by side with native habitat of the Puente Hills. This area drains to Coyote Creek.

as well as the major urban populations of the San Gabriel and Pomona Valleys and the coastal plain of the Los Angeles Basin.

About 26% of the watershed's total area is developed with urban and related land uses. The San Gabriel River consists of 22 creeks, washes and streams, including four major tributaries or sub-watersheds, which join to form the overall watershed:

- Upper San Gabriel River including the East, West and North Forks
- Walnut Creek
- San Jose Creek
- Coyote-Carbon Creek

The length of the main stem of the San Gabriel River, which begins where the West Fork and East Fork meet, is about 48 miles. The total length of this part of the river, including both the main stem of the river and its tributaries, is about 73 miles. The lower San Gabriel River also includes the Los Cerritos wetlands system, just upstream of its mouth at the Pacific Ocean.

Overview of Watersheds

Everyone, at all times, in any location, lives within a watershed. Wherever rainfall hits the ground, it travels as surface runoff over the ground until it enters a small stream or storm drain. These streams and storm drains collect into a larger stream, which eventually meets a major river, perhaps through a wetland, and then on to its final destination, a lake or ocean. In some cases, where there is no surface outlet, stormwater can pool and naturally percolate through the ground to reach the groundwater aquifer. These rivers and streams form the trunk and branches of a watershed.

Watersheds share similar characteristics, but every watershed is unique because of differences in local conditions. Land form and climate determine the size and form of a watershed, as well as the speed, direction and quantity of the flow of its rivers. Land forms such as mountain ranges, local hills and ridgelines and other high grounds, direct water one way or another and form the watershed boundary. Watersheds can be tiny or immense and are often composed of smaller sub-watersheds.

Each watershed begins at a headwaters and flows downstream to an outflow. As streams and rivers flow, they collect and deposit sediment, nutrients and velocity, or energy, which influence local ecosystem characteristics. Whether flowing through remote areas or through populous urban landscapes, rivers reflect the rocks and soils, the plants and wildlife, and the human communities through which they flow.

Landscape change is also part of a natural system. These changes are often climate-related, including drought, flood, storm and fire. Living plants and animals also induce change, for example, an insect infestation or the changing character of a maturing tree.

In the past, rivers and streams followed their own courses. Today, the natural water cycle and flow are often significantly altered in urban environments, primarily to protect urban communities from flood damage and to better use local water resources for urban and agricultural water supplies. Dams provide flood protection and water conservation benefits. Urban development increasingly covers land areas with impermeable surfaces, which eliminate opportunities for natural percolation. This increases stormwater runoff amounts and velocities, and creates river systems that can be unpredictably damaging to the urban, built community. So, beginning in the 1930s, urban area rivers and creeks were often placed in concrete channels to increase their ability to carry high velocity stormwater flows out to the ocean.

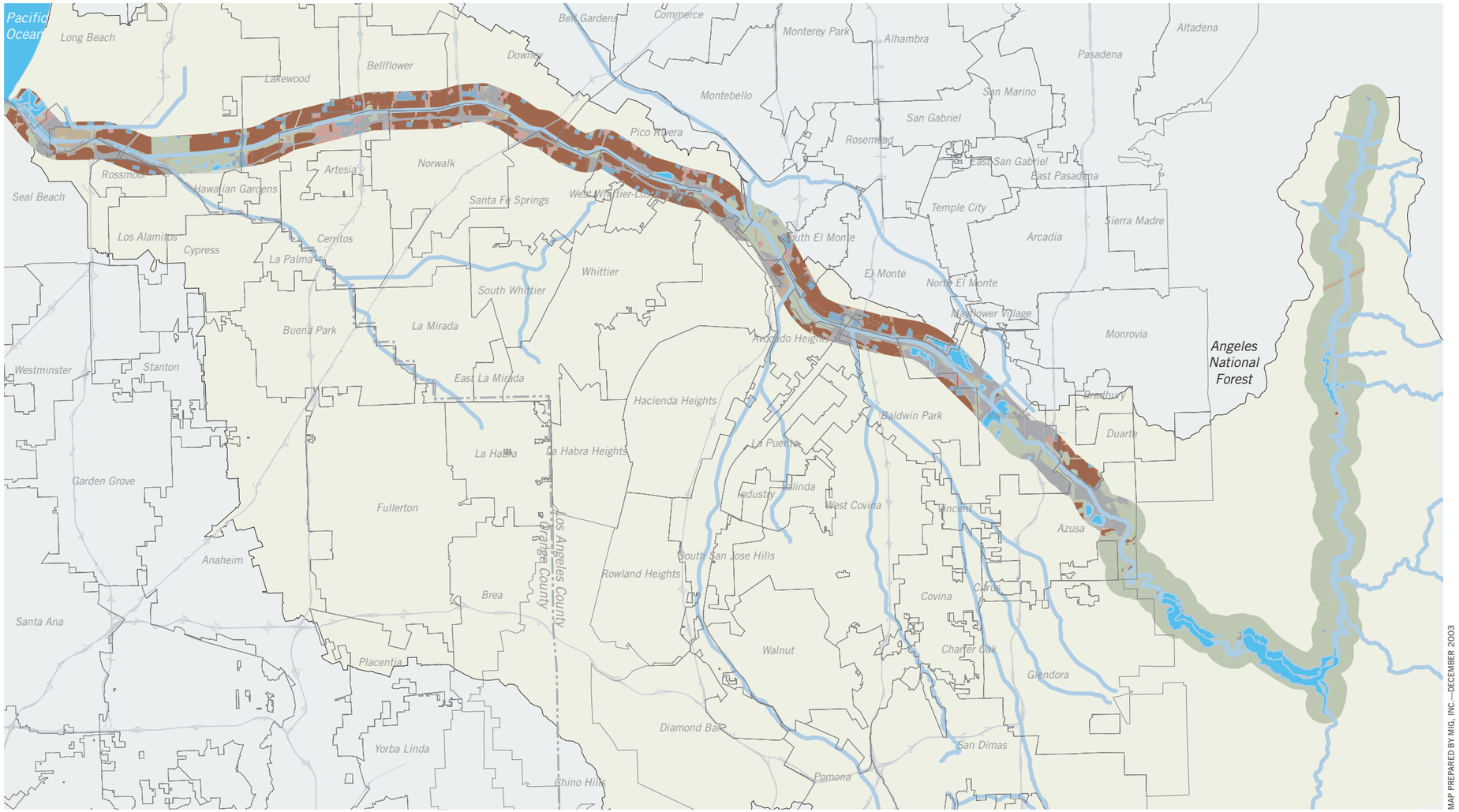
River Corridor Boundary

The project area lies along 58 miles of the San Gabriel River in Southern California from the Cogswell Dam in the Angeles National Forest to its terminus at the Pacific Ocean. This project area encompasses the portions of the river within the jurisdiction of the County of Los Angeles Department of Public Works (LADPW).

The uppermost section of the project area begins with the Cogswell Dam Reservoir and flows east 10 miles along the West Fork of the San Gabriel River until it reaches the main stem of the river, continuing south for another 48 miles towards the ocean. The project area is almost entirely in Los Angeles County, with a portion in Orange County where it borders the east side of the river for approximately three miles at its southern end.

The Master Plan envisions the river corridor as a regional, linear network of community green spaces adjacent to the river, including parks and open space areas. The "park" component of the Master Plan vision provides a useful standard for defining the parameters of the river corridor. The general rule for planning community parks is that the park should serve areas within a one half-mile walking distance of the park. That translates into a one-mile wide circle, with the park at its center. When applied to the San Gabriel River, this park-planning standard translates into a half-mile distance from the centerline of the river on either side, forming a one-mile wide corridor along the 58-mile length. Based on this one-mile corridor width, the project area for the Master Plan encompasses about 58

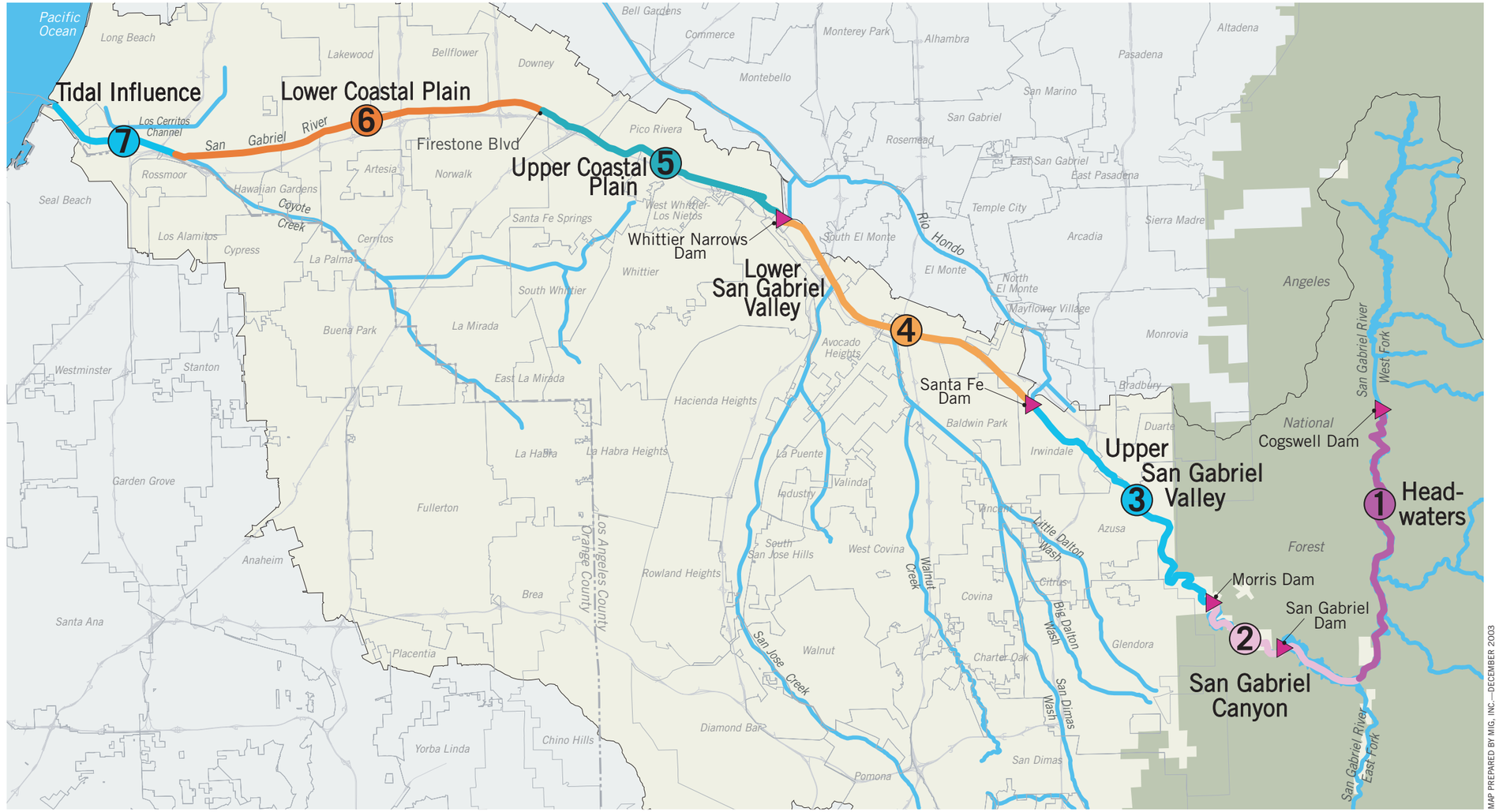
Figure 1-9. Cogswell Dam and Reservoir on the West Fork is the start of the project area.



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Note: Project Boundary is 1 mile wide.

Map 1-1. River Corridor boundary.



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Map 1-2. San Gabriel River Reaches.

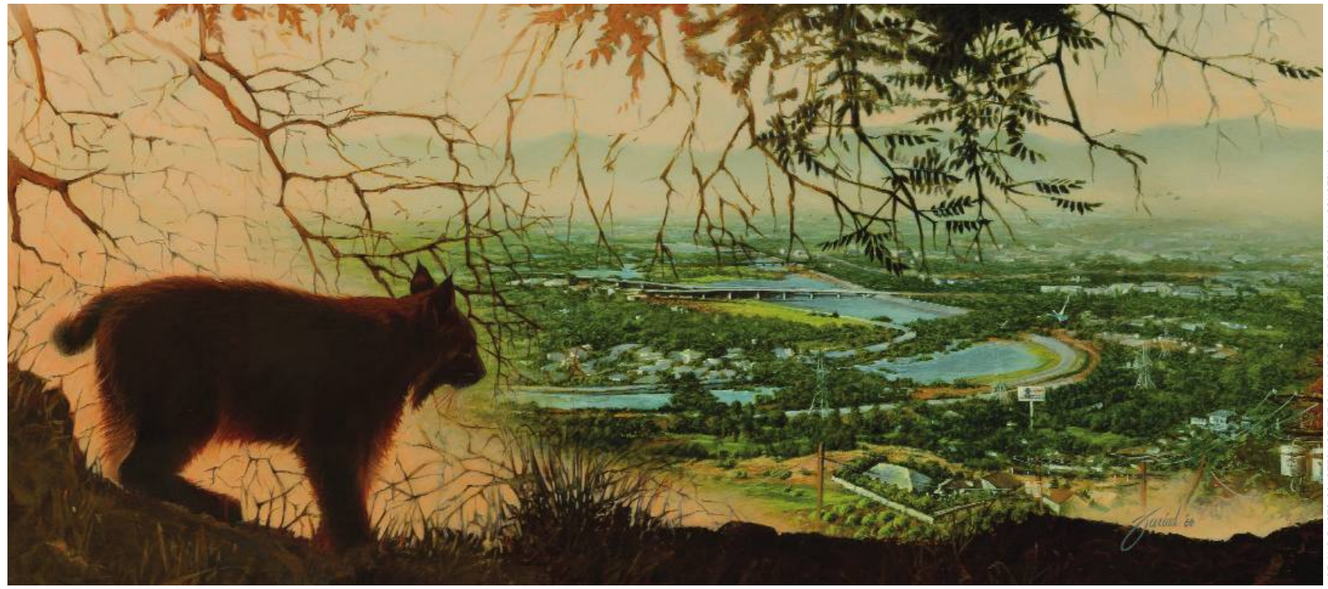
square miles. This one-mile corridor provides a necessary focus for the Master Plan study area but is not meant to be a totally exclusive boundary. Some projects and programs located nearby but outside the one-mile study are included in the Master Plan as they contribute to the vision and goals of the Plan. This one-mile wide corridor provides a necessary focus for the Master Plan study area but is not meant to be a totally exclusive boundary. Some projects and programs located nearby but outside the one-mile wide study are included if they are designed to contribute to the vision and goals of the Master Plan.

The Seven Reaches

The river environment changes dramatically during the 58-mile course. For this reason, the Plan divides the river into seven different reaches. Each reach is defined by distinct landscape, cultural, geological and hydrological features, which naturally change as the river flows from the mountains, through the valley, into the coastal plain, and eventually out to sea. The reach segments' individual characteristics and functions should guide future project designs:

1. **HEADWATERS.** The Angeles National Forest at the base of Cogswell Dam east to the confluence with the East Fork of the River.
2. **SAN GABRIEL CANYON.** Where the main stem of the river joins the East Fork south to the mouth of San Gabriel Canyon, just above the last developed land in Azusa.

Figure 1-10. The mouth of the river is at Seal Beach, near the River's End Café.



USE AND PHOTO COURTESY OF THE SAN GABRIEL MOUNTAINS REGIONAL CONSERVANCY

Figure 1-11. A bobcat viewing the San Gabriel River from the Puente Hills; original painting by Fariad.

3. **UPPER SAN GABRIEL VALLEY.** From the mouth of the San Gabriel Canyon above Azusa to the base of Santa Fe Dam in Irwindale.
4. **LOWER SAN GABRIEL VALLEY.** The base of the Santa Fe Dam to the base of the Whittier Narrows Dam.
5. **UPPER COASTAL PLAIN.** Whittier Narrows to where the river crosses Firestone Boulevard in Downey and Norwalk.
6. **LOWER COASTAL PLAIN.** Firestone Boulevard south to 500 yards below the Coyote Creek confluence.
7. **ZONE OF TIDAL INFLUENCE.** The final stretch of river, below the Coyote Creek confluence to the Pacific coast.

The river itself played a significant role in shaping this landscape; recognizing the distinctive characteristics of each reach will help us understand the river as it is today and how projects along it might be designed in the future. (See Section 3.6 for more detailed descriptions of the reaches.)

1.3 PAST AND PRESENT THINKING ABOUT RIVERS

During the past one hundred years, attitudes about rivers and watershed management have evolved greatly in the Los Angeles region. Before modern flood control structures were installed, the San Gabriel River emerged from the mountains onto the plain of the valley, often percolating through the alluvium that eroded from the growing San Gabriel Mountains. The river shifted frequently, resulting in dynamic, braided patterns of stream channels and terraces, which often intermingled with the Los Angeles River system. The vast groundwater basin and seasonal flows of water from the mountains provided all the water needed for human settlement.

With the development of agriculture and our increasing population, the landscape began to change rapidly. Irrigation systems, including tunnels, canals and ditches, were developed to convey the water to where it was needed to support these endeavors. Recognizing the value of the water resources from the river system, the rights to these waters were carefully

defined. Wetlands were often drained because of public health concerns associated with mosquito-born diseases. The rich supply of rock, sand and gravel that flowed down from the San Gabriel Mountains provided raw materials to build structures such as homes, roads and public infrastructure. Aggregate mining to harvest these resources was established in the San Gabriel Valley in the early 1900s, soon becoming a major economic activity.

As settlement intensified through the early twentieth century, the risks associated with development in the river floodplains in the region became apparent, particularly following devastating floods in the 1910s and the 1930s. The Los Angeles County Flood Control District was created in 1915 to address this issue.

The disruption caused by these floods led to a widespread desire to control floodwaters. The result was a highly engineered series of flood

COURTESY OF THE AZUSA HISTORICAL SOCIETY

Figure 1-12. Irrigation ditches built with local river rocks brought river water to Los Angeles County citrus groves.

COURTESY OF THE AZUSA HISTORICAL SOCIETY

Figure 1-13. The 1938 flood reinforced the need for flood control systems.

management structures, primarily to move storm flows to the ocean as quickly as possible. Because of the complex surface and groundwater rights along the river, which over time have become completely allocated, the County also developed a role in managing the river system to conserve water. But there were trade-offs associated with managing the river for single purpose objectives. The most widespread impacts have been on habitat, particularly to aquatic and riparian species.

In the last few decades, technical knowledge has evolved and the limits of the single-purpose approaches are now better understood. It is clear that it is both possible and necessary to address multiple objectives in managing rivers, which involves consideration of environmental resources, community recreation and open space, as well as flood protection and water supply allocation.

The first major effort in Los Angeles County to incorporate multi-objective planning was the Los Angeles River Master Plan (1996), which considered factors such as habitat and recreation, and included a stakeholder-based, participatory planning process. Community-based groups concerned about improving and even restoring the Los Angeles River worked collaboratively with the County and other stakeholders to develop a plan that continues to serve as a foundation for current efforts on that river.

Building on the momentum of the Los Angeles River Master Plan and recognizing the potential for collaborative, stakeholder-based approaches to rivers and watersheds, The Los Angeles and San Gabriel Rivers Watershed Council was created in the mid-1990s as a forum for public and private stakeholders to explore issues and solutions related to the Los Angeles and San Gabiel River Watersheds. The Watershed Council's mission is to facilitate a comprehensive, multi-objective, stakeholder-driven consensus process to preserve, restore, and enhance the many beneficial uses—economic, social, environmental and biological—of the Los Angeles and San Gabriel Rivers Watersheds ecosystem through education, research, planning and mediation. The spirit embodied by this forum has set a collaborative tone for addressing all of the region's watersheds.

In the year 2000, LADPW reorganized to create a Watershed Management Division, bringing together services such as flood protection, water conservation, preservation and creation of open space for recreation and habitat, and reduction of pollution of water resources. This new division adopted its own mission statement:

> "The Department of Public Works will lead the planning and implementation of watershed management in Los Angeles County. Working with those who have a stake in our watersheds' future, we will integrate flood protection, conscientious management of natural resources, water conservation and efforts to improve the quality of

LOS ANGELES COUNTY
WATERSHED MANAGEMENT

Figure 1-14. The County of Los Angeles Department of Public Works Watershed Management Division was created in the year 2000.

stormwater runoff and groundwater. Our goal is to protect our communities and the environment, and provide a higher quality of life for the citizens of our County."

Over the years, river and floodplain management evolved to address the most pressing issues of the day—and were largely consistent with the prevailing cultural values and technical knowledge of the time. As science sheds light on the complexities of these systems and as social values change with respect to the need for environmental resources protection and community recreation, management of these systems is also evolving. This requires building on the experience and knowledge of solutions implemented in the past, while continuing to grapple with new issues and challenges.

1.4 HISTORY OF THE PLANNING PROCESS

Given the complex political and social landscapes through which the river flows, the success of the planning process was dependent upon the active participation of all stakeholders. For this reason, the County of Los Angeles Board of Supervisors passed a motion to prepare a San Gabriel River Corridor Master Plan (Master Plan) and directed that LADPW establish a Steering Committee composed of cities along the river; water and regulatory agencies; interested community, business, and environmental groups; and other stakeholders to assist with plan preparation. The Steering Committee conducted a two-year information exchange and consensus-building process, leading to a common vision for the river's future. This consensus vision provided the foundation for the 18-month Master Planning process.

Master Plan Development Process

The process officially began on September 7, 1999, with an action of the County of Los Angeles Board of Supervisors that directed LADPW, in conjunction with the Department of Parks and Recreation and the Department of Regional Planning, to prepare a San Gabriel River Master Plan. The Board motion also included a request for assistance from the National Park Service Rivers, Trails and Conservation Assistance Program (NPS), and an instruction to the LADPW to invite the newly formed San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) and other stakeholders to participate. The Board specified that the Master Plan would address the issues of recreation, habitat and open space for the river corridor. On July 17, 2001, the Board provided additional direction that the Master Plan should also include the dams and reservoirs under the County's jurisdiction above Morris Dam. It should be noted, however, that the *river* reaches between these facilities are under the jurisdiction of the USDA Forest Service and thus are not part of the Master Plan scope.

The core planning team included the three county departments specified in the Board motion and a representative from NPS. To support the development of a stakeholder-driven planning effort, the San Gabriel River Master Plan Steering Committee was formed. The membership of the Steering Committee was open to anyone who was interested, but most of the participants represented organizations. The Steering Committee members met approximately 35 times during three years, spending over 10,000 hours of combined efforts developing elements of the Master Plan. Throughout the process, about 300 groups were represented, with an average of 40-60 individuals participating in each meeting. The roles and functions of the Steering Committee included: guiding the preparation of the San Gabriel River Corridor Master Plan, providing staff and consultants regarding project development, reviewing and commenting on all work products, and encouraging broad community participation in the planning process.

Figure 1-15. During the July 2003 Steering Committee Meeting/Concept Design Charrette, participants discuss river enhancement opportunities for a series of projects along the San Gabriel River.

The Steering Committee followed a consensus-based process in developing the planning framework:

- **INTRODUCTION.** The project and planning process including the roles and responsibilities of participating committee members and a set of ground rules for the committee's activities.
- **EDUCATION.** To ensure that committee members were empowered with a common base of information through several means. The County provided background information about the agency's mission and mandates, as well as technical information on the river and its management. Committee members were invited to present information about their organization. A series of field trips brought the committee members together to explore the river corridor from the Angeles National Forest to its ocean outlet.
- **ISSUE IDENTIFICATION.** Stakeholders were asked to identify the key issues and concerns related to the river and the development of a Master Plan. Through group dialog and discussion, these issues and concerns were articulated and used to develop plan goals, objectives and project design criteria.
- **GOAL IDENTIFICATION.** Based on the issues identified by the stakeholders, the Steering Committee developed broad goals.
- **VISION DEVELOPMENT.** Based on the issues, concerns and goals developed by the group, the Steering Committee developed a broad vision statement that synthesized the diverse perspectives of the stakeholders. The vision set the overall tone and spirit of the development of the Master Plan.

Once the overall direction and planning framework was established, the County retained the services of Moore Iacofano Goltsman (MIG), Inc., and its subconsultants to facilitate the process and to develop the Master Plan. For nearly a four year period between July 2002 and June 2006, the Steering Committee and Planning Team continued to meet on a periodic basis, providing essential input and guidance to the MIG consultant team through each of the five phases of plan development:

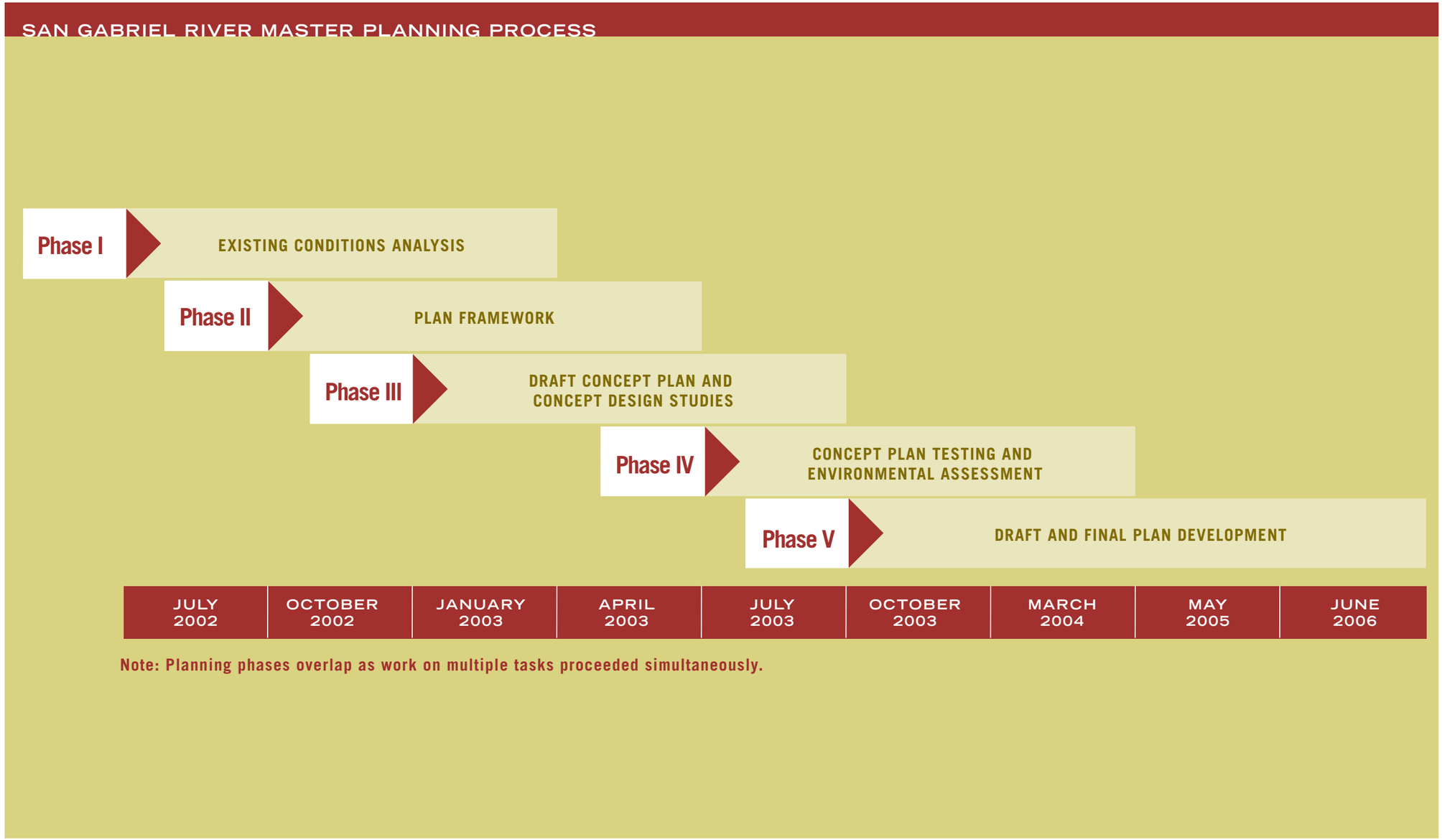


Figure 1-16. The Master Plan development process consisted of five major phases.

I. Existing Conditions Analysis
II. Plan Framework
III. Draft Concept Plan and Concept Design Studies
IV. Concept Plan Testing and Environmental Assessment
V. Draft and Final Plan Development

Phase I: Existing Conditions Analysis

The existing conditions analysis used all available data along with new field assessments to identify current opportunities and constraints to project development along the river corridor. The process also involved stakeholder interviews with representatives from all 19 cities along the corridor, and other state and federal public agencies such as the RMC, the U.S. Forest Service, and the U.S. Army Corps of Engineers (COE). Interviews were also conducted with Southern California Edison (SCE), water agencies such as the Main San Gabriel Basin Watermaster and the Upper San Gabriel Valley Municipal Water District, and non-profit groups, including the Sierra Club, North East Trees, the San Gabriel Mountains Regional Conservancy (SGMRC) and others representing a wide spectrum of environmental and recreational interests. These interviews provided information on current and proposed projects being pursued, as well as issues and concerns to be addressed by the Master Plan.

This data was combined with GIS spatial analysis to develop a series of environmental assessment maps identifying potential opportunities in addition to those already being pursued by the stakeholders. These maps identify constraints to be considered for both current and future projects. This analysis provides an in-depth, multi-faceted picture of the river, and the many current and proposed activities along its banks, as well as a framework for the realization of future project development opportunities.

Phase II: Plan Framework

The plan framework was created by translating the stakeholder vision and goals into specific, actionable objectives and performance criteria. The goals and performance criteria are used to help select projects for development and to evaluate the extent to which projects are achieving the overall vision and goals of the Master Plan. A master project grid grouped all 134 stakeholder projects by the seven geographic reaches of the river and according to the six major goals, or Plan Elements. This classification system strengthens the portrayal of the San Gabriel River as a unified, comprehensive and integrated system of projects which taken together advances the shared vision for the river.

Phase III: Draft Concept Plan and Concept Design Studies

The Draft Concept Plan established the overall direction for the Master Plan, integrating stakeholder perspectives with the physical opportunities and constraints identified along the river corridor. Analysis led to eight project enhancement categories—prototype enhancements that could be duplicated along the river. The Steering Committee used that information to select five concept design studies from among the projects and to conduct a design charrette focused on those five projects. The design studies demonstrate how to apply the multi-objective approach to the design of actual projects intended to to achieve the goals of habitat, recreation and open space, while also maintaining existing flood protection, water quality and water supply functions. This planning approach is fundamental to the vision and goals of the Master Plan.

Phase IV: Concept Plan Testing and Environmental Assessment

During this phase, the Master Plan was refined and additional river enhancement opportunities were identified. At the same time, a Program Environmental Impact Report (EIR) was prepared. The EIR discloses any significant or potentially significant environmental effects of implementing the San Gabriel River Corridor Master Plan; identifies possible ways to avoid or reduce those impacts; and describes reasonable alternatives to the proposed project. This analysis is compliant with the California Environmental Quality Act (CEQA). A funding opportunities analysis was also conducted.

Phase V: Draft and Final Plan Development

The final Master Plan and EIR were completed and approved during this phase of the project. Following completion of County Counsel's initial review of the EIR, and a subsequent 60-day public review period, comments received from the County of Los Angeles Department of Public Works, other members of the Planning Team, the Steering Committee, and the public were incorporated into the Master Plan. After a second County Counsel review, additional changes to the Master Plan reflecting progress made on specific projects as well as other stakeholder input were included. The final Master Plan and EIR were then subsequently presented to the Los Angeles County Board of Supervisors for adoption in June 2006.

1.5 RELATIONSHIP TO OTHER PLANNING PROCESSES

A number of other planning efforts have recently been completed or are currently being developed throughout the San Gabriel River Watershed. "Recent Planning Studies" focus on all or parts of the San Gabriel River Watershed, and were completed three to fifteen years ago. "Current Planning Studies" focus on ongoing planning efforts. The majority of these plans are watershed-based, that is, they provide recommendations focused on regions defined by the natural functioning of watersheds, rather than by the traditional boundaries that define political jurisdictions. The Master Plan was developed in coordination with these plans to ensure consistency and minimize duplication. Ongoing coordination with these plans will be needed as the San Gabriel River Corridor Master Plan moves forward to implementation.

Recent Planning Studies

Long-Term Management Plan West Fork San Gabriel River

West Fork Working Group (May 1989)

The West Fork Working Group (WFWG) consists of the Angeles National Forest, the California Department of Fish and Game, LADPW, and California Trout. It was formed through a cooperative agreement on April 4, 1986, to create a mechanism for these entities to work together to improve water resources management in the West Fork of the San Gabriel River. The group developed a plan to integrate flood management, water conservation, fisheries management, stream habitat improvement, and recreational enhancement. The plan was also signed by various local water interests, the San Gabriel River Water Committee, the San Gabriel Valley Protective Association, and the San Gabriel Basin Water Master. The plan's primary goal is to manage Cogswell Reservoir and the West Fork of the San Gabriel River drainage to provide a balance of resource uses while minimizing conflict between users through cooperation, commitment and agreement.

Puente Hills Corridor: Greenspace Connectivity for Wildlife and People

California State Polytechnic University Pomona, Graduate Department of Landscape Architecture-606 Studio, College of Environmental Design (June 1997)

This study explores the issues facing the Puente Hills as a wildlife corridor within the context of a greater regional greenspace system that can simultaneously provide for the biological needs of wildlife and the recreational needs of people.

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

California State Polytechnic University Pomona, Graduate Department of Landscape Architecture-606 Studio, College of Environmental Design (June 2000)

This study, prepared for the SGMRC, presents a regional network planning process for prioritizing different areas within the San Gabriel Valley region for conservation efforts. The study includes recommendations for creating networks that support wildlife connectivity. This study, which received awards from the County and the American Planning Association, was the first to examine the main stem of the Upper San Gabriel River as a whole for multiple objectives. More information on this project can be found at www.sgmrc.org.

Los Angeles and San Gabriel Rivers Watershed Feasibility Study

US Army Corps of Engineers (July 2001)

COE and LADPW undertook this study as a partnership "to gather and evaluate available information, to look for opportunities for watershed improvement, and to initiate thinking on a future integrated Watershed Management Plan." A task force was established, which included cities, local governments, water agencies, and state and federal organizations. The primary goals were to provide adequate flood protection, conserve stormwater for groundwater recharge, improve water quality, increase recreation and open space, increase and restore wildlife habitat, and revitalize areas within the watersheds, by locating multi-objective opportunities, identifying partnering resources, and increasing knowledge of watershed issues. As a result of this study, six pilot projects were identified and taken to the next level of detailed assessment, including the Arroyo Seco Watershed, the Headworks project in Glendale and San Creek at Cal Poly Pomona.

Common Ground: From the Mountains to the Sea

San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) and Santa Monica Mountains Conservancy (October 2001)

This joint plan, undertaken by two California state conservancies, articulates a vision for the future of the San Gabriel and Los Angeles Rivers Watersheds and provides a framework for future watershed and open space planning. The overall vision is to "restore balance between natural and human systems in the watershed." The key component of the plan is a set of guiding principles, which provide over-arching goals to guide future open space planning in the dual watershed.

San Gabriel Confluence Park: A River Based Urban Nature Network

California State Polytechnic University Pomona, Graduate Department of Landscape Architecture-606 Studio, College of Environmental Design (June 2000)

This planning study was prepared for the Sierra Club, which has taken an active interest in the San Gabriel River. The study examines the potential for a network of open space around the San Jose Creek/San Gabriel River Confluence area.

Current Planning Studies

Forest Master Plan Update

USDA Forest Service-Angeles National Forest

The US Forest Service is updating its Forest Plans for Southern California, including, from north to south, the Los Padres, Angeles, San Bernardino and Cleveland National Forests. The Forest Plans set policies for the types of activities and special designations that can occur within each forest. The headwaters of the San Gabriel River fall within the boundaries of the Angeles National Forest. This process is scheduled to be completed in 2004.

San Gabriel River Watershed Special Resource Study

US Department of the Interior

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, including the City of Santa Fe Springs. NPS will lead this effort and will begin the study process in 2004. The study will evaluate the significance of the natural and cultural resources of the area and consider whether any portion of the area should be added to the national park system. The study may also assess opportunities for additional education and interpretation, low-impact recreation, trails and other access to urban open space, habitat protection and restoration, and watershed improvements. Based on the complex land ownership and jurisdictional boundaries in the area, NPS anticipates that recommendations would emphasize public-private partnerships. The legislation provides direction to coordinate with RMC and other federal, state and local agencies, such as the Angeles National Forest, and to take into consideration flood control, drainage and public infrastructure needs. Public involvement and participation will be included at key steps in the study process. The Department of the Interior has three years to complete the study and report its findings to Congress.

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 Corridor 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. It will address opportunities and challenges in a comprehensive watershed management plan. The plan is intended to provide a foundation and framework to facilitate planning and implementation efforts beyond the scope of this plan. Future programs already identified include: implementation of identified pilot projects; citizen-based land stewardship programs; local land conservation and resource management plans; citizen-based water quality monitoring coordinated with watershed-wide monitoring efforts anticipated by the Los Angeles Regional Water Quality Control Board and the LA and San Gabriel Rivers Watershed Council; and formation of the "San Gabriel River Tributaries Land Trust."

Rio Hondo Watershed Management Plan

San Gabriel Valley Council of Governments

The San Gabriel Valley Council of Governments, in partnership with RMC, has been awarded Proposition 13 grant funds from the State Water Resources Control Board to prepare the Rio Hondo Watershed Management Plan. This multi-objective project will integrate issues of land use, water supply, water quality, recreation and habitat.

Coyote and Carbon Creeks Watershed Management Plan

County of Orange, Public Facilities and Resources Department

The Coyote Creek Watershed covers 41.3 square miles in the northwest corner of Orange County. It includes portions of the cities of Brea, Buena

Park, Fullerton, La Habra and La Palma. Coyote Creek, its main tributary, flows from Riverside County and empties into the San Gabriel River. In 2001, COE initiated a comprehensive watershed study. The first step involved the Reconnaissance Phase, which was completed in June 2001. The "Westminster Watershed Reconnaissance Study" covers three Orange County watersheds: Coyote Creek, Carbon Creek, and Westminster. In fall 2002, COE began the Feasibility Phase, which will cover both the Coyote Creek and Carbon Creek Watersheds.

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. Measures will include trash reduction, retrofit of lavatories, stream clearance to remove blockages caused by sedimentation and debris build-up, clearance/rehabilitation of designated trails, stream bank stabilization and public outreach.

Water Quality Assessment, Source Identification and Management Action Evaluation of the San Gabriel River

Southern California Coastal Water Research Project

This study is one component of the 2003 Regional Monitoring Survey that will assess the overall environmental health of the Southern California Bight, the coastal region that extends from Point Conception to Cabo Colnet in Baja California. A part of this survey, conducted on a recurring five-year basis, will address the impact of stormwater plumes on coastal ocean water quality. SCCWRP received an $800,000 grant for the San Gabriel River component of the study.

Southern California Wetlands Recovery Project

California Coastal Conservancy

This project is 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.

chapter 2 The San Gabriel River: Past and Present

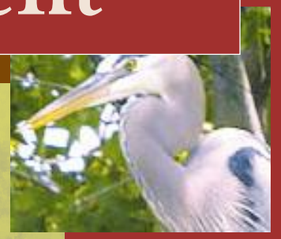


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Figure 2-16 courtesy of National Oceanic and Atmospheric Administration/Department of Commerce, "The Fishes of Alaska," Bulletin of the Bureau of Fisheries, Vol. XXVI, 1906, Plate XXXVII.

Figure 2-17 courtesy of The Bancroft Library at the University of California, Berkeley, the Robert B. Honeyman, Jr., Collection of Early California and Western American Pictorial Material, BANC PIC 1963.002:0001-1886.

chapter 2 The San Gabriel River: Past and Present

2.1 OVERVIEW

A realistic appraisal of how biological, physical and social forces worked together to create the river as it is today helps clarify the gap between its current state and the vision of what the river corridor might be in the future.

"The San Gabriel River Watershed Through Time" (section 2.2) describes the natural processes that created and shaped the river over millions of years and how human habitation has affected these natural conditions and processes in recent times.

"The San Gabriel River Today" (section 2.3) presents the existing conditions of the river corridor with maps and accompanying text. Each map looks at the river through a different lens, highlighting the issues and challenges that will be addressed in the San Gabriel River Corridor Master Plan. This section is organized in two parts:

BIOLOGICAL AND PHYSICAL RESOURCES. The *natural ecology* of the river corridor, such as flora and fauna, and the human-built elements including parks and trails, and infrastructure (roads, utilities, drains, etc.).

CULTURAL AND SOCIAL RESOURCES. The *human ecology* of the river corridor, such as political boundaries, social demographics and land use.

COURTESY OF GABI MCLEAN ©2003

Figure 2-1. Dramatic mountains and gently sloping alluvial plains characterize the upper part of the watershed.

2.2 THE SAN GABRIEL RIVER THROUGH TIME

Today's San Gabriel River Watershed is the result of thousands of years of natural processes: geology, climate, hydrology and ecology. An understanding of these processes will help determine the habitat, recreation and open space enhancements that are possible now and in the future.

2.2.1 Pre-Human Habitation

The river and its watershed provide a diverse landscape and a spectacular array of abundant resources. During the past few centuries, these natural riches have provided the foundation for equally spectacular human achievements.

Geology and Topography

The geologic structure of the San Gabriel River Watershed creates a relatively unusual drainage pattern. It directs the main corridor of the San Gabriel River to the western boundary of the watershed for most of its length.

The watershed can be divided into four distinct sections or physiographic areas, each with very different hydrological characteristics:

1. The rugged upper watershed of the San Gabriel Mountains
2. The San Gabriel Basin area, including the urban communities of the east San Gabriel and Pomona Valleys
3. Whittier Narrows
4. The Central Basin and Los Angeles Coastal Plain, including the communities of southeastern Los Angeles and northern Orange Counties

SAN GABRIEL MOUNTAINS

The Upper San Gabriel River Watershed falls largely within the San Gabriel Mountains. It is framed by surrounding ridgelines, and a small portion of the mid-San Gabriel Valley. The mountains contain the headwaters of the San Gabriel River Watershed and the West, North, and East Forks, as well as the main stem of the San Gabriel River.

The San Gabriels are one of several mountain ranges in Southern California that make up the Transverse Ranges. The Transverse Ranges run east-

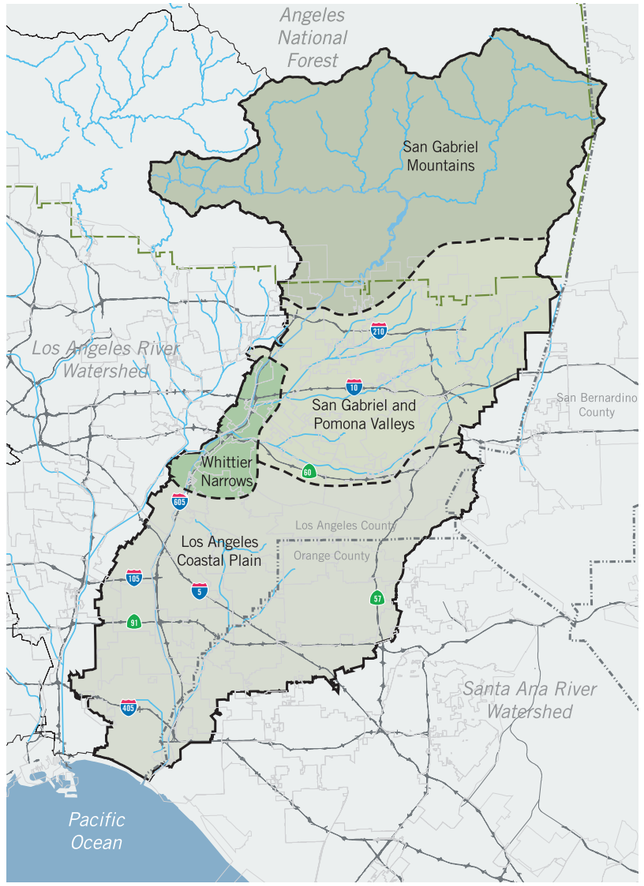


Figure 2-2. Physiographic areas of the San Gabriel River Watershed.

west—crosswise to nearly all other mountain ranges and valleys in California. The Pacific and North American plates converge in this area along an eastward-trending bend in the San Andreas Fault. The geologic compression caused by the merging of these two plates is expressed primarily in a north-south direction—it is squeezing the region together. The result is uplift in some areas, which forms the San Gabriel Mountains, and push down in other areas, which forms basins. The transverse nature of the San Gabriel Mountains and their extreme elevation change create diverse climatic conditions and habitat.

These geologic processes have affected the rugged San Gabriel Mountains for more than 100 million years. Even so, the San Gabriel Mountain range is still one of the fastest growing in the world. Over 60 percent of the landscape slopes at grades over 60 percent, with great expanses of steep, inaccessible terrain. Elevation in the upper watershed ranges from just 700 feet above sea level in Azusa to the peak of Mt. Baldy at over 10,000 feet high. The San Gabriels stand on a massive block of the earth's crust that is separated from the surrounding landscape by a network of major faults, including the San Andreas Fault on the north and the San Gabriel and Sierra Madre faults on the south. The San Gabriels are also fractured by many subsidiary faults. Most of the parent bedrock is igneous, but the rocks are highly fractured and weathered, decomposing rapidly when exposed to the elements.

In the transverse province of Southern California, this bedrock erosion forms natural aggregate deposits that are transported and deposited as sediment and rock fragments by the creeks, streams and rivers that flow from the mountains to the valleys. As a result, the valleys below the south face of the San Gabriel Mountains have exceptionally rich and deep alluvial deposits within and around the natural rivers and streams, and in the alluvial fans of these rivers and streams that form at the base of mountains and hills. The sand and gravel deposits in the area adjacent to the San Gabriel River form one of the most significant aggregate mining districts in the world and have become one of the region's major economic ventures.

SAN GABRIEL BASIN

The San Gabriel Basin lies to the south of the San Gabriel Mountains. The eastern portions of the basin fall within the San Gabriel River Watershed and the western portions fall within the Rio Hondo Watershed. Historically, these drainages shifted and braided, periodically interweaving. The two primary tributaries within the San Gabriel Basin portion of the San Gabriel River Watershed—San Jose Creek and Walnut Creek—flow from east to west. Each has its own sub-watershed.

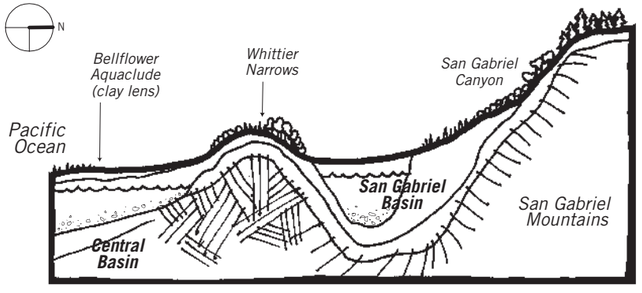


Figure 2-3. Physiographic cross-section of the basins below the San Gabriel River.

The Puente Sub-Basin is an offshoot of the San Gabriel Basin, mainly underneath the San Jose Creek Sub-Watershed. Vast portions of the San Gabriel Basin and Puente Sub-Basin are characterized by mildly sloping to nearly flat terrain. These areas consist mostly of alluvium, terrace and shale soil. The Merced and San Jose Hills and the Puente-Chino Hills complexes, which define the basin to the east and south, largely consist of shale and sandstone.

The Walnut Creek Sub-Watershed is formed by the foothills of the San Gabriel Mountains on the north and the Merced and San Jose Hills to the south. This sub-watershed contains the upper east San Gabriel Valley, characterized by mildly sloping alluvial conditions. The Merced and San Jose Hills form the northern edge of the San Jose Creek Sub-Watershed with the Puente-Chino Hills to the south. This sub-watershed contains the majority of the lower, east San Gabriel Valley, characterized by mildly sloping to nearly flat terrain.

WHITTIER NARROWS

Shaping the bottom of the San Gabriel Basin, the Whittier Narrows forms a division between the San Gabriel Basin to the north and the Central Basin and the Los Angeles Coastal Plain to the south. It is an area of geologic uplift between the Puente-Chino Hills complex on the east and the Montebello Hills on the west. This formation provides a barrier to groundwater movement. It is a natural collection and convergence point for both surface water and groundwater.

CENTRAL BASIN–LOS ANGELES COASTAL PLAIN

The southern portion of the Central Basin is located within the San Gabriel River Watershed and the northern portion is within the Los Angeles River-Rio Hondo Watersheds. Most of the San Gabriel River Watershed downstream of Whittier Narrows is formed by the Coyote-Carbon Creeks Sub-Watershed, which is formed by the Puente-Chino Hills on the north and the Coyote Hills and Santa Ana River Watershed on the south. It is characterized by a mildly sloping to nearly flat coastal plain, with the exception of the Coyote Hills. The western boundary of the watershed is divided from the Los Angeles River Watershed by a slightly elevated area of the plain. The Central Basin aquifer underlies this portion of the San Gabriel River Watershed. It is formed by the Whittier Fault Zone and an uplift along the Newport-Inglewood Fault. The West Coast Basin underlies the lower end of the San Gabriel River Watershed. The lower end of the watershed includes the Los Cerritos Wetlands system and other lands that were once associated with a complex coastal estuary at the mouth of the San Gabriel River.

Climate

The climate and precipitation patterns of the region are key to understanding the hydrologic patterns of the watershed. In general, the climate is Mediterranean-type. This rare climate type covers only 3 percent of the earth's land surface, including regions adjacent to the Mediterranean Sea and portions of Australia, Chile and South Africa. Long, hot, dry summers and cool, wet winters are typical. This pattern is an important factor in the

COURTESY OF GABI MCLEAN ©2003

Figure 2-4. Many coastal sage scrub plants drop their leaves during periods of drought and resprout after the first winter rains.

hydrology and habitat structure of the watershed. About 75 percent of precipitation falls between December and March, with the remainder mostly falling in November and April. Precipitation levels increase with altitude, and at the highest elevations, some of it falls as snow. The average annual precipitation in the San Gabriel Mountains is 36 inches a year, while the San Gabriel Valley averages 20 inches and the coastal plain averages 13 inches. Most years vary substantially with many seasons of drought and floods. In addition, geologic records reveal dramatic cyclic variations in climate with little predictability.

Erosion and Fire

Four main factors cause erosion in this region: steep slopes, soil characteristics, vegetative cover and rainfall patterns. Fire is also an indirect cause of erosion. It is a significant ecological process in the watershed, particularly in the mountainous hillside areas. Adaptations to fire are evident in the physiological and physical characteristic of the many chaparral and coastal sage scrub species that dominate the lower elevations of the San Gabriel Mountains and the hills of the San Gabriel Valley. These biomes naturally depend on fire for healthy and sustainable nutrition, soil renewal and disease reduction. The natural ignition source for fire in the watershed is lightning strikes. Lightning fires occur during summer storms that form at high elevations in the San Gabriel Mountains where there is little rain to suppress the fire. In fall, Santa Ana winds often blow from the north and northeast, creating the extremely dry, hot conditions that spread wildfires. After a fire, depletion of vegetative cover creates greater erosion potential. During heavy storms after the fire season, streams often transport large quantities of sediment, increasing the potential for floods.

COURTESY OF GABI MCLEAN ©2003

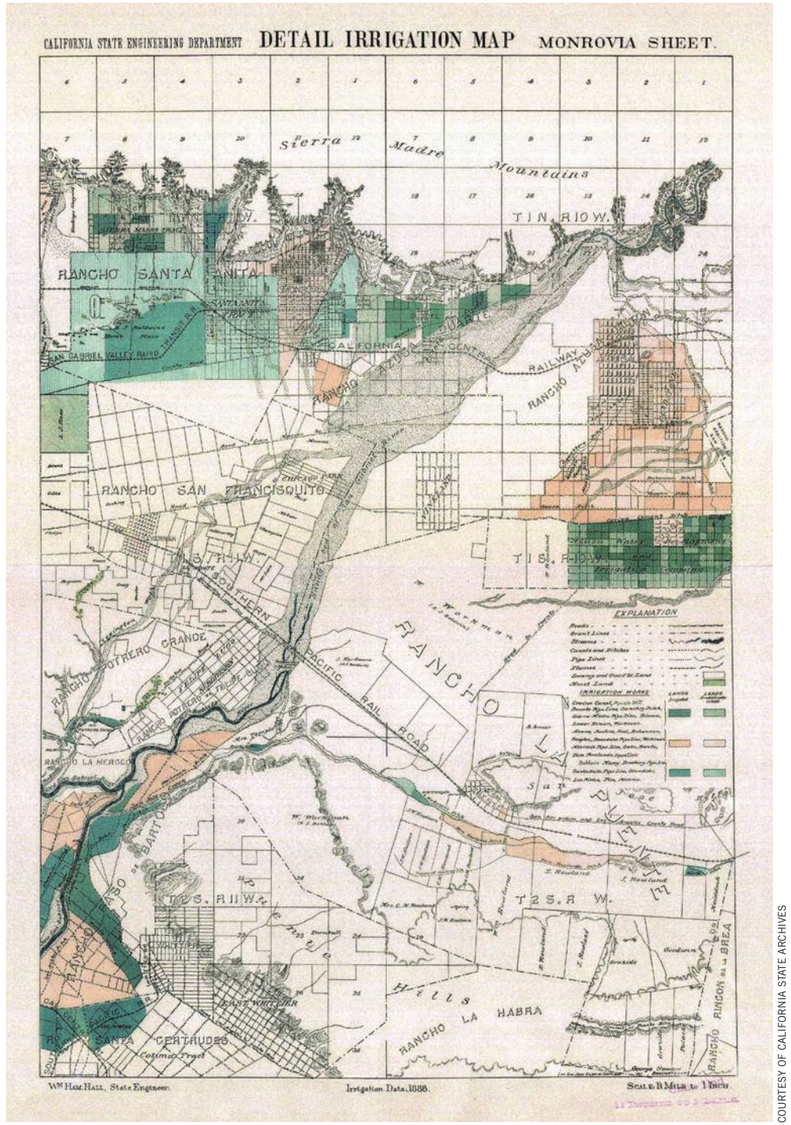
Figure 2-6. The ceanothus crassifolious or hoaryleaf ceanothus has regenerated five years after a fire in the San Gabriel Mountains.

COURTESY OF TIM BAAL, U.S.D.A. FOREST SERVICE

Figure 2-5. The Williams Fire of 2002 is seen burning in the mountains, as viewed from Santa Fe Dam.

Hydrology

The San Gabriel River was originally wide and shallow, surrounded by native vegetation. It was a braided series of slow-velocity channels that used a large flood plain to disperse sediment. It was an unpredictable river, not unlike other river systems in the American Southwest. During large storms, the river often created new channels, sometimes even intermingling with the Los Angeles River. Over time, the San Gabriel River system returned to equilibrium where the amount of sediment deposition and level of erosion were balanced.



COURTESY OF CALIFORNIA STATE ARCHIVES

Figure 2-7. This 1887 irrigation map shows the broad floodplains and stream braiding that was characteristic of the San Gabriel River before dams and channelization.

The San Gabriel River Watershed consists of three primary basins:

1. The San Gabriel Basin including Puente Sub-Basin in the San Gabriel Valley (see Figure 2-8)
2. The Central Basin along the Coastal Plain (see Figure 2-9)
3. The West Coast Basin at the lower end of the watershed (see Figure 2-9)

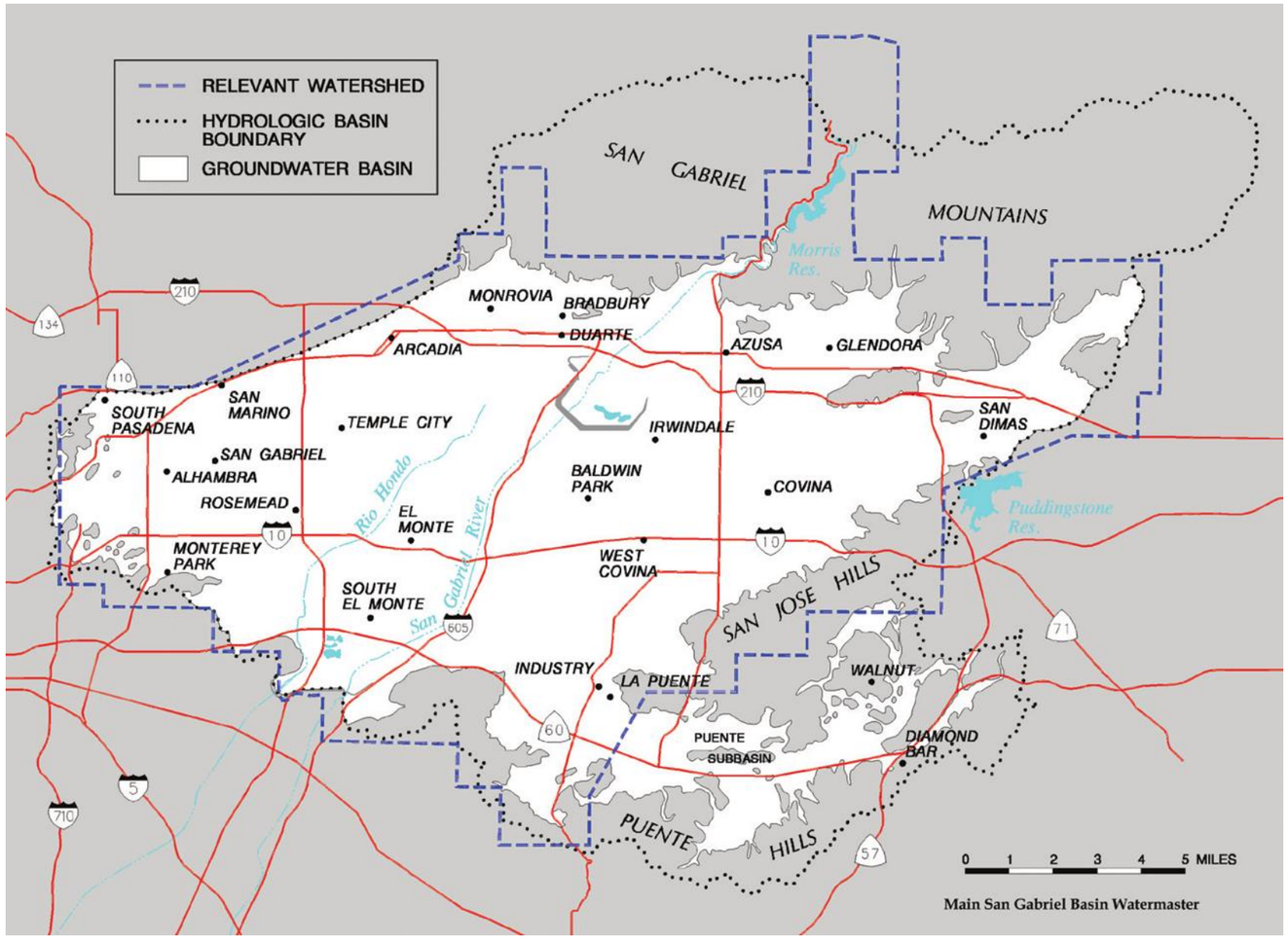
The San Gabriel Basin is an unconfined aquifer; the soil allows water to easily percolate from the surface through the basin. Historically, water entered this basin through natural percolation and from subsurface flows from the San Gabriel Mountains, Chino Basin to the east and the Raymond Basin to the northwest. Water flow within the basin has been toward the Whittier Narrows, where water migrates from the San Gabriel Basin into the Central Basin.

The Central Basin, north of the City of Downey, is also an unconfined aquifer. However, from Downey south to the estuary, it is a confined aquifer; a basin with a clay lens or aquaclude that only allows water to naturally percolate in a few specific locations. The Central Basin is formed by the Whittier Fault Zone on the northeast and the Newport-Inglewood Fault on the southwest. Historically, the Central Basin fed numerous artesian flows throughout the lower watershed.

The West Coast Basin underlies a small portion of the watershed near the outfall of the San Gabriel River. The basin also underlies portions of the Los Angeles River and the Santa Monica Bay Watersheds to the north. Historically, freshwater in the West Coast Basin has acted as a barrier preventing saline seawater from migrating into the West Coast and Central Basins.

Habitat and Vegetation

The San Gabriel River Watershed contains a rich variety of plant communities. In this area, as in the greater Southern California region, many plant communities merge to form very complex habitat relationships and ecosystems. The San Gabriel River Watershed contains eight geographical plant regions, placing it among the top regions worldwide in regards to biodiversity.

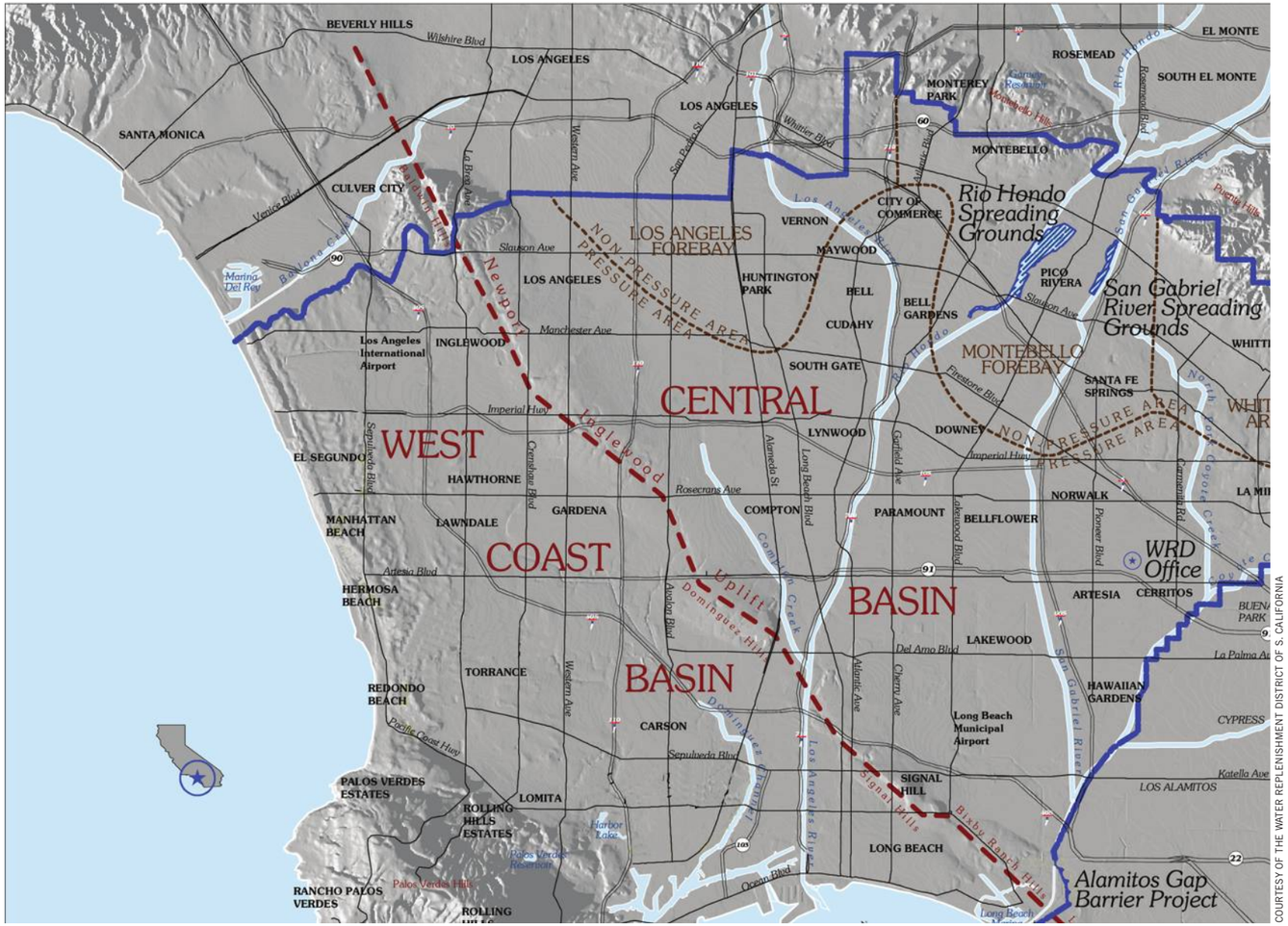


COURTESY OF THE MAIN SAN GABRIEL BASIN WATERMASTER

Figure 2-8. The Main San Gabriel Basin is an important natural water storage area for the Los Angeles region.

SAN GABRIEL MOUNTAINS

In the steep, upper mountainous reaches of the watershed, the majority of land, particularly south-facing slopes, is covered by shrub-dominated chaparral and coastal sage scrub. There are substantial patches of oak woodland and oak riparian woodlands in the more protected canyons and north-facing slopes. Higher elevations include significant patches of mixed conifer woodlands. The many riparian corridors throughout the San Gabriel Mountains contain sycamore and alder riparian woodlands.



COURTESY OF THE WATER REPLENISHMENT DISTRICT OF S. CALIFORNIA

Figure 2-9. The Central and West Coast Basins are also important natural water storage areas.

FOOTHILLS OF THE SAN GABRIEL MOUNTAINS

Foothill areas are characterized by masses of chaparral on slopes and coastal sage scrub in the flatter areas. These areas have intermittent oak, oak woodland, and grassland communities. Sycamore and alder riparian corridors occur sporadically throughout the foothill areas at all elevations.

The San Gabriel River and other tributaries in the watershed (including Big Dalton Wash, San Dimas Creek, Live Oak Creek, and Thompson Creek) emerge from the San Gabriel Mountains in this area. Large stands of alluvial fan sage scrub often indicate alluvial fan areas below.

PUENTE-CHINO HILLS, MERCED HILLS, AND SAN JOSE HILLS

These hills are characterized by large stands of coastal sage scrub, chaparral, walnut woodland and oak woodland, as well as intermittent corridors of oak riparian forest.

FLOOR OF THE SAN GABRIEL VALLEY

The Valley floor is dominated by coastal sage scrub, including alluvial fan sage scrub associations along the river corridor above Whittier Narrows. Upper portions of this area were once graced with periodic stands of open Engelmann Oak forest. In the past, the valley floor was braided with ribbons of oak and sycamore riparian forest that followed the river and tributaries such as Walnut Creek and San Jose Creek.

COURTESY OF GABI MCLEAN ©2003

Figure 2-10. Below 5,000 feet, oak woodlands flourish on north-facing slopes and in protected canyons.

COURTESY GABI MCLEAN ©2003

Figure 2-11. Riparian plants such as this arroyo willow thrive in areas where the river has a soft bottom.

WHITTIER NARROWS

The Whittier Narrows is a natural surface and groundwater collection point. Its moist conditions result in significant expanses of oak, sycamore and willow riparian woodlands and associated wetlands.

COYOTE-CARBON CREEK

The upper portion of the Coyote-Carbon Creek Sub-Watershed falls within the Puente-Chino Hills. It is characterized by stands of coastal sage scrub, chaparral, walnut woodland and oak woodland. The lower portion merges with the San Gabriel River coastal plain, where expanses of coastal sage scrub and grasslands, intermittent sycamore and oak riparian woodlands can be found.

SAN GABRIEL RIVER COASTAL PLAIN

The lower San Gabriel River corridor and surrounding watershed below the Whittier Narrows contains large expanses of coastal sage scrub and grasslands, as well as riparian woodlands and associated freshwater wetlands.

SAN GABRIEL RIVER ESTUARY

The river terminates at the Pacific Ocean with a large and fluctuating estuary. As is typical of the rivers of the western United States, the river often changed course in its past during large storms, so its outfall and the associated estuary changed considerably. Sometimes the estuary and outfall connected with Los Angeles River estuaries to the north. Sometimes they connected with estuaries to the south, associated with the Santa Ana River.

COURTESY U.S. NAVY, NAVAL WEAPONS STATION SEAL BEACH

Figure 2-12. Coastal wetlands, such as this one at the Seal Beach National Wildlife Refuge, once dominated the landscape at the mouth of the San Gabriel River.

Wildlife

Many large, predatory species of wildlife once inhabited the watershed, including grizzly bear, mountain lion, bobcat, gray fox and coyote. While the grizzly bear has disappeared from the region, the mountain lion, bobcat, and coyote still live in the Angeles National Forest and in some portions of the Puente-Chino Hills, San Jose Hills and foothills of the San Gabriel Mountains. The black bear, introduced into the region, inhabits secluded portions of the Angeles National Forest. Occasionally, this species also visits the urban portions of the foothills of the San Gabriel Mountains, drawn by readily available food sources such as trashcans.

The diverse environments of the watershed supported many other species, both terrestrial and aquatic. Hundreds of bird species frequented the watershed; more than 350 bird species used the rich habitat found within the Whittier Narrows. Steelhead trout, Pacific lamprey, unarmored threespine stickleback, arroyo chub, Santa Ana sucker, and Santa Ana speckled dace are among the fish species that lived in the San Gabriel River and some of its tributaries. Without today's impediments to wildlife movement, populations of wildlife were able to disperse from this watershed into other habitats, including the Pacific Ocean. This maintained a healthy gene flow between populations. The ability to disperse also provided opportunities for seasonal migration and for escape during episodic disturbance such as fire and floods.

COURTESY GARY M. STOLZ, USFWS

Figure 2-13. Bobcats prefer rocky, shrub hillsides and eat small mammals such as rabbits and rodents.

COURTESY USFWS

Figure 2-14. Coyotes have adapted to the wildland-urban interface areas.

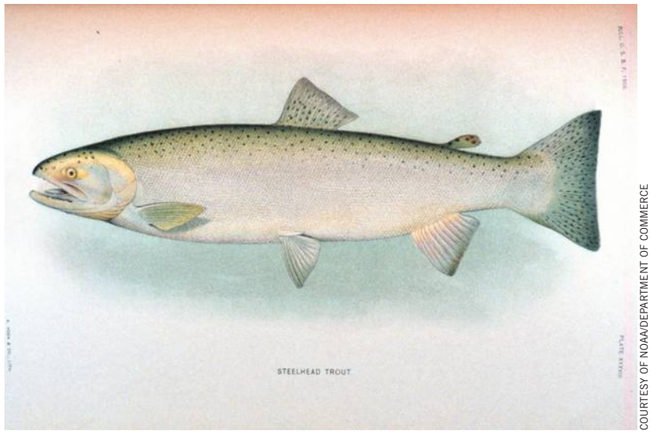
The San Gabriel River also functioned as a terrestrial and aquatic wildlife corridor, linking the Puente-Chino Hills and Montebello Hills with the San Gabriel Mountains. Prior to the dams being built, thousands of steelhead trout traveled up the river in the winter/spring season, returning to their birthplaces to spawn.

Today, Southern California's South Coast Ecoregion is host to many endangered species of plants and animals found nowhere else on earth.

COURTESY BONTERRA CONSULTING ©2003

Figure 2-15. The endangered brown pelican is usually found on the coast, but occasionally ventures inland to lakes and rivers.

Because of urban development and natural resource use, the river and watershed have experienced significant loss of plant and animal species. However, large patches of open space, including the San Gabriel Mountains and the Puente-Chino Hills, are still viable habitat for some species. Relatively large species, including predators like the mountain lion, cannot sustain healthy populations over the long term without access to relatively large habitat areas nearby.



COURTESY OF NOAA/DEPARTMENT OF COMMERCE

Figure 2-16. Steelhead trout were once abundant in the San Gabriel River.

2.2.2 Human Habitation

The San Gabriel River Watershed has a long, rich history of human habitation. From the early Native Americans to European arrival and periods of rule by Spain, Mexico and the United States, each successive wave of inhabitants left its indelible mark on this region. The cultural and economic diversity of the many communities found today in the watershed is a direct result of this historic legacy.

Land Use and Urban Development

Native Americans may have arrived in this area 40,000 years ago. The first recorded inhabitants arrived about 500 B.C. About 5,000-10,000 indigenous people were estimated to be in the region when the Spanish arrived. The Spaniards established the San Gabriel Mission in 1771 in the San Gabriel Valley near present day El Monte. In 1775, after significant flooding along the San Gabriel River and the Rio Hondo River, the mission was moved to its current location in the City of San Gabriel. Watershed lands were used as part of the mission's system of ranching and agriculture. This period ended in 1834 when control of California was transferred to Mexico and Mission lands were secularized.

COURTESY THE BANCROFT LIBRARY, U.C. BERKELEY

Figure 2-17. A bird's-eye view of Azusa in 1887 illustrates early town planning concepts.

COURTESY OF THE AZUSA HISTORICAL SOCIETY

Figure 2-18. Tongva Indian pictographs can be found near Azusa, as shown in this 1928 photograph.

Figure 2-19. The Pio Pico Adobe in Pico Rivera is an example of the ranchos of the 1800s.

Private ranchos became a defining landscape pattern during the Rancho Period, when former mission lands were dispersed to private individuals. Although the period was short, the massive ranches provided the foundation for the development of Southern California. The end of the Rancho Period began in 1846, when the U.S. occupied California, which became a state in 1850. Soon after, a series of devastating floods and droughts resulted in the economic collapse of the rancho lifestyle.

After California statehood, the ideal climate and landscape conditions found in Southern California, particularly in the coastal watersheds such as the San Gabriel River, led to the discovery of agriculture as an economic activity. Agricultural production, including citrus, wine grapes, walnuts, dairy products and field crops, became the basis of the Valley's agricultural economy. The watershed was a haven for farming and ranching for almost 100 years.

During and following World War II, the area shifted away from its agricultural roots toward an industrial economy with growing suburban communities—which is still the basis of the area's economy today. The watershed is now largely built out. Residential, commercial, and industrial development is present in most of the lower elevations, including the former flood plain of the San Gabriel River. Land use development continues through infill projects, redevelopment of more dense urban communities, and development of open space in foothill areas of the watershed.

Figure 2-20. Communities of the San Gabriel Valley relied on the citrus industry from the 1800s to mid-1900s.

Flood Protection and Water Supply

From the moment agricultural and urban development began appearing in the watershed, communities along the San Gabriel River have had to deal with periodic major flooding. In the upper San Gabriel Valley, debris flows out of the canyons of the San Gabriel Mountains often accompanied these floods. In response, the U.S. Army Corps of Engineers (COE) and the County of Los Angeles made a commitment to protect the communities along the river from flood damage to the extent possible. Los Angeles County officials discussed flood control as early as 1893 to address the unpredictable and often rampaging storm flow from the San Gabriel Mountains. Major storms in 1914 and 1916 led to the creation of the Los Angeles County Flood Control District and, ultimately, implementation of flood control measures on the San Gabriel River and its tributaries. Over time, a series of dams, debris basins and formal river channels to protect against flood flows and sediment transport have been constructed. The result is a weakening of the physical connections between upper portions of the watershed and the Pacific Ocean, resulting in barriers for sand, sediment, people and wildlife. Sediment that once was carried across the watershed (replenishing soils) and out to sea (replenishing beach sands) is now captured behind debris basins and dams resulting in significant maintenance requirements at each dam and debris facility, and in beach erosion.

Flooding is not the only environmental factor driving the change in natural conditions. The tremendous mosquito populations in California's early history caused major public health and economic problems, leading to removal of many of California's wetlands, illustrating the significant impact mosquito reproduction has had on the lives of California residents.

Because the region has a semi-arid Mediterranean climate, water resource development was necessary to support population growth, agriculture and industry. The first recorded diversion of water from the San Gabriel River was made in 1812 for agricultural purposes. In 1871, the County of Los Angeles Board of Supervisors created the San Jose Water District, the first official water district in the watershed. Today, many water agencies are charged with managing and protecting local surface water and groundwater supplies. The water in the San Gabriel River and the watershed's groundwater basins has been adjudicated and has been fully appropriated according to the State Water Resources Control Board. Specific water rights' holders own precise amounts of surface flow in the river and/or water stored in groundwater basins.

Urban development has converted open space to land uses that include hard, impervious surfaces. These surfaces cause stormwater to run off, rather than percolate into the ground. To compensate for this reduction of

COURTESY CITY OF LAKEWOOD

Figure 2-21. A housing boom started when the City of Lakewood incorporated in 1954.

COURTESY CITY OF LAKEWOOD

Figure 2-22. The streets of Lakewood flooded after a large storm in 1950.

groundwater recharge, percolation and settling basins have been introduced, concentrating recharge in smaller areas. Although a large amount of water is captured and infiltrated in percolation basins, the region's natural ability to provide enough water has long since been exceeded. So watershed agencies import significant quantities of water from the State Water Project and the Colorado River, through the Metropolitan Water District of Southern California.

The amount of water flowing through the watershed has been increased over time because of this imported water. It contributes to surface runoff as a result of uses such as irrigation and from discharge of treated wastewater. These sources of runoff now occur year-round in a watershed that was traditionally ephemeral.

Fire Protection, Erosion and Fire

Over time, urban development in the San Gabriel River Watershed continued to encroach onto historically fire-prone areas. To protect property, agencies and local communities adopted strict fire suppression policies. Over time, that suppression has led to increased vegetation build-up. The result was hotter-burning and often larger, more devastating fires than what once occurred historically. These altered disturbance patterns can have an adverse effect on native plant communities by changing the conditions in which these species had evolved. Increasingly, human-induced fires became the common cause of wildfires in the watershed, producing massive fires that are costly to fight and damaging to human property, plant communities and wildlife. They leave behind burned areas, which, during rainstorms, can cause massive sediment flows that must be managed in order to maintain flood protection levels.

Habitat Health and Connectivity

During the last 150 years, urban development has largely eliminated or degraded habitat along the river corridor. The majority of the valley and coastal plain areas and the lower elevation foothill areas have 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.

The San Gabriel River itself once functioned as a major habitat corridor, but urban development has fragmented remaining habitat along the river corridor and throughout the watershed. Only small patches of habitat remain along the river, such as the Santa Fe Dam Recreation Area, the Whittier Narrows Recreation Area, Bonelli Regional Park and Schabarum Regional Park. Some large intact habitat patches within the San Gabriel Mountains and the Puente-Chino Hills can still be found. However, these habitat patches are not well connected, which isolates plant and wildlife communities and limits the species' gene pools. This will affect the long-term viability of regional habitat communities and remaining wildlife.

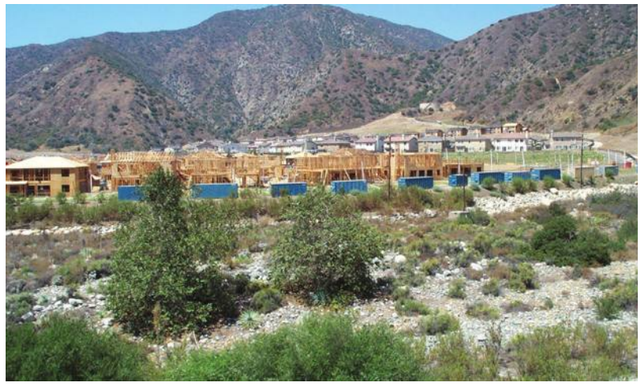


Figure 2-23. Residents at the edge of the wildland-urban interface area face critical habitat management issues.

COURTESY GABI MCLEAN ©2003

Figure 2-24. Although horseweed is native to California, it mainly grows in disturbed areas.

Another variable is the introduction and spread of invasive, non-native plant species. While the distribution of plant species shifts during an evolutionary timescale, human activities have accelerated this process. 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 already disturbed areas. Invasive plants can displace native vegetation, alter hydrologic patterns and reduce habitat quality.

2.3 THE SAN GABRIEL RIVER TODAY

Today, the San Gabriel River is as multi-faceted as are its many different stakeholders. An engineer at County of Los Angeles Department of Public Works (LADPW) may perceive the river as a flood control channel that efficiently protects nearby residents from swift waters. To San Gabriel Valley water purveyors, the river is a critical source of precious local drinking water. Fly-fishermen see the river as a local destination. Environmentalists see the river as a significant biological resource. For community groups and conservancies, the river is a potential greenbelt of open space,

Figure 2-25. The river flows through a concrete channel for ten miles in the lower coastal plain.

providing a respite from urban sprawl. This complexity and richness have increased the river's function and value to all residents of Southern California.

2.3.1 Biological and Physical Resources

The river ties our natural and urban environments together, providing a sense of place for all the communities along its banks. The physical environment encompasses biological and material conditions, both natural and human-made, that are tangible features of the present-day river:

GEOLOGY—the rock, sand, and gravel (aggregate) resources that Southern California relies upon for roads, schools, homes, and commercial and industrial buildings.

HABITAT—the present state of plant and animal communities along the San Gabriel River as defined by Significant Ecological Areas (SEAs) and sightings of rare plant and animal species.

TRAILS AND BRIDGES—the many physical structures designed to provide people access to or through the river corridor.

PARKS, SCHOOLS AND OPEN SPACE—the "empty" spaces in the built-environment along the river corridor that offer people an escape from buildings and streets that otherwise define their world.

FLOOD PROTECTION—the many dams, levees and other physical infrastructure built to help control and manage the river.

WATER SUPPLY—the water sources, the major agencies responsible for the water supply, the groundwater basins, and the water supply infrastructure, including water reclamation plants and spreading grounds.

WATER QUALITY—the current baseline conditions of ground and surface waters along the river and its tributaries.

Where applicable, current biological and physical resources are described within the context of each of the seven reaches as defined by the San Gabriel River Corridor Master Plan.

Figure 2-26. Aggregate is carried on a conveyor belt to a processing plant.

Geology

The San Gabriel River and the rocks and soils that lie along its channel are a creation of the continuing uplift and ongoing erosion of the San Gabriel Mountains. As the mountains have eroded, rocky pieces of boulders, rocks, gravel and sand have flowed out of the mountains and have been deposited by the river on top of the deep bedrock of the valley. The valleys below the south face of the San Gabriel Mountains still have particularly rich alluvial deposits (sediment deposited by flowing water). The alluvium fan deposit is estimated to be thousands of feet deep (up to 3.4 miles) and forms the 167-square mile aquifer, or groundwater basin, that is the

Figure 2-27. Exposed weathered rock outcrops are visible along Highway 39 in San Gabriel Canyon.

San Gabriel Valley's primary water source. In places the deposits are so deep geologists are unable to determine the make-up of the bedrock underneath.

Geologic maps tell the story, showing the range of rock and soil types existing along the path of the river.

HEADWATERS (REACH 1)

The West Fork consists predominately of two rock types: granitic and quartz diorite rocks from the Mesozoic era (55- to 245-million years ago). There are occasional alluvial sand and gravel deposits interspersed in a band along and near the channel of the West Fork.

SAN GABRIEL CANYON (REACH 2)

The San Gabriel Canyon is also dominated by quartz diorite rocks from the Mesozoic, and has significant deposits of Precambian era (544- to 4,600-million years ago) gneissic rocks, a type of igneous and metamorphic rock. There are alluvium deposits along the river channel between these solid rock formations.

UPPER SAN GABRIEL VALLEY (REACH 3)

The alluvial fan deposit begins at this point, where the river flows out of the San Gabriel Canyon and spreads alluvium out and into the Valley. These alluvium deposits consist of gravel and sand from the Pleistocene and Holocene era (10,000 years ago to the present).

LOWER SAN GABRIEL VALLEY (REACH 4)

The alluvial fan deposit continues south into the San Gabriel Valley. The alluvium directly deposited by the outflow of the river from the mountains narrows as it approaches Whittier Narrows, surrounded to the east and west by the alluvial gravel, sand and silt of the valleys and floodplains. The Puente-Chino and Montebello Hills consist of sandstone and claystone deposits from the Pliocene era (1.8- to 5.3-million years ago).

UPPER COASTAL PLAIN (REACH 5), LOWER COASTAL PLAIN (REACH 6), AND ZONE OF TIDAL INFLUENCE (REACH 7)

The Los Angeles Coastal Plain includes Pleistocene- to Holocene-age alluvium deposited from the river and marine sediments deposited during periodic encroachments of the sea. These sediments are grouped in four different formations: recent alluvium, the Lakewood Formation, the San Pedro Formation and the Pico Formation.

AGGREGATE MINING

Because of its the abundant aggregate resources, the San Gabriel Valley is called the "mother lode" of Southern California. Aggregate from the Holocene and Pleistocene eras are very durable and suitable for making concrete and asphalt. Rock, sand and gravel from the alluvial fans of the San Gabriel River have been used to build roads, schools, shopping centers, industrial plants and homes in Southern California.

Since the early 1900s, over a billion tons of aggregate have been produced for the construction industry in the Los Angeles region. Rock, sand, gravel, cement, water and other "ad mixtures" are the primary components of Portland Cement Concrete or PCC. PCC is specified in many construction projects for buildings, streets, sidewalks and landscapes. Asphaltic Concrete or AC is the basic material for building and maintaining roads and parking lots. AC contains crushed rock, manufactured natural sands and hot, liquid asphaltic oil. Many famous landmarks, including the Los Angeles Memorial Coliseum, the Los Angeles Harbor and the Los Angeles freeways were built with San Gabriel Valley aggregates.

COURTESY OF VULCAN MATERIALS COMPANY

Figure 2-28. Aggregate—sand, stone and gravel—is mined at the Reliance facility and used for construction.

COURTESY OF VULCAN MATERIALS COMPANY

Figure 2-29. Once mined, aggregates are sorted by size.

Aggregates come in a natural smooth rounded form or in an angular form, also called "crushed stone." Rounded rocks result from years of wearing down by the sediment transport process as mountains erode and are carried by water downstream. They tend to be found in or near current or historic riverbeds. The smooth larger rocks or cobbles, also known as "river rock," are the primary building material for Craftsman bungalows and landscapes of the Arts and Crafts era. Crushed stone is created by either blasting or crushing large rocks. Because it compacts more tightly than rounded pebbles or gravel, crushed stone is used as a base layer for building roads and sidewalks to ensure an even surface.

Rock, sand and gravel are obtained through "surface mining" or "open pit mining." Once mined, materials are washed and sorted at a local production plant and sold to market.

There are 11 mines located within one-half mile of the San Gabriel River. These mines are currently operated by three companies: Hanson Aggregate West, United Rock Products and Vulcan Materials Company. There are additional mines in the area, but beyond the project area of the Master Plan. Mines in the San Gabriel Valley are privately owned and are currently operated under various entitlements such as conditional use permits, vested rights and reclamation plans. All but the Rodefer Quarry are now producing rock, gravel and sand for the construction industry. Rodefer Quarry is in the early reclamation stages. The mines are concentrated in Reaches 3 and 4, in the Cities of Azusa, Duarte, Irwindale and Baldwin Park:

- Azusa Rock Quarry
- Azusa-Largo Quarry
- Reliance #2 Quarry
- United Rock Products Quarry #1
- United Rock Products Quarry #2
- United Rock Products Quarry #3
- United Rock Products Quarry #4
- Bubalo Quarry
- Hanson Quarry
- Durbin Quarry
- Rodefer Quarry

Figure 2-30. This diagram shows mine locations.

The California State Department of Conservation's Division of Mines and Geology (DMG) tracks supply and demand of aggregate resources within the State. According to the DMG, each person in Los Angeles "requires approximately 3.7 tons of new aggregate resources each year for the construction of streets, schools, shopping centers, homes and other basic structures. That means California uses over 180 million tons of aggregate each year, making the San Gabriel River one of the State's most important resources.

The State of California Department of Mines and Geology has incorporated land use designations with proven mineral deposits for the development of aggregate resources. The Surface Mining and Reclamation Act provides for mineral land classification in Sections 2711, 2712, 2761, 2762, 2763 and 2764 of the Public Resources Code. Land is either designated as urban or as a mineral resource, which differs from the land use designations as developed by the Southern California Association of Governments (see Section 2.3.2.3-Land Use and Economic Development). Existing mines are generally within Mineral Resource Zone-2 (MRZ-2), with the exception of Azusa Rock Quarry (Fish Canyon Quarry Property), which has recently been reclassified from MRZ-3 to MRZ-2 for Portland Cement Concrete Aggregate.

The land use zones from the Mineral Land Classification Map—Aggregate Resources Only, June 1, 1982, are:

OUTER BOUNDARIES SUBJECT TO URBANIZATION shows areas undergoing urbanization

EXISTING URBAN BOUNDARIES shows present conditions of urban areas

PRODUCTION-CONSUMPTION REGION BOUNDARY shows areas under classification for minerals

MINERAL RESOURCE ZONE BOUNDARIES include the following sub-areas:

- MRZ-1 areas have little to no significant mineral deposits
- MRZ-2 areas contain significant mineral deposits, based on adequate information
- MRZ-3 areas contain mineral deposits but the significance cannot be established
- MRZ-4 areas have inadequate information to assign to any other MRZ zone

These privately owned mines are a current and future resource for local and regional communities, providing materials for building the urban infrastructure. At this time, mining is projected to occur for another 30 to 40 years. In the future, reclaimed mines will provide land for a variety of uses. Each mine has a closure plan detailing the reclamation procedures of the mine and a re-use plan for future commercial, industrial, residential or open space and habitat land uses once its resources are exhausted. Mining companies are partnering with local communities to develop closure plans (for more details on closure plans, see Section 3.5, Master Plan Projects).

Habitat

Due to its Mediterranean climate and other factors, Southern California has one of the rarest ecosystems in the world. The biodiversity that characterizes a Mediterranean ecosystem exists only on three percent of the surface of the earth. Locally, the San Gabriel Mountains, Whittier Narrows and the estuarine area of the San Gabriel River Watershed contain good quality habitat as shown by the following two maps:

SIGNIFICANT ECOLOGICAL AREA (SEA). These are "ecologically important fragile land and water areas that are valuable as plant or animal communities and to the preservation of threatened or endangered species" according to the 1988 Los Angeles County General Plan (see Map 2-1).

SENSITIVE SPECIES OCCURRENCES. These are sensitive species as compiled and presented in the California Natural Diversity Database-CNDDB (see Map 2-2).

SIGNIFICANT ECOLOGICAL AREA

The County of Los Angeles Department of Regional Planning has designated areas within some unincorporated portions of the county as SEAs, adding a layer of protection for biotic resources. SEAs do not take away a property owner's right to build, but outline land use management practices that require development projects to be designed around existing habitat.

There are 10 SEAs in the San Gabriel River Watershed. Two SEAs lie directly on the river, including the Santa Fe Dam Floodplain and Whittier Narrows Dam County Recreation Area. Within a mile of the river are the Rio Hondo College Wildlife Sanctuary, the Sycamore-Turnbull Canyons and Alamitos Bay. Other SEAs are dispersed throughout the Puente-Chino Hills and San Jose Hills to the east of the river, as well as in the San Gabriel Mountains. Two proposed SEAs are in development, San Gabriel Canyon and Puente Hills. Once adopted, both SEAs will significantly increase the area of protection within the San Gabriel Mountains and Puente Hills areas. Existing SEAs within these regions will be included into the new designations.

COURTESY GABI MCLEAN ©2003

Figure 2-31. The valley cholla, an alluvial fan sage scrub plant, only occurs in the Santa Fe Dam Recreation area.

The following existing and proposed SEAs are located along or near the San Gabriel River.

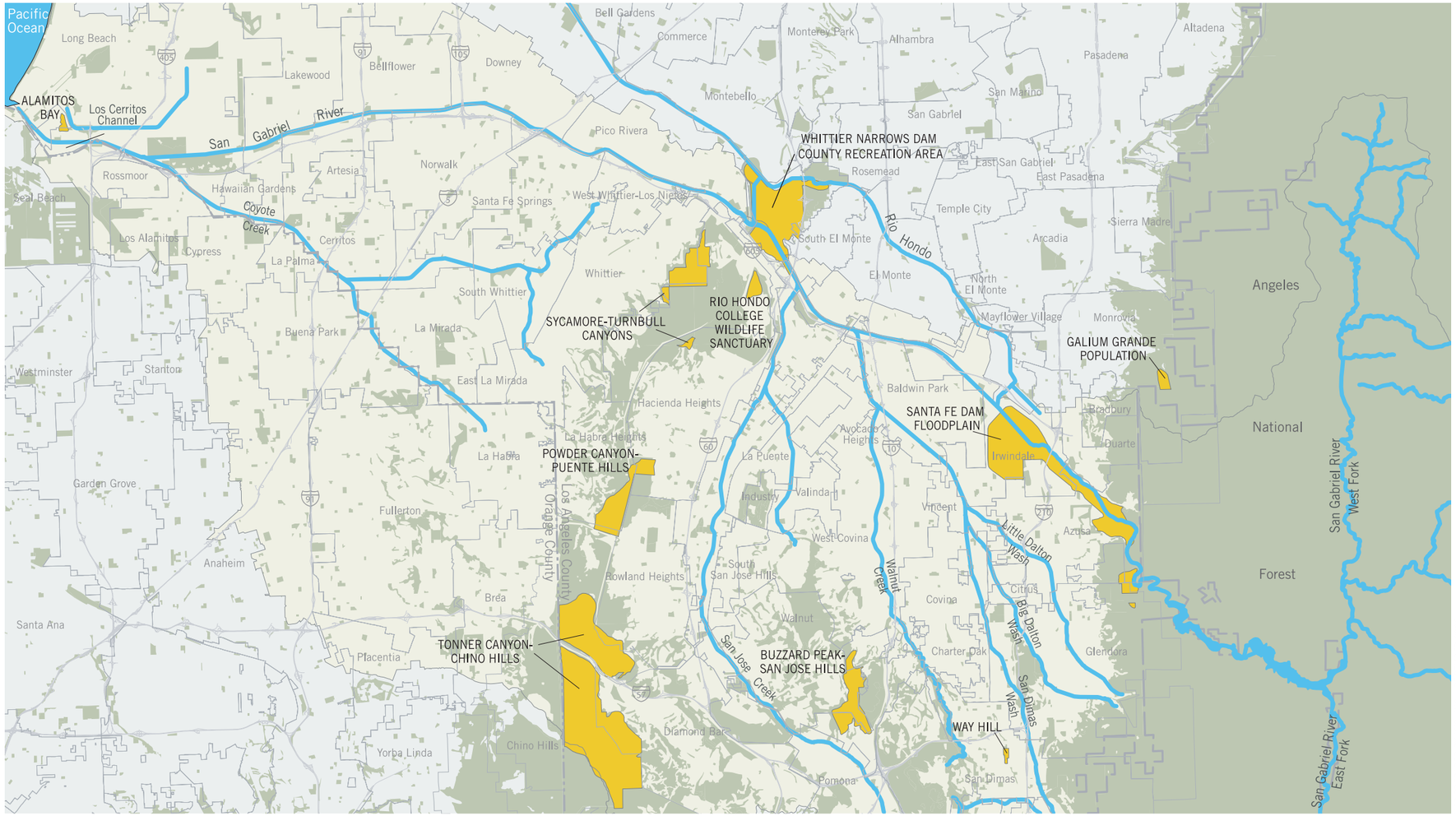
Headwaters and San Gabriel Canyon (Reaches 1 and 2)

There are currently no SEAs in these reaches, but there is a proposed SEA expansion.

SAN GABRIEL CANYON (PROPOSED). The new San Gabriel Canyon SEA will incorporate the existing SEA, "Santa Fe Dam Floodplain." Once approved, it will include the San Gabriel, Sawpit and Santa Anita Canyons and lands associated with those canyons, for a total area of 22,966 acres. Within this proposed SEA are steep slopes, elevation changes and a wide variety of plant communities including grasslands, riparian, shrublands, woodlands and forests. The majority of this SEA is in the Angeles National Forest, with portions in unincorporated Los Angeles County and the foothill Cities of Arcadia, Azusa, Duarte, Glendora and Monrovia.

Upper San Gabriel Valley (Reach 3)

SANTA FE DAM FLOODPLAIN. This SEA stretches almost five miles along the San Gabriel River, from Azusa down to Santa Fe Dam in Irwindale. It straddles both sides of the river, and includes the entire open space area



Source: County of Los Angeles Departments of Public Works & Regional Planning and Rivers and Mountains Conservancy

Note: Does not include Orange County data. From 1976 study by County of Los Angeles Department of Regional Planning and as amended through the adoption of the 1980 Revised General Plan.

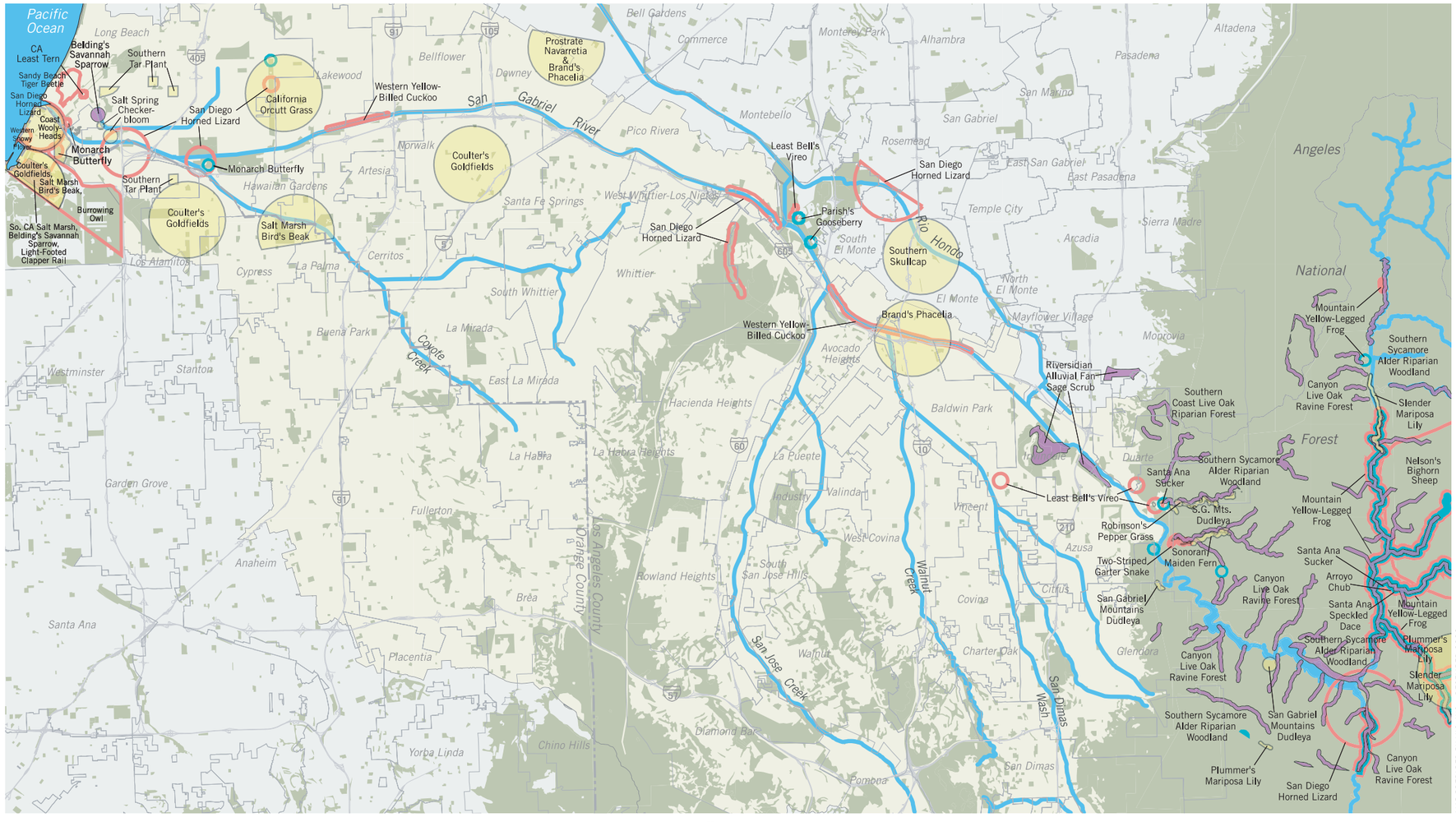
MAP PREPARED BY MIG, INC.—DECEMBER 2003

Significant Ecological Areas (SEA)

County of Los Angeles Department of Public Works

San Gabriel River Corridor Master Plan

Map 2-1. Significant Ecological Areas.



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Note: Data derived from the California Natural Diversity Database. Habitat data included within five mile buffer from San Gabriel River only.

Habitat and Species Occurrences

County of Los Angeles Department of Public Works

San Gabriel River Corridor Master Plan

Map 2-2. Habitat and species occurrences.

behind the dam. It encompasses 2,125 acres in floodplain conditions, including significant stands of alluvial fan sage scrub habitat, a rare plant community that today only exists in isolated patches. This SEA also includes some stretches of riparian woodland and coastal sage scrub plant communities. The area supports many regional biological values, including protection of existing core populations of rare species, presence of plant communities with restricted distribution, essential habitat for resident species and migratory birds, and habitat linkages along the upper San Gabriel River.

Lower San Gabriel Valley (Reach 4)

WHITTIER NARROWS DAM COUNTY RECREATION AREA. This large area straddles the San Gabriel River above the Whittier Narrows Dam and stretches over to the Rio Hondo. This SEA encompasses 4,145 acres in an area that is a collection point for surface and groundwaters from the San Gabriel River and Rio Hondo Watersheds. It presents a mix of oak, sycamore and willow riparian woodland, freshwater marsh, grasslands and coastal sage scrub. Whittier Narrows is a large and intact patch of rich habitat that is relatively isolated from other intact habitat patches in the watershed. Even so, it supports about 300 species of resident and migratory bird species. It also supports many regional biological values, including protection of existing core populations of rare species, presence of plant communities with restricted distribution, essential habitat for resident species and migratory birds, and potential habitat linkages along and between the San Gabriel River and the Puente Hills corridor. This SEA lies within land owned by the United States Army Corps of Engineers and the County of Los Angeles Department of Parks and Recreation.

PUENTE HILLS (PROPOSED). The proposed SEA will encompass remaining habitat areas within the Puente Hills, including Whittier Narrows, Sycamore Canyon and Turnbull Canyon, Powder Canyon, Brea and Tonner Canyons. The total area proposed is 13,421 acres. These areas contain relatively undisturbed patches of woodland, shrubland, grassland and wetland communities. As part of an important wildlife corridor, the Puente Hills are virtually a habitat island, surrounded by urban development. This proposed SEA will include the existing Whittier Narrows Dam County Recreation Area. A majority of this proposed SEA occurs within unincorporated Los Angeles County, with the rest in the city limits of Industry, La Habra Heights, Montebello, Pico Rivera, South El Monte and Whittier.

COURTESY OF MARGO BORS, CAL PHOTOS/CAL FLORA

Figure 2-32. Purple needlegrass, a once abundant native California bunchgrass, is now only found in small patches—it has been replaced by exotic annual grasses.

COURTESY OF GABI MCLEAN ©2003

Figure 2-33. Riparian woodland habitat can be found within the river corridor.

RIO HONDO COLLEGE WILDLIFE SANCTUARY. Located in the far northwest portion of the Puente Hills, adjacent to the Rio Hondo Community College (RHCC) campus and the Puente Hills Landfill, this SEA is approximately 109 acres and is used primarily by faculty and students at RHCC as a natural classroom and laboratory. The area includes examples of riparian woodland, chaparral, oak woodland, and coastal sage scrub communities. Students and professors at RHCC have recorded a wide variety of plant life and over 100 species of vertebrates here.

Upper Coastal Plain (Reach 5)

SYCAMORE-TURNBULL CANYONS. Located in the far southwestern portion of the Puente Hills, this SEA is about 607 acres and supports a number of plant communities including oak woodland, oak riparian forest, walnut woodland, southern willow scrub, chaparral, coastal sage scrub, freshwater marsh and non-native grassland. The SEA supports several habitat types that are considered sensitive biological resources because of the scarcity of vegetation and habitat for a number of the state and federally listed endangered, threatened and rare vascular plants, and several sensitive bird and reptile species.

Lower Coastal Plain (Reach 6)

There are no SEAs in this reach.

Zone of Tidal Influence (Reach 7)

ALAMITOS BAY. This SEA is located at the lower end of the San Gabriel River Watershed at the outfall of the Los Cerritos Channel. It is a 43-acre remnant of salt marsh, one of the last remaining patches in Los Alamitos Bay not yet lost to urbanization. The mingling of salt water and fresh water provides a rich ecological mix of brackish conditions. Salt marshes are an important breeding ground for terrestrial and marine species, including commercial fish. Wintering migrating birds also benefit from this salt marsh system.

SENSITIVE SPECIES OCCURRENCES

An ecosystem is composed of all organisms in a given place, interacting with their physical surroundings. It is a complex, interdependent web. Every plant species requires certain conditions for survival, while plant communities consist of groups of plant species that have similar needs for survival. Wildlife species have adapted to specific conditions as well, and rely on both plant communities and other wildlife associations. Often, areas where different plant communities come together, also known as ecotones, present richer, more diverse conditions and a richer variety of wildlife. This is also called the "edge effect," where two landscapes meet. And some species are specific to an ecotone, creating unique habitat zones.

The California Department of Fish and Game developed The California Natural Diversity Database (CNDDB) to catalog rare and endangered plants, animals and vegetation types. CNDDB is a database of actual sightings of rare plant and animal species, including rare species sightings along and near the San Gabriel River. It does not provide a complete picture of *all* existing habitat or open space areas containing commonly found species. However, it provides an inventory of areas of viable habitat. CNDDB is continually being updated by experts in the field. Therefore a habitat area with no previous sighting may eventually be included in the database, once an official sighting is recorded. Large tracts of land statewide that have never been surveyed still have the potential to retain rare species.

CNDDB contains over 40,000 records on rare plants, animals and natural communities. Its users include conservation groups such as local land trusts, The Nature Conservancy, the Wildlife Conservation Board, environmental planners, and federal, state and local governmental agencies. If a site contains a rare plant species according to the CNDDB, a local lead agency can use that information to generate funding to protect the site or implement a restoration project. CNDDB entries use several designations of plants and animals:

- State-listed rare, threatened or endangered
- State candidate for listing
- Federally listed threatened or endangered
- Federally proposed threatened or endangered

A plant species is "endangered" when "the prospects of its survival and reproduction are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, or disease," according to the State Department of Fish and Game (see Resources).

A plant species is "threatened" when it is "likely to become endangered in the foreseeable future in the absence of protection measures."

A plant species is "rare" when the species is "found in such small numbers throughout its range that it may be endangered if its environment worsens."

The following section lists known sensitive plant species and community and animal species that occur within a 2.5-mile distance on either side of the San Gabriel River. In more urbanized reaches, there may not be any occurrences of sensitive plant communities, indicating the fragmented nature of habitat there. Individual plants, although an important find, may not have a long-term chance at survival without its associated plants and wildlife species, as well as the natural disturbances such as flooding or fire that make up a healthy ecosystem. Planting these species is not necessarily recommended; see Appendix B for a sample list of plant species appropriate for planting in each reach.

COURTESY PETER J. CARBONI, USFWS

Figure 2-34. Nelson's bighorn sheep is a subspecies of the desert bighorn shown here.

Headwaters (Reach 1)

This reach contains a rich array of sensitive plant and animal species. That's not surprising because it is the reach with the least amount of disturbance and the greatest quantity of contiguous open space, creating an area with high biodiversity value. The West Fork of the river corridor and associated canyons are rich in multiple species occurrences. Of particular significance, are the 700 Nelson's bighorn sheep. This rare mammal, once numbering in the thousands, is the San Gabriel Mountains' second largest mammal (after the mountain lion).

PLANT COMMUNITIES. Canyon Live Oak Ravine Forest, Southern Sycamore Alder Riparian Woodland

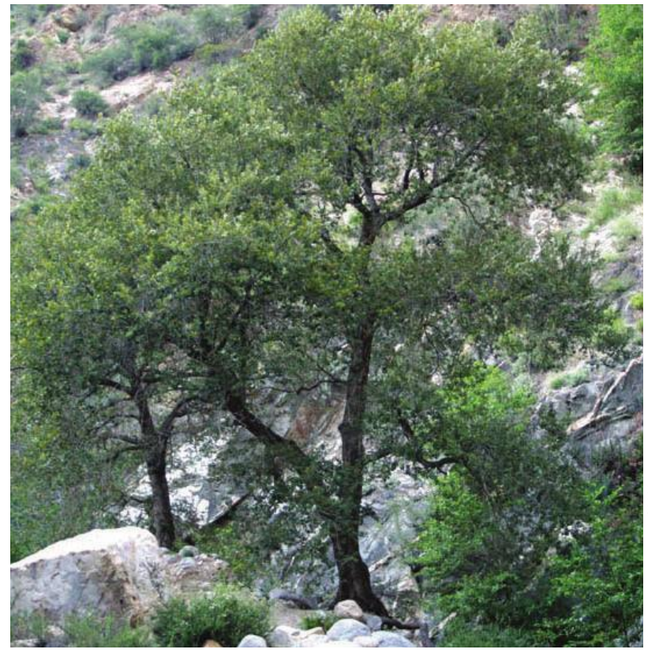
PLANT SPECIES. *Calochortus plummerae* (Plummer's mariposa lily), *calochortus clavatus gracilis* (slender mariposa lily)

WILDLIFE SPECIES. *Gila orcutti* (arroyo chub), *rana muscosa* (mountain yellow-legged frog), *ovis canadensis nelsoni* (Nelson's bighorn sheep), *rhinichthys osculus* (Santa Ana speckled dace), *catostomus santaanae* (Santa Ana sucker)

San Gabriel Canyon (Reach 2)

This reach is also rich in biodiversity, despite the two major dams that have altered the original structure and function of the river system. Although there has been a lack of sensitive species occurrences in this reach along the main stem of the river, there have been occurrences of rare species in the protected canyons leading down to the river, as well as up the East Fork.

PLANT COMMUNITIES. Canyon Live Oak Ravine Forest, Southern Sycamore Alder Riparian Woodland



COURTESY GABI MCLEAN ©2003

Figure 2-35. Canyon oaks provide habitat for small and large mammals and a variety of birds.

PLANT SPECIES. *Calochortus plummerae* (Plummer's mariposa lily), *dudleya densiflora* (San Gabriel Mountains dudleya)

WILDLIFE SPECIES. *Phrynosoma coronatum blainvillei* (San Diego horned lizard)

Upper San Gabriel Valley (Reach 3)

Despite the vegetated soft-bottom of the San Gabriel River in this reach, species occurrences tend to occur mainly in the protected canyon, away from human activity. Most species sightings have occurred in the mountains and in the undeveloped floodplain area behind Santa Fe Dam; there are few sightings in the developed stretches of Azusa.

PLANT COMMUNITIES. Riversidian Alluvial Fan Sage Scrub, Southern Sycamore Alder Riparian Woodland, Southern Coast Live Oak Riparian Forest

COURTESY OF BONTERRA CONSULTING ©2003

Figure 2-36. The Santa Ana sucker is found in the river above the San Gabriel Dam.

PLANT SPECIES. *Lepidium virginicum robinsonii* (Robinson's pepper-grass), *dudleya densiflora* (San Gabriel Mountains dudleya), *thelypteris puberula sonorensis* (Sonoran maiden fern)

WILDLIFE SPECIES. *Vireo bellii pusillus* (least Bell's vireo), *catostomus santaanae* (Santa Ana sucker), *thamnophis hammondii* (two-striped garter snake)

Lower San Gabriel Valley (Reach 4)

Residential and industrial land uses line this area of the river, which results in the complete absence of sensitive species occurrences in the upper section of the reach and only minimal occurrences in the middle of the reach. The Whittier Narrows, a large open space area in the lowest section of the reach, does have many rare plant and animal species, including about 300 species of birds. It is a native habitat that is now interlaced with exotic and invasive plants like arundo, and large expanses of turf and lined lakes for recreational uses.

COURTESY OF GARY R. ZAHM, USFWS

Figure 2-37. The coloring of the coast horned lizard helps it blend into chaparral and coastal sage scrub backgrounds.

PLANT COMMUNITIES. None

PLANT SPECIES. *Phacelia stellaris* (Brand's phacelia), *ribes divaricatum parishii* (Parish's gooseberry), *scutellaria bolanderi austromontana* (southern skullcap)

WILDLIFE SPECIES. *Vireo bellii pusillus* (least Bell's vireo), *phrynosoma coronatum blainvillei* (San Diego horned lizard), *coccyzus americanus occidentalis* (western yellow-billed cuckoo)

Upper Coastal Plain (Reach 5)

The few sensitive species occurrences in this reach are all in the river bottom and in the Puente Hills south of Whittier Narrows. A few rare plant types occur west of the river in this reach. This reach is heavily developed right up to the river, with some of the densest human populations found in Southern California. The only open spaces are the utility right-of-way corridors on both sides of the river. A few urban parks are strung along the river, but these are largely turf and non-native landscapes.

PLANT COMMUNITIES. None

COURTESY OF CAROLYN MARTUS, CAL PHOTOS/CAL FLORA

Figure 2-38. The Brand's phacelia.

PLANT SPECIES. *Phacelia stellaris* (Brand's phacelia), *navarretia prostrata* (prostrate naverretia)

WILDLIFE SPECIES. *Phrynosoma coronatum blainvillei* (San Diego horned lizard)

Reach 6: Lower Coastal Plain (Reach 6)

This is the concrete-lined stretch of the river and is heavily developed up to the river's edge. Toward the lower portion of the reach, as more and more open space becomes available, some sensitive species have been found. These sensitive species occurrences may be related to Coyote Creek, which joins the San Gabriel River below El Dorado Park in Long

COURTESY DR. DEAN WM. TAYLOR, JEPSON HERBARIUM, UC BERKELEY

Figure 2-39. Coulter's goldfields occur naturally in the outer edges of tidal marshes.

Beach. However, there are no sensitive plant communities here, only isolated plant and animal species.

PLANT COMMUNITIES. none

PLANT SPECIES. *Orcuttia californica* (California Orcutt grass), *lasthenia glabrata coulteri* (Coulter's goldfields), *cordylanthus maritimus maritimus* (salt marsh bird's beak), *hemizonia parryis australis* (southern tarplant)

WILDLIFE SPECIES. *Danaus plexippus* (monarch butterfly), *phrynosoma coronatum blainvillei* (San Diego horned lizard), *coccyzus americanus occidentalis* (western yellow-billed cuckoo)

Zone of Tidal Influence (Reach 7)

The Pacific Ocean, coastal wetlands and large expanses of open space combine to make this the second richest area of biodiversity along the river. The southern coastal salt marsh plant community can be found here, a rare habitat within Southern California, and the only major plant community found below the Santa Fe Dam.

PLANT COMMUNITIES. Southern Coastal Salt Marsh

PLANT SPECIES. *Nemacaulis denudata var. denudata* (coast woolly-heads), *lasthenia glabrata coulteri* (Coulter's goldfields), *cordylanthus maritimus maritimus* (salt marsh bird's beak), *sidalcea neomexicana* (salt spring checkerbloom), *hemizonia parryi australis* (southern tarplant)

WILDLIFE SPECIES. *Passerculus sandwichensis beldingi* (Belding's savannah sparrow), *athene cunicularia hypogaeae* (burrowing owl), *rallus longirostris levipes* (light-footed clapper rail), *danaus plexippus* (monarch butterfly), *phrynosoma coronatum blainvillei* (San Diego horned lizard), *charadrius alexandrinus nivosus* (western snowy plover)

Existing Trails and Bridges

One of the more notable non-flood control, non-water conservation structures along the San Gabriel River is the 39-mile bike trail beginning in Azusa and extending all the way to the Pacific coast. There are access points from most major streets and direct access to 15 parks. This north-south trail is intersected by other east-west trails. The entire trail network may be expanded in the future.

This overview of the trail system focuses on trails within one-half mile of the river, including trails that bisect the river from the east and west. It does not include more localized trails developed and maintained by the cities along the course of the river.

Most of these trails are multi-use for bicyclists, hikers and equestrians. The trail map is based on the "Riding and Hiking Trails" map provided by County of Los Angeles Department of Parks and Recreation (see Map 2-3).

The San Gabriel River Bike Trail also threads its way under a variety of bridges, including freeway, major street, railway and pedestrian bridges. The bridge names are noted below within each reach.

Headwaters and San Gabriel Canyon (Reaches 1 and 2)

Trails

- West Fork North Trail—8 miles from Highway 39 to Cogswell Dam (rated difficult); trail may still be closed because of security considerations

Bridges

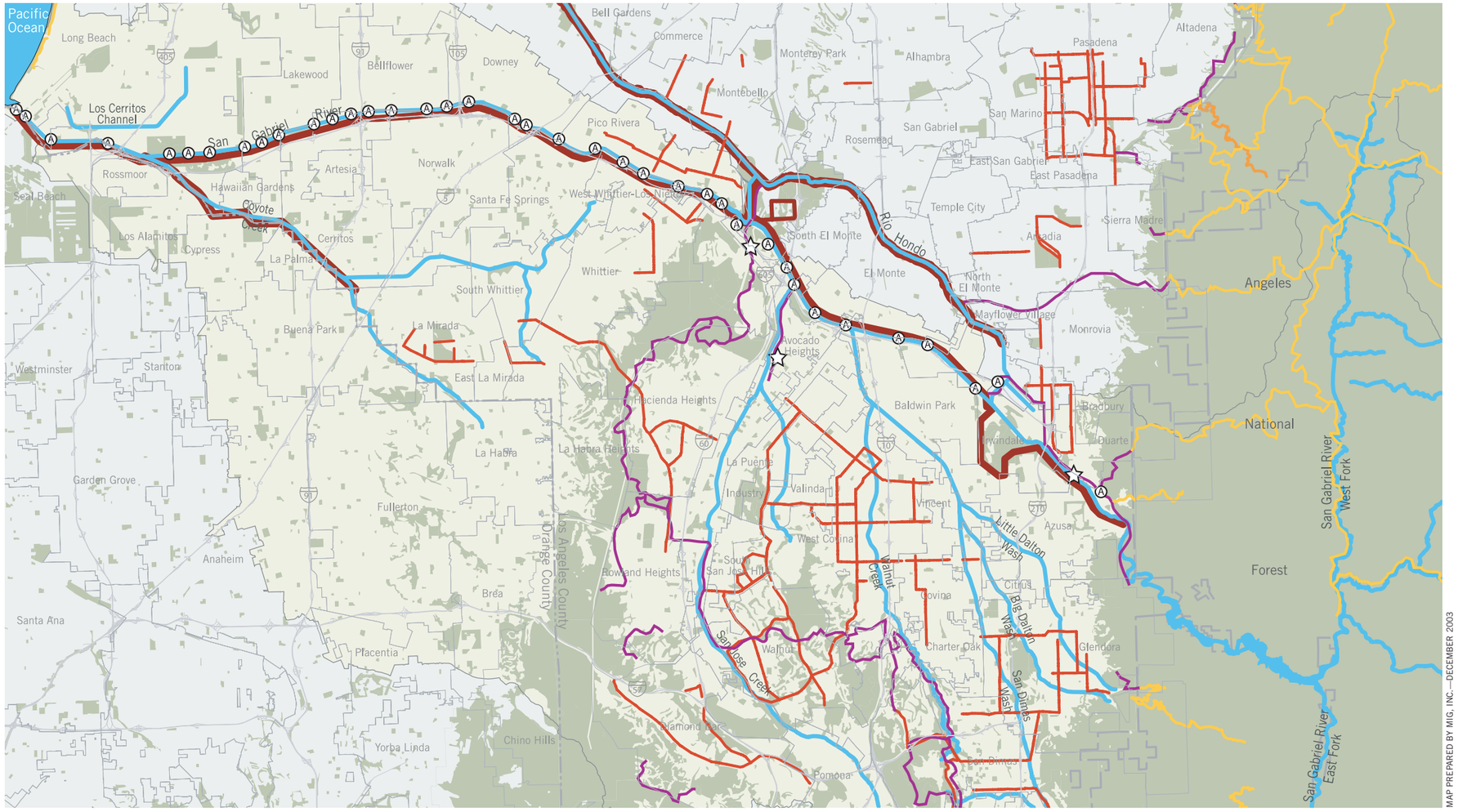
- San Gabriel Canyon Road/California Highway 39
- East Fork Road

COURTESY BONTERRA CONSULTING ©2003

Figure 2-40. Urbanization has greatly decreased the burrowing owl habitat and reduced the total number of owls.

Figure 2-41. Equestrian trails line the riverbanks in many communities.

Figure 2-42. The East Fork Road bridge spans the river in the San Gabriel Canyon.



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

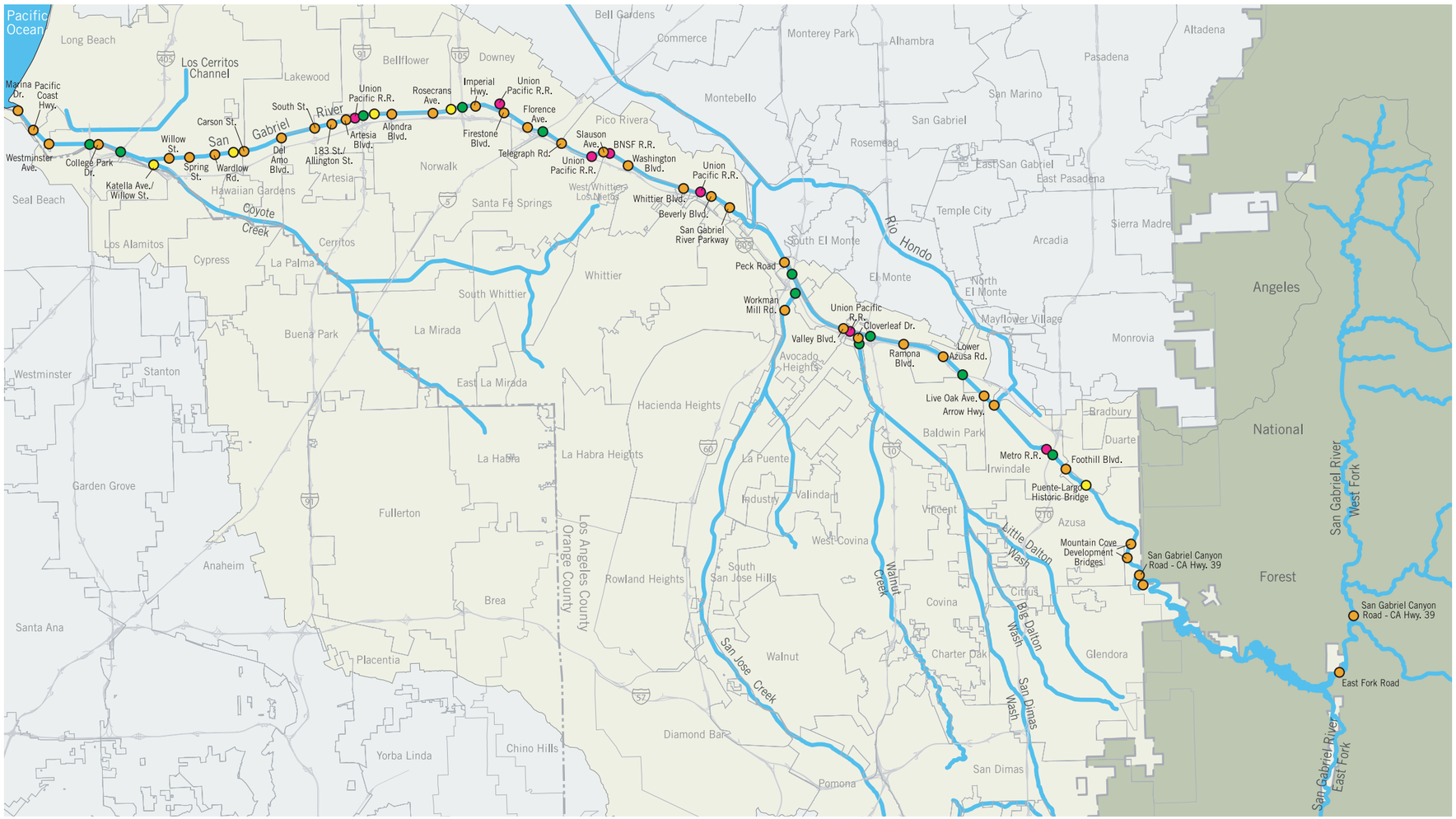
Note: Trails in Los Angeles County only. Data derived from RMC database and County of Los Angeles Department of Parks and Recreation, "Los Angeles County Riding and Hiking Trails" map, 2001.

Existing Los Angeles County Trails

County of Los Angeles Department of Public Works

San Gabriel River Corridor Master Plan

Map 2-3. Existing Los Angeles County trails.



Source: County of Los Angeles Department of Public Works, Thomas Bros. Maps, and Rivers and Mountains Conservancy

Existing Bridges

County of Los Angeles Department of Public Works

San Gabriel River Corridor Master Plan

Map 2-4. Existing bridges.

Upper San Gabriel Valley (Reach 3)

Trails

- Van Tassel Trail—3.5 miles from start of San Gabriel River Bike Trail to Fish Canyon (rated moderately difficult)
- San Gabriel River Bike Trail (first leg)—Trailhead for 38-mile trail begins on east side; located near Angeles National Forest Entrance Station in Azusa; includes staging area; one-mile extension is currently being built past Mountain Cove development to future River Park (rated not difficult)

  —8.5 miles along the east bank of the river from trailhead to bottom of Santa Fe Dam
  —Two designated access points along this reach: Trailhead and Santa Fe Dam Recreation Area

Bridges

- San Gabriel Canyon Road/Highway 39 (two bridges)
- Mountain Cove (two bridges)
- Puente-Largo Historic Railroad
- Foothill Boulevard
- Foothill Freeway
- Metro Railroad

Lower San Gabriel Valley (Reach 4)

Trails

- San Gabriel River Bike Trail (second leg)

  —8.5 miles on the west bank of the river from Santa Fe Dam to Whittier Narrows Dam
  —11 designated access points along the reach
- San Jose Creek Bike Trail—2.0-mile east-west trail that ends where it intersects the San Gabriel River Bike Trail at the San Jose Creek confluence; this trail is proposed to extend to Cal Poly Pomona and beyond to Claremont (rated not difficult)
- Schabarum Trail—28-mile trail that begins at the San Gabriel River in Whittier Narrows; extends eastward through the Puente Chino Hills toward La Habra Heights

Figure 2-43. Trail access from the community of Avocado Heights leads to the equestrian trail on the north bank of San Jose Creek.

- Link to Lario (Rio Hondo) Trail—A significant east-west trail that connects the San Gabriel River Bike Trail to the Rio Hondo Trail, which travels north to Monrovia and south to the LA River Bike Trail, which continues south to Long Beach and the Pacific Ocean

Bridges

- Arrow Highway
- Live Oak Avenue
- San Gabriel River Freeway (605 Freeway)
- Lower Azusa Road
- Ramona Boulevard
- San Bernardino Freeway (10 Freeway)
- Cloverleaf Drive
- Union Pacific (MetroLink)
- San Gabriel River Freeway (605 Freeway)
- Valley Boulevard
- Workman Mill Road
- San Gabriel River Freeway (605 Freeway)
- Pomona Freeway (60 Freeway)
- Peck Road

Upper Coastal Plain (Reach 5)

Trails

- San Gabriel River Bike Trail (third leg)

  —7.5 miles on the east bank of the river from Whittier Narrows to Firestone Boulevard in Downey
  —9 designated access points
  —Currently no major east-west trail connections except the recently completed Whittier Greenway Trail rails-to-trails project

Bridges

- San Gabriel River Parkway
- Beverly Boulevard
- Union Pacific Rail
- Whittier Boulevard
- Washington Boulevard
- Burlington Northern Santa Fe Railroad (MetroLink)
- Slauson Avenue
- Union Pacific Railroad
- Telegraph Road
- Santa Ana Freeway
- Florence Avenue
- Firestone Boulevard

Figure 2-44. The Union Pacific Railroad Bridge is being converted to the new West Branch Greenway, a rails-to-trails project by the City of Bellflower.

Lower Coastal Plain (Reach 6)

Trails

- San Gabriel River Bike Trail (fourth leg)
  - —10 miles on the east bank of the river from Firestone Boulevard in Downey to the San Diego Freeway, I-405
  - —13 designated access points
- Coyote Creek Bike Trail
  - —Begins at the San Gabriel River Bike Trail and heads northeast toward La Mirada in Orange County

Bridges

- Imperial Highway
- Glenn Anderson Freeway (I-105 Freeway)
- Rosecrans Avenue
- Alondra Boulevard
- Artesia Freeway
- Union Pacific Railroad
- Artesia Boulevard
- 183rd Street/Allington Street
- South Street
- Del Amo Boulevard
- Carson Street
- Wardlow Road
- Spring Street
- Willow Street
- Pedestrian bridge (4 bridges)

Figure 2-45. The bridge at Foster Road on the Downey-Bellflower-Norwalk border is one of the four pedestrian bridges in Reach 6.

Zone of Tidal Influence (Reach 7)

Trails

- San Gabriel River Bike Trail (fifth leg)
  - —3.5 miles on the east bank through Orange County to the Pacific coast in Seal Beach
  - —4 designated access points

Bridges

- San Diego Freeway (I-605 Freeway)
- College Park Drive
- 22 Freeway Bridge
- Westminster Avenue
- Pacific Coast Highway
- Marina Drive

EQUESTRIAN TRAILS

The river has many areas of significant equestrian activity, especially from Reaches 3 through 6. Specific areas include Azusa, Santa Fe Dam Recreation Area, Whittier Narrows Dam Recreation Area, Pico Rivera, Bellflower and Lakewood.

An equestrian trail parallels the Bike Trail along many portions of the river, but many other trails frequently used by equestrians have not yet been mapped. The Trail Documentation Project of the San Gabriel River Equestrian Coalition will inventory equestrian trails in the river corridor.

Figure 2-46. Marina Drive Bridge is the southern-most bridge that crosses the river, on the Long Beach-Seal Beach border.

Figure 2-47. Picnic shelters in the Santa Fe Dam Recreation area are well-used.

Parks, Schools, and Open Space

This set of maps (Maps 2-5 and Map 2-6) details information about existing parks and open space along the San Gabriel River. In addition to specific parks and natural areas designated as open space, this section also identifies schools, another potential source of recreational and open space, and utility rights-of-way, a functional element of infrastructure which provides some open space value.

REGIONAL PARKS

About 52 public parks and recreation areas of all sizes lie within or near the river corridor. The largest of these, the Angeles National Forest, is in the San Gabriel Mountains. Three other large regional parks are fairly evenly dispersed along the urbanized portion of the San Gabriel River corridor linked by the bike trail. This includes: the Santa Fe Dam

Figure 2-48. This lake, one of the six lakes in El Dorado Regional Park, provides visual relief and a sense of serenity.

Recreation Area in the northern section; the Whittier Narrows Recreation Area in the middle section, and El Dorado Regional Park along the southern portion.

ANGELES NATIONAL FOREST. 701 N. Santa Anita Ave., Arcadia (Forest Supervisor's Office, located outside the forest)

Managed by the U.S.D.A. Forest Service, this national forest covers over 650,000 acres, including the headwaters of the San Gabriel River. A diverse wild land area lying above the metropolitan area of Los Angeles, the park provides a wide range of recreational activities including hiking, backpacking, camping, picnicking, fishing, off-highway vehicle use, gold-panning, swimming and other water sports.

SANTA FE DAM RECREATION AREA. 15501 E. Arrow Highway, Irwindale

Operated by County of Los Angeles Department of Parks and Recreation, this 836-acre park includes a 70-acre lake for sailing, swimming, and fishing; trails for biking and hiking; the Peter Schabarum Nature Center; 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.

WHITTIER NARROWS DAM RECREATION AREA. 823 Lexington-Gallatin Road, South El Monte

Operated by County of Los Angeles Department of Parks and Recreation and the City of Pico Rivera, this 1,400-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 and four lakes for migrating waterfowl.

EL DORADO REGIONAL PARK. 7550 E. Spring Street, Long Beach

Operated by the City of Long Beach, this 470-acre park is bordered on the west by the San Gabriel River and on the east by the I-605 Freeway. The park includes the El Dorado Nature Center, community gardens, Olympic archery range, six lakes and several streams, picnic areas, play equipment, a children's train, a group campground, over 4 miles of bike trails, a glider flying area, and model sailboat area.

Although the regional parks are strategically spaced along the river corridor, the remaining parks and open spaces, as illustrated by the map, are not as evenly distributed. While most of the river-adjacent communities have parks within walking distance of the river (66 percent along the west bank and 80 percent along the east bank), some communities lack this open space resource. Gaps in the distribution of parks along the river include densely populated communities such as Baldwin Park and El Monte in Reach 4, Pico Rivera and West Whittier-Los Nietos in Reach 5, and portions of Bellflower in Reach 6.

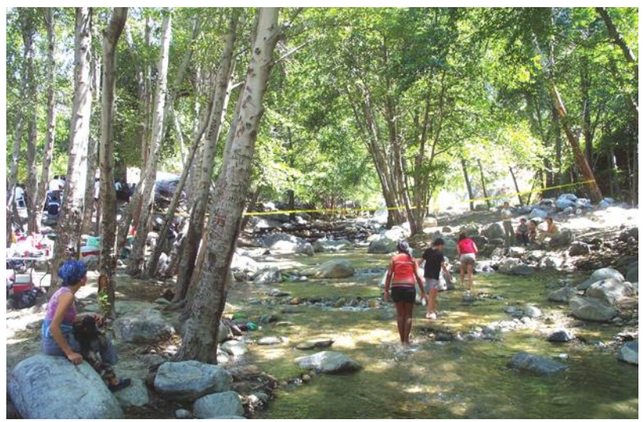


Figure 2-49. The river itself is open space—and a highly used recreation area in the Angeles National Forest for millions of visitors every year.

LOCAL PARKS AND RECREATION AREAS

The map identifies specific parks by name and illustrates them by size (see Map 2-5). It includes the regional parks described above and the many local parks usually managed by cities. Parks are categorized by size:

- Large: greater than 50 acres
- Medium: 15 to 50 acres
- Small: less than 15 acres

The parks illustrated on the map are listed below by Reach. All these parks lie within one-half mile of the river. An asterisk (*) indicates all parks that are directly adjacent to the river.

Headwaters (Reach 1)

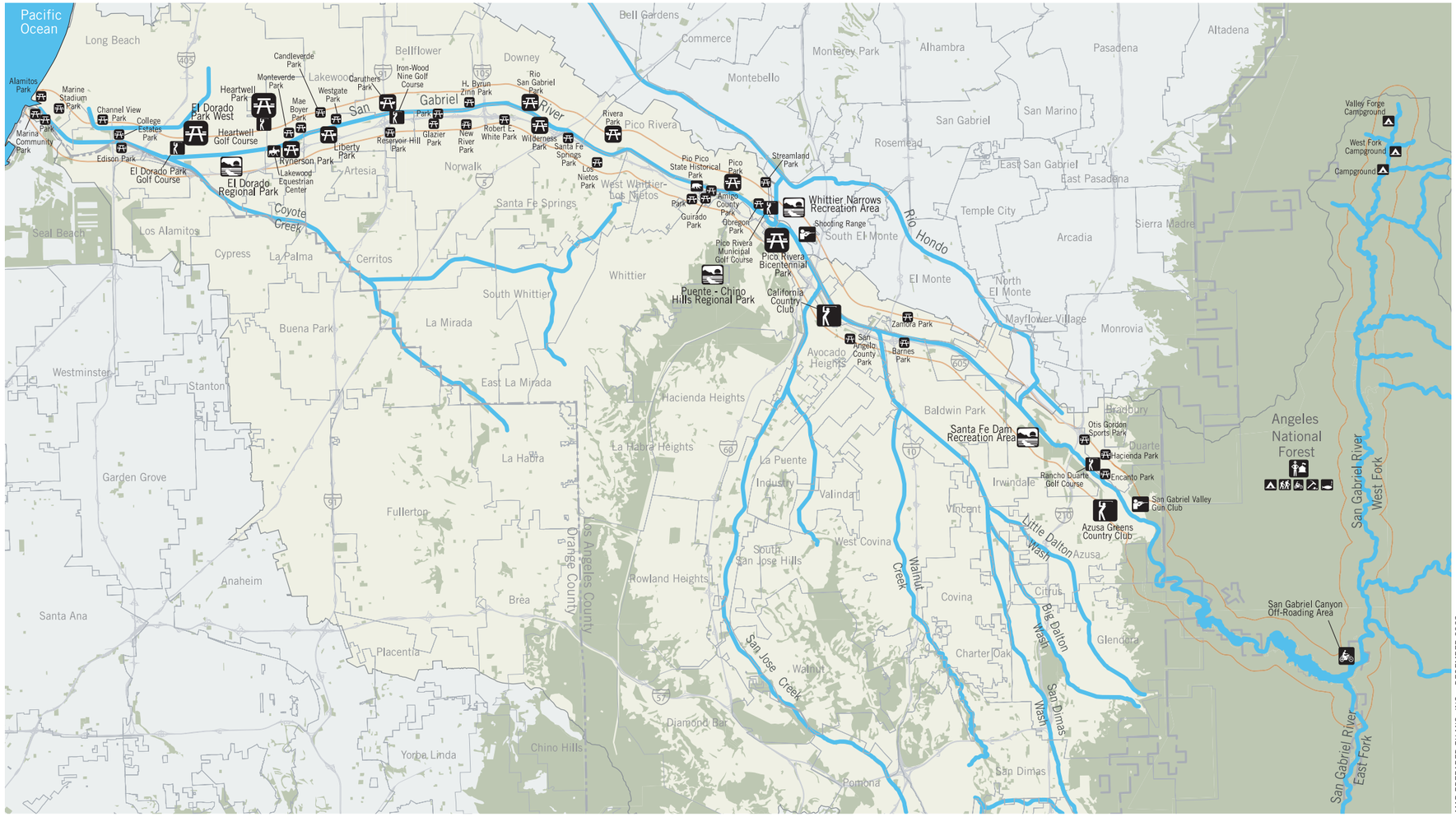
The following three "parks" are campgrounds that lie within the Angeles National Forest just below the headwaters of the San Gabriel River and to the west of the Cogswell Dam Reservoir.

- Valley Forge Campground
- West Fork Campground
- Campground

San Gabriel Canyon (Reach 2)

- San Gabriel Canyon Off-Highway Vehicle Area

Figure 2-50. Off-road vehicles drivers obtain day-use permits from the US Forest Service for designated areas in San Gabriel Canyon.



Map 2-5. Existing parks and recreational facilities.

Upper San Gabriel Valley (Reach 3)

Except for the Santa Fe Dam Recreation Area, none of these parks is oriented toward the nearby river.

- Azusa Greens Country Club, Azusa
- Encanto Park, Duarte
- Hacienda Park, Duarte
- Rancho Duarte Golf Course, Duarte
- Otis Gordon Sport Park, Duarte
- Santa Fe Dam Recreation Area*, Irwindale (regional park—see description above)

Lower San Gabriel Valley (Reach 4)

This reach lacks parks, most notably in the central and northern portion. The parks that do exist are usually not adjacent to river or are separated from it by the I-605 Freeway.

- Barnes Park, Baldwin Park
- Zamora Park, El Monte
- San Angelo County Park, Bassett
- California Country Club, City of Industry
- Pico Rivera Bicentennial Park*, Pico Rivera
- Whittier Narrows Recreation Area*, Pico Rivera (regional park—see description above)

Figure 2-51. Legg Lake at Whittier Narrows Recreation Area is a popular weekend destination for families.

Figure 2-52. Santa Fe Springs Park includes a playground and active recreation, and will expand to include a nature sanctuary.

Upper Coastal Plain (Reach 5)

Compared with Reaches 3 and 4, Reach 5 has significantly more parks. All of these parks are 15 acres or less, but many are notable for lying directly adjacent to the river. They are linked by the San Gabriel River Bike Trail, which runs down the east bank of the river. This trend begins at the southern end of Reach 4 with the Bicentennial Park in Pico Rivera. Although generally well covered with small parks, there is one notable gap in the central portion of Reach 5, between Pio Pico State Historic Park and Los Nietos Park.

- Pico Rivera Municipal Golf Course*
- Obregon Park*, Pico Rivera
- Streamland Park, Pico Rivera
- Pico Park, Pico Rivera
- Amigo County Park*, Pico Rivera
- Guirado Park, LA County
- Pio Pico State Historic Park, Pico Rivera
- Rivera Park, Pico Rivera
- Los Nietos Park, Santa Fe Springs
- Santa Fe Springs Park*, Santa Fe Springs
- Wilderness Park*, Downey
- Rio San Gabriel Park*, Downey

Lower Coastal Plain (Reach 6)

Reach 6 has the largest number of parks and the most diverse sizes. Although most are less than 15 acres, there are also medium-size parks, as well as one large regional park.

- Robert E. White Park, Norwalk
- New River Park, Norwalk
- H. Byrun Zinn Park*, Bellflower
- Glazier Park, Norwalk
- Iron-Wood Nine Hole Golf Course, Cerritos
- Caruthers Park*, Bellflower
- Westgate Park*, Cerritos
- Liberty Park*, Cerritos
- Candleverde Park, Lakewood
- Mae Boyer Park*, Lakewood
- Rynerson Park*, Lakewood
- Monteverde Park, Lakewood
- Lakewood Equestrian Center, Lakewood
- Heartwell Golf Course, Long Beach
- Heartwell Park, Long Beach
- El Dorado Regional Park*, Long Beach (regional park—see description above)
- El Dorado Park West, Long Beach
- El Dorado Park Golf Course*, Long Beach

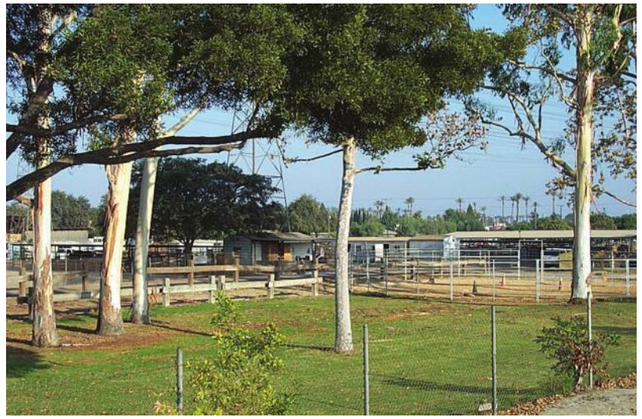


Figure 2-53. The Lakewood Equestrian Center serves an active equestrian community.

Zone of Tidal Influence (Reach 7)

This relatively short reach has only a few public parks.

- Edison Park*, Seal Beach
- College Estates Park*, Long Beach
- Channel View Park, Long Beach
- Gum Grove Park, Seal Beach
- Marina Community Park, Seal Beach
- Alamitos Park, Long Beach

Figure 2-54. A kite surfer heads toward the mouth of the river at Seal Beach.

OPEN SPACE

Open space along the river is relatively sparse, compared with the parks that provide more active recreational opportunities. The map shows parks in bright green and open spaces in soft green, illustrating locations with active versus passive recreational opportunities (see Map 2-6). Open space includes undeveloped natural areas, as well as vacant lands, and is usually in public ownership. The largest open space groupings lie in the mountains and hills. The most notable open space includes:

- Angeles National Forest
- Foothills of the San Gabriel Mountains
- Natural areas adjacent to the Santa Fe Dam Recreation Area
- Woodland Duck Farm property
- Whittier Narrows
- Puente-Chino Hills
- Wetland areas in Seal Beach and Long Beach

However, not all of the open spaces illustrated on the map are necessarily protected from future development. This is especially true for the open space areas in or near the foothills of the San Gabriel Mountains, some of which is privately held. A portion of the open space data set used to generate this map includes land designated as vacant, which provides an opportunity for future parks or protected open space.

SCHOOLS

In addition to existing parks and open space, schools and utility rights-of-way offer additional significant forms of open space along the river. Public schools can be a key element in the creation of additional open space opportunities for some communities. When school properties are added to the map of parks and open space, the network of open space is tightened, with less distance remaining between open spaces.

The communities that lack parks and open space do have local schools. Dual use of these properties may provide more available parks and open space. Public schools in or near the river corridor are present in all the reaches south of the Santa Fe Dam, beginning with Reach 4. An asterisk (*) indicates public schools that are located directly adjacent to the river.

Headwaters, San Gabriel Canyon and Upper San Gabriel Valley (Reaches 1, 2 and 3)

There are no schools located along the San Gabriel River in these upper reaches.

Lower San Gabriel Valley (Reach 4)

- Continuation High School, El Monte
- Elementary School 1, El Monte
- Elementary School 2, El Monte
- Madrid Middle School*, City of Industry (significant river frontage)
- Mountain View High School*, El Monte (lies opposite from Woodland Duck Farm, with significant river frontage)
- Charles T. Kranz Intermediate, El Monte
- South El Monte High School, South El Monte (lies adjacent to Whittier Narrows Nature Center)

Upper Coastal Plain (Reach 5)

- Pico Rivera Middle School, Beverly Boulevard, Pico Rivera (adjacent to Pico Park)
- Middle School, Norwalk Boulevard, LA County
- Continuation High School, Passons Boulevard, Pico Rivera
- Middle School, Passons Boulevard, Pico Rivera
- Elementary School, Passons Boulevard, Pico Rivera
- Pioneer High School, LA County
- Middle School 2, Pico Rivera

Lower Coastal Plain (Reach 6)

- Ernie Pyle Elementary, Rosecrans Avenue, Bellflower
- Bellflower High School, Bellflower
- Elementary School 2, Del Amo Boulevard, Lakewood
- Demille Middle School*, Long Beach (river adjacent near El Dorado Regional Park)

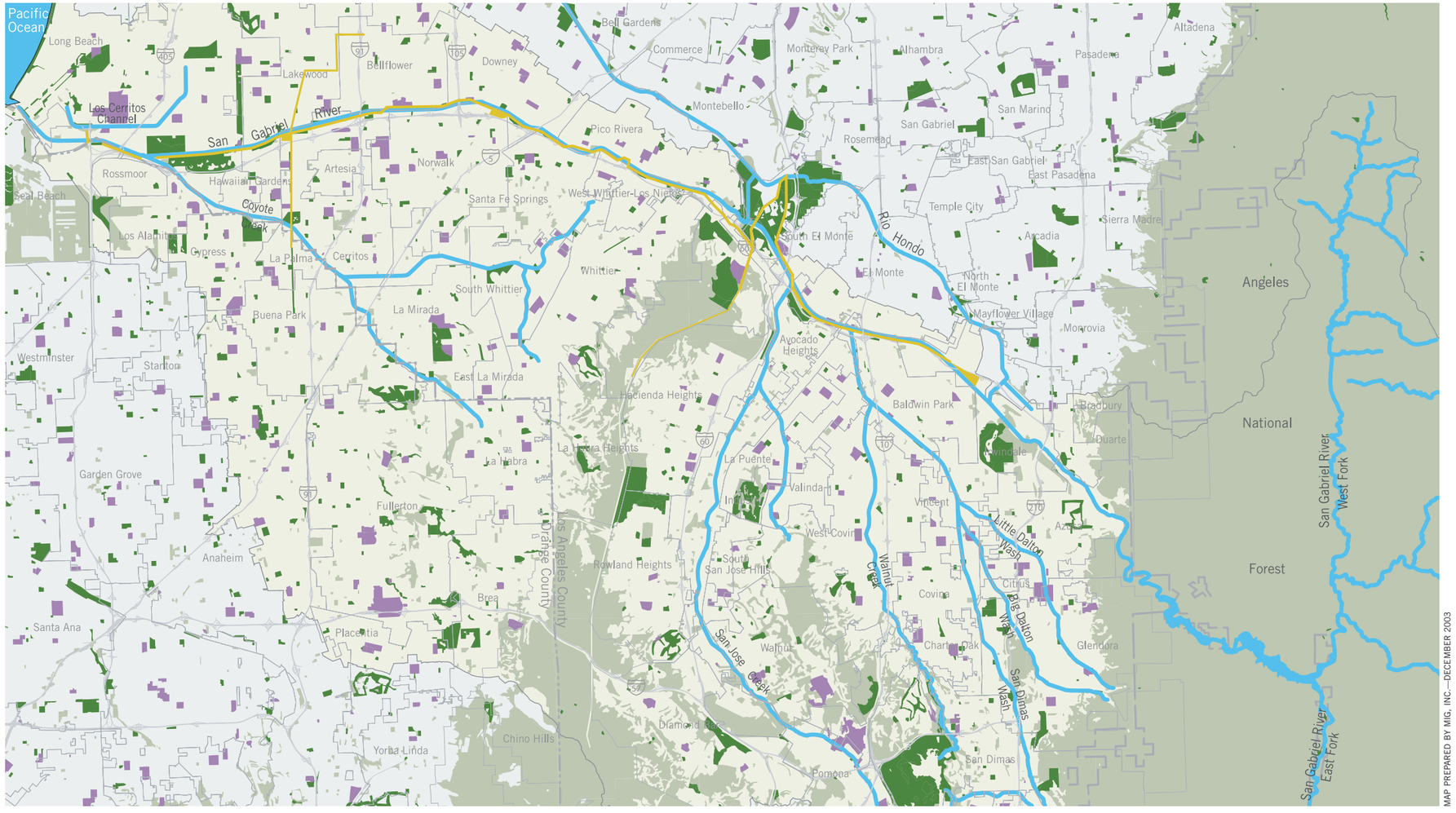
Zone of Tidal Influence (Reach 7)

- Middle School, Iroquois Avenue, Long Beach (adjacent to Los Cerritos Channel)

UTILITY RIGHTS-OF-WAY

Utility rights-of-way and easements provide a long corridor of relatively open land running parallel to and within the river corridor.

Southern California Edison (SCE) owns or leases 85 percent of a continuous strip of land that runs primarily along the east side of the river. Beginning just below the Santa Fe Dam in Irwindale and continuing to the electrical power facilities in Seal Beach (below the confluence with Coyote Creek), most of the SCE property is not built upon. The SCE corridor deviates only once from this linear pattern, when it jags sharply to the west



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Map 2-6. Existing open space.

Figure 2-55. The West San Gabriel Open Space Park in Lakewood makes good use of a utility right-of-way.

of the river in the Whittier Narrows area and then back again across the river to the eastern bank. Along several stretches of the river, cities have established agreements enabling them to build parks within the SCE right-of-way. The LA Department of Water and Power also owns and leases land along the San Gabriel River.

Flood Protection

Beginning in the 1930s, the San Gabriel River was engineered through a series of dams and levees to provide water and flood protection. To manage flooding and water storage, the river channel was made deeper and narrower. This flood protection allowed safe urban development almost to the river's edge. For years, the river has done its job so well that it has allowed many people simply to forget about it as it silently runs through the entire valley. The map shows the location of all flood control facilities on the San Gabriel River, including flood control channels and dams (see Map 2-7).

DAMS

Three major dams in the upper watershed provide flood protection and store water for use in the Los Angeles metropolitan region.

COGSWELL DAM AND RESERVOIR. Owned by the Flood Control District and operated by LADPW, it was completed in April 1934 at a cost of $3.1 million. It is a rock-filled structure with a concrete cutoff wall and rises 255 feet above the original stream bottom. Used both for flood control and water conservation, Cogswell Dam is located 22 miles north of Azusa in San Gabriel Canyon.

SAN GABRIEL DAM AND RESERVOIR. Owned by the Flood Control District and operated by LADPW, construction began in 1932 and finished in 1939 at a cost of $17 million. It is a compacted, earth-filled and rock-filled dam with a concrete cutoff wall, standing 310 feet above the original streambed 7 miles north of Azusa. It is 1,500 feet long at its crest. It is used for flood control and water conservation.

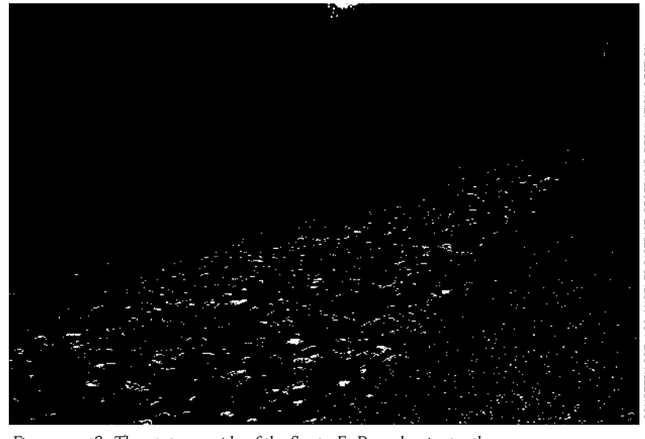
Figure 2-56. The cuts in the slopes show the source material used to construct the San Gabriel Dam.

MORRIS DAM AND RESERVOIR. Built by the City of Pasadena, Morris Dam was completed in May 1934 at a cost of $7.6 million. It was later relinquished to the Metropolitan Water District (MWD) of Southern California, and, in 1995, it was transferred to LADPW. It is a concrete, partially arched gravity structure, 800-feet long, rising 245 feet above the original streambed, a few miles below the San Gabriel Dam. Its primary purpose is water conservation.

SANTA FE DAM. This is a compacted earth-fill dam owned by the U.S. Army Corps of Engineers. It rises 92 feet in height and spans 23,800 feet in length at the crest. In the upper portion of the reservoir is the Santa Fe Spreading Grounds.

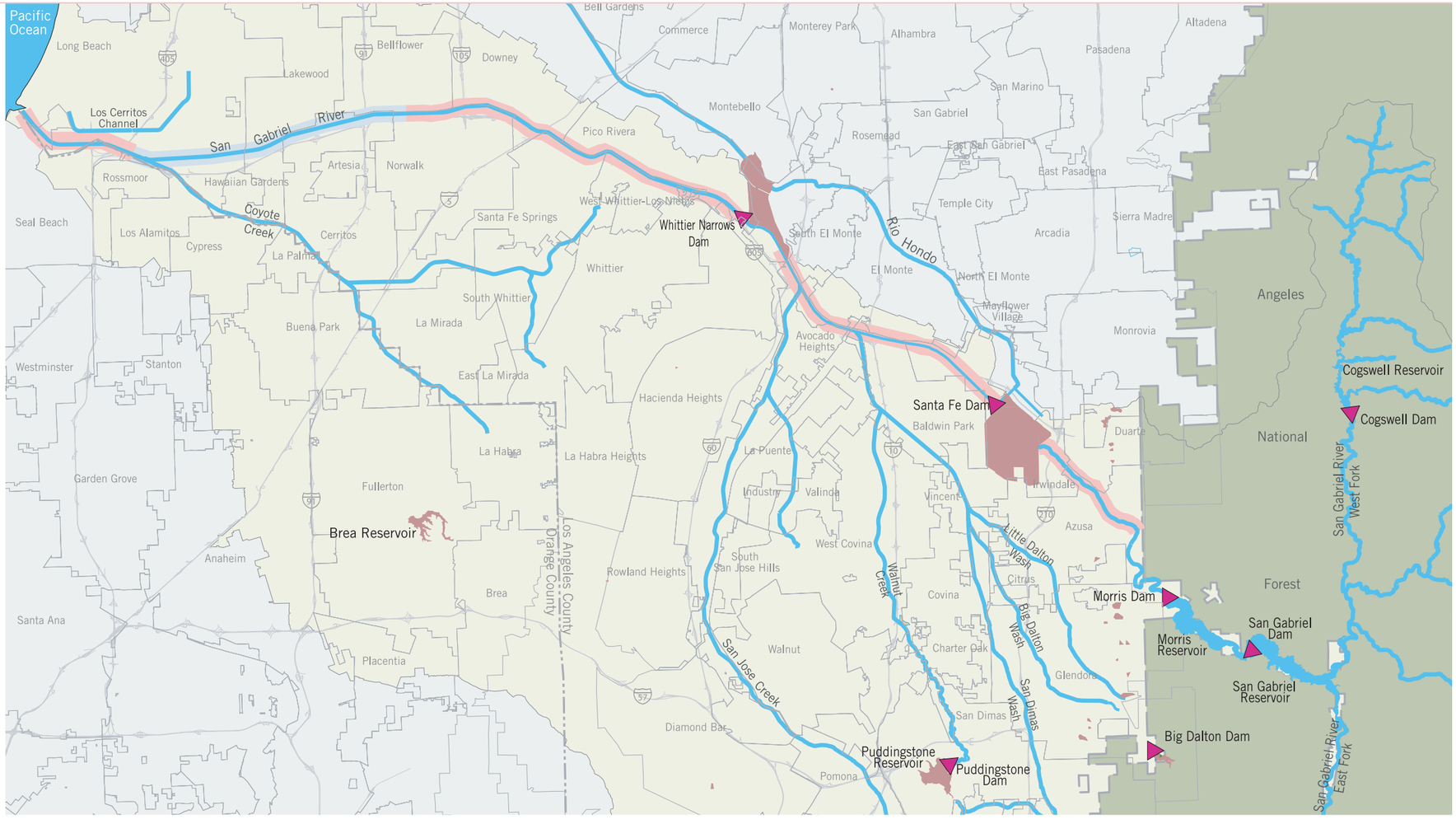
COURTESY BONTERRA CONSULTING

Figure 2-57. Most of the drainage above Morris Dam is steeply sloped.



COURTESY COE, LOS ANGELES DISTRICT, RESERVOIR REGULATION SECTION

Figure 2-58. The upstream side of the Santa Fe Dam dominates the area.



Map 2-7. Flood control structures.

Figure 2-59. The counterweights on the spillway at Whittier Narrows Dam are significant part of this intricate structure.

WHITTIER NARROWS DAM. Owned by the U.S. Army Corps of Engineers, Whittier Narrows Dam captures water flowing in the San Gabriel River and the Rio Hondo. Construction began on the earth-fill dam in 1949 and was completed in 1957 at a cost of $32.2 million.

Flood Channel

In most of the urban areas of the San Gabriel Valley, the river flows in a soft-bottomed channel between raised levees. The soft-bottom channel promotes infiltration of water released from the dams during large storms or for spreading. Beginning seven miles below the Whittier Narrows Dam, the soft bottom of the river is replaced by a concrete channel for about 10 miles (Reach 6). Just downstream from the confluence with Coyote Creek, the river returns to a soft-bottom, and flows another 3.5 miles through a natural estuary to the Pacific Ocean.

LADPW is responsible for operation and maintenance of most of the flood channel. The two exceptions, maintained by the COE, are:

- From the mouth of the San Gabriel Canyon to Santa Fe Dam; and the
- Whittier Narrows Flood Control Basin.

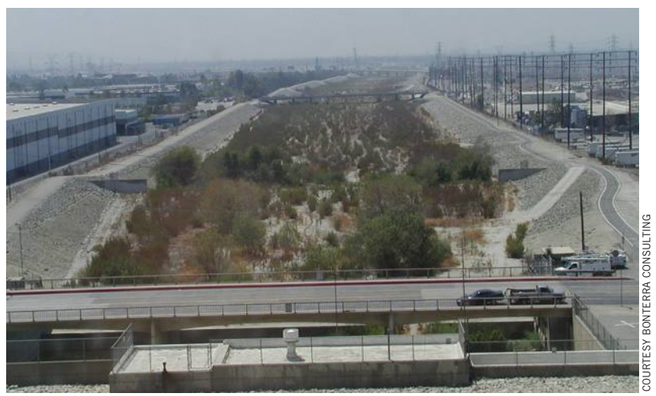
Most of the flood control channel is designed to meet capacity requirements of a 100-year flood. However, the channel capacity varies along different segments of the river. The map presents an analysis of channel capacity for various segments of the river, starting at the Santa Fe Dam, down to the mouth in Seal Beach (see Map 2-8). Specifically, it shows the amount of excess capacity for different reaches in cubic feet per second.

The area of greatest channel capacity (*deep purple segment*) runs from the Santa Fe Dam to just below the Whittier Narrows Dam. This segment includes all of Reach 4, and the beginning of Reach 5. Excess capacity on this long segment varies from 5,000 to 30,000 cubic feet per second.

Overall channel capacity below Whittier Narrows Dam is less than that above Whittier Narrows. However, with the minor exception of two short segments, the southern portion of the river still exceeds capacity requirements of a 100-year flood. The two segments that do not meet this requirement (*orange segments*) are in Reach 5 and Reach 7:

- Pico Rivera (Reach 5)—from Whittier Boulevard down to Washington Boulevard, alongside the San Gabriel Coastal Basin Spreading Grounds.
- Long Beach (Reach 7)—below the confluence with Coyote Creek, from the 405 Freeway south to 7th Street/22 Freeway.

The storm drain system captures and conveys stormwater through a network of gutters, drainage structures, and underground pipes. These systems move water as quickly as possible by transporting it downstream to outfalls, where it reaches the main channel of the river. As the water is conveyed downstream, additional tributary conveyance systems feed into it, requiring that capacity enlarges as the network approaches its outfall. Although a portion of this storm water will be directed into spreading grounds for percolation into underlying groundwater basins, during large storm events water in excess of the system's capacity will go out to sea.



COURTESY BONTERRA CONSULTING

Figure 2-60. The stretch of the river below Santa Fe Dam is encased in an earthen levee.

Figure 2-61. The concrete channel begins seven miles below Whittier Narrows Dam.

Figure 2-62. Dozens of city and county stormdrains flow to the river, such as this one in Azusa.

Modifications to traditional stormwater systems have included detention and retention basins designed to detain a portion of the water for controlled release after the peak runoff has occurred. Since the storm drain system is constructed of concrete and other impervious materials, water cannot infiltrate into the soil unless it is diverted to spreading grounds or other soft-bottom portions of the river system.

The "storm drain" map (see Map 2-9) shows existing storm drains and channels in Los Angeles County, maintained by LADPW. The storm drain system generally mimics the historic locations of rivers and tributaries. Topography dictates flow patterns, whether they are natural rivers or human-

Source: County of Los Angeles Department of Public Works, Montgomery Watson Harza, and Rivers and Mountains Conservancy

Existing Channel Capacity

County of Los Angeles Department of Public Works

San Gabriel River Corridor Master Plan

Map 2-8. Existing channel capacity.

built channels. The storm drain system operates within the boundaries of the watershed. Since the natural boundary of the San Gabriel River is only a short distance west of the river, storm drains leading to the river from this direction are much shorter than those coming from the east. Storm drains to the west of the San Gabriel River Watershed feed instead into the Rio Hondo.

The map of the County storm drain systems indicates gaps, where presumably local City storm drains connect into the County system. There are no storm drains or channels in the Puente-Chino Hills or in the San Gabriel Mountains.

Water Supply

Drinking water for residents of Southern California—including Ventura, Los Angeles, San Bernardino, Riverside, Orange and San Diego Counties—comes from a variety of sources. This region is home to about 18 million people. Because of the overuse of local supplies, communities need imported water to meet current demands, which can cost as much as 10 times that of local water. Given Southern California's growing population, identifying future supplies is a key issue for the future of the region.

Water supplies for the San Gabriel River region come from three main sources: local surface and groundwater supplies, reclaimed water and distant or "imported" sources. The local water suppy begins as rainfall that percolates naturally into the underlying groundwater basins or results in surface runoff. Reclaimed water is treated wastewater from local Water Reclamation Plants (WRP). Imported water is water transported to the region from distant sources, hundreds of miles away. The San Gabriel Valley water supply, based on these three sources, is derived through an intertwined network, which involves the transport, percolation, storage and conveyance of imported sources, surface flows, and groundwater. Groundwater basins are the primary means for water storage in the region and are recharged through natural soil percolation, as well as through engineered spreading grounds. Spreading grounds allow water to percolate into groundwater basins for later pumping.

Spreading grounds allow water to percolate into groundwater basins for later pumping.

WATER SUPPLY INFRASTRUCTURE

This section provides an overview of the water supply infrastructure for the San Gabriel Valley and Coastal Plain cities below Whittier Narrows. The water supply infrastructure is composed of five principal components: surface water, groundwater (and the groundwater basins), spreading grounds, reclaimed water and imported water.

COURTESY NORTH EAST TREES

Figure 2-63. Reclaimed water from the San Jose Creek Reclamation Plant is a source of locally derived water supply.

Surface Water

The San Gabriel River and its major tributaries (the West Fork, North Fork, East Fork, Walnut Creek, San Jose Creek and Coyote Creek) is the predominant surface water feature within the San Gabriel River Watershed. Surface runoff from the San Gabriel River and its tributaries provides a portion of the recharge of local groundwater basins through both natural infiltration and via spreading grounds. The major dam and reservoir facilities, previously described, were developed to impound water not only for flood control purposes but also water supply purposes in the San Gabriel River. Between 90 and 95 percent of precipitation above Whittier Narrows Dam is retained in the watershed for local water supply. The precipitation is conveyed via the river and storm drain system to area spreading grounds to be stored for future use by various water agencies. Natural percolation occurs in all areas except roads, buildings, parking lots and other impermeable surfaces. Precipitation varies along the route of the river: the average annual rainfall is 35 inches in the San Gabriel Mountains; the San Gabriel Valley averages 17 inches; and the coast averages 12 inches.

Groundwater

Groundwater basins, or aquifers, are natural underground formations filled with sediment, including sand and gravel. They serve as underground water reservoirs; wells drilled into the basins pump water to the surface for human use. Three groundwater basins lie underneath the river: the Main San Gabriel, the Central Basin and the West Coast Basin (see Map 2-10). These basins are part of the geologic occurrence known as the Los Angeles Basin, which is over three miles deep in some locations.

In addition to daily water supply, groundwater aquifers hold emergency reserves of water for periods of drought and natural disasters that might disrupt normal water deliveries. Groundwater basins store local rainfall for use, but demand would far exceed capacity if water supplies were derived entirely from rainfall. Groundwater supplies must be supplemented with reclaimed water from Water Reclamation Plants, as well as costly imported water.

The Main San Gabriel Basin contains contaminated plumes that are also shown on the groundwater map. Contaminated water is being treated to remove the contaminants and to prevent the polluted water from migrating south into the Central Basin, which is separated by Whittier Narrows.

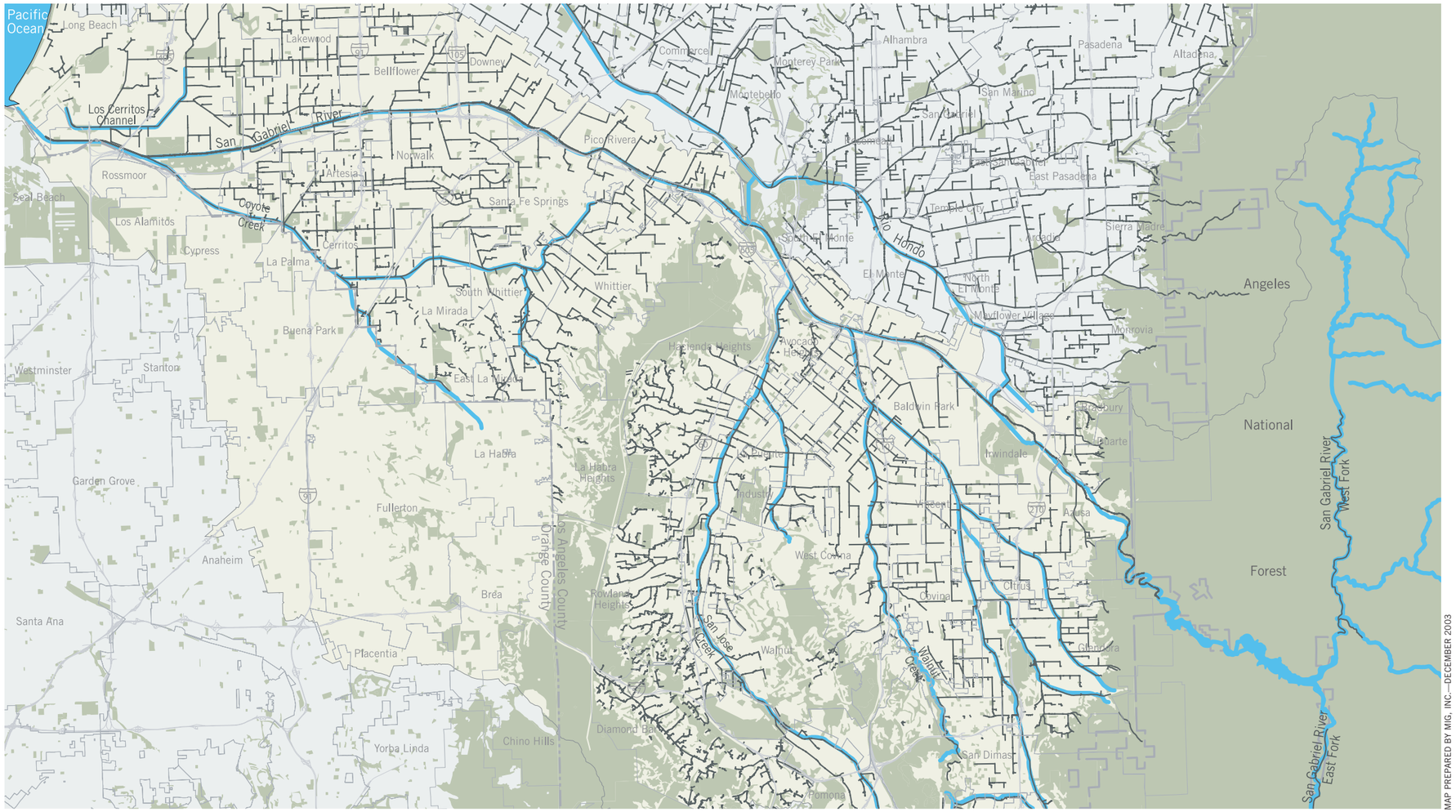
Main San Gabriel Basin

This basin underlies the San Gabriel Valley. It is bounded on the north side by the base of the San Gabriel Mountains, on its 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. In fact, it sits underneath two surface watersheds, the upper portion of the San Gabriel River and the eastern portion of the Los Angeles River Watersheds. The surface area of the groundwater basin is about 167 square miles. This basin provides approximately 80 percent of local groundwater supplies. The fresh water storage capacity of the basin is about 8.6 million acre-feet. An acre-foot is one foot of water covering one acre of land; enough water to supply two typical households for one year.

Within the vicinity of the San Gabriel River, there are five contaminated plumes that are being cleaned-up by a consortium of agencies under the coordination of the San Gabriel Basin Water Quality Authority (WQA). The five plumes are called "Operable Units (OU)" and include:

BALDWIN PARK OU. This is the largest OU. Perchlorate is a significant problem here because traditional treatment methods are ineffective in removing it from groundwater. Nitrosodimethylamine (NDMA) is also a problem.

EL MONTE OU. Characterized by shallow groundwater contamination in the upper 100 feet of the aquifer, and limited to Volatile Organic Compounds (VOCs), requiring a simple clean-up approach. Some water supply wells, in El Monte for example, have had to close because of contamination, decreasing supplies of locally available water. Deep groundwater contamination has been found in the northwest and eastern areas of this OU.



Map 2-9. Existing storm drains.

PUENTE VALLEY OU. This OU includes portions of the City of Industry and the City of La Puente and overlies both the Puente Groundwater Basin and the Main San Gabriel Groundwater Basin. The EPA sent notices to 50 Potential Responsible Parties (PRPs) regarding clean up in the area. Of those, 34 companies have formed the Puente Valley Steering Committee (PVSC) to fund and implement work required by the EPA in the Remedial Investigation/Feasibility Study (RI/FS) phase of the Superfund cleanup. The PRPs are now in the final stages of the RI/FS.

SOUTH EL MONTE OU. This plume continues to migrate and threatens to enter the Central Basin. The mix of contaminates is more serious than the El Monte OU, making treatment more difficult and costly. The loss of well productivity is of great concern to entities that rely on this local source of water.

WHITTIER NARROWS OU. This OU is contaminated with VOCs, with the presence of perchlorates and low concentrations of dioxins. Action has taken place to prevent migration of these contaminants into the Central Basin. A containment barrier has been established by the EPA, and includes three to four extraction sites that will remove and treat polluted groundwater.

Central and West Coast Basins

The Central Basin is located below Whittier Narrows and goes down to the coast at Long Beach. The West Coast Basin lies at the mouth of the San Gabriel River and extends to the northwest away from the river. The Water Replenishment District (WRD) is responsible for recharging water to the basins. An impermeable clay layer called an aquaclude sits underneath the river from Downey down to the confluence of Coyote Creek in Long Beach.

These two basins rely on several sources of water delivered via spreading grounds and injection wells:

- Imported water purchased from the Metropolitan Water District of Southern California
- Reclaimed water from local Water Reclamation Plants
- Local runoff and rainfall
- "Make-up" water from the Main San Gabriel Basin
- Subsurface flows from adjacent basins

Some significant threats to the quality of the groundwater supply in these two basins include VOC contamination from migrating plumes originating in the Main San Gabriel Basin through the Whittier Narrows, isolated areas of existing local contamination and saltwater intrusion from the ocean into the groundwater aquifer.

Spreading Grounds

Spreading grounds are a very important part of the local water supply infrastructure. They are essentially large ponds that temporarily hold water, which allows sufficient time for the water to percolate through the bottoms and sides of the ponds and replenish the groundwater basin. With the exception of Fish Canyon Spreading Grounds in Duarte, the spreading grounds along the San Gabriel River are owed by the Los Angeles County Flood Control District and operated by LADPW.

The basins are fed by carefully controlled allocated water from the San Gabriel River. Water from the river is derived from different sources, depending on the time of year. During the rainy season, water is derived from storm runoff, both from the mountains and the urban areas that drain to the river. This is mixed with water from the Water Reclamation Plants. Between storms and during the dry season, water for groundwater recharge is provided by releasing water held at upstream reservoirs, adding water from the plants, and by imported water bought from the Metropolitan Water District of Southern California (with some nuisance runoff from urban areas). The amount of water being recharged to the basins is carefully controlled. During the last 10 years, an average of 63,000 acre-feet of imported water and 47,000 acre-feet of reclaimed water has been recharged annually. The quantity of reclaimed water used for recharge each year is governed by water reclamation requirements and the imported water by groundwater basin recharge needs.

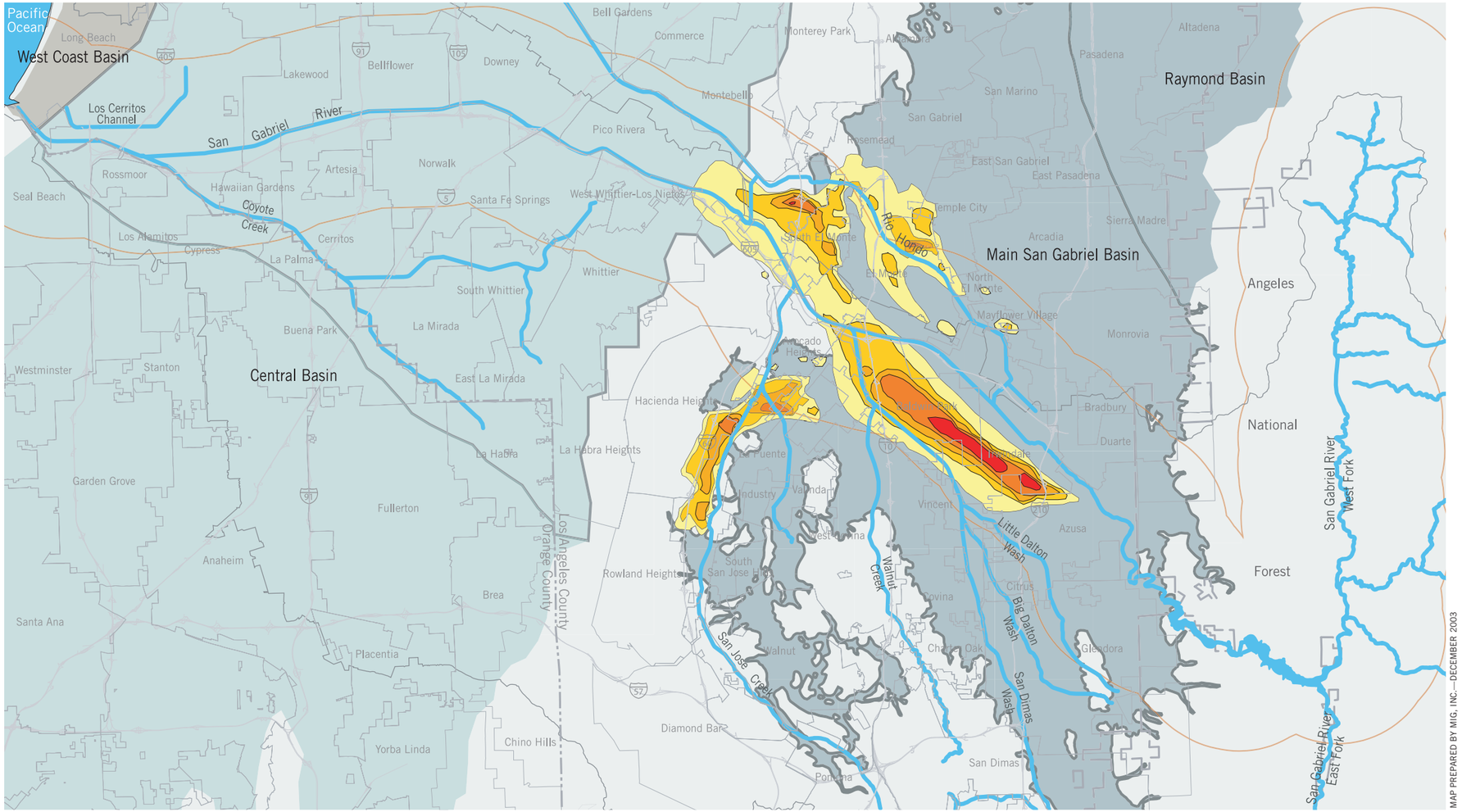
Figure 2-64. The San Gabriel Canyon Spreading Grounds are former gravel mining pits.

Figure 2-65. The Rio Hondo brings water from the San Gabriel River to productive spreading grounds in Pico Rivera.

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

Spreading basins are significant unbuilt areas, often surrounded by residential communities. But the spreading ground basins are deep and the sides are quite steep. Because the water in these ponds directly recharges our groundwater supply, direct human contact is not permitted and they are generally closed to the public, with the exception of the newly opened public trails within the Rio Hondo and San Gabriel Coastal Basin Spreading Grounds.

As shown on the map, there are three spreading grounds in operation along the San Gabriel River and a fourth spreading ground along the Rio Hondo (see



Groundwater Basins and Contaminated Plumes

County of Los Angeles Department of Public Works

San Gabriel River Corridor Master Plan

Map 2-10. Groundwater basins and contaminated plumes.

COURTESY BONTERRA CONSULTING

Figure 2-66. Rubber dams help the recharging process along soft-bottom stretches of the river.

Map 2-11). The soft-bottom San Gabriel River itself is also being used as a "spreading ground." A series of 13 rubber dams help hold back floodwaters along the river to allow water to percolate down after storms and dam releases.

The Rio Hondo is an integral part of the San Gabriel River water supply conveyance system. This is because the most productive groundwater recharge spreading grounds, the Rio Hondo Coastal Basin Spreading Grounds in Pico Rivera, are fed by the Rio Hondo. Although the Rio Hondo is a tributary of the Los Angeles River, it now also functions as a distributary of the San Gabriel River. In other words, water is conveyed to the Rio Hondo from the San Gabriel River for water supply purposes. This water, a combination of stormwater runoff, imported water and reclaimed water, travels through one of three channels, either the Buena Vista Channel by the Santa Fe Dam or the Lario Creek/Zone 1 Ditch or the Crossover Channel just above Whittier Dam.

SAN GABRIEL CANYON SPREADING GROUNDS. These spreading grounds lie on the west side of San Gabriel River, below the mouth of San Gabriel Canyon and north of the City of Azusa. These two basins are classified as "deep" basins due to their former use as gravel quarries. They recharge the uppermost areas of the Main San Gabriel Basin, cover 140 wetted acres and store up to 8,170 acre-feet of water. Sources of water include San Gabriel River controlled releases from Cogswell Dam, San Gabriel Dam and Morris Dam and Committee of Nine surplus flows and imported water.

SANTA FE SPREADING GROUNDS. These spreading grounds are located within Santa Fe Dam reservoir and spillway areas of the Santa Fe Dam, near the City of Irwindale, just below the 210 Freeway. There are 16 shallow basins in this area that replenish the Main San Gabriel Basin. They cover 168 wetted acres, storing up to 540 acre-feet of water. Sources of water include controlled flows from San Gabriel Canyon Reservoirs, uncontrolled flows from San Gabriel River below Morris Reservoirs and imported water.

SAN GABRIEL RIVER (SAN GABRIEL VALLEY). Within the soft-bottom stretch from the Santa Fe Dam to Whittier Narrows Dam, the San Gabriel River itself has in-river spreading capabilities. The storage occurs behind four rubber dams installed on drop structures. The area of percolation is 196 wetted acres. Sources of water include controlled flows from the San Gabriel and Morris Dams, and uncontrolled runoff from the San Gabriel Valley below Santa Fe Dam, as well as imported water.

SAN GABRIEL RIVER (MONTEBELLO FOREBAY). Within this soft-bottom stretch from the headworks below Whittier Narrows Dam down to Firestone Boulevard, the San Gabriel River has spreading capabilities. The storage occurs behind seven rubber dams installed on drop structures. The area of percolation is 308 wetted acres that can store 913 acre-feet of water. Sources of water include controlled releases from San Gabriel Canyon Dams, Santa Fe and Whittier Narrows Dams, and imported and reclaimed water.

SAN GABRIEL COASTAL BASIN SPREADING GROUNDS. These spreading grounds lie on the west side of San Gabriel River, south of Whittier Boulevard, to Washington Boulevard in Pico Rivera. There are three shallow basins in the productive Montebello Forebay, below Whittier Narrows, that replenish the Central Basin. There are 96 wetted acres of basins with storage capacity of 550 acre-feet of water. Sources of water include controlled releases from San Gabriel Canyon, Santa Fe and Whittier Narrows Dams and imported and reclaimed water.

RIO HONDO COASTAL BASIN SPREADING GROUNDS. These spreading grounds lie on the east side of the Rio Hondo, south of the Southern Pacific Railroad bridge (south of Whittier Boulevard) to Slauson Avenue and on the west side of side of Rio Hondo from 0.2 mile above Whittier Boulevard and south to Foster Bridge Boulevard. There are 20 shallow basins in the productive Montebello Forebay, below Whittier Narrows, that replenish the Central Basin. There are 430 wetted acres of basins with storage capacity of 3,694 acre-feet of water. Sources of water include controlled releases from San Gabriel Canyon, Santa Fe and Whittier Narrows Dams, uncontrolled runoff via the San Gabriel River, the Rio Hondo and their tributaries, and imported and reclaimed water.

Reclaimed Water

Treated wastewater at five Water Reclamation Plants (WRP) is discharged into the river or its tributaries. Water Reclamation Plants are managed by the County Sanitation Districts of Los Angeles County. These plants reclaim almost 80 million gallons per day from residential, industrial and commercial wastewater, making it available for reuse, which includes groundwater recharge, industrial and landscape uses. The Sanitation Districts own and operate five Water Reclamation Plants in the San Gabriel River Watershed.

Figure 2-67. The Rio Hondo Spreading Grounds are some of the most productive facilities in Los Angeles County.

POMONA WATER RECLAMATION PLANT. The Pomona Water Reclamation Plant is located at 295 Humane Way, Pomona. The plant occupies 14 acres northeast of the intersection of the Pomona (I-60) and Orange (I-57) Freeways. It discharges to the South Fork San Jose Creek, a tributary to the San Jose Creek, which is about 16 miles upstream from the San Gabriel River. It provides primary, secondary and tertiary treatment for 15

Map 2-11. Existing water supply infrastructure.

million gallons of wastewater per day (15 MGD), enough for about 130,000 people. About 9 MGD of the purified water is reused at over 140 different reuse sites. These include irrigation of parks, schools, golf courses, landscaping and greenbelts, irrigation and dust control at the Spadra Landfill, industrial use by local paper manufacturers and use by commercial facilities. The remainder of the purified water is put back into the San Jose Creek channel, where it makes its way to the unlined portion of the San Gabriel River. Therefore, nearly 100 percent of the treated water is reused since the river water percolates into the groundwater.

SAN JOSE CREEK WATER RECLAMATION PLANT. The San Jose Water Reclamation Plant is located at 1965 Workman Mill Road, in unincorporated Los Angeles County, next to the City of Whittier. This is the largest Water Reclamation Plant operated by the Sanitation Districts, occupying 39 acres north of the I-60 Freeway on both sides of the I-605. The Water Reclamation Plant has three outfall locations. Treated effluent can be discharged to the San Jose Creek near the San Gabriel River confluence, to the San Gabriel River downstream of the San Jose Creek confluence, and to the San Gabriel River at Firestone Boulevard. The San Jose Creek Water Reclamation Plant provides primary, secondary and tertiary treatment for 100 MGD. The plant serves a largely residential population of about 1 million people. About 50 MGD of the purified water is reused at 25 different reuse sites. These include groundwater recharge and irrigation of parks, schools and greenbelts.

WHITTIER NARROWS WATER RECLAMATION PLANT. The Whittier Narrows Water Reclamation Plant is located at 301 N. Rosemead Boulevard in El Monte. This was the first reclamation plant built by the Sanitation Districts in 1962. It occupies 27 acres south of the Pomona (I-60) Freeway. This Water Reclamation Plant can discharge treated effluent at four different locations or outfalls located in the vicinity of the Whittier Narrows Dam, either separately or in combination. Treated effluent can be discharged to the San Gabriel River upgradient of the Whittier Narrows Dam, to the Zone 1 Ditch (Lario Creek) downstream of Whittier Wells Road, to the Rio Hondo, and to a site near the Zone 1 Ditch formerly used as a research basin for groundwater recharge studies but no longer in use. It provides primary, secondary and tertiary treatment for 15 MGD and serves a population of about 150,000 people. About 9 MGD of treated effluent is used for groundwater recharge, with a small amount being used for irrigation at a commercial nursery.

LOS COYOTES WATER RECLAMATION PLANT. The Los Coyotes Water Reclamation Plant is located at 16515 Piuma Avenue, Cerritos. The plant occupies 34 acres at the northwest junction of the I-605 and the I-91 Freeways. Twenty of the 34 acres is occupied by the Iron Wood Nine Golf Course, which is built on adjoining Sanitation Districts' property. The Water Reclamation Plant discharges exclusively to the San Gabriel River near the I-91 Freeway crossing. It provides primary, secondary and tertiary treatment for 37.5 MGD, serving about 370,000 people. Over 5 MGD of the purified water is reused at over 230 reuse sites. These include irrigation of schools, golf courses, parks, nurseries and greenbelts and industrial use at local companies for carpet dying and concrete mixing.

LONG BEACH WATER RECLAMATION PLANT. The Long Beach Water Reclamation Plant is located at 7400 E. Willow Street, Long Beach. The plant occupies 17 acres west of the I-605 Freeway. The Water Reclamation Plant discharges exclusively to Coyote Creek near the confluence with the San Gabriel River. It provides primary, secondary and tertiary treatment for 25 MGD for about 250,000 people. Over 5 MGD of the purified water is reused at over 48 reuse sites. These include irrigation of schools, golf courses, parks and greenbelts and for repressurization of oil-bearing strata.

Imported Water

Imported water, water derived from distant sources, is a major source of water supply for Southern California. The three primary sources of imported water are the Colorado River, the Owens Valley in eastern California, and the Sacramento-San Joaquin River Delta in Northern California. Imported water is costly because it is transported hundreds of miles from its origins, requiring extensive infrastructure and monitoring. Scarce rainfall in source regions can directly influence the amount of imported water supplies available to Southern California residents. The San Gabriel Valley requires less imported water than other regions of Los Angeles because it has so much local water supply. Water demands are currently met with available water supplies derived from both local and imported water stored in local reservoirs and aquifers. Growth in other regions such as Arizona and San Diego County is adding competitive pressure on the sources of water for Southern California. Consequently, local conservation measures are increasing in importance. Current practices include more stormwater capture, increased water conservation programs and increased reclaimed water resource utilization.

Three aqueducts supply water to Southern California:

COLORADO RIVER AQUEDUCT. Completed in 1941, this 242-mile aqueduct carries water from the Colorado River that is diverted from Lake Havasu in Arizona, traveling across the High Desert to Lake Matthews and the

Figure 2-68. The Long Beach Water Reclamation Plant discharges to Coyote Creek, just above the confluence with the San Gabriel River.

COURTESY CALIFORNIA DEPARTMENT OF WATER RESOURCES

Figure 2-69. The California Aqueduct brings State Water Project water to urban and agricultural users in Central and Southern California.

recently completed Diamond Valley Lake. Built and managed by the Metropolitan Water District of Southern California, the aqueduct serves Southern California residents in the Los Angeles and San Diego regions, delivering over one billion gallons of water a day (or 3.161 acre-feet) to Los Angeles.

LOS ANGELES AQUEDUCT. The Owens Valley lies between the Eastern Sierra Nevada and White Mountains in eastern California. Runoff from the mountains into this valley supplies City of Los Angeles residents with 480,000 acre-feet of water each year. In 1908, William Mulholland began to build this 233-mile aqueduct for the City of Los Angeles Department of Water and Power. To meet increasing demands for water, an extension from Mono Lake added 105-miles in 1940. A second aqueduct within the valley was completed in 1970. Restrictions on water use to protect the Sierra Nevada ecosystem will reduce future deliveries to 321,000 acre-feet a year during the next 20 years.

CALIFORNIA AQUEDUCT. The 444-mile California Aqueduct is part of the overall water storage and conveyance system called the State Water Project operated and maintained by the State of California Department of Water Resources. Starting southeast of San Francisco, the aqueduct conveys water from the Sacramento-San Joaquin River Delta to Southern California. The CALFED Bay-Delta Program is working to improve water supply reliability and ecosystem restoration, making future increases in water supplies for Southern California uncertain.

WATER SUPPLY INSTITUTIONAL ARRANGEMENTS

Various institutional arrangements and the water agencies defined by them are responsible for making water available to end-users.

Water Rights

Water rights determine who can draw upon water from the river and the groundwater bains, and how many acre-feet can be allocated to each user each year.

Surface water rights are administered by the State Water Resources Control Board (SWRCB). It has declared the San Gabriel River fully appropriated, which means the full water capacity of the river has been allocated and no new rights may be appropriated. Local rights to direct diversion of surface water in the San Gabriel River are held among local agencies, including primarily the San Gabriel River Water Committee, and the San Gabriel Valley Protective Association (see below).

Groundwater rights and plans to protect those rights in most basins in Southern California have been established through court adjudication and are administered by local court-appointed agencies, such as the Main San Gabriel Basin Watermaster (see below). Six local agencies and organizations are involved in administering water rights in the Master Plan area.

SAN GABRIEL RIVER WATER COMMITTEE. Formerly known as the "Committee of Nine," this nonprofit organization consists of five members that have rights to divert water from the San Gabriel River. Members, primarily in the upper San Gabriel Valley, are entitled to the first 135 cubic feet per second (cfs) of flows in the river, beginning up in San Gabriel Canyon. River water is first treated at the Canyon Filtration Plant in Azusa and the Covina Filtration Plant for potable uses. Excess water is sent to the San Gabriel Canyon Spreading Grounds to recharge the Main San Gabriel Basin, under an agreement with LADPW. The five members and their entitlement amounts in acre-feet per year are listed below.

- City of Azusa (3,252)
- Covina Irrigating Company (2,514)
- California-American Water Company (1,672)
- Monrovia Nursery Company (958)
- Azusa Agricultural Water Company (170)

MAIN SAN GABRIEL BASIN WATERMASTER. This agency is charged with administering adjudicated water rights and managing groundwater resources for the Main San Gabriel Basin. Parties that pumped 5,000 acre-feet or more from the Main San Gabriel Basin in fiscal year 2001-2002 are listed below. There are many other parties with smaller water rights.

- Azusa Valley Water Company
- California Domestic Water Company
- California-American Water Company
- City of Arcadia
- City of Glendora
- City of Monrovia
- City of Whittier
- Covina Irrigating Company
- Pellissier Irrevocable QTIP Trust, et. al.
- San Gabriel County Water District
- San Gabriel Valley Water Company
- Southern California Water Company
- Suburban Water Systems
- Valley County Water District

SAN GABRIEL VALLEY PROTECTIVE ASSOCIATION. The Association protects the water rights for 22 entities in the San Gabriel Valley. These members are entitled to the water from the San Gabriel River that is in excess of 135 cfs, beyond the allocation given for members of the San Gabriel River Water Committee. The water is used primarily for groundwater recharge. Members are listed below.

- California Domestic Water Company
- California-American Water Company
- Central Basin Municipal Water District
- City of Alhambra
- City of Arcadia
- City of Azusa
- City of Glendora
- City of Lakewood

- City of Monrovia
- City of Whittier
- Covina Irrigating Company
- La Habra Heights County Water District
- Montebello Land and Water Company
- Pico County Water District
- San Gabriel County Water District
- San Gabriel Valley Municipal Water District
- San Gabriel Valley Water Company
- Suburban Water Systems
- Upper San Gabriel Valley Municipal Water District
- Valencia Heights Water Company
- Water Replenishment District of Southern California

SAN GABRIEL RIVER WATERMASTER. The Watermaster is responsible for tracking the amount of surface water and groundwater that passes through the Whittier Narrows from the San Gabriel Basin to the Central Basin.

CENTRAL BASIN WATERMASTER. The Watermaster manages water rights for 146 parties, who are allocated a total of 217,367 acre-feet per year. Parties with an allocation of 3,000 acre-feet or more from the Central Basin are listed below.

- City of Huntington Park
- City of Lakewood
- City of Long Beach
- City of Lynwood
- City of Paramount
- City of Pico Rivera
- City of Santa Fe Springs
- City of South Gate
- City of Vernon
- City of Los Angeles Department of Water and Power
- Pico Water District
- Southern California Water Company
- Suburban Water Systems

WEST COAST BASIN WATERMASTER. The Watermaster tracks water rights for 68 parties who are allocated 64,468.25 acre-feet per year. Very little of the West Coast Basin lies in the vicinity of the San Gabriel River. However, this basin still affects water rights within the San Gabriel River corridor. Parties with an allocation of 1,000 acre-feet or more from the West Coast Basin are listed below.

- Atlantic Richfield Company
- California Water Service Company
- Chevron USA, Inc.
- City of Hawthorne
- City of Inglewood
- City of Lomita Water System
- City of Los Angeles
- City of Manhattan Beach
- City of Torrance
- Equilon Enterprises, LLLc
- Foothill Freeway
- Mobil Oil Corporation
- Shell Oil Company
- Southern California Water Company
- Tosco Corporation

Water Supply Agencies

A complex web of 15 water supply agencies in the San Gabriel River project area buys, sells, pumps, cleans-up and manages these precious water resources. Some agencies have direct water rights, while others are wholesalers or retailers of water. Others are responsible for either groundwater or surface water, or simply the clean-up of contaminated water. Several entities listed are also member agencies of the Metropolitan Water District of Southern California (MWD). This means that those member agencies buy imported water from MWD wholesale for local distribution.

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA (MWD). A consortium of 26 cities and water districts provides drinking water to nearly 18 million people in parts of Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura counties. MWD currently delivers an average of 1.7 billion gallons of water per day to a 5,200-square-mile service area.

CENTRAL BASIN MUNICIPAL WATER DISTRICT. This public agency purchases imported water from the MWD and wholesales the water to cities, mutual water companies, investor-owned utilities, and private companies in southeast Los Angeles County. It also supplies water used by the Water Replenishment District for groundwater replenishment in spreading grounds, and provides the region with recycled water for municipal, commercial and industrial use.

CITY OF AZUSA, AZUSA LIGHT AND WATER. This municipally-owned utility in the San Gabriel Valley, serves over 125,000 residents and businesses that consume about 10 billion gallons of water per year.

CITY OF LONG BEACH WATER DEPARTMENT. The department serves a population of 461,000, the fifth largest city in the State of California. Its mission is to "deliver an uninterrupted supply of quality water to our customers; to effectively dispose of, or reclaim, sewage and runoff waters; and to operate in a manner that is economically efficient and environmentally responsible."

SAN GABRIEL RIVER WATER COMMITTEE (FORMERLY COMMITTEE OF NINE). This nonprofit organization has rights to surface flows from the San Gabriel River above Morris Dam, conveying that water to the San Gabriel Canyon Spreading Grounds in Azusa. Four local entities and cities have rights to the water including City of Azusa, California-American Water Company, Monrovia Nursery and Covina Irrigating Company.

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS. This agency controls the flow of local runoff, reclaimed and imported waters for recharge in the San Gabriel River and associated spreading grounds for both groundwater basins.

MUNICIPAL WATER DISTRICT OF ORANGE COUNTY. This public planning and resource management agency provides imported water to more than 2 million Orange County residents, 70 percent of the County's population, through 27 cities and water districts and two private water companies. Half of Orange County's water supply comes from local sources; the other half is imported.

SAN GABRIEL BASIN WATER QUALITY AUTHORITY. The Authority coordinates the plans and activities of state and federal agencies and others involved in the cleanup of the Main San Gabriel Basin. It has been responsible for removing nearly 10 tons of contaminants. It is actively intercepting contaminated groundwater flowing toward the Whittier Narrows.

SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT. This Water District is responsible for maximizing water quality and quantity of the Main San Gabriel Basin for four cities in the valley: Alhambra, Azusa, Monterey Park and Sierra Madre. It contracts with the State of California Department of Water Resources for water supplies via the State Water Project. A pipe from the California Aqueduct in San Bernardino brings water to the San Gabriel Canyon Spreading Grounds in Azusa.

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY. The Districts treat wastewater at five Water Reclamation Plants (WRP) near the San Gabriel River, adding reclaimed water to the local supply.

THREE VALLEYS MUNICIPAL WATER DISTRICT. This Water District provides water to 475,000 residents of the eastern Los Angeles County areas of the

San Gabriel, Walnut and Pomona Valleys. The District operates the Miramar Water and Hydroelectric facility in Claremont.

UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT. This Water District provides wholesale water service to local water suppliers. About 60,000 acre-feet of imported water is served each year, with the majority of the water being used for groundwater recharge.

WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA (WRD). This Water District manages groundwater in the West and Central Basins for 3.5 million residents in 43 cities of southern Los Angeles County, including the cities in the lower San Gabriel River Watershed.

Water Quality

Decades of polluted urban runoff into the San Gabriel River and Pacific Ocean have degraded the quality of surface waters to levels that are unsafe for human contact.

The Los Angeles Regional Water Quality Control Board (Regional Board) regulates ground and surface water quality in the Los Angeles Region, including the coastal watersheds of Los Angeles and Ventura Counties, along with very small portions of Kern and Santa Barbara Counties. The LA Regional Board is one of nine Regional Boards overseen by the State Water Resources Board. The Regional Board oversees water quality for 4,447 square miles of land, including offshore islands; 1,115 miles of streams; 2,107 acres of lakes; and 120 miles of coastline.

Water quality associated with the San Gabriel River is defined by the Regional Board using the concepts of "beneficial uses" and "impaired reaches."

BENEFICIAL USES

Beneficial uses are water quality milestones for water that need to be attained and maintained over time. Water may be a reservoir, lake, stream, river segment or estuary. The State Water Resources Control Board has designated 21 "Beneficial Uses" for surface waters such as contact recreation or groundwater recharge.

The San Gabriel River is divided into multiple river segments, tributaries and reservoirs according to their beneficial use designations. Eleven water body segments or lakes fall within the San Gabriel River Corridor Master Plan project area. Each location has specific beneficial uses as outlined below. They are designated as "existing," "proposed," or "intermittent" (streams that only run during the rainy season). All are existing unless indicated with a "P" for proposed, or "I" for intermittent. The nature of each beneficial use is implied by its title. For a more precise definition of each beneficial use, refer to the Los Angeles Regional Water Quality Control Board Basin Plan. The uses are not listed in preferential order.

Reach 1

West Fork San Gabriel River

- Municipal and Domestic Supply (P)
- Groundwater Recharge
- Water Contact Recreation
- Non-contact Water Recreation
- Warm Freshwater Habitat
- Cold Freshwater Habitat
- Wildlife Habitat
- Rare, Threatened, or Endangered Species
- Spawning, Reproduction, and/or Early Development
- Wetland Habitat

Reach 2

Morris and San Gabriel Reservoirs

- Municipal and Domestic Supply
- Industrial Service Supply
- Industrial Process Supply
- Agricultural Supply
- Groundwater Recharge
- Hydropower Generation
- Water Contact Recreation (P in Morris)
- Non-contact Water Recreation
- Warm Freshwater Habitat
- Cold Freshwater Habitat
- Wildlife Habitat
- Spawning, Reproduction, and/or Early Development (Morris only)

Figure 2-70. The San Gabriel Dam is a source of local water supply.

Figure 2-71. On occasion, the river is used for baptisms by local area churches.

San Gabriel River: Main Stem

- Municipal and Domestic Supply
- Industrial Service Supply
- Industrial Process Supply
- Agricultural Supply
- Groundwater Recharge

COURTESY DAN SLATER

Figure 2-72. Water contact recreation includes river crossings on horseback.

- Water Contact Recreation
- Non-contact Water Recreation
- Warm Freshwater Habitat
- Cold Freshwater Habitat
- Wildlife Habitat
- Spawning, Reproduction, and/or Early Development

Reach 3

San Gabriel River

- Municipal and Domestic Supply
- Industrial Service Supply
- Industrial Process Supply
- Agricultural Supply
- Groundwater Recharge
- Water Contact Recreation
- Non-contact Water Recreation
- Warm Freshwater Habitat
- Cold Freshwater Habitat
- Wildlife Habitat
- Rare, Threatened, or Endangered Species

Santa Fe Flood Control Basin

- Municipal and Domestic Supply (P)
- Groundwater Recharge (I)
- Water Contact Recreation (P)
- Non-contact Water Recreation (I)
- Warm Freshwater Habitat (I)
- Wildlife Habitat
- Wetland Habitat

Reach 4

San Gabriel River

- Municipal and Domestic Supply (P)
- Groundwater Recharge (I)
- Water Contact Recreation (I)
- Non-contact Water Recreation (I)
- Warm Freshwater Habitat (I)
- Wildlife Habitat

Whittier Narrows Flood Control Basin

- Municipal and Domestic Supply (P)
- Groundwater Recharge

Figure 2-73. Trails are a good example of non-contact river uses.

- Water Contact Recreation
- Non-contact Water Recreation
- Warm Freshwater Habitat
- Wildlife Habitat
- Rare, Threatened, or Endangered Species (P)

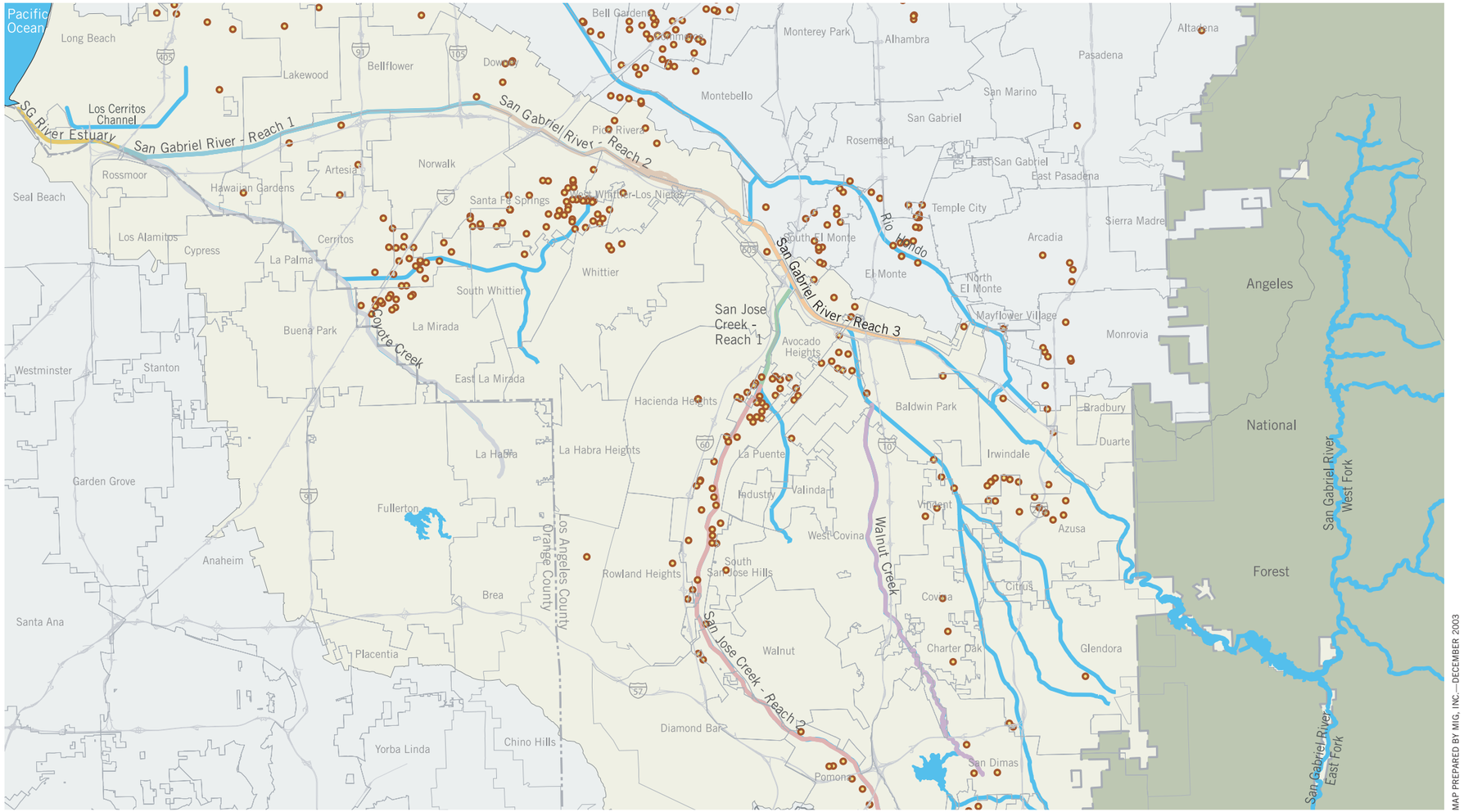
COURTESY BONTERRA CONSULTING

Figure 2-74. Wildlife sightings such as this Great Blue Heron occur along many stretches of the river.

Reach 5

San Gabriel River: Whittier Narrows to Firestone Boulevard

- Municipal and Domestic Supply (P)
- Industrial Service Supply (P)
- Industrial Process Supply (P)
- Groundwater Recharge (I)
- Water Contact Recreation
- Non-contact Water Recreation
- Warm Freshwater Habitat (I)
- Wildlife Habitat



Map 2-12. Impaired reaches.

- Rare, Threatened, or Endangered Species

Reach 6

San Gabriel River: Firestone Boulevard to Estuary

- Municipal and Domestic Supply (P)
- Water Contact Recreation
- Non-contact Water Recreation
- Warm Freshwater Habitat (P)
- Wildlife Habitat (P)

Reach 7

San Gabriel River Estuary

- Industrial Service Supply
- Navigation
- Water Contact Recreation
- Non-contact Water Recreation
- Commercial and Sport Fishing
- Estuarine Habitat
- Marine Habitat
- Wildlife Habitat
- Rare, Threatened, or Endangered Species
- Migration of Aquatic Organisms
- Spawning, Reproduction, and/or Early Development
- Shellfish Harvesting (P)

IMPAIRED REACHES

The designation of "impaired reaches" identifies reaches that are officially recognized by the State of California as affected by specific pollutants, derived from unknown or nonpoint sources.

The Impaired Reaches map is based on the latest version of the 303(d) List (see map 2-12). The State Water Resources Control Board developed the 2002 Clean Water Act, Section 303(d) List of Water Quality Limited Segments, approving it on February 4, 2003. On July 25, 2003, USEPA gave final approval to California's 2002 Section 303(d) List of Water Quality Limited Segments. The list (see below for San Gabriel River list) includes all bodies of water statewide that do not meet water quality standards, even after known point sources of pollution have implemented pollution control technology. This list represents concentrations of nonpoint source pollutants that occur within major rivers, creeks and waterbodies within the state.

Together with local stakeholders, the Regional Board helps set Total Maximum Daily Loads or TMDLs, which describe maximum levels for specific water quality parameters for specific water bodies. TMDLs provide water quality improvement targets and priorities that local jurisdictions must use in addressing 303(d) listed pollutants. TMDLs outline pollutant removal or reduction objectives over a period of time.

The map of Impaired Reaches shows which waterbodies are impaired or polluted. The associated constituents or pollutants are listed below for each waterbody. Walnut, San Jose and Coyote Creeks are included here because they are major tributaries of the river even though they do not fall within the Master Plan project area.

- 303 (d) San Jose Creek (from confluence with Puente Creek to confluence with San Gabriel River): algae, coliform
- 303 (d) San Jose Creek (from top of main stem to confluence with Puente Creek): algae, coliform
- 303 (d) Walnut Creek (from Puddingstone Reservoir to confluence with Big Dalton Wash, excludes last stretch of Walnut Creek to the San Gabriel River confluence): pH, toxicity
- 303 (d) San Gabriel River (from Ramona Boulevard to Whittier Narrows Dam): toxicity
- 303 (d) San Gabriel River (from Whittier Narrows Dam down to Firestone Boulevard): coliform, copper, lead, zinc
- 303 (d) San Gabriel River (from Firestone Boulevard to the Estuary): abnormal fish histology, algae, coliform, toxicity
- 303 (d) San Gabriel River Estuary: abnormal fish histology
- 303 (d) Coyote Creek (entire stretch of main stem): abnormal fish histology, algae, coliform, toxicity, copper, lead, selenium, zinc

The San Gabriel River has four impaired reaches listed, as well as impaired tributaries that flow into the river *(Note: the reach designations used by the Regional Board differ from those used in this Master Plan document).* The impaired tributaries obviously bring in the listed impairments into the San Gabriel River system. The water reclamation plants that send recycled water into the river may dilute the quantities of certain pollutants to levels below 303(d) listing standards. The presence of "abnormal fish histology" in the lowest reach of the San Gabriel River may indicate the accumulation of toxins in fish found in these reaches, whether they are listed or not.

2.3.2 Cultural and Social Resources

Cultural and social resources are the intangible features of the river environment that define how people have lived and worked along and near the river through time. This includes the people, political jurisdictions and social and cultural institutions that exist in and around the Master Plan project area. This section includes:

POLITICAL JURISDICTIONS: the levels of government that overlay and intersect the natural boundaries of the river.

DEMOGRAPHICS: the composition and characteristics of the people who reside in and around the river corridor.

LAND USE AND ECONOMIC DEVELOPMENT: how people use the land adjacent to and near the river.

CULTURAL AND HISTORIC RESOURCES: the artifacts and imprints of past and present generations of inhabitants.

PUBLIC SAFETY INSTITUTIONS: the network of facilities in and near the river, such as fire stations, hospitals and police stations.

PUBLIC HEALTH AGENCIES: the jurisdictional and regulatory domains of public health agencies.

Political Jurisdictions

The San Gabriel River Corridor Master Plan project area is a complex mosaic of political jurisdictions and agency boundaries, making on-going coordination and joint planning an essential recommendation of this Master Plan. Jurisdictions include: the Angeles National Forest; two US Army Corps of Engineers-managed dam and recreation areas; ten Congressional districts; five California State Senate districts; nine State assembly districts; a State conservancy; several joint powers authorities including the new Watershed Conservation Authority; three Los Angeles County Supervisorial Districts; one Orange County Supervisorial District; 14 water supply agencies; three councils of governments (San Gabriel Valley COG, Gateway COG, Orange County COG); two counties (Los Angeles and Orange); 19 cities and a number of regulatory and other agency stakeholders. There are also a number of other stakeholder groups, including non-governmental organizations and a variety of recreational user groups.

In some cases, the San Gabriel River itself defines the jurisdictional boundaries of many public agencies.

CITIES

The river flows through or alongside 19 cities. This list is organized by reach although reach boundaries do not correspond exactly with those of the cities.

REACHES 1 AND 2: HEADWATERS AND SAN GABRIEL CANYON. These two reaches occur entirely within the boundaries of the Angeles National Forest and do not flow through a city.

REACH 3: UPPER SAN GABRIEL VALLEY. Azusa, Duarte, Arcadia, Irwindale.

REACH 4: LOWER SAN GABRIEL VALLEY. Baldwin Park, El Monte, South El Monte, City of Industry. This reach also includes the Los Angeles County unincorporated community of Bassett.

REACH 5: UPPER COASTAL PLAIN. Pico Rivera, Whittier, Santa Fe Springs, Norwalk.

REACH 6: LOWER COASTAL PLAIN. Downey, Bellflower, Cerritos, Lakewood.

REACH 7: ZONE OF TIDAL INFLUENCE. Long Beach, Seal Beach, Los Alamitos. This reach also includes the Orange County unincorporated community of Rossmoor.

LOS ANGELES COUNTY SUPERVISORIAL DISTRICTS

First Supervisorial District Supervisor Gloria Molina
Includes the northern half of the urbanized river corridor from Reach 3 to Reach 5 (Upper and Lower San Gabriel Valley, as well as portions of Upper Coastal Plain)

Fourth Supervisorial District Supervisor Don Knabe
Includes the southern half of the urbanized river corridor from Reach 5 through Reach 7. (portions of Upper Coastal Plain, Lower Coastal Plain, and Zone of Tidal Influence)

Fifth Supervisorial District Supervisor Michael D. Antonovich
Includes all of the reaches in the Angeles National Forest, Reach 1 and Reach 2 (Headwaters and San Gabriel Canyon)

ORANGE COUNTY SUPERVISORIAL DISTRICTS

Second Supervisorial District Supervisor James Silva
Includes the communities of Los Alamitos, Rossmoor and Seal Beach in the north coastal area of Orange County, located in the lower portions of Reach 6 and all of Reach 7.

CALIFORNIA STATE ASSEMBLY DISTRICTS

Assembly District 44 Assemblymember Carol Liu
Includes the western edge of Reach 3 to the north and west of Santa Fe Dam, primarily those portions of Reach 3 falling within the City of Duarte.

Assembly District 49 Assemblymember Judy Chu
Primarily the western half of Reach 4, from just below Santa Fe Dam to Whittier Narrows. The San Gabriel River defines the eastern boundary of this district.

Assembly District 50 Assemblymember Hector De La Torre
Includes the western half of Reach 6 (Lower Coastal Plain) as the river flows by the City of Bellflower.

Assembly District 54 Assemblymember Betty Karnette
Includes the lower half of Reach 6 as the river flows between Long Beach and Hawaiian Gardens, and the western half of Reach 7 as it flows by Long Beach to the coast.

Assembly District 55 Assemblymember Jenny Oropeza
Includes the western half of Reach 6 as the river flows by Lakewood. The San Gabriel River defines the eastern boundary of the district.

Assembly District 56 Assemblymember Rudy Bermudez
Includes the eastern half of Reach 5 as the river flows by unincorporated West Whittier and Santa Fe Springs, and bisects Lakewood. The river defines the western boundary of the district.

Assembly District 57 Assemblymember Ed Chavez
Includes Reach 3 (the Upper San Gabriel Valley cities of Azusa and Irwindale) and the eastern half of Reach 4, from just below Santa Fe Dam to Whittier Narrows. This includes Baldwin Park and unincorporated areas of Los Angeles County on the eastern bank. The river defines the western boundary of this district along the Reach 4 portion.

Assembly District 58 Assemblymember Ronald S. Calderon
Includes Whittier Narrows and Puente-Chino Hills (lower portion of Reach 4) and the western half of Reach 5 as the river flows by Pico Rivera and Downey. The river defines the eastern boundary of the district along the Reach 5 portion.

Assembly District 59 Assemblymember Dennis Mountjoy
Includes all of the river within Angeles National Forest, Reach 1 and Reach 2.

Assembly District 67 Assemblymember Tom Harman
Includes the eastern half of Reach 7, as the river flows by Los Alamitos, Rossmoor and Seal Beach.

CALIFORNIA STATE SENATE DISTRICTS

Senate District 24 Senator Gloria Romero
Includes Reach 3 (Upper San Gabriel Valley) and most of Reach 4 (Lower San Gabriel Valley), but stops short of Whittier Narrows.

Senate District 27 Senator Alan Lowenthal
Includes the western half of Reach 6, as the river flows by Downey and Bellflower, all of the lower portions of Reach 6 as the river flows between Lakewood and Cerritos, and primarily the western portion of Reach 7 as it flows by Long Beach to the coast.

Senate District 29 Senator Bob Margett
Includes the river as it flows through the Angeles National Forest, Reach 1 and Reach 2.

Senate District 30 Senator Martha M. Escutia
Includes the lowest portion of Reach 4 (South El Monte and Whittier Narrows); all of Reach 5 (Upper Coastal Plain) including Pico Rivera, Whittier, Santa Fe Springs and part of Downey, and the eastern half of Reach 6 as it flows by Norwalk.

Senate District 35 Senator John Campbell
Includes the eastern half of Reach 7 as the river flows by Rossmoor and Seal Beach.

U.S. CONGRESSIONAL DISTRICTS

Congressional District 26 Congressman David Dreier
Includes all of the San Gabriel River within the Angeles National Forest, Reach 1 and Reach 2.

Congressional District 32 Congresswoman Hilda Solis
Includes most of Reach 3 and Reach 4, as defined by the Cities of Azusa, Duarte, Irwindale, Baldwin Park, El Monte and South El Monte, and the Whittier Narrows. The river defines the southeastern boundary of this district, from north of the 10 Freeway to the mouth of the San Gabriel Canyon, the river flows through the center of this congressional district.

Congressional District 34 Congresswoman Lucille Roybal-Allard
Includes portions of Reach 5 and 6, as defined by the Cities of Downey and Bellflower. The river forms the eastern boundary of the district.

Congressional District 38 Congresswoman Grace Napolitano
Includes portions of Reach 4 (the eastern bank of the river/Avocado Heights, Puente Chino Hills), the western bank of Reach 5 (Pico Rivera), and the eastern bank of Reach 6 (Santa Fe Springs, and Norwalk).

Congressional District 39 Congresswoman Linda Sanchez
Includes much of Reach 6, as defined by the Cities of Lakewood, Cerritos and Hawaiian Gardens. In addition, a northern spur of the district includes the eastern bank of the river as defined by the community of West Whittier and the City of Whittier.

Congressional District 40 Congressman Edward Royce
Includes a small portion of Reach 7, as defined by Rossmoor and Los Alamitos in Orange County.

Congressional District 46 Congressman Dana Rohrabacher
Includes most of Reach 7, as defined by the cities of Long Beach and Seal Beach. It straddles both Los Angeles County and Orange County.

Demographics

Plans for parks and other projects along the river must take into account the diverse characteristics of the people and communities adjacent to the river, especially in regards to size and age distribution, race, culture and ethnicity, and other factors.

POPULATION SIZE AND AGE DISTRIBUTION

About 1.5 million people live near the river, including the populations of the cities and unincorporated areas. Population distribution varies: only a handful of people live fulltime in Reaches 1 and 2, within the boundaries of the Angeles National Forest. The majority lives within the San Gabriel Valley and the river's coastal plain as described below.

- Reach 3: 120,698 (Azusa, Duarte, Arcadia, Irwindale)
- Reach 4: 228,871 (Baldwin Park, El Monte, South El Monte, Industry, Avocado Heights CDP)
- Reach 5: 292,973 (Pico Rivera, Whittier, West Whitter-Los Nietos CDP, Santa Fe Springs, Norwalk)
- Reach 6: 311,034 (Downey, Bellflower, Cerritos, Lakewood)
- Reach 7: 495,977 (Long Beach, Seal Beach, Rossmoor CDP)

(Population figures are based on 2000 US Census data for the cities that adjoin the San Gabriel River. For unincorporated areas, the corresponding "census designated place [CDP]" is used.)

Reach 4 has the highest percentage of young people, with 37.5 percent of the population 19 years old or younger (see Table 2-1). The population in this reach is generally younger than the others, which all have similar age distributions.

Parks and recreation planners will need to take into account the age structure of the local communities that are to be served. Regardless of the specific age distributions of a river reach, engaging local community members in the planning process is the best way to gather information on the specific needs of each community.

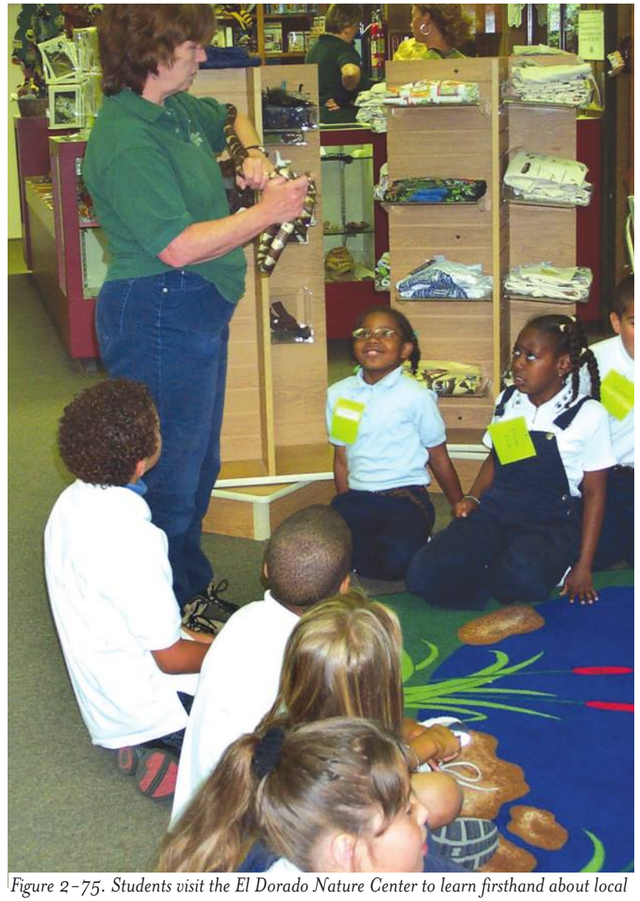
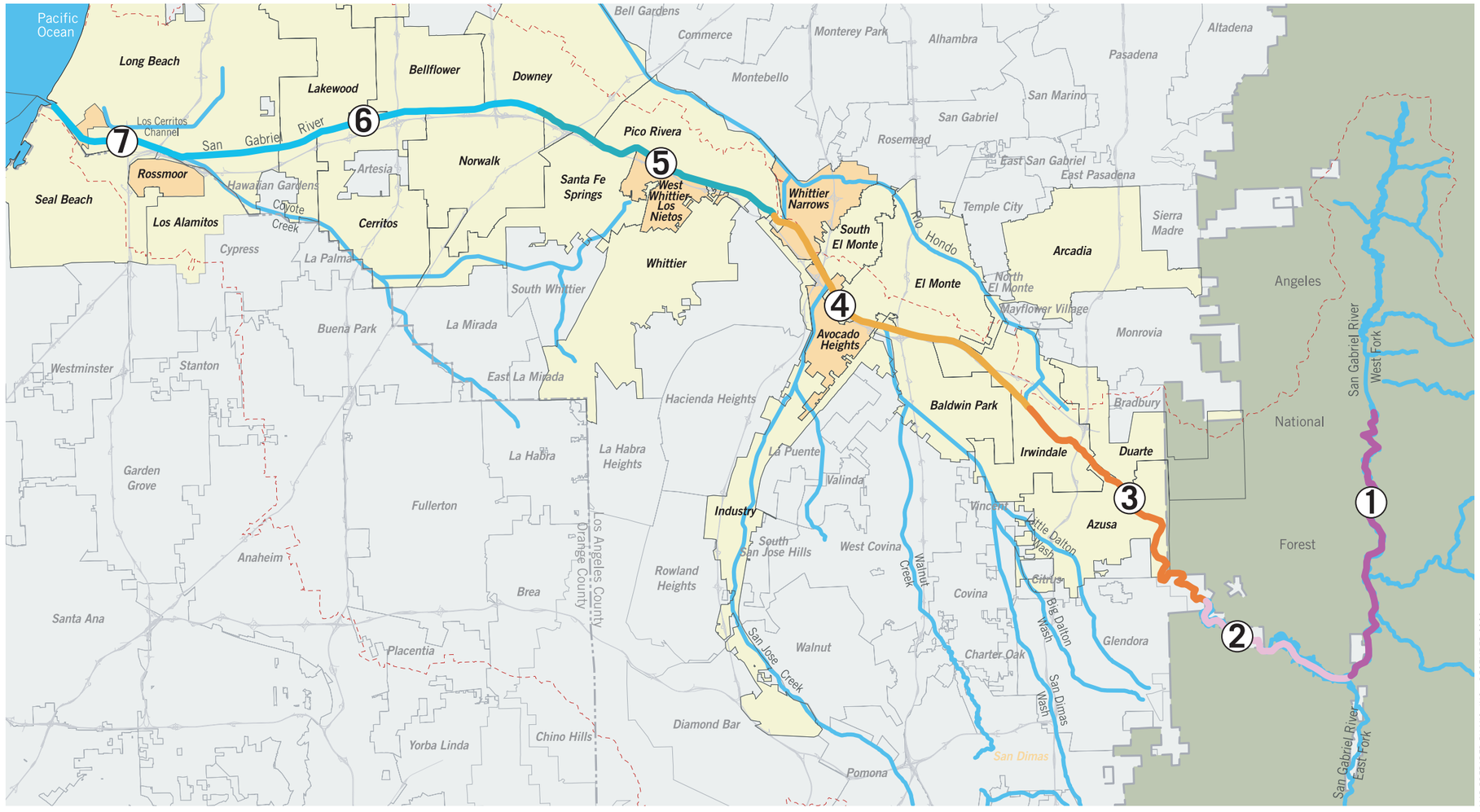


Figure 2-75. Students visit the El Dorado Nature Center to learn firsthand about local creatures.



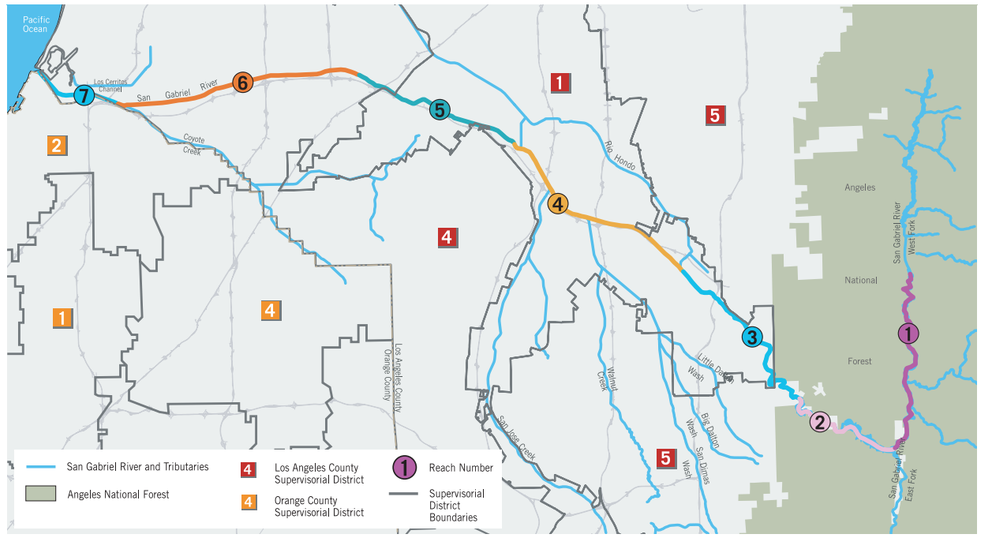
Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Cities and Unincorporated County Areas

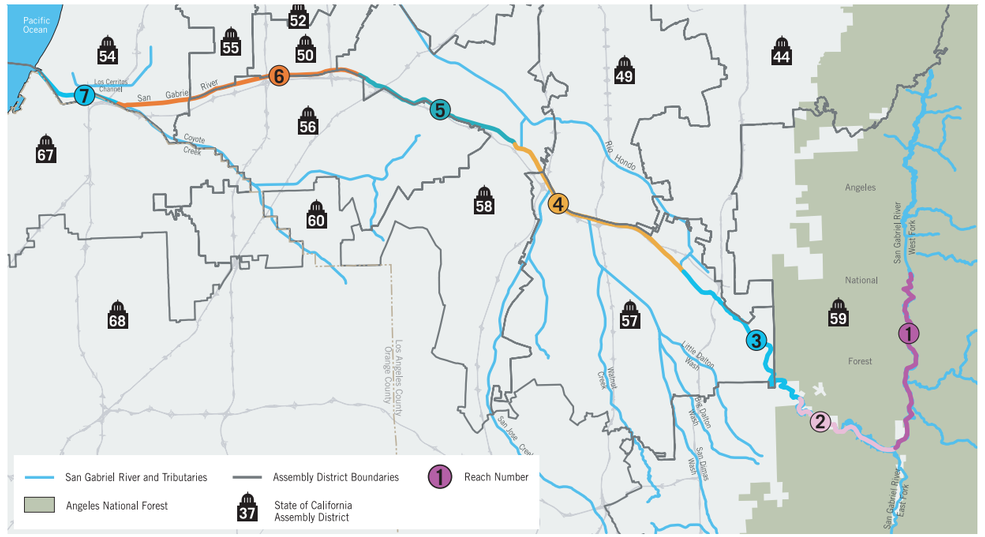
County of Los Angeles Department of Public Works

San Gabriel River Corridor Master Plan

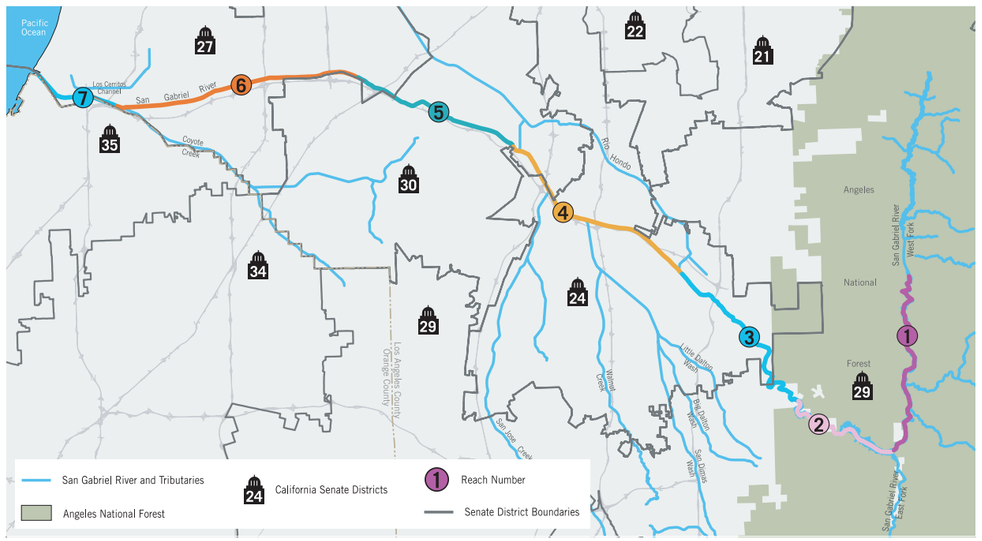
Map 2-13. Cities and unincorporated county areas in the San Gabriel River Corridor Master Plan project area.



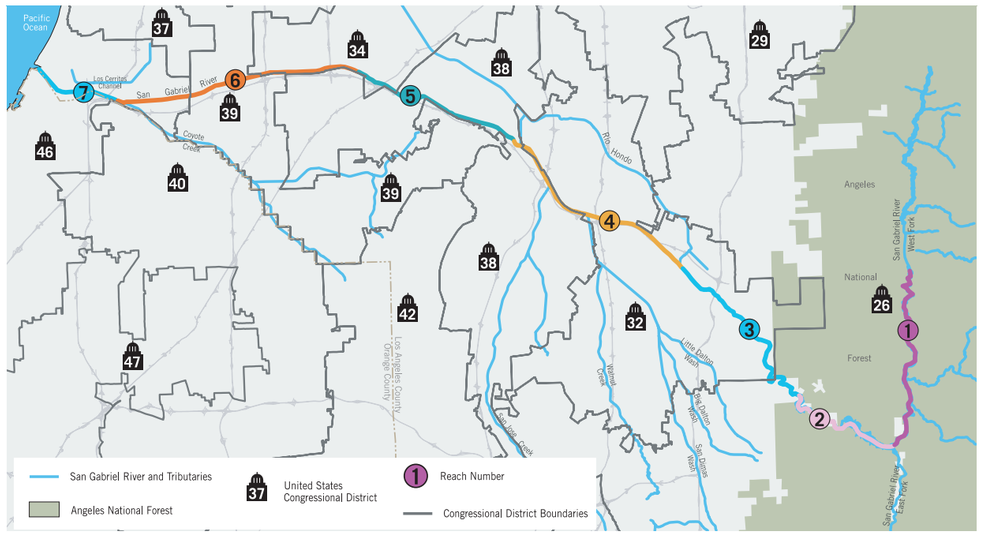
Los Angeles and Orange Counties Supervisorial Districts



State of California Assembly Districts



State of California Senate Districts



United States Congressional Districts

County of Los Angeles Department of Public Works
San Gabriel River Master Plan

MAP'S PREPARED BY MIG, INC.—DECEMBER 2003

Map 2-14. Political jurisdictions.

RACE AND ETHNICITY

Like most of Southern California, the area around the San Gabriel River is racially and ethnically diverse. However, these patterns vary along the river corridor (see Table 2-2). In every reach, except for the zone of tidal influence (Reach 7), those who identified themselves as Hispanic or Latino represent the largest component of the population. In the lower San Gabriel Valley and upper coastal plain, the Hispanic or Latino population is 75.9 percent and 68.7 percent respectively. Those identifying themselves as Asian in the 2000 Census also represent a large percentage of the river corridor's population. In the lower San Gabriel Valley, the Asian population is the second largest group. The largest percentage of Asian population occurs in the upper San Gabriel Valley.

COURTESY NORTH EAST TREES

Figure 2-76. A habitat restoration planting event at San Jose Creek attracted a diverse group of volunteers.

TABLE 2-1. POPULATION BY AGE GROUP AND RIVER REACH (%), 2000

	Reach 3 Upper San Gabriel Valley	Reach 4 Lower San Gabriel Valley	Reach 5 Upper Coastal Plain	Reach 6 Lower Coastal Plain	Reach 7 Zone of Tidal Influence
Under 5 years	6.9%	9.7%	8.2%	7.6%	8.0%
5 to 9 years	7.8%	10.3%	9.1%	8.4%	8.7%
10 to 14 years	7.7%	9.0%	8.4%	8.0%	7.6%
15 to 19 years	8.1%	8.5%	8.0%	7.5%	7.1%
20 to 29 years	14.0%	17.3%	14.7%	13.8%	15.9%
30 to 39 years	14.7%	15.8%	15.6%	15.5%	16.7%
40 to 49 years	15.0%	12.1%	13.3%	14.5%	13.7%
50 to 59 years	10.5%	7.8%	8.8%	10.9%	9.2%
60 to 69 years	6.7%	4.8%	6.0%	6.3%	5.3%
70 to 79 years	5.3%	3.2%	5.4%	5.0%	4.0%
80 to 89 years	2.7%	1.3%	2.2%	2.3%	2.7%
90 years and over	0.6%	0.2%	0.4%	0.3%	0.5%

SOURCE: US CENSUS BUREAU, 2000

TABLE 2-2. RACE AND ETHNICITY (%) BY RIVER REACH, 2000

	Reach 3 Upper San Gabriel Valley	Reach 4 Lower San Gabriel Valley	Reach 5 Upper Coastal Plain	Reach 6 Lower Coastal Plain	Reach 7 Zone of Tidal Influence
Hispanic or Latino	37.0%	76.1%	68.7%	37.6%	33.7%
White	32.4%	7.4%	21.4%	34.0%	36.7%
Black or African America	3.3%	0.8%	2.2%	7.1%	13.6%
American Indian and Alaska Native	0.3%	0.3%	0.4%	0.3%	0.4%
Asian	24.3%	14.5%	5.7%	17.9%	11.5%
Native Hawaiian and Other Pacific Islander	0.1%	0.1%	0.2%	0.4%	1.1%
Some Other Race	0.2%	0.1%	0.1%	0.2%	0.2%
Two or More Races	2.3%	0.8%	1.3%	2.5%	2.9%

SOURCE: US CENSUS BUREAU, 2000

Note: Individuals who reported themselves as Hispanic or Latino have been grouped regardless of race. All other groups listed include only those who identified themselves as non-Hispanic/Latino. All categories listed above reflect those used in the 2000 Census (US Census Bureau, 2000).

TABLE 2-3. LANGUAGES SPOKEN AT HOME BY RIVER REACH (%), 2000

	Reach 3 Upper San Gabriel Valley	Reach 4 Lower San Gabriel Valley	Reach 5 Upper Coastal Plain	Reach 6 Lower Coastal Plain	Reach 7 Zone of Tidal Influence
Speak only English	45.55%	20.43%	42.60%	50.98%	58.17%
Spanish or Spanish Creole	27.99%	64.89%	50.65%	29.94%	28.44%
Chinese	15.30%	7.06%	0.83%	2.97%	0.74%
Korean	1.79%	0.31%	0.96%	4.62%	0.31%
Mon-Khmer, Cambodian	0.07%	0.22%	0.23%	0.51%	3.75%
Vietnamese	0.43%	3.68%	0.42%	0.77%	1.00%
Tagalog	2.36%	1.98%	1.72%	4.05%	2.97%

Note: Includes people over 5 years of age and languages with more than one percent of population per reach reporting using that language at home. This information is derived from the 2000 Census question asking whether a person speaks a language other than English at home and if so, what is the language. It is important to note that many who indicated that languages other than English are spoken at home also speak English (US Census Bureau, 2000).

TABLE 2-4. HOUSEHOLD LANGUAGE BY LINGUISTIC ISOLATION AND RIVER REACH (%), 2000

	Reach 3 Upper San Gabriel Valley	Reach 4 Lower San Gabriel Valley	Reach 5 Upper Coastal Plain	Reach 6 Lower Coastal Plain	Reach 7 Zone of Tidal Influence
English	46.2%	16.9%	39.9%	51.0%	63.2%
Spanish	26.5%	66.2%	51.9%	29.3%	23.6%
Linguistically isolated	6.1%	19.8%	9.3%	5.7%	7.9%
Not linguistically isolated	20.4%	46.4%	42.6%	23.6%	15.7%
Other Indo-European	4.6%	1.0%	2.6%	4.4%	3.7%
Linguistically isolated	0.5%	0.2%	0.3%	0.6%	0.5%
Not linguistically isolated	4.1%	0.8%	2.2%	3.8%	3.1%
Asian and Pacific Island	21.8%	15.6%	5.3%	13.9%	9.0%
Linguistically isolated	7.9%	7.1%	1.3%	3.6%	2.3%
Not linguistically isolated	13.8%	8.5%	4.0%	10.3%	6.6%
Other languages	0.9%	0.2%	0.3%	1.4%	0.6%
Linguistically isolated	0.1%	0.1%	0.0%	0.2%	0.1%
Not linguistically isolated	0.8%	0.2%	0.3%	1.2%	0.5%
Total Households Linguistically Isolated:	14.7%	27.2%	11.0%	10.1%	10.8%

Note: Linguistic isolation is defined as a household in which no person 14 years old or over speaks English or speaks English "very well." In other words, a household in which all members 14 years old and over speak a non-English language and also speak English less than "very well" (have difficulty with English) is "linguistically isolated." All the members of a linguistically isolated household are tabulated as linguistically isolated, including members under 14 years old who may speak only English (US Census Bureau, 2000).

SOURCE: US CENSUS BUREAU, 2000

LANGUAGES

The communities of the San Gabriel River corridor are also linguistically diverse (see Table 2-3). Of the 39 language categories in the 2000 Census, only one category, Navajo, is not found within the river corridor. In Reaches 3, 4 and 5, the majority of respondents indicated that they speak a language other than English at home. The languages most widely spoken at home include English, Spanish and Chinese. The other prevalently used languages at home include Asian and Pacific Island languages such as Korean, Mon-Khmer or Cambodian, Vietnamese and Tagalong, the primary language of the Philippines.

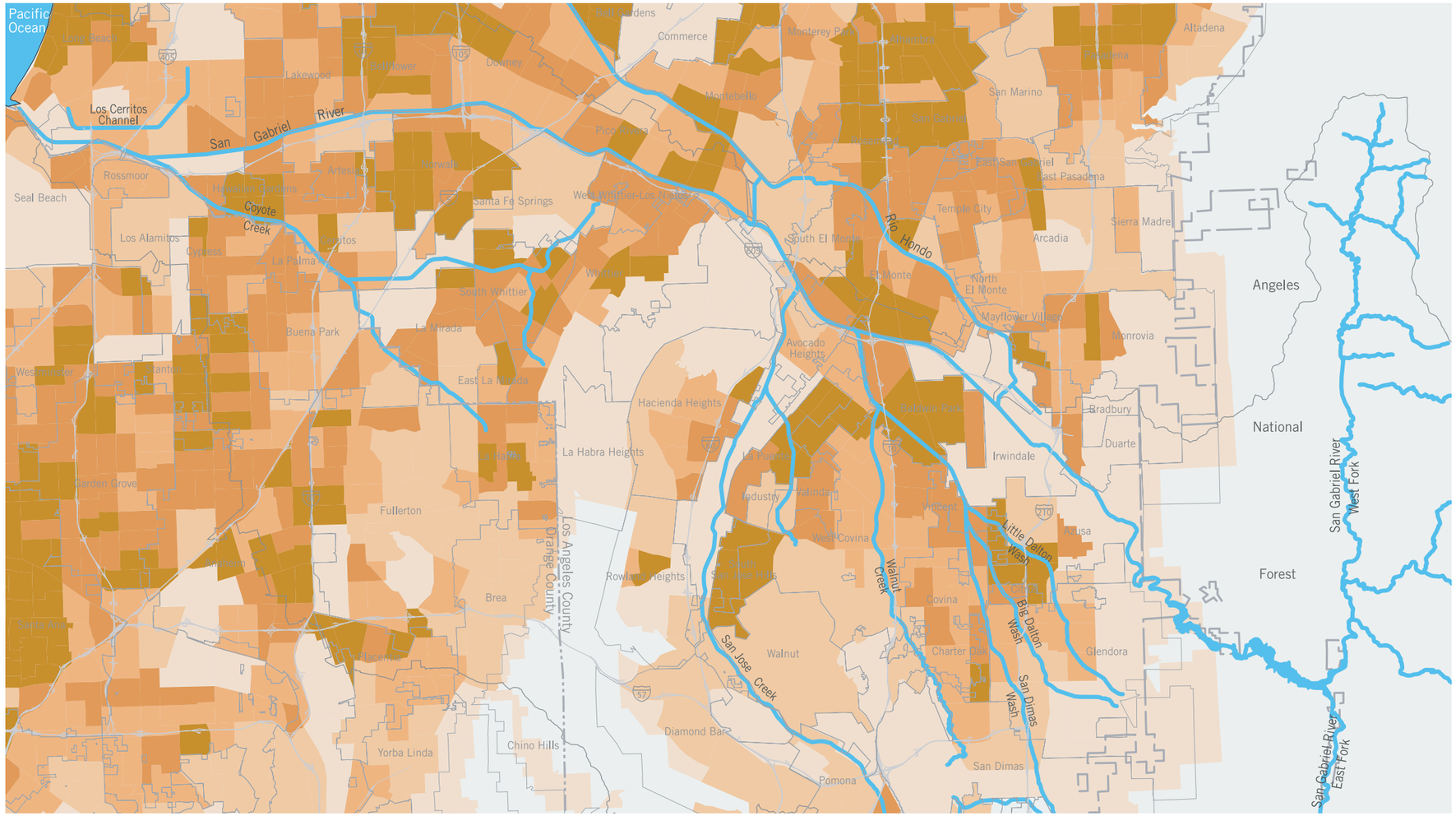
While many living in communities along the river corridor speak languages other than English at home, a subset of this population are also defined as "linguistically isolated" (see Table 2-4). This term, used by the US Census Bureau, describes households in which no one over 14 years of age speaks English or speaks English "very well." More than 10 percent of the population for each river reach is defined as being linguistically isolated, with Reaches 3 and 4 having the greatest occurrences at 14.7 percent and 27.2 percent respectively.

POPULATION DENSITY

Population density is the number of people living within a particular area, measured by the number of people per square mile of area. In 2000, the densest communities included Baldwin Park, El Monte, Norwalk and Bellflower, each of which had an average of over 11,000 people per square mile (see Table 2-5).

The Population Density Map (Map 2-18) is based on data from the 1990 Census (2000 Census data was not available when the map was created). The patterns show areas of very low to very high density along the river. Five categories of population density were developed to create this snapshot, showing the distribution of where people live along the San Gabriel River:

- Very Low: 0–2,400 people per square mile
- Low: 2,401–4,800 people per square mile
- Medium: 4,801–7,200 people per square mile
- High: 7,201–9,600 people per square mile
- Very High: > 9,600 people per square mile



Map 2-18. Population density.

TABLE 2-5. POPULATION DENSITY, 2000

	Total population	Land Area (sq. mi.)	Density (people/sq. mi.)
REACH 3: UPPER SAN GABRIEL VALLEY			
Azusa	44,712	8.9	5,023.8
Duarte	21,486	6.68	3,216.5
Arcadia	53,054	11.11	4,775.3
Irwindale	1,446	9.46	1,52.9
Baldwin Park	75,837	6.8	11,152.5
REACH 4: LOWER SAN GABRIEL VALLEY			
El Monte	115,965	9.69	11,967.5
South El Monte	21,144	2.89	7,316.3
Industry	777	11.89	65.3
Avocado Heights CDP	15,148	2.82	5,371.6
REACH 5: UPPER COASTAL PLAIN			
Whittier	83,680	14.63	5,719.8
Pico Rivera	63,428	8.3	7641.9
West Whittier-Los Nietos CDP	25,129	2.51	10,011.6
Santa Fe Springs	17,438	8.86	1,968.2
Norwalk	103,298	8.74	11,819.0
REACH 6: LOWER COASTAL PLAIN			
Downey	107,323	12.59	8,524.5
Bellflower	72,878	6.15	11,850.1
Cerritos	51,488	8.89	5,791.7
REACH 7: ZONE OF TIDAL INFLUENCE			
Lakewood	79,345	9.5	8,352.1
Long Beach	461,522	65.87	7,006.6
Los Alamitos	11,536	4.0	2884.0
Rossmoor	10,298	1.45	7,102.1
Seal Beach	24,157	11.51	2,098.8

SOURCE: US CENSUS BUREAU, 2000

Altogether, 13 high-density areas are linked with the river: Duarte, two areas in Baldwin Park, El Monte-South El Monte, West Whittier-Los Nietos, Pico Rivera, Norwalk, Bellflower, Lakewood, Lakewood-Cerritos, Long Beach, and Seal Beach (Leisure World).

The most heavily populated areas are in the northern and central areas, Reaches 4 and 5, including the communities of Baldwin Park, El Monte, and Pico Rivera, which lie adjacent to or within a half-mile of the river.

There are other very heavily populated areas in the lower third of the river, within one mile of the river but not adjacent to it: Norwalk-northwest Cerritos, Lakewood-Hawaiian Gardens, and the coast of Long Beach, west of the river mouth.

Reaches 1 and 2

There is very low population density in these two reaches which encompass the wilderness areas of the Angeles National Forest.

Reach 3

This reach also has very low population density, especially in areas adjacent to the river. The area is on the edge of the Angeles National Forest, encompassing both publicly managed and privately owned open space areas. A substantial portion of the area is devoted to industrial land use activities, especially gravel quarries. There are pockets of high population density in the nearby communities of Azusa and Duarte.

Reach 4

The very highest population densities along the river are located in this reach. This includes both Baldwin Park and El Monte, which have population densities greater than 9,600 people per square mile. The very high-density communities of El Monte are directly adjacent to the river, on its west bank. The residential portions of Irwindale and parts of South El Monte directly adjacent to the river have high population densities.

Figure 2-77. This aerial photo shows dense housing along the river in Reach 5.

As the river proceeds further south toward Whittier Narrows, the population densities begin to decrease.

This reach also includes significant areas of very low density, mostly in Irwindale, because of industrial land uses, such as gravel quarry operations that lie adjacent to the river. Portions of these very low-density areas act as a barrier, as they lie between the river and the very high-density communities of Baldwin Park. The Puente-Chino Hills, east of the river at Whittier Narrows, is mostly open space and as a result falls into the very low density category.

Reach 5—Upper Coastal Plain

The reach also has river-adjacent communities with very high-densities, particularly in the City of Pico Rivera. Across the river from Pico Rivera, are the relatively high-density communities of West Whittier-Los Nietos.

Reach 6—Lower Coastal Plain

Reach 6 has many low- to medium-density communities adjacent to the river, most notably Cerritos and parts of Bellflower and Lakewood. Other high-density communities include parts of Norwalk, Lakewood, and Long Beach. There are no very high-density communities adjacent to the river, but densities do increase farther away from the river, for example, in Bellflower, large areas of Norwalk, and Hawaiian Gardens.

A large triangular patch of very low population density at the confluence with Coyote Creek is due to the El Dorado Regional Park.

Reach 7—Zone of Tidal Influence

Communities in this reach are mostly low- to medium-density, with one significant area of very low density, just before densities increase again at the coast.

TABLE 2-6. HOUSEHOLD INCOME BY RIVER REACH (%), 1999

	Reach 3 Upper San Gabriel Valley	Reach 4 Lower San Gabriel Valley	Reach 5 Upper Coastal Plain	Reach 6 Lower Coastal Plain	Reach 7 Zone of Tidal Influence
Less than $10,000	7.9%	9.3%	7.1%	6.4%	12.0%
$10,000 to $24,999	15.6%	22.9%	17.1%	16.1%	21.4%
$25,000 to $34,999	12.0%	15.3%	12.2%	10.8%	12.8%
$35,000 to $44,999	11.1%	12.8%	12.3%	10.9%	10.4%
$45,000 to $59,999	13.5%	14.4%	16.2%	14.1%	11.7%
$60,000 to $74,999	11.1%	9.3%	12.0%	12.4%	9.2%
$75,000 to $99,999	11.7%	8.6%	11.9%	14.0%	9.4%
$100,000 to $124,999	6.9%	3.8%	5.7%	7.4%	5.5%
$125,000 to $149,999	3.7%	1.8%	2.3%	3.5%	2.8%
$150,000 to $199,999	3.4%	0.9%	1.9%	2.8%	2.6%
$200,000 or more	3.2%	0.8%	1.4%	1.6%	2.4%
Median Household Income 1999	$47,759	$41,372	$45,466	$54,068	$55,269
Per Capita Income 1999	$18,651	$11,291	$15,481	$20,381	$30,757

SOURCE: U.S. CENSUS BUREAU, 2000

INCOME

Income levels of households also vary along the river corridor (see Table 2-6). The median household income for 1999 along the corridor varied from $41,372 to $55,269 by river reach. When calculated on a per capita basis, the breadth of annual income for the surveyed year is even broader, ranging from $11,291 to $30,757.

Lower income areas may have less access to open space and recreation resources, relying more on close-to-home resources. This information can be useful in prioritizing areas for investing in open space and recreation.

Land Use and Economic Development

The Land Use Map (see Map 2-19) provides an overview of how people currently use land adjacent to and near the San Gabriel River. This land use map was derived from data developed by the Southern California Association of Governments (SCAG). It divides land uses into five primary land use categories:

- **COMMERCIAL.** This include areas with office buildings, retail stores, restaurants, offices, personal services, hotels and motels, storage and public parking facilities.
- **INDUSTRIAL AND TRANSPORTATION.** This includes light and heavy industrial, mining areas and wholesale and warehousing, and major transportation facilities such as airports, freeways, roads, railways and harbor facilities, as well as all communication and utility facilities.
- **OPEN SPACE.** This includes golf courses, local and regional parks, cemeteries, wildlife preserves, beaches, vacant undeveloped lands, and all agricultural lands.
- **PUBLIC FACILITIES AND INSTITUTIONS.** This includes government offices and other public service facilities, major health care facilities, religious facilities, public and private educational facilities and military installations.
- **RESIDENTIAL.** This includes all single-family as well as multi-family residential, mobile homes and trailer parks and mixed residential areas.

There is a sharp divergence of land use patterns between the Angeles National Forest (Reaches 1 and 2) and in the urbanized areas (Reaches 3 to 7). Reaches 1 and 2 are predominantly open space. There are a variety of land uses in the urbanized areas—residential dominates and open space is relatively sparse. The most significant open space within the urbanized areas are in the Santa Fe Dam Recreation Area, Whittier Narrows, and El Dorado Regional Park in Long Beach.

Industrial areas are concentrated mostly in the northern half of the corridor (Reaches 3 and 4), and toward the southern end of the river as it approaches the ocean (Reach 7). Public facilities and institutions are scattered fairly evenly along the urbanized river corridor. Commercial land uses are largely limited to areas near freeway intersections and along other major east-west corridors intersecting the river.

REACHES 1 AND 2. Exclusively open space (Angeles National Forest).

REACH 3. The most heavily industrialized reach, but with significant amounts of residential (cities of Azusa and Duarte) and open space (Santa Fe Dam Recreation Area).

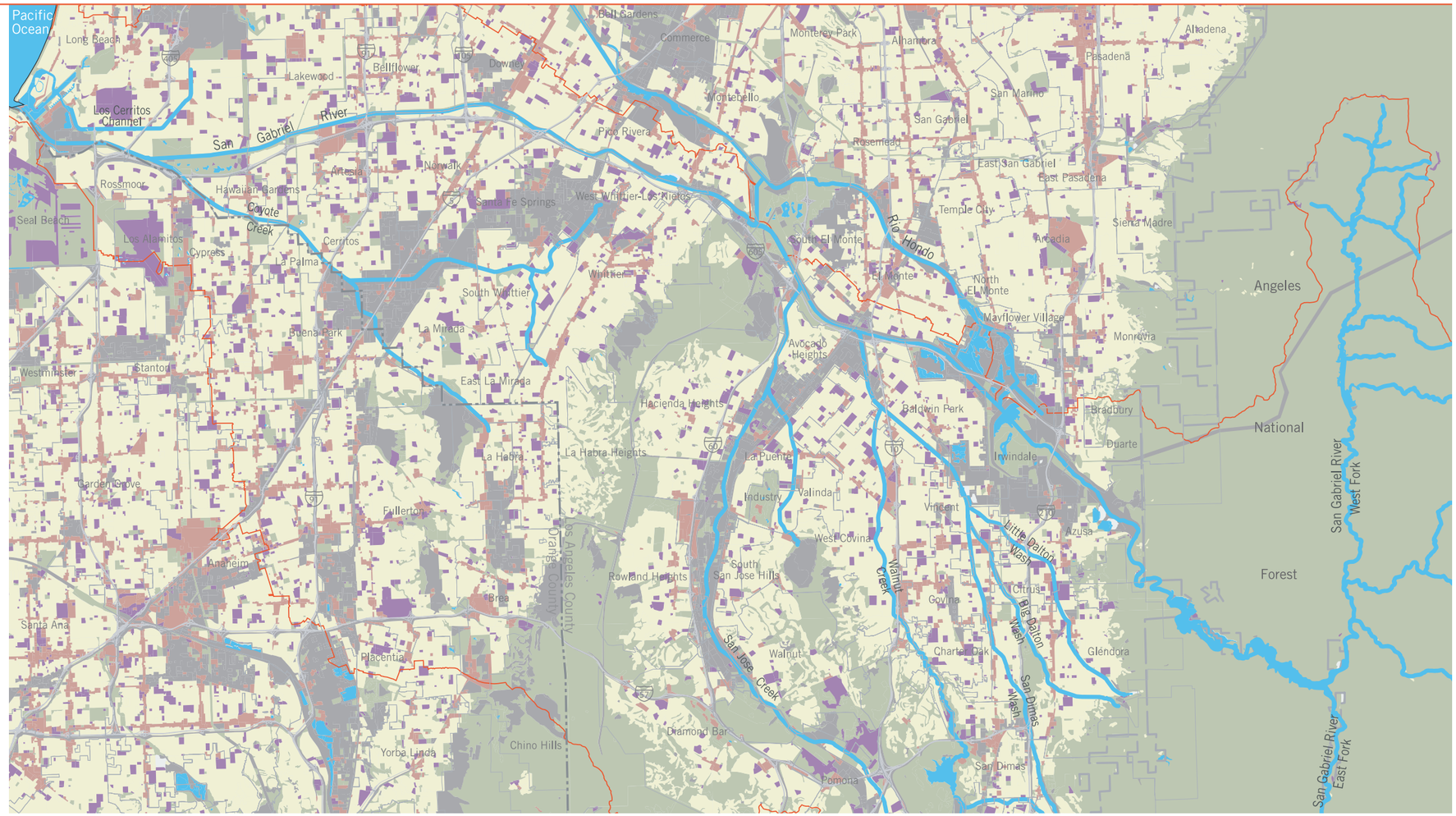
REACH 4. Heavily industrialized, but mostly residential in the middle and lower portions, ending with the most significant open space area outside the national forest (Whittier Narrows).

REACHES 5 AND 6. Primarily residential with some open space.

REACH 7. Primarily residential with some industrial.

Most of the lands adjacent to the San Gabriel River are privately owned residential and industrial land. Southern California Edison (SCE) utility easements and fee-owned properties make up a significant proportion of the privately owned lands.

Public land includes the 605 Freeway, owned and operated by Caltrans, which runs parallel to the river through much of the urbanized area. Other public lands are open spaces and parks, mainly in the upper half of the river (Angeles National Forest, Santa Fe Dam Recreation Area and Whittier Narrows). The lower half of the river has few public lands along the river, except for significant parklands along the Long Beach/Seal Beach segment. Most of the open space is publicly owned, but there are some exceptions, especially in the foothills.



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

MAP PREPARED BY MIG, INC.—DECEMBER 2003

Existing Land Use (Generalized)

County of Los Angeles Department of Public Works

San Gabriel River Corridor Master Plan

Map 2-19. Existing land use (generalized).

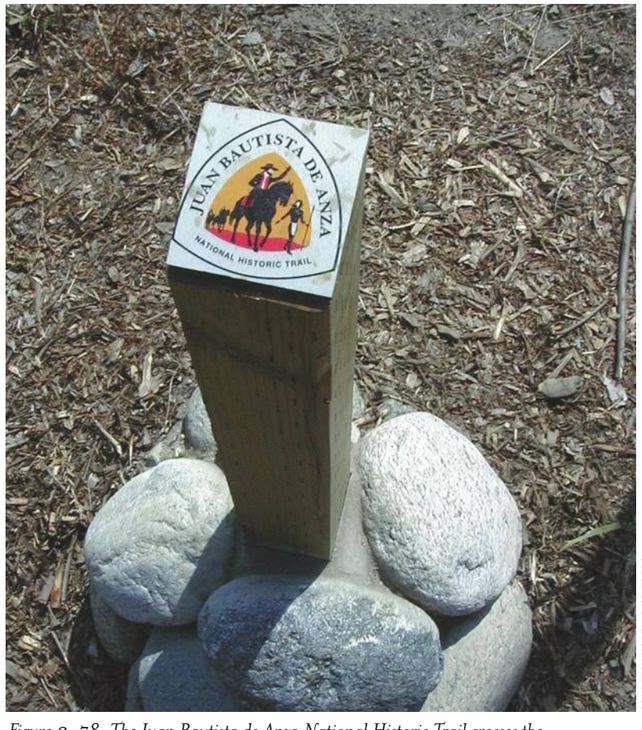
Cultural and Historic Resources

The river region is rich in cultural and historic sites, telling the story of the settlement and development of Southern California.

The RMC created a GIS database of known landmarks within and near the river corridor, based on research documents and its December 2002 survey of local cities. The map created from this database (see Map 2-20) organizes these cultural and historic landmarks into the following four categories:

RMC PROJECTS: cultural and historical projects currently funded by the RMC.

NATIONAL HISTORICAL LANDMARKS: the nation's official list of cultural resources.



COURTESY NORTH EAST TREES

Figure 2-78. The Juan Bautista de Anza National Historic Trail crosses the San Gabriel River in the Whittier Narrows area.

Figure 2-79. The West San Gabriel River Parkway Nature Trail is a new local park in Lakewood.

CALIFORNIA STATE HISTORICAL LANDMARKS: properties of historical importance in California.

CITY LANDMARKS: This map reveals all known landmarks identified by cities that responded to the RMC survey. Although there are many cultural and historic landmarks in the San Gabriel Valley and southeastern Los Angeles County, only a few are within easy walking distance to the river (one-half mile). They are listed below by reach:

REACHES 1 AND 2

No cultural or historic landmarks have currently been identified in these two upper reaches.

REACH 3: UPPER SAN GABRIEL VALLEY

CITY LANDMARKS: Puente Largo Railroad Bridge/Duarte Historical Society (Duarte) and Historic Route 66.

REACH 4

NATIONAL DESIGNATIONS: Juan Bautista de Anza National Historic Trail.

CITY LANDMARKS: Walnut Creek Nature Center (Baldwin Park), Whittier Narrows Nature Center.

REACH 5

CALIFORNIA STATE HISTORICAL LANDMARK AND RMC PROJECT: Casa de Governor Pio Pico and Pio Pico State Park (6003 Pioneer Boulevard, Whittier). A historic adobe home built by Pio Pico, the last Mexican governor of California before the American takeover in 1846.

REACH 6: LOWER COASTAL PLAIN

CITY LANDMARKS: Horse Country (Bellflower), Caruther's Park House (Bellflower), Nye Library (Lakewood), Mae Boyer Park (Lakewood), Monte Verde Park (Lakewood), Rynerson Park (Lakewood), West San Gabriel River Open Space Area (Lakewood) and Lakewood Equestrian Center (Lakewood).

REACH 7: ZONE OF TIDAL INFLUENCE

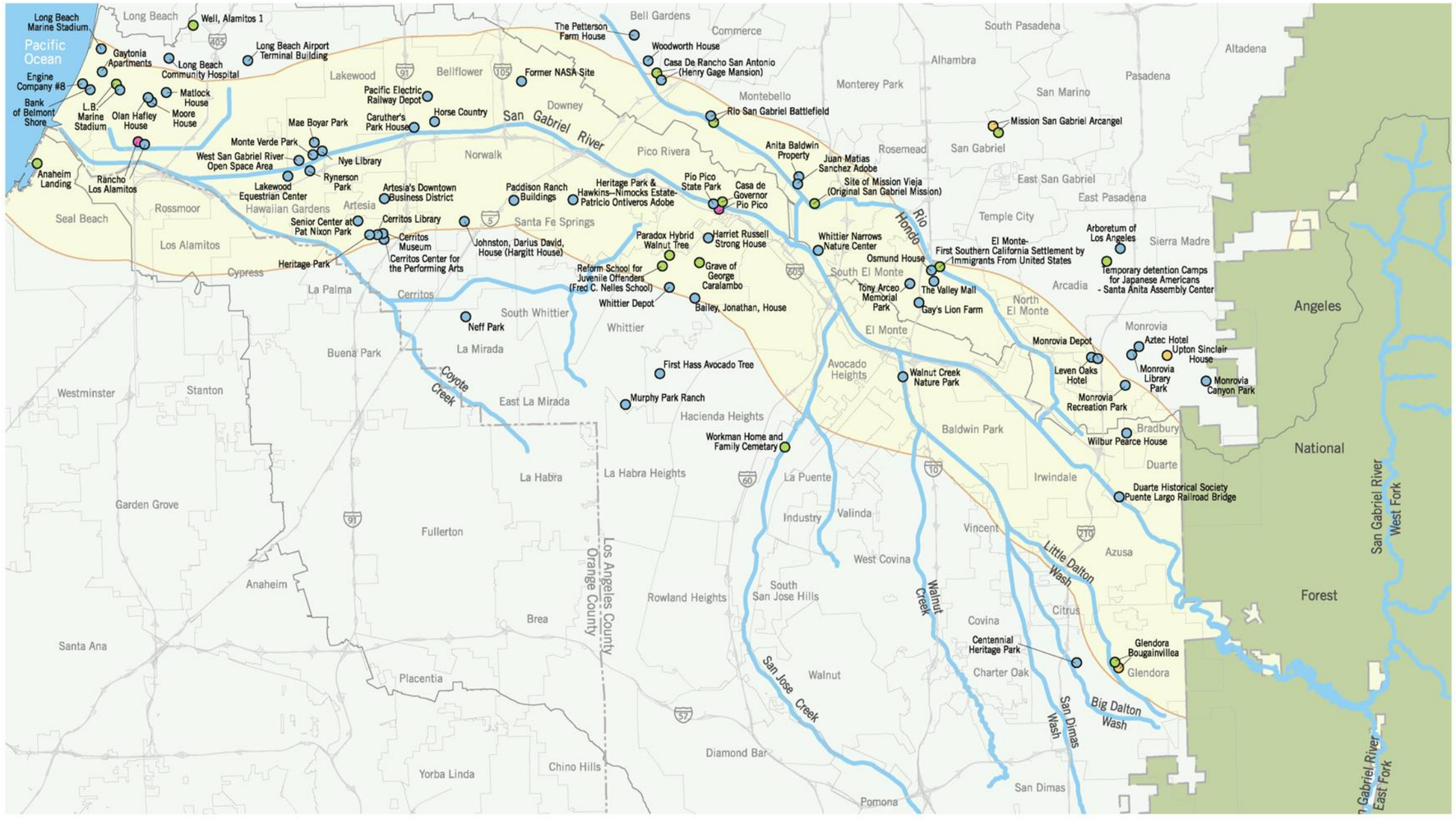
CITY LANDMARK/RMC PROJECT: Rancho Los Alamitos (6400 Bixby Hill Road, Long Beach). A historic18-room adobe ranch house that had its origins in a land grant from the King of Spain, dating from the late 1800s.

ADDITIONAL OBSERVATIONS

There are no National Historical Landmarks within walking distance of the river. However, three sites do appear on the map due to their significance and relative proximity: Mission San Gabriel Arcangel (San Gabriel), Upton Sinclair House (Monrovia) and Glendora Bougainvillaea (Glendora).

The Casa de Governor Pio Pico in Whittier/Pico Rivera is the only California State Historic Landmark on the river. However, two additional sites are located within one mile of the river: Site of Mission Vieja (Whittier Narrows), the original site of San Gabriel Mission on the Rio Hondo, and Anaheim Landing (Seal Beach). There are 10 other state sites within five miles of the river.

Other designated city landmarks within three to five miles of the river are also depicted on the map in the Cities of Bradbury, Glendora, Monrovia, Arcadia, El Monte, Montebello, Bell Gardens, Santa Fe Springs, Whittier and Cerritos.



Map 2-20. Cultural and historic resources.

The RMC will update the database as new data is acquired. It is anticipated that many more city landmarks will appear once surveys are completed.

Public Safety and Hospital Facilities

Public safety is of paramount importance in both current and future uses of the river, and is partially dependent on where public safety facilities are located in relation to the river. Facilities on the map (see Map 2-21) include fire stations, hospitals and police stations. The location of these public safety facilities can be used to assess whether the geographic service areas of fire, police, and other emergency personnel offer sufficient coverage of the river.

The mapping shows that very few public safety facilities are currently located within one-half mile of the river. However, the number of public safety facilities increases significantly at a distance of at least one-mile from the river.

The following is a list by reach of all public safety facilities located within one-half mile of the San Gabriel River:

REACH 1: HEADWATERS

No public safety facilities are located in this reach.

REACH 2: SAN GABRIEL CANYON

Fire Stations

- Rincon Ranger Station (on West Fork)
- County of Los Angeles Fire Dept Camp 19 (on East Fork within one mile of Main San Gabriel River channel)
- East Fork Fire Station

REACH 3: UPPER SAN GABRIEL VALLEY

Fire Stations

- Fire Station (Azusa)

Hospitals

- City of Hope National Medical Center (1500 E. Duarte Road, Duarte; three-quarter mile west of the river)

REACH 4—LOWER SAN GABRIEL VALLEY

No public safety facilities exist within one-half mile of the river.

REACH 5: UPPER COASTAL PLAIN

Fire Stations

- County of Los Angeles Fire Station #40 (4864 S. Durfee, Pico Rivera)
- Fire Station (Florence Avenue, Downey; three-quarter mile from the river)

Police Stations

- County of Los Angeles Sheriffs Station (Passons Boulevard, Pico Rivera)
- California Highway Patrol (Davenrich Street, Santa Fe Springs)
- Police Station (Jersey Avenue/Telegraph Road, Santa Fe Springs)

REACH 6: LOWER COASTAL PLAIN

Fire Stations

- Fire Station (Lakewood)
- Fire Station (Wardlow Road, El Dorado Regional Park, Long Beach)

Hospitals

- Coast Plaza Doctors Hospital (13100 Studebaker Road, Norwalk; three-quarter mile from the river)
- Bellwood General Hospital (10250 E. Artesia Boulevard, Bellflower; just beyond one-half mile of the river)

REACH 7: ZONE OF TIDAL INFLUENCE

Fire Stations

- Fire Station (Long Beach Marina, Long Beach)
- Fire Station (8th Street/Central Avenue, Seal Beach)

Facilities located within one-half mile from the river (a reasonable walking distance from the river) are described below.

FIRE STATIONS

There are nine fire stations close to the river: two in the Angeles National Forest, one each in Azusa, Pico Rivera, Downey, Lakewood, two in Long Beach, and one in Seal Beach. There are six additional fire stations one mile from the river. In general, the fire stations are evenly distributed in the region, approximately 2–3 miles apart.

HOSPITALS

There are three hospitals close to the river, one each in Duarte, Norwalk and Bellflower. There are nine hospitals about one mile from the river on either side, making hospital coverage somewhat evenly distributed.

POLICE STATIONS

There are three police stations, one in Pico Rivera and two near each other in Santa Fe Springs, all in Reach 6. Above Pico Rivera there are no police stations near the river. The nearest ones are approximately two miles from the river, and are located in Azusa, Irwindale and Baldwin Park.

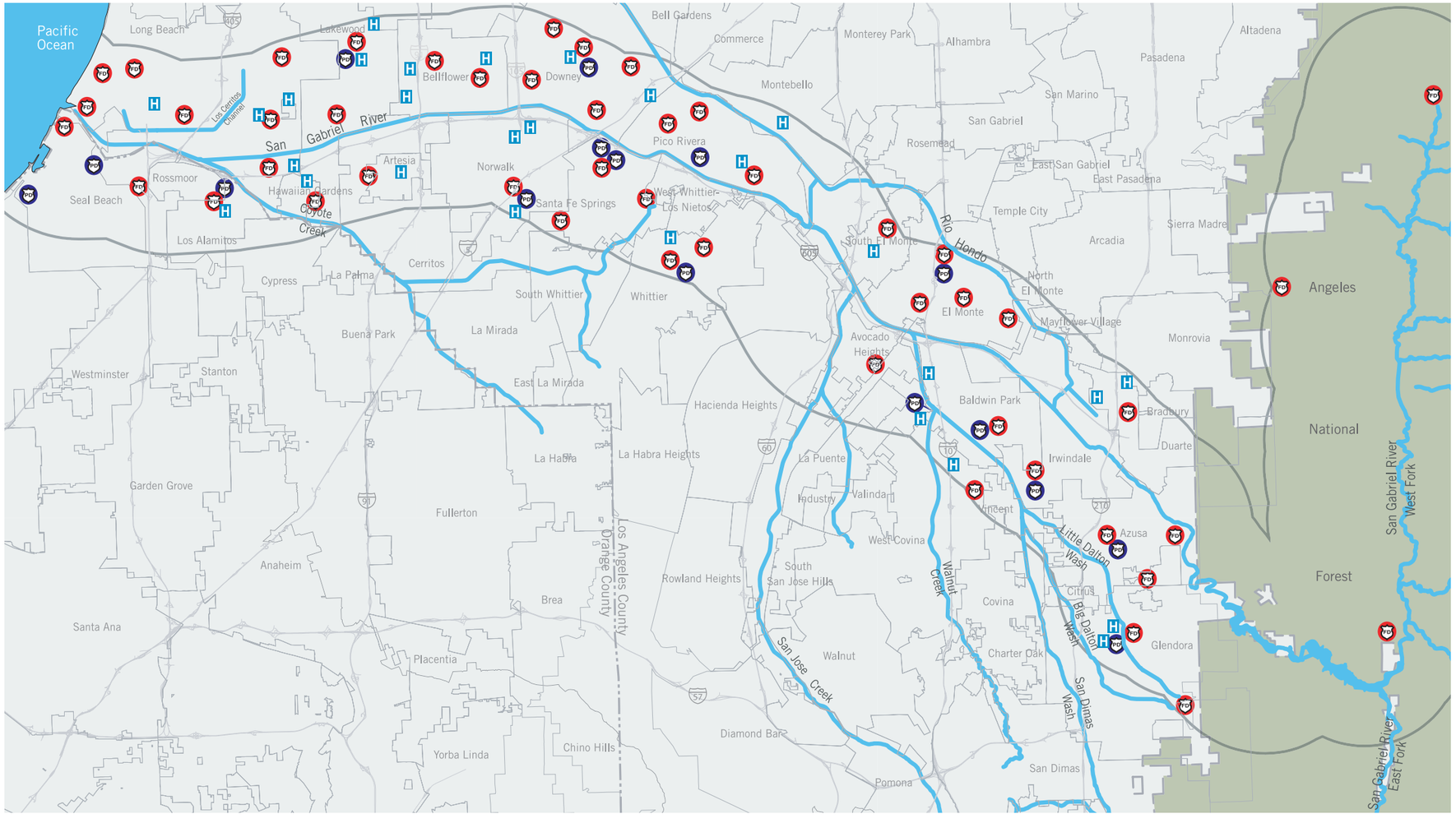
Reach 4 between Santa Fe Dam Recreation Area and Whittier Narrows has no public safety facilities within one-half mile of the river.

The presence of public safety facilities near the river suggests that public safety can be monitored and maintained with increased use of the river. Better signage to these facilities and regular patrols by uniformed officers and trained citizen watch groups can further increase both the real and perceived safety of the river.

Public Health Agencies

Public health issues relating to vector control are part of the river's context and must be considered. A vector is "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," according to California's Health and Safety Code. Wetlands have been breeding grounds for vectors such as mosquitoes in the past. In the early 1900s, public concern about malaria outbreaks led to the implementation of malaria control programs. This led to vector abatement and control legislation in 1915, including the Mosquito Abatement Act. Now, a variety of public agencies are responsible for protecting the residents of Los Angeles County from human disease-causing vectors.

The Infectious Diseases Branch of the California Department of Health Services protects and promotes the health of Californians through the surveillance, investigation, prevention and control of communicable diseases. It also monitors and addresses disease occurrences that have an impact on all local health jurisdictions in the State, and that may affect public health policy on a national and international level. The seven regional offices of the Vector-Borne Disease Section of the branch provide technical consultation and assistance to local vector control agencies to



Map 2-21. Public safety and hospital facilities.

prevent and control vector-borne diseases such as Hanta virus, plague, malaria, tick-borne diseases and arboviral encephalitis.

Mosquito and vector control districts (MVCDs) also play a significant role in public health. These districts are authorized through the Mosquito Abatement and Vector Control District Law (§2000 of California Health and Safety Code), which created special districts to conduct effective programs for the surveillance, prevention, abatement, and control of mosquitoes and other vectors. MVCDs are encouraged to cooperate with other public agencies to protect the public health, safety and welfare. Their authority 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, four of which overlap the San Gabriel River corridor and the cities that line the river. These include:

THE GREATER LOS ANGELES COUNTY VECTOR CONTROL DISTRICT: A special district serving 1,300 square miles of Los Angeles County. The district's mission is to: reduce populations of vectors to below nuisance levels (mosquitoes, midges, black flies and Africanized Honey Bees); prevent human infection associated with mosquito-transmitted disease; guard against human infection associated with other vector-transmitted diseases; and prevent the loss of property values and commercial enterprise as the result of vector occurrence and activity. Jurisdictions in the master plan area that are served by this District include Bellflower, Cerritos, Downey, Lakewood, part of Long Beach, portions of Los Angeles County, Norwalk, Pico Rivera, Santa Fe Springs, South El Monte, and Whittier.

COURTESY CENTER FOR DISEASE CONTROL, US DEPARTMENT OF HEALTH AND HUMAN SERVICES

Figure 2-80. A female mosquito lays her eggs in "rafts."

THE SAN GABRIEL VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT: 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. Communities in the master plan area that are served by this district include Arcadia, Azusa, Duarte, El Monte, Industry, and Irwindale.

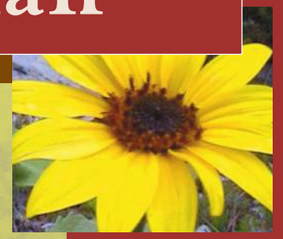
THE CITY OF LONG BEACH DEPARTMENT OF HEALTH AND HUMAN SERVICES/ VECTOR CONTROL PROGRAM: Protects public health and safety by providing vector control services and education to the citizens of Long Beach. These services include control and elimination of insects and rodents that can transmit diseases and education on how to control them. Portions of the City of Long Beach are also served by the Greater Los Angeles County Vector Control District and the Compton Creek Mosquito Abatement District.

THE COUNTY OF ORANGE VECTOR CONTROL DISTRICT: Formed in 1947 to serve all of Orange County, including communities adjoining the San Gabriel River such as Seal Beach and the unincorporated community of Rossmoor.

THE COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH: Maintains a Vector Management Program within the Department of Health, consisting of three units: Vector-Borne Disease Surveillance, Entomology and Vector Control. The objectives of the Vector-Borne Disease Surveillance Unit are to reduce the risks of exposure to the pathogens of vector-borne disease through early detection and abatement of the factors that enhance the transmission of disease to humans. Routine surveillance of such diseases as sylvatic plague, murine typhus, Lyme borreliosis, the various Hanta viruses and arena viruses 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 unit continues to survey and manage the rodent populations within the Los Angeles metropolitan area as part of its response to the historic Downtown Project.

It is critical that mosquito and vector control agencies be consulted during planning and design of river corridor projects, particularly if the project might result in new vector breeding and disease transmission. Wetland and open space projects that are well designed for mosquito and vector control can mitigate potential social and financial impacts. Many innovative approaches to designing and managing constructed wetlands for vector abatement are available.

chapter 3 The River Corridor Plan



CHAPTER 3

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Note: Figures 3-5, 3-53 and 3-67 courtesy of California State Polytechnic University, Graduate Department of Landscape Architecture 606 Studio project, "San Gabriel Confluence Park," sponsored by the Sierra Club Los Angeles Chapter, San Gabriel Valley Task Force.

chapter 3 The River Corridor Plan

3.1 PLAN OVERVIEW

The Master Plan for the San Gabriel River corridor provides a shared, comprehensive vision of the watershed, from the mountains to the ocean. It integrates the multiple goals of enhancing habitat, recreation and open space, while maintaining and enhancing flood protection, water supply and water quality. The Plan identifies priorities, provides guidance, and helps coordinate the over 130 independently sponsored enhancement projects that were identified by the 19 cities along the river, the County of Los Angeles and the many public agencies and community organizations that participated in developing the Master Plan.

The Master Plan reflects the stakeholders' consensus vision of what is possible. This chapter is the heart of the Master Plan, focusing on the concepts for enhancing the river and specific stakeholder projects. It is organized in the following way:

FUTURE VISION. This narrative statement is a portrayal of what the San Gabriel River might be like in coming decades, if the Master Plan is successfully implemented.

PLAN FRAMEWORK. The Plan framework is the guiding structure for realizing the vision and goals developed by the San Gabriel River Steering Committee.

PLAN ELEMENTS. The six Plan elements are Habitat, Recreation, Open Space, Flood Protection, Water Supply and Water Quality, and Economic Development. Each element includes a goal statement and a set of specific objectives and project performance criteria that support that goal.

RIVER ENHANCEMENT PROJECT CONCEPTS. The eight river enhancement concepts are designed to inspire cities, agencies and other stakeholders to create their own projects. They include: Trail Enhancements; Educational Centers; Bridges, Gateways and Connections; Parks and Open Space; Redevelopment and Reclamation; Habitat Enhancement; Water Quality and Water Supply; and Studies.

STAKEHOLDER PROJECTS. The 134 stakeholder projects—new projects and enhancements to existing projects—are presented in the context of the reach in which they are located:

- Reach 1 Headwaters: 7 projects
- Reach 2 San Gabriel Canyon: 8 projects
- Reach 3 Upper San Gabriel Valley: 30 projects
- Reach 4 Lower San Gabriel Valley: 31 projects
- Reach 5 Upper Coastal Plain: 18 projects
- Reach 6 Lower Coastal Plain: 23 projects
- Reach 7 Zone of Tidal Influence: 17 projects

RIVER CORRIDOR-WIDE PROJECTS, POLICIES, PROGRAMS AND DESIGN GUIDELINES. River corridor-wide initiatives will complement and link individual stakeholder projects and will address key issues such as public safety, vector control, maintenance, pollution control, and design image.

CONCEPT DESIGN STUDIES. The five Concept Design Studies are case studies of specific projects that simultaneously address multiple goals and objectives, providing valuable lessons for a multi-objective approach to river corridor planning and project design. They include:

- San Gabriel Canyon Spreading Grounds
- Woodland Duck Farm
- San Gabriel River Discovery Center at Whittier Narrows
- Lario Creek/Zone 1 Ditch
- El Dorado Regional Park

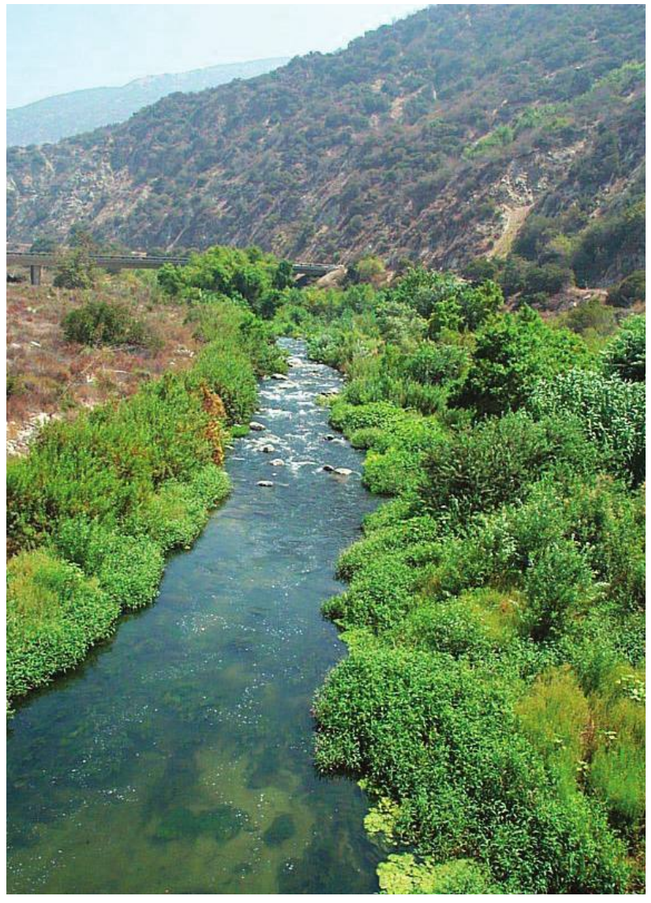


Figure 3-1. The San Gabriel River's natural character is evident as it flows south through the Angeles National Forest to the valley communities of Azusa and Duarte.

3.2 THE FUTURE SAN GABRIEL RIVER

Rediscovering and enhancing the San Gabriel River will be a long process, inspired by the shared vision of the communities of the San Gabriel River Watershed who are working together to make it a reality. The transformation will take time, but as projects are launched along the river, they will slowly but surely lead to dramatic changes. Twenty years from now, a future visitor to the San Gabriel River may find an entirely different place from what we see today...

Spring 2024

I love to take long, leisurely walks along the banks of the San Gabriel River. And, I'm not surprised to see so many others seeking out this green sanctuary that winds through the densely developed cities of the valley and the coastal plain. This is "the river that LA Rediscovered," as a newspaper headline recently put it. Now, the river and the many parks and open spaces lining its banks play a prominent part in the lives of all of us who live nearby. The river has become a very popular gathering place for people from Azusa to Seal Beach to walk, ride their bikes, take in the sights or simply relax and enjoy a bit of the outdoors. And it serves the region in many other ways: after adding just a little more water, life once again flourishes along the river.

From where I stand, near where San Jose Creek approaches the San Gabriel River, I can see children playing along one of the places where it is safe to touch the river and even get your toes wet. To my left, native Sycamore trees shading the bike path cool off the bicyclists who have just stopped for a drink of water and a well-deserved rest. It seems they've been biking to all the education centers that lie along the river. They've just come from the Discovery Center in Whittier Narrows and are heading north to the Peter Schabarum Nature Center by the Santa Fe Dam, and then on to the Forest Gateway Center in Azusa. They had started their journey near the coast at the Los Cerritos Wetlands Restoration Center, and along the way also paid a visit to Pio Pico State Historic Park.

ILLUSTRATION COURTESY OF SIERRA CLUB, ANGELES CHAPTER

Figure 3-2. Local artist Nancy Romero depicted the future of a restored river for people, wildlife and the environment in her painting, "San Gabriel River Confluence Park: A Vision for the Future," commissioned by the Sierra Club.

Until today, I didn't realize that it has become a tradition to combine a trip along the river with visits to all the interpretive centers. This is just another indication of how our perception of the San Gabriel River has changed. Utility rights-of-way are now shared open spaces filled with parks, habitat and people, thanks to new technologies and design concepts that allow multiple uses to co-exist with utility

facilities. We now see the river and the lands adjacent to it as a single, integrated greenway linking all the communities along its path.

From what the bicyclists have been telling me, they have seen many of our natural friends, including some blue herons in the Whittier Narrows area. That used to be a very rare sight, but now it's commonplace. In fact, native wildlife, vegetation and fish are flourishing up and down the river in ways they've not done in decades, even though urban communities lie nearby. A major factor in this restoration is the habitat corridor running from the Puente Hills along the river up into the mountains. There's even a passageway around the Santa Fe Dam to complete the transit for wildlife that in the past couldn't get around that formidable structure.

Part of the habitat corridor is on the landscaped edges of some of the recently reclaimed gravel quarries that lie just to the north of where I now stand. Although many of the quarries are still a vital part of the local economy and will operate for at least two more decades, the first ones to be reclaimed are now an integral part of the new river greenway. A strong public-private partnership between the quarry operators and local cities led to new multi-use developments near the river. Many high-tech companies and other businesses have been drawn to these sites because they offer nearby housing and shops for employees, and provide unique amenities such as parks and natural landscapes with riverfront views.

And there are even more dramatic plans. In a few decades, when all the gravel quarries have ceased operations, we can restore more of the natural floodplain here. We've done that further up the river in Azusa and south at the El Dorado Regional Park in Long Beach. There were large areas of land adjacent to the river that could accommodate a system of setback levees to provide flood control on the natural flood plains. Flood control is, of course, always our main concern, as the massive dams and flood control channels still in place show. However, we have learned how to manage the flood control system to achieve other important benefits. For instance, all new structures and ongoing maintenance take into account the biological needs of wildlife, fish and native plants. You now see fishermen enjoying the results below Morris Dam and other popular fishing spots along the river, including Fish Canyon, where steelhead trout have returned.

Now that I have been walking along the river here for the past hour, I could use a drink of water myself. Fortunately, water is not a problem. We've greatly increased our ability to use water from the San Gabriel River and its tributaries, although we still rely to some extent on imported water. We're even better at capturing stormwater now, handling even the largest amounts of rainfall. And changes in land use practices, such as permeable pavements and expanded groundwater percolation throughout the entire San Gabriel River Watershed, have made it possible.

One of the most important improvements to the river today is clean water. Today, children play in the water without getting sick, unlike the days when trash, bacteria and other pollutants were at levels harmful enough for regular beach closures. Toxic plumes, which once contaminated parts of the groundwater basin, have been thoroughly cleaned up. And, numerous new treatment wetlands in parks and other open space areas along the river remove contaminants and improve water quality—further adding to the water supply. We have also learned how to monitor and maintain these new wetlands so they don't become mosquito breeding grounds. Through these and other water conservation methods, the greatly expanded local water supply has enabled us to add a modest amount of water back into the river —the key to its current transformation—and maintain all existing water rights.

Today, after 20 years of hard work, we can all enjoy the best of what the river has to offer us, while still protecting our homes from flood-waters and meeting our water supply needs. Although it will always be a work in progress, the San Gabriel River has definitely been rediscovered—it is now the common thread that draws people together for inspiration and renewal. I can't wait to see what happens during the next 20 years!

3.3 THE PLAN FRAMEWORK

The Master Plan framework emerged over a three-year period, based on many discussions among stakeholders on the San Gabriel River Master Plan Steering Committee. Its multilevel hierarchy serves as a structure for selecting and planning additional projects. The Plan Framework includes:

VISION STATEMENT. Describes an ideal future condition for the San Gabriel River that will result from successfully implementing the Master Plan.

GOALS. Describe the desired outcomes that must be achieved in order to progress toward the ideal future vision.

OBJECTIVES. Translate the vision and goals into specific, measurable actions and identify what must be done to accomplish the goals. Many objectives are time-specific but others are ongoing.

PROJECT PERFORMANCE CRITERIA. Provide a yardstick to measure progress. Specific projects and programs must meet one or more of the goals and objectives, as measured by the project performance criteria. The criteria act as a reference to assess whether proposed projects and strategies can achieve desired objectives. Criteria are listed by Plan Element on pages 3-6 through 3-11.

RIVER ENHANCEMENT CONCEPTS. Illustrate the types of multi-objective projects that can be replicated all along the river corridor, creating dramatic improvements and an enhanced identity for the river, and helping achieve the vision and goals of the Master Plan.

This Plan framework aligns the shared, long-term vision for the future of the San Gabriel River with the many independently-sponsored projects and programs that are designed to bring about that vision. The Plan Framework is shown on page 3-4.

3.3.1 Master Plan Vision

The San Gabriel River Master Plan Steering Committee developed the overall vision:

The San Gabriel River will be the corridor of an integrated watershed system while providing protection, benefit and enjoyment to the public.

3.3.2 Goals

Initially, the Master Plan responded to three major goals—habitat, recreation and open space—identified by the County of Los Angeles Board of Supervisors when it instructed the Department of Public Works to

SAN GABRIEL RIVER MASTER PLAN FRAMEWORK

COMMUNITY INPUT

Community Vision:
The San Gabriel River will be the corridor of an integrated watershed system while providing protection, benefit and enjoyment to the public.

PLAN ELEMENTS

GOALS	OBJECTIVES AND PROJECT PERFORMANCE CRITERIA (See Chapter 3 text for details on project performance criteria)				
Habitat (H) Preserve and enhance habitat systems through public education, connectivity and balance with other uses.	**H1:** Protect Existing High Quality Habitat and Ecologically Significant Areas H1.1 H1.2 H1.3 H1.4 H1.5 H1.6 H1.7	**H2:** Restore / Enhance Aquatic and Terrestrial Riparian and Upland Habitat H2.1 H2.2 H2.3 H2.4 H2.5 H2.6 H2.7 H2.8 H2.9	**H3:** Coordinate Efforts to Remove Invasive Species H3.1 H3.2 H3.3 H3.4 H3.5	**H4:** Maintain and Enhance Wildlife Corridors as Continuous Linkages H4.1 H4.2 H4.3 H4.4 H4.5 H4.6 H4.7	**H5:** Educate Private and Public Land Owners about the use of Appropriate Plants to Use for Landscaping H5.1 H5.2
Recreation (R) Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses.	**R1:** Improve Access to Recreation for all Communities R1.1 R1.2 R1.3 R1.4	**R2:** Connect Open Space and Recreation Areas with a Network of Trails R2.1 R2.2 R2.3 R2.4 R2.5 R2.6 R2.7 R2.8 R2.9	**R3:** Clearly Identified Recreation Destinations Adjacent to the Corridor as Part of the Riparian System R3.1 R3.2	**R4:** Coordinate Recreational Programming to Reinforce Other Goals and Objectives R4.1 R4.2 R4.3 R4.4	**R5:** Plan Facilities to Meet Multiple Objectives R5.1 R5.2 R5.3 R5.4 R5.5 R5.6
Open Space (O) Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose activities.	**O1:** Create, Expand and Improve Public Open Space Throughout the Region O1.1 O1.2 O1.3 O1.4	**O2:** Improve Access to Open Space and Recreation for all Commnities O2.1 O2.2 O2.3 O2.4 O2.5 O2.6	**O3:** Promote Stewardship of the landscape O3.1 O3.2 O3.3 O3.4 O3.5	**O4:** Develop a Cross-Jurisdictional Safety and Maintenance Program O4.1 O4.2 O4.3 O4.4 O4.5	
Flood Protection (FP) Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration of recreation, open space and habitat systems.	**FP1:** Maintain and Improve Flood Protection FP1.1 FP1.2 FP1.3 FP1.4 FP1.5 FP1.6	**FP2:** Improve Flood Protection Using Natural Processes FP2.1 FP2.2 FP2.3 FP2.4 FP2.5 FP2.6	**FP3:** Improve the Visual Aesthetics of Flood Control Elements FP3.1 FP3.2		
Water Quality Supply (WQ) Maintain existing water and other rights while enhancing water quality, water supply, groundwater recharge and water conservation through integration with recreation, open space and habitat systems.	**WQ1:** Improve Quality of Surface Water and Groundwater WQ1.1 WQ1.2 WQ1.3 WQ1.4 WQ1.5 WQ1.6	**WQ2:** Optimize Water Resources to Reduce Dependance on Imported Water WQ2.1 WQ2.2 WQ2.3 WQ2.4	**WQ3:** Establish Riverfront Greenways to Cleanse Water, Hold Floodwaters, and Extend Open Space WQ3.1 WQ3.2		
Economic Development (ED) Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the San Gabriel River.	**ED1:** Connect Communities to the Waterways by Extended Greenways LU1.1 LU1.2 LU1.3	**ED2:** Implement design and development standards consistent with Master Plan goals LU2.1 LU2.2			

The Plan Framework helps organize current, proposed and future project development efforts and work scopes.

San Gabriel River Enhancement Projects

- **8 Project Concepts**
- **134 Stakeholder Projects**
- **5 Concept Design Studies**
- **Future Project Development Opportunities**

develop a Master Plan for the San Gabriel River. During the two-year information exchange and consensus-building process, the Steering Committee added two goals to acknowledge the vital role of the river and its management for flood protection and water conservation (the abbreviations in parentheses correspond with the Plan framework diagram):

- *Preserve and enhance habitat systems through public education, connectivity, and balance with other uses (H)*
- *Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance, and multi-purpose uses (R)*
- *Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses (O)*
- *Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration with recreation, open space, and habitat systems (FP)*
- *Maintain existing water and other rights while enhancing water quality, water supply, groundwater recharge, and water conservation through the integration with recreation, open space, and habitat systems (WQ)*

An additional goal was added to fully embrace the long term needs of cities along the river that were identified later in the planning process:

- *Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the river (ED)*

3.4 PLAN ELEMENTS

The Plan has six elements that correspond to the goals listed above. The Steering Committee developed multiple objectives that will help meet each goal, and performance criteria that help assess whether proposed projects will achieve the objectives.

3.4.1 Habitat Element (H)

The San Gabriel River can function as a major habitat corridor, connecting fragmented open space areas in Puente Hills and the San Gabriel Mountains. There are many opportunities to replace some of the estuaries, salt marshes, wetlands and riparian habitats that have been lost. For example, the Whittier Narrows area is a critical stopover point for birds on the Pacific Flyway.

Figure 3-3. The river is a de facto habitat corridor adjacent to existing housing development.

The Plan offers opportunities to preserve and restore habitat and wildlife:

- Greater habitat connectivity, enhancements and restoration are possible especially by re-establishing the Puente Hills to San Gabriel Mountains wildlife corridor, and long-term aquatic habitat. In the short term, projects such as the Habitat Passage around Santa Fe Dam provide a key linkage in habitat connectivity along San Gabriel River.
- New wetlands and riparian corridor restoration projects are possible such as the Hellman Ranch Wetlands Freshwater Marsh and Los Cerritos Wetlands Restoration projects will result in over 300 acres of wetland restoration in Seal Beach and Long Beach.
- Native vegetation and landscaping throughout the corridor can lower water use, increase shade and habitat through projects such as the San Jose Creek Habitat and Trail Enhancement Project. This project will increase available habitat through native plants on slopes above the creek.

(See Table, Habitat Element (H), page 3-6)

3.4.2 Recreation Element (R)

The river is already a tremendous regional resource; the mountain area alone has more than 50 hiking trails and a 37-mile bicycle trail running from the edge of the mountains down to the Pacific Coast. Yet, the river can offer many additional recreational opportunities: Horseback riding, bicycling, hiking, picnicking, fishing, swimming, off-road driving, shooting, field activities like soccer and baseball, and even gold panning can be made more accessible to many more residents. The Plan expands and enhances recreation, critical to the almost 4 million residents of the San Gabriel Valley. It includes:

- New and improved access points to the San Gabriel River Bike Trail, as well as other trails to and near the river. In Azusa, the Robert's and Fish Creek Trails can be made more accessible to hikers. In South El Monte, the Thienes Gateway will provide access to trails and a staging area for equestrians. Local schools such as Bellflower High and Cerritos College can benefit from improved bike trail linkages to the San Gabriel River Bike Trail.
- New and improved pedestrian, bicycle and equestrian trails, and bike connections to the Rio Hondo and Los Angeles River bike trails. Rails to trails projects provide communities such as Whittier and Bellflower with improved access to the river. Signage will enhance the usability of existing trails at spreading grounds in Pico Rivera and in Whittier Narrows.

Figure 3-4. The cool river water draws children to the Angeles National Forest.

HABITAT ELEMENT (H)

GOAL: Preserve and enhance habitat systems through public education, connectivity and balance with other uses.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
H1 **Protect existing high quality habitat and ecologically significant areas**	H1.1 Supports Habitat conservation H1.2 Protects threatened and endangered species' habitats, significant ecological areas and significant natural areas H1.3 Enhances specific species that have experienced decline H1.4 Protects habitats from incompatible adjacent uses H1.5 Identifies indicator species and develops standards and monitoring systems H1.6 Balances wildlife and human uses/recreation H1.7 Controls litter and dumping
H2 **Restore/enhance aquatic and terrestrial riparian and upland habitat**	H2.1 Ensures sufficient flow conditions to support riparian river habitats, aquatic species and fisheries H2.2 Uses reclaimed water for irrigation H2.3 Incorporates habitat areas into development on private and public lands and requires mitigation efforts for impacts to existing habitats H2.4 Protects native vegetation and encourages native plant restoration H2.5 Restores and enhances habitats without compromising flood protection, groundwater recharge or public health H2.6 Reconciles habitat enhancement with water quality issues (i.e., some enhancement may cause increased coliform levels) H2.7 Increases acreage of coastal wetland habitats H2.8 Incorporates monitoring and maintenance procedures into restoration plans H2.9 Supports planting levees with native riparian vegetation wherever possible without compromising flood control capabilities and without encouraging vector breeding H2.10 Encourages development of new habitats without compromising essential public services including groundwater recharge, flood protection, or electrical power transmission by offering legal and operational safeguards such as memoranda of understanding that allow access for regular maintenance and emergency operations.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
H3 **Coordinate efforts to remove invasive species**	H3.1 Prohibits planting of listed invasive/exotic plant species in parks, recreation, open space or habitat areas H3.2 Encourages use of native plants in parklands or river corridor and adjacent areas H3.3 Removes invasive species and prevents their spread or migration upstream H3.4 Utilizes Best Management Practices for management of habitat areas H3.5 Mediates issues between stock and native fish
H4 **Maintain and enhance wildlife corridors as continuous linkages**	H4.1 Reduces habitat fragmentation by establishing wildlife corridors and nodes H4.2 Minimizes the effects of barriers and choke points that create impediments to wildlife movement H4.3 Utilizes ecologically responsible methods to maintain or reduce populations of wildlife meso-predators (raccoon, feral cats, opossum, skunk) and rodents that may transmit vector-borne diseases and discourages wildlife encroachment into surrounding urban areas H4.4 Maintains or increases the population of prey species (amphibians, reptiles, small mammals and birds) H4.5 Establishes habitat area design standards to meet the tolerances of the most sensitive species that might possibly use a corridor H4.6 Discourages urban development in floodplain and habitat areas H4.7 Enhances connections between remaining wildlife populations so genetic exchange between populations can resume (between Puente Hills, San Jose Hills, Sante Fe Dam floodplain, Whittier Narrows Recreational Area, Cleveland National Forest)
H5 **Educate private and public land owners about the use of appropriate plants to use for landscaping**	H5.1 Forms business partnerships to encourage residents to use native plants and materials that reflect the river/watershed identity while providing habitat value H5.2 Provides guidelines to coordinate habitat preservation efforts between agencies, jurisdictions, and private lands

RECREATION ELEMENT (R)

GOAL: Encourage and enhance safe and diverse recreation systems, while providing for expansion, equitable and sufficient access, balance and multi-purpose uses.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
R1 **Improve access to recreation for all communities.**	R1.1 Provides active and passive recreation opportunities R1.2 Serves to improve the aesthetic quality of the corridor, the viewshed, and adjacent communities R1.3 Establishes interpretive centers at key nodes along the river system to provide a link between environmental education, recreation, habitat and open space R1.4 Provides educational and interpretative elements that combine art and science for fun, expressive and meaningful exhibits about habitats and landscape processes
R2 **Connect open space and recreation areas with a network of trails.**	R2.1 Provides continuous bike trail, equestrian and public access along riverfronts R2.2 Establishes design standards for trails to safely accommodate multiple users of all ages and abilities R2.3 Includes shade, river access, rest areas, maps/signs, mile markers, landmarks, lighting, emergency call boxes and other amenities for trail users R2.4 Provides for public safety and security along waterways and trails R2.5 Allows trail users to experience a positive sense of the adjacent community's identity as they travel along the river corridor R2.6 Provides a comprehensive network that connects river trails to mountain trails, urban trails, local dams, and beaches R2.7 Connects recreational areas to transit access points R2.8 Provides trails that are designed for low maintenance R2.9 Provides access for routine maintenance and emergency use R2.10 Maximizes access to the river and its related facilities for people with disabilities

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
R3 **Clearly identify recreation destinations adjacent to the corridor as part of the riparian system**	R3.1 Provides site signage and design details to orient visitors throughout the river corridor R3.2 Provides interpretive opportunities with recreational facilities, including informative signage (explaining topics such as natural history, historic landscapes, fire, habitat, stewardship, pollution, hydrology, water supply, etc.)
R4 **Coordinate recreational programming to reinforce other goals and objectives**	R4.1 Provides 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 River R4.2 Provides programming, site design and signage to increase public awareness about riparian systems and engender stewardship R4.3 Encourages Parks and Recreation Departments to incorporate community gardens and pocket parks, demonstration and restoration projects R4.4 Educates the public about the benefits of catch and release fishing
R5 **Plan facilities to meet multiple objectives**	R5.1 Provides habitat where possible and minimizes impacts to adjacent sensitive areas; serves as a wildlife corridor where appropriate R5.2 Optimizes water flow and sediment removal activities for fish habitat to support fishing activities R5.3 Optimizes water flow and maintenance activities for wildlife habitat to support environmental education activities R5.4 Provides for groundwater infiltration where possible to meet water quality goals R5.5 Provides site design, planting, lighting and maintenance to support habitat goals/objectives R5.6 Provides a corridor-wide perspective to minimize use conflicts and mitigate negative impacts

- New parks and recreation areas, created through land acquisition and land use conversions in Santa Fe Springs, Downey, Bellflower and Azusa.
- Environmental education centers and interpretive sites in Azusa at the new Forest Gateway Interpretive Center, San Gabriel River Discovery Center at Whittier Narrows, Rio San Gabriel Interpretive Trail in Downey, and the Hellman Ranch Wetlands in Seal Beach.

(See Table, Recreation Element (R), page 3-7)

3.4.3 Open Space Element (O)

The San Gabriel River is a "living" river, with wide-open spaces, greenery, running water, and the sounds of birds and other wildlife. The Plan includes projects that enhance and reserve open space for future generations:

- Enhancements to existing open space areas within Southern California Edison and Los Angeles Department of Water and Power utility easements. Some improvements are already being made by the Cities of Baldwin Park and Lakewood.
- The open space surrounding reservoirs and spreading grounds can be enhanced selectively for use by the community. The San Gabriel and Rio Hondo Coastal Basin Spreading Grounds in Pico Rivera are currently accessible to the public. Proposed studies also reflect an interest in making the San Gabriel and Morris Dam Reservoirs available for recreational purposes. Care must be taken to maintain public safety and avoid liability as public access is improved at these facilities.
- New habitat areas within the San Gabriel River; it is itself a long, contiguous stretch of open space. Habitat will be created in new open space projects that take place in utility easements, land reclamation projects and numerous smaller projects.
- Gravel quarries, rails-to-trails railroad easements, and old commercial and industrial lands. These areas can be converted and reclaimed over time, yielding additional open space.

(See Table, Open Space Element (O), below)

OPEN SPACE ELEMENT (O)

GOAL: Enhance and protect open space systems through conservation, aesthetics, connectivity, stewardship, and multi-purpose uses.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
O1 **Create, expand and improve public open space throughout the region**	O1.1 Establishes priorities for land acquisition, coordinating targeted land acquisitions with land use planning O1.2 Recycles brownfields with agency collaboration O1.3 Coordinates land management policies and procedures among jurisdictions O1.4 Includes restored native habitats within open space
O2 **Improve access to open space and recreation for all communities**	O2.1 Provides for active and passive recreational uses O2.2 Incorporates passive/low impact recreational uses and stormwater re-capture O2.3 Evaluates access by population density, distance and time for each type of open space. O2.4 Meets site design standards for special user needs O2.5 Improves the aesthetic quality of the corridor, the viewshed, and adjacent communities O2.6 Includes adequate parking, access via public transportation, and facilities for buses
O3 **Promote stewardship of the landscape**	O3.1 Utilizes drought tolerant and native plant materials O3.2 Uses Best Management Practices that support habitat and water quality goals O3.3 Identifies historical sites and cultural landscapes O3.4 Supports community gardens and water-wise and native plant gardens O3.5 Uses conservation easements to provide incentives to expand open space
O4 **Develop a cross-jurisdictional safety and maintenance program**	O4.1 Establishes public safety measures to reduce crime in the river corridor O4.2 Encourages connections with groups that sponsor volunteer clean-up activities O4.3 Promotes fire safety and awareness O4.4 Reduces debris flows O4.5 Reduces habitat and recreational conflicts O4.6 Reduce vector breeding potential and encourages public education of vector-borne diseases and precautions

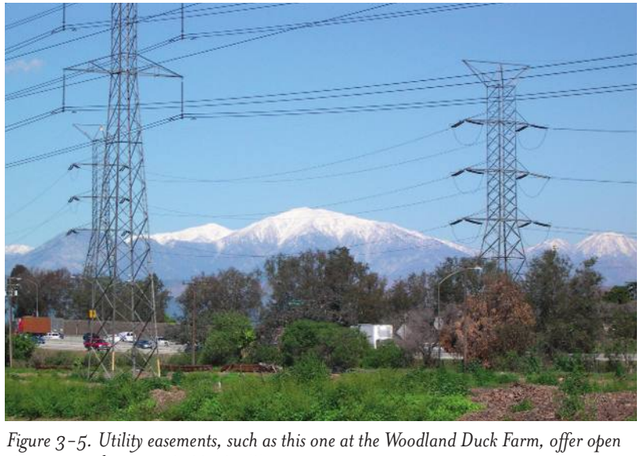


Figure 3-5. Utility easements, such as this one at the Woodland Duck Farm, offer open space area enhancement opportunities.

3.4.4 Flood Protection Element (FP)

The Plan maintains and enhances all existing flood protection elements in two ways. First, all projects, even those that primarily achieve other Plan goals, must maintain existing flood protection at all times. Second, projects should improve flood protection whenever feasible.

Within Reach 4, the river has 5,000 to 30,000 cfs in excess capacity for a 100-year flood event. The vegetation in the reach that is regularly mowed down could be allowed to grow and provide significant habitat. Two short stretches in Pico Rivera and Long Beach are under-capacity for a 100-year storm. These areas present opportunities to develop flood protection measures using natural processes in adjacent open spaces, or further upstream. Feasibility studies may lead to identification of opportunities for pushing out levees for floodplain restoration and increased capacity, thus improving flood protection through natural processes.

(See Table, Flood Protection Element (FP), below)

Figure 3-6. The low-flow channel moves water during the dry season.

FLOOD PROTECTION ELEMENT (FP)

GOAL: Maintain flood protection and existing water and other rights while enhancing flood management activities through the integration of recreation, open space and habitat systems.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
FP1 **Maintain and improve flood protection**	FP1.1 Maintains existing flood protection at all times FP1.2 Reduces volume and velocity of stormwater runoff where feasible FP1.3 Maintains current or lower Water Surface Elevation (WSE) design standards FP1.4 Maintains or reduces floodwater velocity FP1.5 Develops networks of stormwater detention areas FP1.6 Ensures liability is not increased
FP2 **Improve flood protection using natural processes**	FP2.1 Utilizes non-structural flood control where feasible FP2.2 Identifies opportunities for use of naturalized low-flow streambeds FP2.3 Restores local streams FP2.4 Coordinates maintenance of the flood protection system with habitat needs FP2.5 Recycles sediments from sluicing and maintenance operations FP2.6 Reduces the amount of precipitation that is converted to urban runoff (decreases the acreage of impermeable surfaces)
FP3 **Improve the visual aesthetics of flood control elements**	FP3.1 Fosters multi-purpose flood control infrastructure to accommodate recreation, trails and habitat FP3.2 Establishes visual design standards for flood control devices

Figure 3-7. The Rio Hondo Spreading Grounds is one of the San Gabriel River's most productive recharge facilities.

3.4.5 Water Supply and Water Quality Element (WQ)

Residents of the San Gabriel Valley receive water supplies from local rainfall, reclaimed sources, and imported sources (from Northern and Eastern California and from Colorado). Every drop of water flowing in the San Gabriel River is appropriated to a water rights holder. Surface water rights are owned by two entities: the San Gabriel River Water Committee and the San Gabriel Valley Protective Association. The water is then distributed for direct use, or in the case of the Protective Association, it is used to recharge the underground aquifer on behalf of water producers in the San Gabriel River system. The San Gabriel River Watermaster manages groundwater resources in the Main San Gabriel Basin, including administering all adjudicated water rights. The Central Basin Watermaster and West Coast Basin Watermaster have the same roles for those groundwater basins located to the south. Water rights also establish the relationship between surface and groundwater flow from the upper portion of the river above Whittier Narrows to the lower portion of the river, ensuring that the Central and West Coast Basins receive their entitled share of waters within the supply system of the San Gabriel River Watershed.

PHOTO COURTESY OF DAN SLATER

Figure 3-8. Trash is a serious problem in the river.

WATER SUPPLY AND WATER QUALITY ELEMENT (WQ)

GOAL: Maintain existing water and other rights while enhancing water quality, water supply, groundwater recharge and water conservation through integration with recreation, open space and habitat systems.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA
WQ1 **Improve quality of surface water and groundwater**	WQ1.1 Reduces dry weather urban runoff discharge into waterways WQ1.2 Expands and enhances groundwater infiltration and recharge WQ1.3 Uses on-site opportunities to reduce impermeable surfaces and increase infiltration WQ1.4 Assists cities in meeting water quality requirements for Total Maximum Daily Load (TMDLs) and National Pollution Discharge Elimination System (NPDES) WQ1.5 Employs phyto-remediation to treat water
WQ2 **Optimize water resources to reduce dependence on imported water**	WQ2.1 Expands groundwater recharge facilities to increase water supplies WQ2.2 Extends the distribution and range of uses of reclaimed water WQ2.3 Encourages onsite collection of stormwater for irrigation and percolation, where consistent with water rights WQ2.4 Maintains conservation of local water
WQ3 **Establish riverfront greenways to cleanse water, hold floodwaters, and extend open space**	WQ3.1 Utilizes open spaces and landscaped areas to filter and cleanse runoff. WQ3.2 Prevents reduction of water conservation facilities

Master Plan projects must be designed to protect and enhance the existing water supply and water rights. Projects at the local spreading grounds in Azusa, Irwindale and Pico Rivera maintain existing water rights and groundwater recharge. Several water supply opportunities are also included, such as additional recharge opportunities.

Meeting water quality objectives is integrated into the Plan. Implementing Total Maximum Daily Loads (TMDLs, a water quality measurement) is a high priority for municipal stakeholders, and the Master Plan proposes projects to directly address this issue, including treatment wetlands in Irwindale, at the Duck Farm (see Section 3.8.2) and in Long Beach. Other measures include sediment management, a trash boom on Coyote Creek and urban runoff diversion in Seal Beach. The Plan describes Beneficial Uses, as well as 303(d) listed constituents or pollutants to the river and its major tributaries. The Plan also encourages projects that address water quality treatment solutions.

(See Table, Water Supply and Water Quality Element (WQ), page 3-10)

3.4.6 Economic Development

Reconnecting communities to the San Gabriel River by making it a more accessible, visually appealing, and environmentally friendly place can be a principal element in the economic development plans of cities located along the river corridor. The Plan supports and complements economic use of the river that meets environmental goals. Reclaiming old industrial lands, gravel quarries and vacant lots can provide land for mixed-use projects that combine housing, business and industry, commercial developments, parks, habitat areas, and urban river frontage. Although gravel quarries are still active, closure plans such as the one for Hanson Quarry include open space and parkland, as well as industrial and commercial developments. The result will be more opportunities for "riverfront" communities to embrace, rather than fence off the river. Revitalizing the river as a living "greenway" will increase its value for recreation, habitat and people and enhance the value of adjacent properties.

(See Table, Economic Development Element (ED), below)

Figure 3-9. New businesses along the river can capitalize on proximity to the river through the application of quality design and development standards.

ECONOMIC DEVELOPMENT ELEMENT (ED)

GOAL: Pursue economic development opportunities derived from and compatible with the natural aesthetic and environmental qualities of the San Gabriel River.

OBJECTIVES	PROJECT PERFORMANCE CRITERIA	OBJECTIVES	PROJECT PERFORMANCE CRITERIA
ED1 **Connect communities to the waterways by extended greenways**	ED1.1 Creates new access points ED1.2 Develops trails to and along the waterways ED1.3 Promotes development of public spaces	ED2 **Implement design and development standards consistent with Master Plan goals.**	ED2.1 Provides incentives to participating adjacent landowners ED2.2 Educates participating landowners about potential liability and protective measures

3.5 RIVER ENHANCEMENT CONCEPTS

The eight river enhancement concepts, defined by type of physical improvement, are designed to inspire cities, agencies and other stakeholders to create their own projects. Projects based on these concepts can be designed to serve multiple plan elements. Replicating these projects all along the river will create dramatic improvements and an enhanced identity for the river as a whole.

3.5.1 Trail Enhancements

Trail enhancements will create a cohesive, identifiable and comfortable regional trail network, using the river as a framework. As individual projects are completed, they will link to the river and create an enhanced "sense of place" for community residents. Elements in this trail design framework include:

- Signage
- Fencing
- Landscaping (Native plants and trees, stones and boulders as appropriate)
- Trail Surfacing
- Lighting
- Site Amenities
- Gateways

(See Figure 3-10.)

Figure 3-10. Trail enhancements help create an identity for the river.

3.5.2 Educational Centers

Educational centers will inform and educate visitors about the river and its environs—ideal for school and youth groups, as well as casual visitors. A network of centers along the river creates a multifaceted chain of living museum experiences. Each will have a unique program and purpose, depending on location and the local environment. Ecologically designed, these centers touch the river as lightly as possible, incorporating environmentally friendly building materials and the native landscape palette. Centers accommodate both large and small groups, indoors and outdoors. Interpretive elements throughout the landscape also enhance the visitor experience. (See Figure 3-11.)

3.5.3 Bridges, Gateways and Connections

Cohesive design of elements such as bridges, trails and other access points, help create "Gateways" that reconnect the river with residential areas and commercial districts. Gateways provide easily recognized points of access, enhance the river's visibility and identity, and symbolically link it to the communities it flows through. (See Figure 3-12.)

3.5.4 Parks and Open Space

Open space in many forms—parks, playgrounds, greenways, and natural areas—provide residents of the densely developed communities along the San Gabriel River with easily accessible opportunities to enjoy the pleasures of a more natural, varied landscape. New and improved recreational and park facilities along the river carefully balance active recreational uses such as sports fields and playgrounds, with more passive uses that are habitat-friendly. Additional recreation is critically needed for many of the communities along the river corridor. Recreational programming ensures that these uses remain compatible with other functions of the river and builds a larger constituency of groups and individuals who are aware of the importance of the river in their community. (See Figure 3-13.)

Figure 3-11. Educational Centers will draw school groups and visitors.

Figure 3-12. Gateways and bridges signal a river entrance.

3.5.5 Redevelopment and Reclamation

Land reclamation transforms landscapes from previous urban and industrial uses to make them available for other economically viable and ecologically sustainable uses. For example, gravel quarries, old parking lots, exhausted mines and other unused land can become parks, residential and commercial development, restored habitat areas, "green" golf courses and river frontage. Reclamation and closure plans will emerge from negotiation and partnership with the current owners and operators of these properties. The cumulative effect of reclamation along the river offers increased open space, important groundwater protection and recharge, and economic development potential. (See Figure 3-14.)

3.5.6 Habitat Enhancement

Previously, local plant species provided habitat for native fish, birds, and other wildlife. In specific settings on and near the river, protecting and re-creating original environmental conditions can help native plant and animal communities flourish in a place that was once their natural home. Where feasible, hydrological and biological functioning of the river and wetlands is being restored to support native plant and animal communities. This includes removing the exotic plants that have now overwhelmed the local plant species. And new connections between existing habitat areas will help wildlife negotiate an otherwise dense urban area. (See Figure 3-15.)

3.5.7 Water Quality and Supply

Spreading basins, bio-engineered wetlands, rubber dams and other water resource enhancement projects expand water supply capabilities such as groundwater recharge, while also helping cities and agencies meet water quality objectives. The cumulative impact of water supply projects will increase the local water supply, increase the use of reclaimed water, and decrease the amount of imported water needed. Water treatment will provide cleaner waters for other beneficial uses such as recreation and habitat.

By mimicking natural water purification processes, bio-engineered wetlands and streams can effectively meet the objectives of multiple plan elements. Wetlands usually occur along riparian corridors or in artesian areas where the groundwater table is high and where water appears on the surface when the ground is saturated. Engineers and planners can design bio-engineered wetlands in large open spaces downstream of areas where industrial, commercial or heavy residential uses generate polluted stormwater runoff. As shown here, new wetlands send urban runoff through a filter of

Figure 3-13. More people will be able to enjoy recreation along the river.

Figure 3-14. Reclamation projects can creatively blend engineering and ecology.

Figure 3-15. New habitat areas can be designed to allow controlled public access and habitat-friendly uses.

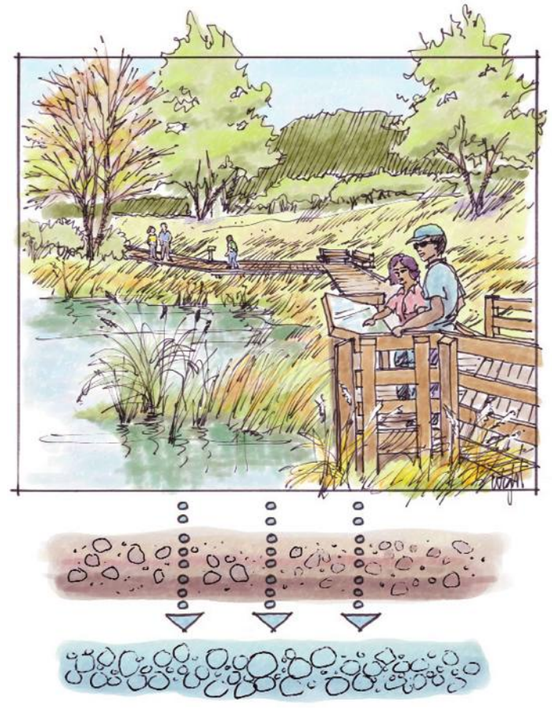


Figure 3-16. Bio-engineered wetlands can increase the local water supply and provide passive recreation opportunities.

vegetation and soil that cleanses the water. Water either percolates down and recharges the groundwater, or continues as a surface stream back to the river. (See Figure 3-16.)

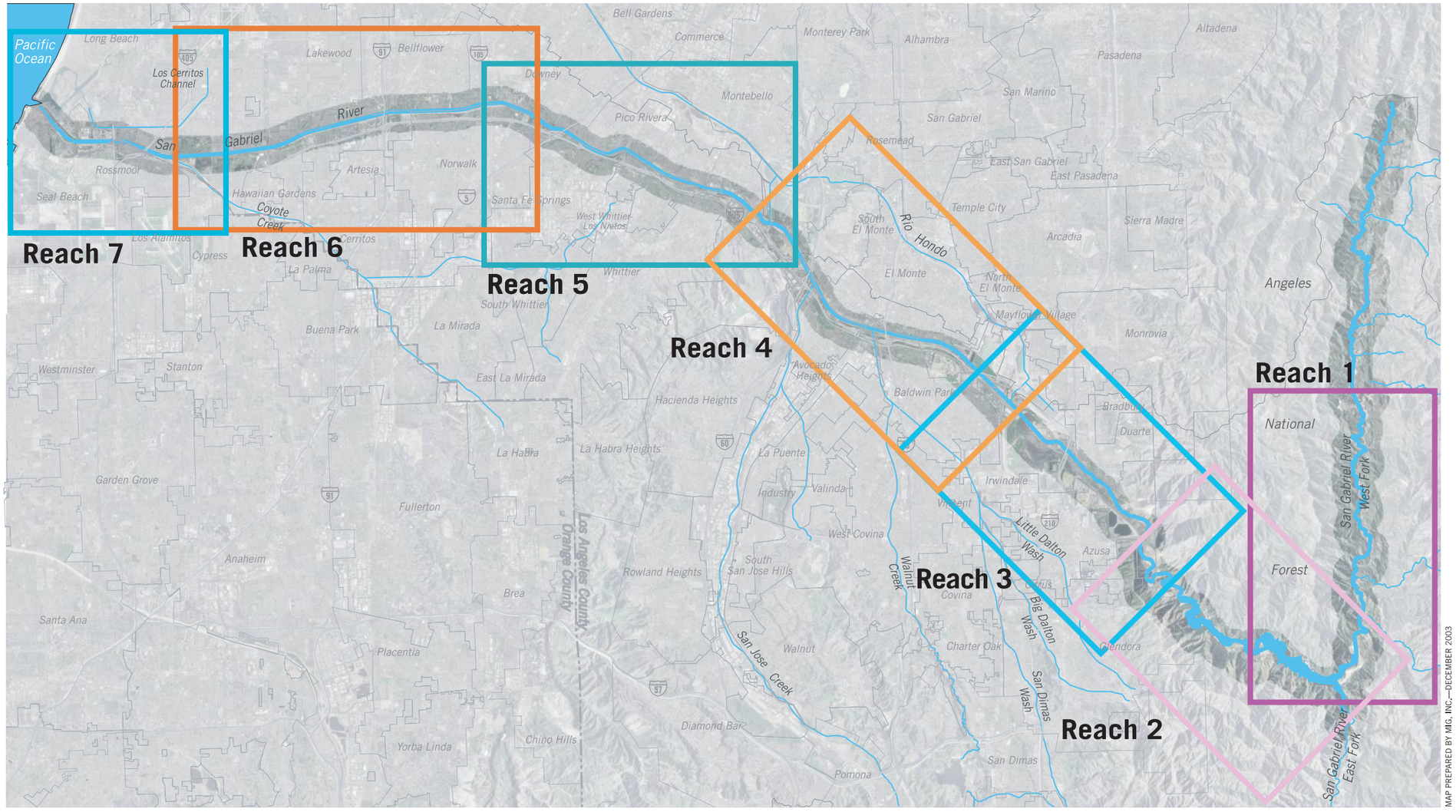
3.5.8 Studies

Technical and social feasibility research is now exploring the potential for river enhancement projects at specific site locations. These studies will determine the viability of a suggested opportunity, evaluate optional project designs, estimate costs and benefits, and identify likely funding sources—and may lead to specific projects at these targeted locations or to policy changes at a local or regional level. Other studies are larger in scale, looking at complex systems such as watersheds on a regional basis. These special studies will determine the best long-term management strategy for ecosystem and economic health, land use and water resource management decisions. Specific project and policy recommendations will be derived as well. (See Section 1.5 for more information.)

3.6 MASTER PLAN PROJECTS

Stakeholders representing cities and government agencies, and representatives of local community-based non-profit organizations, developed 134 river enhancement projects (categorized here by reach). They are either entirely new projects or an enhancement of an existing project to increase its river-friendly functioning. Implementing these projects all along the corridor will help achieve the future vision of the river.

Each project is labeled on reach maps and color-coded by the river enhancement concept that best applies (see Sections 3.5.1–3.5.7). Virtually all projects are multi-objective and fall into several river enhancement concept categories. The accompanying text contains key information about each project. Taken together, the reach maps provide a graphic picture of the spatial distribution of projects and the stakeholders' collective vision. In addition, a summary overview is available in the Master Plan Projects Action Grid (Appendix A).



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Key to Master Plan Reaches

County of Los Angeles Department of Public Works

San Gabriel River Corridor Master Plan

Map 3-1. Key to Master Plan Reaches.

3.6.1 Reach 1: Headwaters

Location

This reach plays a special role in the development of the river as we know it today. The West Fork of the San Gabriel River actually begins about 12 miles above Cogswell Dam at the very top of the watershed, near Red Box. It has a unique west to east flow at that point, through undisturbed riparian and woodland habitats. The project area begins near Cogswell Dam. The West Fork flows east from the dam for about 8 miles, where it meets the North Fork, then for another 2 miles to its confluence with the East Fork of the river. (The North Fork and East Fork are not in the project area.)

Character

Located completely within the Angeles National Forest, the Headwaters Reach is characterized by wide, steep canyons, heavily forested slopes and a natural river bottom providing habitat for native fish and other wildlife. Only here in the headwaters is the river unaltered by human-built structures (with the exception of the Cogswell Dam) and is mainly uninhabited. This reach captures the heaviest rainfalls in the watershed, over 30 inches a year, which results in significant flows during the winter and early spring.

Key Issues

As it passes through the Angeles National Forest, the San Gabriel River's West, North and East Forks offer tremendous recreational opportunities for the heavily urbanized communities of LA County. About 3.5 million people visit the Angeles National Forest each year—with inevitable effects on the forest and river environments. The issue is how to balance vitally needed recreational use while protecting delicate habitat areas and maintaining flood prevention, water quality, and other beneficial river functions.

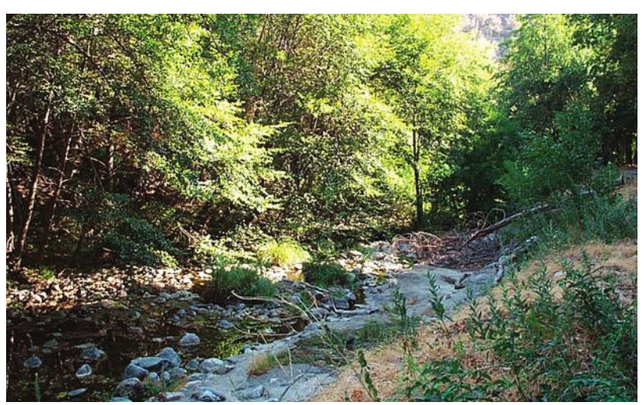


Figure 3-17. The West Fork is a pristine environment.

Projects Overview

Two significant planning efforts are underway for the river and forest: the San Gabriel River Watershed Management Plan and the Forest Plan. These plans will have a significant impact on natural resource management in both the Angeles National Forest and the urbanized areas of the watershed. Among the projects proposed for the Headwaters Reach are two that have been initiated by recreation-interest groups and include about 5 miles of new trails. Those projects can play an important role in protecting the river's natural beauty while providing recreational opportunities for their members and other enthusiasts. Each project presents possible solutions that can be applied to future efforts, especially as continued population growth places more pressure on the Angeles National Forest. (See Map 3-2 for locations of Reach 1 projects.)

R1.01 Fisherman's Trail Above Cogswell Dam

The Fly Fishers Club of Orange County (FFCOC) has proposed establishing a recreational easement (Trail) across or around the LADPW facility at Cogswell Dam allowing access to the upper West Fork of the San Gabriel River. Pedestrian access to the River was blocked by completion of Cogswell Dam in 1934. Project implementation will require close coordination with LADPW and the U.S. Forest Service. Access to the West Fork of the San Gabriel River above Cogswell Dam now requires a very long hike through the mountains from the area near Mt. Wilson. A trail around Cogswell Reservoir would involve access through LADPW and USFS controlled property. An alternative route would require a new trail around either the north or south side of the reservoir. The Project's scope could be expanded to include access across or around Cogswell Dam, which was recently closed by LADPW due to increased security considerations. This recent closure cut off access to the existing Devil's Canyon trail, the San Gabriel Wilderness area and the stream in Devil's Canyon. The Fisherman's Trail project might be able to provide access to both the West Fork and to the existing Forest Service trail into Devil's Canyon.

R1.02 Sediment Management Plan (Cogswell Reservoir)

Under the Sediment Management Plan, Cogswell Dam will be cleaned out about every 10 years, by means of mechanical excavation. NEPA and CEQA reviews for the Sediment Management Plan were concluded in 1997 and 1998, respectively.

R1.03 Long Term Management Plan: West Fork, San Gabriel River

This plan, developed in 1989 by the West Fork Working Group (WFWG), addresses management of the West Fork, including Cogswell Reservoir. The WFWG includes the USDA Forest Service, County of Los Angeles Department of Public Works (LADPW), California Department of Fish and Game, California Trout, Incorporated, Main San Gabriel Basin Watermaster, San Gabriel Valley Protective Association, and the San Gabriel Water Committee. Six objectives of the Plan include flood control, dam safety, water rights, fisheries optimization, recreation and land use management.

R1.04 Forest Master Plan Update

The four southern National Forests including Angeles, San Bernardino, Los Padres and Cleveland, are updating their Master Plans. The Forest Plans address issues of resource management, recreational access issues, habitat and other concerns of forest stakeholders.

R1.05 Off-Highway Vehicle Area Improvements

Near the eastern edge of the Headwaters Reach, just above its confluence with the East Fork, is a large, flat river bottom area that is a favorite spot with off-highway vehicle users. The Azusa Canyon Off-Roaders Association (ACORA) is proposing improvements to existing stream crossings and habitat restoration for the Santa Ana sucker to minimize impacts from off-road vehicle use, while providing selected amenities for the benefit of off-highway enthusiasts and other river visitors.

Figure 3-18. Off-road vehicle enthusiasts often congregate at the East Fork confluence.

Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Map 3-2. Master Plan Projects: Reach 1.

R1.06 San Gabriel River Watershed Management Plan Above Whittier Narrows

This planning study by the San Gabriel Mountains Regional Conservancy (SGMRC) is funded by Proposition 13. The project will develop land use-based recommendations that address water quality and supply, habitat, recreation and open space, and land and water stewardship opportunities. The "Think River! Youth Watershed Conference" is an outgrowth of this project. Within the Angeles National Forest, the focus will be on the heavily used areas of Highway 39 and the North and East Forks of the San Gabriel River. In the lower urbanized sub-watersheds of San Jose and Walnut Creeks, the focus will be on water quality, education, stewardship, habitat linkages and open space.

R1.07 San Gabriel Watershed Habitat Restoration Assessment Project

This study will augment the San Gabriel River Watershed Management Plan (R1.06) by mapping and assessing current habitat conditions in the San Gabriel River Watershed. It will also evaluate the opportunities and constraints for habitat restoration along urban corridors, undeveloped areas, and protected open spaces in a manner that will also protect other resources such as water quality. Attention will be given to potential wildlife corridor improvement opportunities and protection of regional species biodiversity.

3.6.2 Reach 2: San Gabriel Canyon

Location

The San Gabriel Canyon Reach is about 8 miles long. It begins where the main stem of the river joins the East Fork and turns south, and ends at the mouth of the canyon, 1.5 miles south of Morris Dam, just before entering Azusa. A natural flowing section of the river meanders between the San Gabriel Dam and the Morris Dam Reservoir.

Character

This is a breathtaking reach, still within the Angeles National Forest. Here, the river widens as it turns southward and travels down the dramatically steep San Gabriel Canyon. Two major flood control facilities, the San Gabriel and Morris Dams and Reservoirs, are key features of this stretch. The San Gabriel Dam backs sediments up into the East and West Forks—the original river bottom may be 100 feet or more beneath the decades of sediment build-up behind the reservoir.

Figure 3-19. The steep slopes of San Gabriel Canyon provide a dramatic backdrop to the meandering San Gabriel River.

Key Issues

The San Gabriel Canyon Reach has significant recreational potential, but that must be carefully balanced with fundamental flood protection, water supply and water quality functions that take place here.

Projects Overview

Several of the projects in this reach explore the recreational carrying capacity of the river, particularly as they relate to water. The projects determine whether and where river water might be used for recreational pursuits, how to protect water quality where visitor access is deemed feasible, and whether to add water to create year-round flows adequate for supporting fish habitat. These projects could add 40 acres of park and open space and 2 miles of additional trails. (See Map 3-3 for locations of Reach 2 projects.)

R2.01 Black-Fly Vector Research

On behalf of the FFCOC, a funded research study conducted by consultants of the San Gabriel Mountains Regional Conservancy is evaluating the river's black fly populations, a source of fish food. Fluctuations in black fly populations have implications for stream ecology, interdependent organisms, bio-indicators, as well as human health and vector control methods.

R2.02 San Gabriel Reservoir Recreational Study

This 1992 LADPW study investigated expanding non-water oriented recreational activities at or near the reservoir. Its recommendations need to be updated in light of today's increased security considerations.

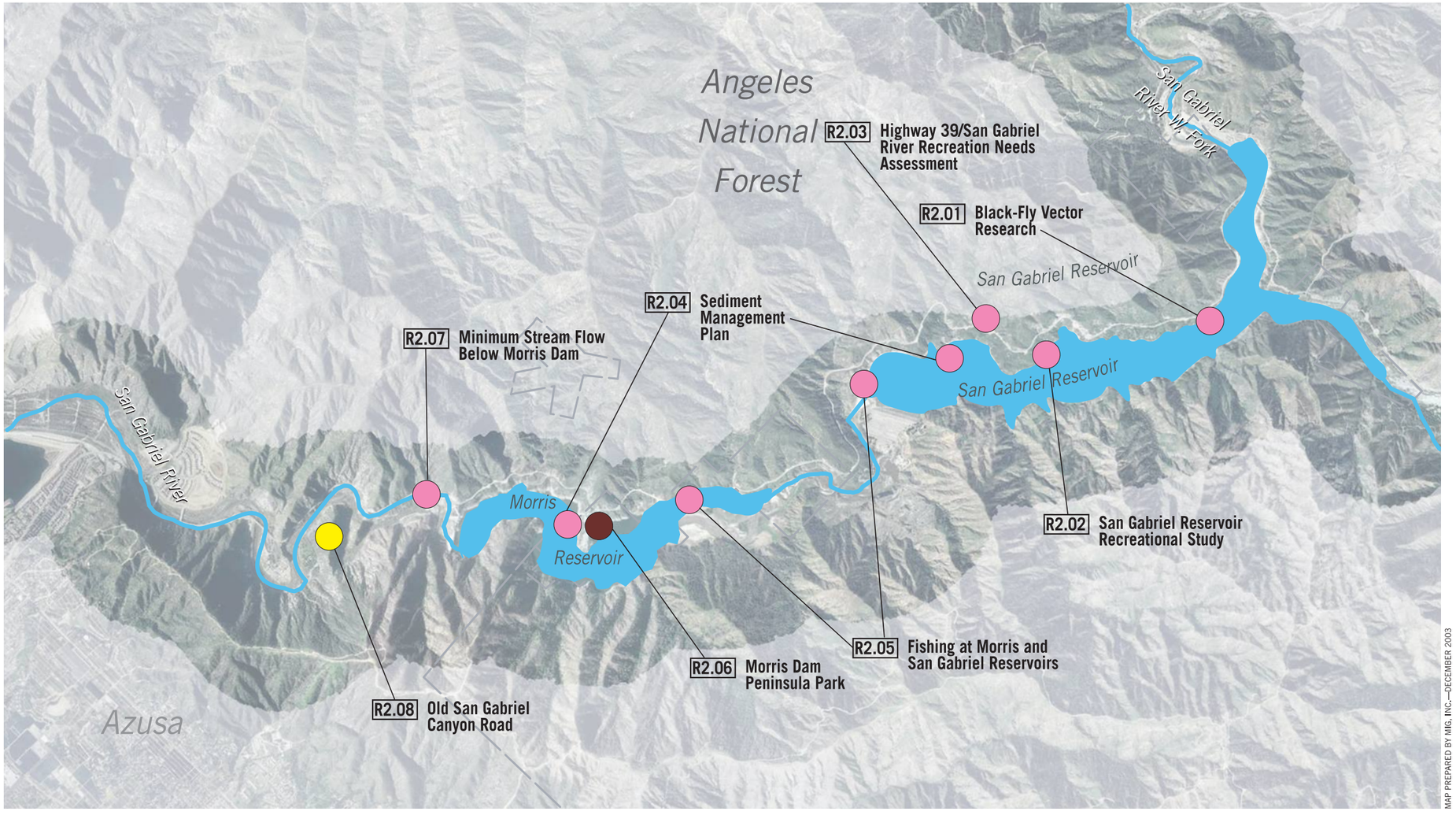
R2.03 Highway 39/San Gabriel River Recreation Needs Assessment

The SGMRC is developing a proposal to address issues relating to high usage along the Highway 39 area of the river, for a Proposition 13 Nonpoint Source Pollution grant. A significant amount of trash has accumulated in the river and along Highway 39. Toilet facilities are insufficient for the thousands of visitors, and more parking, trash and ash receptacles, and information/interpretive kiosks are needed. A needs assessment study will explore current recreational usage and needs, as well as potential impacts on habitat and water quality.

Figure 3-20. Lack of visitor facilities and amenities are serious issues for visitors to the Angeles National Forest.

R2.04 Sediment Management Plan (San Gabriel Canyon)

A current LADPW study explores options for removing sediment that has accumulated behind both the San Gabriel Dam and the Morris Dam. In the wake of the 2002 Curve and Williams Fires, LADPW is planning to undertake a 5-million cubic yard emergency clean out of San Gabriel Reservoir, which is anticipated to start in 2004 and last for several years.



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Map 3-3. Master Plan Projects: Reach 2.

R2.05 Fishing at Morris and San Gabriel Reservoirs Study

This FFCOC study will investigate the feasibility of providing limited access to Morris and San Gabriel Reservoirs for non-body contact fishing and related recreational activities, including allowing float tubes and non-motorized boats onto the reservoirs. The feasibility study will use the existing Department of Health Services Guidelines for non-body contact public access onto reservoirs, and access limitations successfully employed at other locations where recreational fishing is permitted at public reservoirs. It will address all concerns related to necessary operations at LADPW facilities. The study recognizes that access may be seasonally limited, with further restrictions required to accommodate maintenance of the reservoirs and associated facilities. As with all projects in the Master Plan, it will be important to ensure that the multi-objective framework of habitat, recreation, open space, flood protection, water quality, and regulatory compliance is maintained. Both LADPW and the Upper San Gabriel Valley Water District will jointly fund the feasibility study.

Figure 3-21. The U.S. Navy tested over 50 types of torpedoes and bombs in the Morris Dam Reservoir during World War II.

R2.06 Morris Dam Peninsula Park

The largest available open space along the national forest section of the river, this 40-acre peninsula juts into the Morris reservoir at the former site of a Navy torpedo testing facility adjacent to Highway 39. It can be reclaimed and developed for recreational day-use, over-night camping, trails and an interpretive center for the national forest, including a historic military interpretive site. The development of this park would provide additional needed park facilities with parking and other site amenities to relieve the serious weekend congestion of Angeles National Forest visitors.

R2.07 Minimum Stream Flows Below Morris Dam Project

Upon further consideration among all interested groups, this proposal is withdrawn for the time being.

R2.08 Old San Gabriel Canyon Road

This two-mile County service road extends south from Morris Dam at a pump station down to Azusa by the El Encanto Restaurant. A City of Azusa project, this road can provide river access for hikers and bikers and could also be linked to the nearby San Gabriel River Bike Trail via the Canyon Inn and El Encanto properties. A safe crossing of Highway 39 is needed.

3.6.3 Reach 3: Upper San Gabriel Valley

Location

The Upper San Gabriel Valley Reach extends seven miles from the mouth of the San Gabriel River Canyon above Azusa, south to the Santa Fe Dam in Irwindale.

Character

This complex, tenuous urban/wildland interface features large remnants of natural wilderness that commingle with residential, gravel mining and industrial land uses. The mouth of the canyon opens up to the broad alluvial plains of the Upper San Gabriel Valley in Azusa as the river leaves the mountains. This reach lies above the San Gabriel Basin, which begins at the base of the impermeable bedrock layers of the mountains. The reach has very deep alluvial deposits, offering some of the most productive recharge opportunities in the river system. The river itself is mainly in a natural state with sandbars and riparian and alluvial fan sage scrub habitat. However, the soft-bottomed channel is confined to engineered

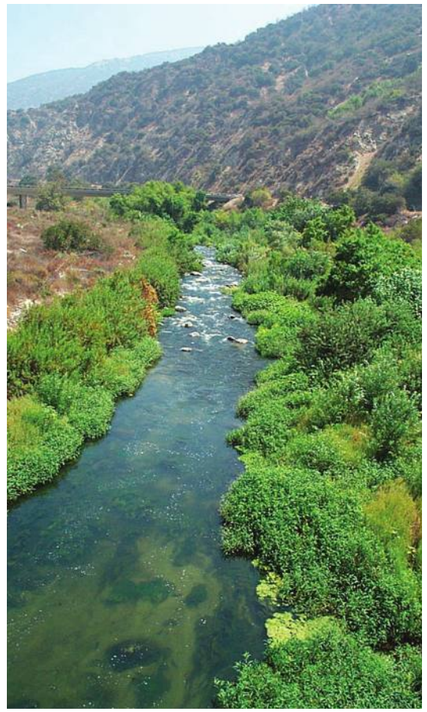


Figure 3-22. The river flows through a natural floodplain in this area.

levees and check dams crossing the river at regular intervals. The Santa Fe Dam Recreation Area is a large open space with stands of alluvial fan sage scrub.

Key Issues

This “edge zone” is in a period of transition. Over the coming decades, quarry sites and other industrial uses will gradually phase out, creating significant restoration opportunities for parks, trails and habitat, as well as economic development opportunities. Land acquisition for open space protection of remaining undeveloped lands is a long-term strategy. In the

short-term, more readily available river access can be provided, while also retaining all-important flood prevention and water conservation functions. Access to in-mountain creek trails is difficult.

Projects Overview

More than half of the 29 projects proposed for this reach are trails or similar projects that can reconnect people to the nearby, but inaccessible, river. Other projects aim to create new parks and open space that restore natural beauty to the area and provide habitat. New and re-opened interpretive centers will help explain the area's natural and cultural significance. (See Map 3-4 for locations of Reach 3 projects.)

R3.01 Azusa Canyon River Park

This City of Azusa project aims to acquire land to develop a river-focused park at the southern end of San Gabriel Canyon. It includes a visitor's center surrounded by a native plant garden, interpretive signage, restored habitat areas, and paths leading down to the river. Landscaping, picnic tables and a small play area will encourage national forest users to visit. Camping in a natural park area will be available. The City of Azusa has already acquired part of the park. This park is adjacent to the Rainbow Canyon Equestrian Center.

R3.02 San Gabriel River Bike Trail Extension

This project will extend the 38-mile regional bike trail from its current terminus near the southern edge of San Gabriel Canyon by the proposed Interpretive Center, to the proposed Azusa Canyon River Park and eventually all the way to Angeles National Forest. A one-mile extension is being built to the Mountain Cove development, near the mouth of the San Gabriel Canyon

R3.03 Robert's Creek Trail Access

Public access to Robert's Creek will be provided through Mountain Cove private residential development, from Azusa Canyon River Park and/or the San Gabriel River Bike Trail Extension.

R3.04 Robert's Creek Restoration

This will be a habitat restoration and park expansion in the canyon area behind Mountain Cove.

R3.05 Westside Trail

A new, multi-purpose trail at the far edge of the flood plain, running parallel to the San Gabriel River on its west side and opposite to the San Gabriel River Bike Trail will be developed. This one-mile trail will run along the San Gabriel Valley Gun Club and provide a connection between the Robert's Creek and Fish Creek Trails.

R3.06 Forest Gateway Interpretive Center

This project will create a new USDA Forest Service Ranger Station and Interpretive Center at the entrance to Azusa Canyon. Diverse educational opportunities will provide information about the canyon, the national forest and native habitat. "Green" building practices and watershed sensitive design principles will be incorporated into the site. North East Trees has already developed the building and site designs for this open space area. The project is currently funded and will be built in 2004.

R3.07 Glendora Ridge Road Trail Access

Public access for pedestrians and bicycles to the existing fire road through the mountains on the south side of the canyon will be provided, either by an access easement through private property, or by creating a new access point. This road leads to Mount Baldy.

R3.08 San Gabriel Canyon Spreading Grounds (Concept Design Study, see Section 3.8.1)

This project will study possibilities for providing landscaping, native habitat restoration, decorative fencing, interpretive signage, trails and other park amenities for public enjoyment and education at two deep spreading basins adjacent to the San Gabriel River. The 165-acre site project will be compatible with the groundwater recharge function of the two basins. Due to the deepness of the two basins, and the fact that it is a major water supply for Azusa, health and safety issues will be key project determinants.

R3.09 Future Pedestrian Bridge

The City of Azusa has indicated to Vulcan Materials Company (Vulcan) that it would like to investigate the use of the existing conveyor belt that traverses across the San Gabriel River as a potential bicycle and pedestrian bridge (about 30 years from now after mining operations cease). Although Vulcan does not have any objections to using this bridge when mining is completed, it has not yet engaged in negotiations with the City to discuss potential liability and cost for converting the conveyor crossing to a bicycle and/or pedestrian bridge.

R3.10 West Riverbank Tree Planting Project at the San Gabriel Valley Gun Club

The San Gabriel Valley Gun Club has proposed planting 200+ trees on the west levee of the San Gabriel River, beside its facilities on land it leases from Vulcan. The Gun Club serves over 100,000 people each year, including recreationists and training organizations such as law enforcement. The trees will provide much needed shade along the river and dampen the sounds that currently echo up the canyon from Gun Club activities. The City of Azusa, representatives of Vulcan and representatives from the San Gabriel Valley Gun Club are in negotiations to mitigate noise emanating from the Club into residential areas. Vulcan has not included these trees as potential mitigation to noise impacts.

R3.11 Azusa Rock Quarry Restoration

Vulcan is currently pursuing a revised reclamation plan for the Azusa Rock Quarry to rehabilitate and restore the area when mining is complete. The existing reclamation plan is subject to negotiations between Vulcan and the City of Azusa. A revised reclamation plan would change the quality of reclamation that currently exists at this quarry site.

R3.12 Fish Creek Restoration and Public Access

Vulcan is currently working with the City of Duarte on (and discussing with the City of Azusa), limited public access through the Azusa Rock Quarry along Fish Creek. For safety and liability reasons, Vulcan will limit access to daylight hours and non-operational hours of the quarry, probably on weekends and holidays. These discussions are ongoing; an agreement has not been reached as of this writing. After mining is complete at the Azusa Rock Quarry site, and with Vulcan's permission, it may be possible to daylight and restore the stream and provide fuller public access through the quarry site.

R3.13 Todd Avenue Bike Trail Connection

This project will connect an existing City of Azusa bike path at the south end of the spreading grounds with the San Gabriel River Bike Trail. The project will provide the local community with a much needed access point to the River Trail.

R3.14 Azusa Bike Trail Network

This project will develop a system of street-side bicycle paths to help bicyclists enter Azusa Canyon from Sierra Madre Avenue or Azusa Canyon Road and connect to the San Gabriel River Bike Trail.

R3.15 Pacific Electric Rails-to-Trails Project

A proposed multi-city project will create an east-west bike trail on an abandoned rail line running parallel to Foothill Boulevard between Monrovia in the west and Claremont in the east. The proposed bike trail design will need to take into account a potential light rail line which is being considered for this route. This trail may integrate with the Duarte Bike Trail, crossing the San Gabriel River at the Puente-Largo Bridge.

R3.16 Azusa-Largo Quarry

This quarry operation, located north of Foothill Boulevard, houses the current aggregate production facility of Vulcan, as well as shop facilities and asphalt plant production facilities. The plant at the Azusa-Largo Quarry produces material from the area in which it exists, as well as material that is transported via a conveyor system from Azusa Rock Quarry. The operation will supply aggregate, construction grade materials as well as asphalt materials for over 40 years. The eventual land use post-mining will be determined later in negotiations between the City of Irwindale and Vulcan.

Figure 3-23. The historic Puente Largo Bridge is part of the proposed Duarte Bike Trail extension.

R3.17 Reliance #2 Quarry

This is an existing landfill operated by Vulcan at a site located south of Foothill Boulevard bordered by the Foothill Freeway (I-210), and bordered on the east by Irwindale Avenue. This operation is currently being used for silt deposition from the existing Reliance Plant and operates as a landfill facility that can ultimately be filled and used for some commercial activity. It is subject to negotiation between the City of Irwindale and Vulcan to determine potential land use and other issues. The time to complete the landfill is not known at this time.

R3.18 Wright-Romvary Properties

The City of Duarte plans to acquire a total of 365 acres of land for open space protection, trails and habitat restoration. The property is adjacent to Van Tassel Creek, a tributary of the San Gabriel River. This project is dependent on funding availability.

R3.19 Duarte Bike Trail Extension

This project will extend and improve an existing 1.5-mile multi-use trail for an additional mile from Royal Oaks Park in the City of Duarte across the historic Puente Largo Rail Bridge to San Gabriel River Bike Trail in Azusa. Improvements will create a safer connection and will include signage, paint lines, lighting, and pavement resurfacing.

R3.20 Route 66/Foothill Boulevard Gateway

This future City of Duarte gateway project, in partnership with the City of Azusa, is located on the historic Route 66 Highway.

R3.21 Santa Fe Dam Recreation Area and Habitat Enhancements

The County of Los Angeles Department of Parks and Recreation (LADPR) plans improvements to habitat areas and trails, including the protection and restoration of remnant alluvial fan sage scrub plant communities by replanting native plants and removing exotics. Other improvements include improving access to the Park's bicycle path by establishing safe crossings and directional signage.

R3.22 Santa Fe Dam Nature Center

A recently re-opened nature center operated by the SGMRC in partnership with County of Los Angeles, provides interpretive trails, habitat restoration, a native plant demonstration garden, outdoor amenities improvements and possible camping, as well as community education and outreach programs. Project sponsors are seeking outreach partners for docent and interpretive programs.

Figure 3-24. The Peter Schabarum Nature Center provides a venue for school groups and interpretive presentations.

R3.23 United Rock Products Quarry #4

This is currently the processing plant for United Rock Products. Material mined in Quarry #2 and Quarry #3 are processed on the site. Additionally, this site has two asphalt plants, two ready mix concrete plants, and equipment shops. United Rock Products and the City of Irwindale are negotiating the mining and reclamation options for this site.

R3.24 Buena Vista Wetlands

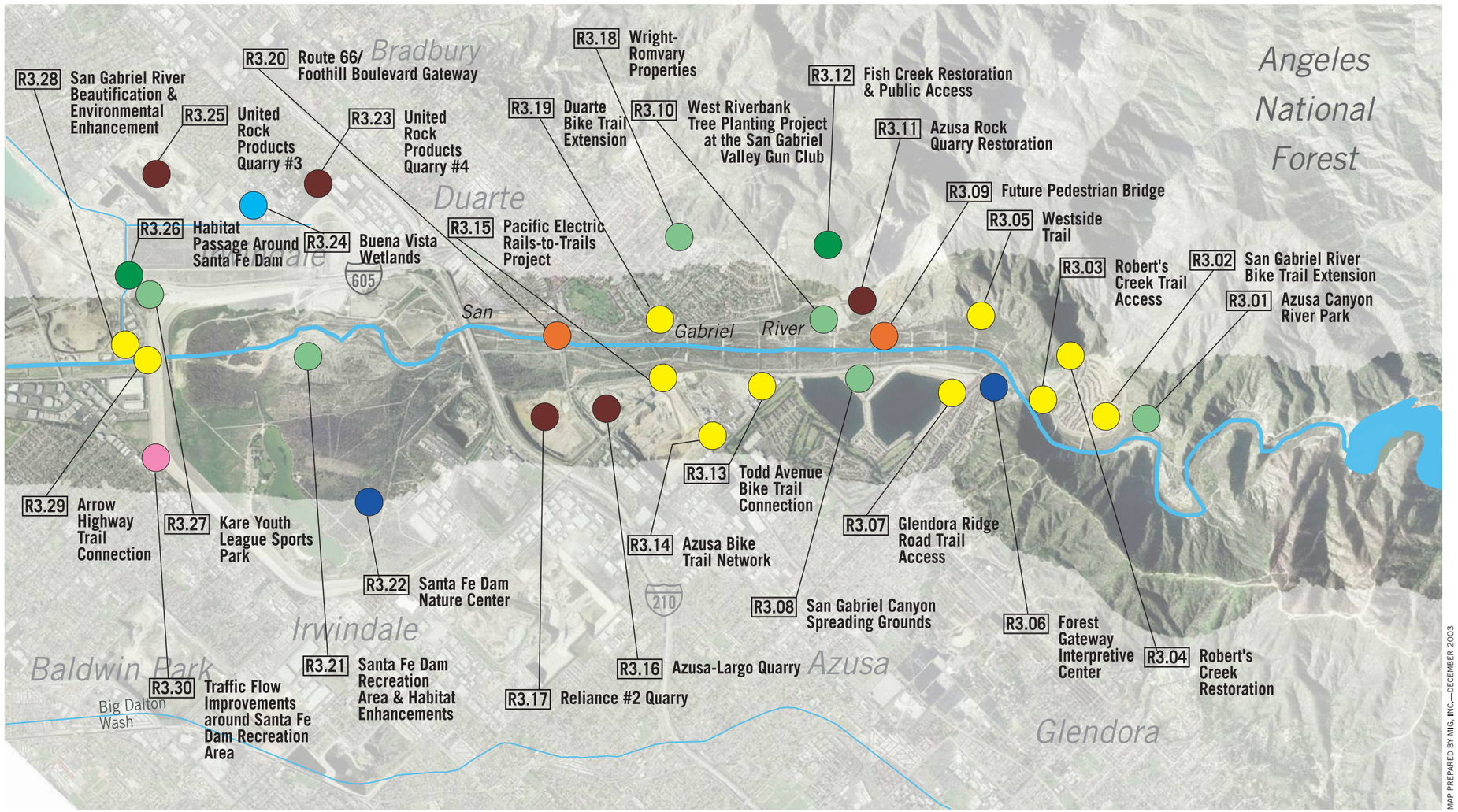
This project will create bio-engineered wetlands for habitat restoration in a LADPW spreading basin west of Santa Fe Dam. A conveyor line, operated by United Rock Products, runs across the westerly part of this property. The line has been in operation since 1983 and is scheduled to be in use until circa 2035. The design and implementation of the wetlands will need to ensure the continued safe operation of this conveyor.

R3.25 United Rock Products Quarry #3

This is an active quarry that will be in operation until 2035. United Rock Products and the City of Irwindale are in negotiations for the reclamation of this site, which is scheduled to be completed in 2061.

R3.26 Habitat Passage around Santa Fe Dam

This project will provide a habitat linkage at this "pinchpoint" to complete the Puente Hills to San Gabriel Mountains habitat corridor. The U.S. Army



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Map 3-4. Master Plan Projects: Reach 3.

Corps of Engineers (COE) owns key parcels in this area. COE is willing to partner with other agencies and private groups to identify opportunities for creating this linkage.

R3.27 Kare Youth League Sports Park

This under-used open space area is at the base of the Santa Fe Dam, north of Arrow Highway. It is owned by COE. Kare Youth League is a potential lessee, that would build a soccer field with some amenities on existing disturbed paved areas. There is an existing habitat on the property that could be restored as part of the habitat corridor. There will be a trail linkage to the San Gabriel River Bike Trail.

R3.28 San Gabriel River Beautification and Environmental Enhancement

An environmental beautification opportunity for the City of Irwindale in partnership with the Hollywood Beautification Team, this 1.4-mile enhancement of the existing bike trail would including a bike staging area and other improvements designed to provide a better interface between the Santa Fe Dam and the San Gabriel River Bike Trail south of Arrow Highway. The project includes landscaping, drought-tolerant trees, irrigation, signage and other amenities.

R3.29 Arrow Highway Trail Connection

Bike trail users need a safer passage across Arrow Highway. An assessment on best connection needs to be made. Alternatives include building a new bridge over Arrow Highway, or going underneath through an existing tunnel, which also needs drainage repairs.

R3.30 Traffic Flow Improvements Around Santa Fe Dam Recreation Area

The LADPW proposed this study of vehicular traffic circulation patterns to identify improvements that will enhance public safety and improve pedestrian and bicycle access near the Santa Fe Dam.

3.6.4 Reach 4: Lower San Gabriel Valley

Location

This 8.5-mile reach extends from the Santa Fe Dam to the Whittier Narrows Dam. The "Whittier Narrows" is a natural gap in the hills that divides the Main San Gabriel Basin from the Central Basin to the south, and forms the southern boundary of the San Gabriel Valley, the Puente Hills to the east and the Montebello Hills to the west. The San Gabriel River passes through this gap as it flows south.

Figure 3-25. Although confined to engineered levees, the river still flows through a habitat-rich environment.

Character

This is a densely developed area within the San Gabriel Valley. Because there are extensive river deposits in the upper portion of the reach, major sand and gravel mining still occurs in this area. Most of the reach lies over the lower Main San Gabriel Basin, the primary source of water for the San Gabriel Valley. This basin contains contaminated plumes traveling southwards toward the Central Basin. These plumes are toxins that have percolated into the groundwater aquifer from decades of industrial waste dumping in the San Gabriel Valley. The river itself is soft-bottom, and runs through a wide channel contained by levees. COE owns and maintains this stretch. Whittier Narrows Recreation Area is a 1,400-acre open space area with flood protection, habitat and recreational land uses.

Key Issues

Many of the densely developed communities along this stretch of the river need more parks and open space, but lack easy access to the river. Often development is right to the river's edge. Some industrial sites are becoming available to be reclaimed for recreation and habitat, as well as for new economic development that can be designed to take advantage of the river's proximity. This gradual "greening" of the river can add water where needed to recreate attractive natural landscapes that also provide important habitat connections.

Projects Overview

If implemented, these 31 projects will significantly transform and enhance the character of the river along this reach. Many projects are designed to provide people with easier access to the river, while other land reclamation and water conservation projects ensure they will find a more aesthetically appealing environment once they enter the area. The new parks and open space areas will complement other projects that are designed to provide habitat enhancement and connectivity from the Puente Hills to the San Gabriel Mountains. (See Map 3-5 for locations of Reach 4 projects.)

R4.01 United Rock Products Quarry #1

United Rock Products Quarry #1 is currently being reclaimed, according to agreements with the City of Irwindale. The property will be returned to a condition suitable for development. The anticipated completion is 2020.

R4.02 United Rock Products Quarry #2

United Rock Products Quarry #2 is currently being mined. United Rock and the City of Irwindale are negotiating the details of the mining and reclamation options. Mining operations are expected to cease by 2061.

R4.03 Bubalo Quarry

A reclamation plan for this quarry is in progress.

R4.04 Quarry Reclamation/Water Storage/Recreational Facilities Development Study

The Upper San Gabriel Valley Municipal Water District, Sierra Club, and the State of California Rivers and Mountains Conservancy (RMC) initiated a study to identify potential reuse of gravel quarries for multiple purposes after mining is completed, including stormwater capture and cleanup, recharge of storm and imported water, flood reduction, recreation and habitat restoration, as well as aesthetic improvements. The study will require several years to conduct and any implementation of this study under the San Gabriel Master Plan will require future environmental review beyond the scope of this Master Plan and EIR. The study will also require substantive conversations with mine operators and other stakeholders such as the City of Irwindale. A separate forum has been proposed to provide study participants with essential mining community input.

R4.05 Hanson Quarry

The City of Irwindale is interested in multiple possible uses for the 400-acre Hanson Quarry site, which offers a significant economic development opportunity. A long-term quarry reclamation plan is being developed to be

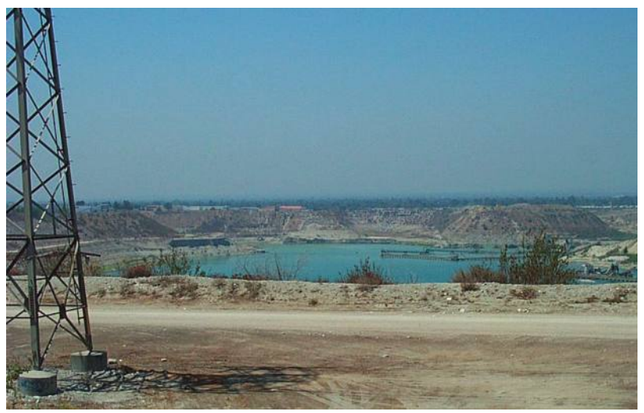


Figure 3-26. The Hanson Quarry is one of the largest mining operations along the river.

implemented once mining operations have ceased, including new business and industrial uses, shopping, parks and open space, and possibly groundwater recharge and cleanup.

R4.06 Rodefer Quarry

This privately-owned quarry is an inholding of the City of Arcadia and is currently being filled with inert materials such as dirt and concrete. It is now zoned for industrial land use. Future reclamation plans could include park and open space, and other uses.

R4.07 Durbin Quarry

The City of Irwindale is interested in multiple uses for the Durbin Quarry site, which offers a significant economic development opportunity. It is developing a long-term quarry reclamation plan for reclamation after mining is complete, including new business and industrial uses, shopping, parks and open space, and possibly groundwater recharge and cleanup. However, the Durbin Quarry, owned and operated by Vulcan, will be an ongoing mining operation for the next 30 to 40 years. The City of Irwindale is keenly interested in its potential for economic development and is now negotiating with Vulcan about final reclamation and landform. Development would occur significantly after mining operations cease because of extensive fill requirements.

R4.08 Ramona Boulevard Gateway

The Ramona Boulevard gateway project will provide a key entry point to the San Gabriel River Bike Trail and the City of El Monte.

R4.09 Caltrans Right-of-Way Open Space and Trail

This Baldwin Park project will upgrade an existing 2-acre right-of-way with landscaping and trails to connect Barnes Park, the San Gabriel River Bike Trail, and neighborhood schools.

R4.10 Barnes Park

Baldwin Park plans to improve the existing Barnes Park with habitat enhancements and an interpretive programs center.

R4.11 Walnut Creek Nature Park and Nature Center

Baldwin Park will improve the Walnut Creek Park with a 3,300 square foot community center, walking trails, spray pool, playgrounds, new turf, fencing and irrigation.

R4.12 Durfee School Recreation Area

The City of El Monte wants to develop active recreation and landscaping along the San Gabriel River and provide access to the San Gabriel River Bike Trail.

R4.13 Valley Boulevard Gateway

This City of El Monte project will improve connections from Mountain View High School and surrounding neighborhoods to the San Gabriel River Bike Trail. The project includes entry signage.

R4.14 Inflatable Rubber Dams

LADPW is building two new inflatable rubber dams over existing drop structures in the river. The dams provide temporary water storage and also create rich and attractive natural habitat.

R4.15 Woodland Duck Farm *(Concept Design Study; see Section 3.8.2)*

The 57-acre Duck Farm Project grants a unique opportunity to provide a much needed open space and recreation area in a densely urbanized portion of the San Gabriel Valley. The property is located along the east side of the San Gabriel River just north of the confluence of the San Gabriel River and San Jose Creek. The portion of the property on the west side of the 605 Freeway had been operated as a Duck Farm. In addition to offering increased area for passive recreation such as bike and pedestrian

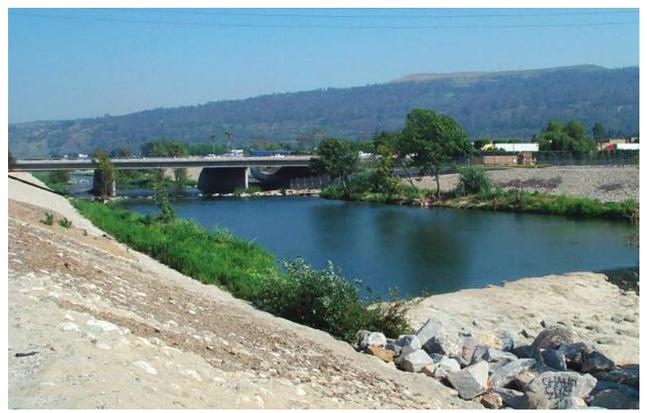


Figure 3-27. San Jose Creek is a major tributary of the San Gabriel River, offering trail and habitat connections.

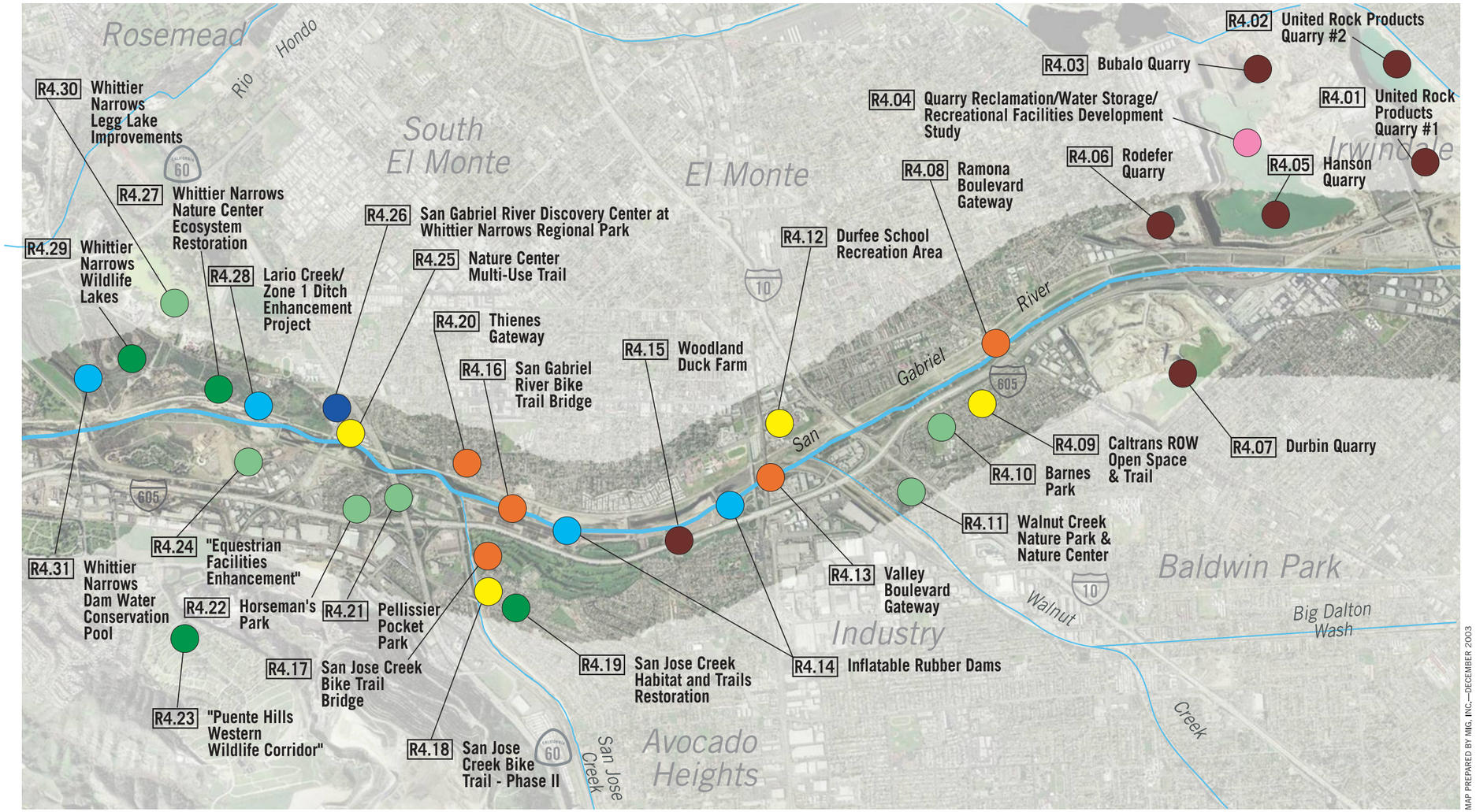
trails, bird watching and rest areas, the project has the potential to incorporate design elements such as groundwater recharge, water quality improvements, flood management, interpretive educational signage, exhibits, displays, as well as the reintroduction of native habitat. The WCA's goal is to create a project that will be a model for sustainable, multi-benefit watershed projects that address the open space recreation and watershed needs of the San Gabriel Valley. By connecting the surrounding communities to the San Gabriel River, the Duck Farm project will establish a local connection to Whittier Narrows Recreation facilities; regional connectivity to the San Gabriel River Trail system and the Emerald Necklace network of recreation facilities.

R4.16 San Gabriel River Bike Trail Bridge

LADPW is studying possibilities for a multi-use bridge to connect El Monte, South El Monte, and unincorporated LA County communities with the San Gabriel River Trail, the San Jose Creek Trail and the Duck Farm.

R4.17 San Jose Creek Bike Trail Bridge

This multi-use bridge would be part of a project to expand the San Jose Creek Bike Trail system. The bridge would connect bicyclists and pedestrians from the south bank of San Jose Creek with the north bank and the San Gabriel River Bike Trail.



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Map 3-5. Master Plan Projects: Reach 4.

R4.18 San Jose Creek Bike Trail Phase II

LADPW is studying potential expansion of the existing San Jose Creek Bike Trail, beginning along the southern bank of the creek from the San Gabriel River traveling east to Cal Poly Pomona and to Claremont along Thompson's Creek (a San Jose Creek tributary).

R4.19 San Jose Creek Habitat and Trails Restoration

North East Trees, with funding from Los Angeles County Open Space District, is restoring native plants along the northern slopes of San Jose Creek. The project area includes a 1.5-mile stretch of creek and trails, starting at the San Gabriel River past Workman Mill Road Bridge. The project includes landscaping to enhance the equestrian trail on the north and south bank and removal of exotic arundo in the creek.

R4.20 Thienes Gateway

This gateway is an equestrian staging area and local access point to the equestrian trails along the west bank of the river. Improvements by the Hollywood Beautification Team and Friends of the San Gabriel River, with funding from the Los Angeles County Open Space District, include an artful gate by a local artist, horse tie posts, drinking water, signage, seating and native landscaping including trees.

R4.21 Pellesier Pocket Park

A pocket park was proposed for this location near the San Jose Creek. It has subsequently been determined to no longer be a viable project.

R4.22 Horseman's Park

This project includes landscaping and a gateway to improve connections between surrounding neighborhoods and Horseman's Park.

R4.23 Puente Hills Western Wildlife Corridor

This project will create a habitat movement corridor between the Puente-Chino Hills and Whittier Narrows, either near Rose Hills Cemetery along Sycamore Canyon, or down the north slope towards San Jose Creek. A connection facilitating northbound and southbound movement to and from the San Gabriel Mountains may eventually become possible. A study by a biological research institute will be required before terrestrials can be re-introduced to the river area.

R4.24 Equestrian Facilities Enhancement

Potential upgrades and water quality runoff mitigation measures will be considered for these existing equestrian facilities. Planned improvements will mitigate any potential wildlife habitat conflicts.

R4.25 Nature Center Multi-Use Trail

A trail connection between the San Gabriel River Discovery Center at Whittier Narrows and the San Gabriel River Bike Trail will improve user access, safety and convenience. New signage to and from the River Discovery Center will enhance existing unmarked paths.

R4.26 San Gabriel River Discovery Center at Whittier Narrows Regional Park (Concept Design Study; see Section 3.8.3)

LADPR, RMC, and the Upper San Gabriel Valley Municipal Water District are jointly developing a new regional indoor/outdoor museum and conference center on the 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. A joint powers authority is being set up to build and operate the Discovery Center.

R4.27 Whittier Narrows Nature Center Ecosystem Restoration

This project, supported by LADPR, has been in development for six years, based on a U.S. Army Corps of Engineers project options study. Because the project is located at the northern most boundary of the Montebello Forebay, this area is subject to rising waters, and therefore is not a good site for groundwater recharge. The selected option is to build a .25-acre pond, line two lakes to reduce water loss from percolation, remove invasive plants, and restore native vegetation. The lakes could be interconnected to Lario Creek (see R4.28) and water in the lakes could flow through the system and down to the Rio Hondo Spreading Grounds. The volume of water required to maintain the lakes is minimal compared with the tens of thousands of acre feet that flow through the system annually.

R4.28 Lario Creek/Zone 1 Ditch (Concept Design Study, see Section 3.8.4)

This project is an opportunity to build upon and enhance an already planned LADPW project to expand the flow capacity of an existing canal. North East Trees proposes to temporarily divert high water flows to protect and extend wetlands. This will restore valuable habitat to support wildlife and increase the aesthetic and educational value of the area, which is adjacent to the San Gabriel River Discovery Center.

Figure 3-28. Legg Lake is a popular family picnic destination.

R4.29 Whittier Narrows Wildlife Lakes

LADPR believes it is important to preserve these two large lakes as wetlands. The lakes, located at the Nature Center, could be lined to reduce water consumption.

R4.30 Whittier Narrows Legg Lakes Improvements

These three recreational lakes should be upgraded to improve ADA accessibility and reduce erosion.

R4.31 Whittier Narrows Dam Water Conservation Pool

The COE completed a feasibility study to expand the current water conservation pool behind the Whittier Narrow Dam from 2,500-acre feet at elevation 201.6 feet up to as high as elevation 209 feet. The pool, to be built by the Water Replenishment District (WRD), will increase groundwater percolation for increased water supply; it is expected to save the WRD $1 million annually. The COE regional headquarters in San Francisco is currently reviewing the study. The project will 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 should be explored.

Figure 3-29. The river is soft bottomed in Reach 5.

3.6.5 Reach 5: Upper Coastal Plain

Location

This seven-mile reach begins at the outlet of the Whittier Narrows Dam and ends where the San Gabriel River crosses Firestone Boulevard in Norwalk, near the I-605 Freeway (San Gabriel Freeway).

Character

The San Gabriel River emerges from the Montebello and Puente-Chino Hills and enters a more gently sloping landscape. Confined by engineered levees and rip-rap, the river remains a soft-bottom channel but is narrower along this stretch than above Whittier Narrows. The river flows above the Central Basin, the most productive recharge area. Two of the largest and most productive spreading grounds in Los Angeles County lie just west of the river. Adjacent cities are densely developed with large areas of industrial use.

Key Issues

With the exception of the nearby spreading grounds, there are few large areas of open land available for parks and open space.

Projects Overview

Six of the 18 projects in this reach are new or improved parks. The remaining projects involve three new trails, and seven river gateways. Two of the largest new parks are possible because undeveloped land surrounding the nearby spreading grounds is available. (See Map 3-6 for locations of Reach 5 projects.)

R5.01 Pico Rivera Golf Course

This proposed golf course would replace an old campground south of the Pico Rivera Sports Arena. An environmentally-friendly "green" golf course design will be needed to address water quality issues. The design suggests at least three holes in the riverbed.

R5.02 Pegasus Ranch Park

A river adjacent park was proposed for this site at a former equestrian facility. It has subsequently been determined to no longer be a viable project.

R5.03 Beverly Boulevard Gateway

This gateway provides a key entry point from the City of Pico Rivera to the river and the San Gabriel River Bike Trail.

R5.04 Amigo Park Improvements

LADPR would like to revitalize Amigo Park, adjacent to the east bank of the river. Providing access from the park to the river may provide more opportunities for the community to exercise safely. Planting native trees would improve the area's appearance and contribute to wildlife habitat. Landscaping, directional signage and more amenities will also enhance safety, security and enjoyment of the park.

R5.05 Whittier Greenway Trail and Connection

The City of Whittier recently built a 5-mile bike trail along an abandoned railroad right-of-way, which added 38 acres of linear open space to the City. Another extension is needed to connect it to the San Gabriel River Bike Trail. Whittier is studying four possible routes, including one to Pio Pico State Historic Park. When fully completed, the bike trail will extend from the river to the City of Brea in Orange County. This trail is part of the MTA Regional Bike Plan.

R5.06 Pio Pico State Historic Park

Pio Pico was the last Governor of Mexican California. His historic Pio Pico Mansion was recently renovated and re-opened in September 2003. A new watershed enhancement project at this site will include a watershed interpretive exhibit and native, drought-tolerant landscaping. The project will open a pedestrian and bicycle access way under the existing rail line, between the park and the east side of the river. At present, the levy/rail line completely blocks the view of the river. A viewing platform may be constructed over the river, allowing people to take in the view without standing in the bike path.

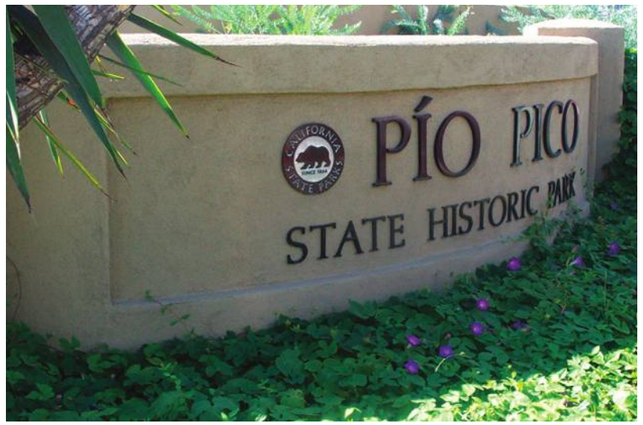
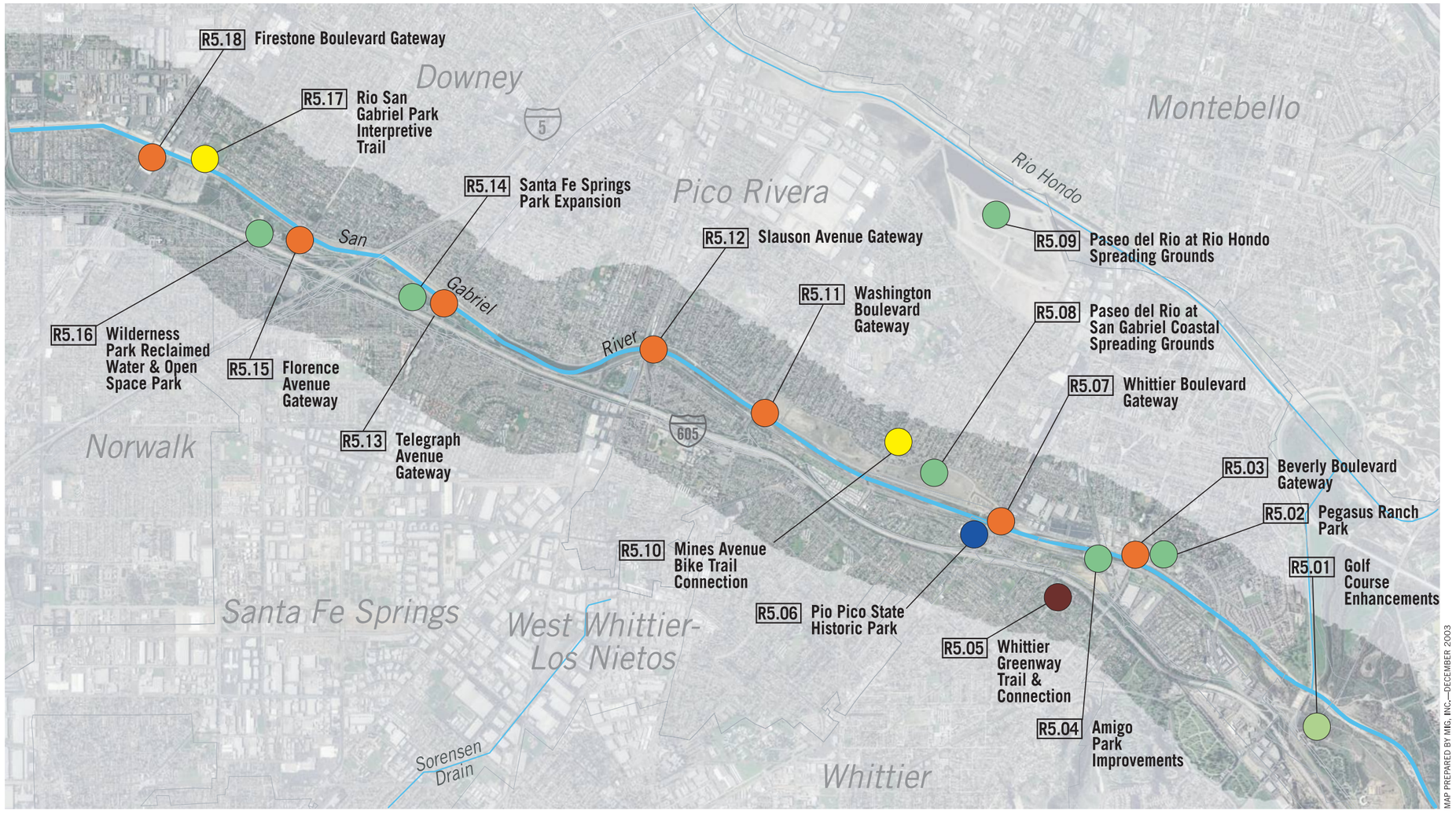


Figure 3-30. Visitors to Pio Pico State Historic Park are often not aware how close they are to the San Gabriel River.

Figure 3-31. The newly renovated Pio Pico Adobe at the Historic Park is one of the many cultural and historic facilities in close proximity to the San Gabriel River Bike Trail.

R5.07 Whittier Boulevard Gateway

A new gateway for the Cities of Whittier and Pico Rivera at the San Gabriel River would be designed to help enhance the image of the western portions of the two cities. The current "Gateway District" for Whittier is 2



Map 3-6. Master Plan Projects: Reach 5.

miles east of the river. Possible partners include the California State Department of Parks and Recreation, LA County, and Caltrans.

R5.08 Paseo del Rio at San Gabriel Coastal Basin Spreading Grounds

This multi-objective 128-acre LADPW project will provide a bike trail, new native and drought-tolerant landscaping, shade structures and other park-like amenities to beautify open space surrounding the existing spreading grounds. The occasional presence of surface water creates the appearance of a lake to be enjoyed by nearby residents and other visitors. The project entails limited public access, with passive recreational and educational opportunities.

R5.09 Paseo del Rio at Rio Hondo Spreading Grounds

This multi-objective 570-acre LADPW project will provide a bike trail, new native and drought-tolerant landscaping, shade structures and other park-like amenities to beautify open space surrounding the existing spreading grounds. The occasional presence of surface water creates the appearance of a lake to be enjoyed by nearby residents and other visitors. The project entails limited public access, with passive recreational and educational opportunities.

R5.10 Mines Avenue Bike Trail Connection

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. This will be a conversion from a Class 2 bike trail to a Class 1, separating the trail from automobile traffic for increased safety.

Figure 3-32. Picnic shelter at Rio Hondo Spreading Grounds provides a compatible recreational use.

R5.11 Washington Boulevard Gateway

This project will provide a key entry point to the river and the San Gabriel River Bike Trail from the City of Pico Rivera.

R5.12 Slauson Avenue Gateway

The Slauson Avenue Gateway will serve as a key entry point to the San Gabriel River Bike Trail from the City of Pico Rivera.

R5.13 Telegraph Road Gateway

This gateway will improve access to the Santa Fe Springs Park Expansion project from the Cities of Pico Rivera and Santa Fe Springs (see project R5.14).

R5.14 Santa Fe Springs Park Expansion

The existing 14-acre park across Telegraph Road will be expanded, with the south side for active recreational users and the north for passive recreation and habitat. The expanded north half is a proposed 13-acre Nature Sanctuary. The project will connect the San Gabriel River Bike Trail with a pedestrian-oriented zone on Telegraph Avenue, and include gateway entry features, native vegetation and potential stormwater management practices.

R5.15 Florence Avenue Gateway

In conjunction with Wilderness Park, this project will connect the San Gabriel River Bike Trail and the City of Downey.

R5.16 Wilderness Park Reclaimed Water and Open Space Park

This 26-acre park in the City of Downey offers varied recreational activities for residents throughout Southeast LA County. The park has a large lake of reclaimed water, which is often used for fishing derbies. A reclaimed water project will connect the lake to the park's irrigation system, reducing the need for chemical treatment of lake water and providing a migrating rest area for birds. Another project will develop six acres of land for passive recreation, using native plants. The City of Downey holds a long-term lease from Southern California Edison (SCE), which currently owns the land.

R5.17 Rio San Gabriel Park Interpretive Trail

This existing 16-acre park adjacent to the river combines high- and low-impact recreational activities with one building for meetings and special

Figure 3-33. Parks along the river often include heavily used playgrounds such as this one at Santa Fe Springs Park.

indoor activities. The City of Downey plans to develop a native plant interpretative trail around the perimeter of the park, beginning at the river's edge. The project will include a trail made of decomposed granite, benches, trash receptacles, signage, restrooms and a picnic shelter.

R5.18 Firestone Boulevard Gateway

The Firestone Boulevard Gateway will provide a key entry point to the river and the San Gabriel River Bike Trail from the Cities of Downey and Norwalk.

3.6.6 Reach 6: Lower Coastal Plain

Location

This ten-mile reach begins at Firestone Boulevard in Downey and extends to the confluence of the San Gabriel River with Coyote Creek, near the Los Angeles County and Orange County border at Rossmoor, just above the San Diego/San Gabriel Freeway intersection. It is the longest urban reach.

Character

The river bottom in this heavily urbanized reach is concrete, the only stretch of the river where that is the case. An impermeable clay lens or aquaclude lies below the surface and prevents groundwater recharge from taking place here.

Figure 3-34. The river flows in a concrete channel for 10 miles in Reach 6.

Key Issues

While this heavily urbanized area has many parks, they are not sufficient to serve the large population. With the exception of the former NASA site in Downey, most available parks and open space land is along the river, making the river a critical recreational resource for these communities. Many of the large parks in the vicinity of the river, such as El Dorado Regional Park, were not originally oriented toward the river.

Projects Overview

Almost all 23 projects in this reach are focused on expanding recreational opportunities by providing new parks, enhancing or expanding existing ones, and by developing new bike trails or other connections to the river. Many of the proposed bike trails and gateways are designed to facilitate east-west connections across the north-south route of the river. (See Map 3-7 for locations of Reach 6 projects.)

R6.01 Downey Landing

The City of Downey plans to develop a new, combination low-impact/high impact recreation area with ballfields and a walking trail at what was once a parking lot for the former NASA site (home to the Apollo and Space Shuttle Orbiter programs). An interpretive trail along the perimeter of the 11.5-acre park will include natural vegetation and a biofiltration swale system to capture and clean 130 acres of urban stormwater runoff and provide flood protection. The project includes trailhead and trailside facilities, restrooms, a shade structure for educational purposes, benches, trashcans, drinking fountains and bike racks. The trail will be enhanced with trees providing a canopy of shade, the creek-like swale system and natural vegetation. Interpretive signage will provide information on the process being used to clean the stormwater. Adjacent to the park site will be the 20,000 square foot Columbia Memorial Space Learning Center.

R6.02 Foster Road Gateway

The Foster Road Gateway will serve as a key entry point and pedestrian bridge to the San Gabriel River Bike Trail for the Cities of Downey, Bellflower and Norwalk.

R6.03 H. Byrun Zinn Park Improvements

The City of Bellflower plans open space enhancements including a pedestrian path, trees and benches to an existing four-acre park where Foster Road comes to a dead end at the river. Landscape improvements will maintain the current passive, low-impact recreational use. The project will be integrated with the Foster Road Gateway (R6.02). It is located in the Southern California Edison right-of-way.

R6.04 Rosecrans Avenue Gateway

This project will provide a key entry point to the San Gabriel River Bike Trail for the Cities of Bellflower and Norwalk.

R6.05 Excelsior Drive Gateway Park

Excelsior Drive Gateway Park will serve as a potential entry point from Norwalk to the San Gabriel River Bike Trail.

R6.06 Bellflower High Bike Trail Connection

This bike trail connection from Bellflower High School east to the San Gabriel River Bike Trail at the MTA right-of-way will improve local community access to the river trail.

R6.07 Riverview Park

Riverview Park will be a new 15-acre recreation area fronting the river. The project will provide a natural, riverfront environment serving the residents of Bellflower and many other communities up and down the river. Proposed improvements include a paved bikeway, landscaping, park benches and informational signage. A direct linkage to the San Gabriel River Bike Trail will be created, as well as linkage to the City of Bellflower West Branch Greenway. There will be an information kiosk for both the River Trail and the West Branch Bikeway (see R6.11). The State of California Resources Agency awarded the City of Bellflower a grant of $2.97 million for Riverview Park, which will be funded by Proposition 12 park bond funds. The funds will be used for land acquisition, trails, botanical gardens with native plants and passive recreation. In addition, the RMC recently awarded the City of Bellflower $100,000 in Proposition 40 planning grants to fund planning activities for the property.

R6.08 Alondra Boulevard Gateway

The Alondra Boulevard Gateway will provide a key entry point to the San Gabriel River Bike Trail for the Cities of Bellflower and Norwalk.

R6.09 Cerritos College Bike Link

A bike trail connection from Cerritos College along Alondra Boulevard west to the San Gabriel River Bike Trail will greatly improve local community access.

R6.10 North Caruther's Channel Improvements

Improvements are needed to address the algae and mosquito problem caused by slow moving water at this tributary to the San Gabriel River. Solutions include creating a soft-bottom and naturalistic channel design to facilitate water flow.

R6.11 West Branch Greenway Rails-to-Trails Project

This new 2.5 mile rails-to-trails project on an abandoned Pacific Electric right-of-way will provide an west-east connection from Lakewood Boulevard to the San Gabriel River Bike Trail. The project will result in a Class I bikeway and pedestrian trail.

Figure 3-35. Slow moving water in Caruthers Channel encourages algae growth.

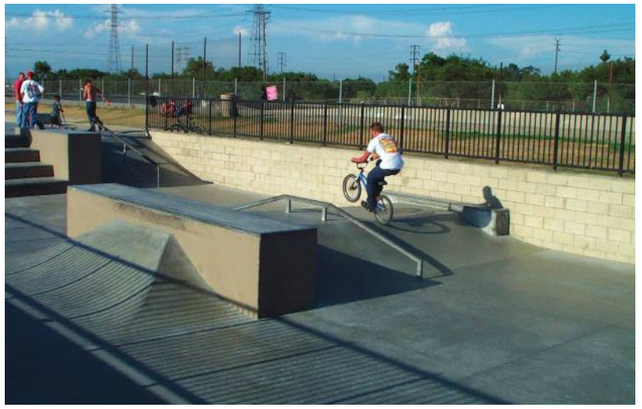


Figure 3-36. A well-designed skate-park is enjoyed by neighborhood youth.

R6.12 West Branch Greenway Bike Connection Area

This site is proposed for a BMX park. Acquisition of an open space area between the abandoned Pacific Electric railway and the river will be needed to create a full connection between the West Branch Greenway and the river.

R6.13 Artesia Boulevard Gateway

The Artesia Boulevard Gateway will provide a key entry point to the San Gabriel River Bike Trail for the Cities of Bellflower and Cerritos.

R6.14 South Street Gateway

This gateway could improve access to the San Gabriel River west side maintenance road and a future trail to West Gate Park. No plans have been started for this project. Design of such a project might depend on adopted recommended design guidelines that provide for some degree of consistency up and down the river.

R6.15 Liberty Park Improvement Project

Improvements will be made to this existing park to provide accessibility for park users with disabilities and passive natural areas with sensory amenities. The project will upgrade an existing playground to universal access standards and provide additional playground space. Additional accessible parking will be provided along with an artificial surface track and walking trail. Amenities will also be provided for bikers and joggers on the San Gabriel River Bike Trail.

R6.16 Del Amo Boulevard Gateway

The Del Amo Boulevard Gateway could provide a key entry point to the San Gabriel River Bike Trail for the Cities of Lakewood and Cerritos. No plans have been started for this project. Design of such a project might depend on adopted recommended design guidelines that provide for some degree of consistency up and down the river.

R6.17 Mae Boyer Park Renovation

The project includes river parkway enhancements and trail access to an existing 6.8-acre park adjacent to the river. Renovations include picnic shelter replacement and amenity upgrades such as parking lots, restrooms and landscaping. Construction of the first phase of this project is nearing completion. The City of Lakewood has applied for a grant for the next phase of the project.

R6.18 West San Gabriel River Open Space Area

This recently completed City of Lakewood project extends open space adjacent to the west side of the river from Carson Boulevard north to Monte Verde Park. This project provides improved bike path linkage on the west side of the river and the San Gabriel River Bike Trail on the east side, an automatic irrigation system, several species of California indigenous trees, meadow grasses and shrubs. Low growing plants are being used under the utility easements. This new park faces Rynerson Park on the east side of the river, creating landscaped parks on both sides of the river. The City of Lakewood has recently submitted a grant for Phase 2 of the project. This second phase will be an extension of the first phase from Monte Verde Park to Del Amo Boulevard.

R6.19 Carson Avenue Gateway

The Carson Avenue Gateway will provide a key entry point to the San Gabriel River Bike Trail for the Cities of Lakewood and Long Beach. Better signage is needed for the Lakewood Equestrian Center at Rynerson Park. The intersection may require a traffic signal or an undercrossing of the service road to provide a connection from the West San Gabriel River Open Space Area to the Heartwell Golf Course and Park, which lies farther west along Carson Street. No plans have been started for this project. Design of such a project might depend on adopted recommended design guidelines that provide for some degree of consistency up and down the river. Lakewood and Long Beach may need to coordinate with each other on this project.

Figure 3-37. School children enjoy the bridge crossing at the El Dorado Nature Center.

R6.20 East-West Pedestrian Bridge Enhancement

Enhancements to an existing bridge will provide a connection between the San Gabriel River Bike Trail on the east side of the river and the maintenance road used by bicyclists on the west side.

R6.21 El Dorado Regional Park Wetlands (Concept Design Study, See Section 3.8.5)

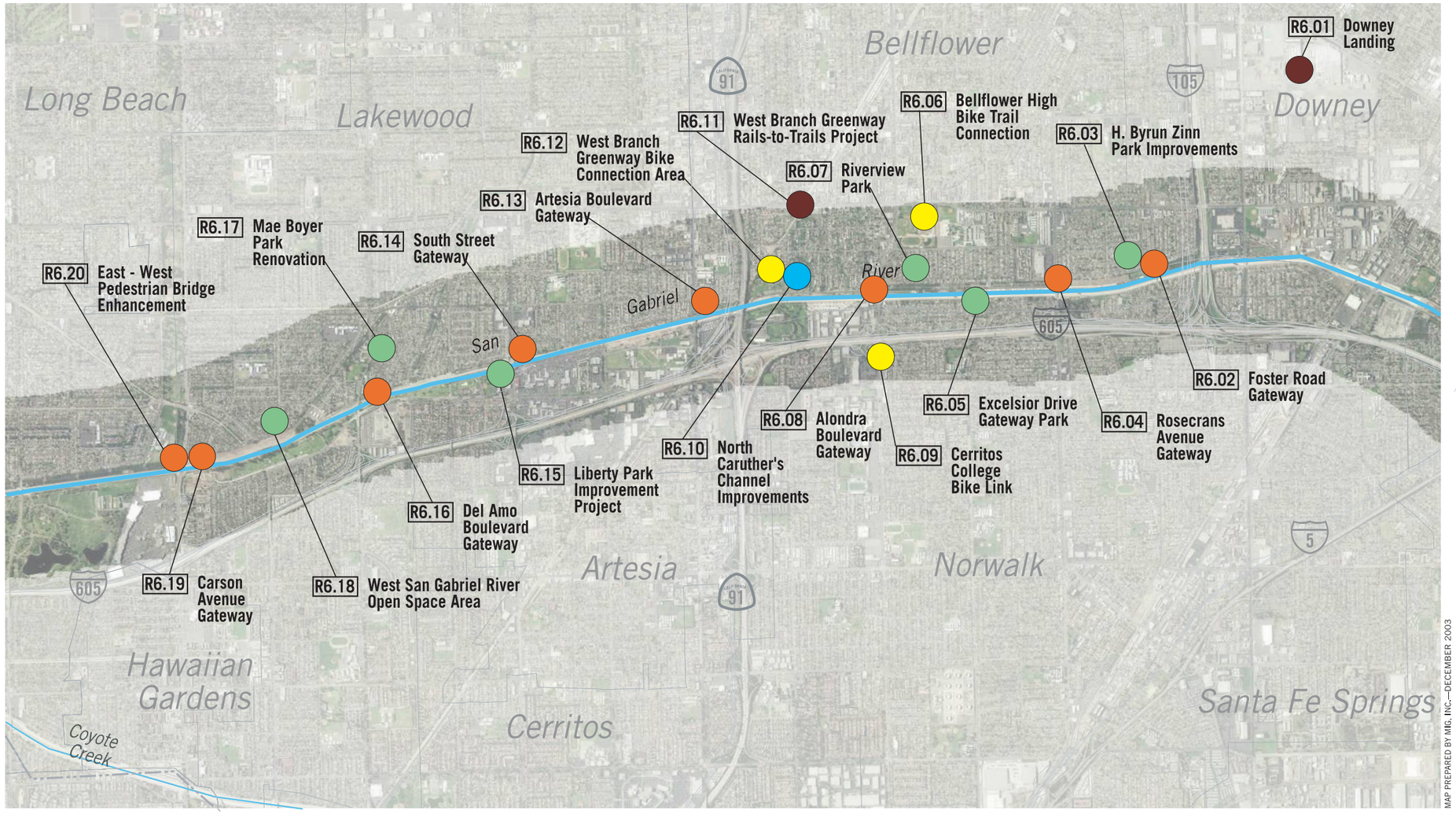
This park borders the river for about two miles, but flood control levees (berms) along the river sever the connection between activities in the park and the river. The City of Long Beach proposed this project to reconnect El Dorado Park with the river. It will create treatment wetlands in the northern section of El Dorado Park and treat San Gabriel River water, stormwater runoff, and/or reclaimed water to replace the potable water supply to the lakes and streams within the regional park.

R6.22 El Dorado Nature Center Master Plan

A recent Master Plan updates the existing Nature Center and surrounding landscape. Improvements will transition the landscape to more low-water and native plants. The ponds and aeration will be improved and the area south of Willow Street will be developed to expand park and open space. That area may also include treatment wetlands.

R6.23 San Gabriel River Walk Phase 1 and 2

The City of Long Beach proposed developing a 1.5-mile pedestrian and bicycle trail through a restored native landscape along the western bank of



Map 3-7. Master Plan Projects: Reach 6.

the river in the City of Los Angeles Department of Water & Power right-of-way. Phase 1 can be built now. The project will begin at Spring Street to the north at the El Dorado Park Golf Course, and run south to Atherton Drive just above the San Diego Freeway. Atherton Drive will provide regional access to California State University Long Beach and El Dorado Regional Park. A bridge will connect the regional trails on the east bank of the river and along Coyote Creek with the Long Beach trail system. Phase 2, another 1.5-mile stretch of new trail and open space, will begin at Spring Street and travel north along the right of way to Carson Avenue. This will connect the West San Gabriel River Open Space Area (see R6.18) in Lakewood above Carson Avenue.

3.6.7 Reach 7: Zone of Tidal Influence

Location

The final 3.5 miles of the river flows from Coyote Creek to the Pacific Ocean, flowing between Long Beach in Los Angeles County and Seal Beach in Orange County.

Character

In this last section of the river before it enters the Pacific Ocean, the channel again has a soft bottom. In this reach, salt water from ocean tides mixes with river water in a natural estuary. The Coyote Creek portion is channelized here. Historically, the area near the mouth of the river was dominated by wetlands. Today, large industrial and utility uses in the northern half of the reach gradually give way to plant nurseries, homes and marinas at the southern end of the reach.

Figure 3-38. Tidal action fills the river with salt water as it nears the Pacific Ocean.

Key Issues

Large oilfields and other industrial fields present future land reclamation opportunities, especially possible wetlands restoration. Debris in the river at this point can be a significant problem, especially following storms that bring trash and other pollutants down from upstream areas.

Projects Overview

Many of the 17 projects along this reach are designed to reconnect people to the river and to the wetlands that previously characterized the area. Wetlands restoration projects will also offer habitat for birds and other native species. Other projects provide enhancements to the regional bike trail along the river or connections to it. A number of key projects will address water quality concerns. (See Map 3-8 for locations of Reach 7 projects.)

R7.01 Coyote and Carbon Creeks Watershed Management Plan

This is a two-phased project. The Phase I Management Plan, headed by the County of Orange, will identify and prioritize potential projects for implementation through stakeholder input and spatial analysis using Geographic Information System (GIS) mapping. The Phase II Coyote Creek-Lower San Gabriel River Watershed Feasibility Study is in its early stages pending increased funding for the U.S. Army Corps of Engineers.

R7.02 Coyote Creek Regional Bikeway Improvements

The County of Orange is currently partnering with a local non-profit organization, Trails4All, to request funding from the San Gabriel and Lower Los Angeles Rivers & Mountains Conservancy to develop this bikeway improvements project. This project will involve a Working Group of all landowners along Coyote Creek, including several cities, the Counties of Los Angeles and Orange, and other key stakeholders to develop a regional bikeway signage program and to develop a long-term Trails Needs Assessment and Master Plan.

R7.03 Coyote Creek Debris Boom

The City of Seal Beach received a grant from the Coastal Conservancy to investigate upgrading a debris restraint system and physical net and boom, similar to that of a fishing net, to catch and hold debris. This project will help reduce the flow of debris into the Pacific Ocean. Design has been completed by the Los Angeles County Department of Public Works.

R7.04 Los Alamitos Channel Treatment Wetland

Orange County proposes urban stormwater treatment wetlands to treat Coyote Creek flows, as part of the COE Coyote Creek Watershed Plan study.

R7.05 Proposed Confluence Bridge

A proposed bike and pedestrian bridge at the Coyote Creek Confluence will connect the San Gabriel River Bike Trail to the Coyote Creek Bike Trail.

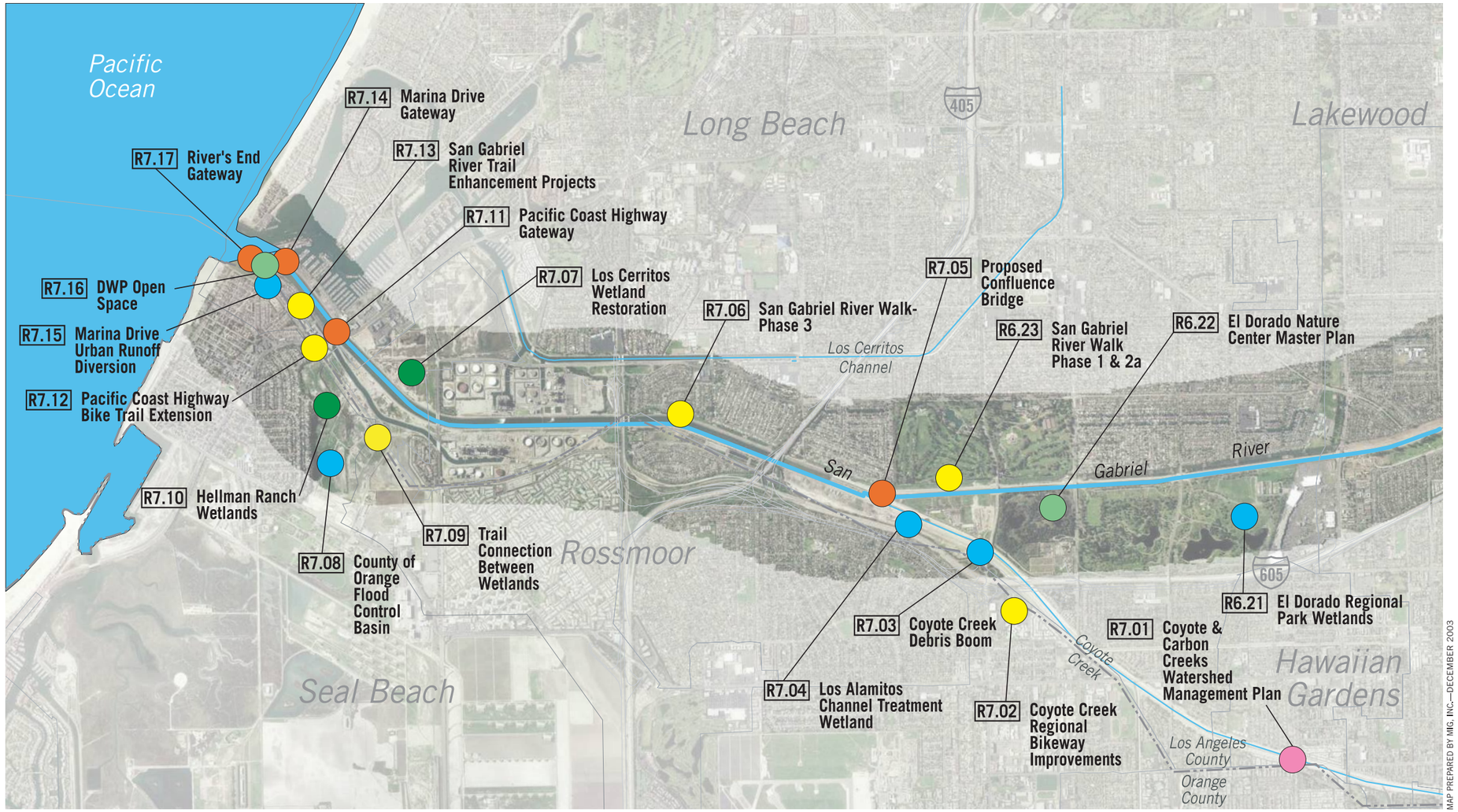
R7.06 San Gabriel River Walk Phase 3

This project is a continuation of the San Gabriel River Walk (see R6.23). This stretch of trail will extend from Atherton Drive, along the west side of the river, potentially down to the Long Beach Marina. It will involve Seal Beach for a small segment where College Estates Park exists, just above the 22 Freeway.

R7.07 Los Cerritos Wetland Restoration (Bryant and Bixby)

This project proposes acquiring about 266 acres of land currently used for oil operations. The Bixby property is 181 acres and the Bryant property approximately 85 acres. The sites, located near the end of the river just north of Alamitos Bay, are surrounded by urban development but still provide valuable habitat for birds and a salt marsh field.

Figure 3-39. Coyote Creek merges with the San Gabriel River just below El Dorado Regional Park.



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Map 3-8. Master Plan Projects: Reaches 6 and 7.

sR7.08 County of Orange Flood Control Basin

This project is a modification of the existing Los Alamitos basin and pump station to expand the flood capacity for runoff flowing from southwest Orange County. Flooding problems will be alleviated in the community of Rossmoor. This project is also being coordinated with the ongoing ACOE Coyote Creek Watershed Study (see R7.01).

R7.09 Trail Connection Between Wetlands

This project will connect bike trails within the City of Seal Beach to provide a complete circuit around the community linking several parks and open space areas.

R7.10 Hellman Ranch Wetlands

Potential acquisition by the City of Seal Beach of 100-acre, deed restricted property and restoration of tidally influenced trail wetland and upland habitat areas, with trail connection to Gum Grove Park and San Gabriel River Bike Trail contemplated.

R7.11 Pacific Coast Highway Gateway

This project will provide a key entry point to the San Gabriel River Bike Trail for the Cities of Seal Beach and Huntington Beach.

R7.12 Pacific Coast Highway Bike Trail Extension

This proposed extension of the Pacific Coast Highway Bike Trail through Seal Beach will connect the San Gabriel River Bike Trail to a major north/south coastal route. The final design stage has been completed but the project has not yet been constructed.

Figure 3-40. The Los Cerritos Wetlands Restoration Project will result in a saltwater wetlands habitat.

Figure 3-41. The River's End café is near the mouth of the river in Seal Beach.

R7.13 San Gabriel River Trail Enhancement

This project by the City of Seal Beach will rehabilitate the existing San Gabriel River Bike Trail. The north section of the project includes Marina Drive to Pacific Coast Highway and the south section includes Marina Drive to First Street. It will introduce new signage, fencing, educational kiosks, new picnic and bicycle storage areas, and native landscaping and vegetation. The restoration will provide public awareness and education, as well as low-impact recreation.

R7.14 Marina Drive Gateway

This project included the construction of a regional trail and landscaping along Marina Drive from 1st Street to 5th Street and provided a key entry point to the San Gabriel River Bike Trail for the Cities of Seal Beach and Long Beach. There was also a street pavement reduction from four lanes to two lanes. This project has already been completed.

R7.15 Marina Drive Urban Runoff Diversion

The City of Seal Beach is seeking to enhance the capacity of the West End Pump Station to provide protection equivalent to the 25-year storm flow and will also construct a low flow diversion to the sewer system. This project will improve water quality to both the San Gabriel River and to Seal Beach. This project is currently 50 percent through its design stage and the City is seeking to obtain permits from the Orange County Sanitation District (OCSD).

R7.16 Los Angeles Department of Water and Power Open Space

This project concerns the future dedication of land for a passive open space area at the mouth of the San Gabriel River. The amount of land dedication is to be negotiated between the City of Seal Beach and property owner during project entitlement consideration. It will have direct connections to four other projects – R7.11, R7.13, R7.14 and R7.17.

R7.17 River's End Gateway

The City of Seal Beach received grants from the Rivers and Mountains Conservancy (RMC) to study open space opportunities throughout the City and to prepare concept plans for a staging area for the San Gabriel River Bike Trail at its terminus in Seal Beach. Enhancements at the staging area, which are part of overall improvements to the San Gabriel River Bikeway (projects R7.06, and R7.17), include landscaping, decorative gates, water fountains, and benches. The project is 50 percent through its design phase.

3.7 RIVER CORRIDOR-WIDE PROJECTS, POLICIES, PROGRAMS, AND DESIGN GUIDELINES

Most of the 134 physical projects identified by stakeholders are specific to particular locations along the San Gabriel River. There are also river corridor-wide projects that link and complement the individual project efforts and create an identity for the river as a whole.

River corridor-wide projects, policies, programs, and design guidelines are needed to respond to key issues such as maintenance, urban stormwater pollution prevention, or homelessness that continue to challenge decision-makers and the communities along the river. These issues need to be addressed comprehensively, bringing all affected communities together to be part of the solution. These river corridor-wide activities will lead to programs designed to bring about desired change.

3.7.1 River Corridor-Wide Projects

These projects are river corridor-wide (CW), rather than for specific sites.

CW1 Wayfinding System

A system of signs, markers and other navigation aids will provide directional information to orient trail users to where they are in relation to the river, connecting trails, points of interest and nearby cities.

CW2 River Identity

A logo and other design elements will be incorporated into the signage used for the wayfinding system, creating an overall identity for the San Gabriel River.

Figure 3-42. A new logo for the San Gabriel River Trail will help create an identity for the entire river.

Figure 3-43. The San Gabriel River Trail would run along both sides of the river in the future.

CW3 Integrated Regional Trail System

An integrated regional trail system will emerge from the completion of individual trail projects, complemented by corridor-wide enhancement efforts and design guidelines. One component of the integrated Regional Trail System is the proposal to expand the current San Gabriel River Bike Trail by developing a bike trail on both sides of the river and ensuring that necessary amenities, such as comfort stations, are provided. Another component is the set of design guidelines for local trail projects that will provide a cohesive, identifiable look for all trails intersecting the San Gabriel River corridor.

CW4 Multi-Objective Use of Corridor Rights-of-Way

Large utility tower rights-of-way create open areas along the river corridor. Utility companies own most of these areas, which offer limited public use due to safety, maintenance and operational requirements. However, utility corridors can be opened to the public along selected portions of the river, by introducing community- and habitat-friendly uses such as gardens, parks and trails. Planting with native vegetation also increases habitat and reduces maintenance costs for utility companies.

Figure 3-44. Southern California Edison and the LA Department of Water and Power own much of the land immediately adjacent to the river.

3.7.2 River Corridor Policies and Programs

The San Gabriel River Master Plan will provide for development and adoption of the following policies and programs (PP) to ensure progress toward the overall vision, goals and objectives, and project performance criteria.

PP1 Design Guidelines

Standards and guidelines provide site and building design information to encourage new development and other land use projects that are compatible with the vision and goals of the Master Plan. The Los Angeles River Design Guidelines are functional standards for trails, lighting, fences, bridges and other landscape elements that will also be applicable to the San Gabriel River. These functional standards will be complemented by the "place-making" reach design palettes specific to the San Gabriel River, drawing upon materials, colors, forms and textures that reflect the river's distinct character. (See Section 3.7.3 Design Guidelines, pages 3-40 through 3-48, for more a comprehensive description of this policy.)

PP2 Access

Guidelines will be developed to establish parameters for public access enabling visitors to safely experience ("touch") the river corridor in ways compatible with flood control, water quality, habitat protection, and other vital functions. These guidelines must take into account the reality that the San Gabriel River is no longer a natural system because channelization has increased the force of rushing water and with it the risk to visitors. For this reason, past and current policy has severely limited public access to the river. However, river access may be appropriate in remaining low flow, natural areas and this new policy can be implemented per the recommendations of a study focused on this specific question.

PP3 Use

Guidelines will be established for determining permitted and prohibited uses within the river corridor by type of activity, location, and other considerations (for example, developing a dog control policy).

PP4 Americans with Disabilities Act (ADA)

All new structures and trails that will be used by the general public will be compliant with ADA standards, wherever applicable.

PP5 Operational Access

Access will be provided for ongoing maintenance and operational requirements of existing infrastructure for flood prevention, water supply and water quality, and utilities. Policy guidelines will be developed to ensure such access is integrated into all designs.

PP6 Maintenance

Planning, design, and construction of new and improved project site facilities and amenities in the San Gabriel River corridor must always take into account the durability and anticipated maintenance requirements of these facilities.

PP7 Exotic Plants Removal

Removal of arundo and other invasive weeds should be achieved where feasible. Plant removal should be carried out in a coordinated, systematic manner.

PP8 Safety and Security

Programs and policies should be developed to ensure the safety and security of all visitors to the river corridor. These policies will address security patrols, lighting, fencing, transient populations, and development of defensible spaces, and other issues impacting safety and security of visitors. Access for all emergency vehicles must be ensured.

Figure 3-45. Policies for visitor access to the river will be guided by safety.

PP9 Vector Control

The planning and design of any new or restored wetland area for habitat or stormwater treatment must be planned in coordination with the local mosquito and vector control agency and designed to avoid vector breeding that might create a risk to public health.

PP10 Water Quality

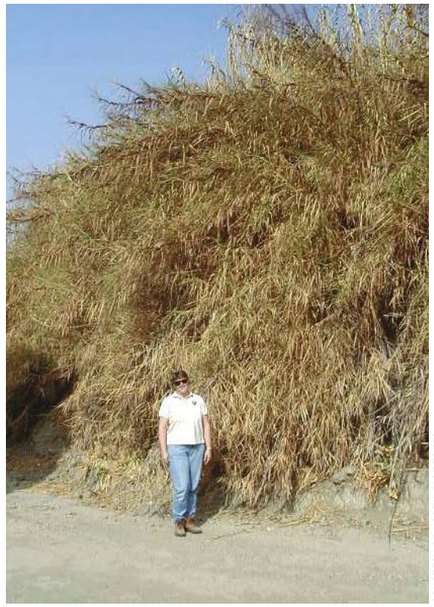
Best Management Practices (BMPs) should be implemented where feasible to ensure groundwater and surface water quality.

PP11 Stormwater Retention/Recharge

Opportunities for stormwater collection and infiltration will be maximized without adding contamination and in accordance with sound water management techniques and public health requirements.

PP12 Water Rights

All surface water and groundwater associated with the San Gabriel River Watershed are subject to water rights, either through State permit or court adjudication. Projects affecting water supply will recognize existing water rights and the limitations they impose on water use, and will not diminish the amount of water available to water suppliers and other water rights holders.

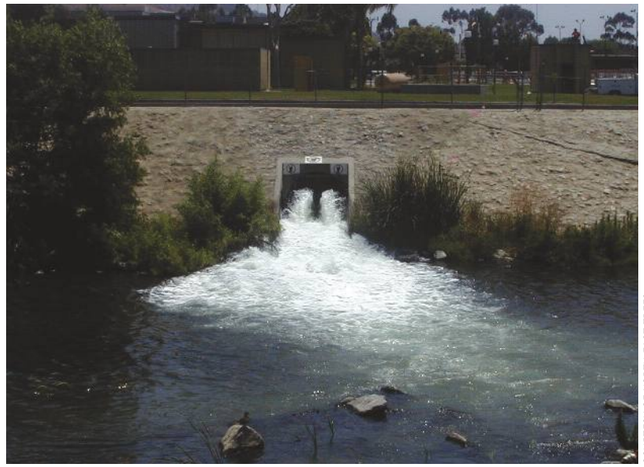


COURTESY OF NORTH EAST TREES

Figure 3-46. Removing non-native plants is critical for a healthy river environment.

COURTESY OF SAN GABRIEL VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT

Figure 3-47. Mosquitoes can be contained through proper design techniques and maintenance.



COURTESY OF NORTH EAST TREES

Figure 3-48. Reclaimed water is released from the San Jose Creek Water Reclamation Plant.

PP13 Water Conservation Education

Educational programs will encourage water conservation policies, reducing dependence on imported water.

PP14 Reclaimed Water Usage

Projects and programs that increase the use of reclaimed water in commercial and industrial settings will be encouraged.

PP15 Habitat Integration

Any project or maintenance work within the river proper should include, where feasible, a component that improves or enhances the movement of fish and wildlife and the growth of native plants within the corridor. Physical improvements or changes to the river should consider low flow channels, drop structure designs or other features that allow the movement or migration of fish. In addition, channel vegetation maintenance programs should consider sensitive clearing practices that promote a biologically diverse mosaic of new and older growth, and use native vegetation for landscaping. However, habitat enhancement should only be considered where it will not have an adverse impact on flood control, water supply and groundwater recharge functions.

COURTESY OF DAN SLATER

Figure 3-49. The great blue heron will make a nest in even the smallest habitat sites.

PP16 Wildlife

All projects should encourage river visitors and users to learn to value wildlife in its natural state and to avoid harming wildlife by harassing, handling, feeding, littering or encouraging interactions with wildlife—for the health and safety of both animals and the public.

Figure 3-50. The Think River! watershed education youth program, sponsored by the San Gabriel Mountains Regional Conservancy and the City of Azusa, is an example of increasing awareness of the river. Logo courtesy of SGMRC and Ramona Rubio.

PP17 Public Information and Education

Programs to increase public awareness and understanding of all aspects of the river and the role they can play in protecting it will be encouraged. This includes a variety of elements such as river maps and brochures, youth watershed education programs, field trips, and other educational activities to complement and reinforce interpretive programs of the various educational centers along the river corridor.

COURTESY OF CAL POLY POMONA SIERRA CLUB, ANGELES CHAPTER

Figure 3-51. Open space acquisition will help form a continuous greenway along the river.

PP18 Economic Development

Projects and programs should serve the economic development interests of cities along the river corridor while also helping to achieve the vision and multiple goals of the Master Plan.

PP19 Open Space Acquisition

Land parcels within or near the river corridor should be acquired where feasible to be adapted as public open space and habitat and for water conservation and/or flood control functions.

3.7.3 Design Guidelines

Design guidelines provide direction to project sponsors and designers to ensure that future improvements are compatible with the vision and goals of the Master Plan while strengthening the sense of place and image of the river. Two sets of design guidelines apply to river corridor projects: aesthetic design guidelines and functional design guidelines.

Aesthetic Design Guidelines by Reach

Aesthetic design guidelines create a "sense of place" for the river corridor, ensuring that all structures and landscapes reflect and express the unique identity of the San Gabriel River. Each of the seven reaches in the project area has a unique character, an individual mosaic of materials, colors, forms and landscape textures. Reach design elements are derived from prevalent plant communities, natural features or geologic formations, physical characteristics of the river channel, existing landmark structures and places, cultural elements and character-forming elements or objects. These elements together make the San Gabriel River distinct from any other Southern California river system.

Future physical improvements to the river corridor can draw from these reach design palettes. (See Appendix B for a more complete list of native plants appropriate to each reach.)

Reach 1: Headwaters

Deep in the interior of the San Gabriel Mountains, this reach is mainly defined by the lack of human presence and the overwhelming presence of nature. The San Gabriel River is very inviting here as it meanders over boulders and is joined by other creeks via waterfalls. Tall riparian trees such as oaks, alders and cottonwoods provide a canopy that frames the sky and mountains, making this reach more human-scale than Reach 2. Trees provide elements of wood, leaves and twigs that are not found in abundant quantities in lower reaches. There are very few structures in this reach, with the exception of the service road and the Pasadena Bait Club.

COURTESY OF DAN SLATER

COURTESY OF GABI MCLEAN ©2003

COURTESY OF ANNE DOVE, NPS

COURTESY OF GABI MCLEAN ©2003

Figure 3-52. The Reach 1 palette emphasizes natural materials.

Materials

- Wood (primary building material)
- Large river rocks and boulders (secondary building material)
- Water
- Rock outcrops
- Riparian trees (alders, willows, cottonwoods, oaks)

Forms

- Rocky waterfalls
- Columnar stands of tree trunks
- Moving streams
- Leaves of all sizes and shapes
- Rocky, uneven surfaces
- Thick foliage

Colors

- Greens (leaves)
- Browns (bark)
- Blues (water, sky)

Native Plants

- *Acer macrophyllum* (big-leaf maple)
- *Alnus rhombifolia* (white alder)
- *Amorpha fruticosa* (false indigo)
- *Baccharis salicifolia* (mule fat)

Figure 3-53. The Reach 2 palette is influenced by Art Deco, with intense colors and dramatic forms.

- *Ceanothus sp.* (California lilac)
- *Mimulus aurantiacus* (bush monkeyflower)
- *Quercus chrysolepsis* (canyon live oak)
- *Rosa californica* (California rose)
- *Rubus ursinus* (California blackberry)
- *Salix exigua* (narrow-leaved willow)
- *Salix lasiolepis* (arroyo willow)
- *Salix laviegata* (red willow)
- *Umbellularia californica* (California bay laurel)

Reach 2: San Gabriel Canyon

The most dramatic stretch of the San Gabriel River, this reach is clearly defined by the deeply cut canyon through the steep mountains. The sky is prominently framed by the mountains and the air is much clearer than in lower reaches. Slopes are coated in coastal sage scrub and mixed chaparral plant communities, all low-growing plants within a fire-dependent ecosystem. Mixed with the soft textures of the plants are the rough textures of rock outcroppings. The Morris and San Gabriel Dams and Reservoirs provide dramatic counterpoints to the steep mountain slopes. Built elements like the Art Deco design of Morris Dam and the engineered earthen rock San Gabriel Dam provide inspiration for future projects.

Materials

- Concrete (primary building material)
- Boulders (secondary building material)
- Water
- Sediment/Sand
- Low sage scrub plants (buckwheat, yucca, artemesia)

Forms

- Tall, towering, historic concrete dam (Morris)
- Art deco elements of Morris Dam
- Rough, rocky walls
- Velvety carpeted scrub plants

Colors

- Turquoise blue of sediment-laden reservoir waters
- Dark midnight blue of oxygen-poor reservoir waters
- Deep sky blue
- Rust (fall color of buckwheat on steep slopes)
- Browns
- Greens
- White (yucca, buckwheat flower)

Native Plants

- *Alnus rhombifolia* (white alder)
- *Amorpha fruticosa* (false indigo)
- *Baccharis salicifolia* (mule fat)
- *Ceanothus sp.* (California lilac)
- *Elymus condensatus* (giant wild rye)
- *Heteromeles arbutifolia* (toyon)

- *Mimulus aurantiacus* (bush monkeyflower)
- *Platanus racemosa* (western sycamore)
- *Populus fremontii* (Fremont's cottonwood)
- *Quercus chrysolepsis* (canyon live oak)
- *Rosa californica* (California rose)
- *Rubus ursinus* (California blackberry)
- *Salix exigua* (narrow-leaved willow)
- *Salix lasiolepis* (arroyo willow)
- *Salix laviegata* (red willow)
- *Umbellularia californica* (California bay laurel)

Reach 3: Upper San Gabriel Valley

The San Gabriel Mountains loom above the gentle inclines of the alluvial fans, which spread out from the mouth of the canyon. At the base of the mountains one can still see vast expanses of rare alluvial fan sage scrub plants, unique to this geologic formation. Spikes of yucca flowers contrast with the softer mounds of sage. The hundreds of feet of unconsolidated sand and gravel supply the construction industry with tons of material each year. The San Gabriel River is the source of river rock, a popular building material for Craftsman-style homes and landscapes throughout the San Gabriel Valley. Historic citrus groves once covered this region, an important chapter in the history of the Valley.

Materials

- River rocks, gravel
- Wood
- Alluvial fan sage scrub plants (black sage, white sage, artemesia, encelia, yucca)
- Scent of sages (when brushed or touched)

COURTESY OF GABI MCLEAN ©2003

COURTESY OF GABI MCLEAN ©2003

Figure 3-54. The Reach 3 design palette reflects the arts and crafts influence with river rock walls and broad sweeps of native sage.

Forms

- Craftsman/arts and crafts-style structural elements (river rock walls, pilaster structures)
- Soft, mounded shrubs (sage scrub expanse)
- Prickly yucca filifera and opuntia
- Orange groves

Colors

- Soft greens
- Gray-green
- Bright green accent
- Gray tones (river rock)
- Sand, beige, tans
- Yellow (sunflower)

Native Plants

- *Amorpha fruticosa* (false indigo)
- *Baccharis pilularis* (coyote brush)
- *Baccharis salicifolia* (mule fat)
- *Ceanothus sp.* (California lilac)
- *Elymus condensatus* (giant wild rye)
- *Heteromeles arbutifolia* (toyon)
- *Malosma laurina* (laurel sumac)

COURTESY OF NORTH EAST TREES

COURTESY OF GABI MCLEAN ©2003

COURTESY OF GABI MCLEAN ©2003

Figure 3-55. The Reach 4 design palette features wood construction, tree forms and birds.

- *Mimulus aurantiacus* (bush monkeyflower)
- *Platanus racemosa* (western sycamore)
- *Populus fremontii* (Fremont's cottonwood)
- *Quercus agrifolia* (coast live oak)
- *Quercus chrysolepsis* (canyon live oak)
- *Rhus integrifolia* (lemonade berry)
- *Rosa californica* (California rose)
- *Rubus ursinus* (California blackberry)
- *Sambucus mexicana* (Mexican elderberry)
- *Salix exigua* (narrow-leaved willow)
- *Salix goodingii* (black willow)
- *Salix lasiolepis* (arroyo willow)
- *Salix laviegata* (red willow)
- *Umbellularia californica* (California bay laurel)

Reach 4: Lower San Gabriel Valley

A close relationship to the land guides the design in the lower San Gabriel Valley. Gravel mining, the recent agricultural land uses such as the Duck Farm, and natural open spaces of Whittier Narrows Regional Park all speak to the importance of natural resources in this reach. Previously, this reach was crisscrossed by small streams and wetlands. There were willows, alders, cattails and other wetland and riparian plants. Then it was home to cattle ranchos and small farms. Over 300 species of birds can still be found today at Whittier Narrows; they frequent the soft-bottom habitat areas of the San Gabriel River and San Jose Creek.

Materials

- Wood (nature-center inspired wood fences, pilings, signs)
- Stones, river rock, flagstone
- Trees (sycamore, willow, alder)
- Wetland stream plants (cattail)

Forms

- Wetland birds (heron, egret, ducks)
- Bird-like oil-derricks

Colors

- Brown
- Green

Native Plants

- *Amorpha fruticosa* (false indigo)
- *Baccharis pilularis* (coyote brush)
- *Baccharis salicifolia* (mule fat)
- *Ceanothus sp.* (California lilac)
- *Elymus condensatus* (giant wild rye)
- *Heteromeles arbutifolia* (toyon)
- *Juglans californica* (California walnut)
- *Malosma laurina* (laurel sumac)

- *Mimulus aurantiacus* (bush monkeyflower)
- *Platanus racemosa* (western sycamore)
- *Populus fremontii* (Fremont's cottonwood)
- *Quercus agrifolia* (coast live oak)
- *Rhus integrifolia* (lemonade berry)
- *Rosa californica* (California rose)
- *Rubus ursinus* (California blackberry)
- *Sambucus mexicana* (Mexican elderberry)
- *Salix exigua* (narrow-leaved willow)
- *Salix goodingii* (black willow)
- *Salix lasiolepis* (arroyo willow)
- *Salix laviegata* (red willow)

Reach 5: Upper Coastal Plain

The Pio Pico State Historic Park provides many distinct historic and cultural design references. The historic home of Pio de Jesus Pico, the last Governor of Mexican California, was built in the mid-1800s and recently reopened. His home was called El Ranchito, reflecting the rancho era of California. Wood, stucco and cast-iron gates and fences are primary materials. A "steer" icon is found throughout the park. The landscape is stark. Drought-tolerant plants with strong forms are used in contrast to the pale colors of stucco. Houses located in neighborhoods near the river reflect the rancho-era aesthetic.

COURTESY OF NORTH EAST TREES

Figure 3-56. The Reach 5 design palette shows the Rancho influence with stucco walls, wood fences and iron gates.

Materials

- Heavy wood gates, fences
- Natural twig trellis, arbor, fence
- Stucco walls, pilasters
- Cast iron gates, fences
- Sharp, bold leaves (yucca)

Forms

- "Steer" brand icon at Pio Pico
- Curved walls, signs
- "Alamo" façade form (City of Pico Rivera signage)

Colors

- Brown wood
- Black iron
- Tan, sand, beige, pale peach (stucco)

Native Plants

- *Amorpha fruticosa* (false indigo)
- *Baccharis pilularis* (coyote brush)
- *Baccharis salicifolia* (mule fat)
- *Ceanothus sp.* (California lilac)
- *Elymus condensatus* (giant wild rye)
- *Heteromeles arbutifolia* (toyon)
- *Juglans californica* (California walnut)
- *Malosma laurina* (laurel sumac)
- *Mimulus aurantiacus* (bush monkeyflower)
- *Platanus racemosa* (western sycamore)

COURTESY OF BRETT GOLDSTONE, NORTH EAST TREES

Figure 3-57. The Reach 6 design palette features industrial materials—concrete and metal—contrasting with cool sherbet colors.

- *Populus fremontii* (Fremont's cottonwood)
- *Quercus agrifolia* (coast live oak)
- *Rhus integrifolia* (lemonade berry)
- *Rosa californica* (California rose)
- *Rubus ursinus* (California blackberry)
- *Sambucus mexicana* (Mexican elderberry)
- *Salix exigua* (narrow-leaved willow)
- *Salix goodingii* (black willow)
- *Salix lasiolepis* (arroyo willow)
- *Salix laviegata* (red willow)

Reach 6: Lower Coastal Plain

The overwhelming presence of engineered concrete dominates this section of the river. Human-built forms with cool sherbet colors are painted onto reclaimed water pipes and other utility facilities. The smooth and engineered surfaces of channel walls are repeated in drainage channels and at Bellflower's skateboard park. Concrete and metal edges are prevalent in this reach.

Materials

- Concrete
- Metal

Forms

- Angular, smooth surfaces
- Sleek, smooth surfaces

Colors

- Lavender, lilac, periwinkle
- Pink
- Yellow

Native Plants

- *Amorpha fruticosa* (false indigo)
- *Baccharis pilularis* (coyote brush)
- *Baccharis salicifolia* (mule fat)
- *Ceanothus sp.* (California lilac)
- *Elymus condensatus* (giant wild rye)
- *Heteromeles arbutifolia* (toyon)
- *Malosma laurina* (laurel sumac)

- *Mimulus aurantiacus* (bush monkeyflower)
- *Platanus racemosa* (western sycamore)
- *Populus fremontii* (Fremont's cottonwood)
- *Quercus agrifolia* (coast live oak)
- *Rhus integrifolia* (lemonade berry)
- *Rosa californica* (California rose)
- *Rubus ursinus* (California blackberry)
- *Sambucus mexicana* (Mexican elderberry)
- *Salix exigua* (narrow-leaved willow)
- *Salix goodingii* (black willow)
- *Salix lasiolepis* (arroyo willow)
- *Salix laviegata* (red willow)

Reach 7: Tidal Influence

The overwhelming presence of water is the primary design element for this reach. The river meets the Pacific Ocean here, mixing ocean saltwater with freshwater. Wind is made visible through windsocks, flags and banners, and in more subtle ways such as ripple patterns in the sand and water surfaces. The marina, with its sailboats and bright, primary colors, also offers strong design features.

Materials

- Water!
- Sand
- Weathered wood (driftwood, pilings)
- Riprap, large jagged boulders
- Gas-lamps
- Wetland plants (cattails)

Forms

- Wind, visualization of… (flags, banners, ripples in sand or water)
- Waves and wavy patterns
- Sailboats (triangle)

COURTESY OF DAN SLATER

COURTESY OF DAN SLATER

Figure 3-58. The Reach 7 design palette features a marina influence with basic geometric shapes and primary colors.

- Banners, flags
- Bird-like oil-derricks
- Elements worn smooth by water and wind (driftwood)
- Elements worn down by water and wind (sand, pebbles)
- Sinous wetland forms

Colors

- Blue for water
- Bright primary colors associated with sailing, marinas (yellow, blue, green, red)
- White (sailboats)
- Wetlands mosaic (browns, greens, blues)

Native Plants

- *Amorpha fruticosa* (false indigo)
- *Baccharis pilularis* (coyote brush)
- *Baccharis salicifolia* (mule fat)
- *Ceanothus sp.* (California lilac)
- *Elymus condensatus* (giant wild rye)
- *Heteromeles arbutifolia* (toyon)
- *Malosma laurina* (laurel sumac)

Adapting the Los Angeles River Functional Design Guidelines

Functional design standards provide standard or suggested dimensions and other specifications for river facilities and amenities, taking into account maintenance requirements, durability, safety, accessibility and overall quality control.

The Los Angeles River Master Plan Advisory Committee has developed design guidelines for implementing projects along the Los Angeles River. The Committee has provided three sets of guidelines: landscaping, maintenance and a signage manual. Both the landscaping and signage manuals are currently available, and the maintenance manual is expected later in 2004.

Since most of the functional specifications being developed for the LA River are universal, they are also applicable to the San Gabriel River. Because of the similarities between conditions along the Los Angeles and the San Gabriel Rivers, these LA River functional specifications are being adapted as technical approaches for the San Gabriel River Corridor Master Plan, and will be available in a separate stand-alone volume (see Appendix D, Design Guideline Topic Areas).

The LA River design guidelines, "Landscaping Guidelines and Plant Palettes for the Los Angeles River and Tujunga Wash," provides functional specifications for both existing and new facilities along the river. The guidelines cover a wide range of topics, including land use, safety and maintenance standards for already existing functions and facilities along the river channel, such as the maintenance standards of the Los Angeles County Flood Control District. For instance, there are standards for both maintenance and emergency vehicle ingress and egress to the river, as determined by service road width, vegetation planning zones and access gate setbacks. Auxiliary function and maintenance requirements are also specified for the two utilities that maintain power lines and transmission towers on the service road or adjacent to the channel (i.e., for the City of Los Angeles Department of Water and Power and for Southern California Edison). This includes detailed specifications for such items as vegetation clearance around the base of transmission towers and plant height limitations. Specifications for other already existing facilities (such as requirements for bike paths and equestrian trails and facilities) are also provided.

The design guidelines also establish basic functional standards for a range of new amenities, trails and paths to be developed along the river such as:

- Fences
- Gates
- Lighting
- Benches
- Trash Receptacles
- Bollards
- Bike Racks
- Drinking Fountains
- Equestrian Amenities
- Emergency Call Boxes
- Pedestrian Paths
- Bicycle Paths
- Equestrian Trails

Project sponsors can use the functional standards as specified within the San Gabriel River Corridor Master Plan Design Guidelines Technical Appendix (available later this year) as a reference to assist with design and development of plans for their own specific projects. For a full listing of the topic areas contained in the Los Angeles River design guidelines, see Appendix C.

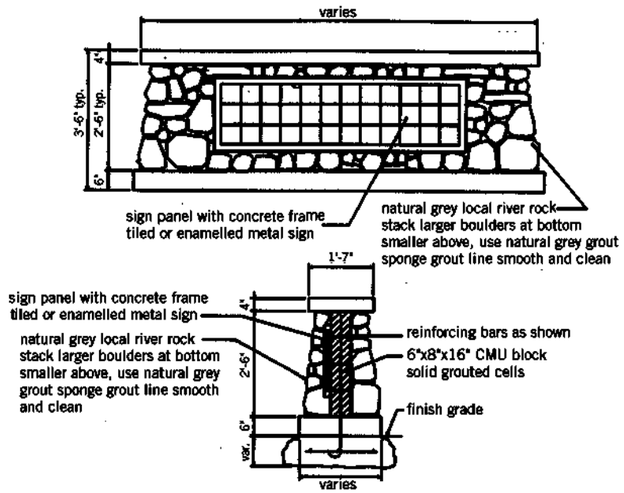


ILLUSTRATION COURTESY OF LADPW

Figure 3-59. Design guidelines, such as this river rock wall detail from the "Los Angeles River Master Plan Landscaping Guidelines and Plant Palettes" by LADPW, specify materials and design elements that blend with the river environment.

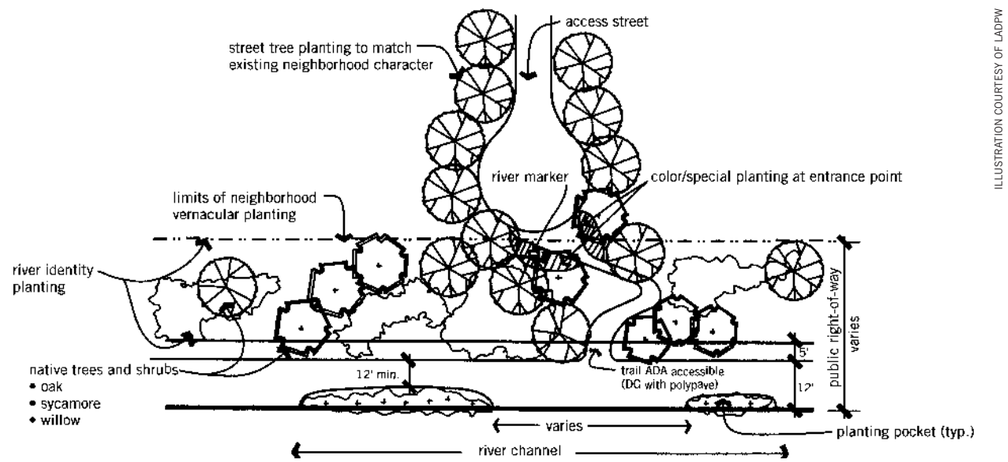


ILLUSTRATION COURTESY OF LADPW

Figure 3-60. Los Angeles River design guidelines such as this street-end landscape concept from the "Los Angeles River Master Plan Landscaping Guidelines and Plant Palettes" provide exact design specifications for river projects.

3.8 CONCEPT DESIGN STUDIES

The Concept Design Studies are exercises that were carried out by members of the Steering Committee to illustrate how the Master Plan multi-objective approach might apply to projects in the San Gabriel River corridor. These studies are intended for illustration purposes only and are not in any way approved or recommended plans. For each of these sites, the actual planning process by project sponsors still needs to be carried out, including appropriate public involvement throughout.

The five Concept Design Studies illustrate how project planning can simultaneously address the multiple goals of the Master Plan. Lessons learned from these projects will help inform and guide the selection, planning, and design of all projects within the Master Plan project area.

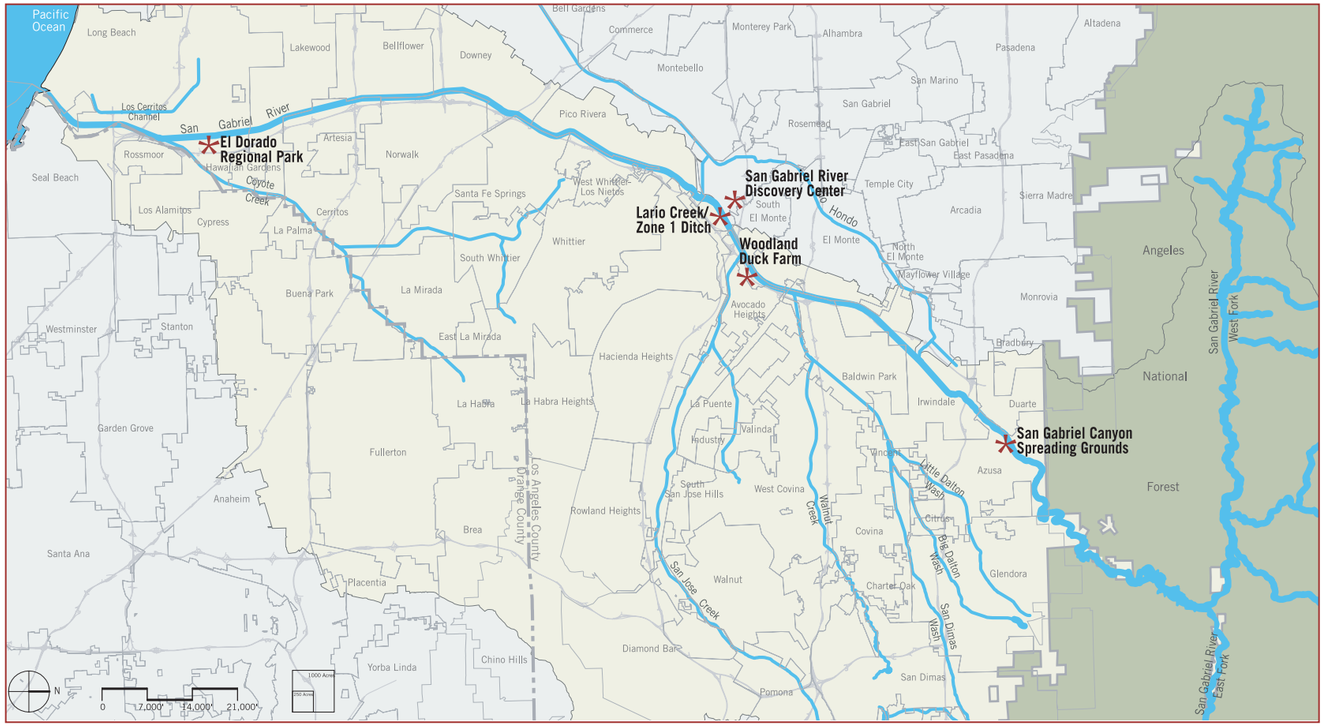
The San Gabriel River Master Plan Steering Committee selected the Concept Design Studies from the list of over 134 stakeholder projects.

Each individual Concept Design Study addresses multiple Master Plan Elements or comprehensively meets all the goals, objectives, and performance criteria of at least one Master Plan Element.

The five projects selected as Concept Design Studies represent all six Plan Elements (see Section 3.3), and the eight river enhancement concept categories (see Section 3.5). Diverse stakeholders—cities, public agencies, and community organizations—are among the many sponsors associated with these projects.

The five Concept Design Studies selected by the Steering Committee are:

- San Gabriel Canyon Spreading Grounds (Reach 3)
- Woodland Duck Farm (Reach 4)
- San Gabriel River Discovery Center at Whittier Narrows (Reach 4)
- Lario Creek/Zone 1 Ditch (Reach 4)
- El Dorado Regional Park Wetlands and Master Plan Update (Reach 6)



Map 3-9. The five Concept Design Studies.

Each study includes a project description, the opportunities offered by the project, specific issues and challenges that must be addressed, the initial design concepts, a site analysis, and a preliminary concept design.

As with all Master Plan projects, the Concept Design Studies can only be implemented if all existing water rights are protected, water supply sources are not diminished, and water quality is not degraded. This requirement stems from more than a century of negotiation and litigation during which water rights to local surface and groundwater have been developed. The State Water Resources Control Board has declared the San Gabriel River fully appropriated, and that reality must be factored into the final design and planning of all projects in the Master Plan.

3.8.1 San Gabriel Canyon Spreading Grounds

Project Description

Once a gravel quarry, this 165-acre site now encompasses two deep spreading basins adjacent to the San Gabriel River. Native landscaping improvements will improve habitat and enhance views by aesthetically improving the appearance of the spreading basins. An interpretive trail and pocket parks at the northern and southern edge of the basins will increase recreational and educational opportunities.

Opportunity

As an adaptive re-use of gravel mining pits, the San Gabriel Canyon Spreading Basins were designed as purely functional, utilitarian facilities. The proposed improvements at this facility provide an excellent example of how existing water conservation infrastructure can be enhanced to serve other multi-purpose objectives, while still effectively carrying out its primary water supply functions.

A vast open space area lies adjacent to the river where the mountains meet the valley floor. The area offers spectacular views of the surrounding natural landscape. With the right landscaping, the pools of water held by the spreading basins can look like lakes reflecting the sky and the mountains. The proposed enhancements will create a more visually appealing place, offering passersby a serene environment for contemplation and passive recreation while also improving habitat.

The basins are currently surrounded by bare soils and concrete drainage structures that were installed to reduce erosion. Random pockets of native and non-native vegetation dot the landscape. Heavy trucks and other equipment move slowly along two parallel access roads encircling the basins. Adding to the stark industrial appearance of the site is a chain link fence surrounding the perimeter. Many residents of nearby Azusa may not even be aware of this barren landscape.

Figure 3-61. A pocket park with interpretive signage will offer spectacular views of the mountains.

Issues and Challenges

The primary mission of the spreading grounds and its accompanying facilities is water conservation; this mission will remain unchanged. The challenge is how to incorporate recreational and habitat enhancements without compromising this primary mission.

Safety, security, and liability concerns will pose a key challenge: would improvements to the site create an "attractive nuisance" (an issue that applies to several other sites along the river). Although a natural lake with steep banks can be a dangerous site, it does not create the same degree of liability as a human-built lake with steep banks. Since enhancements to the spreading grounds will create a more appealing environment, precautions must be taken to ensure public safety. Also, the water itself must be protected from accidental or intentional contamination. Finally,

Figure 3-62. A mountain backdrop against clear blue water is a perfect setting for a pocket park and trailside rest area.

Figure 3-63. Bare landscapes need softening, especially when adjacent to housing.

any improvements must take into consideration new and developing security measures.

For these reasons, while the site design may enable visitors to enjoy the landscaped grounds and scenic views, it must also keep them away from the steep edges of each basin, the open concrete channel, City of Azusa water facilities, and the water itself. In addition, landscaping should achieve the desired aesthetic effects without blocking views for security purposes.

Habitat restoration must be compatible with the primary water supply function of the site. Water surface elevation in the basins fluctuates an impressive 80 feet during the year, with a frequency more erratic than the natural wet/dry cycle. Water is released during the summer months, exposing the nearly vertical sides of the basins, relieved only by terraced earthen slopes for vehicular maintenance access. The bare soils are subject to erosion as the water rises and falls. These drastic water level fluctuations and associated erosive forces must be taken into account in habitat design.

Large trucks moving loads of sediments traverse the narrows strips of land between and around the basins, busily arriving, circulating, and exiting the site. City and County maintenance access roads are in some cases parallel. This suggests an opportunity to consolidate roads parallel to the concrete channel, creating additional space for habitat restoration and trails.

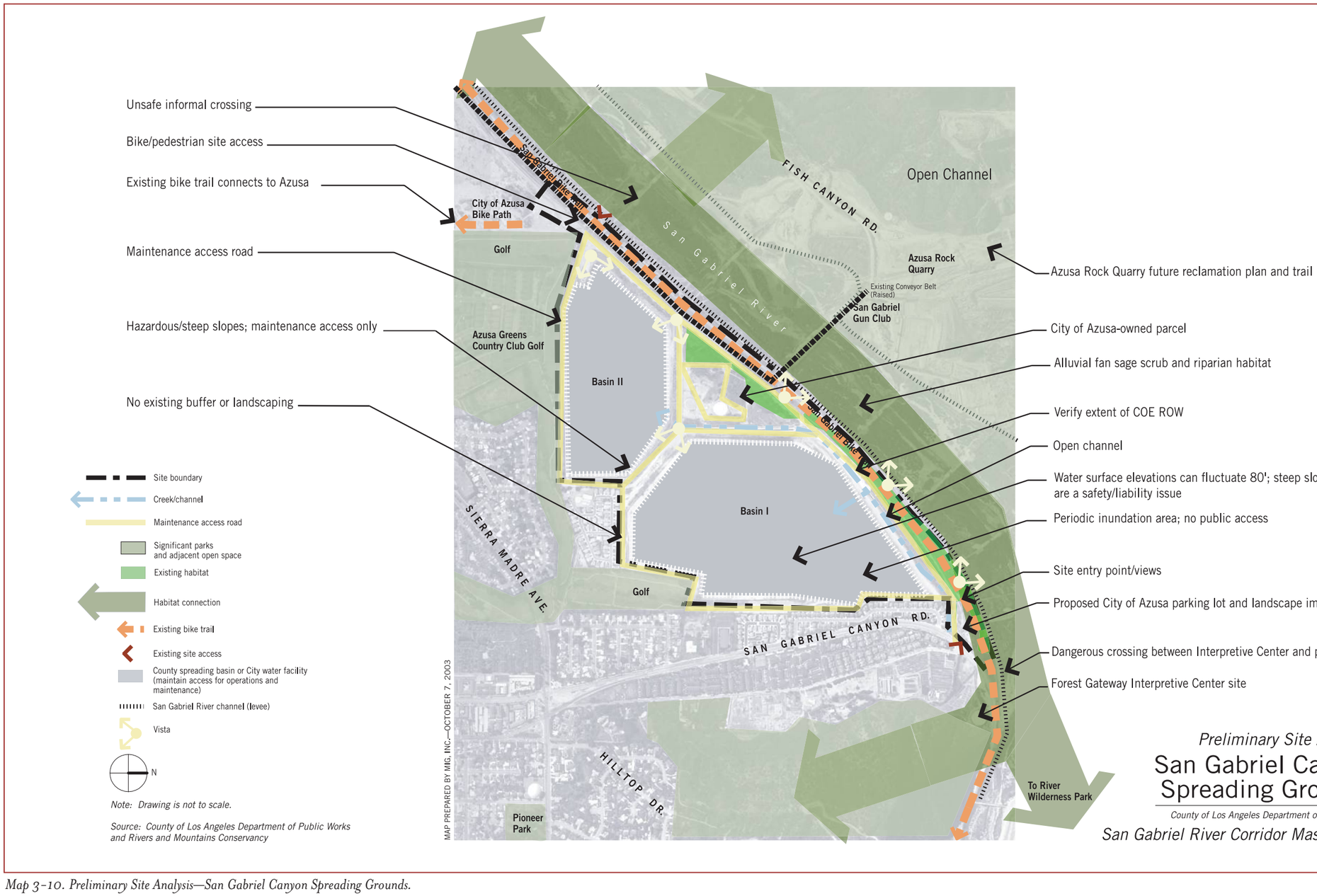
A gravel conveyor belt operated by Vulcan runs along the northwest edge of the basins. Aside from the function it performs, the aesthetic contrast of its pure industrial form slicing through the river floodplain is a powerful image, and could serve as a linear interpretive feature. The San Gabriel River Bike Trail runs along an elevated levee between the conveyor belt and the river, providing views of the spreading grounds and the surrounding landscape. However, there is currently no connection to the site and bike trail.

Design Concepts

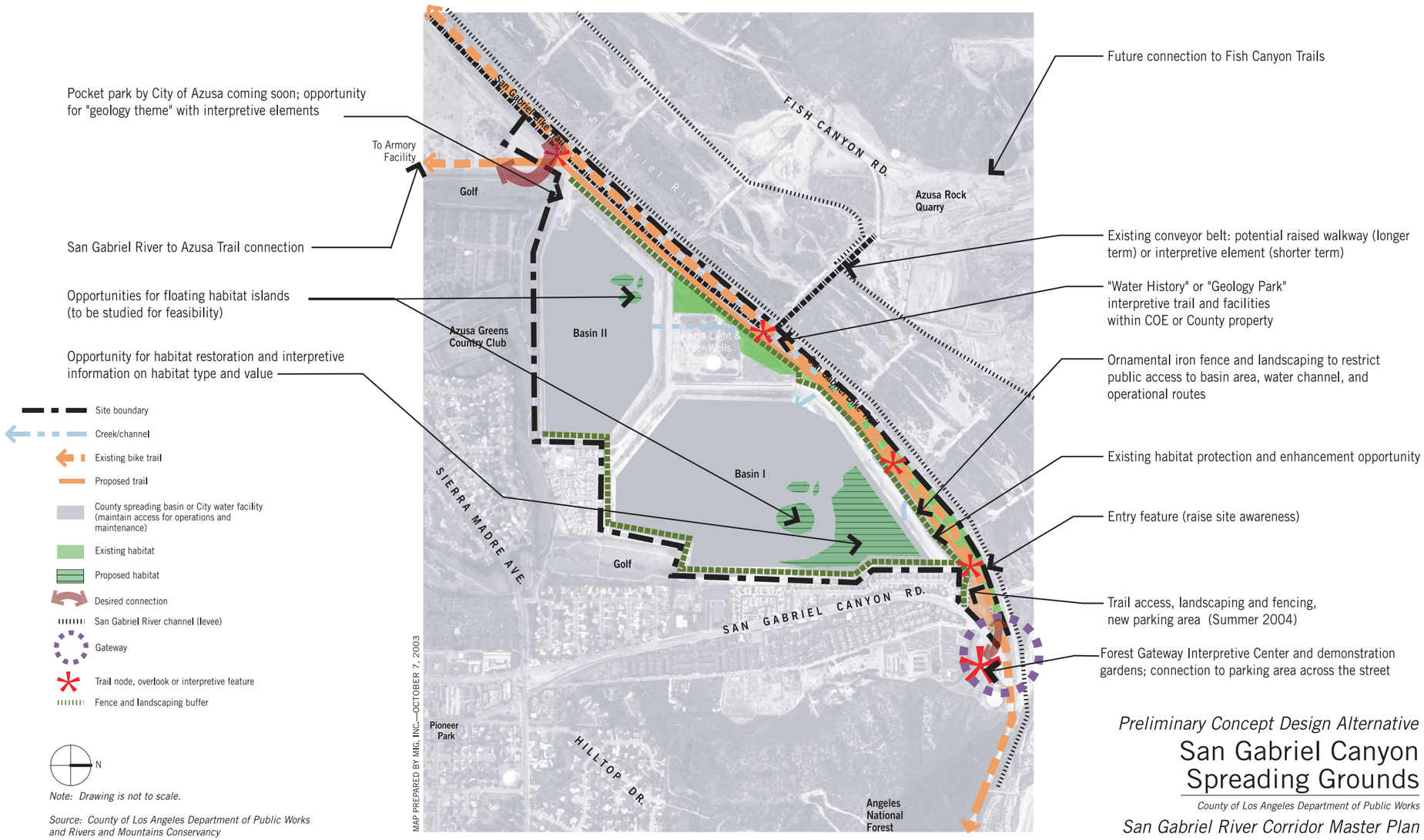
The spine of the proposed improvements is the interpretive trail, with nodes, amenities and destinations anchoring it to the site and its broader landscape context. While the meandering trail offers views and information about the site, fencing and vegetation block public access to both the basins and the concrete channel.

The existing chain link fence surrounding the perimeter of the facility should be replaced with a tubular steel or ornamental iron fence, which can maintain security yet improve aesthetics. This will also enhance public respect for the facility and its critical function of providing drinking water. Artwork on the fence or the fence design itself can follow this theme.

A "pocket park" will anchor each end of the new trail segment, one at the northwest corner and one at the southwest corner. These could be created by moving existing fence lines closer to the basins, creating pockets of land outside of the proposed new fences for the facility. The southwest



Map 3-10. Preliminary Site Analysis—San Gabriel Canyon Spreading Grounds.



Map 3-11. Preliminary Concept Design Alternative—San Gabriel Canyon Spreading Grounds. For illustration purposes only.

corner pocket could be a geology-theme park, in conjunction with the adjacent Vulcan operations. The northwest corner pocket could feature native landscaping, passive recreation, and interpretive signage. The triangular parcel between the two basins is the focal point of the site. This area has views of the spreading basins on three sides, and Fish Canyon and the San Gabriel River to the northwest.

Landscape improvements will provide native landscaping in key areas of the basin edges to improve habitat, enhance views, reduce reflected heat and light and decrease erosion. Habitat values should be maximized through the use of native plants beneficial to birds, small mammals, amphibians, reptiles and insects with access to the basins.

The existing native habitat (alluvial fan sage scrub) can be enhanced and supplemented near the spreading grounds. The beach area on the north side of Basin II and the triangle between the two basins are the largest areas at the site for potential habitat restoration. The shallow corners and edges of the spreading basins may be enhanced with riparian vegetation including willow trees, mule fat scrub, and baccharis scrub, but this may be modified to take into account fluctuating water levels. However, vegetated slopes are nature's way of minimizing erosion, and could be useful here. Vector control to mitigate mosquito breeding must be considered in the design and planning of any new habitat along the edges of the spreading basins.

Floating islands in the spreading basins are possible solutions for fluctuating water levels. These islands would be connected by a cable and weight system attached to the bottom of the basin. The islands would be planted with wetland vegetation providing habitat for breeding and migrating bird species. Kiosks on the trail could provide educational information about wetland habitats and wildlife. The benefits or impacts on water quality relating to attracting birds and other species will require further study because new wildlife could have impacts on water quality. Floating islands may also have a negative impact on maintenance and operations at the site. If habitat is established, LADPW maintenance activities and spreading operations may be affected. New regulations could possibly be imposed when new wildlife and recreation are introduced. If spreading operations are affected, opportunities to spread imported or local water may be missed. If the floating island concept is studied further, long-term assurances will be needed to ensure that the introduction of habitat is compatible with maintaining the facility's water conservation function.

Key Components of the Concept Design Study

- New multi-use trail, amenities, and vista points
- Fencing and native landscaping barriers to restrict public access to spreading basins, concrete channel, light/water facility and sensitive habitat areas
- Interpretive signage: geology, water supply and habitat themes
- Connections to the Gateway Interpretive Center, the San Gabriel River Bike Trail and the City of Azusa
- Existing habitat protection and enhancement
- Perimeter landscape improvements
- New pocket parks in southwest and northwest corners of site
- Floating habitat islands feasibility study

3.8.2 Woodland Duck Farm

Project Description

This project aims to transform an abandoned duck farm into a multi-use riverfront park with passive recreation and native habitat enhancements. Located on a long, narrow strip of land, this 57-acre site, squeezed between the San Gabriel River on the west and the 605 Freeway (San Gabriel) on the east, was the largest privately-owned open space adjacent to the river. Recognizing its unique potential, the Watershed Conservation Authority, a joint powers authority formed by the RMC and the Los Angeles County Flood Control District, purchased the site. Improvements could include interpretive trails, over-look points, habitat restoration, equestrian facilities and treatment wetlands.

Opportunity

When it closed in 2001, the Woodland Duck Farm had been in operation since 1950, the last remaining animal agricultural business in Los Angeles County. It left behind a flat, bleak landscape offering little in the way of shade and only a few scattered remnants of vegetation, mostly non-native. With the exception of a Spanish-style ranch house and remnant duck sheds, the only other remaining structures are tall utility towers marching along the full length of the property. Features of the original floodplain that once characterized this site were long ago obscured by the channelization of the river. Meanwhile, the drone of the freeway is a constant reminder of its proximity.

Yet, despite or even because of this stark setting, the site holds great promise as a possible model for other river-adjacent properties, demonstrating the extent to which it is possible to recreate some of the lost river environment. It also represents a tremendous opportunity to reclaim underused lands to benefit nearby communities long starved for open space and recreational facilities.

Strategically located between Whittier Narrows and the Santa Fe Dam Recreational Area, the Woodland Duck Farm can also provide a critical link in the proposed habitat corridor that will eventually extend from Puente Hills to the San Gabriel Mountains. The Sierra Club was among the first to recognize its strategic importance, not only for habitat but also for recreation and open space. The Sierra Club placed this site at the heart of its proposal for a San Gabriel Confluence Park, a conceptual study of a connected open space network extending from San Jose Creek to the Rio Hondo.

There are other opportunities as well. Current uses on the site include acreage leased for a nursery and an equestrian facility. While these uses are currently subject to short term leases and their continued presence and location would be subject to a site specific master plan, one or both might become a component of the future park. Reflecting the long-standing presence of nearby equestrian communities, acquisition of the Woodland Duck Farm presents an opportunity to preserve this singular recreational resource.

Two creeks on the site, Avocado and San Jose, may also help municipalities meet their mandated Total Maximum Daily Load Requirements (TMDLs). By incorporating best management practices to treat low flows from one or both creeks, the site can serve as an example for other river-adjacent properties with similar water treatment potential.

And, as further testimony to the importance of the Woodland Duck Farm site, RMC has selected the ranch house as the location for its future headquarters.

Issues and Challenges

Many challenges must be overcome to make the vision of a multi-objective riverfront park at the Woodland Duck Farm a reality. This project is a microcosm of the types of problems and opportunities existing elsewhere along the San Gabriel River. Improvements must be made to create a more appealing environment for prospective visitors to the park. There are also physical constraints that must be accommodated in the design. Given its former use as a duck farm, heavy nitrate loading may be a factor and potential contamination must be analyzed.

Figure 3-64. Separate equestrian and bike trails will follow along the treatment wetland.

A contamination plume in the groundwater located north of the Duck Farm property is a recognized EPA superfund site, and may need to be addressed in future park planning. The EPA should be consulted about contaminant migration. There are EPA clean-up programs currently in the area, such as the Baldwin Park Operable Unit.

Another design challenge will be how best to provide convenient access to a 2-mile-long by 500-feet-wide area bounded by the 605 Freeway, the San Gabriel River and San Jose Creek. Presently, only limited access to the site is possible via unmarked entrances under the freeway (including a utility easement, a freeway underpass, and a pedestrian entrance). Ironically, adjacent communities that desperately need parks are built right up to the western edge of the river, yet most have little connection to the waterway or the potential open space promised by the nearby duck farm site. Even

COURTESY OF CAL POLY POMONA/SIERRA CLUB, ANGELES CHAPTER

Figure 3-65. Southern California Edison towers dominate the landscape.

COURTESY OF CAL POLY POMONA/SIERRA CLUB, ANGELES CHAPTER

Figure 3-66. This existing house that once belonged to the Woodland family will become the new RMC headquarters.

the high school directly across the river from the site is strictly separated from the river by a series of chain link fences and hazard signs.

Sound barriers will be needed to buffer noise and other freeway affects. Earth berms or terraces can be planted that will create a green wall to mitigate freeway noise and improve views from both the site and the freeway. These will also create a green landmark that signals a riparian corridor.

Other planning issues to be addressed include the SCE and DWP utility towers that dominate much of the site. Fifteen-foot height restrictions under the power lines and the operating requirements of the utilities, including the need to maintain vehicular access will shape park and habitat restoration plans. A safe harbor agreement may be required if utility companies are to allow native plantings within their right-of-way and easements. The possibility of a safe harbor agreement, as established under the Endangered Species Act, will need to be investigated,

Although it is a large open space adjacent to the river, a combination of factors limits the site's suitability for floodplain restoration. The freeway bounds the site on one side, making it too narrow to accommodate an adequate terraced levee and broader floodplain. In addition, the volume and timing of flows in the river—from Avocado Creek, San Jose Creek, and releases from upstream sources—fluctuate unpredictably according to supply and demand. Vegetative clearing for flood control maintenance further diminishes the possibility of native habitat restoration in the soft-bottom channel.

On the site itself, existing vegetation is dominated by non-native ruderal (weedy) vegetation, although there are some native species present. However, channelization of the river changed the hydrology, soils, and water table to such a degree, that the native riparian vegetation may not be established again without irrigation or some other water supply.

As with many locations along the river, what is now largely deserted vacant land can become a public safety issue. Equestrians traveling alone have been particularly concerned about encampments or undesirable confrontations in the confluence area thickets. So it is essential to create both the appearance and the reality of a safe environment. Fire trucks and other emergency vehicles need access to the property to ensure quick response times for public safety. That access will also facilitate regular patrols by local police and the County Sheriff, which will discourage vandalism and other illegal activities, and further enhance public safety.

Design Concepts

Although the RMC plans to work with the community and other stakeholders to help develop a final specific design for the duck farm site, some general design concepts can be anticipated.

Site entry and access points will have to be safe and clearly defined for park visitors. Primary site access for vehicles and parking may be provided through the freeway underpass linking the equestrian center on the east side of the San Gabriel Freeway to the main portion of the duck farm property on the west side. At the southwest corner of the property, a new bike and pedestrian bridge will connect the San Jose Creek Bike Trail and the San Gabriel River Bike Trail. It will also provide the communities on the far side of the river with direct, convenient access to the duck farm. Emergency access points may need to be located at the utility easement at the north side of the property and the planned bridge at the southern end of the property.

A major programmatic feature of the site includes the possibility of treating stormwater runoff from Avocado Creek. One approach is to use sinuous treatment wetlands braided across the site, parallel to the river.

Surface flows provide an opportunity to simultaneously meet recreational and habitat objectives. Access to the SCE towers for maintenance vehicles can be maintained, with open space near but not under the towers used for the wetland. If half of the available open space were used for the wetlands (from the golf course south to San Jose Creek), about 15 acres would be available, which could effectively treat almost 400 acres of the first three-quarter inches of urban runoff. However, the Avocado Creek channel is 15 feet below grade, so a long swale or wetland would require pumping or a large amount of excavation throughout the site.

Another option may be a 3-acre wet detention basin, essentially an artificial lake with emergent wetland vegetation around the perimeter. The wet detention basin would be an effective means for removing suspended sediments, nutrients and metals, and would also be aesthetically pleasing because of the permanent pool and vegetation. Unlike the treatment wetlands, it would not require as much excavation but it would require inflow on a regular basis to maintain the water level. Soils excavated to create the treatment wetlands or the basins could be used as fill to create berms along the freeway for sound barriers.

To minimize mosquito breeding, vector control would have to be carefully considered for either the treatment wetlands or the wet detention basin.

In addition, for emergency and safety reasons, no ponding of water under power lines is allowed under current SCE policy. This requirement reflects SCE's status as an investor-owned utility regulated by the California Public Utilities Commission. The regulatory condition limits SCE's flexibility much more than municipal utilities, like the DWP. This requirement would have to be addressed in the design and siting of treatment wetlands or a wet detention basin.

Additional water flows might be provided by two rubber dams the LADPW plans to locate in the San Gabriel River adjacent to the Duck Farm. A third rubber dam is already in operation near the northern end of the site. These water conservation structures could provide a modest increase in riparian habitat in the channel or flow diversions from the rubber dams might help support habitat restoration on the duck farm site. Existing water rights would have to be maintained in the design of any water diversion onto the Woodland Duck Farm site.

Much of the duck farm site could be re-vegetated with native species, but the soil type and the depth of the groundwater table are critical factors in determining the type of habitats that could be supported. If the soils and groundwater levels are conducive to riparian habitat, a mosaic of willow, sycamore and cottonwood would be appropriate. If riparian habitat could not be sustained, a mosaic of upland scrub vegetation, including sage scrub, mule fat, and elderberry woodland would be appropriate. Habitat restoration, along with the treatment wetlands or wet detention ponds, will enable the duck farm to function as one important linkage in the Puente Hills to San Gabriel Mountains habitat corridor.

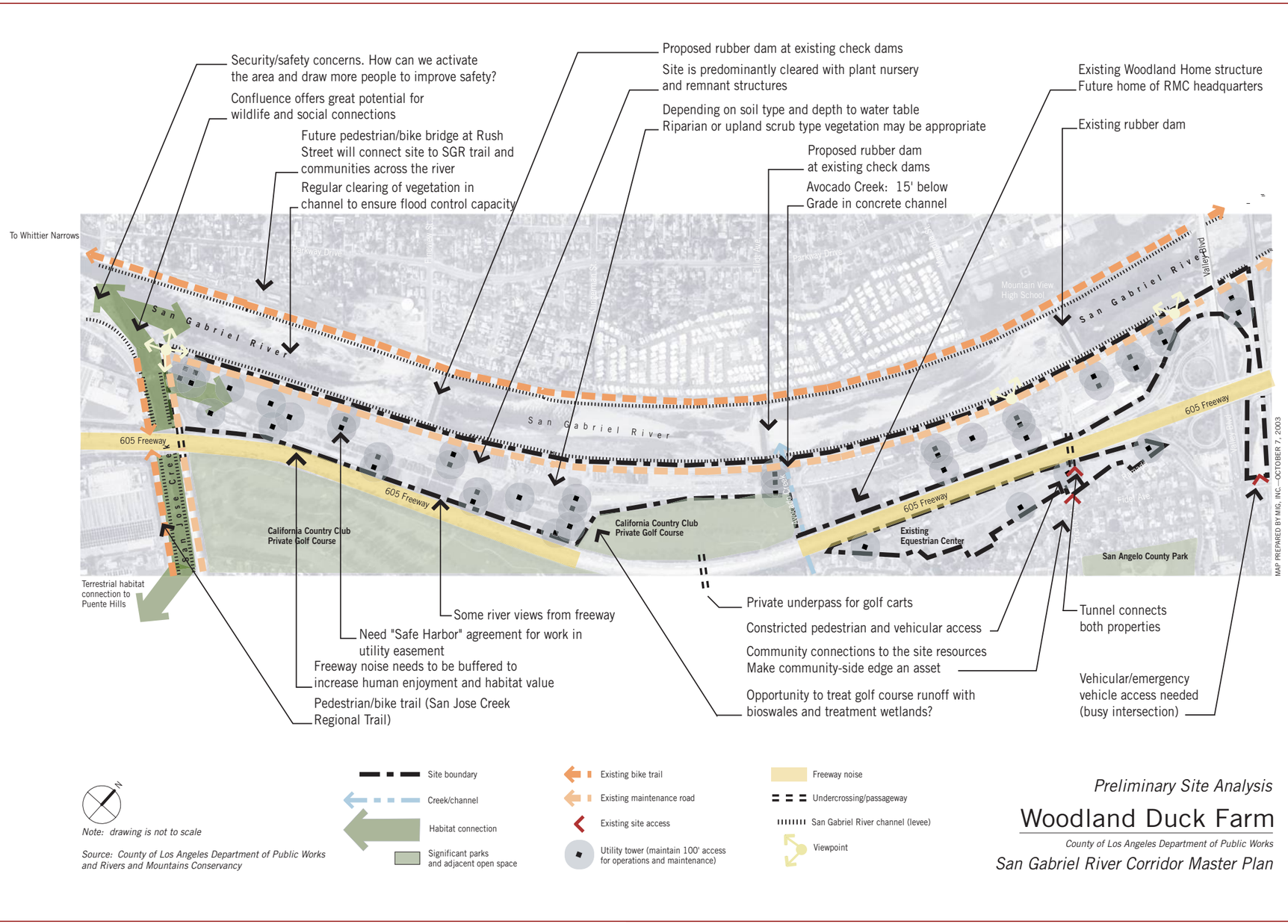
A series of multi-use trails, trail nodes and educational kiosks can be integrated throughout the site, winding through the treatment wetlands and offering a variety of experiences from short loops to longer trail circuits. Signage along the way will orient trail users to the site features, the San Gabriel River, San Jose Creek and to their place along the river corridor. An overlook at the confluence could explain its significant biological richness.

Using utility easements for open space and trails is an important feature of the project design. A stepping-stone approach is suggested, beginning with first phase implementation with trails and non-native, low-water use plants. If a safe harbor agreement is in place, a second phase of low-growing native plants and habitat can be established. All plantings, non-native and native, would have to be consistent with the ground and aerial clearances for the towers.

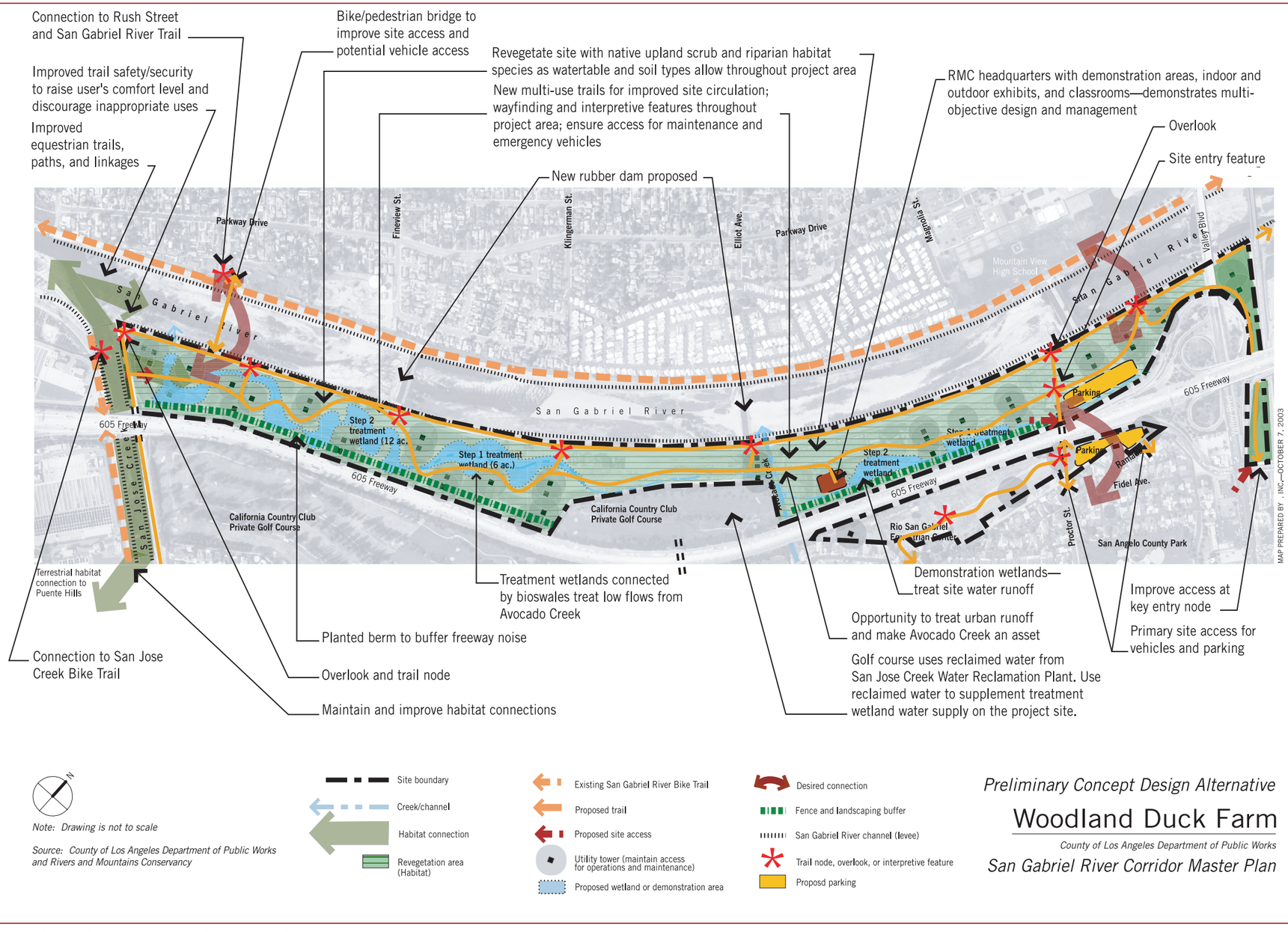
Plans for the new RMC headquarters in the original ranch house may include demonstration gardens, outdoor gathering spaces, and other exhibits. Site and building development should demonstrate green building techniques and an attractive, watershed-appropriate site design. The overall plan for the Duck Farm project might also include additional visitor serving facilities and other enhancements including improved equestrian trails, paths and linkages.

Key Components of the Concept Design Study

- Improved site access and parking
- Re-vegetation and habitat restoration
- Treatment wetlands and bioswales or wet detention basins to treat low flows from Avocado Creek
- Multi-use trails for improved site circulation, wayfinding and interpretive features
- Designated habitat and recreational spaces
- Wildlife habitat corridor connections
- Educational and interpretive opportunities
- Improved equestrian trails, paths, linkages and facilities
- Planted berm to buffer freeway noise
- Spanish style-ranch house as new RMC/WCA headquarters
- Native plant nursery



Map 3-12. Preliminary Site Analysis—Woodland Duck Farm.



Map 3-13. Preliminary Concept Design Alternative—Woodland Duck Farm. For illustration purposes only.

3.8.3 San Gabriel River Discovery Center at Whittier Narrows

Project Description

A new, regional education center will be a multi-faceted showcase at the heart of the San Gabriel River, providing residents and area visitors a chance to explore and reconnect with the river. The new center will be built at the site of the well-used Whittier Narrows Nature Center—at the geographic and hydrologic middle of the San Gabriel River. It will model environmentally-sensitive design, featuring a museum, conference center, and indoor/outdoor programming focused on the watershed. It will also provide information about other locations in the watershed that can be visited (including nearby Lario Creek, the Woodland Duck Farm, and the Rio Hondo). The principal groups involved in the project are County of Los Angeles Department of Parks and Recreation, the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy and the Upper San Gabriel Valley Municipal Water District.

Opportunity

The 320-acre Whittier Narrows Nature Area is owned by the U.S. Army Corps of Engineers for flood control purposes. Lario Creek (the Zone 1 Ditch) also passes through the area. The existing Nature Center was originally operated by the Audubon Society as a bird sanctuary because of the large numbers of resident and migratory birds. The County of Los Angeles Department of Parks and Recreation took over operations when Legg Lake and the Whittier Narrows Regional Park opened.

Many visitors and school nature programs enjoy the recreational opportunities of the Whittier Narrows Regional Park, visit the current Center, and use the lakes and nature trails. Yet, few realize the historic importance of the San Gabriel River to all the people who have lived in the area for hundreds of years. The river has done its job so well that it has allowed area residents to forget about it as it runs through the valley.

The current Nature Center includes a small museum, picnic area, exhibits and about 320 acres of native but somewhat degraded habitat. The Nature Reserve section, adjacent to Lario Creek, is a riparian habitat dominated by sycamore, cottonwood and willows. However, large areas of low quality ruderal (weedy) habitat are dominated by non-native grasses and invasive species such as castor bean and *arundo donax* (giant reed). Replanting with native vegetation can increase habitat and provide demonstration gardens.

Figure 3-67. An outdoor terrace can visually link the indoor exhibits with the native landscape and trails outside.

The current building was constructed in the 1960s. It is small and badly needs renovation and updating. A new Center, built to "green" standards, will replace the current dated facility, expanding educational and community-building opportunities.

The Discovery Center complex will link the San Gabriel River to Lario Creek and its new wetlands (see Section 3.8.4). The Center's river showcase will help community members, schools and visitors reconnect with the sense of place the river offers, encourage stewardship, and raise public understanding about the importance of the river and its watershed.

Issues and Challenges

The site is on high ground within the floodplain behind the Whittier Narrows Dam. Designers will need to include mitigation measures to ensure that there will be no reduction in available flood storage.

The current entrance to the Nature Center is on a blind curve, making it very difficult and dangerous to enter and exit. There is little signage so visitors often miss the entrance and need to turn around. South El Monte High School is across from the center, but there is no safe way to cross. The entrance will need to be redesigned, with new signage and safe pedestrian crossings that will encourage more student participation at the Center.

Figure 3-68. The existing Whittier Narrows Nature Center will be replaced.

The connections between the Center and the river are tenuous. The San Gabriel River Bike Trail runs quite close by, but there is no signage marking a trail to the Center. At the Center, there is no indication that one can easily walk to the river and the trail. In fact, it is difficult to see the river at all because flood control levees entirely block views. It may be possible to redesign part of the site to offer at least some views of the river.

Parking will need to be increased to accommodate more visitors, which will also increase stormwater runoff. That water will need to be treated and returned to the river or Lario Creek, in keeping with the green design of the Center.

Design Concepts

BUILDING. The new facility will be a model of environmentally-sensitive design, touching the river as lightly as possible. It is planned as a Leadership in Energy and Environmental Design (Leeds)-certified green building, incorporating environmentally-friendly and recycled building materials, solar electricity and heating, and the native landscape palette.

PROGRAMMING. The 16,000-square-foot Discovery Center will include about 8,000 square feet of exhibit space, offering a comprehensive view of the formation of the San Gabriel River Watershed (natural and cultural history and water-related topics such as water quality and supply, recycling and conservation). It will include an orientation center for area visitors, conference center, theater, library, and exhibit space.

There will also be an outdoor amphitheater and outdoor exhibits (such as fossils, water cycles, and natural history) with interpretive signage.

The grounds will offer a demonstration garden of watershed-friendly landscape practices, including using rainwater for irrigation. Near the Discovery Center, inviting blooms can display an array of Californian natives. Farther away, visitors will see the open growth patterns of the natural ecology of the landscape.

TRAILS. The site will be easily accessible from the San Gabriel River Bike Trail and a trail loop being developed along the Rio Hondo, across Peck Road Water Conservation Park, and down the San Gabriel River Trail back to Whittier Narrows.

A variety of trails will draw visitors to the Lario Creek demonstration wetlands and the San Gabriel River. Water-themed signage can lead trail users along paths, with interpretive elements to expand on the exhibit topics. Equestrian trails will intermingle on the site with bike trails.

TREATMENT WETLANDS. Stormwater runoff from the site, including the parking lot, can be sent through a bioswale filtration system down to the demonstration wetlands between Lario Creek and the Center. That area is currently low quality ruderal habitat. That system could also treat low-flow runoff coming from the Peck Road and Durfee Road drains. The wetland area, about 3-6 acres, could treat the first 3/4" of stormwater runoff

Figure 3-69. Interpretive signage, such as this display by North East Trees, will provide additional visitor education.

from about 120 acres. These demonstration wetlands will be designed to minimize mosquito production, which can become an additional educational component. Supplemental water can be directed from Lario Creek. Once treated, this water will be returned to Lario Creek.

HABITAT. Areas surrounding the constructed wetland could be planted with cottonwood and willow. Dominant invasive species can be replaced with riparian/mule fat scrub, walnut, and Mexican elderberry woodland. Maintenance removal of exotic invasives throughout the site will allow natives to establish and spread. Extending native habitat areas will dramatically increase the value of the land to wildlife for foraging and nesting.

Key Components of the Concept Design Study

- New Education Center facilities with expanded functions
- Green building and design techniques
- Indoor/outdoor exhibits: natural/cultural history, watershed, conservation, water quality
- Watershed-appropriate demonstration gardens
- Conference center for community use
- New demonstration wetland (part of Lario Creek)
- Enhanced riparian habitat
- Multi-use trails with wayfinding system
- On-site stormwater runoff treatment

Map 3-14. Preliminary Site Analysis—San Gabriel River Discovery Center.

Map 3-15. Preliminary Concept Design Study—San Gabriel River Discovery Center. For illustration purposes only.

3.8.4 Lario Creek/Zone 1 Ditch

Project Description

The Lario Creek project, which is adjacent to the San Gabriel River Discovery Center at Whittier Narrows, will integrate a man-made water conveyance channel with the natural systems of Whittier Narrows. Located within the 50-year flood zone of the San Gabriel River, the Creek diverts water from the San Gabriel River to the Rio Hondo, where it flows into productive spreading grounds to recharge the groundwater. Its primary purpose is to carry imported water from the San Gabriel River to the Rio Hondo for recharge. North East Trees, a local non-profit organization, LADPW, 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 and enhance the downstream spreading grounds, divert high flows to treatment wetlands, expand high quality habitat, and link regional multi-use trails. Proposed site improvements include channel improvements, interpretive trails, overlook points, habitat restoration, and a treatment wetland.

Opportunity

The project site is about 75 linear acres just north of the Whittier Narrows Dam. Historically, the San Gabriel River and the Rio Hondo commingled here—there were braided streams, wetlands, and sandbar islands in a rich natural habitat. Lario Creek was created in the 1950s when the two rivers were channelized and the complex floodplain hydrology was simplified into single purpose flood flow conduits.

The alternative name for Lario Creek best describes its current character: Zone 1 Ditch. It is a functional, human-made 1.8-mile waterway operated by LADPW. The Creek's intake is near the Whittier Narrows Nature Center, on the west side of the San Gabriel River. It heads southwest, parallel to Durfee Road, and empties into the Rio Hondo on the west side of Rosemead Boulevard.

During the dry season—most of the year—the flow contains reclaimed and imported water. A temporary EPA outfall discharges treated groundwater that had been contaminated with volatile organic compounds. Reclaimed and imported water is released into the San Gabriel River, upstream of the creek. LADPW uses the creek to divert some or all of the water from the San Gabriel River to the Rio Hondo and to the Rio Hondo Spreading Grounds in Pico Rivera to recharge the groundwater.

During the winter, the flow also includes stormwater runoff. The Creek is currently too small to divert all the water during heavy rains. However, the channel is critical to LADPW and the Water Replenishment District's water conservation operations and LADPW already has plans to widen it. That offers an opportunity to enhance its functioning as a hydrological system, provide educational opportunities and create another link in the habitat corridor between the Puente Hills on the east and the Montebello Hills on the west.

Issues and Challenges

Lario Creek is now steeply embanked with levees. Its highly compacted banks are subject to steady erosion and reinforced with riprap in some locations. The current practice of clearing vegetation in the channel increases the flow capacity, but leaves the banks barren and dry. Parts of the creek have been taken over by exotic and invasive vegetation such as non-native grasses, castor bean and arundo. What little vegetation remains does not shade the water, increasing the water temperature. Replanting with native vegetation, allowing the Creek to meander, and adding wetlands would improve the aesthetics and increase habitat.

The channel is almost flat; there is very little change in elevation between its intake and where it empties. As a result, the water moves very slowly and is thick with algae. To better serve its primary purpose of conveying water, the water needs to flow faster, without increasing the elevation

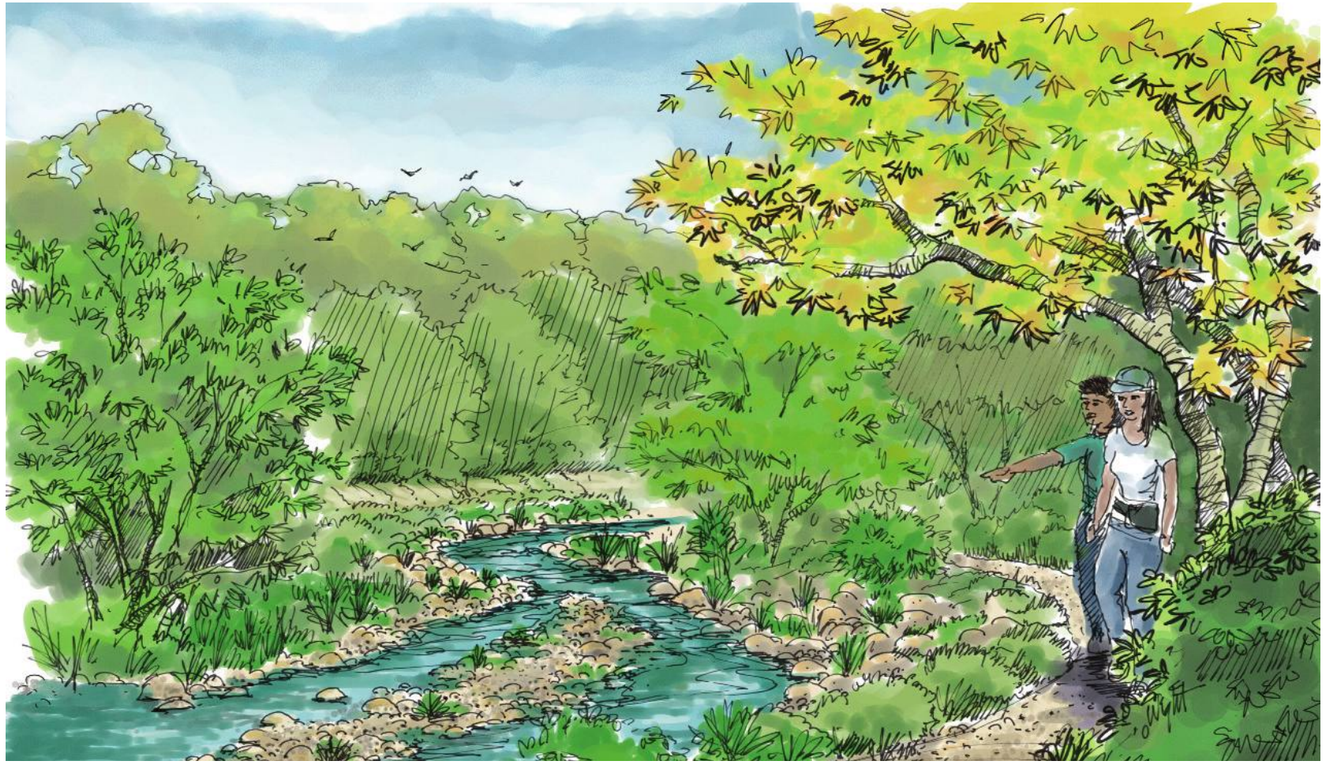


Figure 3-70. A meandering stream provides riparian habitat and shade for trail users.

change. One challenge to be addressed is that replanting with native vegetation could slow down water flow. Because the creek is human-made and flows are controlled, there is no real seasonal pattern to the water flow. The flow can vary throughout the year from zero to full capacity depending on the availability of water for groundwater recharge. It has a capacity of 250cfs, although the mean daily flow is only about 40cfs.

The imported water in the ditch is costly and evaporation is deducted from the purchased amount. This is a cost factor to the replenishing agencies. One proposal is to widen Lario Creek, which would increase evaporation although not significantly. This will be verified during the design of the project.

A major constraint is the concern that Lario Creek could become a vector control problem. If water is diverted to support restored wetlands and other habitats, there could be a problem during dry seasons when slower flows could create conditions that support mosquito proliferation. The planning and design of Lario Creek will need to be coordinated with the local mosquito and vector control agency to avoid mosquito breeding. An ongoing, sustainable, and well-funded vegetation maintenance management program will be essential to keep out non-native vegetation and for vector control.

There are some trails along the creek that are poorly marked and do not connect. Power line corridors, roads, levees, and trails criss-cross the site, fragmenting it and making wayfinding difficult.

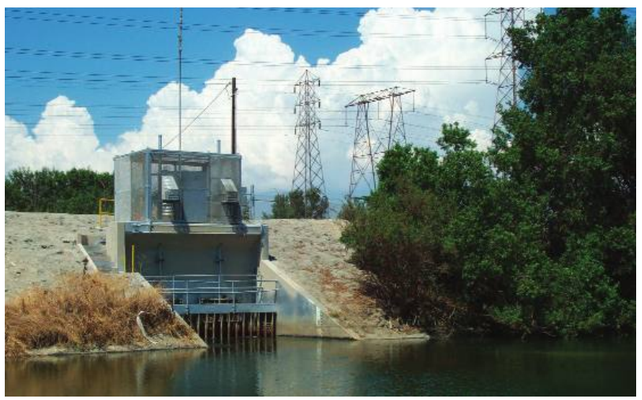


Figure 3-71. Lario Creek begins at the San Gabriel River, just below the Whittier Narrows Nature Center.

Figure 3-72. There is now practically no vegetation along the banks.

Design Concepts

LADPW and North East Trees are now working on concept plans, under a grant from the California State Department of Water Resources Urban Streams Grant Program.

LADPW plans to increase the creek's capacity to a minimum of 300cfs to provide more flexibility for its groundwater recharge operations. Additional water from the upstream San Jose Creek Water Reclamation Plant could be released and diverted to Lario Creek to increase the flow. And during the wet season, an upstream rubber dam on the San Gabriel River collects water that has a valve that can release up to 400cfs.

The original proposal was to widen the channel to increase capacity and increase habitat. It called for a stepped design: a deep, narrow low-flow channel and wide, vegetated terraces to handle increased flows during the wet season.

Stakeholders have now proposed a dual channel model—two parallel channels would run between the two rivers. In the dual channel proposal, the existing conveyance channel would be widened but would not be vegetated. A new habitat channel would be planted with native vegetation and meander like a natural creek. Natural-looking terraces built over engineered levees can stabilize the banks. During the wet season, that channel would provide water for the dry lake beds near the creek.

In both proposals, urban runoff from the area north of Lario Creek and the Whittier Narrows Area, supplemented with water from the creek, could flow to a constructed wetland near the north bank of the creek (between the creek and the Discovery Center). The new wetland will mimic the natural water purification process, sending water through an "obstacle course" of vegetation and soils that cleanse it. The water would then flow back into the Creek and on to the Rio Hondo. An elevated trail system and interpretive signage can lead visitors through the process.

A wetland treatment facility would enhance the water quality from the area by reducing various pollutants accumulated through stormwater runoff, such as phosphorus, bacteria and sediment.

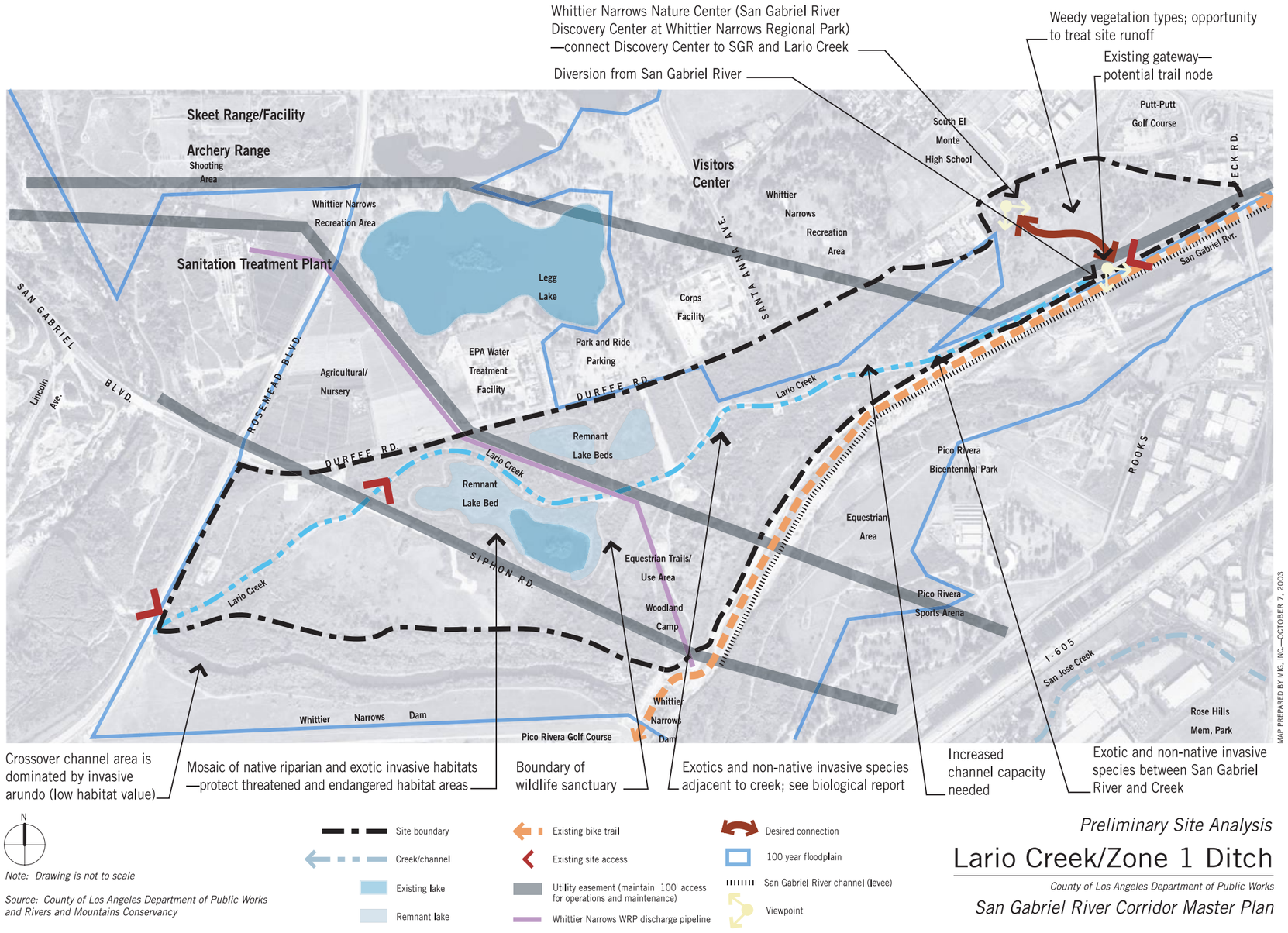
The new habitat channel (or the terraces of a widened single channel) will also provide areas for replanting native vegetation and developing valuable restored riparian habitat for birds on the Pacific Flyway. Native vegetation that can be restored include a riparian forest dominated by sycamore, cottonwood, and willows, and a mosaic of Mexican elderberry woodland, willow riparian scrub, coffeeberry scrub, annual grasslands, and small patches of coastal sage scrub and freshwater marsh.

The proposed design can consolidate trails, access nodes and facilities for all trail uses, including equestrian. The new Lario Creek trail, wayfinding and signage system can link the San Gabriel River with the Rio Hondo, the new Discovery Center, and the demonstration wetland, increasing outdoor educational and recreational opportunities.

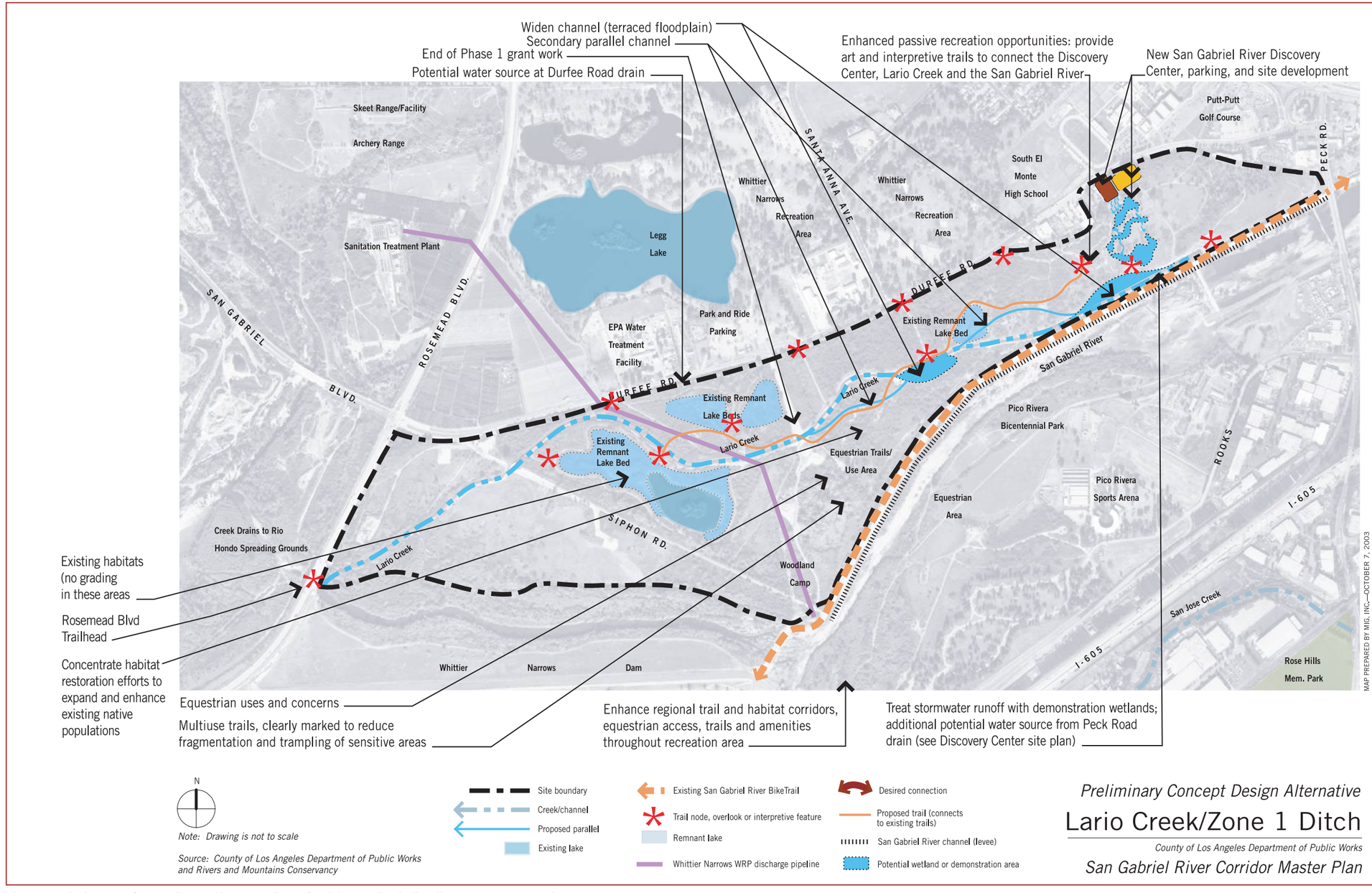
Since Lario Creek and the San Gabriel River Discovery Center at Whittier Narrows are directly adjacent to each other, site design and programming can be done jointly. However, from a planning and funding perspective, they are distinct. Each project has a different set of sponsors and stakeholders, with their own unique needs and requirements. In addition, given the distinct goals of the two projects, each project can pursue different funding sources. Overall funding for the two projects would likely be more limited were they combined into a single planned entity.

Key Components of the Concept Design Study

- Widened channel to increase capacity and flow
- New habitat channel with native vegetation
- Removal of exotic, invasive species
- Multi-use trails consolidation
- Interpretive signage
- Vector control in project design and maintenance



Map 3-16. Preliminary Site Analysis—Lario Creek/Zone 1 Ditch.



Map 3-17. Preliminary Concept Design Alterative—Lario Creek/Zone 1 Ditch. For illustration purposes only.

3.8.5 El Dorado Regional Park

Project Description

El Dorado Regional Park, owned by the City of Long Beach, is 500 acres of open space in a densely developed urban area. It is a long stretch of open land running along a concrete-lined section of the river. The park is a well-established urban recreation area, bordered by the river, Coyote Creek, and the 605 Freeway. The City and the RMC have partnered to develop a new Master Plan for the park, which will include new treatment wetlands, replacing exotic plants with natives, and creating new riparian habitats. An alternative vision includes returning this reach of the river to a more natural state with a soft bottom.

In a parallel process, the County of Orange is working with the U.S. Army Corps of Engineers on the Coyote and Carbon Creeks Watershed Management Plan, which includes the El Dorado Regional Park. That study will help determine the feasibility of elements of this project.

Opportunity

The park is at the confluence of the San Gabriel River and Coyote Creek, on land that was originally part of the floodplain. When the river and creek were channelized, the rich alluvial soils were perfect for farming. In the early 1950s, the City of Long Beach had the foresight to buy 500 acres of that farmland for a regional park to preserve open space. The farmland is long gone. The park is now surrounded by dense urban environments, the freeway—and two miles of the river. However, there is little connection between the park and the river: berms block views of the river from the park and SCE power lines run all along the river, precluding access except at two points.

The park is divided into four sections. The southernmost section, called South of Willow, is six City-owned acres of mostly undeveloped open space. Between that land and the river is 12 acres of SCE right-of-way. The area has been heavily disturbed through extensive construction and maintenance activities associated with the Wastewater Reclamation Plant (WRP) and the new Water Replenishment District groundwater injection facility—injecting water into the coastal basin to prevent saltwater intrusion. There is very little native habitat and minimal wildlife.

Area 1, just north of that site, includes the well-used El Dorado Nature Center, visited by more than 130,000 people a year. It offers natural trails and two lakes joined by a stream that meanders through forested areas and fields of wildflowers. To birds, the Center is a huge green oasis with water, cover and food—it is home to over 50 bird species. There is also a wide variety of mammals, including coyotes, foxes, squirrels, and raccoons. However, the area was initially planted with many non-native species that grow quickly, including pine, eucalyptus and oak. Many of these forested areas have now reached maturity and are beginning to die off. Grounds at the Center are overgrown with non-native grasses, and need replanting. The Nature Center itself has become shopworn and needs updating.

Areas II and III in the northern half of the site, offer a manicured park setting with common turf and ornamental, non-native trees planted for shade. These areas have paved trails and four more lakes, some concrete lined, stocked with fish. Wildlife diversity has dramatically decreased: mainly gophers and field mice remain, along with ducks, herons, and egrets on the lakes. During dry months, all the lakes are replenished with a combination of potable water and well water from the Long Beach Water Department.

This two-mile stretch of open space along the river presents several tantalizing, unique opportunities:

- With potable water an increasingly scare resource, the City is interested in creating a more sustainable lake and creek system. A new treatment wetland at the northern end of the Park could fully treat a year's worth of stormwater runoff from a portion of the surrounding urban areas, replenishing the lakes and perhaps providing Long Beach TMDL credit

Figure 3-73. A partially restored floodplain brings an active riparian ecosystem to El Dorado Regional Park.

and increasing the amount of potable water for Long Beach residents. The wetland could also cleanse reclaimed water from the treatment plant at the south of the park, making it acceptable for replenishing the lakes. (Landscaped areas are already irrigated with reclaimed water.)

- Working with SCE to create habitat and allow river access in more places would set a precedent for more partnerships along the entire river.
- Vegetating with native plant species would increase food and cover, allowing wildlife to return to the area.
- A constructed wetland adjacent to the river at the south could further treat water in this reach of the river, which is mainly effluent from the Los Coyotes and Long Beach Water Reclamation Plants. That water currently flows to the ocean and could be recaptured through a new wetland.
- And, in a visionary alternative scenario, replacing the concrete bottom and east bank of this reach of the river with a soft bottom and terraced vegetated bank would widen the river, create valuable new riparian habitat, integrate the river with the park, and increase both recreational and educational opportunities.

Figure 3-74. The upper lake would be filled with runoff and reclaimed water as the first step in water treatment.

Figure 3-75. This underused northwest corner of the park could be the site of a treatment wetlands or floodplain restoration.

Challenges

Many other areas along the San Gabriel River are reclaiming unattractive landscapes and restoring native vegetation, which will vastly improve both aesthetics and habitat. El Dorado is already "green," although it is manicured and artificially created in Areas 2 and 3. This project proposes replacing the exotic and ornamental plants with native vegetation that will not require as much water and is better for habitat. However, it won't be as "green" all year long. Some people may prefer the manicured areas and may not like the change. Designs should include some of the most aesthetically pleasing native vegetation and ensure minimal loss of active recreation space. It will also require some awareness raising to promote the benefits of native vegetation. The completed El Dorado Nature Center Master Plan study may have also addressed this issue.

In the LA metropolitan area, it is also unprecedented to remove concrete channels from a river. These channels were built in the 1960s and 1970s, continuing four decades of flood control efforts. The community did not want any more damaging floods and the channel represents a major psychological and monetary investment. The open area here offers excess capacity to restore the natural floodplain for the river and it is feasible to remove the channel and maintain flood protection. But, it will take a major effort to convince all stakeholders that it is a wise and prudent idea. (Only the east side of the channel would be removed; the west will remain to provide flood protection for residential areas.)

A decision about whether to remove the concrete must be made before designing treatment wetlands in the southern area of the park, to take into account the larger floodplain that would be required. According to the 2003 State Water Resources Control Board, Section 303(d) list of Water Quality Limited Segment, the reach of the San Gabriel River adjacent to the park is considered impaired for algae, with abnormal fish histology and high coliform counts. That water would benefit from new treatment wetlands in the southern part of the park.

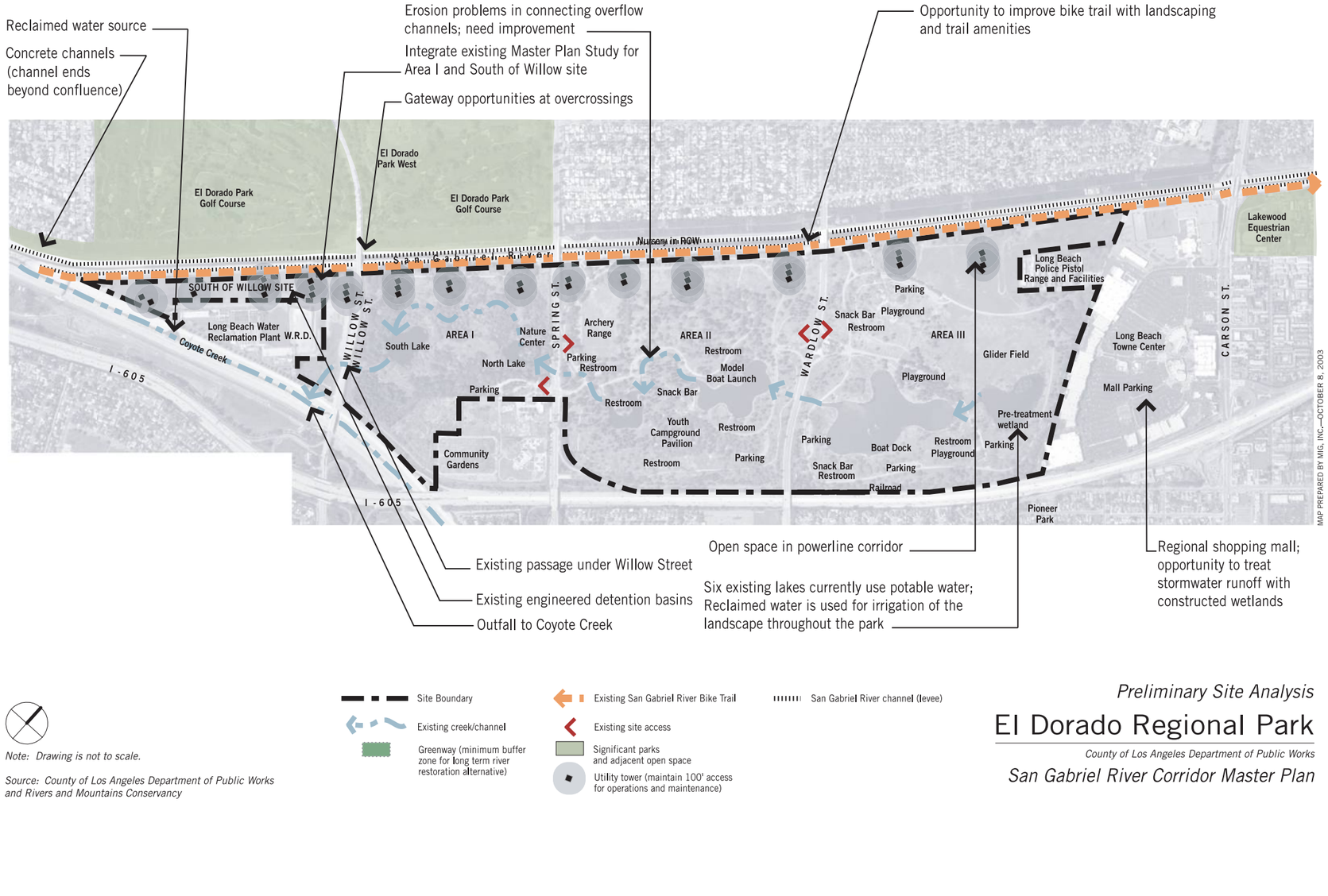
In addition, SCE power lines that run along the river would need to be moved further into the park area, away from the floodplain. In some areas of the country, power lines are placed in wetlands. However, it might be more feasible to relocate them in the park.

According to City of Long Beach park officials, using reclaimed water coming directly from the treatment plant for lakes that are stocked with fish is not acceptable to members of the public who may later catch and consume those fish. Also, reclaimed water is high in nutrients like nitrates and phosphates that might cause algae blooms in a lake. It is too costly for the Long Beach WRP to remove those nutrients, so treatment would be an ideal solution. However, that water would first need to be pumped up to the new north treatment wetlands.

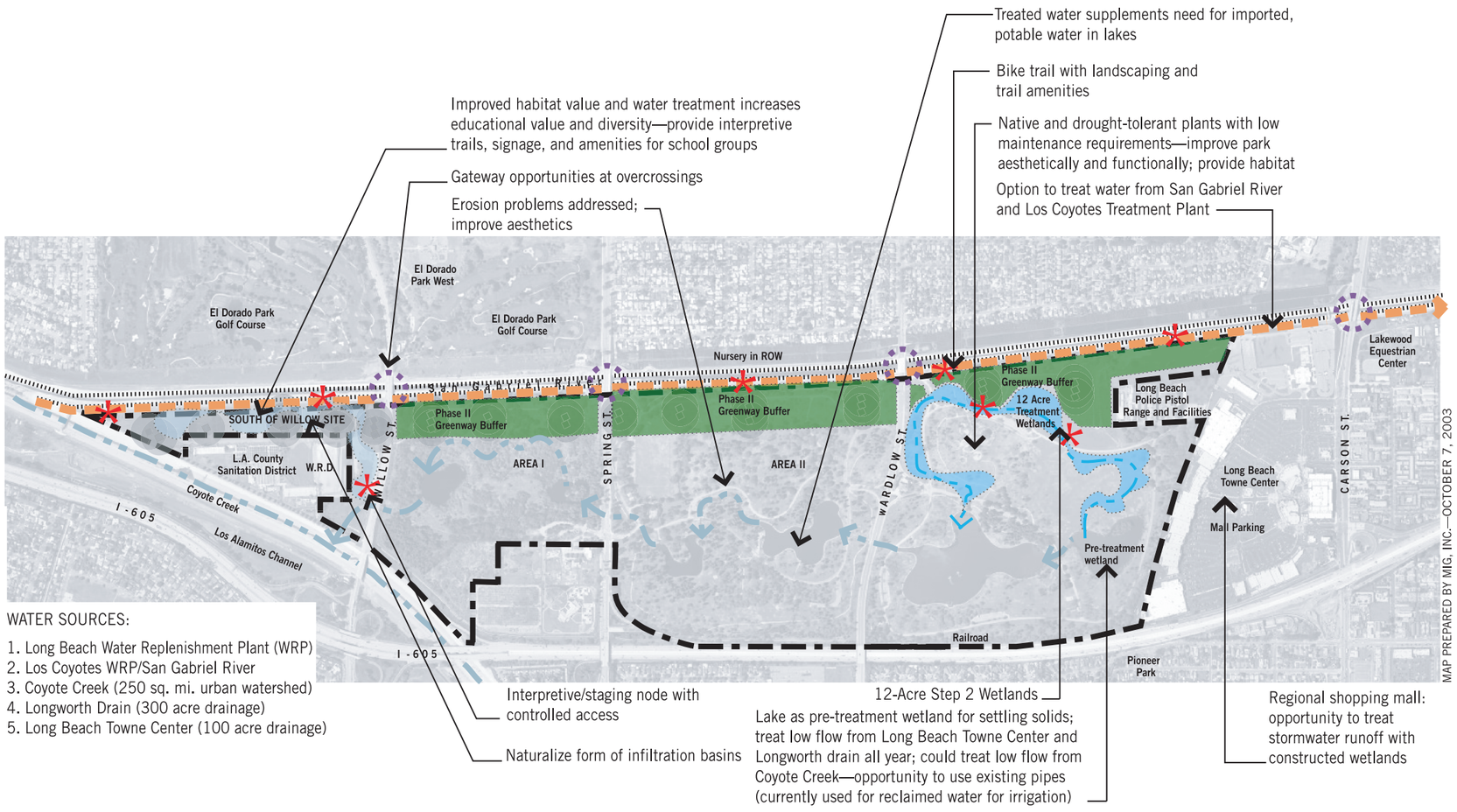
Design Concepts

WETLANDS. The wetland would cover about 6 acres, situated about 10 feet below the existing grade. Stormwater runoff from the adjacent residential and commercial areas in Lakewood and the Long Beach Towne Center, would flow into the northernmost lake. That lake will act like a settling pond. Sediments like oily sands would settle at the bottom and be removed. Water then flows into a snaky maze of vegetation within a newly created wetland, which very effectively cleanses the water. From there, the cleansed water flows into the second lake.

Reclaimed water pumped up into the wetland area would be cleansed of nutrients by the wetlands before flowing into the second lake. During the dry season, reclaimed water from the Long Beach WRP would supplement the urban runoff throughout the treatment wetland system to ensure continuous water flows and help the cleansing process. Water would flow continuously through the lakes, and back out into the river.



Map 3-18. Site Analysis—El Dorado Regional Park.



Map 3-19. Preliminary Concept Design Alternative—El Dorado Regional Park. For illustration purposes only.

A second wetland, at the south end of the park, would treat stormwater runoff and the discharge from the Los Coyotes WRP, returning cleansed water to the river. The habitat areas can be designed to meet the access requirements of SCE and promote multiple uses on the utility corridor rights of way. A decision about removing the concrete channel would need to be made before designing this wetland. The planning and design of both wetlands would be in coordination with the local mosquito and vector control agency to reduce mosquito breeding and not create any public health risk. Long-term maintenance and monitoring will also be developed as part of the final design.

RESTORED FLOODPLAIN. An alternative vision is replacing the concrete bottom with a soft bottom and a series of terraces for flood protection. That is a long-term goal requiring extensive reengineering of the river corridor. The river here is about 100 feet wide and flows are consistently between 100 and 150 cfs. The channel capacity now is almost 59,000 cfs, greater than the 100–year flood.

A soft bottom would require increasing the width of the river with its terraces to 300 feet to provide the same flood control capacity—in most places that would require less than 10 percent of the parklands. The western bank of the San Gabriel River channel and the eastern bank of the Coyote Creek channel would remain, while the two internal channels would be removed. This would create about 8.5 acres of riparian habitat, with willow and cottonwood trees, baccharis and mule fat scrub. It would provide habitat for the least Bell's vireo, yellow warbler and yellow-breasted chat, as well as foraging mudflats and shallow water for native sandpipers, egrets and herons. It would be an important link for migrating coastal birds.

An engineering study will be needed. This may be integrated into the U.S. Army Corps of Engineers study. In addition, operators of the water treatment plant will require assurance that there would be no negative impact on treatment.

TRAILS. Trail access, signage, artwork and shade trees will improve the trail experience and emphasize connections to the river. Overlook points and vistas can highlight the water conservation and water quality aspects of the wetlands and lakes. The current San Gabriel River Bike Trail runs along the park, and could be linked through the wetlands area. If the river becomes soft-bottomed, the terraces could provide soft equestrian trails as well as decomposed granite and asphalt multi-use trails.

LANDSCAPING. Potential habitat changes include replacing existing ornamentals with native drought-tolerant plants and re-vegetating land on the eastern bank with native trees and an understory of gooseberry and mule fat, which attract flying birds and provide foraging habitat for shoreline birds. The eucalyptus in the Nature Center area would be removed and replaced with native trees. The ruderal vegetation adjacent to the water treatment plant can be replaced with a mosaic of willow trees and native scrub, including sage scrub that supports declining wildlife species such as the cactus wren and California gnatcatcher.

Key Components of the Concept Design Study

- Connected system of wetlands and stream corridors, treating stormwater and reclaimed water
- Potable lake water replaced with treated water
- New habitat areas, replacing exotic plants with native plants
- The river integrated with the park
- Improved, linked trail system with interpretive signage
- Multi-use on the utility right of way
- Potentially removing concrete channels on east side, restoring the floodplain—feasibility study required

3.8.6 Lessons Learned

The purpose of the concept design studies was to apply the principal theme of this Master Plan: the multi-objective approach to river corridor project planning, designed to respond to the needs and interests of multiple users. Each study was conceived as an experiment designed to explore the planning process of simultaneously addressing the goals of habitat, recreation and open space, along with the pre-existing priorities of flood protection, water quality and water supply. In this way, the studies helped measure the benefits and limitations of this multi-objective/multi-user approach. The lessons learned from the concept design studies will be useful to other project sponsors as they navigate the challenges created by integrating seemingly divergent program elements.

A key finding is that the multi-objective approach can only be successfully applied on a case-by-case basis. There is no "cookie-cutter" design or formula for success. A successful combination of divergent program elements is dependent on both the physical setting to which it is applied and the talent of the planning team whose site designs are created in response to that setting. In addition, the multi-objective planning process must also take into account institutional, regulatory, and political factors that may limit the available options. As a result, what may work in one setting may have to be significantly modified to be successful elsewhere, and the multi-objective approach may not work in all settings. However, a planning team should approach all future project opportunities from the assumption that a multi-objective approach is applicable unless the emerging design process should prove otherwise. This approach represents a significant shift from past planning practices that began each project with the assumption that it was a single-purpose endeavor, as multi-objective projects were then seen as the exception rather than the rule.

San Gabriel Canyon Spreading Grounds (R3.8)

This site was an opportunity to integrate open space, recreation, and habitat objectives into a major single-function infrastructure. But it came with significant challenges. The ambitious visions initially conceived for the site had to be more tailored to match physical and operational realities. These included safety and liability concerns created by the unusual depth of the spreading basins, the steepness of the banks surrounding the basins, and 80-foot water fluctuations during the course of the year. There were also concerns that some habitat designs might attract wildlife, which could have negative effects on water quality. The concept design addressed these and other concerns by focusing on the edges of the site, making it an attractive place to visit but not in which to linger, and by keeping visitors away from the operational heart of the spreading grounds. Some of the other lessons to keep in mind include:

- Single-function infrastructures, whether designed for flood control, water conservation or other purposes, may contain other, hidden open space opportunities.
- Often, single-purpose land areas are sterile, barren landscapes. It is possible to redesign these areas to provide other benefits such as open space and habitat for people and wildlife, in a way that is compatible with the primary function of the site.
- It is important to look at other, similar situations with new eyes. Look beyond the current reality to see the hidden possibilities for adding life and vitality, making more efficient and beneficial use of all available open space possibilities along the river.

- Project designs must be carefully considered to make sure that the pursuit of additional goals beyond the primary function of the site does not inadvertently create additional liabilities, especially regulatory ones.

Woodland Duck Farm (R4.15)

This significant land reclamation opportunity will provide nearby residents with access to badly needed open space, recreation and restored habitat areas. However, the site design must take into account both physical and regulatory constraints. For instance, treatment wetlands can enhance aesthetics of the site and improve water quality. However, wetlands or other water features cannot for safety and regulatory reasons be located under the SCE power lines that dominate much of the site. This does not mean treatment wetlands are infeasible at this site, but simply that in the site design they must be carefully situated and engineered so as to not violate this spatial requirement. The lessons here are:

- It is important to take advantage of all available open space opportunities along the river; regardless of its current condition, past history, or strange configuration.
- Land reclamation and land re-cycling is an important tool for the enhancement of the river environment, especially as current industrial land uses reach the end of their useful life cycle.
- There is a patchwork of open space opportunities along the river that slowly, over time, can knit together into a re-greening of the river for recreation, habitat and other purposes.

San Gabriel River Discovery Center at Whittier Narrows (R4.26)

Being centrally located, this project will provide an ideal setting, for a regional river and watershed education center, complete with demonstration treatment wetlands. But like other projects along the San Gabriel River corridor that seek access to water, the site design must recognize existing water rights and the limitations they impose on water use, and so cannot diminish the amount of water available to water supplies and other water rights holders. Each project has to assess water availability and the constraints associated with it use. Where will it come from? How much is required? How can it be done without impacting the water supply? The use of unclaimed reclaimed water that is not adjudicated was one of various options raised in the design process. Other lessons:

- No water can be spread without the prior written authorization of the Watermaster.
- The potential impacts on the water supply from unintended groundwater contamination have to be understood and addressed in the site design.
- The enhancement of the river corridor requires a partnership among a wide range of stakeholders, and this project is a vivid example of what can be accomplished when such a cooperative arrangement and shared vision is in place.
- Buildings can be fully integrated into the natural systems of a site.

Lario Creek (R4.28)

Bringing a wide range of interests (i.e., potential multiple users) together in the planning process can lead to new design solutions that deal more effectively with potential constraints than the original design conceived by any single user group alone. In this instance, an alternative approach emerged from the group dialogue that would balance potentially conflicting water flow needs with vegetation growth needed for restored habitat. A new channel parallel to the primary conveyance channel would meet the goals of both the water supply interests and those wishing to restore natural habitat. Other lessons:

- Upgrading flood/water conservation infrastructure presents opportunities to incorporate additional benefits; in this case new habitat and open space.
- If one goal is potential restoration of the natural systems of Southern California, water usage at projects like Lario Creek should not be year-round. Otherwise, non-native species are going to be attracted to the area at the expense of native species that have adapted to a dry climate.
- No matter how well designed, projects containing wetlands will breed mosquitoes. For this reason, all planning and design for any new or restored wetland area for habitat or stormwater treatment must be done in coordination with the local mosquito and vector control agency to avoid creating any public health risk.
- An ongoing, sustainable, well-funded vegetation maintenance and management program must be built into all such projects.

El Dorado Regional Park (R6.21 and R6.22)

This rare, 497-acre open space opportunity of parkland adjacent to the river presents a very large and tempting canvas with which to work. How can one make the best use of this opportunity while recognizing that the site design must address significant constraints? The planning process led to a short-term plan to create urban runoff wetlands treatment systems and a long-term plan to partially restore the floodplain by removing one side of the concrete channel.

Both visions require hydrology studies to assess their feasibility. Because long-term plans will affect the treatment wetlands design and configuration, a decision about whether to restore the floodplain must be made before planning can begin on the wetlands.

Other observations include:

- The river should be front and center as it passes through all the cities along its path to the sea; it cannot remain a forgotten, hidden flood channel. Existing parks and open spaces can be re-oriented to face the river.
- Many parks along the river have the traditional ornamental landscape design. This project could be the prototype for a new river park design model based on native vegetation and river orientation.
- "Thinking big" (e.g., taking out the concrete) may open up other possibilities that no one would have thought of, even if the initial concept is not implemented in its pure form.

chapter 4 Future Master Plan Project Opportunities

CHAPTER 4

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Notes: Figures 4-4 and 4-42 courtesy of California State Polytechnic University, Graduate Department of Landscape Architecture 606 Studio project, "San Gabriel Confluence Park," sponsored by the Sierra Club Los Angeles Chapter, San Gabriel Valley Task Force.

Figures 4-10, 4-13, 4-16, 4-17, 4-19, 4-20 and 4-43 by Dan Burden and Figure 4-11 by Paul Demaio (City of Alexandria), courtesy of The Image Library, Pedestrian and Bicycle Information Center (PBIC).

chapter 4 Future Master Plan Project Opportunities

4.1 OVERVIEW

In addition to the many river enhancement projects described in Chapter 3, there are opportunities for even more projects in the future. A critical examination of the continued, collective impact of all defined projects reveals even more possibilities for habitat, recreation and open space enhancement.

This section is based on a comprehensive analysis of existing conditions in the river corridor and a detailed assessment of the 134 Master Plan projects identified in Chapter 3. It lays the groundwork for future project development opportunities to be identified and defined as the first of several rounds of Master Plan projects move forward to completion. It includes ten categories of potential opportunity:

- Habitat restoration and linkages
- Trail enhancements
- Bridges and gateways
- Interpretive facilities
- Park development
- Open space
- Redevelopment and reclamation
- Flood channel enhancements
- Groundwater recharge
- Water quality improvement

4.2 HABITAT RESTORATION AND LINKAGES

The San Gabriel River once functioned as a terrestrial and aquatic wildlife corridor, linking the Puente-Chino Hills and Montebello Hills with the San Gabriel Mountains. Restoring this habitat linkage will improve biodiversity by increasing open space available for wildlife movement.

Existing Conditions

Habitats for native plants and animal species have been displaced by urban development. The remaining habitat areas are fragmented and isolated, making them less capable of supporting native birds, fish and other wildlife. Major pinch points and other physical barriers limit aerial, aquatic and terrestrial movement between these habitat islands. In particular, dams and flood control facilities and the water supply system have significantly altered water flow and other habitat conditions, terminating or altering historic migration patterns. For example, before dams were built, thousands of steelhead trout traveled up the river in the winter and spring to spawn. Mammals are now mainly confined to specific open space areas or wildlife refuges that are surrounded by vast areas of developed land.

Beyond habitat fragmentation, there are other conditions worth noting:

- Habitat conditions in the San Gabriel Mountains (Reaches 1 and 2) are of the highest quality, but are increasingly stressed by heavy recreational use and recent drought conditions. Other high-quality natural habitat areas providing large, natural open space areas include those in the Santa Fe Dam Recreational Area and Whittier Narrows.
- Exotic plants have reduced native species habitat areas along the river. Arundo, a particularly invasive giant reed, has significantly affected the river environment. Although major efforts to remove arundo are underway, current management practices generally favor non-native species habitat.
- A managed vegetation control system is in effect along the river, in compliance with permits issued by regulatory agencies. To balance flood control with habitat maintenance, the County of Los Angeles Department of Public Works (LADPW) and the U.S. Army Corps of Engineers (COE) are performing vegetation management—but in different ways. As a result, the appearance of the reaches under their respective control varies.
- While it is important to identify, protect and expand existing high quality habitat areas, insufficient habitat mapping presents a challenge to understanding the current status of habitat and hinders planning for future habitat restoration.

COURTESY OF GABI MCLEAN ©2003

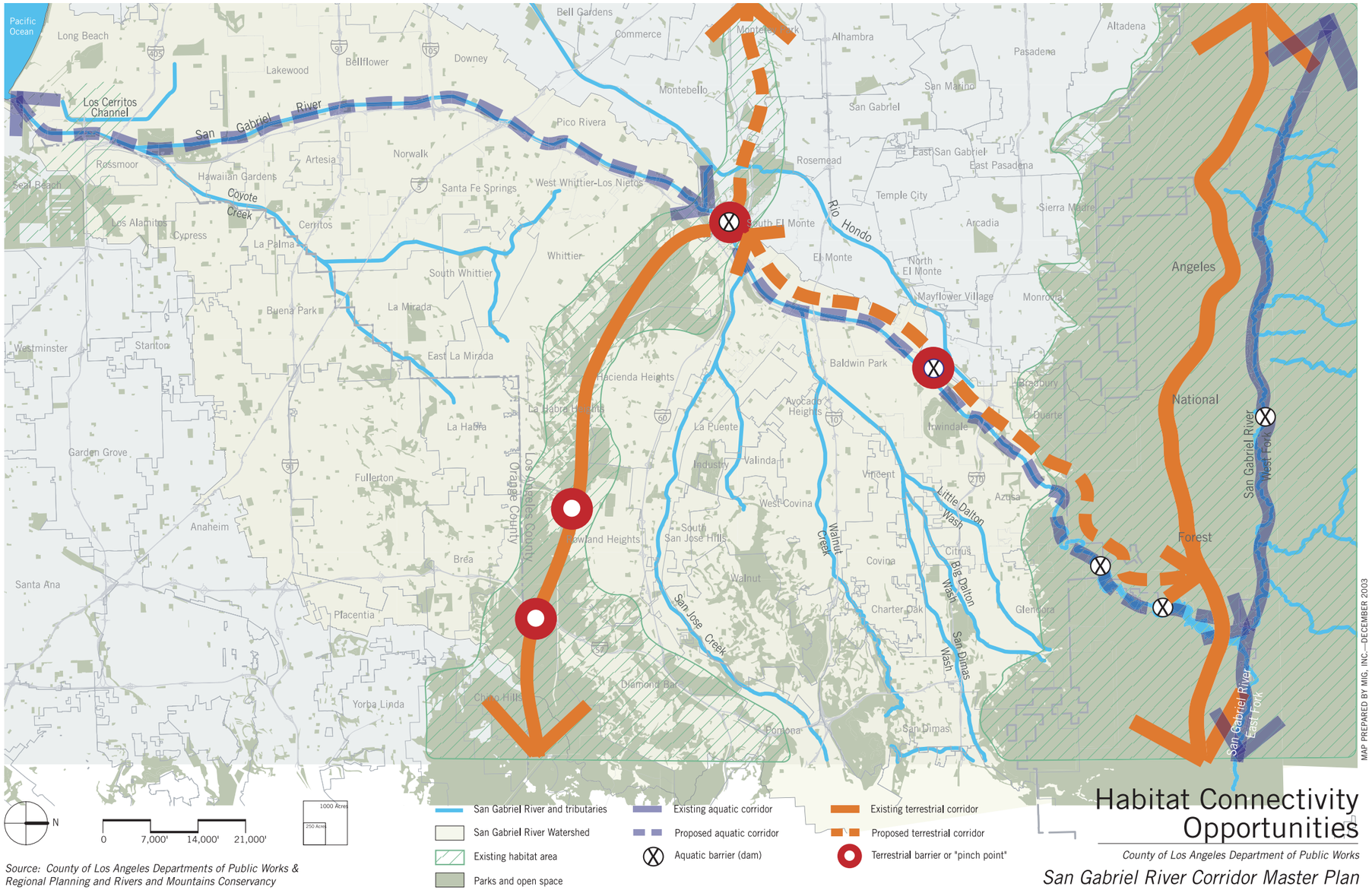
Figure 4-1. Analysis can reveal even more opportunities for future river corridor enhancements.

Future Opportunities

The most important habitat restoration opportunity is in Reach 4, the area between Whittier Narrows and the Santa Fe Dam. It provides the best opportunity to reconnect critical habitat between the Puente-Chino Hills and the San Gabriel Mountains. This would complement and reinforce benefits that will come from completing the Puente Hills Western Wildlife Corridor project (R4.23).

After successfully re-establishing the habitat linkage between the Puente Hills and Whittier Narrows, the program to extend this connection further north along Reach 4 and beyond could include:

- Soft-bottom habitat restoration in areas of the river exceeding the 100-year flood channel capacity



Source: County of Los Angeles Departments of Public Works & Regional Planning and Rivers and Mountains Conservancy

Map 4-1. Habitat connectivity opportunities.

- A habitat restoration element in future gravel quarry land reclamation projects
- Potential use of open space in utility right-of-way as a habitat easement, which will require pursuing essential institutional arrangements such as "safe harbor agreements"
- A habitat linkage or passage enabling wildlife to get around the barrier created by the Santa Fe Dam at the north end of Reach 4 (R3.26)

All future projects should incorporate habitat restoration. Examples among current Master Plan projects include:

- San Jose Creek Habitat and Trails Restoration Project (R4.19)
- Puente Hills Western Wildlife Corridor (R4.23)
- Whitter Narrows Nature Center Ecosystem Restoration (R4.27)

Habitat restoration efforts such as soft bottom vegetative management and exotic plant removal in Reach 3 (a key linkage from the Santa Fe Dam to canyon mountain habitats in Reach 2) would further strengthen efforts to re-establish the San Gabriel River as a habitat linkage. Examples among current Master Plan projects in Reach 3 include:

- Robert's Creek Restoration (R3.04)
- Fish Creek Restoration and Public Access (R3.12)
- Santa Fe Dam Recreation Area and Habitat Enhancements (R3.21)

Fish Creek restoration provides a model for other similar restoration efforts that may occur in the future. Vulcan recently restored the upper third of Fish Creek in the area that it owns. The restoration was very extensive and brought the creek back to its estimated original location before mining began. Vulcan is now working with the City of Azusa to create new mining and reclamation efforts at the Azusa Rock Quarry that will incorporate restoring the remaining portions of Fish Creek on Vulcan's site. The ultimate restoration of Fish Creek will be incorporated into the reclamation plan phasing.

In addition to the habitat corridor, there are other significant habitat restoration opportunities that should be pursued. In the San Gabriel Mountains, Reaches 1 and 2, programs and facilities to mitigate the impacts of recreational activities will be a priority. In Reach 2, minimum flow requirements—duration, quantity and timing—are critical considerations for habitat improvement. Findings from the flow study below Morris Dam (R2.07) will contribute to that effort. However, an agreement allowing the diversion of any water to support habitat or other benefits would have to be arranged with water rights holders.

Habitat restoration opportunities south of the Whittier Narrows Dam are more limited, especially in Reaches 5 and 6, where they are mainly confined to specific sites such as parks and open space. However, improving and restoring upstream river functions may provide future flexibility in downstream sections. In Reach 7, reclamation of oil fields and industrial properties can restore tidal basin wetlands, restoring critical habitat for birds and other native wildlife. Two current examples among the Master Plan projects include:

- Los Cerritos Wetlands Restoration (R7.07)
- Hellman Ranch Wetlands Freshwater Marsh Restoration (R7.10)

Nine proposed habitat restoration projects will contribute to the overall goal of expanding and linking existing habitat areas. Two restore the linkage between Puente-Chino Hills and the San Gabriel Mountains, and seven target individual habitat-restoration opportunities. Even more encouraging, more than one-third of all Master Plan projects include either a habitat enhancement element or a public education component designed to increase habitat awareness.

COURTESY OF BONTERRA CONSULTING

Figure 4-2. Stream and floodplain restoration projects will enhance the region's biodiversity.

COURTESY OF DAN SLATER

Figure 4-3. Great blue herons nest in tall tree tops and rocky cliffs, away from human activity.

Habitat Restoration Considerations

Planners should consider the following opportunities and/or challenges in all reaches of the river:

- Cross-sections of the river should be developed to map habitat restoration zones that vary by reach, according to current conditions and future possibilities. This will aid future planning and design efforts, by identifying appropriate locations outside these zones for non-habitat lakes and "natural" appearing facilities that are geared for recreation and other non-habitat functions. It will also help ensure that future bike, equestrian and hiking trails are designed along perimeters rather than through these habitat zones.
- Individual habitat-enhancement projects should follow system-improvement guidelines and similar resources. This includes adopting the Los Angeles River Landscape Guidelines and using the suggested native plant palettes that are appropriate to each habitat zone.
- Vegetation management practices must protect native habitats, remove exotic species and arrest the spread of ruderal species. Some needed institutional and regulatory changes have already occurred but more are needed. COE's mission now includes habitat restoration in addition to flood control.

Figure 4-4. In-river vegetation provides valuable habitat for birds and other wildlife.

- LADPW and utility easement holders, such as Southern California Edison (SCE), can benefit from safe harbor agreements that encourage programs to expand native species habitat on lands they own or control. Under these agreements, these agencies would not be penalized or fined if normal or emergency operations have an impact on the new habitats. Safe harbor agreements are available under Section 10 of the Endangered Species Act (ESA). But, public entities with activities in waters of the United States or US-owned property (National Forest- or COE-owned rights-of-way) are subject to Section 7 of the ESA, which may not allow safe harbor agreements. Further research is recommended. Legislative action may be needed to make these agreements an option.
- Increasing habitat connections will encourage wildlife in densely developed urban areas. Regional corridor enhancement projects should incorporate measures to reduce human-wildlife interactions because many species (wild birds, opossums, skunks, wild and commensal rodents, raccoons, coyotes and the fleas and ticks they carry) can transmit diseases of public health concern. Safeguards include encouraging (or mandating) "wildlife-proof" trash receptacles in parks and surrounding communities, creating buffer zones (via plantings or design) around corridors to discourage wildlife from leaving the created habitat zone, and developing educational outreach materials for local residents and park visitors. Littering, unkempt picnic areas, and dogs off-leash all have the potential to generate unfortunate human-wildife interactions.

A number of studies recently completed or now underway will help target other future habitat restoration opportunities.

- The South Coast Wildlands Project identified the San Gabriel River as one of 60 missing habitat linkages in the south coast ecoregion, because it can connect the Puente-Chino Hills with the San Gabriel Mountains.
- The Los Angeles and San Gabriel Rivers Watershed Council is undertaking a vegetation-mapping project of all soft-bottom rivers in Los Angeles County, including the San Gabriel. Digital data will be available in late 2004.
- San Gabriel Mountains Regional Conservancy (SGMRC) is conducting a habitat study of San Gabriel River Watershed, funded by Proposition 13 (State Water Resources Control Board) and Proposition 40 (Rivers and Mountains Conservancy). This will build on the foundation provided by SGRMC's "Reconnecting the San Gabriel Valley."
- The Watershed Council has developed a native plant list appropriate for the Los Angeles River. As there are many similar species between both the Los Angeles and San Gabriel River corridors, the Los Angeles River plant list is being used as a resource for development of the San Gabriel River plant list. However, because the San Gabriel River is much less "hardscaped" than the Los Angeles River, additional resources have also been used to develop the plant list specific to the San Gabriel River.

COURTESY OF LARRY MOATS, USFWS

Figure 4-5. Mountain lions hide during the day and emerge after dark to hunt for food.

4.3 TRAIL ENHANCEMENTS

The ideal trail system is continuous, providing connections to and from useful destinations for recreational bike riders, pedestrians and other trail users. Trail systems should not be limited to any one corridor or sub-region, but should instead provide extensive trail connections throughout the region. A successful trail system also integrates design elements (such as signage and fencing) to create a cohesive, navigable, safe and enjoyable trail experience.

Existing Conditions

The current trail network serves a variety of users. In the mountains, there are over 50 miles of hiking trails, many of which connect to the San Gabriel River Bike Trail (Bike Trail). The river trails are multi-use for hiking and biking. The standard width trail is paved for maintenance and emergency vehicle access and is accompanied by a parallel dirt track for equestrians.

The 39-mile class I Bike Trail runs parallel to the San Gabriel River from the edge of the San Gabriel Mountains in Azusa to the Pacific coast in Seal Beach. This trail can serve as the central spine for an extensive regional trail network, but limitations in the layout of the current trail system will have to be addressed before it can fully expand. At present, the trail is only on one side or the other of the river, making access more difficult. In addition, the current trail network is disjointed, with few east-west connections to and from the trail. The best current examples of bike trail connections include:

- The Rio Hondo via Lario Creek/Zone 1 Ditch
- Along San Jose Creek, ending on the east side of the San Gabriel River (however, it lacks a connection to the Bike Trail on the west side)
- Along Coyote Creek, crossing Coyote Creek to join the Bike Trail just before the confluence.

Local, city-maintained trails may fill some trail connection gaps, but the overall bike trail network is incomplete.

There are approximately 38 access points to the Bike Trail, usually via street intersections, bridge crossings and local parks. The majority of the river is reachable through these access points, except above Irwindale. In this stretch, industrial land uses sometimes lie between residential areas and the river/trail system. Even where access points exist, however, the lack of a cohesive wayfinding system makes it difficult to find them. Many access points do not include signage.

The appearance, usability and security of the river trail network can be enhanced through trail amenities and other improvements:

- The many different styles of fencing along the river create a disjointed look and feel. Chain link is the most prevalent style, often in poor condition and posted with warning signs. The river is usually "fenced in," with no physical access allowed. These fences and signs portray the river as a piece of infrastructure rather than as a living asset.
- Landscaping along much of the river is often non-native and water intensive.
- The asphalt-paved Bike Trail doubles as a maintenance access road and needs repair. It provides only two official staging areas.
- Safety lighting along the river is sporadic.
- There are few site amenities, such as restrooms or drinking fountains, and no signage to indicate where they are.
- There are few shade trees along the river.

COURTESY OF DAN SLATER

Figure 4-6. Graffiti along the bike trail in Reach 6 reflects its urban location.

Future Opportunities

There are many opportunities to expand on existing trails and create an integrated network with the river as a key component. The Bike Trail can be enhanced by building parallel trails along the entire length of both sides of the river, increasing its functionality for trail users and possibly reducing the need for additional bridges. Current stakeholder-proposed examples include:

- Westside Trail in Azusa (R3.05)
- Woodland Duck Farm (R4.15)
- West San Gabriel River Open Space Area in Lakewood (R6.18)

More east-west bike trail connections to the SGR Bike Trail are needed, at least once in each reach. East-west connections will help establish a more complete regional trail grid, linking the two most significant north-south trails running along both the Los Angeles and San Gabriel Rivers. Trails along river tributaries, such as San Jose Creek and the Rio Hondo, can also play a key role. Current Master Plan project examples include:

- Pacific Electric Rails-With-Trails (R3.15), providing a linkage to the SGR Bike Trail in the Upper San Gabriel Valley via the future Gold Line light rail extension corridor
- San Jose Creek Bike Trail Bridge (R4.17) and Phase II (R4.18)
- Whittier Greenway Trail and Connection (R5.05)
- West Branch Greenway Rails-to-Trails Project (R6.11)
- Pacific Coast Highway Bike Trail Extension (R7.11)

Local trails should link directly to regional trails to create a truly comprehensive network. Developing and improving connections between the San Gabriel River Bike Trail and adjacent communities can help. Master Plan projects include:

- Azusa Bike Trail Network (R3.14)
- Caltrans ROW Open Space and Trail in Baldwin Park (R4.09)
- Thienes Avenue Gateway (R4.20)
- Mines Avenue Bike Trail Connection (R5.10)
- Bellflower High Bike Trail Connection (R6.06)
- Cerritos College Bike Link (R6.09)
- Trail Connection Between Wetlands in Seal Beach (R7.09)

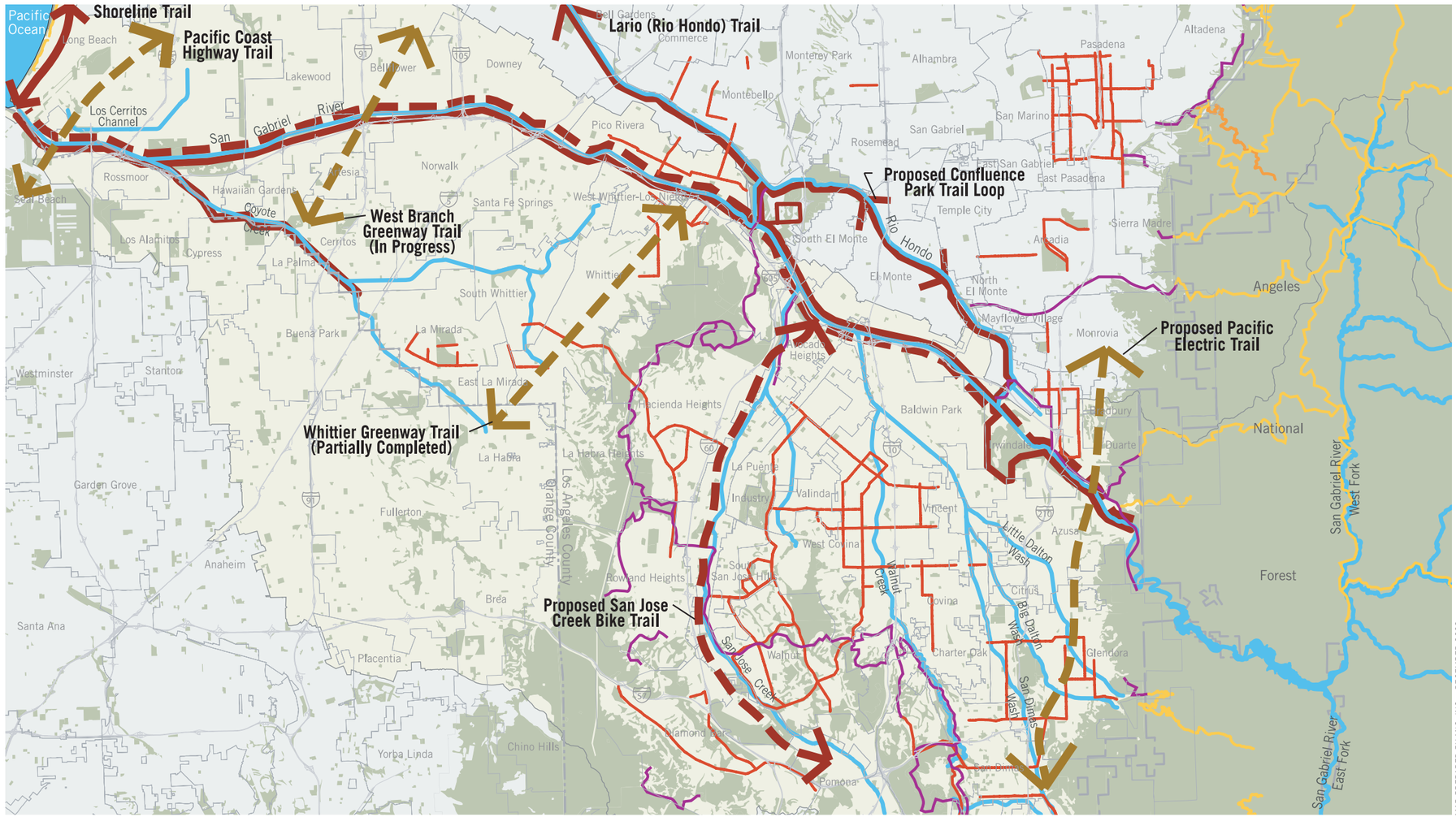
Figure 4-7. A former Union Pacific Railroad right-of-way will soon become the West Branch Greenway Trail in the City of Bellflower.

A continuous bike trail loop could be formed by linking existing trails in the San Gabriel Valley: the San Gabriel River Bike Trail, connecting to the Rio Hondo Bike Trail via Lario Creek, heading north up along the Rio Hondo to Peck Park, east to the Santa Fe Dam Recreation Area, south through the Duck Farm and San Jose Creek, then back to Whittier Narrows.

Qualitative Improvements

In addition to extending and completing the trail network, other more qualitative improvements to the trail network would enhance usability. These include implementing a comprehensive wayfinding system for the Bike Trail. This wayfinding system would provide trail users with a hierarchy of signage to indicate river reach, city, major arterials, community gateways, connections to other bike trails, public transit stops, points of interest, comfort stations, and mile markers. A variety of other amenities are also required.

- **Fencing:** Public safety can be ensured while applying aesthetic considerations; materials should reflect the reach; visual access to the river should be maintained or enhanced.



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Note: Trails in Los Angeles County only. Data derived from RMC database and County of Los Angeles Department of Parks and Recreation, "Los Angeles County Riding and Hiking Trails" map, 2001. Local trails per city.

Trail Enhancement Opportunities

County of Los Angeles Department of Public Works

San Gabriel River Corridor Master Plan

Map 4-2. Trail enhancement opportunities.

Figure 4-8. City streets can link with the river bike trail, such as this connection from Todd Street in Azusa.

Figure 4-9. Fences can be simple, yet attractive, such as this fence surrounding the Rio Hondo Coastal Basin Spreading Grounds.

- **Landscaping:** Native, water-wise plants should be used for each reach.
- **Lighting:** Lighting can be designed to improve safety without disturbing habitat or nearby residences.
- **Trees:** Shade trees will screen nearby residences and enhance user comfort.
- **Staging areas:** Additional bike staging areas with water fountains and public restrooms will improve trail function and convenience for all users.

COURTESY OF PBIC

Figure 4-10. Lighting can be customized to reflect local themes.

COURTESY OF PEDESTRIAN AND BICYCLE INFORMATION CENTER

Figure 4-11. Whimsical bicycle racks add an art element to staging areas, such as this one in Alexandria, Virginia.

Safety must be incorporated in the design and maintenance of all trail enhancement projects, along with aesthetic improvements. New trail fencing can enhance the aesthetic experience of the river system, even when dictated by safety and liability concerns.

COURTESY OF NORTH EAST TREES

Figure 4-12. Drinking fountains can incorporate local materials like river rock.

COURTESY OF PBIC

Figure 4-13. Universal design will improve river and trail access for people of all abilities.

Trail-road intersections are also a major safety consideration. The river trail intersects numerous bridges, overpasses and other obstacles (for example, the 60/605 Freeway interchange near Whittier Narrows).

Staging and parking areas are required at endpoints of all trails, but should also be placed at regular intervals along the trail. They should be designed to meet the needs of all trail users, especially hikers, bicyclists and equestrians.

Universal access and design should be incorporated at every stage in the planning, design and implementation of all trails.

COURTESY OF NORTH EAST TREES

Figure 4-14. The yoga fitness trail on the Los Angeles River is a creative alternative to standard fitness trails.

Other future opportunities for improving the river trails system can be identified through additional research:

- Catalog all access points to the Bike Trail, including connections with other regional and local trails.
- Conduct an on-site survey of the Bike Trail to document all physical barriers to bike and equestrian use (no equestrian trail map is currently available).
- Identify opportunities to improve visual and/or physical access from the Bike Trail to the river.
- Integrate the Bike Trail with the existing and proposed education centers (see section 4.5). Incorporate interpretive themes into the design of trails, trail signage and other wayfinding elements.

4.4 BRIDGES AND GATEWAYS

The tremendous recreational resource that is the San Gabriel River can only be fully realized if people have access to the river corrridor itself. For the most part, access comes in the form of existing bridges, gateways and trail segments.

A total of 61 bridges cross the San Gabriel River or lie within the river corridor, ensuring easy passage over what would otherwise be a natural barrier for nearby residents and visitors on both sides of the river. However, most of the bridges are designed to carry automobiles, trucks and trains—not people on foot, bikes or horses. And they were not designed to integrate with and provide entry to the river and its environs. As a result, not only is it difficult to get access to the river, but the river is also largely "invisible" to the casual observer nearby.

Existing Conditions

Although there are bike paths or sidewalks on many arterial bridge crossings, there are currently only five bridges exclusively for bicyclists and pedestrians. Four of these are in Reach 6 and the fifth, a rails-to-trails conversion in Reach 3, provides the only bike-pedestrian bridge connection north of Whittier Narrows Dam.

Bike-pedestrian bridges are located at the following five locations:

- Puente-Largo Historic Rail Bridge, Azusa (Reach 3)
- Bridge at Foster Road, Downey and Norwalk (Reach 6)
- Bridge at Caruthers Park, Bellflower and Ironwood Golf Course, Cerritos (Reach 6)
- Bridge below Carson Street at Long Beach Towne Center, Long Beach (Reach 6)
- Bridge across Coyote Creek, just above San Gabriel River confluence, Long Beach (Reach 6)

Figure 4-15. Native vegetation grows on top of the Puente-Largo Historic Rail Bridge, alongside the bike trail.

TABLE 4-1. BRIDGE TYPES

Reach	Freeway Bridges	Street Bridges	Rail Bridges	Bike/Pedestrian Bridges
One	0	2	0	0
Two	0	0	0	0
Three	1	5	1	1
Four	5	8	1	0
Five	1	8	4	0
Six	2	11	1	4
Seven	2	4	0	0
Total	11	38	7	5

New bike-pedestrian bridges and new gateways on existing arterial bridges can substantially improve cross-river mobility. Gateways are entry points marked by street monuments or other design elements where city boundaries and the river intersect. They enhance the river's visibility and symbolically link it to the community in which it flows. Gateways can be designed to facilitate access to the river by pedestrians and bicyclists.

Table 4-1 lists the types and number of all 61 bridges found in each of the seven reaches.

Future Opportunities

The Master Plan proposes seven new or enhanced bike-pedestrian bridges and 21 gateways. Completing these bridges will be a major improvement over the current situation, but there will still be significant gaps along the river. For example, Reach 4 north of San Jose Creek and all of Reach 5 would still not have any bike-pedestrian crossings.

Reach 5 has the largest number of proposed gateways, suggesting that there are many arterial street bridges that could be modified for pedestrians and bicyclists.

The following is a summary of all proposed bike-pedestrian bridges and gateways and additional opportunities specific to each reach. (More detailed descriptions of these projects can be found in Section 3.5.)

COURTESY OF THE AZUSA HISTORICAL SOCIETY

Figure 4-16. Historic archives can inspire new gateway signage, for example this historic sign that once stood on Azusa Avenue.

Reaches One and Two

- None

Reach Three

BIKE-PEDESTRIAN BRIDGES

- Future Pedestrian Bridge (R3.09) at site of existing Vulcan Materials Conveyor Belt
- Foothill Boulevard Pedestrian Bridge, as part of Regional Rails to Trails Project (R3.15)
- Puente Largo Rail Bridge Enhancement, as part of Duarte Bike Trail Extension (R3.19)
- Bridge, Tunnel, or other connection around Santa Fe Dam, part of SGR Beautification and Environmental Enhancement (R3.28)

GATEWAY

- Route 66/Foothill Boulevard Gateway (R3.20)

The Vulcan Materials Conveyor Belt may be in operation for another four decades before it can be re-designed for use as a bike-pedestrian bridge (Project R3.09). Since this leaves a significant gap in pedestrian bridge crossings over the river, another site may need to be found that could be available for use much sooner. Project R3.28 would provide pedestrians and bicyclists with a more direct and secure connection around the Santa Fe Dam.

Reach 4

BIKE-PEDESTRIAN BRIDGES

- San Gabriel River Bike Trail Bridge (R4.16)
- San Jose Creek Bike Trail Bridge (R4.17)

GATEWAYS

- Ramona Boulevard Gateway (R4.08)
- Valley Boulevard Gateway (R4.13)
- Thienes Avenue Gateway (R4.20)

COURTESY OF PBIC

Figure 4-17. Local artists can create murals and other art work on bridges, reflecting local themes.

Completing the two proposed bike-pedestrian bridges will meet the needs of the southern portion of Reach 4, but the northern half of this reach may still need an additional bike-pedestrian crossing.

Reach 5

BIKE-PEDESTRIAN BRIDGES

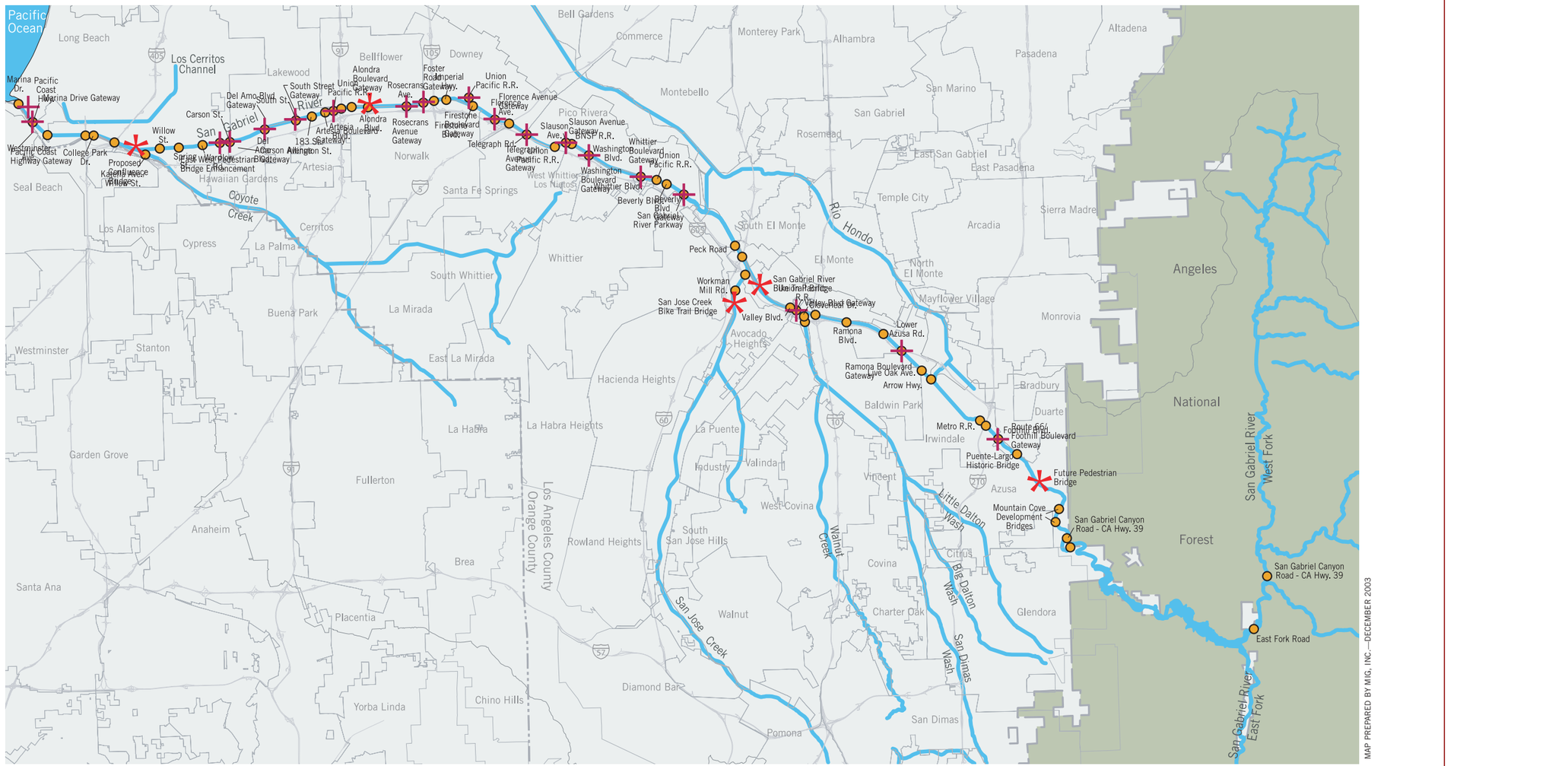
- None

GATEWAYS

- Beverly Boulevard Gateway (R5.03)
- Whittier Boulevard Gateway (R5.05)
- Washington Boulevard Gateway (R5.11)
- Slauson Avenue Gateway (R5.12)
- Telegraph Avenue Gateway (R5.13)
- Florence Avenue Gateway (R5.15)
- Firestone Boulevard Gateway (R5.18)

COURTESY OF NORTH EAST TREES

Figure 4-18. "Guardians of the River Gate" on the Los Angeles River, by artist Michael Amescua, incorporates folk art symbols and historic wildlife.



Source: County of Los Angeles Department of Public Works, Thomas Bros. Maps, and Rivers and Mountains Conservancy

Map 4-3. Bridge project opportunities.

Although there are no current or proposed bike-pedestrian bridges in Reach 5, the proposed gateway projects on existing arterial bridges may facilitate pedestrian and bike use.

Reach 6

BIKE-PEDESTRIAN BRIDGES

- East-West Pedestrian Bridge Enhancement (R6.20)

GATEWAYS

- Foster Road Gateway (R6.02)
- Rosecrans Avenue Gateway (R6.04)
- Excelsior Drive Gateway Park (R6.05)
- Alondra Boulevard Gateway (R6.08)
- Artesia Boulevard Gateway (R6.13)
- South Street Gateway (R6.14)
- Carson Avenue Gateway (R6.19)

This reach already has four bike-pedestrian bridges, the most of any reach.

COURTESY OF PBIC

Figure 4-19. Creative bike-pedestrian bridges, like this one in Spokane, Washington, can enliven trails.

Figure 4-20. The City of Cerritos placed this distinctive marker at the gateway to the City on Artesia Boulevard.

COURTESY OF DAN SLATER

Figure 4-21. The existing bridge at Coyote Creek could be expanded to cross the San Gabriel River near this point.

Reach 7

BIKE-PEDESTRIAN BRIDGES

- Proposed Confluence Bridge (R7.05)

GATEWAYS

- Pacific Coast Highway Gateway (R7.11)
- Marina Drive Gateway (R7.14)
- River's End Gateway (R7.17)

4.5 INTERPRETIVE FACILITIES

Educational centers provide a place to learn about the river and the watershed it serves. In a sense, these facilities speak for the river, telling its story to people who may be unaware of its history and significance. A series of strategically located educational centers will help the public perceive the river as an integrated system and rediscover it as the common thread linking communities from the mountains to the sea.

Existing Conditions

There are presently five individual educational centers located at various points within the San Gabriel River corridor:

- Rincon Station, managed by the Angeles National Forest, just below the confluence of the East Fork (Reach 1)
- The Peter Schabarum Nature Center, a Los Angeles County facility being operated by the San Gabriel Mountains Regional Conservancy, in the Santa Fe Reservoir Recreation Area (Reach 3)
- The Nature Center at Whittier Narrows, a County of Los Angeles Department of Parks and Recreation facility (Reach 4)
- Pio Pico State Historic Park (Reach 5)

COURTESY OF NORTH EAST TREES

Figure 4-22. A grizzly bear loses its grip on a tasty steelhead trout in this sculpture by Michael Amescua on the Los Angeles River.

COURTESY OF AZUSA HISTORICAL SOCIETY

Figure 4-23. Historic landmarks such as the Irwindale Church provide rich historical interpretive opportunities.

- The City of Long Beach's El Dorado Nature Center, just above the Coyote Creek confluence (Reach 6)

There are no interpretive centers in Reach 2 or Reach 7. There are outdoor interpretive exhibits and interpretive signage interspersed along the river, primarily in the mountains along Reaches 1 and 2.

The five major educational centers are primarily stand-alone facilities not designed to relate to each other as part of a larger educational program or network. Although many are located near the San Gabriel River Bike Trail, some centers do not have directional signage to the nearby river. Many of these centers are planning enhancements or upgrades to their facilities and educational programs.

Future Opportunities

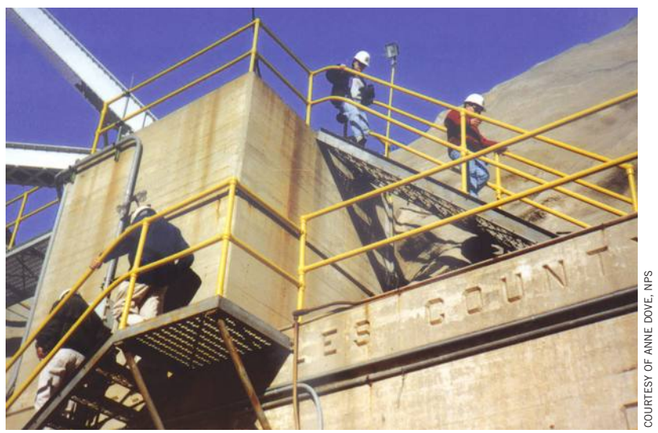
A comprehensive network of educational centers would consist of at least one major educational center in each of the seven reaches of the river. Each reach could also have smaller, more specialized educational centers that complement and reinforce the major centers.

Eight different interpretive themes are recommended for the river corridor (additional interpretive themes may emerge during the process of developing the network). Some of these themes may be appropriate for the river as a whole, while others are more specific to particular reaches:

- San Gabriel River Watershed (all reaches)
- Water Conservation (all reaches)
- Native Habitat (all reaches)
- Regional Culture/History (all reaches)
- Mountains and Forest (Reaches 1 and 2)
- Flood Control and Water Supply (Reaches 2, 3 or 4)
- Geology/Mining/Quarry Operations (Reaches 3 and 4)
- Wetlands (Reach 7)

These interpretive themes should be developed in partnership with existing public and private interests along the river. For example, the geology, mining, and quarry operations theme suggested for Reaches 3 and 4 could be developed in partnership with quarry operators, who are best qualified to promote an understanding of mining, its ancillary uses, history and contributions to the growth of Southern California.

Each educational center would be distinguished by its reach location and particular interpretive theme(s). Each center would provide visitors information about the other centers, including locations and specialized



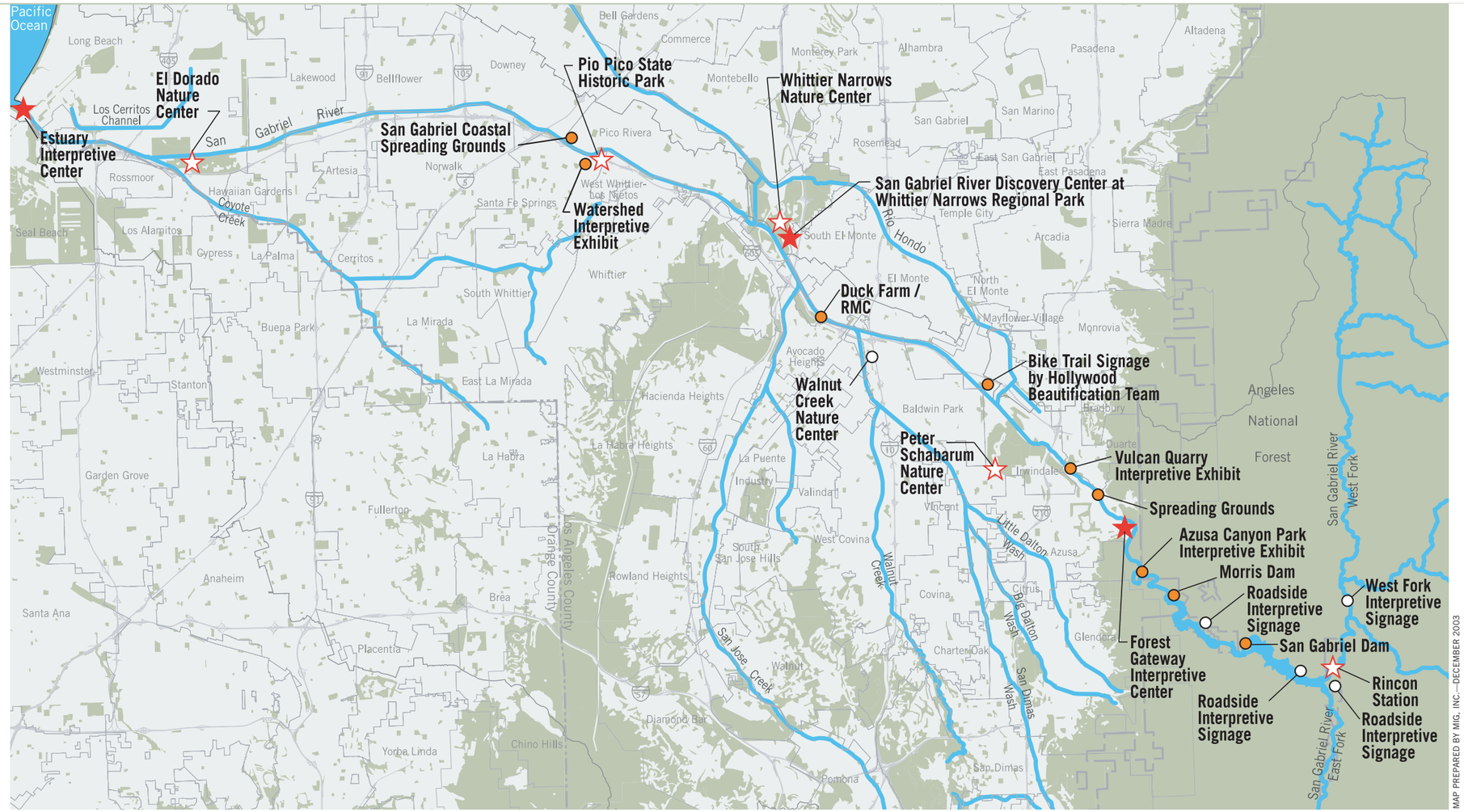
COURTESY OF ANNE DOVE, NPS

Figure 4-24. The San Gabriel Dam provides an interesting array of flood control and water conservation interpretive opportunities.

COURTESY OF VULCAN MATERIALS COMPANY

Figure 4-25. Children can learn about the importance of aggregate to Southern California through field trips to local mines.

Figure 4-26. El Dorado Nature Center is a model for regional education centers.



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Map 4-4. Interpretive facility opportunities.

COURTESY OF THE SAN GABRIEL MOUNTAINS REG. CONSERVANCY

Figure 4-27. The Santa Fe Dam Nature Center celebrates its grand opening in April 2004.

interpretive themes. Staff would cooperate with each other on shared programs and events, promoting overall public awareness of the centers. Visitors could be issued "San Gabriel River Passports" to be stamped each time they visit one of the chain of educational centers along the river.

An overview of the educational center network, structured by reach and theme, might look something like the descriptions provided in Table 4-2.

Design guidelines should encourage *all* projects within the San Gabriel River corridor to incorporate an interpretive element that reflects river and watershed themes. Currently, several Master Plan projects already plan to include a significant interpretive element, complementing the educational programs of the major interpretive centers:

- Azusa Canyon River Park (R3.01)
- San Gabriel Canyon Spreading Grounds (R3.08)
- Buena Vista Wetlands (R3.24)
- Walnut Creek Nature Park and Nature Center (R4.11)
- Woodland Duck Farm (R4.15)
- Rio San Gabriel Park Interpretive Trail in Downey (R5.17)
- Downey Landing (R6.01)
- Riverview Park (6.07) in Bellflower

TABLE 4-2. FUTURE EDUCATIONAL CENTER NETWORK

Reach	Educational Centers	Area of Focus
1: Headwaters	■ Rincon Station	■ San Gabriel Mountains, U.S National Forest
2: San Gabriel Canyon	■ Morris Dam Peninsula Park (2.06)	■ San Gabriel Mountains; role of canyon dams in flood control, water supply and quality; military history of Morris Dam reservoir
3: Upper San Gabriel Valley	■ Forest Gateway Interpretive Center (R3.6) ■ Peter Schabarum Nature Center (R3.22)	■ U.S. National Forest ■ Geology, mining ■ Watershed, water conservation, demo native plant gardens, education, culture, multi-age group activities, research
4: Lower San Gabriel Valley	■ San Gabriel River Discovery Center at Whittier Narrows (R4.26)	■ Watershed, water conservation ■ Geology, mining
5: Upper Coastal Plain	■ Pio Pico State Historic Park (R5.06) ■ Los Cerritos Wetlands Restoration (R7.07)	■ Culture, history ■ Tidal wetlands
6: Lower Coastal Plain	■ El Dorado Nature Center (R6.22)	■ Nature, science, biology for school age groups, wetlands
7: Tidal Influence Zone	■ Hellman Ranch Wetlands Freshwater Marsh Restoration (R7.10)	■ Tidal wetlands; Tongva village archaeological site

COURTESY OF NORTH EAST TREES

Figure 4-28. Interpretive exhibits like this poster for the San Juan Bautista de Anza Trail can be built in even very small spaces.

4.6 PARK DEVELOPMENT

New and expanded parks along the river is a core strategy for "greening" the San Gabriel River. Parks and trails open up the river environment, making it accessible and attractive to nearby residents and other visitors who come for recreation or simply to relax and enjoy the view. River parks link people to the river, while also serving as a gathering place for the communities in which they are located.

Existing Conditions

There are approximately 52 parks within or near the San Gabriel River corridor. By far the largest open space with recreational opportunities is the Angeles National Forest. Three notable regional parks serve the San Gabriel River: Santa Fe Dam Recreation Area in Reach 3, the Whittier Narrows Recreation Area at the southern edge of Reach 4, and El Dorado Regional Park in Reach 6 just above Coyote Creek. There are about 49 city parks along the river corridor.

The majority of the urbanized river corridor is covered by parks: there are parks within walking distance of the river along 66% of the west bank of the river, and 80% of the east bank. Areas that are "missing" parks include communities with very dense populations such as Baldwin Park in

COURTESY OF ANNE DOVE, NPS

Figure 4-29. Fishing is a popular activity on the West Fork.

Reach 4. Other underserved communities include sections of El Monte, Pico Rivera, West Whittier-Los Nietos, Bellflower and Long Beach.

However, many of the river-adjacent parks are not oriented toward the river. As a result, park visitors may not even be aware that the river is nearby. This pattern stems from several factors. Public parks near the river are generally fenced off from the river except at one access point. They are often located beneath the top of the levee, preventing people in the park from seeing the river on the other side. Ornamental trees or shrubs planted along the fence line also limit visual and physical connections to the river. In some places, active rail lines separate parkland from the river.

Landscaping in many existing parks often does not reflect the river environment. The typical "park aesthetic" is lawn and ornamental landscaping that is water-intensive with high maintenance requirements.

Future Opportunities

There are major park development opportunities in all reaches. The most significant of these are within utility rights-of-way, subject to California State Public Utilities Commission guidelines and approval. Other opportunities include confluences and reclamation of brownfields and vacant open space.

Reach 1

In Reach 1, park development will most likely focus on the key issue of preventing future impacts from the thousands of annual visitors who travel Highway 39 along the San Gabriel River corridor into the Angeles National Forest. Highway turnoffs, vista points, interpretive areas, and parking, along with comfort stations and other amenities, can better serve the volume of visitors. This could be achieved through a series of parks along Highway 39, catering to people traveling by autos or bicycles. Management of trash and other user impacts is also a key issue in this reach.

Reach 2

Morris Dam Peninsula Park (R2.06) is the primary park development opportunity in this reach. Site remediation by the U.S. Navy will be necessary. As in Reach 1, highway turnoffs, vista points, and other similar mini-parks would better serve recreational visitors along Highway 39.

Figure 4-30. World War II torpedo chutes are still found on the Morris Dam Peninsula.

Reach 3

Future park development in this reach would consist primarily of opportunities created by reclamation of quarry operations and acquisition of privately held undeveloped lands. Current examples among Master Plan projects include:

- Robert's Creek Restoration (R3.04)
- Azusa Rock Quarry Restoration (R3.11)
- Fish Creek Restoration and Public Access (R3.12)
- Wright-Romvary Properties (R3.18)
- United Rock Products Quarry #3 (R3.25)

Although quarry reclamation offers huge potential for new parks, this will have to be balanced with economic development opportunities that are also important to local cities. The final use for the quarry sites, three or four decades from now, will be determined through negotiations between quarry operators and the Cities of Azusa and Irwindale. Local cities are interested in commercial, industrial, and to some extent, residential development. Parks, open space and habitat can be compatible with

Figure 4-31. The Santa Fe Dam Recreation Area offers both active and passive recreation activities.

economic development. Other Master Plan projects with a significant park and open space component in this reach include:

- Azusa Canyon River Park (R3.01)
- San Gabriel Canyon Spreading Grounds (R3.08)
- Santa Fe Dam Recreation Area and Habitat Enhancements (R3.21)

Reach 4

There are several park development opportunities in Reach 4. In the northern half of the reach, many of the Master Plan projects will help address the existing parks "gap" near Baldwin Park and South El Monte:

- Caltrans ROW Open Space and Trail (R4.09)
- Barnes Park (R4.10)
- Walnut Creek Nature Park and Center (R4.11)
- Woodland Duck Farm Project (R4.15)
- Proposed bridge projects such as the San Gabriel River Bike Trail Bridge (R4.16) and San Jose Creek Bike Trail Bridge (R.17), along with additional gateways (to facilitate access to the Bike Trail and provide the equivalent of a park-like setting along the river corridor)

Figure 4-32. Dog parks like this one at Seal Beach can be developed in "leftover" spaces such as underneath utility towers.

COURTESY OF NORTH EAST TREES

Figure 4-33. Pocket parks on small overlooked properties can provide shade, benches and water.

Quarry reclamation projects in Irwindale have significant park opportunities, if park development is included as an element in these reclamation plans. In the central and southern half of Reach 4, a variety of Master Plan projects in the unincorporated part of LA County in and near Whittier Narrows may form a chain of linked regional and local parks. This concept has been previously referred to as the San Gabriel Confluence Park, linking the Woodland Duck Farm (R4.15) to the Whittier Narrows, including the San Gabriel River Discovery Center (R4.26), the Lario Creek/Zone 1 Ditch Enhancement Project (R4.28), and the Rio Hondo.

Reach 5 and Reach 6

These reaches have the largest number of existing parks. They are very heavily used, suggesting that additional parks are needed. In these reaches, 13 new or enhanced park development projects area proposed. Additional opportunities may include the development of small parks, which can be especially valuable to underserved communities. Joint use programs with local schools can also provide a significant expansion of readily available park space for surrounding communities. The former NASA site in Downey (R5.01) could provide future long-term opportunities for creating new parks and open space.

Figure 4-34. These park benches are oriented to take advantage of picturesque river views on Naples Island, near the mouth of the river.

Reach 7

In Reach 7, proximity to the beach and marinas may create a different set of park opportunities:

- Coyote Creek Confluence
- DWP open spaces (R7.16)
- Oil field reclamation
- At the beach, possibly near River's End Gateway (R7.17)

4.7 OPEN SPACE

Open space has many different forms: parks, school playgrounds, greenways and natural areas. The defining element is that it offers a respite from the hard-edged urban environment where people spend most of their time. Open space may be just a small 50-foot by 50-foot parcel of unused urban land, several acres of river-adjacent parkland, miles of utility right-of-way corridor, or hundreds of square miles in the Angeles National Forest. And the river itself is linear open space.

The Master Plan includes projects that maintain and preserve open space areas along the river, as well as opportunities to reclaim land that could become open space in the future.

Existing Conditions

Open space along the river is sparse, but there are exceptions: the natural areas of the Angeles National Forest (Reaches 1 and 2), Santa Fe Dam Recreation Area (Reach 3), Whittier Narrows (Reach 4), and El Dorado Regional Park in northern Long Beach (Reach 6).

Land use patterns along the river corridor vary considerably by reach, affecting the present and future open space potential along the river. The most dramatic divergence is between the wilderness of Angeles National Forest (Reaches 1 and 2) and the rest of the river as it flows through the highly urbanized areas of Los Angeles County from the foothills to the sea (Reach 3 to Reach 7). Even within the urbanized reaches, however, there are variations in land use patterns that may impact future open space potential. These variations are summarized as follows:

- Reaches 1 and 2: open space
- Reach 3: primarily industrial and open space, with some commercial
- Reach 4: industrial, residential, and open space, with only a little commercial
- Reach 5: open space, but primarily residential and some commercial
- Reach 6: residential with some commercial and open space
- Reach 7: open space, residential, with some industrial and commercial

Utility rights-of-way and easements have had the effect of preserving open space along much of the river corridor. In some cases, these corridors traverse existing parks. SCE owns or leases approximately 85 percent of the adjacent land along the river corridor. LADPW also owns and leases land along the river. In the past, these areas have had only limited public use because of safety, maintenance, CPUC-mandated fiscal responsibilities, and operational requirements. The conversion of SCE rights-of-way lands from nurseries and equestrian facilities to storage units is a current trend that may reduce available open space. SCE is responding to CPUC financial requirements to obtain the "highest and best use" on its available open space lands.

Connections to public schools also expands the network of de facto open space. There are also vacant lands along the river, under-utilized industrial lands and SCE/LADPW hiatus areas that currently do not allow public access.

Figure 4-35. Rose Hills Memorial Park, overlooking the river, is a large open space area where many families gather to celebrate the lives of loved ones.

Future Opportunities

Opportunities for open space enhancement include protecting all existing available open spaces and creating new open spaces through incremental acquisition and conversion of land over time.

Utility Rights-of-Way

The most significant open space opportunity along the river corridor is the SCE utility rights-of-way, which could be enhanced for passive recreational and habitat purposes. There is precedent for utility corridors being used in this manner. For example, in Sun Valley, the City of Los Angeles Department of Water and Power easements are being used for treatment wetlands to assist local cities in meeting water quality regulatory requirements. Selected portions of utility corridors might be used for habitat-friendly gardens, parks and trails. Planting with native vegetation not only increases habitat but could also reduce maintenance costs for utility companies.

Regulatory and fiscal challenges will have to be addressed if this open space vision is to become a reality. For example, SCE will need a safe harbor agreement to protect its operations if endangered species take up residence in newly established habitat areas within the right-of-way.

Conservation easements can also play a major role by providing utilities with a financial incentive not to convert plant nurseries to storage facilities. Conservation easements may be a viable form of public subsidy to make up the difference between the revenue generated by storage units and other less environmentally-sensitive uses.

School Sites

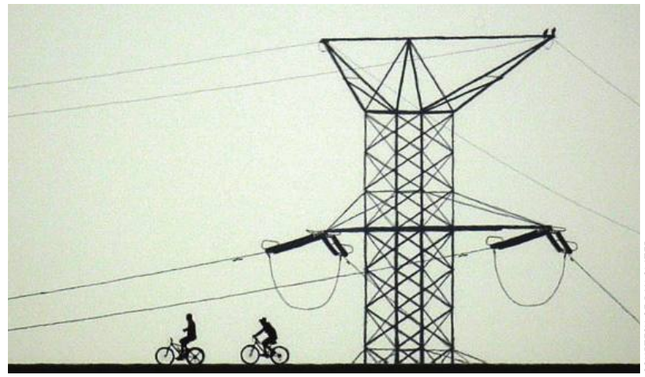
Public school properties can be a key element in the creation of additional open spaces. Opportunities include El Monte and Baldwin Park (in Reach 4) and the lower river communities of Pico Rivera, Downey, Cerritos and Norwalk (in Reaches 5 and 6).

Gravel Quarries

In Reaches 3 and 4, future gravel quarry land reclamation may provide additional open space for recreation and habitat in conjunction with other economic development opportunities on these sites. Quarry sites identified in the Master Plan include:

- Azusa Rock Quarry Restoration (R3.11)
- United Rock Products Quarry #3 (R3.25)
- Hanson Quarry (R4.05)
- Rodefer Quarry (R4.06)
- Durbin Quarry (R4.07)

These quarries are private property. Some quarries, such as the Durbin Quarry and United Rocks Product Quarry #3, offer valuable commercial and industrial area reuse opportunities. Local cities are extremely interested in the property development that will improve their tax base.



COURTESY OF DAN SLATER

Figure 4-36. The land along utility towers can provide significant open space areas.

Proposals to set aside any portions of these properties for open space will need to account for these economic realities.

Undeveloped Land

An additional open space priority in Reach 3 is acquiring privately held undeveloped lands that should be preserved as open space. An example is the Wright-Romvary Properties acquisition in Duarte (R3.18). Abandoned railroad or transportation rights-of-way offer opportunities to acquire linear open space that can be used for trails, habitat, and other community purposes. Examples include:

- Pacific Electric Rails-to-Trails Project involving cities along Foothill Boulevard (R3.15)
- Whittier Greenway Trail and Connection (R5.05)
- West Branch Greenway Rails-to-Trails in Bellflower (R6.11)

Converting underused or abandoned lands currently zoned commercial, industrial and residential may represent a long-term opportunity to create new open space. A survey to determine the extent of these properties is required to assess the potential of this strategy. Although many cities will consider the economic development potential of such sites a priority, the value of such properties increases where there is an open space component, especially in areas adjacent to or near the river. This approach may be especially valuable in heavily developed Reaches 5, 6 and 7, as older buildings and facilities reach the end of their useful lifespans. Converting the former NASA site in Downey (R6.01), which combines new open space with new commercial and business development, may serve as a prototype for future developments.

4.8 REDEVELOPMENT AND RECLAMATION

Redevelopment can transform landscapes from prior urban and industrial uses, making them available for new economically viable and ecologically sustainable uses. Land recycling from one use to another enhances its value.

Land reclamation is the process of improving disturbed land (soil, vegetation and water) to achieve land equivalent to or as close as possible to pre-disturbed conditions. For example, "brownfields" are lands where a hazardous substance, pollutant or contaminant must be cleaned up to prepare the land for reuse. Land reclamation should be guided by the economic and social needs of the communities in which these sites exist.

Figure 4-37. Community gardens, such as this one in Long Beach, can offer multiple benefits in underused open space.

Existing Conditions

The San Gabriel River corridor includes many productive gravel and sand mining operations, primarily in the alluvial deposits in the upper San Gabriel Valley (Reaches 3 and 4). There are 17 gravel quarries in Irwindale alone, and another active one in Azusa. These mines are in various stages of operation and have developed reclamation plans to be implemented during the next 7 to 30 years.

Many of these sites have significant economic development potential and for this reason are especially important for the future economic health of the cities in which they are located. In addition, the adjacency of these sites to the San Gabriel River adds to their significance. Multiple uses could complement or enhance their economic value. These uses could include parks and open space, habitat restoration, stormwater capture and cleanup, and flood hazard reduction.

A variety of challenges will need to be addressed at each site in order to reclaim them. In some of the deeper mining pits, such as Hanson Quarry, groundwater is currently exposed at a depth of 150 feet. Water levels in the groundwater basin have historically and naturally fluctuated greatly in depth. Erosion is also a problem on sites with significant excavation. However, bioengineering techniques could be used to control erosion, with the added benefit of restoring habitat and soil health. Some sites may include contaminated soils or remnant toxins that could be harmful to the environment. These substances must be contained or cleaned up as part of the reclamation plan, especially if site runoff transports these substances elsewhere.

Other significant land reclamation challenges include the EPA Superfund sites in the San Gabriel Valley, oil fields west of Whittier Narrows (Reach 4) and an area by the Los Cerritos Wetlands in Long Beach (Reach 7).

Future Opportunities

On many sites, existing conditions may not meet current safety, accessibility and water quality standards, and post-occupancy reclamation plans must be prepared. The Master Plan's integrated approach to future land uses supports a river system or watershed perspective. Each potential site should be examined in terms of its ability to address a variety of components. For example, the economic development potential of each site is very important, and must be addressed along with other potential benefits. Multiple uses can be integrated into some sites, rather than creating exclusive reserves for one function or another. Uses include:

- Land use conversion
- Open space
- Habitat restoration
- Interpretive features (demonstration areas)
- Groundwater recharge
- Flood protection
- Bioengineered wetlands (water quality)
- Economic development
- Reclaimed water

Gravel Quarries

Gravel quarries constitute the most significant land reclamation opportunity in the river corridor. A Quarry Reclamation Development Study (R4.04) is being conducted to more precisely determine the land reclamation potential of these projects, especially their potential feasibility for multiple beneficial purposes. For example, two former quarries that were already recycled as spreading grounds, are now sites for proposed second-tier land reclamation efforts. At the San Gabriel Canyon Spreading Grounds (R3.08), native landscaping improvements will enhance views of the nearby mountains by aesthetically improving the appearance of the

spreading basins—while also providing habitat. At the Buena Vista Wetlands (R3.24), LADPW plans to create bioengineered wetlands for habitat restoration. LADPW will need assurance that such habitat will not impose additional regulatory burdens. In addition to these existing efforts, Master Plan stakeholders have identified 11 gravel quarries as potential future land reclamation projects, including those listed below.

- Azusa Rock Quarry Restoration (R3.11)
- Azusa-Largo Pit (R3.16)
- Reliance Pit #2 (3.17)
- United Rock Products Quarry #3 (R3.25)
- United Rock Products Quarry #4 (R3.23)
- United Rock Products Quarry #1 (R4.01)
- United Rock Products Quarry #2 (R4.02)
- Bubalo Pit (R4.03)
- Hanson Quarry (R4.05)
- Rodefer Quarry (R4.06)
- Durbin Quarry (R4.07)

COURTESY OF VULCAN MATERIALS COMPANY

Figure 4-38. Reclamation plans for the Durbin Quarry can provide economic development and open space for the region.

The future end use of each of these quarry sites will vary depending on many factors, including the value of the land as determined by surrounding land uses. Some quarry sites can offer land reclamation that complements enhancements to the river corridor. Other quarry sites, especially those surrounded by commercial and industrial uses, will more likely be developed for purposes that can best enhance the tax base of the local cities in which they are located.

Abandoned and Underused Land

Other major stakeholder-proposed projects demonstrate the value of land recycling for creating new uses on abandoned or underused properties that have the potential to significantly transform the landscape. At Morris Dam Peninsula Park (R2.06), the proposed land reclamation project would transform a former Navy torpedo testing facility into a regional park. The Woodland Duck Farm (R4.15), a former agricultural facility, is being reclaimed to provide multiple recreational, habitats, and water quality benefits. At Downey Landing (R6.01), the 160-acre former NASA industrial facility is being recycled as a mixed-use commercial and business project, including a 11.5-acre park with a biofiltration swale system to capture and clean stormwater. The City of Downey has allocated $20.5 million to complete soil and groundwater cleanup at this reuse site.

Figure 4-39. The proposed Downey Landing park on the site of a former NASA facility is a significant land reclamation project.

Three stakeholder-proposed rails-to-trails projects include a land reclamation component:

- Pacific Electric Rails-to-Trails Project (R3.15)
- Whittier Greenway Trail Connection (R5.05) and
- West Branch Greenway Rails-to-Trails Project (R6.11)

RMC has granted the San Gabriel Valley Council of Governments funding to identify brownfield sites in the San Gabriel Valley, some of which are likely to be found within or near the San Gabriel River corridor. This study will be useful for identifying additional future land reclamation opportunities and obtaining funding for such projects.

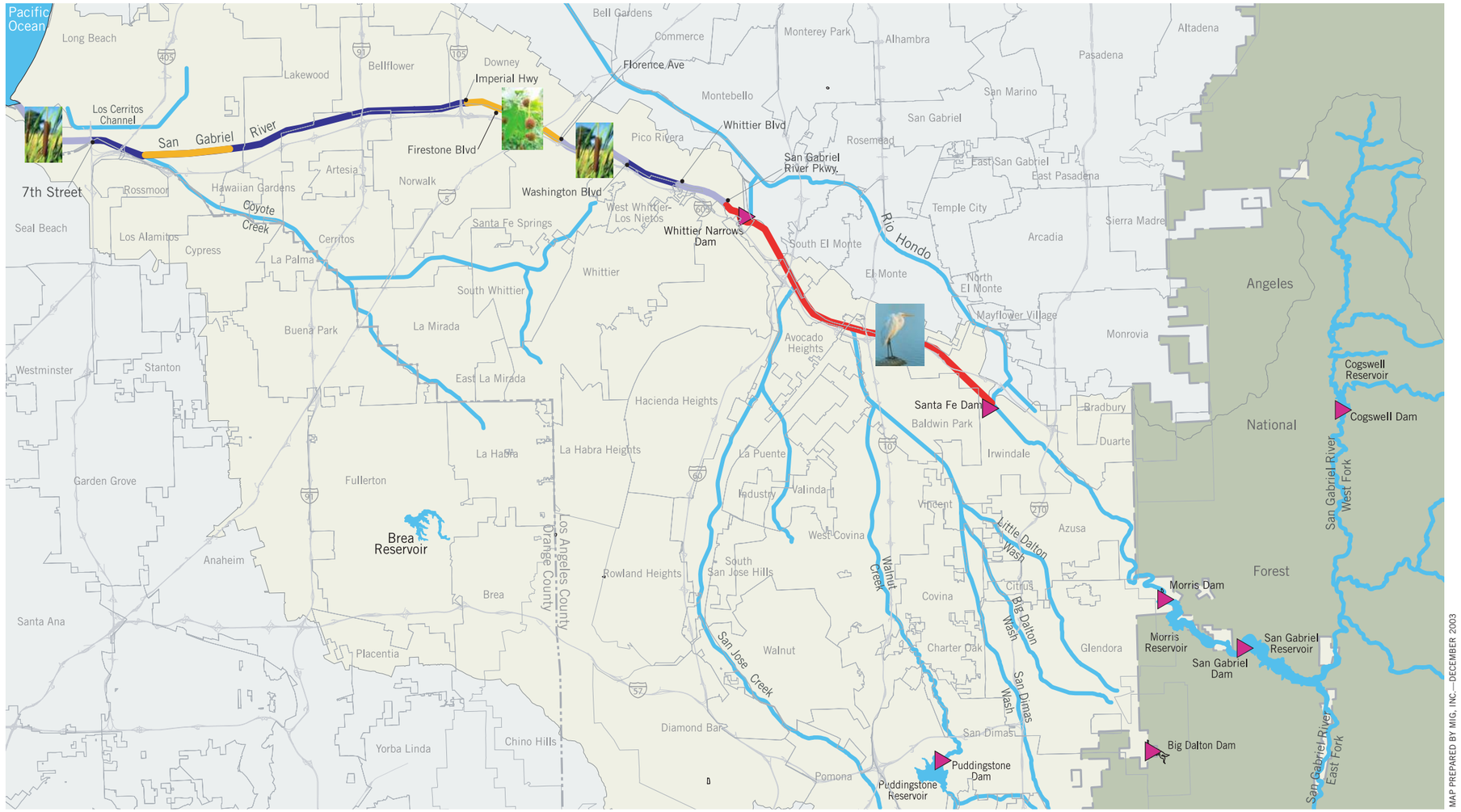
4.9 FLOOD CHANNEL ENHANCEMENTS

Flood channel enhancements refer to projects that can improve flood prevention for properties adjacent to the river. Following the multi-objective framework provided by this Master Plan, flood channel enhancements would also include elements of habitat restoration, recreation and open space. It is possible to creatively blend flood control engineering with ecology to improve flood protection and restore some of the natural attributes of the river system. For example, flood control levees can be set back from the river in adjacent open space areas to widen the floodplain, allowing habitat to be expanded—while still maintaining and improving flood protection for adjacent communities. Natural-looking terraces built over engineered levees can mimic natural features.

Existing Conditions

There is a complex relationship between flood control, water conservation and habitat restoration—all of which can be affected by a number of factors, including the design of the storm drain system, the capacity of the flood control channels, and the type of vegetation growing in those channels.

The existing storm drain system is designed to quickly move runoff from rooftops to streets to the San Gabriel River to the Pacific Ocean. This creates a “peak flow” situation when the river carries large volumes of water, traveling at a fast velocity, for a short period of time. As a result, stormwater that might otherwise be captured for storage, recharge and other values, is quickly lost to the sea.



Map 4-8. River bottom habitat restoration opportunities.

Figure 4-40. Even though the river is in a concrete channel, there is enough open space available at El Dorado Regional Park to consider partial floodplain restoration at this point.

The majority of the San Gabriel River channel is designed to meet capacity requirements for a 100-year flood event. Existing data on channel capacity indicates there are significant stretches of excess capacity along the channel. Computer modeling will be required to confirm this data. Excess capacity suggests that there are opportunities to undertake flood channel enhancements, which can provide benefits for habitat restoration, recreation and other purposes.

The longest stretch of excess capacity is about 9 miles long and carries 5,000-30,000 cfs in excess of 100-year flow. This occurs in Reach 4, from Santa Fe Dam down to just below Whittier Narrows Dam.

Lower Reach 5, from Florence Avenue to Imperial Highway, is a 3-mile stretch with excess capacity of 3,000-5,000 cfs.

There are two under-capacity reaches, one in Reach 5 from Whittier Boulevard down to Washington Boulevard (where the San Gabriel Coastal Basin Spreading Grounds are located) and one in Reach 7, from the I-405 Freeway down to 7th Street (just after the concrete ends and soft-bottom zone of tidal-influence begins).

The remainder of the river, half of Reach 5, all of Reach 6, and most of Reach 7 has excess capacity from 0-3,000 cfs.

Vegetation management and removal of exotic species (especially *Arundo donax*) can have a beneficial impact on channel capacity and on native habitat restoration. The distribution of native alluvial fan sage scrub and native riparian species, naturally adapted for seasonal periods of scarce water, is more widely spaced and less dense than arundo. Riparian species easily root in alluvial soils following a flood, providing rapid regeneration of habitat while preventing erosion of the fragile soils.

In contrast, an arundo forest is denser, taller and less diverse. Arundo forests out-compete native plant species, make less water available for recharge downstream, and provide little habitat value. This plant community also impedes groundwater infiltration because its dense, extensive root system retains water near the ground surface, where it either evaporates or is absorbed by the plants.

Future Opportunities

Over the long-term, river enhancement projects must be designed to attenuate peak flow by capturing and slowing down potential flood waters, reducing flood risk and allowing future stream restoration projects to safely move forward.

Flood Plain Restoration

Open space areas along the river may offer opportunities to set back levees from the river to restore flood plain functioning, including meandering channels and sandbars. Such restoration is most feasible where river-adjacent open space exists in conjunction with excess flood channel capacity, or where open space can even enhance flood control capacity. Utility easements, spreading basins and reclaimed gravel quarries offer opportunities to increase flood channel capacity while contributing to floodplain restoration efforts. The most significant wide, open space areas along the San Gabriel River exist in Azusa, Irwindale, Whittier Narrows and Long Beach. Other open space opportunities are the numerous river-adjacent community parks and industrial lands with reclamation potential.

Figure 4-41. The soft-bottom segment of the river in Reach 5 is regularly mowed to minimize vegetation for flood control purposes.

The El Dorado Regional Park Wetlands and Master Plan (R7.01) is an example of one possible future flood plain restoration opportunity. Long Beach park planners are studying proposals for removing concrete from the eastern side of the San Gabriel River channel adjacent to El Dorado Park to create a more natural channel. Removing the concrete would require that about 200 feet in width of the existing El Dorado Park become part of the floodplain. Much of El Dorado Park is over 2,500 feet wide, so the restored floodplain would be less than 10 percent of the current park width. However, the floodplain may only be partially flooded every one to five years. During dry periods, it could continue to provide open space for recreation and habitat.

Spreading Grounds

Quarry reclamation, as demonstrated by the San Gabriel Canyon Spreading Grounds in Azusa, provides an opportunity to reuse these sites as spreading grounds or as retention/detention areas for floodwaters. Closure plans for these quarries include additional open space and possible opportunities for retaining stormwater:

- United Rock Products Quarry #3 (R3.25)
- Quarry Reclamation/Water Storage Study (R4.04)
- Hanson Quarry (R4.05)
- Rodefer Quarry (R4.06)

Riparian Habitat

In the near term, segments of the soft-bottom portions of the San Gabriel River that have excess capacity could be managed to allow native riparian willow scrub plant communities to thrive. This would provide linear and riparian habitat, shade, cooler water temperatures and a visually pleasing river greenway. COE regularly maintains its channels, including annual mowing of vegetation. LADPW and COE would need to negotiate a “safe harbor” agreement that will allow vegetation to be maintained without penalty. A rigorous exotic species eradication and maintenance schedule would be needed so native plants can be established and sustained over the long term. A field study to identify areas within the river channel that

could handle the additional growth of native vegetation would also need to be undertaken.

The reaches with excess channel capacity also provide opportunities to expand the single-purpose flood channel for multiple-uses. The greatest opportunity is in Reach 4, in the 9-mile stretch from Santa Fe Dam to just below Whittier Narrows Dam. Coincidentally, this is also the location of the critical "missing habitat linkage" from the Puente-Chino Hills to the San Gabriel Mountains, which could be at least partially restored by allowing the regrowth of native plant communities in the soft bottom portions of the river.

Multi-Objective Solutions

Beyond flood plain restoration, the best overall opportunity for addressing flood protection is through individual projects that include multi-objective solutions. Over 50 percent of the Master Plan projects integrate this principle. For example, some recreational and habitat improvement projects will contribute to flood protection by incorporating designs to hold back stormwater and reduce peak flows, including:

- Santa Fe Dam Recreation Area and Habitat Enhancements (R3.21)
- Whittier Narrows Wildlife Lakes (R4.29)
- Whittier Narrows Legg Lake Improvements (R4.30)
- Whittier Narrows Dam Water Conservation Pool (R4.31)

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Figure 4-42. Above Whittier Narrows, vegetation is managed to allow for habitat.

Stream restoration projects can serve multiple purposes including providing habitat, improving water quality and reducing peak flows. Examples of these projects include:

- Robert's Creek Restoration (R3.04)
- San Jose Creek Habitat and Trails Restoration (R4.19)
- Lario Creek/Zone 1 Ditch (R4.28)
- North Caruthers Channel Improvements (R6.10)

Wetlands can be effective in attenuating peak flows by capturing runoff for habitat, including:

- Buena Vista Wetlands (R3.24)
- El Dorado Regional Park Wetlands and Master Plan (R6.21)
- Los Cerritos Wetlands Restoration (R7.07)
- Hellman Ranch Wetlands Freshwater Marsh Restoration (R7.10)

Open space can be an opportunity to incorporate wetlands, retention or spreading basins to hold back floodwaters, including:

- Woodland Duck Farm Project (R4.15)
- Pico Rivera Golf Course Enhancements (R5.01)
- Downey Landing (R6.01)
- DWP Open Space (R7.16)

Although these and other individual projects should strive to address flood protection in their design, hydrologic analysis must be performed in each case to verify the extent of their potential contribution to this goal.

Finally, current flood management projects, facilities, and practices should be re-examined for multi-objective possibilities including:

- Sediment Management and Removal Study (R2.04)
- Flow Study below Morris Dam (R2.07)
- San Gabriel Canyon Spreading Grounds (R3.08)
- Inflatable Rubber Dams to Increase Groundwater Recharge (R4.14)
- Paseo Del Rio at SG Coastal Basin Spreading Grounds (R5.08)
- Paseo Del Rio at Rio Hondo Spreading Grounds (R5.09)
- Marina Drive Urban Runoff Diversion System (R7.15)

Under-Capacity Areas

Two segments are under-capacity and do pose a potential flood hazard. These can be addressed by attenuating peak flows upstream in the watershed. In addition, the potential to use adjacent land for flood storage can be investigated. The first segment is just over 1-mile long, along the San Gabriel Coastal Basin Spreading Grounds in Pico Rivera from Whittier Boulevard to Washington Boulevard. These spreading grounds may be an opportunity to expand the floodplain in this segment, with no net loss in water conserved.

The second under-capacity segment is in Long Beach. It is about one-mile long, from the I-405 Freeway down to 7th Street (22 Freeway). Utility easements on both sides of the river in this stretch might provide land area for the additional needed capacity.

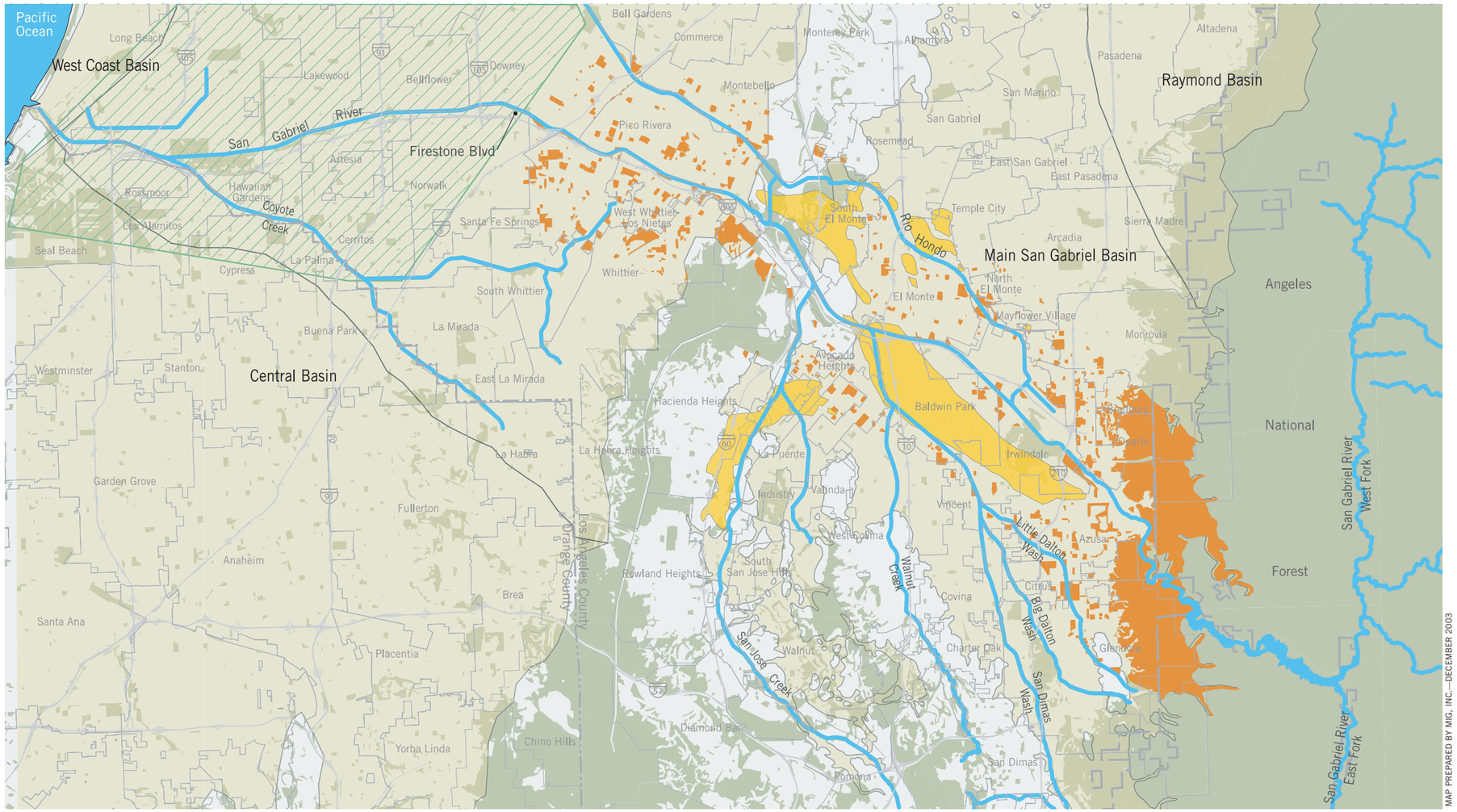
4.10 GROUNDWATER RECHARGE

The Southern California water supply is a combination of local surface and groundwater, imported water from the Colorado River watershed and Northern California, and reclaimed water. The San Gabriel Valley receives most of its water from the river and groundwater basins. The local water supply begins as rainfall that percolates into the underlying groundwater basins. Imported water helps fill the groundwater basins and meet local demand. Reclaimed water is treated wastewater made available for reuse purposes, including groundwater recharge. A complex web of water agencies buy, sell, pump and manage these precious water resources.

Existing Conditions

Groundwater basins store local rainfall for use, but demand far exceeds the available local water supply, so water must be imported and stored in the basins. Two groundwater basins underlie the San Gabriel River: the Main San Gabriel Basin and the Central Basin. A small portion of a third groundwater basin, the West Coast Basin, lies under the mouth of the river in Long Beach.

The Main San Gabriel Basin was created from erosion of the San Gabriel Mountains. That erosion resulted in a bowl of unconsolidated alluvium, or sand and gravel, filling the San Gabriel Valley. This created a permeable condition that retains rainfall underground—as long as the surface ground above remains unpaved. Similar conditions existed below Whittier Narrows, creating the Central Basin. The Montebello Forebay area is an especially productive recharge area. LADPW operates engineered spreading grounds,



Source: County of Los Angeles Department of Public Works and Rivers and Mountains Conservancy

Note: Potential groundwater recharge sites omitted due to two factors: Presence of aquaclude (clay lens prohibiting recharge) south of Firestone Boulevard, and contaminated groundwater plumes near Whittier Narrows, Baldwin Park and Irwindale.

Groundwater Recharge Opportunities

County of Los Angeles Department of Public Works

San Gabriel River Corridor Master Plan

Map 4-9. Groundwater recharge opportunities.

ensuring that a measurable quantity of water is continually recharged to these groundwater basins. These include:

- San Gabriel Canyon Spreading Grounds in Azusa
- Santa Fe Spreading Grounds in Irwindale
- San Gabriel Coastal Basin Spreading Grounds in Pico Rivera

Two spreading facilities on the Rio Hondo take water from the San Gabriel River. Below the Santa Fe Dam, water is sent through the Buena Vista Channel to the Peck Road Water Conservation Park. The Zone 1 Ditch, or Lario Creek, takes water from the San Gabriel River down to the Rio Hondo Coastal Basin Spreading Grounds in west Pico Rivera.

Other areas of the river corridor have impermeable conditions, which do not allow groundwater recharge. South of the Central Basin, an impermeable clay layer—called an aquaclude—sits underneath the river from Downey to the confluence of Coyote Creek in Long Beach. The urban fabric (parking lots, streets and buildings) can also create impermeable conditions, even in areas where favorable geologic conditions would otherwise enable groundwater recharge.

Untreated groundwater pollutants can also reduce the local water supply. Contaminated groundwater plumes in the lower Main San Gabriel Basin have been moving slowly southward toward the Central Basin. The primary area of the plume is just east of the San Gabriel River, starting above Irwindale by the I-210 Freeway, moving south parallel to the river through Baldwin Park, and resurfacing on the other side of the river below South El Monte, above Whittier Narrows. A groundwater treatment facility was built in the Whittier Narrows Recreation Area to treat these contaminated plumes.

The complex web of water suppliers include the Metropolitan Water District of Southern California as the wholesaler, and numerous local agencies as water purveyors and resellers. Jurisdictional responsibility goes to many agencies for surface water and groundwater supply and the quality of both surface and groundwaters. Water agencies and suppliers include:

- Main San Gabriel Basin Watermaster
- Metropolitan Water District of Southern California
- San Gabriel River Water Committee
- San Gabriel River Watermaster
- San Gabriel Valley Municipal Water District
- San Gabriel Valley Protective Association
- San Gabriel Valley Water Association
- Southeast Water Coalition
- Three Valleys Municipal Water District
- Upper San Gabriel Valley Municipal Water District
- Water Replenishment District
- Central Basin Municipal Water District

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Figure 4-43. Permeable paving at the edges of parking lots and driveways can increase permeable surfaces that allow infiltration.

Future Opportunities

If the overall permeability of the watershed is increased, additional recharge of groundwater basins can expand the local water supply. In general, system-wide recharge opportunities should be encouraged on most land use types, starting with large open space areas on public lands. Applying best management practices and watershed-sensitive design to all planning, design and construction could offer significant recharge potential.

Many Master Plan projects have the potential for groundwater recharge. The two best opportunities are at the base of the San Gabriel Mountains (from Reach 3 to halfway down Reach 4 past the Santa Fe Dam) and from Whittier Narrows Dam in Reach 5 down to Firestone Boulevard. There may be opportunities on lands outside the existing spreading grounds that would be an adjunct to the significant groundwater recharge activities already taking place in these reaches.

In Reaches 6 and 7, the aquaclude or clay lens begins, preventing water from reaching the groundwater basin. In addition, recharge is not appropriate above the contaminated plumes.

There is some recharge potential among the many small parks and open spaces that lie above the groundwater basin along the entire river corridor. Many are less than 20 acres, which limits the amount of recharge potential from a single site. But, added together, the cumulative benefit from these sites could be substantial. Runoff from adjacent land uses could be diverted to these sites for groundwater recharge. These sites could be regraded to collect stormwater runoff in ponds, meandering streams or other holding areas.

Additional future opportunities to increase recharge potential include those listed below.

- Consideration can be given to those sites where excess reclaimed water is available from the San Jose Creek Water Reclamation Plant (55 MGD), Los Coyotes Water Reclamation Plant (30 MGD), and the Long Beach Water Reclamation Plant (17 MGD).
- Multi-agency coordination can resolve conflicts associated with lined lakes between water recharge, water-based recreation and habitat value.
- Additional recharge facilities between Whittier Narrows and Firestone Boulevard could further reduce the percent of rainfall water that is lost to the ocean.
- The Groundwater Augmentation Study being conducted by the Los Angeles and San Gabriel Rivers Watershed Council is exploring the opportunities and constraints of directly recharging aquifers with polluted urban stormwater runoff. Pilot projects can demonstrate best management practices for groundwater recharge design, implementation and management.

4.11 WATER QUALITY IMPROVEMENT

Water quality is a top priority for all local municipalities. The Clean Water Act regulatory requirements, administered by the State of California through the Regional Water Quality Control Boards (Regional Board), have set high water quality standards. Implementing the total maximum daily

load (TMDL) standards will require funding that may be beyond the capability of local jurisdictions. Regional solutions such as strategically located treatment wetlands in currently available open space areas may be at least part of the solution for urban water quality problems plaguing local streams and rivers.

Existing Conditions

The Los Angeles Regional Board has identified major watershed issues for the San Gabriel River in its Watershed Management Initiative Chapter of December 2001. These water quality issues include:

- 764 companies or other entities with minor, general, industrial stormwater, or construction stormwater permits under the National Pollution Discharge Elimination System (NPDES)
- Sluicing and disposal of sediments from reservoirs
- Protection of groundwater recharge areas
- Ambient toxicity
- Excessive trash in recreational areas of upper watershed
- Mining/stream modification
- Extensive stream modification for mining and water reclamation
- Urban and stormwater runoff quality
- Nonpoint source loadings from nurseries and horse stables
- Lack of understanding of estuary dynamics (e.g., the salinity)
- Septic systems leaking into groundwater

According to the Regional Board, impairments to the San Gabriel River include nitrogen and effects, trash, metals, historic pesticides, coliform, chlorides, and PCBs. Currently, the only completed TMDL plan is the East Fork Trash TMDL, which will take 10 years to bring the area into compliance. The currently scheduled TMDLs for the San Gabriel River include:

- Nitrogen and metals (river), fiscal year 04/05
- Coliform, fiscal year 02/03
- Nitrogen (lakes), fiscal year 03/04
- PCBs, pesticides and metals (lakes), fiscal year 05/06

The associated constituents or pollutants for reaches in the current 303(d) list include:

- Coyote Creek (entire stretch of main stem): Abnormal fish histology, algae, coliform, copper, lead, selenium, zinc
- San Gabriel River (from below I-91 Freeway to I-405 Freeway, below the confluence of Coyote Creek): Abnormal fish histology, algae, coliform
- San Gabriel River (below Whittier Narrows Dam to below I-91 Freeway): Coliform, copper, lead, zinc
- San Jose Creek, Reach 1 (from confluence with Puente Creek to confluence with San Gabriel River): algae, coliform
- San Jose Creek, Reach 2 (from top of main stem to confluence with Puente Creek): algae, coliform
- Walnut Creek (from Puddingstone Reservoir to confluence with Big Dalton Wash, excludes last stretch of Walnut Creek to the San Gabriel River confluence): pH, toxicity

The San Gabriel River has two impaired reaches listed, as well as impaired tributaries that flow into the river. The impaired tributaries bring in the listed impairments into the San Gabriel River system.

Future Opportunities

Roughly half of the Master Plan projects will address most of the Regional Board watershed issues for the San Gabriel River. This includes the proposed constructed treatment wetlands, which will improve urban and stormwater runoff quality. Both structural (constructed) and non-structural (education and outreach) best management practices (BMP) for reducing non-point source pollution must be implemented in order to fully address the water quality problems in the highly urbanized areas of the river.

Well-designed social marketing programs can enhance the effectiveness of all proposed programs. A public outreach campaign to all the communities along the river and within the watershed will raise awareness of how everyone's daily choices affect water quality.

Treatment Wetlands

Constructed treatment wetlands are engineered systems designed to mimic the natural water purification processes of wetland vegetation, soils, and microorganisms. They are usually located in large open spaces downstream of areas where industrial, commercial or heavy residential uses generate polluted stormwater runoff. These new wetlands send urban runoff through a veritable obstacle course of vegetation and soil that cleanses the water.

However, treatment wetlands might pose a threat to wildlife that will be attracted to what appears to be a new habitat—but which may actually harbor toxic compounds. Some constructed treatment wetlands are intended only to provide water quality treatment, not habitat. Other wetlands may offer multiple benefits, including habitat and recreation.

There are more constructed wetlands opportunities in Reach 3, between the Angeles National Forest and the Santa Fe Dam Recreation Area. Additional opportunities may exist in open space areas of Reach 4 near the confluence with San Jose Creek, in Reach 5 below Whittier Narrows, and in parks and other limited open space areas adjacent to the river in Reach 6. As surface water rights are fully appropriated, the issue of water rights will have to be addressed in the design and implementation of all proposed and future wetland projects.

Mapping the historic streams and wetlands may provide clues on how best to manage, design and restore surface and groundwater resources for maximum habitat, water supply and water quality benefits. It may be possible to daylight streams or remove concrete channels in selected locations.

Bioengineered wetlands that capture runoff from paved areas and vehicular traffic should be carefully studied before such water is allowed to percolate. Petroleum hydrocarbons and MTBE could contaminate the groundwater basin. Even if percolation is minimal, USEPA should be advised of such projects.

Vector Control

Any new or restored wetland area—whether for habitat or stormwater treatment—must be planned and designed in coordination with the local mosquito and vector control agency. Poorly designed and maintained

COURTESY SAN GABRIEL VALLEY MOSQUITO AND VECTOR CONTROL DISTRICT

Figure 4-44. Proper design and construction and regular maintenance of wetlands will minimize mosquito breeding.

wetlands could have negative impacts on the health of wildlife, park visitors, and nearby residents due to the potential for vector-borne diseases. These can include West Nile virus, St. Louis encephalitis, western equine encephalomyelitis, malaria, Hanta virus, plague, Murine typhus, and Lyme disease.

No matter how well designed these facilities are, they will breed mosquitoes and they will have an impact on human health. Given the potential risk to public health, the number and scope of bioengineered wetlands that can be fully monitored and safely maintained within the the San Gabriel River Corridor Master Plan project area should be carefully assessed. This calculation must take into consideration the available human and financial resources that can be confidently applied without interruption.

Additional Water Quality Improvement Opportunities

Nonpoint source loadings from nurseries and horse stables can be mitigated either on site, from another preferred location, or downstream through treatment wetlands processes. A more complete understanding of estuary dynamics will be needed. The Coyote and Carbon Creeks Watershed Management Plan (R7.01) will study the southern San Gabriel River Watershed, down to the mouth of the river. An assessment of septic systems needs to occur in the near future to identify their locations and current conditions and propose management recommendations, including future treatment conversion options.

Beyond constructed treatment wetlands, other Master Plan projects will address additional water quality issues identified by the Regional Board. The Sediment Management and Removal Study (R2.04) will address sluicing and disposal of sediments from reservoirs. Through thoughtful design of trail enhancements and edge treatments, the following projects could help protect groundwater recharge areas:

- Hanson Quarry (R4.05), land reclamation project to partially or completely fill the quarry to minimize exposure of groundwater
- Inflatable Rubber Dams to Increase Groundwater Recharge (R4.14)
- Paseo Del Rio at San Gabriel Coastal Basin Spreading Grounds (R5.08)
- Paseo Del Rio at Rio Hondo Spreading Grounds (R5.09)
- Marina Drive Urban Runoff Diversion (R7.15)

Trash Reduction

Excessive trash in recreational areas of the upper watershed in the Angeles National Forest is addressed by a proposed project that will assess recreational needs along Highway 39 and the San Gabriel River (R2.03). In the meantime, actions can be taken to reduce the amount of trash affecting the upper watershed. This includes providing trashcans, ash receptacles, portable toilets, and educating visitors to the forest about trash and restroom options both in the forest and in their communities.

Mining Mitigation

Several proposed land reclamation projects will mitigate surface or groundwater modifications brought about by mining activity:

- Azusa Rock Quarry Restoration (R3.11)
- United Rock Pit #3 (R3.25)
- Quarry Reclamation/Water Storage Study (R4.04)
- Hanson Quarry (R4.05)
- Rodefer Quarry (R4.06)
- Durbin Quarry (R4.047

Other Ongoing Studies

Other ongoing programs and studies will help shape the direction of future water quality improvement efforts along the San Gabriel River. Multiple agencies and organizations including the Friends of the San Gabriel River, Los Angeles and San Gabriel Rivers Watershed Council, the Regional Board, Southern California Coastal Waters Research Project (SCCWRP) and others joined together to perform system-wide water quality sampling in September 2002 and 2003. SCCWRP is using data gathered to develop computer models of flow and pollutant loading. The San Gabriel Mountains Regional Conservancy is developing the “San Gabriel River Watershed Management Plan Above Whittier Narrows” for the Regional Board. This multiple-objective plan will address nonpoint source pollution reduction strategies. SCCWRP has also proposed studying regional water quality treatment wetlands within the San Gabriel River Watershed.

chapter 5 Moving from Vision to Reality

CHAPTER 5

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chapter 5 Moving from Vision to Reality

5.1 OVERVIEW

Successfully implementing the San Gabriel River Corridor Master Plan and achieving its vision of a transformed river will require the continued engagement and support of the many organizations and individuals that actively participated in developing it. The core agency planning team will also continue to play a key role, communicating and interacting across all the organizational and jurisdictional boundaries that define our region. Prior to plan implementation, the Program Environmental Impact Report (Program EIR) process must be completed. (For more information on the Program EIR see Appendix D.)

This chapter introduces some of the implementation strategies and potential funding sources that project sponsors can draw on to support their efforts.

5.2 THE MASTER PLAN IMPLEMENTATION TEAM

Achieving the Master Plan vision will require a long-term collective effort stretching out over years—and decades. A Master Plan Implementation Team is needed to maximize interest and encourage active agency and community participation.

Inter-Agency Staff

The County of Los Angeles Department of Public Works (LADPW) and the State of California San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) are working together to pursue projects of mutual interest. LADPW will focus on projects with major flood management, water quality, water conservation and groundwater recharge components. RMC will focus on projects related to open space, habitat and recreation.

To facilitate this partnership, RMC and the Los Angeles County Flood Control District, which is administered by LADPW, created the Watershed Conservation Authority (WCA) as a joint powers authority on April 17, 2003. The WCA will leverage funding and implement projects that serve the purposes of each member agency. It will likely focus on projects to preserve urban open space, in order to provide low-impact recreation and educational uses; wildlife and habitat restoration and protection; and watershed improvement projects in both the San Gabriel River and Lower Los Angeles River Watersheds. The WCA will support many of the current and future projects identified in this Master Plan.

Information about WCA can be found at the following website: http://www.wca.ca.gov/

Steering Committee

The San Gabriel River Corridor Master Plan Steering Committee, which played the central role in developing the Master Plan, should also play a continuing role in implementing it. It represents the full spectrum of public and private interests along the river corridor. It will continue to meet on a regular basis to build upon and sustain the community-wide momentum it created during the plan development phase. The Steering Committee will support and guide implementation of the Master Plan, working with LADPW, RMC and WCA in an advisory capacity.

The Master Plan integrates the individual planning efforts of many cities and other public and private organizations. It provides a guiding framework for these individual efforts, showing how each one contributes to the overall revitalization and enhancement of the river corridor. The Master Plan does not control when and how these projects will be implemented. The Master Plan Steering Committee will need to work closely with the WCA to develop a timeline for project funding and implementation.

While the vision and goals of the Master Plan will most likely remain unchanged in the future, the methods to achieve them will need to adapt to changing conditions; thus the Master Plan should be updated on a regular basis. This update process can be timed to coincide with LADPW's 5-year capital planning cycle. Periodic updates to the plan will help ensure its continued relevance and vitality, and maintain the community interest and support that will be key to sustaining the power of its long-term vision during the coming decades.

5.3 PROJECT PARTNERSHIPS

Creative partnerships among the many public and private agencies and organizations that have a stake in the river's future will generate project support. Collaborative efforts can range from an informal information exchange to joint project sponsorship and funding. Partnership opportunities include the following.

Large Public Land Owners

Large public land owners include Southern California Edison (SCE), the U.S.D.A. Forest Service, the U.S. Army Corps of Engineers (COE), the County of Orange and the many cities that line the river. These agencies could form partnerships to jointly fund projects, and promote key programs such as public safety, environmental conservation and river enhancement.

Municipalities and Special Districts

Many cities, special districts and other public entities along the river are facing substantial capital program investments for regulatory compliance, such as for Standard Urban Stormwater Mitigation Plan (SUSMP) and Total Maximum Daily Load (TMDL) requirements. LADPW and RMC can expand the joint powers authority concept to develop partnership agreements, both traditional and innovative, with appropriate agencies and organizations to ensure that the capital and maintenance investments made to meet these new mandates also support the specific projects and objectives of this Master Plan.

Nonprofits and Community-Based Organizations

Nonprofit organizations and other watershed groups can capitalize on individual and organizational passion and commitment to restoring and redeveloping the San Gabriel River corridor. Nonprofit organizations can sometimes move more quickly than government entities to respond to immediate opportunities. Memoranda of Understanding respecting roles and regional jurisdiction could be adopted to avoid competition for outside funding.

Private Property Owners

Care should be taken to work collaboratively with private property owners and find ways to maximize their goals while still meeting the public goals for improved habitat, recreation and open space. Outreach to property owners should be carried out on an on-going basis.

5.4 RIVER CORRIDOR MANAGEMENT PROGRAMS

A coordinated approach will be needed to maximize resources for Master Plan project implementation. The following programs are proposed.

River Reach Project Management

The concept of river reach project management, in which project managers work with all other related entities within a river reach, may go a long way towards implementing the Master Plan. Many federal, state, regional and local funds are narrowly focused on a single objective. A river reach project management model could help integrate various categories of funding programs within a geographic reach. "Layered" funding—from federal, state, regional, and local sources—brought to bear on individual projects requires sophisticated, river-oriented project and grant/finance management. Assigned managers will need to understand all potential funding sources for Master Plan objectives, and develop close working relationships with cities, special districts and other jurisdictional players in their reach.

Legislative Caucus

A regional legislative caucus could begin with those state and federal legislators who are already familiar with the San Gabriel River Corridor Master Plan and RMC. The caucus could grow to include all relevant Southern California legislators. Marketing the Master Plan document through well-prepared briefing material—perhaps in a series of briefings with legislators and their senior staff—could be a starting point for developing a coordinated San Gabriel River Corridor Master Plan long-term legislative initiative. With legislative support, funding efforts could be directed towards federal agencies, including the Environmental Protection Agency (EPA), COE, Department of Interior, Federal Emergency Management Agency (FEMA), and others. While federal and state funding will be intensely competitive, there will be points of financial opportunity over the 50-year time span of the Master Plan.

Private Trusts and Foundations

Organizations such as the Trust for Public Land, the San Gabriel Mountains Regional Conservancy, the Rio Trust and similar organizations acquire land for transfer to a third party, when financing is organized. These private trusts and foundations can provide additional opportunities for funding of Master Plan projects.

Operations, Maintenance, Public Health and Safety

New state and federal monies already identified for the projects in the Master Plan often address new capital projects. However, funds are also needed to operate, and maintain, and provide public health and safety.

It may be appropriate to target new local revenue measures to meet these needs. Creating an endowment for operations and maintenance should also be considered. An endowment could be created through a number of different funding sources. Steering Committee members have suggested mitigation banking; revenue-generating river corridor uses such as parking fees, concessions and leases; corporate sponsorships and "Adopt-a-River Trail" programs; and user fees (e.g., the Angeles National Park "Adventure Pass"). Other possibilities include partnerships with Employment and Job Training systems that could provide training for river facilities construction, maintenance and environmental restoration projects.

Stable Long-Term Revenue Stream

Long-term funding sources for both capital and operating needs will require working with regional partners to develop a strategy to seek future voter authorization of regional or local revenue-generating measures. This strategy can link with ballot initiatives to fund parks and open space—which may have significant appeal for voters. This can be successful if public entities develop good relationships and a reputation for using existing resources wisely and efficiently. On-the-ground demonstration projects that people can touch, feel and see will generate the enthusiasm that can lead to voter approval.

Modify Single Purpose Land Use Restrictions

SCE, Los Angeles County and other public entities own extensive and important lands in the river corridor. Use restrictions limit their use to a single purpose, such as utility tower maintenance. Agreements with these entities to allow for multiple uses, while respecting the primary use, will be an important tool in achieving the goals of the Plan over time. Issues of liability must first be solved when public use or additional uses are contemplated.

Other Models for River Corridor Development

Case studies demonstrating successful multi-objective river corridor projects may also be a source of inspiration. These projects can offer tools and methods for layering funding sources, creating and sustaining inter-agency partnerships, developing public outreach and education, using voter and taxpayer surveys, and developing fees, taxes or benefit assessments the public will support. For example, the Santa Clara Valley Water District successfully extended its benefit assessment program for watershed stewardship and flood protection through sophisticated community analysis, education and polling over a three-year period. The District's strategic approach is just one of many examples that can provide good models for the San Gabriel River Corridor Master Plan Implementation Team.

5.5 FINANCING THE MASTER PLAN

Some of the individual projects presented in the Master Plan are already funded, other long-term initiatives will require long-term financial planning.

Although project costs have not been individually calculated, a rough estimation of the total cost of the 134 projects identified in this Master Plan is about $625 million or $11 million per river mile (the 58 miles from Cogswell Dam to the Pacific). Since the majority of projects actually occur along the 38 miles from Azusa to Seal Beach, the cost per mile increases to $17 million per mile. These rough cost estimates fall well within the $16 million to $40 million per mile range for many other river enhancement and revitalization programs, including the following examples from around the country:

River Projects	Financed Cost	Cost per mile
El Rio Salado—Tempe, Arizona	$100 million	$20 million
Rio Salado—Phoenix, Arizona	$80 million	$16 million
Truckee River—Reno, Nevada	$225 million	$32 million
Napa River—California	$475 million	$35 million
White River—Indianapolis, Indiana	$56 million	$37 million

In the coming years, as more and more projects are identified, the total cost could approach $1–$1.5 billion using similar experiences around the

county as a guide. After annualization, an investment of about $30 million per year over a 50-year period is a reasonable estimate of the financing required for this Master Plan.

The Master Plan itself is critical to implementation because it complements and integrates other planning efforts and illustrates how small projects contribute to the broader efforts—which encourages project funding agencies and organizations. Clarifying the role of local projects is also a necessary first step in building the community excitement and support that could catalyze voter authorization of regional or local revenue-generating measures to support capital and operating funds.

5.6 POTENTIAL FUNDING SOURCES

Local agencies and community groups can call on a variety of funding resources and strategies to support implementation of Master Plan projects and programs. During the past ten years, California and Los Angeles County voters have approved a number of state bond measures for clean water, parks, recreation and open space. These proposition funds represent some of the best short-term opportunities for implementing projects. The projects of the Master Plan will likely be more attractive to funders than stand-alone efforts. Many funding organizations encourage collaborative, partnership-based projects and programs.

The following table provides an overview of funding sources. Some of the programs listed are transient or not always funded because they are based on governmental appropriations or funding through specific ballot or bond measures. Those seeking funding should check the website or call to determine the status of these programs.

The table is sorted by broad project categories, such as flood damage reduction, habitat, recreation and land acquisition. Funding sources in each category are presented by general source, such as federal, state or local government. An overview of local funding initiatives and Internet links to funding databases is also provided.

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
FLOOD DAMAGE REDUCTION			
FEDERAL			
US Department of Agriculture (USDA) - Natural Resource Conservation District (NRCS)	Emergency Watershed Protection Program (Farm Bill Program)	EWP provides technical and financial assistance for watersheds ravaged by natural disasters. It provides funding for work such as clearing debris from clogged waterways, restoring vegetation and stabilizing riverbanks.	http://www.nrcs.usda.gov/
US Army Corps of Engineers (ACE)	Continuing Authorities Program -- Operations and -Maintenance	Annual federal budget provides operations and maintenance funding to the ACE LA District for operation and maintenance of the San Gabriel River flood control works under ACOE responsibility.	Annual federal budget
	Continuing Authorities Program -- New Projects	Small Flood Control Projects (Section 205): The Federal share may not exceed $5 million for each project.	Annual federal budget
		Snagging and Clearing for Flood Control (Section 208): The Federal share may not exceed $500,000 for each project. Emergency Stream-bank and Shoreline Erosion Protection for Public Facilities and Services (Section 14): The Federal Share may not exceed $500,000 for each project.	
		Project Modification for Environment Improvement (Section 1135 and Section 206): The Federal share may not exceed $3.75 million for each project. Ecosystem Restoration Programs address the degradation of ecological resources caused by ACE projects and ecological restoration requiring ACE expertise. Congressionally Authorized Reconnaissance and Feasibility Studies.	ACE
	Congressionally Authorized Studies	These studies look at problems for which solutions will exceed $5 million in construction costs, and can only be authorized by Congress.	The federal Water Resources Development Act is submitted by Congress every 2 years with funding through the annual appropriations cycle of the federal government
Federal Emergency Management Agency (FEMA)/ Office of Emergency Services (OES)	Flood Mitigation Assistance Program	FEMA's Flood Mitigation Assistance (FMA) program helps states and communities identify and implement measures for reducing or eliminating the long-term risk of flood damage to homes and other structures insurable under the National Flood Insurance Program (NFIP). This replaces the HMGP program.	Periodic RFP's, http://www.fema.gov/fima/nfip.shtm
	National Flood Insurance Program (NFIP)	Current flood insurance rates are unknown, but there may be potential for Community Rating System (CRS) rate reductions to NFIP insureds. CRS rate savings could be substantial and form the basis of residential/commercial property owner political support for comprehensive watershed management initiatives.	http://www.fema.gov/fima/planfma.shtm

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
FLOOD DAMAGE REDUCTION (CONTINUED)			
FEDERAL (CONTINUED)			
	Hazard Mitigation Grant Program (HMGP)	The County might explore Northridge Earthquake Hazard Mitigation Grant Program (HMGP) funds that are still in the FEMA/OES pipeline and unspent. These could be redirected to SG Flood Hazard Reduction projects.	http://www.fema.gov/fima/mitgrant.shtm
STATE			
California Department of Water Resources	Flood Control Project Subventions Program	The Flood Control Subventions Program is designed to help ensure the construction of flood control and watershed management projects by providing financial assistance to local agencies that are cooperating with federal agencies in constructing the projects. Projects must be federally authorized.	http://www.water.ca.gov/grants-loans/
	Proposition 13 - Flood Protection Corridor Program	The Flood Protection Corridor Program provides funds to acquire easements and other interests, in real property, from willing sellers. Projects must provide for agricultural land preservation and/or wildlife habitat protection as well as demonstrate a significant reduction of peak flood flows, flood stage, flood risk or potential flood damage. The largest grants available are $5 million per project (except in unusual circumstances).	http://www.water.ca.gov/grants-loans/
	Urban Stream Restoration Program	Funding is provided for flooding and erosion projects that enhance the environmental and ecological values of urban streams and is available to local government agencies (city and county), and special districts and citizen groups statewide.	http://www.watershedrestoration.water.ca.gov/urbanstreams/
SPECIAL DISTRICTS & LOCAL			
LA County Flood Control District	Existing property assessments for drainage, local share of flood protection projects, and O&M of flood control facilities	The main sources of revenue for the Flood Control District are the Benefit Assessments and the District's share of the County-wide property tax revenues. The Benefit Assessment has not been raised since voter approval and adoption of Prop 218, which requires voter approval of a new or increased benefit assessment. The District's share of the property taxes was set by formula upon passage of Prop 13 in 1978. As a result, the revenues to the District are set by the existing tax rates and growth of property value. LADPW determines the allocation of these revenues for the maintenance and rehabilitation of the existing infrastructure, auxiliary functions and/or the construction of improvements for the County's flood control systems.	Annual budget adopted by Board of Supervisors
LAND ACQUISITION & EASEMENTS			
FEDERAL			
US Department of the Interior, National Park Service (administered through California Department of Parks and Recreation)	Land and Water Conservation Fund (LWCF)	The LWCF program provides matching grants to states and local governments for the acquisition and development of public outdoor recreation areas and facilities. The program is intended to create and maintain a nationwide legacy of high quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources across the United States. The funding that is allocated to each state, or "stateside" funding, is administered by that state. Through the LWCF, the California Department of Parks and Recreation provides funds for statewide planning, and for acquiring and developing outdoor recreation areas and facilities. LWCF grant funds may be used for the acquisition and development of state and local facilities that provide active and/or passive recreation opportunities.	Federal funding of this program varies from year to year depending on appropriations. California's allocation for fiscal year 2004 is approximately $7.8 million. Approximately $4.2 million is available for grants to local agencies: 60% for Southern California and 40% for Northern California. For program information, visit: http://www.nps.gov/ncrc/programs/flp/index.html. For information on the stateside funding for LWCF, visit California State Parks: http://www.parks.ca.gov/ and link to the Grants & Bonds page.

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
LAND ACQUISITION & EASEMENTS (CONTINUED)			
FEDERAL (CONTINUED)			
US Department of the Interior, National Park Service	Federal Lands to Parks (FLP)	The National Park Service's FLP Program conveys surplus federal land to communities, usually at no cost, for public park and recreation purposes. Over 1,400 properties, approximately 150,000 acres, have been transferred to state and local governments for parks and recreation areas since the program's inception in 1949. The Program also helps ensure continued public access and stewardship of resources.	Generally, resources are available on an on-going basis as properties become available. For more information on how to participate in this program, visit: http://www.nps.gov/ncrc/programs/flp/index.html
US Department of Agriculture (USDA) - Natural Resource Conservation District (NRCS) Farm Bill Programs	Wetlands Reserve Program	WRP restores wetland, upland and riparian complexes to improve habitat for migratory birds. The objectives of this program are to purchase conservation easements from willing sellers, restore and protect wetlands in agricultural settings, and assist landowners with the restoration of wetland hydrology and wildlife habitat.	http://www.nrcs.usda.gov/programs/wrp/
	Wildlife Habitat Incentives Program (WHIP)	WHIP encourages the voluntary establishment of high quality wildlife habitat on private lands. WHIP offers technical and financial help for all private landowners or local units of government who wish to plan and develop upland, wetland, riparian, or aquatic habitat on their property.	http://www.nrcs.usda.gov/programs/whip/
	Farmland Protection Program (FPP)	FPP assists states, tribes, local governments and non-profit organizations by purchasing conservation easements to limiting land conversion to non-agricultural uses.	http://www.nrcs.usda.gov/
	Watershed Protection and Flood Prevention (WPFP)	WPFP provides technical and financial assistance to state agencies and units of local government in planning and carrying out works of improvement and to protect, develop and utilize the land and water resources in small watersheds not exceeding 250,000 acres. This includes total resource management and planning to improve water quality and solve problems caused by flooding, erosion and sediment damage, conservation, development, utilization and disposal of water. The program emphasizes planning through interdisciplinary teams that include the sponsors, other agencies, and environmental groups in all stages of plan development.	http://www.nrcs.usda.gov/programs/watershed/
US Environmental Protection Agency (EPA)	Conservation Reserve Program (CRP)	CRP is a voluntary program that offers long-term rental payments and cost-share assistance to establish long-term, resource-conserving cover on environmentally sensitive cropland or, in some cases, marginal pastureland. The protective cover reduces soil erosion, improves water quality, and enhances or establishes wildlife habitat. Increased rental payments are available on certain land areas (e.g., land within a wellhead protection area may receive an additional 10 percent payment).	http://www.epa.gov/owow/funding.html
STATE			
California Department of Water Resources	Water Quality, Supply and Safe Drinking Water Projects, Coastal Wetlands Purchase and Protection Bonds	The California Department of Water Resources (DWR) administers grant and loan funding associated with legislation and several general obligation bond laws. State Propositions 13, 40, & 50 have each provided funding for a variety of water-related programs and grants.	http://www.water.ca.gov/
California Resources Agency	River Parkways Program	This program, currently funded through Proposition 50, is subject to allocation of the State budget. Check the Resources Agency website for updates.	http://resources.ca.gov/
California State Water Resources Control Board	Non-point Source Program (Chapter 7, Article 2)	This program provides grants to municipalities, local public agencies and nonprofit organizations for non-point source projects. The maximum funding for each project is $5 million.	http://www.swrcb.ca.gov/funding/index.html
	Non-point Source Implementation Grants (319 Program)	The EPA 319 program, administered by the State Water Resources Control Board, provides formula grants to the states and tribes to implement non-point source (NPS) projects and programs in accordance with section 319 of the Clean Water Act (CWA). Approximately $5-6 million may be available for NPS implementation projects in California for state fiscal year (FY) 2003-04 (federal FY 2003 funds) and are limited to $25,000 to $500,000.	http://www.swrcb.ca.gov/funding/index.html

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
LAND ACQUISITION & EASEMENTS (CONTINUED)			
STATE (CONTINUED)			
San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC)	Miscellaneous	The RMC receives funding directly for the San Gabriel River for projects that address its mission. Often, State Bond programs for water and recreation, such as Propositions 40 and 50, include earmarks of funds for the San Gabriel River.	http://www.rmc.ca.gov/
California State Wildlife Conservation Board (WCB)	Land Acquisition	WCB acquires real property or rights in real property on behalf of the Department of Fish and Game and can also grant funds to other governmental entities or nonprofit organizations to acquire real property or rights in real property. All acquisitions are made on a "willing seller" basis pursuant to a fair market value appraisal as approved by the Department of General Services (DGS). The acquisition activities are carried out in conjunction with the Department of Fish and Game (DFG), with the DFG recommending priorities for proposed acquisitions. Following the DFG site evaluations, recommendations are submitted to the WCB for consideration for funding.	http://www.dfg.ca.gov/wcb/land_acquisition_program.htm
	Oak Woodlands Conservation Program	The program funds the purchase of oak woodland easements or fee interests, land improvement, cost-sharing incentive payments, public education and outreach, and assistance in the development of local general plans relative to oak woodland habitat.	http://www.dfg.ca.gov/wcb/oak_woodland_program.htm
	California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002 (Proposition 40)	The passage of the California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002 made $300 million available to the Wildlife Conservation Board (WCB). Funds can be used to acquire land in fee title and interests in land, such as conservation easements. The funds can also be used for habitat restoration and/or enhancement projects and for public access projects that provide wildlife-related public recreational opportunities. Applications for project funding are accepted on a continuous basis until the funding is exhausted. Specific project types can include: recovery of threatened and endangered species; linkages and corridors to connect large habitat areas; significant natural landscapes; public access for projects that provide public access and use of public lands for wildlife-related recreational activities such as hunting, fishing, and wildlife viewing.	Applications are accepted continuously. The Board meets every three months to consider. The breakdown of funding is: Section 5096.650(a)—$300 million. For updates: http://www.dfg.ca.gov/wcb/p40fundingallocations.htm
	Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50)	The passage of the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 made $940 million available to the Wildlife Conservation Board (WOB) for projects such as: Acquisition of fee or conservation easements by the Board or for grants to protect regional water quality, protect and enhance fish and wildlife habitat, and to assist local public agencies in improving regional water supply reliability.	Applications are accepted continuously. The Board meets every three months to consider. As of January 1, 2004, approximately $543.4 million in Proposition 50 funds have already been approved and allocated by the WCB. The WCB has also received and is currently evaluating a substantial number of new projects to be funded with the remainder of these funds. The WCB will continue to accept and consider new project proposals until all funds are exhausted. For updates: http://www.dfg.ca.gov/wcb/p50fundingallocations.htm
PRIVATE SECTOR			
River Network	Miscellaneous	River Network, a national non-profit organization, offers consulting, publications, acquisition of riverlands and small grants to help people raise money, build organizations, and monitor and protect rivers and watersheds. This organization offers assistance to: help people organize to protect and restore rivers and watersheds; support river conservationists at grass roots, state and regional levels; help build effective organizations and to link them together to build a nationwide movement for rivers and watersheds; and acquire and conserve riverlands critical to wildlife, fisheries, and recreation.	http://www.rivernetwork.org/howcanwehelp/index.cfm?doc_id=130
Southern California Edison	Partnership Opportunity	Southern California Edison controls 80% of the land along the San Gabriel River.	To learn about SCE's community programs, visit: http://www.sce.com/sc3/004_sce_comm/default.htm

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
LAND ACQUISITION & EASEMENTS (CONTINUED)			
PRIVATE SECTOR (CONTINUED)			
Trust for Public Land (TPL)	Miscellaneous	TPL is interested in helping purchase one of the gravel pits in Sun Valley to support conversion to recreation, open space and water conservation. TPL finances the purchase and usually sells the land to a public agency for long-term management and operation. TPL's Southern California office has expressed a strong interest in helping acquire this land for the Sun Valley Watershed Project.	http://www.tpl.org
Patagonia	Environmental Grants Program	Focus is on preservation of wild and scenic areas, biodiversity, limited funding for urban restoration. They are mostly interested in projects that identify and work on the root causes of problems and that approach issues with a commitment to long-term change. Grants range from $3,000 to $8,000 per project.	Deadlines are usually April 30 and August 31 each year. www.patagonia.com/enviro/grants_app.shtml
HABITAT			
FEDERAL			
National Oceanic and Atmospheric Administration (NOAA) Community-Based Restoration Program	Community-based Resoration Program: Individual Project Grants	Grassroots restoration projects that will benefit marine resources and endangered and threatened species. $30,000 to $250,000 per project. Match not required, but recommended.	Typically September deadline. For updates: http://www.nmfs.noaa.gov/habitat/restoration/projects_programs/programs.html
	Community-based Restoration Project: National and Regional Partnerships	Grassroots, community-based projects for restoring and conserving marine resources and their habitats. Typical grants range from $100,000 to $600,000.	http://www.nmfs.noaa.gov/habitat/restoration/projects_programs/programs.html
US Forest Service	Cooperative Forestry Assistance Programs	The programs help State Foresters or equivalent agencies with forest stewardship programs intended to achieve ecosystem health and sustainability. Assistance is provided through the following programs: Forest Stewardship Program; Stewardship Incentive Program; Urban & Community Forestry Program; and, Cooperative Fire Protection Program	http://www.fs.fed.us/spf/coop/
US Department of Agriculture (USDA) - Natural Resource Conservation Service (NRCS)	Farm Bill: Wetlands Reserve Program	WRP restores wetland, upland and riparian complexes to improve habitat for migratory birds. The objectives of this program are to purchase conservation easements from willing sellers, restore and protect wetlands in agricultural settings, and assist landowners with the restoration of wetland hydrology and wildlife habitat.	http://www.nrcs.usda.gov/programs/wip
	Farm Bill: Wildlife Habitat Incentives Program	WHIP encourages the voluntary establishment of high quality wildlife habitat on private lands. WHIP offers technical and financial help for all private landowners or local units of government who wish to plan and develop upland, wetland, riparian, or aquatic habitat on their property. Funding for up to 75% of the cost of the project. Technical assistance also provided.	Contact local NRCS office. http://www.nrcs.usda.gov/programs/whip
US Fish & Wildlife Service	North American Wetlands Conservation Act (NAWCA) - Standard Grants	$51,000-$1.0M to fund a 4-year plan of action supported by a NAWCA grant and partner funds to conserve wetlands and wetlands-dependent fish and wildlife through acquisition (including easements and title donations), restoration, and/or enhancement. Match must be non-Federal and at least equal to the grant request.	http://northamerican.fws.gov/NAWCA/grants.htm
	North American Wetlands Conservation Act (NAWCA) - Small Grants	Up to $50,000 to fund a 4-year plan of action supported by a NAWCA grant and partner funds to conserve wetlands and wetlands-dependent fish and wildlife through acquisition (including easements and title donations), restoration, and/or enhancement. Match must be non-Federal and at least equal to the grant request.	http://northamerican.fws.gov/NAWCA/grants.htm
	Partners for Fish and Wildlife Program	Funding provided for work on private lands. Typical projects include (but not limited to) wetland and riparian habitat restoration and improvement for threatened or endangered species, anadromous fish, and exotic species control and removal. Typically in the range of $25,000 to $50,000 per project.	Applications accepted throughout the year. http://partners.fws.gov

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
HABITAT (CONTINUED)			
STATE			
California Coastal Conservancy	Wetlands Program (through the Southern California Wetlands Recovery Project)	The WRP Small Grants Program provides funding for community-based restoration projects in coastal wetlands and watersheds in the region. The purpose of the program is to further the goals of the WRP Regional Strategy; build local capacity to plan and implement wetland restoration projects; promote community involvement in wetlands restoration activities; and foster education about wetlands ecosystems. Since 2002, the program has been funded by Earth Island Institute. It is administered by Environment Now, a non-profit group located in Santa Monica (http://www.environmentnow.org). Each January the WRP solicits proposals for the Small Grants Program. Nonprofit organizations and local agencies are eligible to apply. Proposals are reviewed by a committee that includes a representative from each of the 5 county task forces. Typically projects are selected and can begin receiving funds by early summer.	http://www.coastalconservancy.ca.gov/scwrp/index.html
California Bay-Delta Program (CALFED)	Miscellaneous	CALFED offers annual grants for water quality, water supply, watersheds, and ecosystem restoration programs. For 2004/05, CALFED is anticipated to offer grants through its Water Use Efficiency Program which addresses water quantity, water quality, and in-stream flow and timing improvements that directly or indirectly provide benefits to the Bay Delta.	http://calwater.ca.gov/GrantOpportunities/GrantOpportunities.shtml
California Department of Fish & Game	Fisheries Restoration Grant Program	Fisheries Restoration Grant program as to protect and restore coastal salmon and steelhead trout habitat, while collaborating with stakeholders to provide environmental, cultural and economic benefit to the state. There are no special requirements as to who qualifies to apply for this program. DFG has considered proposals for work in the subject areas of: in-stream habitat restoration, watershed and riparian habitat restoration, project maintenance for completed in-stream habitat, riparian habitat and watershed restoration projects, watershed evaluation, assessment, and planning, conservation easements that protect and improve water quality, effectiveness and implementation monitoring following project completion, watershed organization support and assistance, public school watershed and fishery conservation education, etc. Funding available for 2003 amounts to $15-$20 million, and most likely another $15-$20 million for 2004.	http://www.dfg.ca.gov/nafwb/fishgrant.html
State of California Wildlife Conservation Board	Riparian Habitat Conservation Program	The California Riparian Habitat Conservation Program (CRHCP) was created within the Wildlife Conservation Board (WOB) by legislation on 1991. The program has a basic mission to develop coordinated conservation efforts aimed at protecting and restoring the state's riparian ecosystems. The WCB is authorized to award grants for riparian conservation purposes to nonprofit organizations, local government agencies, state departments and federal agencies.	http://www.dfg.ca.gov/wcb/California_riparian_habitat_conservation_program.htm
	Habitat Enhancement and Restoration Program	The program funds the restoration and enhancement of habitats such as wetland, riparian, and forest land, as well as threatened or endangered species habitats.	http://www.dfg.ca.gov/wcb/habitat_enhancement_and_restoration_program.html

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
HABITAT (CONTINUED)			
STATE (CONTINUED)			
	California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002 (Proposition 40)	The passage of the California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002 made $300 million available to the Wildlife Conservation Board (WCB). Funds can be used to acquire land in fee title and interests in land, such as conservation easements. The funds can also be used for habitat restoration and/or enhancement projects and for public access projects that provide wildlife-related public recreational opportunities. Eligible Recipients: Federal, state, and local governmental agencies, and non-profit conservation organizations.	Applications are accepted continuously. The Board meets every three months to consider. The breakdown of funding is section 5096.650(a) - $300 million. For updates: http://www.dfg.ca.gov/wcb/p40fundingallocations.htm
	Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (Proposition 50)	The passage of the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 made $940 million available to the Wildlife Conservation Board (WCB) for projects such as: Acquisition of fee or conservation easements by the Board or for grants to protect regional water quality, protect and enhance fish and wildlife habitat, and to assist local public agencies in improving regional water supply reliability. The specific breakdown of funding from the Bond Act for WCB is (Section 79565, Chapter 8, Integrated Regional Water Management) - $140 million. Eligible Recipients: Federal, state, and local governmental agencies, and non-profit conservation organizations	Applications for project funding are accepted continually. The Board meets every three months to consider. As of January 1, 2004, approximately $ 543.4 million in Proposition 50 funds have already been approved and allocated by the WCB. The WCB has also received and is currently evaluating a substantial number of new projects to be funded with the remainder of these funds. The WCB will continue to accept and consider new project proposals until all funds are exhausted. For updates: http://www.dfg.ca.gov/wcb/p50fundingallocations.htm
California Resources Agency	Environmental Enhancement and Mitigation Program (EEMP)	The Environmental Enhancement and Mitigation Program (EEMP) was established by the Legislature in 1989. It offers a total of $10 million each year for grants to local, state and federal government agencies and to nonprofit organizations for projects to mitigate the environmental impacts caused by new or modified state transportation facilities. State gasoline tax monies fund the EEMP. Grants are awarded in three categories: **Highway Landscape and Urban Forestry**: Projects designed improve air quality through the planting of trees and other suitable plants. **Resource Lands**: Projects for the acquisition, restoration, or enhancement of watersheds, wildlife habitat, wetlands, forests, or other natural areas. **Roadside Recreational**: Projects for the acquisition and/or development of roadside recreational opportunities.	http://resources.ca.gov/eem/
California Department of Parks and Recreation	Habitat Conservation Fund	Acquisition and restoration of wildlife habitats and significant natural areas. California counties, cities, and special districts. Up to $400,000 per project. Must have 1 to 1 match from non-state source	Proposals usually due in October. For updates, visit: http://www.parks.ca.gov/default.asp?page_id=21361
PRIVATE SECTOR			
American Rivers (partner with National Oceanic & Atmospheric Administration/ NOAA)	River Restoration Grants	$5,000 to $25,000 per project. Non-federal match not required, but encouraged. Grants provided to projects that are using dam removal or fish passage to restore and protect the ecological integrity of rivers and improve freshwater habitats for anadromous fish. State, local, and tribal governments, conservation groups, and other non-profits in California.	http://www.amrivers.org/dam removal/grantguidelines.htm
American Sportfishing Association and FishAmerica Foundation (partner with National Oceanic & Atmospheric Administration/ NOAA)	Restoration Grants	Projects that result in on-the-ground restoration in marine, estuarine and anadromous fish habitats – especially sportfish. Strong partnerships cooperation from local community groups and citizens are encouraged. Funding typically ranges from $5,000 to $30,000. Match not required, but encouraged.	Applications typically accepted twice each year (March and August). For updates, visit: http://www.fishamerica.org/content/conservation/fishamerica/faf_grant.cfm
The Conservation Fund (TCF)	Miscellaneous	The Conservation Fund is a national non-profit organization dedicated to preserving Americas land legacy by acquiring and protecting open space, wildlife habitat, and historic sites. The Fund also provides technical assistance, information, and small grants to assist with the greenway and trail projects across the nation.	http://www.conservationfund.org

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
HABITAT (CONTINUED)			
PRIVATE SECTOR (CONTINUED)			
National Fish and Wildlife Foundation (NFWF)	Challenge Grant Program	NFWF awards grants to projects that address priority actions promoting fish and wildlife conservation and the habitats on which they depend; work proactively to involve other conservation and community interests; leverage available funding. $10,000 to $150,000 per project. 2-to-1 match preferred.	http://www.nfwf.org/programs/guidelines.htm
	Native Plant Conservation Initiative	The National Fish and Wildlife Foundation supports on-the-ground conservation projects that protect, enhance, and/or restore native plant communities on public and private land. Projects usually fall into one of the three categories and may contain elements of each: protection and restoration, information and education, and inventory and assessment. Deadlines for applications is December 1.	http://www.nfwf.org/programs/npci.htm
	Bring Back the Natives (BBN)	This National Fish and Wildlife Foundation (NFWF) program provides funds to restore damaged or degraded riverine habitats and their native aquatic species through watershed restoration and improved land management. Funding is provided by the Bureau of Land Management (BLM), Bureau of Reclamation (BOR), U.S. Fish and Wildlife Service (FWS), USDA Forest Service (FS), and NFWF. Successful projects will support the applied ecosystem strategy of BLM, BOR, FWS, FS, and NFWF and address any or all of the following: (1) revised land management practices to eliminate causes of habitat degradation; (2) multiple species benefits, (3) direct benefits to native fish and aquatic community resources in watersheds with land managed by BLM, BOR, or FS; (4) multiple resource management objectives, (5) multiple project partners and innovative partnerships; (6) where appropriate, demonstration of a landscape ecosystem approach; and (7) innovative projects that develop new technology that can be shared with others.	http://www.nfwf.org
	Five Star Restoration Challenge Grants	Community-based wetland riparian or coastal restoration projects (on-the-ground) with outreach, education, and community component. $5,000 to $20,000 per project. 1-to-1 match required. Grant offered in partnership with EPA and NOAA.	http://www.nfwf.org/programs/5star-rfp.htm
WATER SUPPLY			
FEDERAL			
US Bureau of Reclamation	Water Reuse and Reclamation Program	Title XVI of Public Law 102-575, the Reclamation Wastewater and Groundwater Study and Facilities Act, sets aside federal government funds to support up to 25 percent of a water recycling project's capital costs. In 1996, funds were authorized to support 18 projects, including the Pasadena Reclaimed Water program	http://www.usbr.gov/lc/region/scao/titlexvi.htm
	Challenge Grant Program	The Bureau of Reclamation is accepting proposals for matching grants from irrigation and water districts that seek to leverage their money and resources to create water markets and make more efficient use of existing water supplies through water conservation and efficiency projects. By law, proposals must have matching non-federal funds of at least 50 percent.	http://www.doi.gov/water2025/grant.html
STATE			
California Department of Water Resources	Proposition 13 Programs: Urban Water Conservation Capital Outlay Grants	The Urban Water Conservation Program (Proposition 13 - Chapter 8, Article 6) allows DWR to issue grants to public agencies and incorporated mutual water companies to finance feasible, cost-effective water conservation capital outlay projects or programs to improve water use efficiency. The California State Legislature appropriated $18.5 million for the fiscal year 2002-2003 funding cycle for urban projects.	http://www.water.ca.gov/grants-loans/#programs
	Groundwater Recharge Construction Loans	DWR will issue loans to public agencies and incorporated mutual water companies for the acquisition and construction of groundwater recharge facilities that will increase water supply reliability. The California State Legislature appropriated $8.7 million for the Fiscal Year 2002-2003 funding cycle for groundwater recharge construction loans.	http://www.water.ca.gov/grants-loans/#programs

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
WATER SUPPLY (CONTINUED)			
STATE (CONTINUED)			
	Groundwater Storage Feasibility Study & Construction Grant	DWR will award grants to local agencies and/or other applicants working with the participation of local agencies, for construction of projects that enhance conjunctive management of surface water and groundwater to increase water supply reliability. No single project will receive more than $50,000,000 from the Groundwater Storage Construction Grant Program.	http://www.water.ca.gov/grants-loans/#programs
	AB303 - Local Groundwater Management Assistance Act of 2000 Grants	The Local Groundwater Management Assistance Act of 2000 (AB 303, Stats. Of 2000, Ch. 708) is designed to help local public agencies better understand how to manage groundwater resources effectively to ensure the safe production, quality, and proper storage of groundwater in California. It authorizes grants for local public agencies to conduct groundwater studies. The Fiscal Year 2002-2003 funding amount was $5 million.	http://www.water.ca.gov/grants-loans/#programs
SPECIAL DISTRICTS & LOCAL			
Metropolitan Water District of Southern California	Local Resources Program (LRP)	The LRP provided financial assistance for new sources of water that reduced MWD's demand for imported water. Under the LRP, MWD may provide public or private water agencies up $250 per acre-ft for the development of recycled water and groundwater projects that offset demands for imported water. Terms may be up to 25 years.	http://www.mwd.dst.ca.us/
WATER QUALITY			
FEDERAL			
US Environmental Protection Agency (EPA)	Watershed Initiative	Grants of $15,000-$20,000 for up to 20 watersheds nationally.	http://www.epa.gov/owow/funding.html
	The Wetland Program Development Grants	The Wetland Program Development Grants (WPDGs), initiated in FY90, provide eligible applicants an opportunity to conduct projects that promote the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. While WPDGs can continue to be used by recipients to build and refine any element of a comprehensive wetland program, priority will be given to funding projects that address the three priority areas identified by EPA: Developing a comprehensive monitoring and assessment program; improving the effectiveness of compensatory mitigation; and refining the protection of vulnerable wetlands and aquatic resources. States, Tribes, local governments (S/T/LGs), interstate associations, intertribal consortia, and national non-profit, non-governmental organizations are eligible to apply.	http://www.epa.gov/owow/funding.html
STATE			
California State Water Resources Control Board	Clean Water State Revolving Fund	The Clean Water State Revolving Fund (CWSRF) provides loans for construction of publicly owned wastewater treatment and water reclamation facilities, implementation of non-point source and storm water pollution control activities and estuary enhancement activities. CWSRFs offer low interest rates with flexible terms. The loans are unsecured and interest rates for CWSRF loans average 2.4 percent.	http://www.swrcb.ca.gov/funding/index.html
	Water Reuse Variable Rate Loan Program	The California Water Reuse Finance Authority created the Variable Rate Loan Program, and avoids delays due to SRF processing requirements. Agencies with projects that qualify for this program may obtain up to 30 years of loans at interest rates currently averaging 3 to 4 percent.	http://www.swrcb.ca.gov/funding/index.html

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
WATER QUALITY (CONTINUED)			
STATE (CONTINUED)			
	Consolidated Grants Program	Provides grant funds and loans for various types of assessment, planning, and implementation projects that reduce, eliminate, or prevent water pollution resulting from polluted runoff and enhance water quality in state waters. Nonprofits, local government agencies including special districts, Indian tribes, and educational institutions. State or federal agencies may qualify. Up to $5 million per project. Consultation with appropriate RWQCB or SWRCB is required prior to submitting an application.	Usually due in May or June. www.swrcb.ca.gov/funding/index/html
California Department of Transportation (Caltrans)	Environmental Enhancement & Mitigation Program (EEMP)/Proposition 11 Funds	In 1990, California voters approved Proposition 111, authorizing a nine-cent increase in the state gas tax. Proposition 111 directed the sales tax—about $60 million per year—to the Public Transportation Account. A portion of this money was used for grants for supplemental mitigation of the environmental impacts of modified or new public transportation facilities. Grants range to $250,000 for a project. Caltrans has had an ongoing fund of $10 million per year to mitigate community impacts from any highway construction or improvement project. The fund has provided monies for tree planting, recreation enhancement, land acquisition and other community improvements. Future funding for this program has not been confirmed.)	http://www.dot.ca.gov/hq/LocalPrograms/EEM/homepage.htm
EDUCATION & PUBLIC OUTREACH			
FEDERAL			
US Environmental Protection Agency (EPA)	Five Star Restoration Program	The Five Star Restoration Program brings together students, conservation corps, other youth groups, citizen groups, corporations, landowners and government agencies to provide environmental education and training through projects that restore wetlands and streams. The program provides challenge grants, technical support and opportunities for information exchange to enable community-based restoration projects. Funding levels are modest, from $5,000 to $20,000, with $10,000 as the average amount awarded per project.	http://www.epa.gov/owow/wetlands/restore/5star/index.html
STATE			
California Wildlife Conservation Board	Oak Woodlands Conservation Program	The program funds the purchase of oak woodland easements or fee interests, land improvement, cost-sharing incentive payments, public education and outreach, and assistance in the development of local general plans relative to oak woodland habitat.	http://www.dfg.ca.gov/wcb/index.html
California Department of Transportation (Caltrans)	Environmental Justice Grants	The program funds a series of one-time demonstration projects for integrating environmental justice into planning and decision-making, public outreach efforts, development of community organization databases, and identification of minority and low-income community needs and concerns in transportation, impact analyses, energy efficiency in transportation, and adopting new technology for improving mobility and access.	http://www.dot.ca.gov/hq/tpp/grants.htm
RECREATION			
FEDERAL			
US Department of Transportation	TEA-21 Reauthorization	U.S. Department of Transportation's Federal Highway Administration has become the nation's largest single source of funding for multiple use paths, trails, and related projects. Major transportation legislation (TEA-21) will benefit foot trails if it continues to be reauthorized. In California, the State Department of Transportation (Caltrans) administers transportation enhancement funds.	Federal TEA information: http://www.dot.gov TEA information from Caltrans: http://www.dot.ca.gov/hq/LocalPrograms/

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
RECREATION (CONTINUED)			
FEDERAL (CONTINUED)			
US Department of the Interior, National Park Service	Urban Park and Recreation Recovery (UPARR)	The Urban Park and Recreation Recovery (UPARR) program was established in November 1978 by Public Law 95-625, authorizing $725 million to provide matching grants and technical assistance to economically distressed urban communities. The purpose of the program is to provide direct Federal assistance to urban localities for rehabilitation of critically needed recreation facilities. The law also encourages systematic local planning and commitment to continuing operation and maintenance of recreation programs, sites, and facilities. Only cities and urban counties meeting established criteria are eligible for assistance.	Although the House-passed version of the appropriation bill included $30 million for the UPARR grant program and the Senate version proposed $10 million, the Congress passed and the President signed the consolidated appropriations package (P.L. 108 7) which eliminated funding for new UPARR grants in FY 2003. For updates, visit: http://www.nps.gov/uprr/
Federal Highway Administration	Federal Highway Administration Bridge Replacement/ Rehabilitation (HBRR) Program	This federal program is administered by the California Department of Transportation (Caltrans), and was authorized within the Transportation Equity Act for the 21st Century (TEA21), which is being considered for renewal. This is an important source for bridge replacement and modifications. FHA pays 75%.	HBRR program information for California: http://www.dot.ca.gov/hq/LocalPrograms/hbrr99/hbrr99a.htm
STATE			
California Department of Parks and Recreation	Per Capita Grant Programs (Proposition 40)	Eligible projects include acquisition, development, improvement, rehabilitation, restoration, enhancement, and the development of interpretive facilities, of local parks and recreational lands and facilities. Per capita grant funds can only be used for capital outlay.	http://www.parks.ca.gov/default.asp?page_id=22333
California Wildlife Conservation Board	Cooperative Projects with Local Agencies for Public Access (Proposition 50)	The Wildlife Conservation Board (WCB) carries out a program that includes the development of facilities in cooperation with local agencies for public access to hunting, fishing or other wildlife-oriented recreation. Financial assistance is available to cities, counties and public districts or corporation for development such as fishing piers or floats, access roads, boat launching ramps, trails, boardwalks, interpretive facilities and lake or stream improvements. Support facilities such as restrooms and parking areas are also eligible for funding under this program.	http://www.dfg.ca.gov/wcb/public_access_program.htm
California Coastal Conservancy	Public Access Grant Program	The public access program provides capital funds and technical assistance for the construction of public access stairs, trails, limited-mobility-access projects, hostels, interpretive signs and other facilities that serve state and regional coastal access needs, and for the acquisition of interests in land necessary to enable the provision of access facilities. The Conservancy has helped build more than 300 accessways and trails, including major portions of the California Coastal Trail and the San Francisco Bay Trail, thus opening more than 80 miles of coastal and bay lands for public use.	http://www.coastalconservancy.ca.gov/Programs/programs.htm
	Urban Waterfronts Program	The urban waterfront program provides capital funds and technical assistance to protect, restore and expand coastal-dependent recreational, commercial and industrial facilities and to expand opportunities for public access and use of urban waterfronts in conjunction with new development, including the provision of technical assistance to landowners and local governments and through land acquisition and the construction and restoration of facilities. The Conservancy has assisted in the completion of more than 100 urban waterfront projects.	http://www.coastalconservancy.ca.gov/Programs/programs.htm
California Department of Parks & Recreation	Recreational Trails Program	The California Department of Parks and Recreation provides funds for recreational trails and trails-related projects. Support is for organizations that maintain and restore existing recreational trails; develop and rehabilitate trailside and trailhead facilities and trail linkages for recreational trails; purchase and lease recreational trail construction and maintenance equipment; construct new recreational trails. http://www.parks.ca.gov/ (Go to Grants & Bonds Page)	http://www.parks.ca.gov/default.asp?page_id=21362
	Habitat Conservation Fund	The program funds efforts for conservation of habitats that are either wetlands, riparian, or near recreational trails. The following categories will be funded during the upcoming grant cycle: Deer/Lion; Rare, Threatened and Endangered; Wetlands; and Riparian.	http://www.parks.ca.gov/default.asp?page_id=21361

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
RECREATION (CONTINUED)			
STATE (CONTINUED)			
	Proposition 12 - Per capita Grant Program	This program funds may be used for the acquisition, development, improvement, rehabilitation, restoration, enhancement, and the development of interpretive facilities for local parks and recreational lands and facilities, including renovation of recreational facilities conveyed to local agencies resulting from the downsizing or decommissioning of federal military installations.	http://www.parks.ca.gov/default.asp?page_id=21349
	Murray-Hayden Urban Parks and Youth Service Program	Acquisition, development, and rehabilitation of parks, park facilities, environmental enhancement projects, youth centers, or environmental youth service centers that: are within the immediate proximity of a neighborhood that has a critical lack of park or open space lands and/or deteriorated park facilities; are in an area of significant poverty and unemployment, have a shortage of youth services for youth. Priority shall be given to capital projects that employ neighborhood residents and at-risk youth.	Under Prop 40, there will probably be little balance left following this grant cycle. Check for updates at: http://www.parks.ca.gov/default.asp?page_id=22295
	California Youth Soccer and Recreation Development	The intent of the Youth Soccer and Recreation Development program, which is currently funded through Proposition 40, is to provide financial assistance to local agencies and community-based organizations to foster the development of new youth soccer, baseball, softball, and basketball recreation opportunities in the state. Cities, counties, a city and county, districts, school districts and community-based organizations are eligible for the program. Eligible projects include capital projects that foster the development of new youth soccer, baseball, softball, and basketball recreation opportunities are eligible, including acquisition (willing sellers only) or development.	Due to uncertainty of when funds for these programs will be appropriated, the Department has postponed all technical assistance workshops and filing deadlines for these programs until further notice. It is expected that additional information will become available in spring 2004 regarding the rescheduled filing deadlines and technical assistance workshops. The next deadline will likely be in summer, 2004. For updates, visit: http://www.parks.ca.gov/default.asp?page_id=22320
	Roberti-Z'Berg-Harris Urban Open Space & Recreation Grants Program-Block Grant Program	Acquisition of park and recreation lands and facilities, development/rehabilitation of park and recreation lands and facilities, special major maintenance of park and recreation lands and facilities, and innovative recreation programs. The previous match requirement for this program has been eliminated. Note: Special Major Maintenance and/or Innovative Recreation Programs may not exceed 30% of grant funds. The Block Grant funds are allocated to eligible cities, counties, and districts based on population and location within urbanized and heavily urbanized areas. The RZH Grant Program, currently through Proposition 40, is intended to meet the urgent need for safe, open, and accessible local park and recreational facilities for increased recreational opportunities that provide positive alternatives to social problems. As a means of addressing these critical neighborhood parks needs, the 2002 Bond Act provides $186.7 million in funds to implement the RZH Program. $155 million of these funds have been allocated as Block Grants. The Block Grant funds are allocated on a population-based formula to cities, counties and Districts that meet the definition of "District" found on page 2. RZH grants shall be expanded for high-priority Projects that satisfy the most urgent park and recreation needs, with emphasis on unmet needs in the most heavily populated and most economically disadvantaged areas within each Jurisdiction. RZH grants to cities, counties and Districts are intended to supplement - not supplant - local expenditures for park and recreation facilities. They are not to diminish in any way the current efforts to provide park and recreation services.	Due to uncertainty of when funds for these programs will be appropriated, the Department has postponed all technical assistance workshops and filing deadlines for these programs until further notice. It is expected that additional information will become available in spring 2004 regarding the rescheduled filing deadlines and technical assistance workshops. http://www.parks.ca.gov/default.asp?page_id=22330
	Roberti-Z'Berg-Harris Urban Open Space & Recreation Grants Program: Urbanized Area Need Basis	The RZH Grant Program, currently funded through Proposition 40, is intended to meet the urgent need for safe, open, and accessible local park and recreational facilities for increased recreational opportunities that provide positive alternatives to social problems. As a means of addressing these critical neighborhood park needs, the 2002 Bond Act provides $186.7 million in funds to implement the RZH Program. $3.884 million of these funds will be awarded on a competitive basis to cities with populations less than 300,000 located in Urbanized Areas and recreation and park Districts in Urbanized Areas. RZH grants shall be expended for high-priority Projects that satisfy the most urgent park and recreation needs, with emphasis on unmet needs in the most heavily populated and most economically disadvantaged areas within each Jurisdiction. RZH grants to cities and recreation and park districts are intended to supplement—not supplant— local expenditures for park and recreation facilities. They are not to diminish in any way the current efforts to provide park and recreation	Due to uncertainty of when funds for these programs will be appropriated, the Department has postponed all technical assistance workshops and filing deadlines for these programs until further notice. It is expected that additional information will become available in spring 2004 regarding the rescheduled filing deadlines and technical assistance workshops. http://www.parks.ca.gov/default.asp?page_id=22332

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
RECREATION (CONTINUED)			
STATE (CONTINUED)			
	Urban Park Act of 2001	Acquisition and/or development of property for new urban parks or new recreational or multipurpose facilities.	http://www.parks.ca.gov/default.asp?page_id=22294
	State Urban Parks and Healthy Communities Program	This program provides grants for the acquisition and development of properties for active recreational purposes. An active recreational purpose is an activity that requires athletic fields, courts, gymnasiums, or other recreational facilities/venues for youth soccer, baseball, football, basketball, tennis, or swimming, or any recreation activity which involves physical exertion and occurs within a facility/venue that was especially designed for this pursuit. Eligible projects include acquisition and/or development of properties for active recreational purposes such as activities that requires athletic fields, courts, gymnasiums, or other recreational venues for youth soccer, baseball, football, basketball, tennis, or swimming, or any activity the department identifies as meeting this definition.	Due to uncertainty of when funds for these programs will be appropriated, the Department has postponed all technical assistance workshops and filing deadlines for these programs until further notice. It is expected that additional information will become available in spring 2004 regarding the rescheduled filing deadlines and technical assistance workshops. The application deadline will likely occur in summer 2004. For updates, visit: http://www.parks.ca.gov/default.asp?page_id=22321
SPECIAL DISTRICTS & LOCAL			
County of Los Angeles Regional Park and Open Space District	LA County Safe Neighborhood Parks Act(2) 1992/1996 (Proposition A)	Los Angeles County voters approved Prop A funds in 1992 and 1996 for regional and local park improvements countywide. The County of Los Angeles Regional Park and Open Space District is the administrator of Proposition A funds. Two programs relate to the San Gabriel River: •San Gabriel River Funds for acquisition and capital improvement projects by cities creating public park and recreation space along the San Gabriel River and its tributaries; •Competitive Grants, for acquisition and capital improvement projects creating public park and recreation facilities, that will be awarded according to each project's respective ranking. Most of the funding from the 1996 Prop A has been allocated, however, some excess funds may still be available.	Contact the Regional Park and Open Space District or your local County Supervisor's office for updated information.
Local Redevelopment Agencies	Tax increment financing	Local redevelopment agencies along the San Gabriel River corridor have tax increment financing available for projects that address economic development and affordable housing. Funds are under extreme pressure with recent State budget troubles, but over time, the RDA's should look at the river corridor as an opportunity area to address its mission.	Annual budgeting process of individual cities and agencies.
LAND RECLAMATION & ECONOMIC DEVELOPMENT			
FEDERAL			
US Environmental Protection Agency (EPA)	Brownfields Assessment	EPA's brownfield program helps communities clean up and redevelop properties. EPA defines a brownfield site as "real property, the expansion, redevelopment, or reuse of which may be contaminated by the presence or potential presence of a hazardous substance, pollutant, or contaminant." The program helps mitigate potential health risks and assists in restoring economic vitality to areas where brownfields exist. EPA's Assessment Grants are directed toward environmental activities preliminary to cleanup, such as site assessment, site identification, site characterization, and site response or cleanup planning.	http://www.epa.gov/brownfields

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
LAND RECLAMATION & ECONOMIC DEVELOPMENT (CONTINUED)			
FEDERAL (CONTINUED)			
US Department of Housing and Community Development (HUD)	Community Development Block Grant Program	The CDBG program provides annual grants on a formula basis to many different types of grantees through several programs. Over a 1, 2, or 3 year period selected by the grantee not less than 70% of the CDBG funds must be used for activities that benefit low- and moderate-income persons. All activities must meet one of the following national objectives for the program: benefit low- and moderate-income persons, prevention or elimination of slums or blight, community development needs having a particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community.	http://www.hud.gov/progdesc/cdbgent.cfm
PLANNING & ORGANIZATIONAL DEVELOPMENT			
FEDERAL			
US Department of the Interior, National Park Service	Rivers, Trails & Conservation Assistance Program (RTCA)	The Rivers, Trails and Conservation Assistance Program, also known as Rivers & Trails or RTCA, works with community groups and local and State governments to conserve rivers, preserve open space, and develop trails and greenways. This is a technical assistance program, not a funding source. Instead of money, RTCA supplies a staff person with extensive experience in community-based conservation to work with a local group on a project for a preset duration, usually one to three years during a project's infancy.	Applications due July 1 of each year. For information visit: http://www.nps.gov/rtca/
US Environmental Protection Agency (EPA)	Targeted Watersheds Grant Program	The Watershed Initiative was conceived to encourage successful community-based approaches to restore, preserve, and protect the nation's watersheds. This new competitive grant program is a bold approach to watershed management in that it will provide needed resources to those watershed organizations whose restoration plans are ripe, and who are anxious to achieve quick, yet tangible environmental change.	http://www.epa.gov/owow/watershed/initiative
STATE			
California Department of Transportation (Caltrans)	Environmental Justice Grants	The program funds a series of one-time demonstration projects for integrating environmental justice into planning and decision-making, public outreach efforts, development of community organization databases, and identification of minority and low-income community needs and concerns in transportation, impact analyses, energy efficiency in transportation, and adopting new technology for improving mobility and access.	http://www.dot.ca.gov/hq/tpp/offices/opar/titleVIand%20EJ.htm
PRIVATE SECTOR			
River Network	Watershed Assistance Grants	Assists in organizational development and long-term effectiveness. $1,000 to $30,000 per project. Very competitive funding source.	Future funding has not been secured. Check the website for updates. www.rivernetwork.org
William C. Kenney Watershed Protection Foundation	General	Projects that seek to protect wild rivers and river ecosystems (large ecosystem campaigns). Funding available for general support, technical assistance, capacity building, advocacy and special projects. Funding is NOT available for watershed restoration, land acquisition, endowments, research or legal. Grant size is generally $7,500 to $15,000 per project.	Submit one-page letter of inquiry. Applications accepted year-round. www.kenneyfdn.org

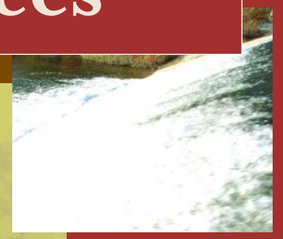
SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
LOCAL FUNDING INITIATIVES			
Tax-based Funding	Special Purpose Sales Tax	An additional countywide sales tax could be levied on top of the existing sales tax base to pay for park and recreation facilities. The stream of revenue from such a tax could be used to pay off debt from a bond issuance or used annually as revenues accrue. The passage of a sales tax measure would require a 2/3 majority vote of residents.	
	Special Purpose Parcel Tax	A flat per-parcel tax places a set amount of additional tax on every parcel in the subject area. It could be levied countywide.	
	Special Purpose Real Estate Transfer Tax	A real estate transfer or conveyance tax is a tax levied on the sale of property that increases with the value of the property being sold. The cost can be borne by either the seller or buyer. Tax rates and dispositions vary from state to state. California has a property tax of $1.10 per $1,000 in assessed value, with $0.55 allocated to the City for general purposes and $0.55 to the County for general purposes. An additional real estate transfer/conveyance tax could also be established for special purposes through a 2/3 vote.	
	Mello-Roos Community Facilities District Special Tax	A Mello-Roos places a special tax on an area to finance authorized community facilities and services. The cities within Solano County have created Mello-Roos Community Facility Districts to pay for park development and maintenance. Mello-Roos Districts tend to encompass large development projects and require a 2/3 majority vote of property owners.	
	Benefit Assessment District	Benefit Assessment Districts, which are subject to Proposition 218, must be based on a determination that the assessment is proportional to the benefit received by the parcels in the district. A Landscape & Lighting District is one type of Benefit Assessment District. Unlike most Benefit Assessment Districts, a Landscape & Lighting District can be used to pay for maintenance, operations, and servicing of park improvements. Votes of property owners in the district require 50% +1 for approval.	
	General Obligation Bonds/Property Tax Overrides	The County could issue a GO Bond for the acquisition, development, and rehabilitation of regional parks. The bond could finance capital improvements while the bond principal and interest would be paid back over time, generally by an increase in taxes. The passage of such a bond would require a 2/3 majority vote of county residents.	
Development-Based Funding & Programs	Park & Open Space Dedications and Fees	The Quimby Act allows a city or county to require payments and/or dedication of land for parks as a condition of subdivisions approval. The payments or dedications cannot exceed the amounts specified in the Act, which are tied to the size of the development. Quimby exactions have been used by the cities of Benicia, Vallejo, and Fairfield to secure park and open space land and improvements in conjunction with major residential developments. However, due to Solano County's Orderly Growth Initiative, urban development is directed to existing urban areas. Therefore, when a major residential development occurs, the land is annexed into a city and the development fees collected would be directed back to each city's park program rather than being directed at building a countywide regional park system.	
	Transfer of Development Credits	A transfer of development credits program could be established that offers incentives to developers to avoid developing lands suitable for regional parks. Landowners or developers are permitted to develop certain areas at higher densities than currently zoned in exchange for their not developing designated regional park lands.	

SAN GABRIEL RIVER CORRIDOR MASTER PLAN FUNDING SOURCE INVENTORY (CONTINUED)

PRIMARY FUNDING CATEGORY AND FUNDING SOURCE	FUNDING PROGRAM	PROGRAM DESCRIPTION	ADDITIONAL INFORMATION
FUNDING DATABASE/LISTS			
FEDERAL			
Federal Grants	grants.gov	Grants.gov is a simple, unified "storefront" for all customers of Federal grants to electronically find, apply for, and manage grants. Grants.gov encompasses over 900 grant programs offered by the 26 Federal grant-making agencies. It streamlines the process of awarding over $350 billion annually to state and local governments, academia, not-for-profits and other organizations. Grants.gov is one of the 24 Federal cross-agency E-Government initiatives focused on improving access to services via the Internet.	http://grants.gov/
	Catalog of Federal Domestic Assistance	The online Catalog of Federal Domestic Assistance provides access to a database of all Federal programs available to state and local governments (including the District of Columbia); federally recognized Indian tribal governments; territories (and possessions) of the United States; domestic public, quasi-public, and private profit and nonprofit organizations and institutions; specialized groups; and individuals.	http://www.cfda.gov/public/granttopics.asp
	Catalog of Federal Funding Sources for Watershed Protection	The Catalog of Federal Funding Sources for Watershed Protection website, hosted by the US EPA, is a searchable database of financial assistance sources (grants, loans, cost-sharing) available to fund a variety of watershed protection projects.	http://www.epa.gov/watershedfunding/
STATE			
State of California Grants	GetGrants	This web site facilitates the identification of Grant Programs within State of California agencies and departments through a single search, without being required to know the name of the responsible entity.	http://getgrants.ca.gov/
PRIVATE SECTOR			
American Trails	Miscellaneous funding information	American Trails is a national, nonprofit organization working on behalf of all trail interests, including hiking, bicycling, mountain biking, horseback riding, water trails, snowshoeing, cross-country skiing, trail motorcycling, ATVs, snowmobiling and four-wheeling. Its goal is to support America's trails by finding common ground and promoting cooperation among all trail interests. American Trails' website contains information about funding strategies in general and specific information on federal funding sources.	Federal Funding: http://www.americantrails.org/resources/fedfund/index.html Funding and Resources: http://www.americantrails.org/resources/funding/index.html
American Hiking Society	Miscellaneous funding information	Updates on the status of funding from a variety of agencies for land acquisition and trail development	http://www.americanhiking.org/policy/current/funding.html http://www.americanhiking.org/news/trail_fund.html
Rails-to-Trails Conservancy	Miscellaneous funding information	The Rails-to-Trails Conservancy is a non-profit organization created to enrich America's communities and countryside by creating a nationwide network of public trails from former rail lines and connecting corridors. They coordinate a Trails & Greenways Clearinghouse website that contains resource information, including a funding database. RTC also maintains a California field office, whose website has funding information specific to California.	National Trails & Greenways Clearinghouse: http://www.trailsandgreenways.org/resources/highlights/default.asp RTC California Field Office: http://www.railtrails.org/field/california/default.asp
Sonoran Institute	Conservation assistance tools	The Sonoran Institute, with several public and private partners, has developed a free technical and funding resource database. The database, which covers nationwide funding and sources specific to selected western states, includes federal, state and regional sources, and private foundations. The database currently does not include funding sources specific to California, but the nationwide sources are relevant.	http://cat.sonoran.org/

Appendices



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appendix A Master Plan Projects Action Grid

MASTER PLAN PROJECTS ACTION GRID

Reach 1

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Plan Elements: Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Project Concepts: Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R1.01	ANGELES NATIONAL FOREST	FISHERMAN'S TRAIL ABOVE COGSWELL DAM	The Fly Fishers Club of Orange County (FFCOC) has proposed establishing a recreational easement (Trail) across or around the LADPW facility at Cogswell Dam allowing access to the upper West Fork of the San Gabriel River. Pedestrian access to the River was blocked by completion of Cogswell Dam in 1934. Project implementation will require close coordination with LADPW and the U.S. Forest Service. Access to the West Fork of the San Gabriel River above Cogswell Dam now requires a very long hike through the mountains from the area near Mt. Wilson. A trail around Cogswell Reservoir would involve access through LADPW and USFS controlled property. An alternative route would require a new trail around either the north or south side of the reservoir. The Project's scope could be expanded to include access across or around Cogswell Dam, which was recently closed by LADPW due to increased security considerations. This recent closure cut off access to the existing Devil's Canyon trail, the San Gabriel Wilderness area and the stream in Devil's Canyon. The Fisherman's Trail project might be able to provide access to both the West Fork and to the existing Forest Service trail into Devil's Canyon.	Fly Fishers Club of Orange Co. (FFCOC); US Forest Service (USFS)		●	○				○	○		○				
R1.02	ANGELES NATIONAL FOREST	SEDIMENT MANAGEMENT PLAN (COGSWELL RESERVOIR)	Under the Sediment Management Plan, Cogswell Dam will be cleaned out about every 10 years, by means of mechanical excavation. NEPA and CEQA reviews for the Sediment Management Plan were concluded in 1997 and 1998, respectively.	County of Los Angeles Dept. of Public Works (LADPW)	○	○		●	●									●
R1.03	SAN GABRIEL RIVER - WEST FORK / ANF	LONG TERM MANAGEMENT PLAN: WEST FORK SAN GABRIEL RIVER	This plan, developed in 1989 by the West Fork Working Group (WFWG), addresses management of the West Fork, including Cogswell Reservoir. The WFWG includes the USDA Forest Service, County of Los Angeles Department of Public Works (LADPW), California Department of Fish and Game, California Trout, Incorporated, Main San Gabriel Basin Watermaster, San Gabriel Valley Protective Association, and the San Gabriel Water Committee. Six objectives of the Plan include flood control, dam safety, water rights, fisheries optimization, recreation and land use management.	West Fork Working Group	○	●	○						○				●
R1.04	ANGELES NF	FOREST MASTER PLAN UPDATE	The four southern National Forests including Angeles, San Bernardino, Los Padres and Cleveland, are updating their Master Plans. The Forest Plans address issues of resource management, recreational access issues, habitat and other concerns of forest stakeholders.	USFS	●	●	●	●	●	●	○	○	○	○			○	●
R1.05	ANGELES NF	OFF-HIGHWAY VEHICLE AREA IMPROVEMENTS	Near the eastern edge of the Headwaters Reach, just above its confluence with the East Fork, is a large, flat river bottom area that is a favorite spot with off-highway vehicle users. The Azusa Canyon Off-Roaders Association (ACORA) is proposing improvements to existing stream crossings and habitat restoration for the Santa Ana sucker to minimize impacts from off-road vehicle use, while providing selected amenities for the benefit of off-highway enthusiasts and other river visitors.	Azusa Canyon Off-Roaders Assoc. (ACORA), California Off-Road Vehicle Association (CORVA), USFS	○	●	○	○	○		○	●		○				
R1.06	SAN GABRIEL RIVER WATERSHED	SAN GABRIEL RIVER WATERSHED MANAGEMENT PLAN ABOVE WHITTIER NARROWS	This planning study by the San Gabriel Mountains Regional Conservancy (SGMRC) is funded by Proposition 13. The project will develop land use-based recommendations that address water quality and supply, habitat, recreation and open space, and land and water stewardship opportunities. The "Think River! Youth Watershed Conference" is an outgrowth of this project. Within the Angeles National Forest, the focus will be on the heavily used areas of Highway 39 and the North and East Forks of the San Gabriel River. In the lower urbanized sub-watersheds of San Jose and Walnut Creeks, the focus will be on water quality, education, stewardship, habitat linkages and open space.	San Gabriel Mountains Regional Conservancy (SGMRC)	●	●	●	●	●	○	○	○	○	○	○	○	○	●
R1.07	ANGELES NF	SAN GABRIEL WATERSHED HABITAT RESTORATION ASSESSMENT PROJECT	This study will augment the San Gabriel River Watershed Management Plan (R1.06) by mapping and assessing current habitat conditions in the San Gabriel River Watershed. It will also evaluate the opportunities and constraints for habitat restoration along urban corridors, undeveloped areas, and protected open spaces in a manner that will also protect other resources such as water quality. Attention will be given to potential wildlife corridor improvement opportunities and protection of regional species biodiversity.	SGMRC	●	●	●	●	●	●	○	○	○	○			○	●

○ = Potential Opportunity ● = Definite Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 2

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Plan Elements: Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Project Concepts: Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R2.01	ANGELES NF	BLACK-FLY VECTOR RESEARCH	On behalf of the FFCOC, a funded research study conducted by consultants of the San Gabriel Mountains Regional Conservancy is evaluating the river's black fly populations, a source of fish food. Fluctuations in black fly populations have implications for stream ecology, interdependent organisms, bio-indicators, as well as human health and vector control methods.	SGMRC	●	●	○		●		○	○	○					●
R2.02	ANGELES NF	SAN GABRIEL RESERVOIR RECREATIONAL STUDY	This 1992 LADPW study investigated expanding non-water oriented recreational activities at or near the reservoir. Its recommendations need to be updated in light of today's increased security considerations.	LADPW	○	●	○	○	○			○	○	○				●
R2.03	ANGELES NF	HIGHWAY 39/SAN GABRIEL RIVER RECREATION NEEDS ASSESSMENT	The SGMRC is developing a proposal to address issues relating to high usage along the Highway 39 area of the river, for a Proposition 13 Nonpoint Source Pollution grant. A significant amount of trash has accumulated in the river and along Highway 39. Toilet facilities are insufficient for the thousands of visitors, and more parking, trash and ash receptacles, and information/interpretive kiosks are needed. A needs assessment study will explore current recreational usage and needs, as well as potential impacts on habitat and water quality.	USFS, Caltrans, SGMRC	●	●	●	○	●	●	○	○	○	○	○			●
R2.04	ANGELES NF	SEDIMENT MANAGEMENT PLAN (SAN GABRIEL CANYON)	A current LADPW study explores options for removing sediment that has accumulated behind both the San Gabriel Dam and the Morris Dam. In the wake of the 2002 Curve and Williams Fires, LADPW is planning to undertake a 5-million cubic yard emergency clean out of San Gabriel Reservoir, which is anticipated to start in 2004 and last for several years.	LADPW	○	○		●	●		○	○	○				○	●
R2.05	ANGELES NF	FISHING AT MORRIS AND SAN GABRIEL RESERVOIRS STUDY	This FFCOC study will investigate the feasibility of providing limited access to Morris and San Gabriel Reservoirs for non-body contact fishing and related recreational activities, including allowing float tubes and non-motorized boats onto the reservoirs. The feasibility study will use the existing Department of Health Services Guidelines for non-body contact public access onto reservoirs, and access limitations successfully employed at other locations where recreational fishing is permitted at public reservoirs. It will address all concerns related to necessary operations at LADPW facilities. The study recognizes that access may be seasonally limited, with further restrictions required to accommodate maintenance of the reservoirs and associated facilities. As with all projects in the Master Plan, it will be important to ensure that the multi-objective framework of habitat, recreation, open space, flood protection, water quality, and regulatory compliance is maintained. Both LADPW and the Upper San Gabriel Valley Water District will jointly fund the feasibility study.	FFCOC	○	●	○	○	○				○					●
R2.06	ANGELES NF	MORRIS DAM PENINSULA PARK	The largest available open space along the national forest section of the river, this 40-acre peninsula juts into the Morris reservoir at the former site of a Navy torpedo testing facility adjacent to Highway 39. It can be reclaimed and developed for recreational day-use, overnight camping, trails and an interpretive center for the national forest, including a historic military interpretive site. The development of this park would provide additional needed park facilities with parking and other site amenities to relieve the serious weekend congestion of Angeles National Forest visitors.	USFS,LADPW	○	●	○				○	○		○			○	●	
R2.07	ANGELES NF, AZUSA	MINIMUM STREAM FLOWS BELOW MORRIS DAM PROJECT	Upon further consideration among all interested groups, this proposal is withdrawn for the time being.															
R2.08	ANGELES NF	OLD SAN GABRIEL CANYON ROAD	This two-mile County service road extends south from Morris Dam at a pump station down to Azusa by the El Encanto Restaurant. A City of Azusa project, this road can provide river access for hikers and bikers and could also be linked to the nearby San Gabriel River Bike Trail via the Canyon Inn and El Encanto properties. A safe crossing of Highway 39 is needed.	Azusa		●	○					○		●	○			

● = Definite Opportunity ○ = Potential Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 3

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Plan Elements: Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Project Concepts: Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R3.01	AZUSA	AZUSA CANYON RIVER PARK	This City of Azusa project aims to acquire land to develop a river-focused park at the southern end of San Gabriel Canyon. It includes a visitor's center surrounded by a native plant garden, interpretive signage, restored habitat areas, and paths leading down to the river. Landscaping, picnic tables and a small play area will encourage national forest users to visit. Camping in a natural park area will be available. The City of Azusa has already acquired part of the park. This park is adjacent to the Rainbow Canyon Equestrian Center.	Azusa	●	●	●	○	○		○	●		○	○	○		
R3.02	AZUSA	SAN GABRIEL RIVER BIKE TRAIL EXTENSION	This project will extend the 38-mile regional bike trail from its current terminus near the southern edge of San Gabriel Canyon by the proposed Interpretive Center, to the proposed Azusa Canyon River Park and eventually all the way to Angeles National Forest. A one-mile extension is being built to the Mountain Cove development, near the mouth of the San Gabriel Canyon.	Azusa		●	○							●	○			
R3.03	AZUSA	ROBERT'S CREEK TRAIL ACCESS	Public access to Robert's Creek will be provided through Mountain Cove private residential development, from Azusa Canyon River Park and/or the San Gabriel River Bike Trail Extension.	Azusa	○	●	○							●	○			
R3.04	AZUSA	ROBERT'S CREEK RESTORATION	This will be a habitat restoration and park expansion in the canyon area behind Mountain Cove.	Azusa, USFS	●	○	○		●		○	○		●				
R3.05	AZUSA	WESTSIDE TRAIL	A new, multi-purpose trail at the far edge of the flood plain, running parallel to the San Gabriel River on its west side and opposite to the San Gabriel River Bike Trail will be developed. This one-mile trail will run along the San Gabriel Valley Gun Club and provide a connection between the Robert's Creek and Fish Creek Trails.	Azusa	○	●	●					○		●	○			
R3.06	AZUSA	FOREST GATEWAY INTERPRETIVE CENTER	This project will create a new USDA Forest Service Ranger Station and Interpretive Center at the entrance to Azusa Canyon. Diverse educational opportunities will provide information about the canyon, the national forest and native habitat. "Green" building practices and watershed sensitive design principles will be incorporated into the site. North East Trees has already developed the building and site designs for this open space area. The project is currently funded and will be built in 2004.	Azusa, USFS	●	●	●	○	●		○	○	○	○	○	●		
R3.07	AZUSA	GLENDORA RIDGE ROAD TRAIL ACCESS	Public access for pedestrians and bicycles to the existing fire road through the mountains on the south side of the canyon will be provided, either by an access easement through private property, or by creating a new access point. This road leads to Mount Baldy.	Azusa, SGMRC		●	○					○		●	○			
R3.08	AZUSA	SAN GABRIEL CANYON SPREADING GROUNDS	This project will study possibilities for providing landscaping, native habitat restoration, decorative fencing, interpretive signage, trails and other park amenities for public enjoyment and education at two deep spreading basins adjacent to the San Gabriel River. The 165-acre site project will be compatible with the groundwater recharge function of the two basins. Due to the deepness of the two basins, and the fact that it is a major water supply for Azusa, health and safety issues will be key project determinants.	Azusa, LADPW	●	●	●	○	○		○	●	○	○	○	○	○	
R3.09	AZUSA	FUTURE PEDESTRIAN BRIDGE	The City of Azusa has indicated to Vulcan Materials Company (Vulcan) that it would like to investigate the use of the existing conveyor belt that traverses across the San Gabriel River as a potential bicycle and pedestrian bridge (about 30 years from now after mining operations cease). Although Vulcan does not have any objections to using this bridge when mining is completed, it has not yet engaged in negotiations with the City to discuss potential liability and cost for converting the conveyor crossing to a bicycle and/or pedestrian bridge.	Azusa		●	○							○	●			
R3.10	AZUSA	WEST RIVERBANK TREE PLANTING PROJECT AT THE SAN GABRIEL VALLEY GUN CLUB	The San Gabriel Valley Gun Club has proposed planting 200+ trees on the west levee of the San Gabriel River, beside its facilities on land it leases from Vulcan. The Gun Club serves over 100,000 people each year, including recreationists and training organizations such as law enforcement. The trees will provide much needed shade along the river and dampen the sounds that currently echo up the canyon from Gun Club activities. The City of Azusa, representatives of Vulcan and representatives from the San Gabriel Valley Gun Club are in negotiations to mitigate noise emanating from the Club into residential areas. Vulcan has not included these trees as potential mitigation to noise impacts.	San Gabriel Valley Gun Club		●	○					○	●				○		

● = Definite Opportunity ○ = Potential Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 3 (continued)

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R3.11	AZUSA	AZUSA ROCK QUARRY RESTORATION	Vulcan is currently pursuing a revised reclamation plan for the Azusa Rock Quarry to rehabilitate and restore the area when mining is complete. The existing reclamation plan is subject to negotiations between Vulcan and the City of Azusa. A revised reclamation plan would change the quality of reclamation that currently exists at this quarry site.	Azusa, Vulcan Materials Co. (Vulcan)	●	●	●	●	●	●	○	○	○	○			●	
R3.12	AZUSA	FISH CREEK RESTORATION & PUBLIC ACCESS	Vulcan is currently working with the City of Duarte on (and discussing with the City of Azusa), limited public access through the Azusa Rock Quarry along Fish Creek. For safety and liability reasons, Vulcan will limit access to daylight hours and non-operational hours of the quarry, probably on weekends and holidays. These discussions are ongoing; an agreement has not been reached as of this writing. After mining is complete at the Azusa Rock Quarry site, and with Vulcan's permission, it may be possible to daylight and restore the stream and provide fuller public access through the quarry site.	Azusa, USFS	●	●	○				●	○		○	○		○	
R3.13	AZUSA	TODD AVENUE BIKE TRAIL CONNECTION	This project will connect an existing City of Azusa bike path at the south end of the spreading grounds with the San Gabriel River Bike Trail. The project will provide the local community with a much needed access point to the River Trail.	Azusa		●	○							●				
R3.14	AZUSA	AZUSA BIKE TRAIL NETWORK	This will develop a system of street-side bicycle paths to help bicyclists enter Azusa Canyon from Sierra Madre Avenue or Azusa Canyon Road and connect to the San Gabriel River Bike Trail.	Azusa		●	○			●				●	○			
R3.15	DUARTE, AZUSA	PACIFIC ELECTRIC RAILS-TO-TRAILS PROJECT	A proposed multi-city project will create an east-west bike trail on an abandoned rail line running parallel to Foothill Boulevard between Monrovia in the west and Claremont in the east. The proposed bike trail design will need to take into account a potential light rail line which is being considered for this route. This trail may integrate with the Duarte Bike Trail, crossing the San Gabriel River at the Puente-Largo Bridge.	To be determined		●	○							●	○			
R3.16	AZUSA	AZUSA-LARGO QUARRY	This quarry operation, located north of Foothill Boulevard, houses the current aggregate production facility of Vulcan, as well as shop facilities and asphalt plant production facilities. The plant at the Azusa-Largo Quarry produces material from the area in which it exists, as well as material that is transported via a conveyor system from Azusa Rock Quarry. The operation will supply aggregate, construction grade materials as well as asphalt materials for over 40 years. The eventual land use post-mining will be determined later in negotiations between the City of Irwindale and Vulcan.	Azusa, Vulcan Materials Co.	●	●	●	●	●	●	○	○	○	○			●	
R3.17	AZUSA	RELIANCE #2 QUARRY	This is an existing landfill operated by Vulcan at a site located south of Foothill Boulevard bordered by the Foothill Freeway (I-210), and bordered on the east by Irwindale Avenue. This operation is currently being used for silt deposition from the existing Reliance Plant and operates as a landfill facility that can ultimately be filled and used for some commercial activity. It is subject to negotiation between the City of Irwindale and Vulcan to determine potential land use and other issues. The time to complete the landfill is not known at this time.	Azusa, Vulcan Materials Co.	●	●	●	●	●	●	○	○	○	○			●	
R3.18	DUARTE	WRIGHT-ROMVARY PROPERTIES	The City of Duarte plans to acquire a total of 365 acres of land for open space protection, trails and habitat restoration. The property is adjacent to Van Tassel Creek, a tributary of the San Gabriel River. This project is dependent on funding availability.	Duarte	●	○	●				○	●		○				
R3.19	DUARTE	DUARTE BIKE TRAIL EXTENSION	This project will extend and improve an existing 1.5-mile multi-use trail for an additional mile from Royal Oaks Park in the City of Duarte across the historic Puente Largo Rail Bridge to San Gabriel River Bike Trail in Azusa. Improvements will create a safer connection and will include signage, paint lines, lighting, and pavement resurfacing.	Duarte		●	○			●				●	○			
R3.20	DUARTE, AZUSA	ROUTE 66/FOOTHILL BOULEVARD GATEWAY	This future City of Duarte gateway project, in partnership with the City of Azusa, is located on the historic Route 66 Highway.	Duarte, Azusa		●	○			●					●			
R3.21	IRWINDALE, LA COUNTY	SANTA FE DAM RECREATION AREA & HABITAT ENHANCEMENTS	The County of Los Angeles Department of Parks and Recreation (LADPR) plans improvements to habitat areas and trails, including the protection and restoration of remnant alluvial fan sage scrub plant communities by replanting native plants and removing exotics. Other improvements include improving access to the Park's bicycle path by establishing safe crossings and directional signage.	LADPR	●	●	●	●	●		○	●		○				

● = Definite Opportunity ○ = Potential Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 3 (continued)

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R3.22	IRWINDALE	SANTA FE DAM NATURE CENTER	A recently re-opened nature center operated by the SGMRC in partnership with the County of Los Angeles, provides interpretive trails, habitat restoration, a native plant demonstration garden, outdoor amenities improvements and possible camping, as well as community education and outreach programs. Project sponsors are seeking outreach partners for docent and interpretive programs.	LADPR, SGMRC	●	●	○	○	○	●	○	○		○		●		
R3.23	IRWINDALE	UNITED ROCK PRODUCTS QUARRY #4	This is currently the processing plant for United Rock Products. Material mined in Quarry #2 and Quarry #3 are processed on the site. Additionally, this site has two asphalt plants, two ready mix concrete plants, and equipment shops. United Rock Products and the City of Irwindale are negotiating the mining and reclamation options for this site.	Irwindale, United Rock Products	●	●	●	●	●	●	○	○	○	○			●	
R3.24	IRWINDALE	BUENA VISTA WETLANDS	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. The line has been in operation since 1983 and is scheduled to be in use until circa 2035. The design and implementation of the wetlands will need to ensure the continued safe operation of this conveyor.	LADPW	●	○	●	○	●		○	○	●	○		○	○	
R3.25	IRWINDALE	UNITED ROCK PRODUCTS QUARRY #3	This is an active quarry that will be in operation until 2035. United Rock Products and the City of Irwindale are in negotiations for the reclamation of this site, which is scheduled to be completed in 2061.	Irwindale, United Rock Products	●	●	●	●	●	●	○	○	○	○			●	
R3.26	IRWINDALE	HABITAT PASSAGE AROUND SANTA FE DAM	This project will provide a habitat linkage at this "pinchpoint" to complete the Puente Hills to San Gabriel Mountains habitat corridor. The U.S. Army Corps of Engineers (ACE) owns key parcels in this area. ACE is willing to partner with other agencies and private groups to identify opportunities for creating this linkage.	To be determined	●	●	●	○		○	●	○					○	
R3.27	IRWINDALE	KARE YOUTH LEAGUE SPORTS PARK	This under-used open space area is at the base of the Santa Fe Dam, north of Arrow Highway. It is owned by COE. Kare Youth League is a potential lessee, that would build a soccer field with some amenities on existing disturbed paved areas. There is an existing habitat on the property that could be restored as part of the habitat corridor. There will be a trail linkage to the San Gabriel River Bike Trail.	COE, Kare Youth League	●	●	●	○			○	●		○			○	
R3.28	IRWINDALE	SAN GABRIEL RIVER BEAUTIFICATION & ENVIRONMENTAL ENHANCEMENT	An environmental beautification opportunity for the City of Irwindale in partnership with the Hollywood Beautification Team, this 1.4-mile enhancement of the existing bike trail would including a bike staging area and other improvements designed to provide a better interface between the Santa Fe Dam and the San Gabriel River Bike Trail south of Arrow Highway. The project includes landscaping, drought-tolerant trees, irrigation, signage and other amenities.	HBT, Irwindale, Watershed Conservation Authority (WCA)	○	●	○		○				●	○				
R3.29	IRWINDALE	ARROW HIGHWAY TRAIL CONNECTION	Bike trail users need a safer passage across Arrow Highway. An assessment on best connection needs to be made. Alternatives include building a new bridge over Arrow Highway, or going underneath through an existing tunnel, which also needs drainage repairs.	ACE, LADPW, Irwindale	○	●	●	○			○	○		●	○			
R3.30	IRWINDALE	TRAFFIC FLOW IMPROVEMENTS AROUND SANTA FE DAM RECREATION AREA	The LADPW proposed this study of vehicular traffic circulation patterns to identify improvements that will enhance public safety and improve pedestrian and bicycle access near the Santa Fe Dam.	LADPW, Irwindale		●	○		○									●

● = Definite Opportunity ○ = Potential Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 4

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Plan Elements: Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Project Concepts: Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R4.01	IRWINDALE	UNITED ROCK PRODUCTS QUARRY #1	United Rock Products Quarry #1 is currently being reclaimed, according to agreements with the City of Irwindale. The property will be returned to a condition suitable for development. The anticipated completion is 2020.	Irwindale, United Rock Products	●	●	●	●	●	●	○	○	○	○			●	
R4.02	IRWINDALE	UNITED ROCK PRODUCTS QUARRY #2	United Rock Products Quarry #2 is currently being mined. United Rock and the City of Irwindale are negotiating the details of the mining and reclamation options. Mining operations are expected to cease by 2061.	Irwindale, United Rock Products	●	●	●	●	●	●	○	○	○	○			●	
R4.03	IRWINDALE	BUBALO QUARRY	A reclamation plan for this quarry is in progress.	Hanson Aggregate West	●	●	●	●	●	●	○	○	○	○			●	
R4.04	IRWINDALE	QUARRY RECLAMATION/WATER STORAGE/RECREATIONAL FACILITIES DEVELOPMENT STUDY	The Upper San Gabriel Valley Municipal Water District, Sierra Club, and the State of California Rivers and Mountains Conservancy (RMC) initiated a study to identify potential reuse of gravel quarries for multiple purposes after mining is completed, including stormwater capture and cleanup, recharge of storm and imported water, flood reduction, recreation and habitat restoration, as well as aesthetic improvements. The study will require several years to conduct and any implementation of this study under the San Gabriel Master Plan will require future environmental review beyond the scope of this Master Plan and EIR. The study will also reduire substantive conversations with mine operators and other stakeholders such as the City of Irwindale. A separate forum has been proposed to provide study participants with essential mining community input.	Upper San Gabriel MWD (USGMWD), Rivers & Mountains Conservancy (RMC), Sierra Club	●	●	●	●	●	●	○	○	○	○		○	○	●
R4.05	IRWINDALE	HANSON QUARRY	The City of Irwindale is interested in multiple possible uses for the 400 acre Hanson Quarry site, which offers a significant economic development opportunity. A long-term quarry reclamation plan is being developed to be implemented once mining operations have ceased, including new business and industrial uses, shopping, parks and open space, and possibly groundwater recharge and cleanup.	Irwindale, Hanson Aggregate West	●	●	●	●	●	●	○	○	○	○		○	●	
R4.06	ARCADIA	RODEFER QUARRY	This privately-owned quarry is an inholding of the City of Arcadia and is currently being filled with inert materials such as dirt and concrete. It is now zoned for industrial land use. Future reclamation plans could include park and open space, and other uses.	To be determined	○	●	●	○	●	●	○	○	○	○		○	●	
R4.07	IRWINDALE	DURBIN QUARRY	The City of Irwindale is interested in multiple uses for the Durbin Quarry site, which offers a significant economic development opportunity. It is developing a long-term quarry reclamation plan for reclamation after mining is complete, including new business and industrial uses, shopping, parks and open space, and possibly groundwater recharge and cleanup. However, the Durbin Quarry, owned and operated by Vulcan, will be an ongoing mining operation for the next 30 to 40 years. The City of Irwindale is keenly interested in its potential for economic development and is now negotiating with Vulcan about final reclamation and landform. Development would occur significantly after mining operations cease because of extensive fill requirements.	Irwindale, Vulcan Materials Co.	○	●	●	○	●	●	○	○	○	○		○	●	
R4.08	EL MONTE, BALDWIN PARK	RAMONA BOULEVARD GATEWAY	The Ramona Boulevard gateway project will provide a key entry point to the San Gabriel River Bike Trail and the City of El Monte.	El Monte, Baldwin Park		●	○			●				○	●			
R4.09	BALDWIN PARK	CALTRANS RIGHT-OF-WAY OPEN SPACE & TRAIL	This Baldwin Park project will upgrade an existing 2-acre right-of-way with landscaping and trails to connect Barnes Park, the San Gabriel River Bike Trail, and neighborhood schools.	Baldwin Park, Caltrans		●	○				○	○	○	●				
R4.10	BALDWIN PARK	BARNES PARK	Baldwin Park plans to improve the existing Barnes Park with habitat enhancements and an interpretive programs center.	Baldwin Park		●	○					●						
R4.11	BALDWIN PARK	WALNUT CREEK NATURE PARK AND NATURE CENTER	Baldwin Park will improve the Walnut Creek Park with a 3,300 square foot community center, walking trails, spray pool, playgrounds, new turf, fencing and irrigation.	Baldwin Park	●	●	○	●	○		○	●		○		○		
R4.12	EL MONTE	DURFEE SCHOOL RECREATION AREA	The City of El Monte wants to develop active recreation and landscaping along the San Gabriel River and provide access to the San Gabriel River Bike Trail.	El Monte	○	●	○		○			○		●				

● = Definite Opportunity ○ = Potential Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 4 (continued)

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R4.13	EL MONTE	VALLEY BOULEVARD GATEWAY	This City of El Monte project will improve connections from Mountain View High School and surrounding neighborhoods to the San Gabriel River Bike Trail. The project includes entry signage.	El Monte		●	○			●				○	●			
R4.14	EL MONTE	INFLATABLE RUBBER DAMS	LADPW is building two new inflatable rubber dams over existing drop structures in the river. The dams provide temporary water storage and also create rich and attractive natural habitat.	LADPW	●	○		●	●		○		●				·	
R4.15	CITY OF INDUSTRY, UNINCORP. LA COUNTY	WOODLAND "DUCK" FARM	The 57-acre Duck Farm Project grants a unique opportunity to provide a much needed open space and recreation area in a densely urbanized portion of the San Gabriel Valley. The property is located along the east side of the San Gabriel River just north of the confluence of the San Gabriel River and San Jose Creek. The portion of the property on the west side of the 605 Freeway had been operated as a Duck Farm. In addition to offering increased area for passive recreation such as bike and pedestrian trails, bird watching and rest areas, the project has the potential to incorporate design elements such as groundwater recharge, water quality improvements, flood management, interpretive educational signage, exhibits, displays, as well as the reintroduction of native habitat. The WCA's goal is to create a project that will be a model for sustainable, multi-benefit watershed projects that address the open space recreation and watershed needs of the San Gabriel Valley. By connecting the surrounding communities to the San Gabriel River, the Duck Farm project will establish a local connection to Whittier Narrows Recreation facilities; regional connectivity to the San Gabriel River Trail system and the Emerald Necklace network of recreation facilities.	Watershed Conservation Authority	●	●	●	○	●	●	○	○	○	○	○	○	●	
R4.16	UNINCORP. LA COUNTY	SAN GABRIEL RIVER BIKE TRAIL BRIDGE	LADPW is studying possibilities for a multi-use bridge to connect El Monte, South El Monte, and unincorporated LA County communities with the San Gabriel River Trail, the San Jose Creek Trail and the Duck Farm.	LADPW, MTA		●								○	●			
R4.17	UNINCORP. LA COUNTY	SAN JOSE CREEK BIKE TRAIL BRIDGE	This multi-use bridge would be part of a project to expand the San Jose Creek Bike Trail system. The bridge would connect bicyclists and pedestrians from the south bank of San Jose Creek with the north bank and the San Gabriel River Bike Trail.	LADPW, MTA	○	●	○	●	●					○	●			
R4.18	UNINCORP. LA CO., CITY OF INDUSTRY, POMONA, CLAREMONT	SAN JOSE CREEK BIKE TRAIL PHASE II	LADPW is studying potential expansion of the existing San Jose Creek Bike Trail, beginning along the southern bank of the creek from the San Gabriel River traveling east to Cal Poly Pomona and to Claremont along Thompson's Creek (a San Jose Creek tributary).	LADPW, MTA, Pomona, Claremont		●	○					○		●	○			
R4.19	UNINCORP. LA COUNTY, CITY OF INDUSTRY	SAN JOSE CREEK HABITAT & TRAILS RESTORATION	North East Trees, with funding from Los Angeles County Open Space District, is restoring native plants along the northern slopes of San Jose Creek. The project area includes a 1.5-mile stretch of creek and trails, starting at the San Gabriel River past Workman Mill Road Bridge. The project includes landscaping to enhance the equestrian trail on the north and south bank and removal of exotic arundo in the creek.	North East Trees, Sierra Club, LA Co. Regional Parks & Open Space District (LAOSD)	●	●	○	○	○		●	○	○	○				
R4.20	SOUTH EL MONTE, UNINCORP. LA COUNTY	THIENES GATEWAY	This gateway is an equestrian staging area and local access point to the equestrian trails along the west bank of the river. Improvements by the Hollywood Beautification Team and Friends of the San Gabriel River, with funding from the Los Angeles County Open Space District, include an artful gate by a local artist, horse tie posts, drinking water, signage, seating and native landscaping including trees.	South El Monte, HBT, Friends of the San Gabriel River (FSGR) LACSD	○	●	○		○			○		○	●			
R4.21	UNINCORP. LA COUNTY	PELLISSIER POCKET PARK	A pocket park was proposed for this location near the San Jose Creek. It has subsequently been determined to no longer be a viable project.	HBT, FSGR, RMC														
R4.22	UNINCORP. LA COUNTY	HORSEMAN'S PARK	This project includes landscaping and a gateway to improve connections between surrounding neighborhoods and Horseman's Park.	HBT, FSGR, RMC	○	●	○		○	○		●			○			

● = Definite Opportunity ○ = Potential Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 4 (continued)

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R4.23	UNINCORP. LA COUNTY	PUENTE HILLS WESTERN WILDLIFE CORRIDOR	This project will create a habitat movement corridor between the Puente-Chino Hills and Whittier Narrows, either near Rose Hills Cemetery along Sycamore Canyon, or down the north slope towards San Jose Creek. A connection facilitating northbound and southbound movement to and from the San Gabriel Mountains may eventually become possible. A study by a biological research institute will be required before terrestrials can be re-introduced to the river area.	Puente Hills Landfill Native Habitat Preservation Authority (HPA); City of Whittier	●	○	○				●	○		○			○	
R4.24	UNINCORP. LA COUNTY, PICO RIVERA	EQUESTRIAN FACILITIES ENHANCEMENT	Potential upgrades and water quality runoff mitigation measures will be considered for these existing equestrian facilities. Planned improvement will mitigate any potential wildlife habitat conflicts.	LADPR, Pico Rivera		●	○		○			●	○	○				
R4.25	UNINCORP. LA COUNTY	NATURE CENTER MULTI-USE TRAIL	A trail connection between the San Gabriel River Discovery Center at Whittier Narrows and the San Gabriel River Bike Trail will improve user access, safety and convenience. New signage to and from the River Discovery Center will enhance existing unmarked paths.	LADPR	●	●	○				○	○		●	○	○		
R4.26	UNINCORP. LA COUNTY	SAN GABRIEL RIVER DISCOVERY CENTER AT WHITTIER NARROWS REGIONAL PARK	LADPR, RMC, and the Upper San Gabriel Valley Municipal Water District are jointly developing a new regional indoor/outdoor museum and conference center on the 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. A joint powers authority is being set up to build and operate the Discovery Center.	USGMWD, Sierra Club, LADPR	●	●	●	○	●	●	○	○	○	○		●		
R4.27	UNINCORP. LA COUNTY	WHITTIER NARROWS NATURE CENTER ECOSYSTEM RESTORATION	This project, supported by LADPR, has been in development for six years, based on a U.S. Army Corps of Engineers project options study. Because the project is located at the northern most boundary of the Montebello Forebay, this area is subject to rising waters, and therefore is not a good site for groundwater recharge. The selected option is to build a .25-acre pond, line two lakes to reduce water loss from percolation, remove invasive plants, and restore native vegetation. The lakes could be interconnected to Lario Creek (see R4.28) and water in the lakes could flow through the system and down to the Rio Hondo Spreading Grounds. The volume of water required to maintain the lakes is minimal compared with the tens of thousands of acre feet that flow through the system annually.	LADPR, COE	●	●	●	●	●		●	○	○	○		○		
R4.28	UNINCORP. LA COUNTY	LARIO CREEK/ZONE 1 DITCH	This project is an opportunity to build upon and enhance an already planned LADPW project to expand the flow capacity of an existing canal. North East Trees proposes to temporarily divert high water flows to protect and extend wetlands. This will restore valuable habitat to support wildlife and increase the aesthetic and educational value of the area, which is adjacent to the San Gabriel River Discovery Center.	North East Trees, Ca. Dept. of Water Resources (DWR), LADPW	●	○	○	●	●		○	○	●	○				
R4.29	UNINCORP. LA COUNTY	WHITTIER NARROWS WILDLIFE LAKES	LADPR believes it is important to preserve these two large lakes as wetlands. The lakes, located at the Nature Center, could be lined to reduce water consumption.	LADPR; Water Replenishment District (WRD)	●	○	○	●			●	○	○	○				
R4.30	UNINCORP. LA COUNTY	WHITTIER NARROWS LEGG LAKE IMPROVEMENTS	These three recreational lakes should be upgraded to improve ADA accessibility and reduce erosion.	LADPR; WRD	●	○	○	●			○	●	○	○				
R4.31	UNINCORP. LA COUNTY	WHITTIER NARROWS DAM WATER CONSERVATION POOL	The COE completed a feasibility study to expand the current water conservation pool behind the Whittier Narrow Dam from 2,500-acre feet at elevation 201.6 feet up to as high as elevation 209 feet. The pool, to be built by the Water Replenishment District (WRD), will increase groundwater percolation for increased water supply; it is expected to save the WRD $1 million annually. The COE regional headquarters in San Francisco is currently reviewing the study. The project will 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 should be explored.	WRD; LADPR	●	●	○	●	●		○	○	●	○				

● = Definite Opportunity ○ = Potential Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 5

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Plan Elements: Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Project Concepts: Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R5.01	PICO RIVERA	PICO RIVERA GOLF COURSE	This proposed golf course would replace an old campground south of the Pico Rivera Sports Arena. An environmentally-friendly "green" golf course design will be needed to address water quality issues. The design suggests at least three holes in the riverbed.	Pico Rivera; Congressmember Esteban Torres	●	●	●	○	●	●	○	●	○					
R5.02	PICO RIVERA	PEGASUS RANCH PARK	A river adjacent park was proposed for this site at a former equestrian facility. It has subsequently been determined to no longer be a viable project.	RMC														
R5.03	PICO RIVERA	BEVERLY BOULEVARD GATEWAY	This gateway provides a key entry point from the City of Pico Rivera to the river and the San Gabriel River Bike Trail.	Pico Rivera		●	○			●				○	●			
R5.04	UNINCORP. LA COUNTY	AMIGO PARK IMPROVEMENTS	LADPR would like to revitalize Amigo Park, adjacent to the east bank of the river. Providing access from the park to the river may provide more opportunities for the community to exercise safely. Planting native trees would improve the area's appearance and contribute to wildlife habitat. Landscaping, directional signage and more amenities will also enhance safety, security and enjoyment of the park.	LADPR, Pico Rivera	○	●	●		○			●		○	○			
R5.05	WHITTIER	WHITTIER GREENWAY TRAIL & CONNECTION	The City of Whittier recently built a 5-mile bike trail along an abandoned railroad right-of-way, which added 38 acres of linear open space to the City. Another extension is needed to connect it to the San Gabriel River Bike Trail. Whittier is studying four possible routes, including one to Pio Pico State Historic Park. When fully completed, the bike trail will extend from the river to the City of Brea in Orange County. This trail is part of the MTA Regional Bike Plan.	Whittier		●	●			●	○	○		○	○		●	
R5.06	WHITTIER	PIO PICO STATE HISTORIC PARK	Pio Pico was the last Governor of Mexican California. His historic Pio Pico Mansion was recently renovated and re-opened in September 2003. A new watershed enhancement project at this site will include a watershed interpretive exhibit and native, drought-tolerant landscaping. The project will open a pedestrian and bicycle access way under the existing rail line, between the park and the east side of the river. At present, the levy/rail line completely blocks the view of the river. A viewing platform may be constructed over the river, allowing people to take in the view without standing in the bike path.	Friends of Pio Pico State Historic Park Improvements	●	●	●		○		○	○		○		●		
R5.07	WHITTIER, PICO RIVERA, UNINCORP. LA COUNTY	WHITTIER BOULEVARD GATEWAY	A new gateway for the Cities of Whittier and Pico Rivera at the San Gabriel River would be designed to help enhance the image of the western portions of the two cities. The current "Gateway District" for Whittier is 2 miles east of the river. Possible partners include the California State Department of Parks and Recreation, LA County, and Caltrans.	Pio Pico SHD, City of Whittier		●	○							○	●			
R5.08	PICO RIVERA	PASEO DEL RIO AT SAN GABRIEL COASTAL SPREADING GROUNDS	This multi-objective 128-acre LADPW project will provide a bike trail, new native and drought-tolerant landscaping, shade structures and other park-like amenities to beautify open space surrounding the existing spreading grounds. The occasional presence of surface water creates the appearance of a lake to be enjoyed by nearby residents and other visitors. The project entails limited public access, with passive recreational and educational opportunities.	LADPW, Pico Rivera	●	●	●	○	●		○	●	○	○				
R5.09	PICO RIVERA	PASEO DEL RIO AT RIO HONDO SPREADING GROUNDS	This multi-objective 570-acre LADPW project will provide a bike trail, new native and drought-tolerant landscaping, shade structures and other park-like amenities to beautify open space surrounding the existing spreading grounds. The occasional presence of surface water creates the appearance of a lake to be enjoyed by nearby residents and other visitors. The project entails limited public access, with passive recreational and educational opportunities.	LADPW, Pico Rivera	●	●	●	○	●		○	●	○	○				
R5.10	PICO RIVERA	MINES AVENUE BIKE TRAIL CONNECTION	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. This will be a conversion from a Class 2 bike trail to a Class 1, separating the trail from automobile traffic for increased safety.	Pico Rivera		●	○							●	○			

● = Definite Opportunity ○ = Potential Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 5 (continued)

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R5.11	PICO RIVERA	WASHINGTON BOULEVARD GATEWAY	This project will provide a key entry point to the river and the San Gabriel River Bike Trail from the City of Pico Rivera.	Pico Rivera		●	○			●				○	●			
R5.12	PICO RIVERA	SLAUSON AVENUE GATEWAY	The Slauson Avenue Gateway will serve as a key entry point to the San Gabriel River Bike Trail from the City of Pico Rivera.	Pico Rivera		●	○			●				○	●			
R5.13	PICO RIVERA, SANTA FE SPRINGS	TELEGRAPH AVENUE GATEWAY	This gateway will improve access to the Santa Fe Springs Park Expansion project from the Cities of Pico Rivera and Santa Fe Springs (see project R5.14).	Pico Rivera, Santa Fe Springs		●	○			●				○	●			
R5.14	SANTA FE SPRINGS	SANTA FE SPRINGS PARK EXPANSION	The existing 14-acre park across Telegraph Road will be expanded, with the south side for active recreational users and the north for passive recreation and habitat. The expanded north half is a proposed 13-acre Nature Sanctuary. The project will connect the San Gabriel River Bike Trail with a pedestrian-oriented zone on Telegraph Avenue, and include gateway entry features, native vegetation and potential storm water management practices.	Santa Fe Springs	○	●	●		○			●		○	○			
R5.15	DOWNEY	FLORENCE AVENUE GATEWAY	In conjunction with Wilderness Park, this project will connect the San Gabriel River Bike Trail and the City of Downey.	Downey						●				○	●			
R5.16	DOWNEY	WILDERNESS PARK RECLAIMED WATER & OPEN SPACE PARK	This 26-acre park in the City of Downey offers varied recreational activities for residents throughout Southeast LA County. The park has a large lake of reclaimed water, which is often used for fishing derbies. A reclaimed water project will connect the lake to the park's irrigation system, reducing the need for chemical treatment of lake water and providing a migrating rest area for birds. Another project will develop six acres of land for passive recreation, using native plants. The City of Downey holds a long-term lease from Southern California Edison (SCE), which currently owns the land.	Downey	●	●	●		●		○	●	○	○				
R5.17	DOWNEY	RIO SAN GABRIEL PARK INTEPRETIVE TRAIL	This existing 16-acre park adjacent to the river combines high- and low-impact recreational activities with one building for meetings and special indoor activities. The City of Downey plans to develop a native plant interpretative trail around the perimeter of the park, beginning at the river's edge. The project will include a trail made of decomposed granite, benches, trash receptacles, signage, restrooms and a picnic shelter.	Downey	●	●	●		○	●	○	○		●				
R5.18	DOWNEY	FIRESTONE BOULEVARD GATEWAY	The Firestone Boulevard Gateway will provide a key entry point to the river and the San Gabriel River Bike Trail from the Cities of Downey and Norwalk.	Downey, Norwalk		●	○			●				○	●			

● = Definite Opportunity ○ = Potential Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 6

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R6.01	DOWNEY	DOWNEY LANDING	The City of Downey plans to develop a new, combination low-impact/high impact recreation area with ballfields and a walking trail at what was once a parking lot for the former NASA site (home to the Apollo and Space Shuttle Orbiter programs). An interpretive trail along the perimeter of the 11.5-acre park will include natural vegetation and a biofiltration swale system to capture and clean 130 acres of urban storm water runoff and provide flood protection. The project includes trailhead and trailside facilities, restrooms, a shade structure for educational purposes, benches, trashcans, drinking fountains and bike racks. The trail will be enhanced with trees providing a canopy of shade, the creek-like swale system and natural vegetation. Interpretive signage will provide information on the process being used to clean the storm water. Adjacent to the park site will be the 20,000 square foot Columbia Memorial Space Learning Center.	Downey	○	●	●	●	●	●	○		○	○		○	●	
R6.02	DOWNEY, BELLFLOWER NORWALK	FOSTER ROAD GATEWAY	The Foster Road Gateway will serve as a key entry point and pedestrian bridge to the San Gabriel River Bike Trail for the Cities of Downey, Bellflower and Norwalk.	Downey, Bellflower, Norwalk		●	○			●		○		○	●			
R6.03	BELLFLOWER	H. BYRUN ZINN PARK IMPROVEMENTS	The City of Bellflower plans open space enhancements including a pedestrian path, trees and benches to an existing four-acre park where Foster Road comes to a dead end at the river. Landscape improvements will maintain the current passive, low-impact recreational use. The project will be integrated with the Foster Road Gateway (R6.02). It is located in the Southern California Edison right-of-way.	Bellflower	○	●	●		○		○	●	○	○				
R6.04	BELLFLOWER NORWALK	ROSECRANS AVENUE GATEWAY	This project will provide a key entry point to the San Gabriel River Bike Trail for the Cities of Bellflower and Norwalk.	Bellflower, Norwalk		●	○			●				○	●			
R6.05	NORWALK	EXCELSIOR DRIVE GATEWAY PARK	Excelsior Drive Gateway Park will serve as a potential entry point from Norwalk to the San Gabriel River Bike Trail.	Norwalk						●		●		○	○			
R6.06	BELLFLOWER	BELLFLOWER HIGH BIKE TRAIL CONNECTION	This bike trail connection from Bellflower High School east to the San Gabriel River Bike Trail at the MTA right-of-way will improve local community access to the river trail.	Bellflower		●	○			●		○		●				
R6.07	BELLFLOWER	RIVERVIEW PARK	Riverview Park will be a new 15-acre recreation area fronting the river. The project will provide a natural, riverfront environment serving the residents of Bellflower and many other communities up and down the river. Proposed improvements include a paved bikeway, landscaping, park benches and informational signage. A direct linkage to the San Gabriel River Bike Trail will be created, as well as linkage to the City of Bellflower West Branch Greenway. There will be an information kiosk for both the River Trail and the West Branch Bikeway (see R6.11). The State of California Resources Agency awarded the City of Bellflower a grant of $2.97 million for Riverview Park, which will be funded by Proposition 12 park bond funds. The funds will be used for land acquisition, trails, botanical gardens with native plants and passive recreation. In addition, the RMC recently awarded the City of Bellflower $100,000 in Proposition 40 planning grants to fund planning activities for the property.	Bellflower	○	●	●	○			●		○		○			
R6.08	BELLFLOWER NORWALK	ALONDRA BOULEVARD GATEWAY	The Alondra Boulevard Gateway will provide a key entry point to the San Gabriel River Bike Trail for the Cities of Bellflower and Norwalk.	Bellflower, Norwalk		●	○			●				○	●			
R6.09	CERRITOS	CERRITOS COLLEGE BIKE LINK	A bike trail connection from Cerritos College along Alondra Boulevard west to the San Gabriel River Bike Trail will greatly improve local community access.	Cerritos, Norwalk		●	○							●				
R6.10	BELLFLOWER	NORTH CARUTHER'S CHANNEL IMPROVEMENTS	Improvements are needed to address the algae and mosquito problem caused by slow moving water at this tributary to the San Gabriel River. Solutions include creating a soft-bottom and naturalistic channel design to facilitate water flow.	Bellflower	○			●	●		○	○	●	○				
R6.11	BELLFLOWER	WEST BRANCH GREENWAY RAILS-TO-TRAILS PROJECT	This new 2.5 mile rails-to-trails project on an abandoned Pacific Electric right-of-way will provide an west-east connection from Lakewood Boulevard to the San Gabriel River Bike Trail. The project will result in a Class I bikeway and pedestrian trail.	Bellflower, Paramount, Artesia		●	●			●	○	○		○	○		●	
R6.12	BELLFLOWER	WEST BRANCH GREENWAY BIKE CONNECTION AREA	This site is proposed for a BMX park. Acquisition of an open space area between the abandoned Pacific Electric railway and the river will be needed to create a full connection between the West Branch Greenway and the river.	Bellflower		●	○					○		●	○			

● = Definite Opportunity ○ = Potential Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 6 (continued)

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R6.13	BELLFLOWER CERRITOS	ARTESIA BOULEVARD GATEWAY	The Artesia Boulevard Gateway will provide a key entry point to the San Gabriel River Bike Trail for the Cities of Bellflower and Cerritos.	Bellflower, Cerritos		●	○			●				○	●			
R6.14	LAKEWOOD CERRITOS	SOUTH STREET GATEWAY	This gateway could improve access to the San Gabriel River west side maintenance road and a future trail to West Gate Park. No plans have been started for this project. Design of such a project might depend on adopted recommended design guidelines that provide for some degree of consistency up and down the river.	Lakewood, Cerritos		●	○			●				○	●			
R6.15	CERRITOS	LIBERTY PARK IMPROVEMENT PROJECT	Improvements will be made to this existing park to provide accessibility for park users with disabilities and passive natural areas with sensory amenities. The project will upgrade an existing playground to universal access standards and provide additional playground space. Additional accessible parking will be provided along with an artificial surface track and walking trail. Amenities will also be provided for bikers and joggers on the San Gabriel River Bike Trail.	Cerritos	○	●	●		○			●		○				
R6.16	LAKEWOOD CERRITOS	DEL AMO BOULEVARD GATEWAY	The Del Amo Boulevard Gateway could provide a key entry point to the San Gabriel River Bike Trail for the Cities of Lakewood and Cerritos. No plans have been started for this project. Design of such a project might depend on adopted recommended design guidelines that provide for some degree of consistency up and down the river.	Lakewood, Cerritos		●	○			●				○	●			
R6.17	LAKEWOOD	MAE BOYER PARK RENOVATION	The project includes river parkway enhancements and trail access to an existing 6.8-acre park adjacent to the river. Renovations include picnic shelter replacement and amenity upgrades such as parking lots, restrooms and landscaping. Construction of the first phase of this project is nearing completion. The City of Lakewood has applied for a grant for the next phase of the project.	Lakewood	○	●	●		○			●		○				
R6.18	LAKEWOOD	WEST SAN GABRIEL RIVER OPEN SPACE AREA	This recently completed City of Lakewood project extends open space adjacent to the west side of the river from Carson Boulevard north to Monte Verde Park. This project provides improved bike path linkage on the west side of the river and the San Gabriel River Bike Trail on the east side, an automatic irrigation system, several species of California indigenous trees, meadow grasses and shrubs. Low growing plants are being used under the utility easements. This new park faces Rynerson Park on the east side of the river, creating landscaped parks on both sides of the river. The City of Lakewood has recently submitted a grant for Phase 2 of the project. This second phase will be an extension of the first phase from Monte Verde Park to Del Amo Boulevard.	Lakewood	○	●	●		○		○	●		○				
R6.19	LONG BEACH LAKEWOOD	CARSON AVENUE GATEWAY	The Carson Avenue Gateway will provide a key entry point to the San Gabriel River Bike Trail for the Cities of Lakewood and Long Beach. Better signage is needed for the Lakewood Equestrian Center at Rynerson Park. The intersection may require a traffic signal or an undercrossing of the service road to provide a connection from the West San Gabriel River Open Space Area to the Heartwell Golf Course and Park, which lies farther west along Carson Street. No plans have been started for this project. Design of such a project might depend on adopted recommended design guidelines that provide for some degree of consistency up and down the river, Lakewood and Long Beach may need to coordinate with each other on this project.	Lakewood, Long Beach		●	○			●				○	●			
R6.20	LONG BEACH	EAST-WEST PEDESTRIAN BRIDGE ENHANCEMENT	Enhancements to an existing bridge will provide a connection between the San Gabriel River Bike Trail on the east side of the river and the maintenance road used by bicyclists on the west side.	Long Beach		●	○							○	●			
R6.21	LONG BEACH	EL DORADO REGIONAL PARK WETLANDS	This park borders the river for about two miles, but flood control levees (berms) along the river sever the connection between activities in the park and the river. The City of Long Beach proposed this project to reconnect El Dorado Park with the river. It will create treatment wetlands in the northern section of El Dorado Park and treat San Gabriel River water, stormwater runoff, and/or reclaimed water to replace the potable water supply to the lakes and streams within the regional park.	Long Beach	●	●	●	●	●		○	○	●	○		○		
R6.22	LONG BEACH	EL DORADO NATURE CENTER MASTER PLAN	A recent Master Plan updates the existing Nature Center and surrounding landscape. Improvements will transition the landscape to more low-water and native plants. The ponds and aeration will be improved and the area south of Willow Street will be developed to expand park and open space. That area may also include treatment wetlands.	Long Beach	●	●	○		○		○	●	○	○		○		
R6.23	LONG BEACH	SAN GABRIEL RIVER WALK PHASE 1 & 2	The City of Long Beach proposed developing a 1.5-mile pedestrian and bicycle trail through a restored native landscape along the western bank of the river in the City of Los Angeles Department of Water & Power right-of-way. Phase 1 can be built now. The project will begin at Spring Street to the north at the El Dorado Park Golf Course, and run south to Atherton Drive just above the San Diego Freeway. Atherton Drive will provide regional access to California State University Long Beach and El Dorado Regional Park. A bridge will connect the regional trails on the east bank of the river and along Coyote Creek with the Long Beach trail system. Phase 2, another 1.5-mile stretch of new trail and open space, will begin at Spring Street and travel north along the right of way to Carson Avenue. This will connect the West San Gabriel River Open Space Area (see R6.18) in Lakewood above Carson Avenue.	Long Beach	●	●	●		○		○	○		●	○			

● = Definite Opportunity ○ = Potential Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 7

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R7.01	COYOTE CREEK WATERSHED	COYOTE & CARBON CREEKS WATERSHED MANAGEMENT PLAN	This is a two-phased project. The Phase I Management Plan headed by the County of Orange will identify and prioritize potential projects for implementation through stakeholder input and spatial analysis using Geographic Information System (GIS) mapping. The Phase II Coyote Creek-Lower San Gabriel River Watershed Feasibility Study is in its early stages pending increased funding for the U.S. Army Corps of Engineers.	County of Orange	●	●	●	●	●	○	○	○	○	○	○	○	○	●
R7.02	LOS ALAMITOS CERRITOS	COYOTE CREEK REGIONAL BIKEWAY IMPROVEMENTS	The County of Orange is currently partnering with a local non-profit organization, Trails4All, to request funding from the San Gabriel and lower Los Angeles River & Mountains Conservancy to develop this bikeway improvements project. This project will involve a Working Group of all landowners along Coyote Creek, including several cities, the Counties of Los Angeles and Orange, and other key stakeholders to develop a regional bikeway signage program and to develop a long-term Trails Needs Assessment and Master Plan.	Cerritos, Los Alamitos	○	●	○	○	○					●	○			
R7.03	LOS ALAMITOS	COYOTE CREEK DEBRIS BOOM	The City of Seal Beach received a grant from the Coastal Conservancy to investigate upgrading a debris restraint system and physical net and boom, similar to that of a fishing net, to catch and hold debris. This project will help reduce the flow of debris into the Pacific Ocean. Design has been completed by the Los Angeles County Department of Public Works.	Seal Beach	●		○	○	●				●					
R7.04	LOS ALAMITOS	LOS ALAMITOS CHANNEL TREATMENT WETLAND	Orange County proposes urban stormwater treatment wetlands to treat Coyote Creek flows, as part of the COE Coyote Creek Watershed Plan study.	County of Orange	○		●		●		○	○	●	○				
R7.05	LONG BEACH	PROPOSED CONFLUENCE BRIDGE	A proposed bike and pedestrian bridge at the Coyote Creek Confluence will connect the San Gabriel River Bike Trail to the Coyote Creek Bike Trail.	Long Beach	○	●	●	○							●			
R7.06	LONG BEACH	SAN GABRIEL RIVER WALK PHASE 3	This project is a continuation of the San Gabriel River Walk (see R6.23). This stretch of trail will extend from Atherton Drive, along the side west side of the river, potentially down to the Long Beach Marina. It will involve Seal Beach for a small segment where College Estates s Park exists, just above the 22 Freeway.	Seal Beach	○	●	●		○					●				
R7.07	SEAL BEACH LONG BEACH	LOS CERRITOS WETLAND RESTORATION (BRYANT & BIXBY)	This project proposes acquiring about 266 acres of land currently used for oil operations. The Bixby property is 181 acres and the Bryant property approximately 85 acres. The sites, located near the end of the river just north of Alamitos Bay, are surrounded by urban development but still provide valuable habitat for birds and a salt marsh field.	Seal Beach, Long Beach	●	○	●	○	●		●	○	○	○				
R7.08	SEAL BEACH	COUNTY OF ORANGE FLOOD CONTROL BASIN	This project is a modification of the existing Los Alamitos basin and pump station to expand the flood capacity for runoff flowing from southwest Orange County. Flooding probems will be alleviated in the community of Rossmoor.	County of Orange	●	○	○	●	●		○	○	●	○			○	
R7.09	SEAL BEACH	TRAIL CONNECTION BETWEEN WETLANDS	This project will connect bike trails within the City of Seal Beach to provide a complete circuit around the community linking several parks and open space areas.	Seal Beach	○	●	○							●				
R7.10	SEAL BEACH	HELLMAN RANCH WETLANDS	Potential acquisition by the City of Seal Beach of 100-acre, deed restricted property and restoration of tidally influenced trail wetland and upland habitat areas, with trail connection to Gum Grove Park and San Gabriel River Bike Trail contemplated.	Seal Beach	●	○	●	○	●	○	●	○	○	○				
R7.11	SEAL BEACH	PACIFIC COAST HIGHWAY GATEWAY	This project will provide a key entry point to the San Gabriel River Bike Trail for the Cities of Seal Beach and Huntington Beach.	Seal Beach		●	○			●				○	●			
R7.12	SEAL BEACH	PACIFIC COAST HIGHWAY BIKE TRAIL EXTENSION	This proposed extension of the Pacific Coast Highway Bike Trail through Seal Beach will connect the San Gabriel River Bike Trail to a major north/south coastal route. The final design stage has been completed but the project has not yet been constructed.	Seal Beach		●	○							●				
R7.13	SEAL BEACH	SAN GABRIEL RIVER TRAIL ENHANCEMENT	This project by the City of Seal Beach will rehabilitate the existing San Gabriel River Bike Trail. The north section of the project includes Marina Drive to Pacific Coast Highway and the south section includes Marina Drive to First Street. It will introduce new signage, fencing, educational kiosks, new picnic and bicycle storage areas, and native landscaping and vegetation. The restoration will provide public awareness and education, as well as low-impact recreation.	Seal Beach	○	●	●		○			○		●				

● = Definite Opportunity ○ = Potential Opportunity

MASTER PLAN PROJECTS ACTION GRID

Reach 7 (continued)

ID NUMBER	LOCATION/ CITY	PROJECT NAME	PROJECT DESCRIPTION	PROJECT LEAD(S)	Habitat	Recreation	Open Space	Flood Protection	Water Quality & Supply	Land Use/Econ. Dev't.	Habitat Enhancement	Parks & Open Space	Water Quality & Supply	Trail Enhancement	Bridges & Gateways	Education Center	Land Reclamation	Studies
R7.14	LONG BEACH SEAL BEACH	MARINA DRIVE GATEWAY	This project included the construction of a regional trail and landscaping along Marina Drive from 1st Street to 5th Street and provided a key entry point to the San Gabriel River Bike Trail for the Cities of Seal Beach and Long Beach. There was also a street pavement reduction from four lanes to two lanes. This project has already been completed.	Long Beach, Seal Beach			●	○		●					○	●		
R7.15	SEAL BEACH	MARINA DRIVE URBAN RUNOFF DIVERSION	The City of Seal Beach is seeking to enhance the capacity of the West End Pump Station to provide protection equivalent to the 25-year storm flow and will also construct a low flow diversion to the sewer system. This project will improve water quality to both the San Gabriel River and to Seal Beach. This project is currently 50% through its design stage and the City is seeking to obtain permits from the Orange County Sanitation District (OCSD).	Seal Beach		●			●	●				●				
R7.16	SEAL BEACH	LOS ANGELES DEPARTMENT OF WATER AND POWER OPEN SPACE	This project concerns the future dedication of land for a passive open space area at the mouth of the San Gabriel River The amount of land dedication is to be negotiated between the City of Seal Beach and property owner during project entitlement consideration. It will have direct connections to four other projects – R7.11, R7.13, R7.14 and R7.17.	Seal Beach		○	●	●	○	○	○	○	●	○	○			
R7.17	SEAL BEACH	RIVER'S END GATEWAY	The City of Seal Beach received grants from the Rivers and Mountains Conservancy (RMC) to study open space opportunities throughout the City and to prepare concept plans for a staging area for the San Gabriel River Bike Trail at its terminus in Seal Beach. Enhancements at the staging area, which are part of overall improvements to the San Gabriel River Bikeway (projects R7.06, and R7.17), include landscaping, decorative gates, water fountains, and benches. The project is 50% through its design phase.	Seal Beach		○	●	○		●		●			○	●		

● = Definite Opportunity ○ = Potential Opportunity

appendix B Native Plants in the River Corridor

Planting species from the following list can enhance the overall quantity and quality of native habitat for the San Gabriel River region. While not exhaustive, the list provides an overview of the native plant species appropriate to each of the seven reaches in the San Gabriel River corridor. These plants are not considered rare, threatened or endangered (although in some cases, their associated plant community may be "special status habitat") and planting individual plant species does not necessarily constitute creating a specific habitat type.

Reach One

- *Acer macrophyllum* (big-leaf maple)
- *Alnus rhombifolia* (white alder)
- *Amorpha fruticosa* (false indigo)
- *Artemisia californica* (California sagebrush)
- *Artemisia douglasiana* (mugwort)
- *Baccharis salicifolia* (mule fat)
- *Brickellia californica* (California bricklebush)
- *Ceanothus sp.* (California lilac)
- *Cercocarpus betuloides* var. *betuloides* (mountain mahogany)
- *Epilobium canum* ssp. *latifolium (Zauschneria californica) (*California fuschia)
- *Eriogonum fasciculatum* var. *foliolosum* (California buckwheat)
- *Eriophyllum confertiflorum* (golden yarrow)
- *Lasthenia californica* (California goldenfields)
- *Lessingia filaginifolia* var. *filaginifolia* (California aster)
- *Lotus scoparius* (deer weed)
- *Lupinus bicolor* (miniature lupine)
- *Melica imperfecta* (Coast Range melic)
- *Mimulus aurantiacus* (bush monkeyflower)
- *Muhlenbergia rigens* (deergrass)
- *Nassella cernua* (nodding needlegrass)
- *Nassella pulchra* (purple needlegrass)
- *Prunus ilicifolia* ssp. *ilicifolia* (hollyleaf cherry)
- *Quercus chrysolepsis* (canyon live oak)
- *Rhamnus californica* ssp. *californica* (California coffeeberry)
- *Ribes aureum* var. *gracillimum* (golden currant)
- *Rosa californica* (California rose)
- *Rubus ursinus* (California blackberry)
- *Salix exigua* (narrow-leaved willow)
- *Salix lasiolepis* (arroyo willow)
- *Salix laviegata* (red willow)
- *Solidago californica* (California goldenrod)
- *Symphoricarpos mollis* (creeping snowberry)
- *Umbellularia californica* (California bay laurel)

Reach Two

- *Alnus rhombifolia* (white alder)
- *Amorpha fruticosa* (false indigo)
- *Artemisia californica* (California sagebrush)
- *Artemisia douglasiana* (mugwort)
- *Baccharis salicifolia* (mule fat)
- *Brickellia californica* (California bricklebush)
- *Ceanothus sp.* (California lilac)
- *Cercocarpus betuloides* var. *betuloides* (mountain mahogany)
- *Elymus condensatus* (giant wild rye)
- *Epilobium canum* ssp. *latifolium (Zauschneria californica) (*California fuschia)
- *Eriogonum fasciculatum* var. *foliolosum* (California buckwheat)
- *Eriophyllum confertiflorum* (golden yarrow)
- *Heteromeles arbutifolia* (toyon)
- *Lasthenia californica* (California goldenfields)
- *Lessingia filaginifolia* var. *filaginifolia* (California aster)
- *Lotus scoparius* (deer weed)
- *Lupinus bicolor* (miniature lupine)
- *Melica imperfecta* (Coast Range melic)
- *Mimulus aurantiacus* (bush monkeyflower)
- *Muhlenbergia rigens* (deergrass)
- *Nassella cernua* (nodding needlegrass)
- *Nassella pulchra* (purple needlegrass)
- *Platanus racemosa* (western sycamore)
- *Populus fremontii* (Fremont's cottonwood)
- *Prunus ilicifolia* ssp. *ilicifolia* (hollyleaf cherry)
- *Quercus chrysolepsis* (canyon live oak)
- *Rhamnus californica* ssp. *californica* (California coffeeberry)
- *Rhus ovata* (sugar bush)
- *Ribes aureum* var. *gracillimum* (golden currant)
- *Rosa californica* (California rose)
- *Rubus ursinus* (California blackberry)
- *Salix exigua* (narrow-leaved willow)
- *Salix lasiolepis* (arroyo willow)

- *Salix laviegata* (red willow)
- *Solidago californica* (California goldenrod)
- *Symphoricarpos mollis* (creeping snowberry)
- *Umbellularia californica* (California bay laurel)

Reach Three

- *Amorpha fruticosa* (false indigo)
- *Artemisia californica* (California sagebrush)
- *Artemisia douglasiana* (mugwort)
- *Baccharis pilularis* (coyote brush)
- *Baccharis salicifolia* (mule fat)
- *Brickellia californica* (California bricklebush)
- *Ceanothus sp.* (California lilac)
- *Cercocarpus betuloides* var. *betuloides* (mountain mahogany)
- *Elymus condensatus* (giant wild rye)
- *Epilobium canum* ssp. *latifolium (Zauschneria californica) (*California fuschia)
- *Eriogonum fasciculatum* var. *foliolosum* (California buckwheat)
- *Eriophyllum confertiflorum* (golden yarrow)
- *Heteromeles arbutifolia* (toyon)
- *Lasthenia californica* (California goldenfields)
- *Layia platyglossa* (tidy-tips)
- *Lessingia filaginifolia* var. *filaginifolia* (California aster)
- *Lotus scoparius* (deer weed)
- *Lupinus bicolor* (miniature lupine)
- *Malosma laurina* (laurel sumac)
- *Mimulus aurantiacus* (bush monkeyflower)
- *Muhlenbergia rigens* (deergrass)
- *Nassella cernua* (nodding needlegrass)
- *Nassella pulchra* (purple needlegrass)
- *Platanus racemosa* (western sycamore)
- *Populus fremontii* (Fremont's cottonwood)
- *Prunus ilicifolia* ssp. *ilicifolia* (hollyleaf cherry)
- *Quercus agrifolia* (coast live oak)
- *Quercus chrysolepsis* (canyon live oak)
- *Rhamnus californica* ssp. *californica* (California coffeeberry)
- *Rhamnus crocea* (spiny redberry)
- *Rhus ovata* (sugar bush)
- *Rhus integrifolia* (lemonade berry)
- *Ribes aureum* var. *gracillimum* (golden currant)
- *Rosa californica* (California rose)
- *Rubus ursinus* (California blackberry)
- *Sambucus mexicana* (Mexican elderberry)
- *Salix exigua* (narrow-leaved willow)
- *Salix goodingii* (black willow)
- *Salix lasiolepis* (arroyo willow)
- *Salix laviegata* (red willow)
- *Umbellularia californica* (California bay laurel)
- *Yucca whipplei* (our Lord's candle or chaparral yucca)

Reach Four

- *Amorpha fruticosa* (false indigo)
- *Artemisia californica* (California sagebrush)
- *Artemisia douglasiana* (mugwort)
- *Baccharis pilularis* (coyote brush)
- *Baccharis salicifolia* (mule fat)
- *Brickellia californica* (California bricklebush)
- *Ceanothus sp.* (California lilac)
- *Elymus condensatus* (giant wild rye)
- *Eriogonum fasciculatum* var. *foliolosum* (California buckwheat)
- *Eriophyllum confertiflorum* (golden yarrow)
- *Heteromeles arbutifolia* (toyon)
- *Juglans californica* (California walnut)
- *Lasthenia californica* (California goldenfields)
- *Layia platyglossa* (tidy-tips)
- *Lessingia filaginifolia* var. *filaginifolia* (California aster)
- *Lotus scoparius* (deer weed)
- *Lupinus bicolor* (miniature lupine)
- *Malosma laurina* (laurel sumac)
- *Melica imperfecta* (Coast Range melic)
- *Mimulus aurantiacus* (bush monkeyflower)
- *Nassella cernua* (nodding needlegrass)
- *Nassella pulchra* (purple needlegrass)
- *Platanus racemosa* (western sycamore)
- *Populus fremontii* (Fremont's cottonwood)
- *Prunus ilicifolia* ssp. *ilicifolia* (hollyleaf cherry)
- *Quercus agrifolia* (coast live oak)
- *Rhamnus crocea* (spiny redberry)
- *Rhus integrifolia* (lemonade berry)
- *Ribes aureum* var. *gracillimum* (golden currant)
- *Rosa californica* (California rose)
- *Rubus ursinus* (California blackberry)
- *Sambucus mexicana* (Mexican elderberry)

- *Salix exigua* (narrow-leaved willow)
- *Salix goodingii* (black willow)
- *Salix lasiolepis* (arroyo willow)
- *Salix laviegata* (red willow)
- *Yucca whipplei* (our Lord's candle or chaparral yucca)

Reach Five

- *Amorpha fruticosa* (false indigo)
- *Artemisia californica* (California sagebrush)
- *Artemisia douglasiana* (mugwort)
- *Baccharis pilularis* (coyote brush)
- *Baccharis salicifolia* (mule fat)
- *Brickellia californica* (California bricklebush)
- *Ceanothus sp.* (California lilac)
- *Elymus condensatus* (giant wild rye)
- *Eriogonum fasciculatum* var. *foliolosum* (California buckwheat)
- *Eriophyllum confertiflorum* (golden yarrow)
- *Heteromeles arbutifolia* (toyon)
- *Juglans californica* (California walnut)
- *Lasthenia californica* (California goldenfields)
- *Layia platyglossa* (tidy-tips)
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- *Malosma laurina* (laurel sumac)
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- *Rhamnus crocea* (spiny redberry)
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- *Salix exigua* (narrow-leaved willow)
- *Salix goodingii* (black willow)
- *Salix lasiolepis* (arroyo willow)
- *Salix laviegata* (red willow)
- *Yucca whipplei* (our Lord's candle or chaparral yucca)

Reach Six

- *Amorpha fruticosa* (false indigo)
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- *Baccharis salicifolia* (mule fat)
- *Ceanothus sp.* (California lilac)
- *Elymus condensatus* (giant wild rye)
- *Eriogonum fasciculatum* var. *foliolosum* (California buckwheat)
- *Eriophyllum confertiflorum* (golden yarrow)
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- *Rhamnus crocea* (spiny redberry)
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- *Salix exigua* (narrow-leaved willow)
- *Salix goodingii* (black willow)
- *Salix lasiolepis* (arroyo willow)
- *Salix laviegata* (red willow)
- *Yucca whipplei* (our Lord's candle or chaparral yucca)

Reach Seven

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- *Heteromeles arbutifolia* (toyon)
- *Lasthenia californica* (California goldenfields)
- *Layia platyglossa* (tidy-tips)
- *Lessingia filaginifolia* var. *filaginifolia* (California aster)
- *Lotus scoparius* (deer weed)
- *Lupinus bicolor* (miniature lupine)
- *Malosma laurina* (laurel sumac)
- *Mimulus aurantiacus* (bush monkeyflower)
- *Nassella cernua* (nodding needlegrass)
- *Nassella pulchra* (purple needlegrass)
- *Platanus racemosa* (western sycamore)
- *Populus fremontii* (Fremont's cottonwood)
- *Quercus agrifolia* (coast live oak)
- *Rhus integrifolia* (lemonade berry)
- *Rosa californica* (California rose)
- *Rubus ursinus* (California blackberry)
- *Sambucus mexicana* (Mexican elderberry)
- *Salix exigua* (narrow-leaved willow)
- *Salix goodingii* (black willow)
- *Salix lasiolepis* (arroyo willow)
- *Salix laviegata* (red willow)

appendix C Design Guideline Topic Areas

Many of the design guidelines developed for the Los Angeles River should be applicable to the San Gabriel River. During implementation of the San Gabriel River Corridor Master Plan, it is envisioned that the Steering Committee will assess the design guidelines developed for the Los Angeles River and will adapt them to the San Gabriel River corridor. The following comprises a list of topic areas to be covered in the functional design guidelines that will be prepared for the San Gabriel River Master Plan as separate technical appendices. These topic areas are derived from the three design guideline manuals prepared for the Los Angeles River Master Plan:

Landscaping Guidelines and Plant Palettes

- Landscape Design Considerations
- Land Use and Maintenance Standards
- River Planting Guidelines
  - Site Characterization
  - Design Following Site Characterization
  - Design with Native Plants
  - Planting Patterns, Density, and Setback Guidelines
  - Species and Structural Density
  - Existing Landscape Plants
  - Gateways
  - Plants That Should Never Be Planted Along the River
  - Plant Community Lists
- Site Preparation Guidelines
  - Capture and Infiltration of Rainfall
  - Weed Abatement
  - Soil Amendment
- Landscape Planting Guidelines
  - Contract Collecting and Growing
  - Container Plant Sizes and Installation Guidelines
  - Installation Schedule
  - Seed Planting
- Landscape Maintenance Guidelines
  - Supplemental Irrigation
  - Extended Maintenance Program
  - Pruning and Removal of Plants
  - Weeding and Supplemental Mulching
- Hardscape Elements
  - Fences and Gates
  - Lighting
  - Benches
  - Seatwalls
  - Trash Receptacles
  - Bicycle Racks
  - Drinking Fountains
  - Trails and Paths
  - Signs

Landscaping Maintenance and Operations

- Los Angeles County Flood Control District Maintenance Standards
- Irrigation System Management
- Weed Management
- Tree Maintenance
- Shrub Maintenance
- Groundcover Maintenance
- Wildflower and Meadow Maintenance
- Grass, Sedge, and Yarrow Management
- Vine Maintenance
- Litter Control
- Hardscape, Site Furnishings, and Graffiti
- Soils Testing, Fertilization, and Mulch
- Pest Management
- Green Waste Management

Sign Guidelines

- Use and Purpose of Sign Guidelines
- Standard Design Elements
- Design Specifications
- Installation and Maintenance

appendix D Program EIR Summary

A Program Environmental Impact Report (Program EIR) was released for public review and comment in conjunction with the Draft San Gabriel River Corridor Master Plan. The Program EIR is intended to streamline the environmental review and documentation process for stakeholders proposing projects in the river corridor. The document is available for review at County offices in Alhambra and on the County website: http://ladpw.org/pln/sgrmp/

CEQA Requirements

Pursuant to the California Environmental Quality Act (CEQA), discretionary decisions by public agencies regarding certain public and private projects are subject to environmental review. The San Gabriel River Corridor Master Plan must comply with CEQA because it is a "project" as defined by Section 15378 of the State CEQA Guidelines.

LADPW has prepared a Program EIR in compliance with the CEQA Statutes (Public Resources Code Section 21000 *et. seq.*) and the State CEQA Guidelines (Title 14, California Code of Regulations Section 15000 *et. seq.*) as amended.

The purpose of the Program EIR is to:

1. Fully disclose to the project's decision-makers, responsible agencies, interested parties, and to the general public the significant or potentially significant environmental effects of implementing the proposed project;
2. Identify possible ways to avoid or reduce those impacts; and
3. Describe reasonable alternatives to the proposed project.

Program EIR Approach

The San Gabriel River Corridor Master Plan is a set of policies and actions to increase open space, habitat and recreation in the San Gabriel River corridor. The Program EIR considers the environmental impacts, mitigation measures and alternatives of the proposed Master Plan as a whole. This approach avoids duplication, allows the lead agency to consider broad policy alternatives and mitigation measures at an early time when there may be more flexibility to address the issues, and addresses cumulative impacts that might be overlooked in a project-level EIR.

Program EIRs are broader and contain less detail than Project EIRs. That's because specific sites and/or construction and operation plans have not been determined. The level of detail in the impact analysis reflects the level of detail in the project description. Based on preliminary planning, more detailed environmental analysis is provided for the two County-sponsored Concept Design Studies (San Gabriel Canyon Spreading Grounds and Lario Creek) and three other Concept Design Studies (Woodland Duck Farm, El Dorado Regional Park Wetlands and San Gabriel River Discovery Center at Whittier Narrows Regional Park).

As the Concept Design Studies are proposed for implementation, project proponents would review the Program EIR and determine if it sufficiently analyzes the environmental effects of the individual project. If the subsequent activity would have effects not covered by the Program EIR, a second-tier CEQA document (a Negative Declaration or an EIR) would then be prepared. For other projects within the Master Planning area, the Program EIR provides data on existing conditions, CEQA thresholds of significance, possible mitigation measures, and future analyses expected to be required.

EIR Process

Notice of Preparation

LADPW filed a Notice of Preparation (NOP) for this Program EIR with the State Clearinghouse in April 2003. It was distributed to responsible agencies and interested parties for a 30-day review and comment period, ending May 28, 2003. LADPW received 21 comment letters on the NOP. CEQA related comments were also received during the CEQA scoping meeting held at LADPW offices in Alhambra on May 12, 2003. The comments received related to surface and groundwater quality, flood control, water rights, mineral resources, construction impacts on utilities, traffic/transportation facilities, recreational facilities (e.g., bike trails), and effects on public health (creation of habitat for mosquitoes and other vectors).

Program EIR Public Review

Following publication of the Draft Program EIR, there will be a public review and comment period during which LADPW will accept written comments on the document. LADPW will hold a public meeting on the Draft Program EIR, at which time other agencies, interested parties and the public will be invited to orally comment on the document. Written and oral comments which raise environmental issues will be responded to, and the comments and responses will be published in a document entitled Final Program Environmental Impact Report (Final Program EIR). Following its publication, the Final Program EIR will be certified by the County of Los Angeles Board of Supervisors prior to adoption of the San Gabriel River Corridor Master Plan and the Mitigation Monitoring and Reporting Plan.

Scope of the EIR

Based on a preliminary analysis of environmental issues associated with the project and comments received on the NOP, LADPW concluded that the proposed project has the potential to have impacts on the following environmental issues:

- Air quality
- Biological resources
- Cultural resources
- Geology and soils
- Hazards and hazardous materials
- Hydrology and water quality
- Land use
- Noise
- Public services and utilities
- Recreation
- Transportation and traffic

Based on the preliminary analysis, LADPW determined that the proposed project would have no or negligible impacts on the environmental issues listed below. Therefore, these environmental issues have been excluded from analysis in the Program EIR.

- Agricultural resources
- Population and housing (growth inducing impacts are addressed in Section 6 of the EIR.)

Areas of Known Controversy

In the course of preparation of the San Gabriel River Corridor Master Plan and the Program EIR, the following issues of concern have been identified and are addressed in the Program EIR:

- Potential effects on existing flood control facilities and capacities associated with actions involving modification of the river channel
- Potential effects on surface and groundwater rights associated with actions involving groundwater recharge or surface diversions
- Potential effects on public health from increase in mosquito-breeding conditions associated with creation of constructed wetlands or other surface water features

Organization of the Program EIR

The Program EIR is organized in six major sections.

SECTION 1—SUMMARY. A summary of the contents of the Program EIR.

SECTION 2—INTRODUCTION. Background, project objectives, lead agency identification, the purpose and overview of the EIR process, scope of the Program EIR, responsible agencies and approvals, and areas of known controversy.

SECTION 3—PROJECT DESCRIPTION. Project location, and descriptions of the Concept Design Studies, and Master Plan policies.

SECTION 4—ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES. Description of the environmental setting, criteria for determining impact significance, analysis of project-related impacts, description of mitigation measures for each environmental topic, and summary of future analyses.

SECTION 5—CUMULATIVE IMPACTS. A discussion of past, present and reasonably anticipated future activities that could add impacts to those of the proposed project.

SECTION 6—ADDITIONAL CEQA ANALYSIS. Additional analyses required by CEQA, including a discussion of the impacts of project alternatives, irreversible environmental changes, unavoidable environmental impacts, growth-inducing impacts, and consistency with regional and local planning.

APPENDICES. A list of references, acronyms and abbreviations, glossary, organizations and persons consulted, and preparers of the Program EIR; NOP and comments received; and the technical materials and data supporting the air quality and cultural resources analyses presented in the Draft Program EIR.

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