Project Summary Report

ORANGE COUNTY WATER DISTRICT APPLICATION TO APPROPRIATE SANTA ANA RIVER WATER

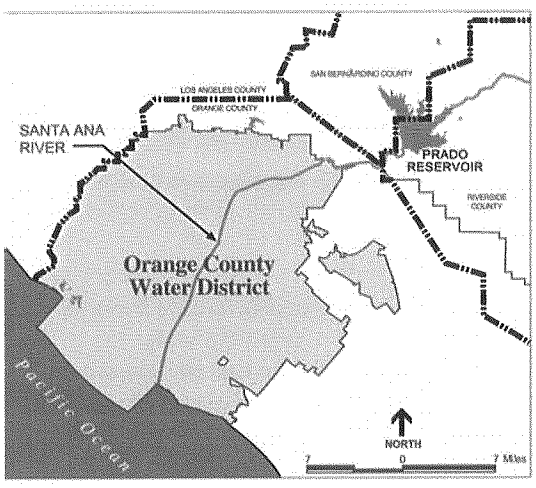
Draft Program Environmental Impact Report

Prepared for:
Orange County Water District

March 2006

Contents

1. Introduction



The Orange County Water District (OCWD or District) has filed an application with the State Water Resources Control Board (SWRCB) for a permit to appropriate water from the Santa Ana River (SAR). The District currently diverts water from the river to recharge the Orange County groundwater basin.

The District requests a permit that recognizes its current water rights reflected in the 1969 Judgment by the California Superior Court and diversion practices as well as appropriation of the river's increasing flow at Prado Dam that would otherwise reach the Pacific Ocean. The SWRCB permit would formalize the District's right to capture whatever level of additional base and storm flow may reach Prado Basin in the future up to 505,000 acre-feet per year[1] (afy).

The increased diversions and proposed recharge and storage projects evaluated in this document provide an opportunity for the District to achieve the following project objectives:

The mission of the Orange County Water District is to provide local water retailers with a reliable, high quality water supply at the lowest reasonable cost in an environmentally responsible manner.

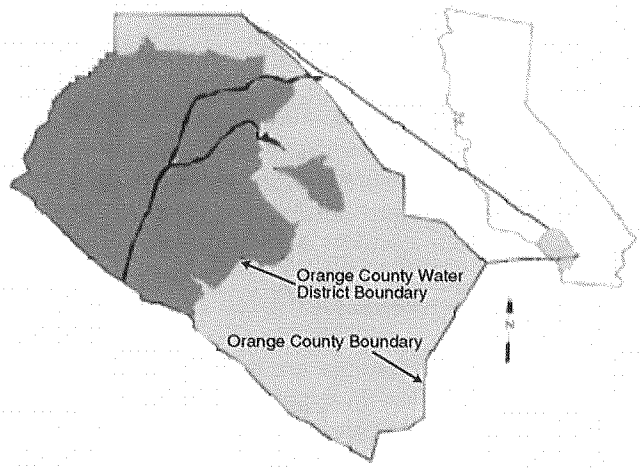
- Protect beneficial uses of the Orange County groundwater basin;
- Improve the reliability of local groundwater supply to serve local water demands;
- Maximize sustainable water supplies during drought periods;
- Increase the sustainable yield of the Orange County groundwater basin in a cost effective manner to maximize the use of local water supplies to serve local water demands;
- Improve beneficial use of local water supplies;
- Reduce dependence on imported water; and
- Increase operational flexibility by increasing both recharge capacity and recharge location options to better manage groundwater basin conditions.

This Project Summary Report provides a brief history of the District and the Santa Ana River and summarizes the contents of the Draft Program Environmental Impact Report (Program EIR) prepared for the project pursuant to the California Environmental Quality Act (CEQA).

The Draft PEIR for this project was originally circulated for public review from May 28 to July 16, 2004. In response to the comments received on the Draft PEIR the District has developed and incorporated substantial additional information and reorganized the PEIR. The District is recirculating the Draft PEIR for public and agency review and comment on the expanded analysis. This Project Summary Report is meant to provide basic information to increase the general awareness about the District and the proposed project. The entire Draft Program EIR itself, including appendices, is included on a **compact disc** at the back of this report.

[1] One acre-foot is the amount of water that would cover one acre of land – a football field – one foot deep (326,000 gallons). It takes about one acre-foot of water to meet the needs of two families of four each year (and that assumes they are practicing good water conservation).

2. OCWD Overview



OCWD was formed in 1933 by a special act of the California State Legislature (SB 1201) to protect Orange County's rights to water in the Santa Ana River and to manage the vast groundwater basin under north and central Orange County. groundwater basin while more than doubling the basin's annual yield. Today the basin provides water for 23 cities and water agencies, serving 2.3 million people with more than half of their water demand.

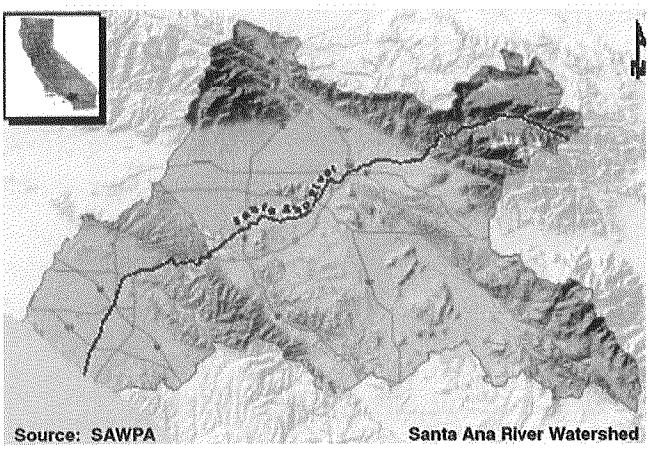
The District maintains groundwater supplies for use by local cities and water agencies that, in turn, retail the water to customers. Since its inception, the District has developed an extensive system of diversion, storage and recharge facilities along the Santa Ana River and its tributaries. The groundwater basin is recharged primarily with water diverted from the Santa Ana River, although the District supplements river flows with imported water purchased from Metropolitan Water District of Southern California.

The District's original water rights to the lower Santa Ana River were acquired from two irrigation districts with rights established in the 1870s. In 1969, the District was involved in litigation with upstream water districts resulting in a Stipulated Judgment establishing the Santa Ana River Watermaster and providing a solution for maximizing beneficial uses of the river. The court-ordered solution guarantees the District a minimum base flow at Prado Dam of 42,000 afy, plus all storm flows reaching the dam.

MAJOR GROUNDWATER PRODUCERS IN OCWD SERVICE AREA

City of Anaheim
City of Buena Park
East Orange County Water District
City of Fountain Valley
City of Fullerton
City of Garden Grove
Golden State Water Company
City of Huntington Beach
Irvine Ranch Water District
City of La Palma
City of Newport Beach
Mesa Consolidated Water District
City of Orange
Orange Park Acres Mutual Water Company
City of Santa Ana
Santiago County Water District
City of Seal Beach
Serrano Water District
City of Tustin
City of Westminster
Yorba Linda Water District

3. Santa Ana River—History and Hydrology



Source: SAWPA

Santa Ana River Watershed

Santa Ana River Watershed

San Bernardino Mountains and flowing over 100 miles to the southwest, reaching the Pacific Ocean between the cities of Newport Beach and Huntington Beach. The watershed encompasses 2,650 square miles in San Bernardino, Riverside and Orange Counties. The river flows through a gap in the Santa Ana Mountains that separates the upper and lower watersheds. The OCWD spans the lower watershed on the coastal side of the Santa Ana Mountains.

Historic River Flows

Precipitation in the region is generally limited to the winter months—December through March. The Santa Ana River flow usually mimics this water cycle, increasing in the winter in response to periodic storms and decreasing in the summer. This seasonal flow cycle is augmented by year-round base flow in the river resulting from urbanization in the upper watershed including discharges from wastewater treatment plants.

Long-term flow records for the lower SAR have been compiled by the United States Geological Survey (USGS) from two stations: 1) Santa Ana near present day 17th Street and 2) immediately downstream of the Prado Dam. Both stations have records dating back to the early 1920s. These USGS river flow records from Prado Dam (compiled by the Santa Ana River Watermaster) highlight the annual variability of river flow. The graph below differentiates perennial flow (base flow occurring year-round) with storm flow (high flows corresponding to storm events). It shows that in recent years, both storm flow and base flow have increased, as a result of upstream urbanization. Total annual flows in the river have exceeded the amount requested in the OCWD application of 505,000 acre-feet twice in the last 25 years.

Diversion of essentially all of the base flow in the river has been occurring since the mid-1800s. USGS river flow gages indicate that the river has dried up in the summer downstream of 17th Street in Santa Ana since at least the 1920s and historical literature suggests that this may be similar to the natural condition of the lower SAR.

KEY HISTORIC POINTS

Pre 1850. Santa Ana River is recorded as a perennial stream reaching ocean except in drought years.

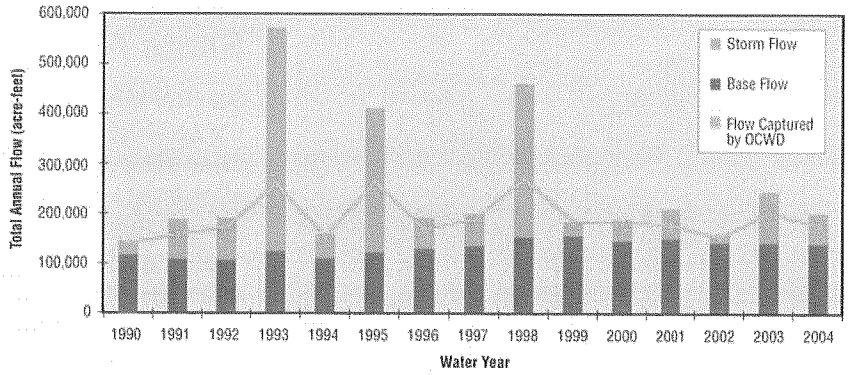
Mid-1800s. Agricultural interests divert entire Santa Ana River flow. Channelization and flood control levees constructed on lower Santa Ana River in Orange County.

1938. Major flood affects large area in Orange County.

1941. The Army Corps of Engineers completes Prado Dam.

1941-1980s. OCFCD extensively modifies lower Santa Ana River for flood control.

1980-present. The Army Corps of Engineers begins Santa Ana River Main Stem Project in 1980, completing most channel improvement projects in lower SAR by 2000.



Flooding and Flood Control Shape the River

The Santa Ana River has a history of significant flood events. As a result, numerous flood control activities have been implemented over the last century and a half—mostly within the last 60 years. The Map Atlas at the end of this report shows a series of historic aerial photographs that document river channel changes over time.

Flood control districts managed river flows with levees from the mid-1800s through the 1930s. In the upper watershed, steep slopes, shallow surface soils, impervious bedrock, and occasional loss of vegetation from fires served to compound the flooding impacts of intense rainfall. The most damaging flood to human settlements occurred in March 1938, during a record-making storm period throughout southern California with peak flow reaching 100,000 cfs on the Santa Ana River.

Prado Dam was constructed in 1941 by the US Army Corps of Engineers (Corps of Engineers) in response to this catastrophic flood. County agencies continued flood control on the lower Santa Ana River in Orange County through the 1970s until the Corps of Engineers identified deficiencies in flood protection resulting from increased urbanization throughout the watershed.

The Corp of Engineers has been implementing its extensive Main Stem Project since the mid-1980s. This includes upgrading existing flood control improvements on the main stem of the river, such as the concrete channel lining in Orange County, and the construction of the Seven Oaks Dam in San Bernardino County.

LA Times January 2004
'Flood of '38 Forever Altered the Southland Landscape'
by Cecilia Rasmussen

"The pummeling rains of two weeks ago made Donna Gustin Crippen feel as if she were 8 years old and it was 1938 again – when rain fell in feet not inches, and her neighbors were swept to their death.

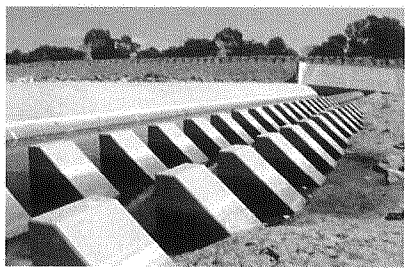
...The flood killed more than 100 people and left thousands homeless and scores missing. It was Southern California's deadliest flood of the 20th Century."

Historic Photographs of the southern reaches of the Santa Ana River

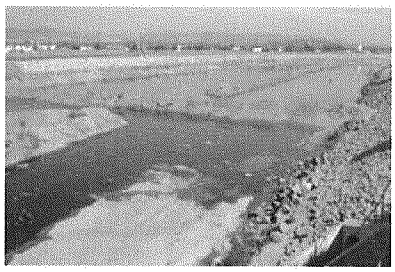
Since 1941 the lower watershed within Orange County has experienced dramatic growth. These figures illustrate the 1938 flood event by overlaying the floodplain over today's development. The historic floodplain shown in these figures has been eliminated due to the channel improvements implemented by the Orange County Flood Control District and the Corps of Engineers.

Current River Conditions

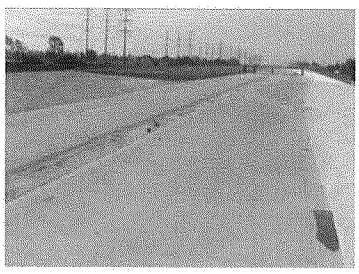
Most of the physical changes made to the historic river channel have been implemented for flood protection purposes by flood control agencies including the Corps of Engineers and the Orange County Flood Control District. The Map Atlas at the end of this report illustrates the condition of the Santa Ana River in 2004 from Prado Dam to the Pacific Ocean. The photographs illustrate where the river is concrete-lined or channelized and where it is not. There is a relatively natural stretch of river with riparian habitat just downstream of Prado Dam to the Weir Canyon Avenue crossing in Yorba Linda. From the Weir Canyon Avenue crossing the river becomes channelized. Approximately three miles downstream, OCWD utilizes a six-mile stretch for groundwater recharge including two rubber dams to divert flow from the river. Downstream of the District's operations the riverbed becomes part of Riverview Golf Course. Downstream of the golf course, the river is fully concrete lined for approximately eight miles. The final one and a half miles of river consists of a soft sandy bottom leading to the Pacific Ocean.



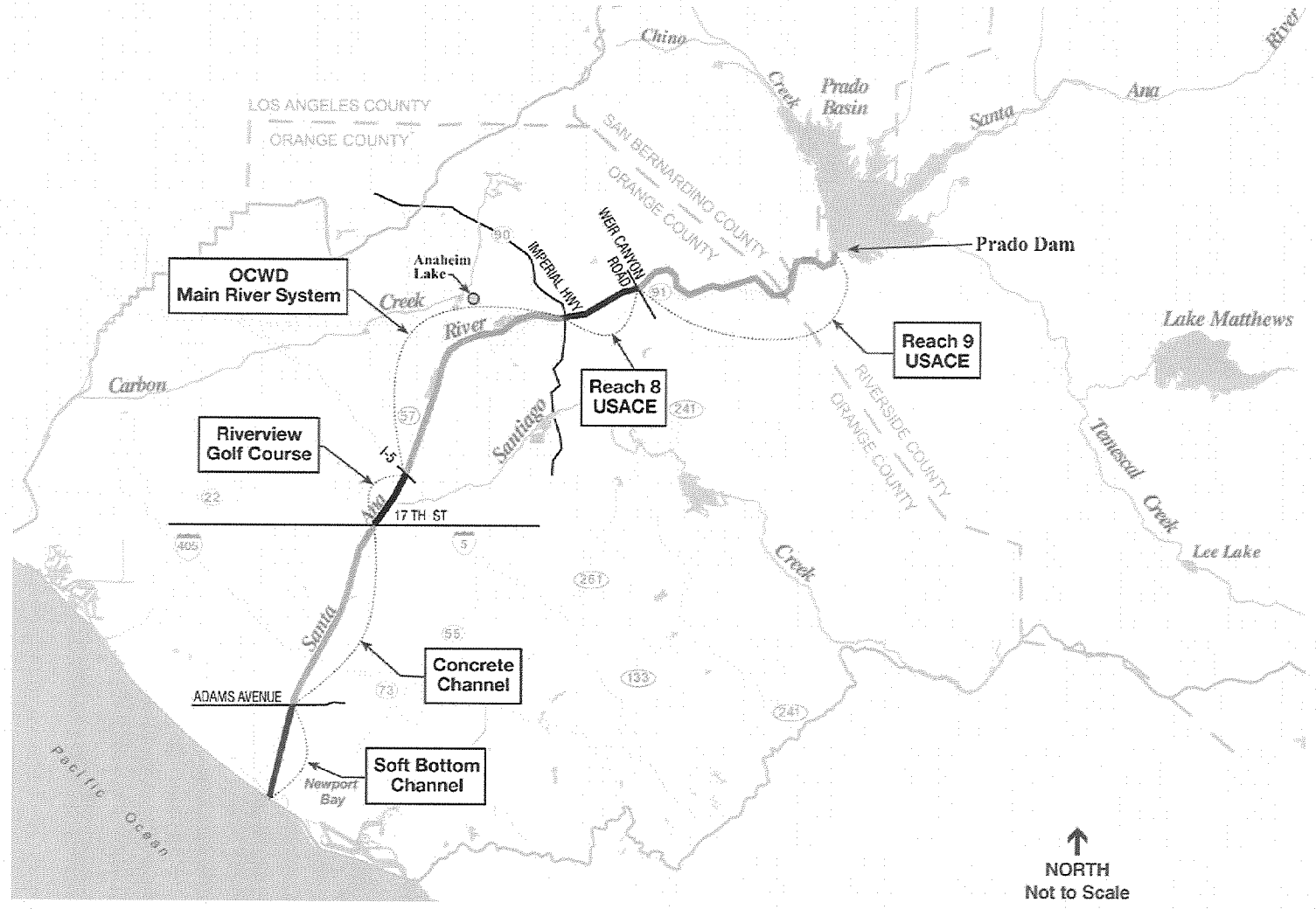
One of several concrete drop structures, this one near Chapman Avenue



OCWD "T" and "L" levees built in recharge section of river



Concrete-lined channel



Segments of the Santa Ana River Below Prado Dam

4. Growing Demand for Water

Water Demand in Orange County

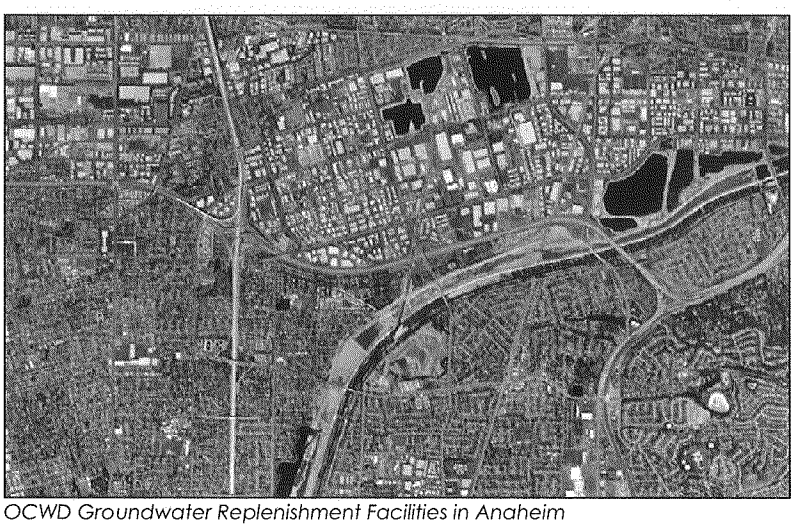
Since the 1950s, Orange County has experienced rapid change from a rural, agricultural area to a densely populated region of over three million people. The northern portion of Orange County was extensively developed in the 1970s and 1980s and continues to increase in population density. Since 1990 Orange County's population has increased by an average 1.7 percent annually, compared with a 1.46 percent increase in Southern California as a whole.[2] The Southern California Association of Governments (SCAG) projects that Orange County's population will increase to 3.49 million by the year 2025, just over 12 percent.

Groundwater makes up more than 50 percent of all water used in Orange County and 60 to 70 percent of the water used in the north and central parts of the county. The District expects water demand within its service area to increase from 500,000 afy in 2004 to 570,000 afy in 2025. When OCWD was formed in 1933, the Orange County groundwater basin was overdrafted from excessive pumping. Since then, OCWD has replenished the groundwater basin and more than doubled its annual yield in the last 40 years. OCWD continues to implement and expand its multifaceted programs of conjunctive surface and groundwater management to protect the quality and sustainability of the basin.

POPULATION PROJECTIONS (MILLIONS OF PEOPLE)

	2005	2010	2025
Orange County[1]	3.10	3.29	3.49
OCWD Service Area[2]	2.27	2.33	2.55

SOURCES: [1] SCAG Growth Forecasting, City Projections (http://www.scag.ca.gov/forecast/downloads/2004GF.xls); [2] Center for Demographic Research, MWDOC.



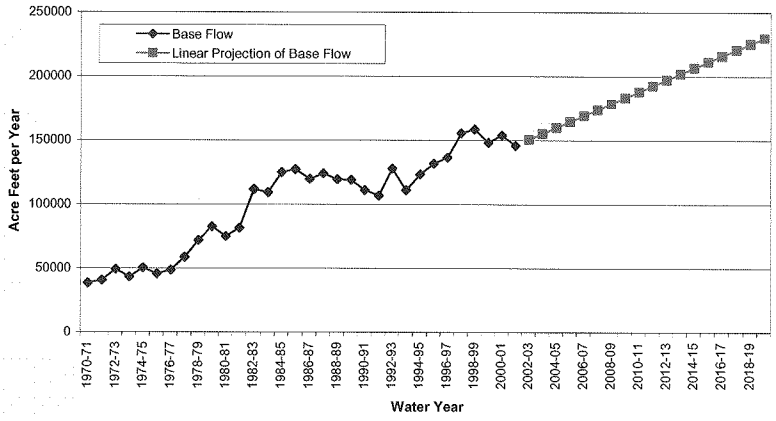
OCWD Groundwater Replenishment Facilities in Anaheim

[2] SCAG, RTP PEIR, February 1, 2001.

5. A Growing Water Supply

Santa Ana River Flow Below Prado Dam

As the communities of San Bernardino and Riverside in the upper Santa Ana River watershed have grown throughout the late 20th Century, base flow and storm flows that reach Prado Dam have steadily increased. Urbanization increases base flow because as population grows, more wastewater is produced. Urbanization also increases storm flow because development increases impervious surfaces, which increase overland runoff. These trends are expected to continue in the upper watershed above Prado Dam, with projections showing a population increase of 1.5 million over the next 20 years. This graph summarizes base flow through Prado Dam since 1970 as recorded by the Watermaster and shows the expected projection of increased flow.



River flows vary widely from year to year, mostly due to fluctuating storm flow, and thus the District must adapt its groundwater recharge operations to a broad range of flow volumes. For example, in 2001-2002, base flow at Prado Dam was 146,000 afy, while storm flow was only 10,600 afy—the lowest volume of storm flow on record since institution of the Watermaster in 1970. By contrast, during the 1992-1993 water year, base flow reached 128,000 while storm flow exceeded 440,000 afy. The US Army Corps of Engineers estimates that for the year 2052 wet year flows at Prado Dam could exceed 847,000 afy.

Upstream urbanization in Riverside and San Bernardino Counties provides a tremendous opportunity for OCWD to divert and capture additional water from the Santa Ana River for beneficial use within the region. Securing additional water supplies would help meet local needs and prevent an increasing reliance upon imported water.

The District has prepared a Water Availability Assessment to evaluate the amount of water that could reach Prado Basin in the future, accounting for future upstream diversions. The assessment—included in the PEIR as Appendix D—concludes that over 650,000 afy could reach Prado Basin during future wet years even when accounting for all the proposed upstream diversions.

6. OCWD Santa Ana River Facilities

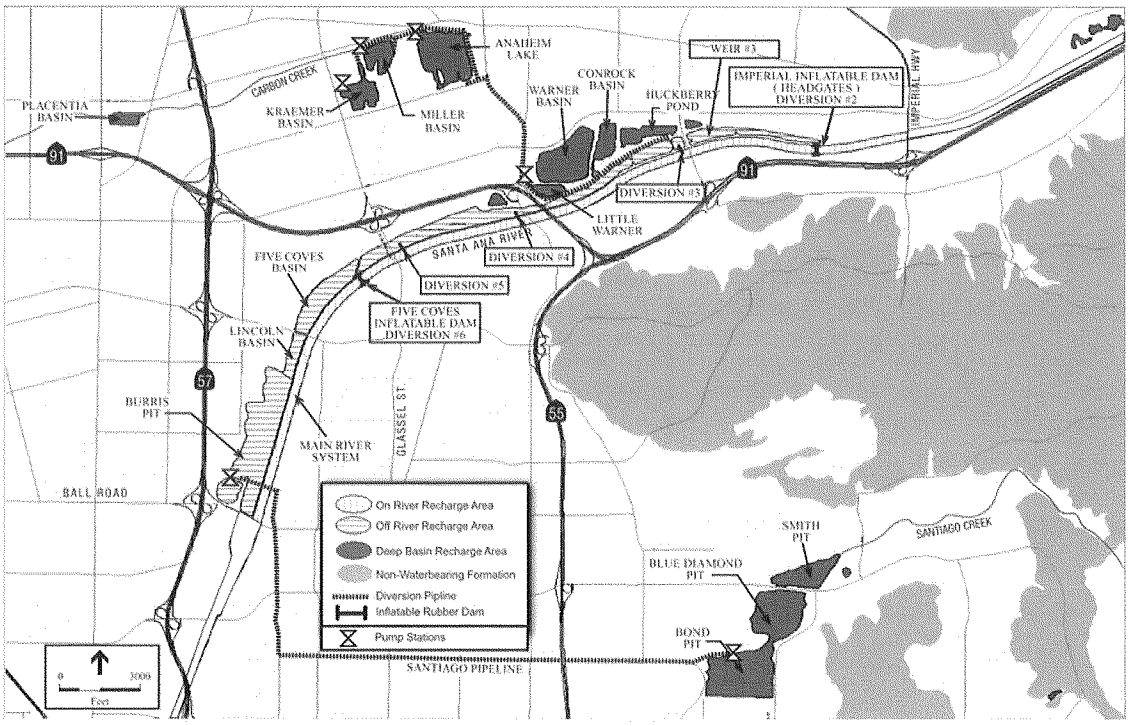
T and L sand levees in Main River System

Existing Diversion Facilities

Below Prado Dam, the District can divert water at five points to off-river recharge basins that run parallel to the main river channel. Two inflatable rubber dams are used in the main channel during periods of low flow to pool water for diversion.

Existing Recharge Facilities

OCWD recharges the Orange County groundwater basin by letting water percolate through the riverbed and diverting water to a network of off-river basins. The District's Main River System is located on the Santa Ana River downstream of Prado Dam between Imperial Highway and Ball Road. The District uses approximately 1,000 acres of surface area to recharge nearly 250,000 afy of groundwater. In addition to recharge basins, sand levees ("T and L" levees) are constructed in the riverbed during low-flow periods to slow water and promote infiltration through the river's sandy soils. The District has invested 50 million dollars since 1989 to construct facilities for capturing river water to recharge into the groundwater basin.



OCWD Existing Facilities

The District has developed a sophisticated system to maximize the beneficial use of SAR water. The recharge system is comprised of 14 recharge facilities interconnected with large diameter pipelines, 16 submersible pumps, and 4 inclined pumps. These transfer facilities have the capacity to move approximately 500 cubic feet per second amongst the recharge basins.

The District also maintains a fleet of heavy equipment and four proprietary vehicles (Basin Cleaning Vehicles) that are deployed to clean the bottom of the recharge basins to maintain efficient percolation rates. Maintaining the basins allows the District to optimize the diversions from the SAR.

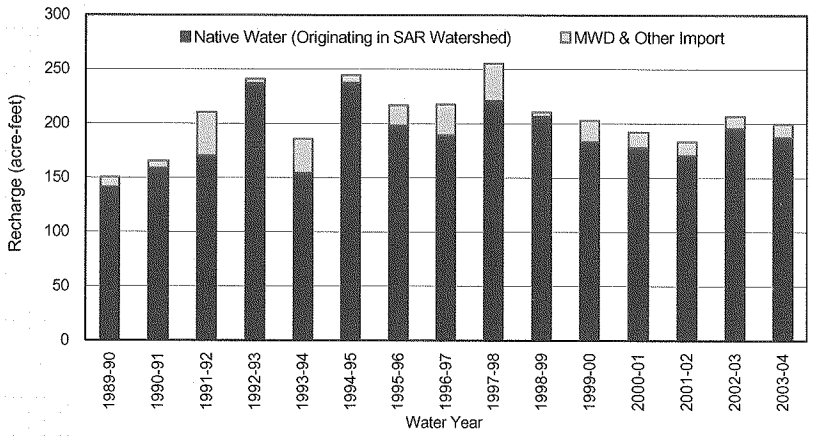
CURRENT MAXIMUM PERCOLATION CAPACITY OF EXISTING OCWD RECHARGE FACILITIES UNDER CURRENT BASE FLOW AND STORM FLOW CONDITIONS

Existing Facilities (as shown in figure)	Rate[1] cfs	Rate[1] Afy
Main River System (river channel)	100	70,400
Off River System (bordering river channel)	65	11,000
Deep Basins		
Anaheim/Kraemer Basins	280	91,800
Warner Basin	70	16,200
Burris/Santiago Basin System	130	60,600
Subtotal	**645**	**250,000**

[1] The diversion rates shown represent an average rate accounting for time spent out of service for routine cleaning. The instantaneous diversion rate (excluding water captured behind Prado Dam for subsequent release) is 1,000 cfs for the Deep Basins plus an additional 300 cfs in-river percolation.

SOURCE: Orange County Water District.

TOTAL WATER DIVERTED FROM SANTA ANA RIVER SINCE 1990



SOURCE: Orange County Water District

7. OCWD Watershed Stewardship

OCWD is a leading resource manager and environmental steward within the Prado Basin and the greater Santa Ana River watershed. OCWD is a founding member of the Santa Ana Watershed Association of Resource Conservation Districts (SAWA) and of the Santa Ana Watershed Project Authority (SAWPA). Both organizations are mandated to enhance Santa Ana River watershed resource management.

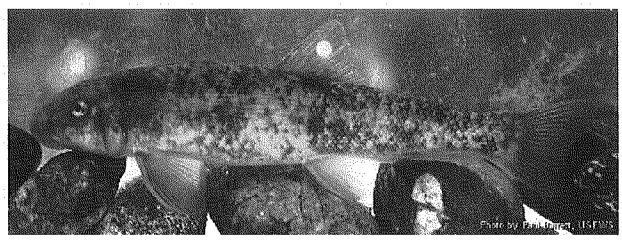
Least Bells Vireo

The District supports habitat and species restoration programs in Prado Basin, in particular cooperating with the U.S. Fish and Wildlife Service to expand the population of threatened least Bells vireo, a small song bird, and to enhance habitat for the southwestern willow flycatcher and Santa Ana sucker.

Southwestern Willow Flycatcher

The District has constructed a wetland within the Prado Basin to increase water quality providing enhanced nitrogen removal to river water. Water is diverted from the main stream of the river, passes through the wetlands, and is returned to the river bed upstream of Prado Dam. The wetland also serves as nesting habitat to the endangered vireo and flycatcher in addition to providing habitat to local wildlife of all kinds. The District is in the process of doubling the size of this wetland due to the success of the original project.

The District also works to remove Arundo, an invasive exotic plant that consumes large amounts of water and out-competes native plants that are beneficial to wildlife. Arundo utilizes a relatively large amount of water compared to native plants, such that removing one acre of Arundo leaves an additional 3.6 acre-feet (af) of water in the river, for native plants. It is estimated that by 2025, an annual minimum of 36,000 af of additional water will be available in the Santa Ana River as a result of Arundo removal. These and other environmental projects by the District benefit the environment and the District's water conservation programs.



Santa Ana Sucker

8. Project Description

Appropriation

In 2000, the SWRCB issued Order WR 2000-12 directing the Division of Water Rights to proceed with processing the District's Application as well as other water rights applications for the Santa Ana River, which are indicated in the table below.

PENDING SAR WATER RIGHTS APPLICATIONS

Upper Santa Ana River – above Prado Basin

- San Bernardino Valley Municipal Water District and Western Municipal Water District (Muni/Western) – Application Number 31165
- Chino Basin Watermaster – Application Number 31369
- San Bernardino Valley Municipal Water District and Western Municipal Water District (Muni/Western) – Application Number 31370
- San Bernardino Valley Water Conservation District – Application Number 31371
- City of Riverside – Application Number 31372

Lower Santa Ana River – below Prado Basin

- Orange County Water District – Application Number 31174

OCWD is the only water applicant on the lower Santa Ana River below Prado Dam. While the water diversion activities of the upstream entities affect the flow in the Santa Ana River that reaches Prado Dam, OCWD is not competing with these upstream entities for the water in the upper river. OCWD is interested in securing a right to divert the Santa Ana River flow that reaches Prado Basin, without trying to restrict the rights of upstream entities to divert water or recycled wastewater (consistent with the 1969 Judgment).

The District currently recharges approximately 250,000 afy from the Santa Ana River. This amount has been diverted in three previous years (1993, 1995, and 1998). The District's ability to use river flows to replenish groundwater is limited by several factors including the timing, duration and magnitude of storms, the quantity of base flow, and the capacity of its recharge facilities. The District proposes to increase its recharge and storage capacity to more effectively utilize river flows. The District's application requests rights to up to 505,000 afy of Santa Ana River water and would allow the District to use existing and new facilities to recharge that water into the groundwater basin for beneficial use within the region.

Anaheim Lake Expansion Project

The PEIR evaluates the Anaheim Lake Expansion project in project-level detail. The project would provide an additional 2,000 afy of recharge capacity. Anaheim Lake is the largest recharge basin of the Deep Basin System. Located on Mira Loma Avenue in Anaheim, the lake is 49 feet deep and encompasses 72 acres with 2,000 af of storage capacity. There are three islands in the lake. The expansion project would involve draining the lake and flattening the islands using heavy earth moving equipment. The bottom of the basin would be groomed and the lake refilled with water. Removing the islands would increase the basin's recharge capacity. Construction

would require approximately six months, separated into two three-month periods during the drier summer months over two consecutive years.

Santiago Creek Expanded Recharge Project

The PEIR evaluates the Santiago Creek Expanded Recharge Project in project-level detail. The project would add an additional 3,000 afy of recharge capacity. Santiago Creek located in the City of Orange conveys storm flows to the Santiago Basins and to the SAR. Downstream of the basins, the Santiago Creek traverses soils with high percolation capacity. The District currently discharges approximately 15 cfs into the creek from Santiago Pits or the District's pipeline that conveys water from Burris Pit to the Santiago Basins. This water flows toward the SAR, but percolates before reaching Hart Park in the City of Orange. The creek is lined with concrete for approximately 1,500 feet as it traverses Hart Park. This concrete area is used as a parking lot for the park.

The District is proposing to install a 36-inch diameter pipeline or a culvert for an approximate length of 1,500 feet through the parking lot. The culvert could be open or covered with a grate. The project will allow the District to discharge up to 30 cfs from the Santiago Basins into the creek without flooding the parking area of Hart Park, constituting a 15 cfs increase over existing operations. The culvert or pipeline through the parking lot would be designed to accommodate existing traffic and parking demands in the parking lot. Construction would include excavating a trench to a depth of approximately 10 to 15 feet, requiring removal and disposal of up to 1,500 cubic yards of soil.

Future Facilities

The PEIR evaluates future recharge and storage facilities at a program-level of detail. The projects are described at a conceptual level and evaluated to determine potential significant effects that could result from implementation. Future environmental evaluations pursuant to CEQA Guidelines would be required prior to implementing these future facilities. The following sections describe both proposed near-term future facilities and longer term facilities.

Recharge Facilities

The District has identified a set of potential near-term projects for diverting additional river flows using existing diversion structures, adding 97,000 afy of recharge capacity. Near-term projects include surface recharge basins, creek enhancements, and basin cleaning vehicles.

EXISTING AND PROPOSED FACILITIES	
RECHARGE FACILITIES	**Direct Diversion Amount (AF/Y)**
Existing	
Main River System	70,400
Off River System	11,000
Deep Basins	
Anaheim/Kraemer System	91,800
Warner System	16,200
Burris/Santiago System	60,600
Subtotal	**250,000**
Near-Term Projects	
Approved and Constructed	
Santiago Creek Replenishment	10,000
River View Recharge Basin	4,000
Basin Cleaning Vehicles [BCV]	23,000
Proposed (or In Progress)	
Basin Cleaning Vehicles[1] [BCV]	36,000
La Jolla Recharge Basin	9,000
Mira Loma Recharge Basin	10,000
Santiago Creek Expanded Recharge	3,000
Anaheim Lake Expanded Recharge	2,000
Subtotal	**97,000**
Long-Term Projects	
Fletcher Recharge Basin	1,000
Additional Recharge Basins[3]	77,000
Basin Cleaning Vehicle	25,000
Subsurface Collection/ Recharge System (SCARS) – Multiple Sites	10,000
Deep Basin Filtration Recharge – 3 sites	25,000
Recharge Galleries – 2 sites	20,000
Subtotal	**158,000**
Total Proposed Additional Recharge Capacity	**505,000**
STORAGE FACILITIES	**Proposed Storage Capacity (AF)**
Near-Term Projects	
Prado Dam conservation pool (summer elev. = 505)[2]	7,000
Long-Term Projects	
Prado Dam (Conservation elev. = 514)[2]	23,600
Gypsum Canyon Reservoir[2]	30,000
Aliso Canyon Reservoir[2]	30,000
Total Proposed Additional Storage Capacity[4]	**90,600**

1 Deep Basin continuous cleaning device will increase percolation rates.
2 Storm flow captured for later release to the SAR for diversion downstream at recharge facilities when capacity becomes available.
3 150 acres total – multiple sites
4 Does not include storage capacity of recharge basins.

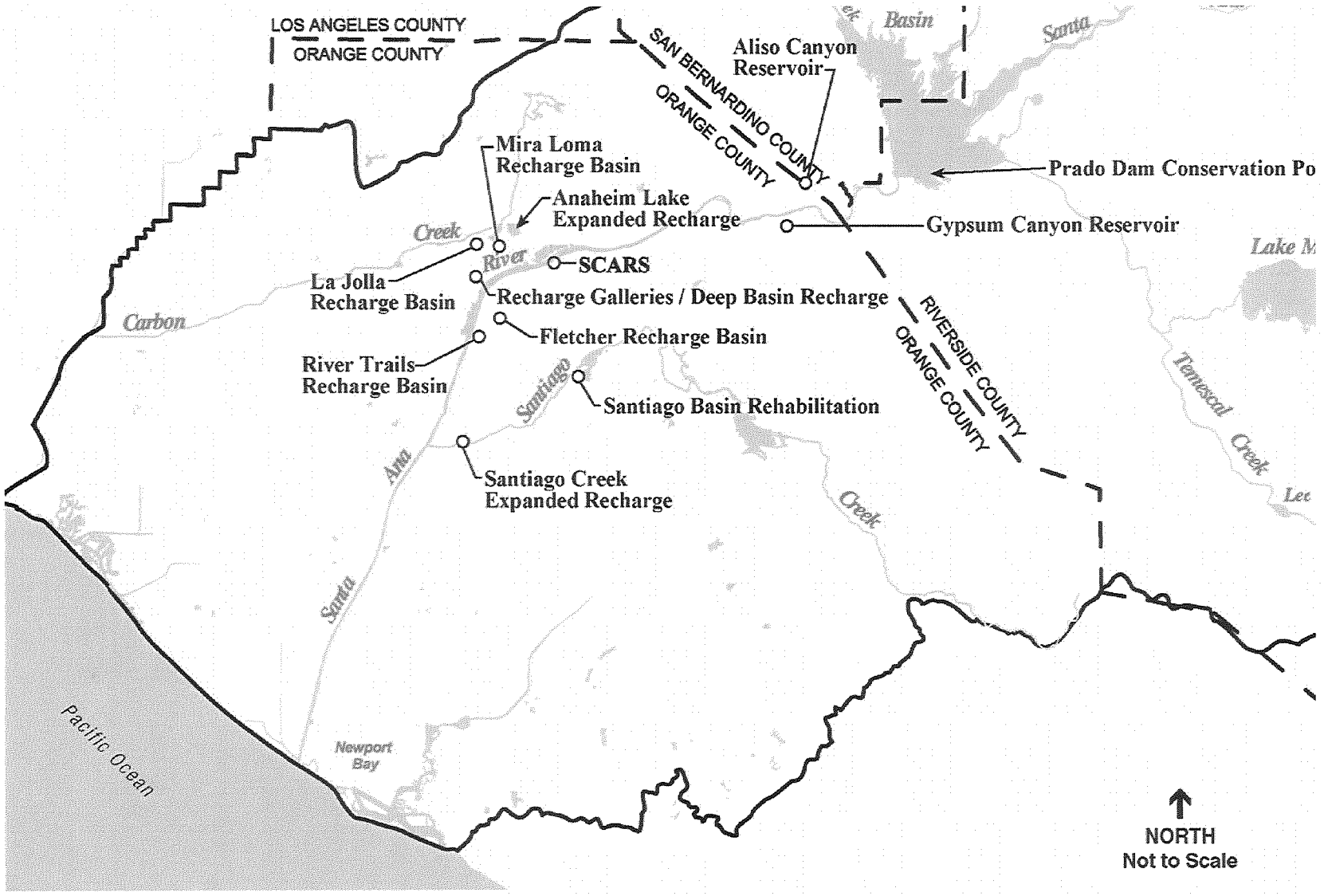
SOURCE: Orange County Water District

The District also has identified a set of long-term projects that could provide an additional 158,000 afy of recharge capacity. Recharge projects include surface recharge basins, subsurface recharge facilities, and additional basin cleaning vehicles. Some of these projects would require additional diversion structures, and all long-term projects would require additional, detailed environmental evaluation and CEQA review prior to implementation.

Storage Facilities

In addition to recharge facilities, the District has identified a set of possible storage projects to capture and retain storm water flows for later release into recharge basins. The District has proposed raising the maximum elevation of the Prado Dam conservation pool and constructing off-river surface water storage reservoirs. The Corps of Engineers is currently considering raising the Prado Dam conservation pool elevation. In the longer term, further conservation pool increases to 514 feet msl would require further environmental review and approval by the Corps of Engineers, including a detailed evaluation of impacts to sensitive biological habitats within Prado Basin.

Constructing off-stream storage reservoirs in Aliso and/or Gypsum Canyons would involve new dam construction, a new river diversion facility and a conveyance pipeline to transfer water from the river to the reservoir and back for release to OCWD's recharge facilities. These projects are included here as long-term potential projects to be analyzed for feasibility in the future. The PEIR identifies the types of environmental impacts and mitigation requirements anticipated for these types of facilities to be addressed in future project-level CEQA review.



Locations of Proposed Future Recharge and Storage Projects

9. Summary of Environmental Impact Analysis

The District has prepared the Program EIR to evaluate the potential environmental impacts associated with the proposed diversion of water from the Santa Ana River. The PEIR describes the existing facilities and proposed facilities, and it evaluates both the overall effects of appropriating water as well as the project-specific effects of constructing and operating recharge and storage facilities. The PEIR provides impact analysis for three distinct components of the project:

- Increased SAR diversions (Chapter 4)
- Two near-term facilities projects: the Anaheim Lake Expansion and the Santiago Creek Expanded Recharge (Chapter 4)
- Construction and operation of future recharge and storage facilities to accommodate increased SAR diversions (Chapter 5)

The OCWD diversions and two near-term projects are evaluated at a project level of detail in Chapter 4. Future projects are reviewed in Chapter 5 at a program level of detail, consistent with the conceptual nature of the siting, design, and operational descriptions for such potential facilities. OCWD will conduct additional, project-level CEQA review of these future projects.

Several of the near-term facilities identified in the water rights application previously have undergone separate analysis pursuant to CEQA. OCWD has been the lead agency for each of these CEQA compliance efforts and the results are summarized in the PEIR Appendix C.

This table summarizes the results of the PEIR's impact analysis. More detailed impacts and mitigation measures are provided in the Impact Summary.

SUMMARY OF IMPACTS

		Future Projects		Specific Projects	
	SAR Water Diversion	Recharge Basins	Storage Reservoirs	Anaheim Lake Expansion	Santiago Creek Expansion
Hydrology	LS	LS/M	LS/M	LS/M	LS/M
Biology	NI	LS/M	PS	LS/M	NI
Land Use/Recreation	NI	LS/M	PS	LS	LS
Aesthetics	NI	LS/M	PS	LS	LS
Air Quality	NI	PS	PS	LS	LS
Cultural Resources	NI	LS/M	LS/M	LS/M	LS/M
Geology	NI	LS/M	PS	NI	LS
Hazards	NI	LS/M	LS/M	NI	LS
Noise	NI	LS/M	PS	LS	LS
Traffic	NI	LS/M	LS/M	LS	LS

PS= Potentially Significant Unavoidable
LS/M = Less than Significant with Incorporation of Mitigation
LS = Less than Significant
NI = No Adverse Impact

Santa Ana River Diversion

The PEIR identifies the following findings regarding proposed diversions:

Hydrology

The District's proposed increase in diversions of SAR water would not alter base flows in the lower SAR, but could reduce the amount of future storm flow that would otherwise reach the ocean. This would be a less than significant impact for the following reasons:

- Peak flows will continue to reach the ocean during large storm events that could occur in dry, average, or wet years. The duration and size of the peak flows could be reduced by diversions, but instantaneous peak flow rates would be similar to conditions without the project, depending on how the Army Corps of Engineers operates Prado Dam and the intensities of individual storms.
- No biological resources or other beneficial uses downstream of OCWD's diversions would be adversely affected by the reduction in annual volume or duration of peak flows that would otherwise reach the ocean, because the downstream channel is predominantly concrete lined. (Effects of increased diversions on biological resources are discussed in Section 4.3.4.)
- Increased runoff intensity caused by upstream urbanization will increase peak flows reaching Prado Basin during storms which will increase frequency of releases from Prado Dam that exceed OCWD's diversion capacity.

Biology

Diversion of SAR water would not result in any impacts to biological resources for the following reasons:

- The diversion of SAR water will not alter the existing condition of the biological resources in the river.
- No sensitive species, designated critical habitat, or habitat conservation areas would be affected by the District's diversions because the river is predominantly a concrete-lined channel below the OCWD diversions.
- No downstream habitats were identified that would benefit from increased bypass flow.
- Existing operations and flood control improvements have been evaluated pursuant to CEQA requirements. The Corps of Engineers and the Orange County Flood Control District (OCFCD) have engaged in off-site habitat restoration as mitigation for effects to habitat in the river. The OCWD participates in this mitigation within Prado Basin, including invasive species removal programs, the Santa Ana Sucker Conservation Program, and the least Bell's vireo conservation program.

Other Environmental Issues

Diversion of SAR water would not result in any impacts to other environmental resources. The PEIR evaluates the project's potential effects to other resource areas as required by CEQA including: land use, aesthetics, air quality, noise, traffic, geology, hazards and cultural resources. The PEIR concludes that the proposed diversions would not result in direct or cumulatively significant environmental effects.

Evaluation of Future Projects

The diversion of additional SAR water would require constructing additional recharge capacity and storage reservoirs. Recharge projects include surface recharge basins, sub-surface recharge facilities, and basin cleaning vehicles. Storage reservoirs include the increased elevation of the conservation pool behind Prado Dam and off-river storage reservoirs. The PEIR provides a program-level evaluation of the proposed future projects. Future recharge projects could result in significant impacts to air quality during construction. No other significant impacts would remain following implementation of mitigation measures. Future storage reservoirs could result in potentially significant impacts to biology, land use, recreation, aesthetics, air quality, geology, and noise. Each of the future projects described in the PEIR would be subject to additional project-level CEQA review prior to implementation.

Evaluation of Anaheim Lake Expansion Project and Santiago Creek Expanded Recharge Project

The PEIR identifies potential impacts associated with the Anaheim Lake Expansion Project and the Santiago Creek Expanded Recharge Project. None of the identified potential impacts would remain significant with implementation of identified mitigation measures.

Growth Inducement

OCWD does not supply water directly to customers for use. Rather, OCWD is responsible for maintaining and protecting the groundwater basin under northern and central Orange County to maximize its beneficial uses by others. While OCWD does have an important role in the region's water supply management, it does not have a role in either planning or approving land use development and growth or in extending water service to specific areas, developments or users within its service area.

Other sources of supply are potentially available or could be pursued to meet future increases in water demands of local jurisdictions independent of groundwater usage. These other sources include increased import of water from Metropolitan, increased local water recycling, water transfers for import from others outside the region, and desalination. OCWD's proposed project would not cause or induce growth within the

area since it is reasonably foreseeable that the major water suppliers within OCWD's service area (MWDOC, and the cities of Anaheim, Fullerton, and Santa Ana) and/or the local communities and water agencies within the MWDOC service area would pursue other water supply options to meet the needs of planned growth in the absence of OCWD's proposed project.

Cumulative Impacts

CEQA requires that an EIR assess the cumulative impacts of a project with respect to past, current, and probable future projects within the region. The cumulative impact from several projects results from the incremental impacts of the proposed project when added to other closely related, and reasonably foreseeable, future projects. The following sections summarize the PEIR's cumulative impact assessment conclusions.

Cumulative Impact of SAR Diversion

OCWD diversions would be a component of cumulative diversions within the SAR watershed which would result in a reduction of the amount of storm water that would otherwise reach the ocean. This is a less than significant impact to resources below Prado Dam. Although several cumulative effects are identified upstream of Prado Basin by other water rights applicants, OCWD's proposed diversions downstream would not contribute to those upstream effects. Upstream diversions would not significantly reduce water reaching Prado Basin, and OCWD's proposed diversions would not limit proposed upstream diversions.

Cumulative Impact of Future Recharge Facilities

Construction activities for future recharge facilities could contribute temporarily to cumulatively significant environmental impacts to air quality. This would be a significant and unavoidable effect of the construction of new recharge facilities.

Cumulative Impact of Future Storage Reservoirs

Construction of off-river storage facilities within open space could contribute to cumulatively significant impacts to air quality, noise, and traffic. Operations could add to cumulatively significant impacts to aesthetics, biological resources, and land use. This would be a significant and unavoidable effect of the construction of new recharge facilities.

Cumulative Impact of Santiago Creek Expanded Recharge and Anaheim Lake Expanded Recharge Projects

Construction and operation of the Santiago Creek Expanded Recharge and Anaheim Lake Expanded Recharge projects would not contribute to cumulatively significant environmental impacts.

PROJECT IMPACT ANALYSIS SUMMARY

Diversion of Santa Ana River Flows

The District's proposed increase in diversions of SAR water would not alter base flows in the lower SAR, but could reduce the amount of future storm flow that would otherwise reach the ocean. No significant environmental impacts on river resources (including hydrology, aquatic or riparian habitat, wildlife, land uses, or beneficial uses of river water) or on groundwater resources would occur as a result of OCWD's proposed diversions.

Anaheim Lake Expanded Recharge and Santiago Creek Expanded Recharge

Construction: Construction of the Anaheim Lake Expanded Recharge Project and the Santiago Creek Expanded Recharge Project would result in less than significant impacts with implementation of identified mitigation measures to:

- Air quality – construction would emit dust and construction-related vehicle emissions
- Noise – construction equipment would generate noise
- Storm water quality – construction could affect storm water quality
- Hazardous materials – construction could encounter contaminated soils
- Biological resources – construction could disrupt nesting birds at Anaheim Lake
- Cultural resources – construction could encounter previously unknown cultural resources
- Land Use – construction could temporarily disrupt recreational uses
- Aesthetics – temporary construction would affect local views
- Traffic – temporary construction would affect parking

Operation: Operation of the Anaheim Lake Expanded Recharge Project would result in no operational impacts. Operation of the Santiago Creek Expanded Recharge Project would result in less than significant impacts with implementation of identified mitigation measures to:

- Groundwater quality – recharge water could affect neighboring extraction wells
- Biological resources – riparian habitat would be altered with increased water

Future Surface and Sub-Surface Recharge Projects

Construction: Construction of the proposed new recharge basins could potentially affect the following resources:

- Air quality – construction would emit dust and construction-related vehicle emissions This could result in a significant and unavoidable direct and cumulative impact.
- Noise – construction equipment would generate noise
- Storm water quality – construction could spill hazardous substances (e.g., fuels, oils)
- Hazardous materials – construction could encounter of hazardous soils
- Biological resources – construction could destroy habitat or disrupt wildlife
- Cultural resources – construction could encounter unknown cultural resources
- Aesthetics – temporary construction would affect local views

Operation: Operation of the proposed new recharge basins could potentially affect the following resources:

- Groundwater quality – groundwater quality could be affected by recharge water quality and subsurface contamination
- Biological resources – operation of new recharge basins could alter habitats
- Land Use – operation could affect neighboring land uses

PROJECT IMPACT ANALYSIS SUMMARY (continued)

Future Storage Projects

Increased Prado Dam Storage

Construction: No construction would be required to implement the increased water storage behind Prado Dam.

Operation: Operation of the increased water conservation storage at Prado Reservoir could result in less than significant environmental impacts in the following areas with implementation of identified mitigation measures.

- Biological resources – inundation of habitat
- Land Use – existing land uses could be displaced and neighboring land uses could be incompatible

Off-River Storage Reservoirs

Construction: Construction of the new storage reservoirs could result in significant environmental impacts in the following areas:

- Air quality – construction would emit dust and construction-related vehicle emissions. This could result in a significant and unavoidable direct and cumulative impact.
- Noise – construction equipment would generate noise. This could result in a significant and unavoidable direct and cumulative impact.
- Storm water quality – construction could spill hazardous substances (e.g., fuels, oils). This could be mitigated to less than significant levels with implementation of identified mitigation measures.
- Hazardous materials – construction could encounter hazardous soils. This could be mitigated to less than significant levels with implementation of identified mitigation measures.
- Geologic resources – dam construction could affect local soils and geologic features. This could result in a significant and unavoidable impact.
- Biological resources – construction could disrupt habitats and wildlife. This could result in a significant and unavoidable impact.
- Cultural resources – construction could encounter unknown resources. This could be mitigated to less than significant levels with implementation of identified mitigation measures.
- Transportation – construction could temporarily impact local roadways. This could be mitigated to less than significant levels with implementation of identified mitigation measures. Cumulative impacts to traffic could be significant and unavoidable.
- Aesthetics – temporary construction would affect local views. This could result in a significant and unavoidable impact.

Operation: Operation of new storage reservoirs (in Gypsum Canyon and Aliso Canyon) could result in significant environmental impacts in the following areas.

- Biological resources – operations could disrupt wildlife. This could result in a significant and unavoidable impact.
- Land Use – existing land uses could be displaced and neighboring land uses could be incompatible. This could result in a significant and unavoidable impact.
- Geologic hazards – storage reservoirs would be subject to seismic hazards. This could result in a significant and unavoidable impact.
- Aesthetics – storage reservoirs would alter visual character of the area

10. Alternatives

Introduction

CEQA Guidelines Section 15126.6 requires that an EIR assess a reasonable range of alternatives to a project that would meet most of the project objectives *and* avoid or substantially lessen any significant environmental impacts associated with the proposed project. The PEIR evaluates the following alternatives:

- No Project Alternative
- Near-Term Facilities Only Alternative
- No New Surface Water Storage Reservoirs Alternative

No Project Alternative

The No Project Alternative assumes that no new recharge or storage projects would be approved or constructed and that the District would continue to divert and recharge at current levels. The existing maximum recharge capacity is approximately 287,000 afy, including previously approved facilities. The No Project Alternative would require that no new projects would be constructed to increase this recharge capacity. The District would continue to manage the groundwater basin with the objective of minimizing the need to purchase supplemental imported water.

Near-Term Facilities Only Alternative

The Near-Term Facilities Only Alternative assumes that each of the near-term facilities would be constructed, but the long-term facilities would be abandoned. This would increase the District's recharge capacity to approximately 347,000 afy. As base flows and storm flows in the river increase in the future, the District would capture as much as possible with the proposed near-term facilities. Base flows in excess of the District's recharge capacity would bypass the diversion points and flow to the ocean.

No New Storage Reservoirs Alternative

The No Storage Reservoirs Alternative assumes that the off-river storm water storage reservoirs listed in the Application (Aliso Canyon and Gypsum Canyon) would not be constructed. This would not prevent raising the Prado Dam conservation pool higher than 508 feet above sea level (asl). Under this alternative, each of the near-term projects and the long-term recharge projects would remain under consideration. Without storm water storage reservoirs, diverting and recharging 505,000 afy would not be possible. For planning purposes, this analysis assumes that the maximum recharge capacity without off-river storage facilities would be reduced to approximately 445,000 afy. This is approximately 60,000 afy less than the preferred project.

Summary

Each alternative would result in different recharge capacities as shown. The two action alternatives would each provide more water than is currently being recharged into the ground and therefore would assist in meeting the project objectives, but to a lesser degree than the preferred project. The No Project Alternative does not meet the project objectives. The Near-Term Facilities Only Alternative would avoid construction impacts associated with the long term projects. The No Storage Reservoirs Alternative would avoid impacts associated with construction of the storage reservoirs.

SUMMARY OF RECHARGE CAPACITY UNDER EACH ALTERNATIVE

	Preferred Project	No Project Alternative	Near-Term Facilities Only	No Storage Reservoirs
Maximum Recharge Capacity (afy)	505,000	287,000	347,000	445,000[a]
Maximum New Storage (af)	162,000	1,000	11,000	50,600

[a] Assumes that recharge capacity would be reduced 60,000 afy with no new off-river storage reservoirs.

SUMMARY OF ALTERNATIVES ANALYSIS

	No Project Alternative	Near-Term Facilities Only	No Storage Reservoirs
Meets Project Objective	No	Yes, but to a much lesser degree	Yes, but to a lesser degree
Avoids Impacts of Implementation			
▪ Construction and operational impacts associated with new recharge facilities (hydrology, water quality, biology, air quality, noise, aesthetics, geology, cultural resources, traffic, land use, hazards)	Yes	No	No
▪ Operational impacts of Prado Dam conservation (hydrology, biology, land use)			
Near term (508 feet asl)	Yes	No	No
Long term (514 feet asl)	Yes	Yes	No
▪ Construction and operational impacts associated with storage facilities (hydrology, water quality, biology, air quality, noise, aesthetics, geology, cultural resources, traffic, land use, hazards)	Yes	Yes	Yes

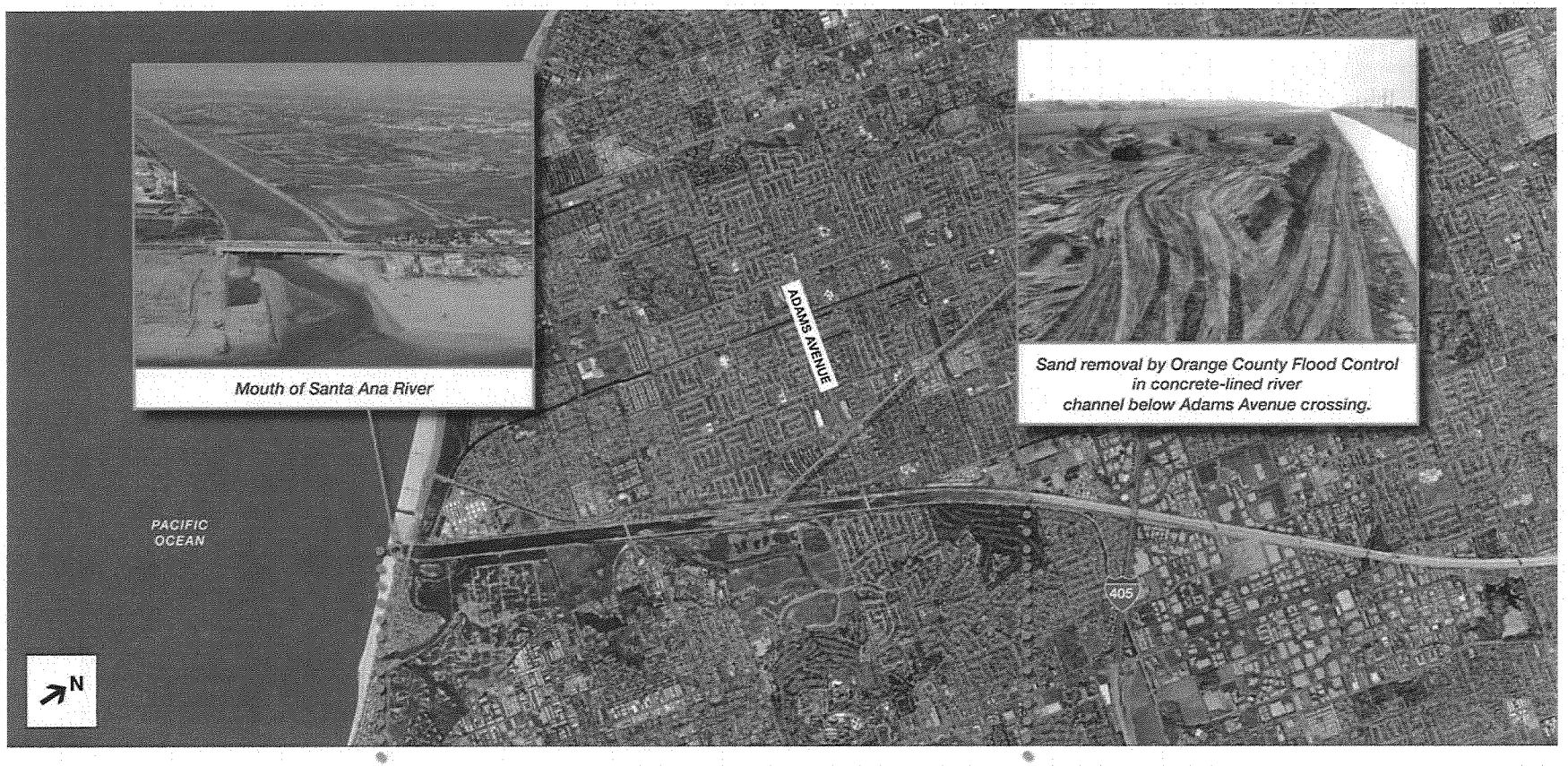
Environmentally Superior Alternative

CEQA requires that an EIR identify the environmentally superior alternative of a project. Each of the alternatives evaluated in this PEIR present environmental tradeoffs among construction impacts associated with recharge and storage facilities. The proposed project would provide for the maximum use of SAR water to meet local water demand and would be the most beneficial to groundwater resources since up to 505,000 af could be recharged in one wet year. Maximizing use of SAR water minimizes the impacts associated with constructing and operating new facilities and technologies to import, desalinate, or reclaim water to meet local demand and impacts associated with using another source of water supply, such as importation from northern California rivers or the Bay Delta. However, construction of facilities to recharge the additional water would present impacts to other environmental resources as discussed above.

As shown in Chapter 5 of this document, potential impacts of constructing and operating the two off-river storage reservoirs (at the Gypsum and Aliso Canyon reservoir sites) could be significant, and in some cases, unavoidable as a result of dam construction and routine inundation for water storage. In contrast, impacts associated with constructing recharge facilities would be minimal. Both the Near-Term Facilities Only Alternative and the No Storage Reservoirs Alternative would avoid the significant impacts associated with off-river storage reservoirs while providing additional recharge facilities and capacity. Of these two alternatives, the No Storage Reservoirs Alternative would provide substantially greater recharge capacity with minimal impact while avoiding the significant impacts associated with constructing off-river storage projects. At this time, with this level of programmatic CEQA review, the No Storage Reservoirs Alternative appears to be the environmentally superior alternative.

The two storage reservoirs are part of OCWD's long-term program and detailed siting evaluations and conceptual designs have not yet been prepared. Inclusion of these projects allows the District to retain its options for additional future storage capacity. If the District does decide to pursue development of these storage facilities in the future, it will undertake more detailed studies and conduct project-level CEQA review. As part of that process, the District will again evaluate alternatives available to meets its program objectives of protecting the groundwater basin and providing adequate groundwater resources to region. At that time, it will be appropriate to develop more detailed information about potential alternatives to capturing local SAR water for recharge such as importation of additional supply from outside the region, local or regional desalination of seawater, and/or significant increases in water recycling. With this additional project-level information, the District will again need to evaluate the question of which option is environmentally superior.

Map Atlas



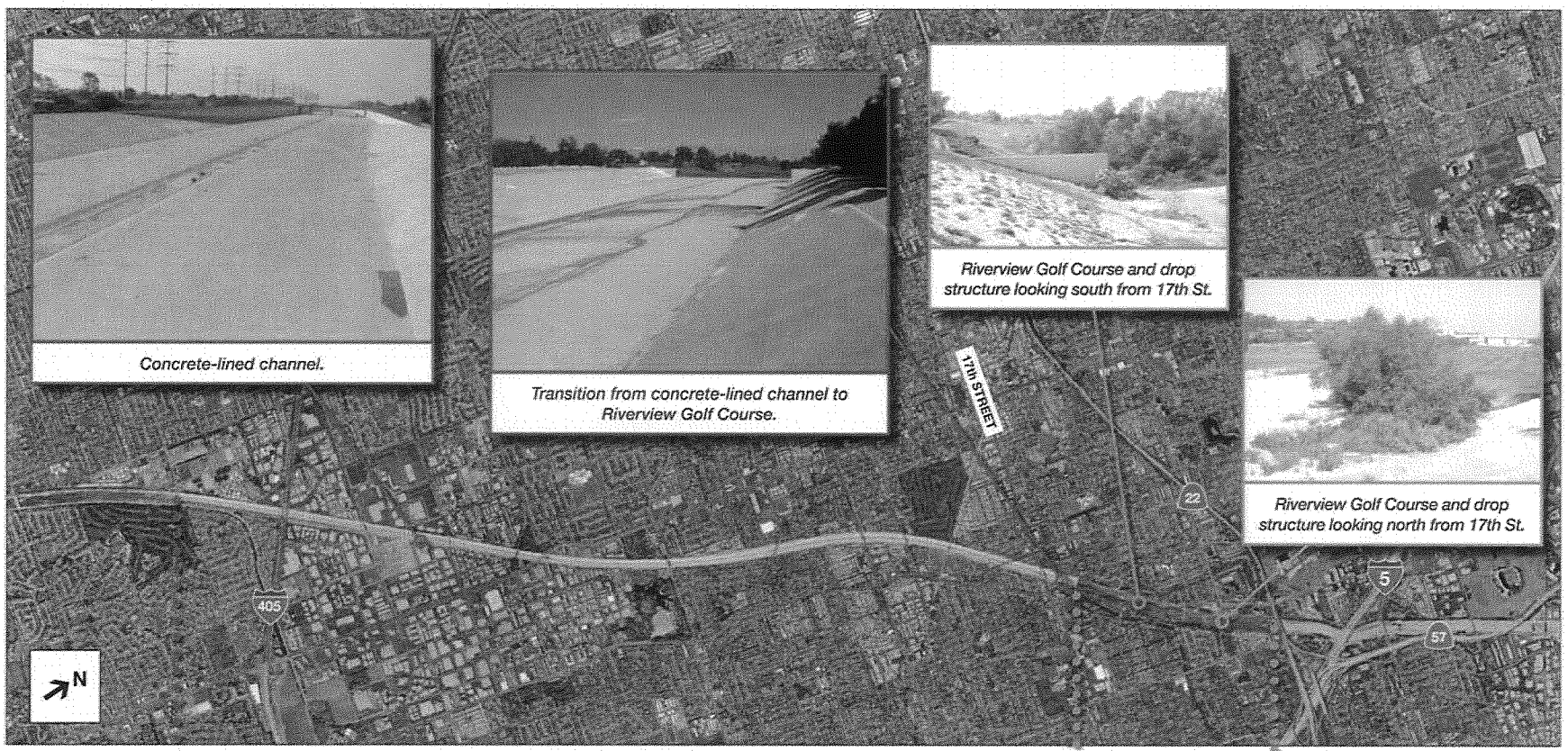
- Channelized
- Soft Bottom
- Concrete Lined Levees

From Adams Avenue to the coast, the channel has a soft bottom.

SOURCE: OCWD and ESA, 2005

OCWD . 202291

Adams Avenue to the Coast



- Channelized
- Concrete Bottom
- Concrete Lined Levees

South of 17th Street in Santa Ana to above Adams Avenue in Costa Mesa, the river is a concrete lined channel with sloping concrete side levees and a concrete bottom

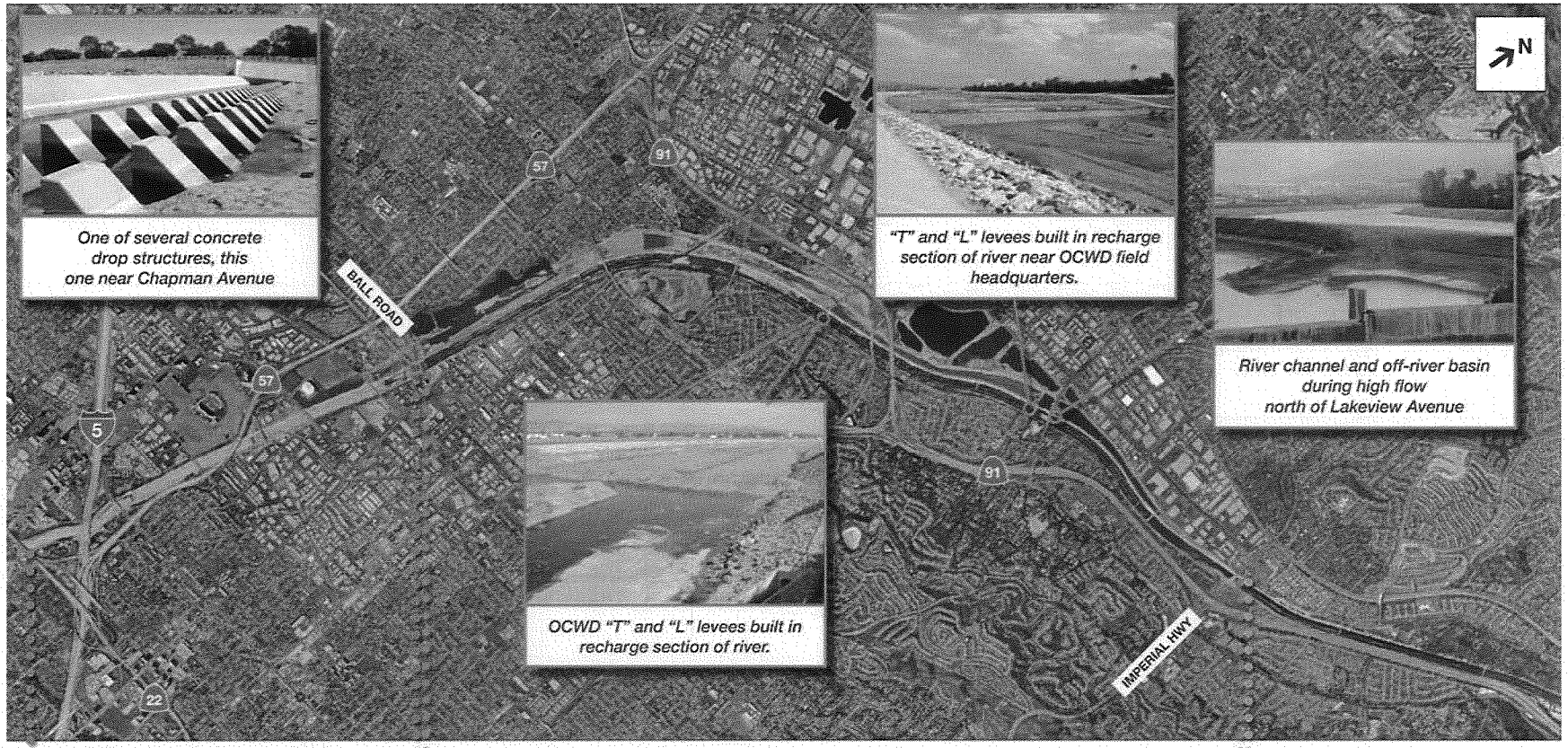
- Soft Bottom
- Soft Levees
- Golf Course

From SR-22 to 17th Street in Santa Ana, the Riverview Golf Course occupies the river channel landscaped with manicured turf grass and exotic trees.

SOURCE: OCWD and ESA, 2005

OCWD . 202291

South of 17th Street to SR-22 in Santa Ana

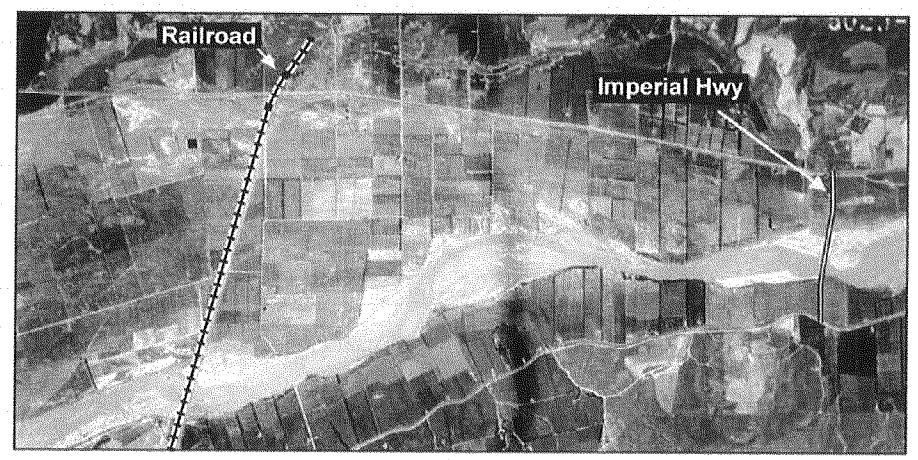


The District's diversion and recharge facilities are contained in the 5.5 mile segment between Imperial Highway and the Garden Grove Freeway (SR-22) overpass. The soft-bottomed river is lined with rip-rap or concrete levees in these areas.

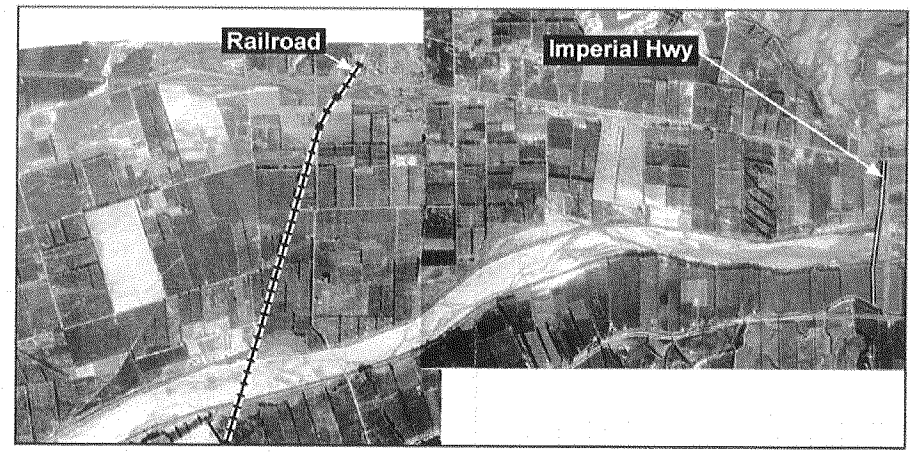
SOURCE: OCWD and ESA, 2005

OCWD . 202291

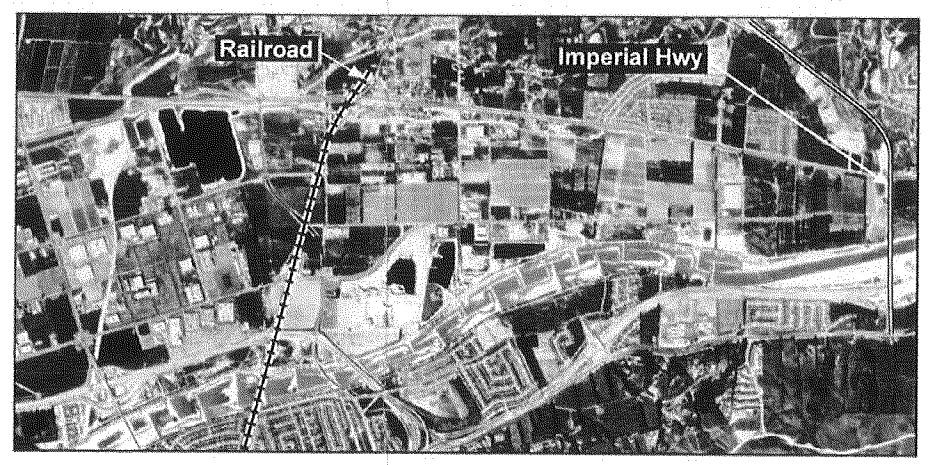
The District's Division and Recharge Facilities and a Portion of Reach 8



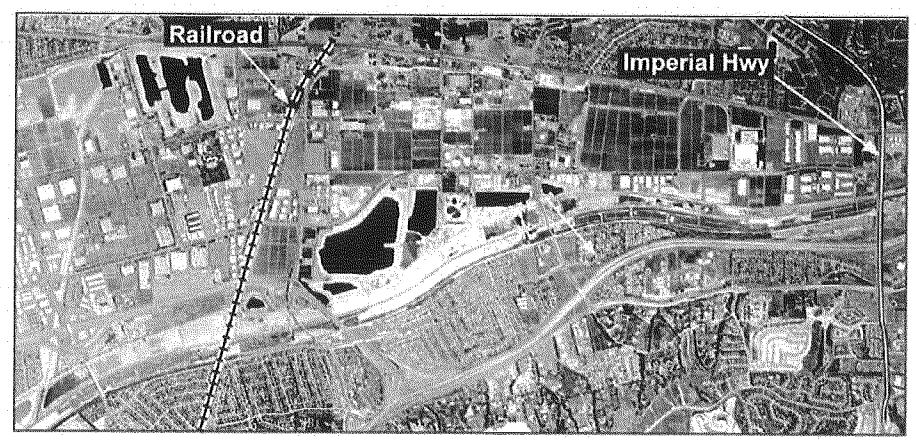
1938
No substantial side levees or in-river improvements visible.



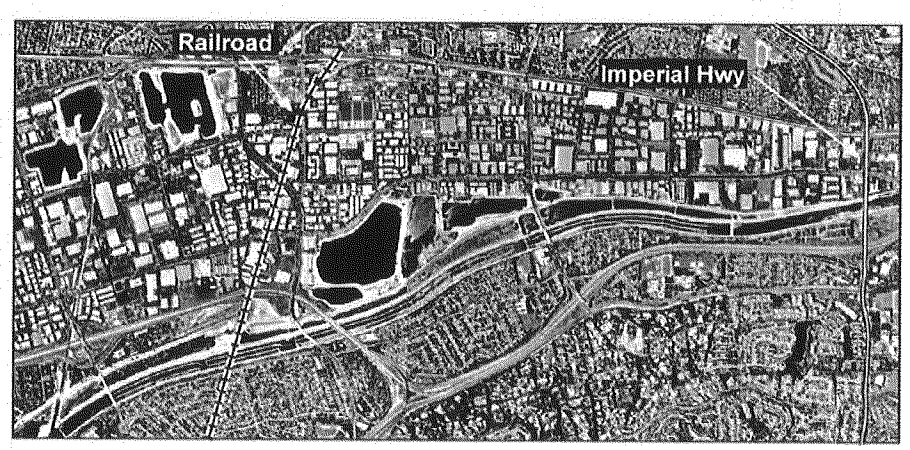
1953
Side levees visible. Some in-river grading may be occurring.



1970
Improved channel levees. In-river levees visible to slow base flow. Off-river recharge basins (Conrock Basin and Huckberry Pond) visible as either operating or in construction.



1977
Off-river recharge system paralleling main river channel is apparent. River channel is groomed with "T and L" levees. Miller Basin, Anaheim Lake, Warner Basin, Conrock Basin, Huckberry Pond are clearly visible.



2002
Similar to existing condition with in-river and off-river recharge facilities. Well defined side levees. Well defined in-river "T and L" levees.

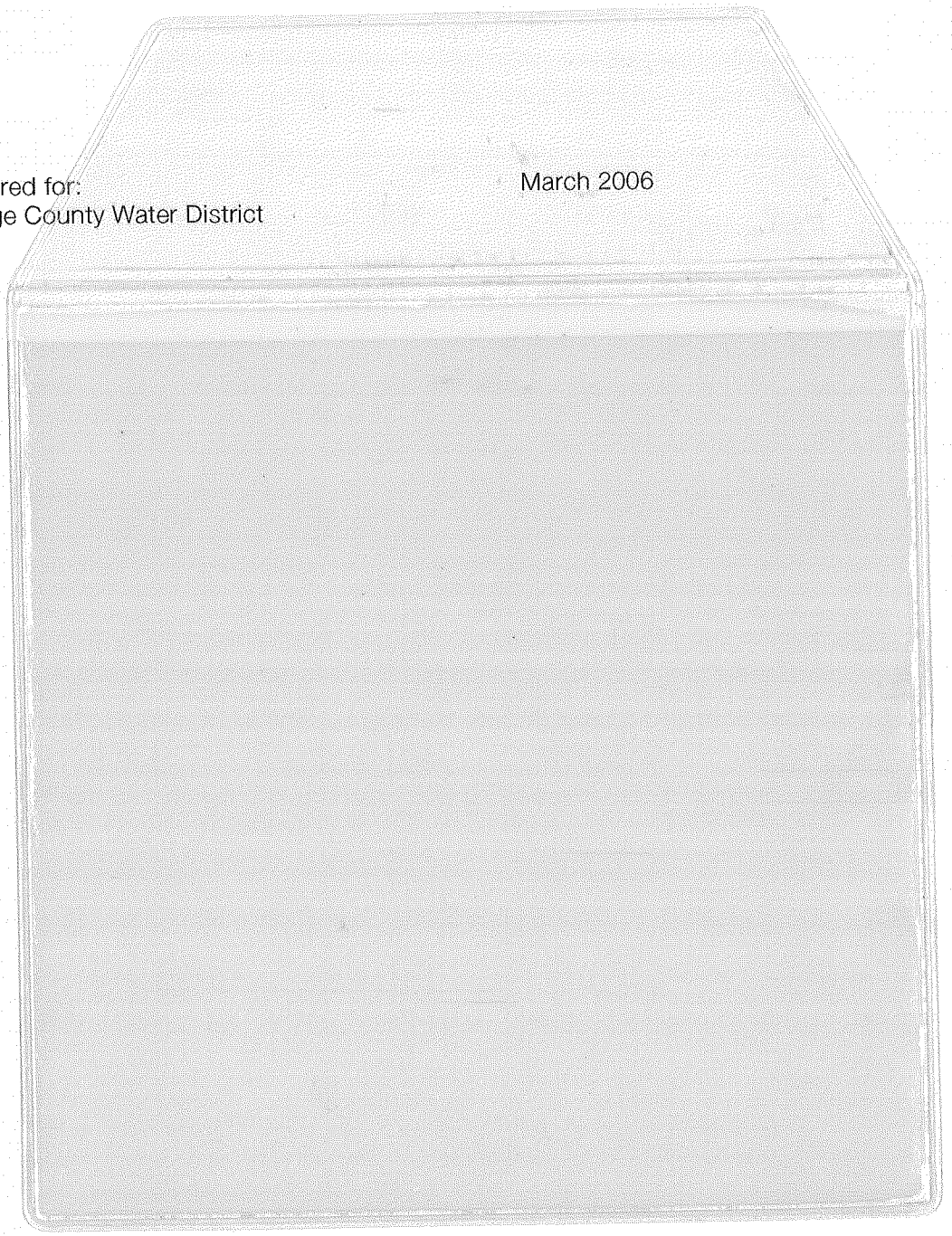
0 4500
Aprox. Scale in Feet

SOURCE: Water Resources Institute at Cal State San Bernardino Data Resources Inc., 1953, 1977; Continental Aerial Inc.,1970; OCWD, 2002

Compact Disc

ORANGE COUNTY WATER DISTRICT APPLICATION TO APPROPRIATE SANTA ANA RIVER WATER

Recirculated Draft Program Environmental Impact Report
SCH # 2002081024



Prepared for:
Orange County Water District

March 2006