ANNUAL REPORT

Upper Los Angeles River Area Watermaster

Re: City of Los Angeles vs. City of San Fernando, et al.

Superior Court Case No. 650079 – County of Los Angeles

WATERMASTER SERVICE

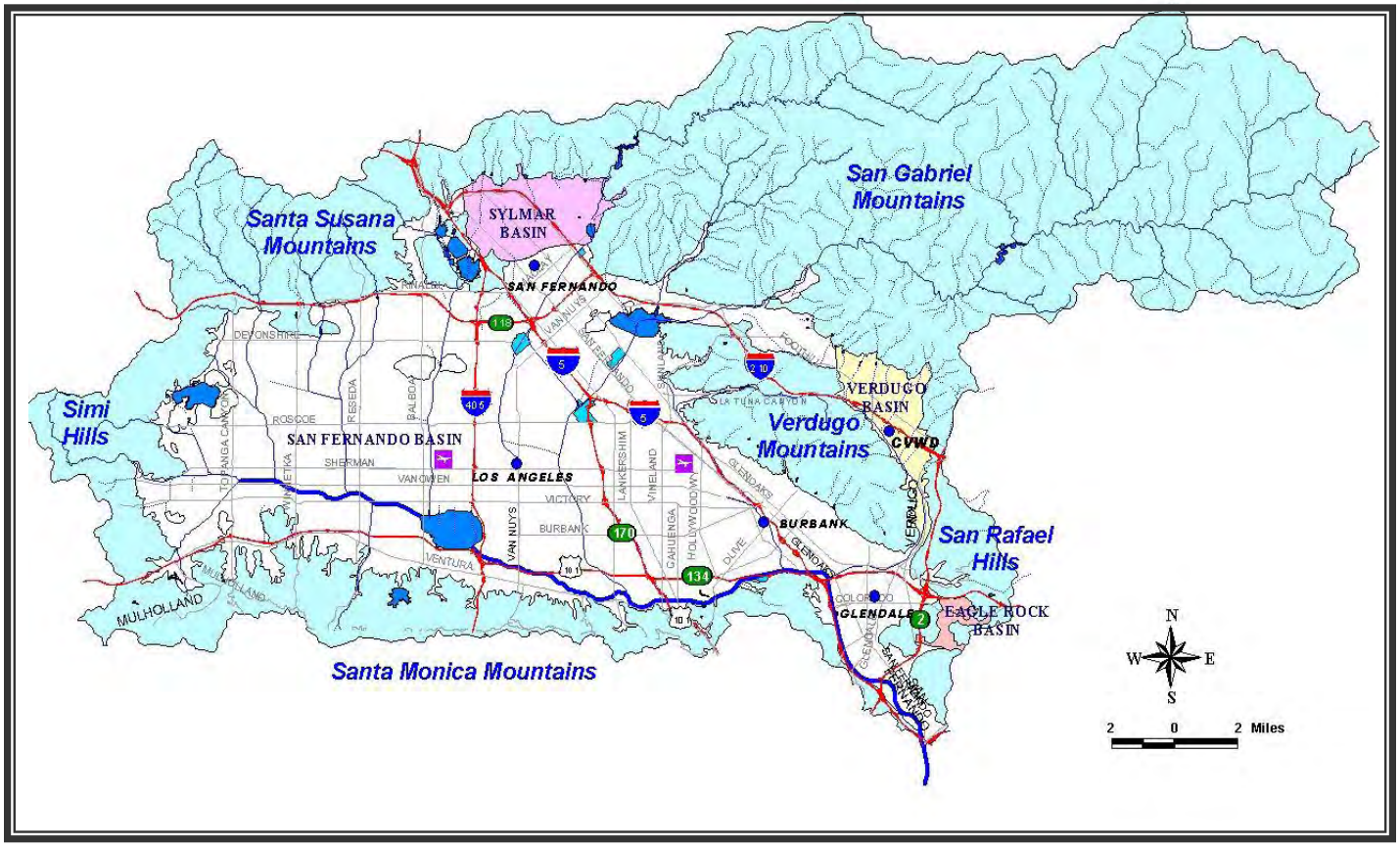
IN THE

UPPER LOS ANGELES RIVER AREA

LOS ANGELES COUNTY, CALIFORNIA

2010-11 WATER YEAR

OCTOBER 1, 2010 – SEPTEMBER 30, 2011



MAY 2012

ANNUAL REPORT
UPPER LOS ANGELES RIVER AREA WATERMASTER

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CASE NO. 650079 - COUNTY OF LOS ANGELES

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LOS ANGELES COUNTY, CALIFORNIA

2010-11 WATER YEAR
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Copies of this report may be viewed and downloaded from the ULARA Watermaster website located at http://ularawatermaster.ladwp.com/

MAY 2012

FOREWORD

As Watermaster, I am pleased to present the Annual Watermaster Report for the Upper Los Angeles River Area (ULARA) for the 2010-11 Water Year (i.e., from October 1, 2010 through September 30, 2011). This report has been prepared in accordance with the provisions of the Judgment, dated January 26, 1979, in regard to the court-defined water rights case of the Superior Court for the County of Los Angeles (i.e., City of Los Angeles vs. City of San Fernando, et al, Case No. 650079). Four groundwater basins and their adjoining hill and mountain areas comprise ULARA; from largest to smallest in surface area, these four groundwater basins are known as the San Fernando, the Sylmar, the Verdugo and the Eagle Rock basins.

This Annual Watermaster Report describes the water rights in each of the four groundwater basins within the ULARA and indicates the water in storage to the credit of each party as of October 1, 2011. This report also provides background information on the history of the San Fernando case and information regarding the four groundwater basins in ULARA with respect to: local water supply; groundwater extractions; trends in groundwater levels in numerous wells in the basins; estimates of the change in groundwater in storage; imported water use; recharge operations; water quality; and other pertinent information for the 2010-11 Water Year.

Significant challenges in ULARA over the long-term will continue to be: the accumulation of stored water credits in the San Fernando Basin; ongoing contamination of groundwater in the San Fernando and Verdugo basins; increased concentrations of nitrate in the groundwater in Sylmar Basin; and the need to increase recharge into the local groundwater basins by different methods, at different locations and depths, and by using different sources of water. This need for increased recharge is particularly important for the San Fernando Basin.

In late-2007, the cities of Glendale, Burbank, and Los Angeles entered into a 10-year agreement to help reverse the long-term decline in stored groundwater and the concurrent accumulation of a large quantity of unsupported stored water credits in the San Fernando Basin. The agreement contains several important provisions, including: restrictions on pumping of stored water credits; the joint efforts of the City of Los Angeles and the County of Los Angeles Department of Public Works to rehabilitate existing facilities and/or construct new facilities to

help increase recharge of stormwater runoff; and working to reduce future losses from the basin due to rising groundwater and underflow out of ULARA.

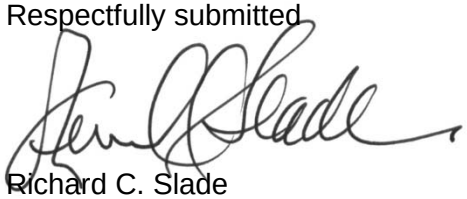
Groundwater contamination from volatile organic compounds (VOCs) and hexavalent chromium continues to be a serious problem for water-supply in the eastern portion of the San Fernando Basin. The cities of Burbank, Glendale and Los Angeles continue to enlist the assistance of key regulatory agencies including the United States Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board – Los Angeles (LARWQCB) to help expedite the cleanup of the contaminated soils and aquifers within San Fernando Basin. Pumping of excessive concentrations of chromium by certain wells and limitations of existing treatment facilities to treat those excessive concentrations have also become more recent problems. In addition, various gasoline components continue to impact and/or threaten municipal-supply water wells owned by the Crescenta Valley Water District in the Verdugo Basin. In the Sylmar Basin, nitrate concentrations have been increasing in recent years in wells operated by the City of San Fernando; Los Angeles has one well that has been impacted by TCE in this basin. Some of the municipal-supply water wells owned by these purveyors have had to be removed from active service due to excessive concentrations of various contaminants in the San Fernando, Sylmar and Verdugo basins.

An ongoing activity of the Watermaster continues to be the review and the approval/denial of the possible plans for infiltration of stormwater collected at all new development and/or redevelopment projects within the San Fernando basin portion that lies within the City of Los Angeles. These stormwater collection plans, as prepared by the engineer for the developer, are part of the Standard Urban Stormwater Mitigation Plan (SUSMP) program of the LARWQCB.

To provide ongoing groundwater management within the four ULARA groundwater basins, the Watermaster and the Administrative Committee continued to meet on a quarterly basis during 2010-11. The Watermaster continued to provide updates of key ULARA issues at quarterly status conferences with Judge Susan Bryant-Deason, Judge of the Los Angeles County Superior Court. Further, and as outlined in Section 5.4 of the ULARA Policies and Procedures, the ULARA Groundwater Pumping and Spreading Plan report for 2009/10 was prepared by the Watermaster and the Watermaster Support staff at the Los Angeles Department of Water and Power (LADWP), and was filed with the Court in July 2010.

For this current Annual Watermaster Report, I want to acknowledge and personally thank the Watermaster Support Staff at LADWP for their continued efforts in creating many of the data tables, figures and maps, and for conducting computer model simulations that are all vital to preparing this report in a timely basis for the Court. Among those at LADWP whose efforts continue to be particularly notable are: Mr. Greg Reed; Ms. Fatema Akhter; Mr. Hadi Jonny; Ms. Araceli Carrillo; and Ms. Billie Washington. I also appreciate the efforts of Mr. Mel Blevins (former Watermaster) in his capacity as Special Consultant to this Watermaster.

Respectfully submitted,



Richard C. Slade
ULARA Watermaster

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1. INTRODUCTION

1.1 Background

The Upper Los Angeles River Area (ULARA) encompasses the entire watershed of the Los Angeles River and its tributaries above (north of) a point in the river designated by the Los Angeles County Department of Public Works (LACDPW) as Gaging Station F-57C-R; this gage lies near the junction of the Los Angeles River and the Arroyo Seco (see Plate 1, "ULARA Location Map"). This ULARA watershed encompasses an approximate total of 328,500 acres of hill and mountain areas and intervening valley fill areas. Of this total watershed area, there are approximately 122,800 acres valley fill that comprise the four groundwater basins), whereas the remaining 205,700 acres are comprised by the tributary hills and mountains in the watershed. ULARA is bounded on the north and northwest by the Santa Susana Mountains; on the north and northeast by the San Gabriel Mountains; on the east by the San Rafael Hills, which separate ULARA from the San Gabriel Groundwater Basin; on the south by the Santa Monica Mountains, which separate ULARA from the Los Angeles Coastal Plain; and on the west by the Simi Hills.

Four distinct groundwater basins have been identified within the valley fill areas of ULARA: the San Fernando, Sylmar, Verdugo and Eagle Rock basins (refer to Plate 1). The groundwater reservoir comprising each of these basins is separated from the others and is considered to be replenished by the following sources: deep percolation from direct rainfall; infiltration of surface water runoff; and infiltration of a portion of the water that is delivered for use within these basins. Artificial recharge also occurs in the San Fernando Basin via the use of spreading basins whenever excess rainfall and runoff are available.

For this report, a groundwater basin is generally defined as a three-dimensional region that has reasonably-definable surface and subsurface boundaries and that contains layers and lenses of potentially water-bearing sediments which are capable of yielding groundwater in useable quantities and of acceptable quality for beneficial use. In short, a groundwater basin could be considered to represent an area underlain by permeable sediments capable of storing and yielding a substantial supply of potable groundwater to water-supply wells. For the four ULARA groundwater basins, the potentially water-bearing sediments are comprised by various young and old alluvial fan-type deposits. In the San Fernando and Sylmar basins, the potentially water-bearing sediments also

include various strata within the Saugus Formation that underlie the geologically younger and older alluvial-type deposits beneath the floor of the San Fernando Valley..

Exposed at ground surface in all of the hill and mountain watershed areas of ULARA, and also known to directly underlie all potentially water-bearing sediments within the four ULARA groundwater basins, are geologically older sedimentary rocks (i.e., sedimentary bedrock) and even older metamorphic and crystalline rocks (i.e. crystalline basement rock). These geologically older rocks are either well-lithified, cemented and/or crystalline in nature, and as such, they are considered to display only secondary porosity; their permeability is low to very low. Because of their lithified and/or cemented and/or crystalline character, these rocks do not contain water in the interstices between the individual sand or gravel grains, but rather the groundwater is contained solely within fractures, joints, and/or along bedding planes in the rocks. Hence, the groundwater storage capacity of these rocks is low and their long-term sustained yield is unpredictable; only limited quantities of water can be yielded to wells. For these reasons, these rocks are classified as nonwater-bearing for municipal-supply purposes in ULARA, and none of these older sedimentary rock formations or crystalline rocks are considered to be part of the four groundwater basins within ULARA.

The four ULARA groundwater basins are briefly described in the paragraphs below. Noteworthy is that Bulletin 118 Update 2003, prepared by the California Department of Water Resources (Oct 2003, p. 216) defines a groundwater basin as follows: “an alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined boundaries in a lateral direction and having a definable bottom.” This Watermaster, as a result of prior groundwater projects, has used the following as a more detailed definition of a typical groundwater basin: “a three dimensional region that has reasonably-definable surface and subsurface boundaries and that contains layers and lenses of potentially water-bearing sediments which are capable of yielding groundwater in useable quantities and of acceptable quality for beneficial use. In short, a groundwater basin could be considered to represent an area underlain by permeable sediments capable of storing and yielding a substantial supply of potable groundwater to water-supply wells.”

THE SAN FERNANDO BASIN (SFB), the largest of the four basins, has a surface area of approximately 112,000 acres and a maximum thickness of potentially water-bearing sediments of ±1200 ft. The surface area of SFB comprises 91.2 percent of the total valley-fill area in ULARA. The lateral or ground surface boundaries of this basin are formed by nonwater-bearing bedrock and/or crystalline basement rock in the adjoining hills/mountains, as follows: on the east and northeast by the San Rafael Hills, the Verdugo Mountains, and the San Gabriel Mountains; on the north by the San Gabriel Mountains and the eroded south limb of the Little Tujunga syncline which separates it from the Sylmar Basin on the north; on the northwest and west by the Santa Susana Mountains and Simi Hills; and on the south by the Santa Monica Mountains. Plate 1A, "San Fernando Groundwater Basin Map," illustrates the approximate ground surface boundaries of the SFB (as originally interpreted by prior Watermasters and as subsequently converted to GIS format by LADWP personnel), along with the general locations of key wellfields in this basin that are owned by the cities of Burbank, Glendale and Los Angeles.

THE SYLMAR BASIN, which lies in the north-central portion of ULARA, displays a surface area of approximately 5,600 acres and may have a maximum thickness of potentially water-bearing sediments of at least 1000 ft; the surface area of Sylmar Basin comprises 4.6 percent of the total valley fill in ULARA. The Sylmar Basin is bounded by the nonwater-bearing bedrock and/or basement rock in the adjoining hills/mountains, as follows: on the north and east by the San Gabriel Mountains; on the west by a topographic divide in the valley fill between the Mission Hills and the San Gabriel Mountains; on the southwest by the Mission Hills; on the east by the older portion of the Saugus Formation along the east bank of Pacoima Wash; and on the south by the eroded south limb of the Little Tujunga syncline, which separates it from the SFB to the south. Plate 1B, "Sylmar Groundwater Basin Map," illustrates the approximate ground surface boundaries of Sylmar Basin (as originally interpreted by prior Watermasters and as subsequently converted to GIS format by LADWP personnel) and the approximate locations of wells owned by the cities of Los Angeles and San Fernando in this basin.

THE VERDUGO BASIN, which lies north and east of the Verdugo Mountains, has an approximate surface area of 4,400 acres and a maximum thickness of potentially water-bearing sediments on the order of 300 ft; this basin comprises 3.6 percent of the total valley fill in ULARA. Verdugo Basin is bounded on the north by nonwater-

bearing basement rock in San Gabriel Mountains; by a groundwater divide separating it from the Monk Hill Subarea of the Raymond Groundwater Basin to the east; on the southeast by sedimentary bedrock in the San Rafael Hills; and on the south and southwest by the crystalline basement rock within the Verdugo Mountains. Plate 1C, "Verdugo Groundwater Basin Map," shows the boundaries of Verdugo Basin (as originally interpreted by prior Watermasters and as subsequently converted to GIS format by LADWP personnel) and the approximate locations of water wells owned by the City of Glendale and the Crescenta Valley Water District.

THE EAGLE ROCK BASIN, the smallest of the four ULARA groundwater basins, lies in the extreme southeast corner of ULARA. The surface area of this basin is approximately 800 acres and the maximum thickness of potentially water-bearing sediments may be on the order of only ±200 ft. As a result, the surface area of the Eagle Rock basin comprises only 0.6 percent of the total valley fill in ULARA. The approximate ground surface boundaries of this small basin (as originally interpreted by prior Watermasters and as subsequently converted to GIS format by LADWP personnel) are shown on Plate 1D, "Eagle Rock Groundwater Basin Map"; note that there are no existing municipal-supply water wells in this basin.

1.2 History of Adjudication

Water rights in ULARA were established by the JUDGMENT AFTER TRIAL BY COURT in Los Angeles County Superior Court Case No. 650079, entitled The City of Los Angeles, a Municipal Corporation, Plaintiff, vs. City of San Fernando, et al., Defendants, signed March 14, 1968, by the Honorable Edmund M. Moor, Judge of the Superior Court. Numerous pre-trial conferences were held subsequent to the filing of the action by the City of Los Angeles in 1955 and also before the trial commenced on March 1, 1966.

On March 19, 1958, an Interim Order of Reference was entered by the Court directing the State Water Rights Board (now known as the State Water Resources Control Board, SWRCB) to study the availability of all public and private records, documents, reports, and data relating to a proposed Order of Reference in the case. On June 11, 1958, the Court subsequently entered an "Order of Reference to State Water Rights Board to Investigate and Report upon the Physical Facts (Section 2001, Water Code)".

A Final Report of Referee was approved on July 27, 1962 and filed with the Court. The Report of Referee provided the results of a study of the surface and subsurface geology, the occurrence and movement of groundwater, aquifer characteristics, and the surface hydrology. In addition, investigations were made of the history of: channels of the Los Angeles River and its tributaries; the general directions of groundwater flow within the area; the groundwater quality and the historic extractions of groundwater in the four basins; and all sources of water, whether they be diverted, extracted, imported, etc within the ULARA basins. The Report of Referee served as the principal basis for the geological, hydrogeological and hydrological facts for the original Trial Court Judgment in 1968, the Decision of the Supreme Court in 1975 (14 Cal 3d 199, 123 Cal Rept 1), and the Trial Court Final Judgment on remand on January 26, 1979.

The Trial Court issued its opinion on March 15, 1968. The City of Los Angeles filed an appeal from the Judgment of the Trial Court with the Court of Appeal, where after the City of Los Angeles participated in a hearing on November 9, 1972 conducted by the Court of Appeal. The opinion prepared by Judge Compton, was issued on November 22, 1972, and was concurred with by Judges Roth and Fleming. It provided a reversal, with direction, of the original Judgment handed down by Judge Moor on March 14, 1968. In essence, this reversed opinion gave rights to the City of Los Angeles for all water in ULARA, including the use of the groundwater in the local groundwater basins, along with some limited entitlements to others. The defendants, however, were given the right to capture "import return water", which was considered to be that portion of the treated surface water purchased from (and imported to the area by) the Metropolitan Water District of Southern California (MWD) that percolates back into the local groundwater basin.

A petition for rehearing was filed on December 7, 1972, but this petition was denied by the Court of Appeal. On January 2, 1973, the defendants filed a petition for hearing with the State Supreme Court. The State Supreme Court, on March 2, 1973, advised the parties it would hear the case, and the appeals hearing began on January 14, 1975.

On May 12, 1975, the California Supreme Court filed its opinion on the then-current 20 year-long San Fernando Groundwater Basin litigation. This opinion, which became final on August 1, 1975, upheld the Pueblo Water Rights of the City of Los Angeles to all groundwater in the SFB derived from precipitation (infiltration of direct rainfall plus surface water runoff) within ULARA. The Pueblo Water Rights of Los Angeles were not

allowed to extend to and/or include the groundwater in the Sylmar, Verdugo or Eagle Rock basins. However, all surface and groundwater underflows from these adjoining groundwater basins were considered to be a part of the Pueblo Water Rights of the City of Los Angeles.

The California Superior Court opinion also provided the City of Los Angeles with rights to all groundwater in the SFB that was derived from water imported by the City from outside ULARA that was eventually spread or delivered within the SFB. The Cities of Glendale and Burbank were also given rights to all SFB groundwater derived from water that each imports from outside ULARA and delivered within ULARA. Because the City of San Fernando was not a member of MWD until the end of 1971, and because that city had never imported any water from outside ULARA prior to 1971, the City of San Fernando was given no return flow rights based on a March 22, 1984 stipulation between the cities of Los Angeles and San Fernando.

The California Supreme Court reversed the principal judgment of the March 15, 1968 Trial Court opinion and remanded the case back to the Superior Court for further proceedings consistent with the Supreme Court's opinion. On remand, the case was assigned to the Honorable Harry L. Hupp, Judge of the Superior Court of Los Angeles County. The Final Judgment (Judgment), signed by Judge Hupp, was entered on January 26, 1979; copies of this Judgment are available from the ULARA Watermaster. Importantly, the water rights set forth in the Judgment are generally consistent with the opinion of the Supreme Court as described above, with the exception of a provision regarding the calculation of Import Return Credit. That is, contrary to the Supreme Court opinion, the cities of Burbank, Glendale and Los Angeles in 1978 agreed to use all delivered water, instead of only imported water, in the calculation of Import Return Credit. This agreement among these cities has had a significant adverse impact on groundwater storage in the San Fernando Basin, as discussed later in this report.

In addition, the January 26, 1979 Judgment includes provisions and stipulations regarding water rights, storage of water, stored water credits, and arrangements for physical solution water for certain parties as recommended by the Supreme Court.

A separate stipulation was filed in Superior Court on January 26, 1979 appointing Mr. Melvin L. Blevins as the original ULARA Watermaster under the Judgment in this case. On September 1, 2003, Mr. Mark G. Mackowski was appointed ULARA Watermaster by

the Superior Court, succeeding Mr. Blevins after his 24 years of service. On January 1, 2009, Mr. Richard C. Slade of Richard C. Slade and Associates LLC, Consulting Groundwater Geologists, was appointed as the first completely independent ULARA Watermaster, thereby succeeding Mr. Mark Mackowski after his 5 years of service.

On August 26, 1983, the original ULARA Watermaster (Mr. Blevins) reported to the Court, pursuant to Section 10.2 of the Judgment, that the Sylmar Basin was in a condition of overdraft. In response to the Watermaster's letter and a Minute Order of the Court, the cities of Los Angeles and San Fernando responded by letter to the Court, agreeing with the Watermaster's report on overdraft in the Sylmar Basin. On March 22, 1984, Judge Hupp signed a stipulation ordering, effective October 1, 1984, that the cities of Los Angeles and San Fernando would be limited in their pumping from the Sylmar Basin in order to bring their total groundwater extractions within the safe yield of this basin, including any rights exercised by private parties.

Pursuant to Judgment Section 8.2.10, the then-current Watermaster increased the safe yield of the Sylmar Basin on a temporary basis in 1996, from 6,210 acre-feet per year (AF/y) to 6,510 AF/y. On October 1, 2005 this temporary increase expired, and the then-current Watermaster again re-evaluated the safe yield of the Sylmar Basin. Based on that re-evaluation, a recommendation was made by that Watermaster in 2006 to increase the total safe yield of this basin to 6,810 AF/y (3,405 AF/y each for the cities of Los Angeles and San Fernando). This recommendation was subject to certain conditions and requirements, including the possible construction of as many as four new groundwater monitoring wells to help determine groundwater outflow from the Sylmar Basin into the San Fernando Basin to the south. The Court approved the new stipulation after its hearing on December 13, 2006. An updated re-assessment of the safe yield of this basin may be filed with the Court by the current Watermaster in the summer of 2012.

In September 2007, the cities of Burbank, Glendale, and Los Angeles entered into a 10-year Stipulated Agreement to address the long-term decline in stored groundwater in the San Fernando Basin (see Section 2.9 of this report and Appendix G). This 10-year interim agreement restricts the pumping of Stored Water Credits, helps account for basin losses, and provides for the support of Los Angeles for enhancing the recharge of native water within this basin. It also provided for a re-evaluation of the safe yield of the San Fernando Basin. A draft of the report was prepared by a private engineering company retained by the ULARA Administrative Committee, but the Technical Committee and Mr.

Blevins recommended to the Administrative Committee in 2010 that the draft document not be finalized.

Table 1-1, "Judges of Record," lists the judges (and their respective date of appointment) who have succeeded the original Superior Court Judge (Judge Hupp); it was Judge Hupp who signed the Final Judgment in this case as Judge of Record for the San Fernando Judgment in 1979.

TABLE 1-1: JUDGES OF RECORD

Judge	Date Appointed
Vernon G. Foster	April 30, 1985
Miriam Vogel	January 16, 1990
Sally Disco	May 25, 1990
Jerold A. Krieger	April 16, 1991
Gary Klausner	December 9, 1991
Ricardo A. Torres	January 1, 1993
Susan Bryant-Deason	January 1, 1999

1.3 Extraction Rights

The extraction rights under the January 26, 1979 Judgment and the separate August 26, 1983 Sylmar Basin Stipulation are as follows:

1.3A San Fernando Basin

Native Water

The City of Los Angeles has an exclusive right to extract and utilize all the native safe yield water in the San Fernando Basin; refer to Plate 1A for the boundaries of this basin. This native safe yield, which was originally determined to be an average of 43,660 AF/y, represents the Pueblo Water Right of the City of Los Angeles under the Final Judgment dated January 26, 1979.

Import Return Water

The cities of, Burbank, Glendale, and Los Angeles each have a right to extract the following amounts of groundwater from the SFB.

Burbank: 20.0 percent of all delivered water, including recycled water, to the valley fill land of the SFB and all of its tributary hill and mountain areas.

Glendale: 20.0 percent of all delivered water, including recycled water, to the valley fill land of the SFB and all of its tributary hill and mountain areas.

Los Angeles: 20.8 percent of all delivered water, including recycled water, to the valley fill land of the SFB and all of its tributary hill and mountain areas.

Physical Solution Water

Several parties are granted limited entitlement to extract groundwater chargeable to the rights of others upon payment of specified charges. Table 1-2 “Physical Solution Parties,” lists the various pumping parties and their maximum physical solution pumping volumes in units of acre feet per year (AF/y).

TABLE 1-2: PHYSICAL SOLUTION PARTIES

Chargeable Party	Pumping Party	Allowable Pumping (acre-feet)
City of Burbank	Valhalla	300
	Lockheed-Martin	25
City of Glendale	Forest Lawn	400
	Angelica Healthcare[2]	75
City of Los Angeles	City of Glendale	5,500
	City of Burbank	4,200
	Middle Ranch	50
	Hathaway	60
	Van de Kamp[1]	120
	Toluca Lake	100
	Sportsmen's Lodge	25
	Water Licenses	83

1. Van de Kamp has never pumped its physical solution right.
2. Angelica Healthcare no longer pumps its physical solution rights.

Stored Water

Each of the cities of Burbank, Glendale, and Los Angeles has a right to store groundwater and the right to extract equivalent amounts of groundwater from the SFB.

1.3B Sylmar Groundwater Basin

Native Water

The March 22, 1984 Stipulation assigned the cities of Los Angeles and San Fernando equal rights to the total safe yield of the Sylmar Basin (see basin boundaries on Plate 1B). On the recommendation of the original Watermaster, and on July 16, 1996, the Administrative Committee approved a temporary increase in the safe yield of this basin from 6,210 AF/y to 6,510 AF/y for a 10-year period. This temporary 10-year period ended on October 1, 2005, and triggered a re-evaluation of the safe yield of this basin by the original Watermaster. The Watermaster conducted the safe yield re-evaluation consistent

with Section 8.2.10 of the Judgment. Another Stipulation approved by the Court on December 13, 2006 permitted a temporary increase in the safe yield of the Sylmar Basin to 6,810 AF/Y, beginning October 1, 2006. This Stipulation provides that the safe yield of the Sylmar Basin "shall be re-evaluated within 5 years after adoption of the Stipulation. The forthcoming 2012 Stipulation will also recommend a timeframe for safe yield re-evaluation. The current Watermaster will be providing a re-assessment of the safe yield of this basin to the Court in the summer of 2012.

The only potentially active private party with overlying rights within the Sylmar Basin is Santiago Estates, a successor to Meurer Engineering, M.H.C. Inc. Any pumping by Santiago Estates is deducted from the safe yield of this basin and the cities of Los Angeles and San Fernando are permitted to equally divide the remainder of the safe yield value of basin. However, Santiago Estates has not pumped any groundwater since the 1998-99 Water Year.

Stored Water

Each of the cities of Los Angeles and San Fernando has a right to store groundwater by in-lieu practices and a right to extract equivalent amounts of groundwater from the Sylmar Basin.

1.3C Verdugo Groundwater Basin

Native Water

The City of Glendale and the Crescenta Valley Water District (CVWD) have appropriative and prescriptive rights to extract 3,856 and 3,294 AF/y of groundwater, respectively, from Verdugo Basin; refer to Plate 1C for the boundaries of this basin.

Import Return Water

The City of Los Angeles may have a right to recapture delivered imported water in this basin upon application to the Watermaster and on subsequent order after a hearing by the Court pursuant to Section 5.2.3.2 of the Judgment.

Stored Water

There are no storage rights for any party in the Verdugo Basin based on the Judgment.

1.3D Eagle Rock Basin

Native Water

The Eagle Rock Basin has only a limited native safe yield. Plate 1D provides the approximate boundaries of this small groundwater basin.

Imported Return Water

The City of Los Angeles delivers imported water to lands overlying this groundwater basin, and return flow from this delivered water is considered to constitute the majority of the safe yield of the basin. Los Angeles has the right to extract, or to allow to be extracted, the entire safe yield of this groundwater basin.

Physical Solution Water

DS Waters (successor to Sparkletts and Deep Rock water companies) has a physical solution right to extract groundwater from Eagle Rock Basin pursuant to a stipulation with the City of Los Angeles, and as provided for in Section 9.2.1 of the Judgment.

Stored Water

There are no storage rights for any party in the Eagle Rock Basin, based on the Judgment, dated January 26, 1979.

1.4 Watermaster Service and Administrative Committee

In preparing this Annual Watermaster Report, the Watermaster support staff at the Los Angeles Department of Water and Power (LADWP) continued to collect and record a large amount of information affecting and relating to the water supply, water use and disposal, groundwater levels, water quality, and the ownership and location of all new water-supply wells within ULARA. Groundwater pumpers are required to report their extractions on a monthly basis to the Watermaster. This allows the Watermaster staff at LADWP to update the Watermaster water production accounts on a monthly basis, from which the allowable pumping by each party for the remainder of the year is determined.

Section 8.3 of the Judgment established an Administrative Committee for the purpose of advising the Watermaster in the administration of his duties. As of April 18, 2012, the duly appointed members of the Committee are:

CITY OF BURBANK
Bill Mace (Committee Chair)
Matt Elsner (Alternate)

CITY OF GLENDALE
Peter Kavounas (Committee Vice-Chair)
Patrick Hayes (Alternate)

CITY OF SAN FERNANDO
Ron Ruiz
Tony Salazar (Alternate)

CITY OF LOS ANGELES
Gregory Reed
Milad Taghavi (Alternate)

CRESCENTA VALLEY WATER DISTRICT
Dennis Erdman
David Gould (Alternate)

The Watermaster may convene the Administrative Committee at any time in order to seek its advice. Each year the Administrative Committee is also responsible for reviewing and approving the proposed annual report prepared by the Watermaster. The Watermaster met with the Administrative Committee on January 19, April 20, and August 10, 2011 of the 2010-11 Water Year. The Administrative Committee approved this 2010-11 Watermaster Report on April 30, 2012.

1.5 Significant Events through April 2012

Groundwater System Improvement Study (GSIS)

In February 2009, LADWP began a six-year, $19 million study in the San Fernando Basin (SFB) to evaluate groundwater quality near its major wellfields and to provide recommendations for treatment options that will enable Los Angeles to recover the full use of its groundwater supply. The Los Angeles Department of Water and Power (LADWP) began drilling a network of 26 groundwater monitoring wells in April 2012 and these wells will provide vital water level and water quality information necessary for the study.

LADWP is also pursuing other efforts to study groundwater treatment alternatives and develop projects that will expedite its groundwater recovery from the San Fernando Basin. These efforts include evaluating the use of bio-remediation and advanced

oxidation for groundwater treatment and testing these methods on a pilot scale implementation.

Burbank Operable Unit (BOU)

The BOU, operated by Burbank under a contract with APT, Inc., and funded by Lockheed-Martin, removes volatile organic compounds (VOCs) from groundwater. The City of Burbank, in cooperation with the United States Environmental Protection Agency (USEPA) and Lockheed-Martin, continued with design improvements and operational changes to make the facility mechanically more reliable at its design capacity of 9,000 gallons per minute (gpm). During the 2010-11 Water Year, a total of 10,394 AF of groundwater were pumped and treated at the BOU; this volume is about 351 AF greater than the volume treated in the prior year. As a requirement of the Consent Decree, Burbank also reduces the levels of nitrate in its pumped groundwater through its blending facility using imported supplies from MWD before delivery to the City of Burbank.

In 2004-05, the USEPA gave approval to modify the vapor-phase granular activated carbon (GAC) vessels at the BOU. Modifications to the vapor-phase GAC vessels were completed in 2008, resulting in the increased production and reliability noted above.

Montgomery Watson Harza (MWH) was retained by Burbank to perform a Well Field Performance Attainment Study that evaluated the wellfield and related facilities in an effort to increase groundwater extractions to 9,000 gpm. As a part of this work, a 60-day "stress test" was requested by the EPA, and completed in summer, 2010. A total discharge rate of 9,000 gpm was pumped from six BOU wells for a period of 60 days. EPA used observations from this pumping test to update values for hydraulic conductivity, and for the transmissivity and storativity in the aquifer systems beneath the BOU for use in the basin wide groundwater model.

Glendale Operable Unit (GOU)

The GOU removes VOCs and has the capability of treating up to a total of 5,000 gpm from its two existing wellfields: the Glendale North Operable Unit (GNOU) and the Glendale South Operable Unit (GSOU). Pumped groundwater is treated and then blended with imported MWD supplies to reduce nitrate and hexavalent chromium levels. The GOU treated 7,473.2 AF during the 2010-11 Water Year.

As reported by Glendale, one of the biggest challenges in operating the GOU is maintaining the capacities of the 8 total wells in the GNOU and GSOU. While the wells are intended to operate full-time (i.e., 24 hours a day, 365 days a year), they are in their 11th year of operation and each of the wells is in need of re-development to restore its original capacity. Also, issues with power and communications reliability in the GOU wellfield have resulted in additional interruptions to well production.

In an effort to control hexavalent chromium levels, the GOU operates under a modified pumping plan approved by the USEPA that varies from the original Consent Decree. The modified pumping plan allows reduced pumping from certain GOU wells containing high concentrations of chromium, and increased pumping from other GOU wells displaying lower chromium concentrations. The current Consent Decree expires in November 2012. Once a new Interim Remedy is issued by the EPA, then a new Consent Decree can be negotiated.

Glendale has continued to pursue an aggressive research program to identify viable treatment technologies for the removal of hexavalent chromium in its local groundwater. Glendale will serve on the new Water Research Foundation (WaterRF) technical advisory committee on chromium.

The wellhead treatment system at Well GS-3, known as the WBA Chromium Removal Demonstration (WBA) facility, has been effective at removing chromium to concentrations below 5 μg/L (ppb). Glendale is also testing microfiltration for the removal of chromium.

North Hollywood Operable Unit (NHOU)

The NHOU, funded in part by a USEPA Consent Decree, was designed to remove volatile organic compounds (VOCs) at a total groundwater pumping rate of 2,000 gpm using a system of seven extraction wells and an air-stripping tower. The 15-year Consent Decree expired on December 31, 2004. The USEPA has stated that there are sufficient funds to continue operation and maintenance of the NHOU into 2012. However, the NHOU did not contain the VOC plume as expected, and some VOCs have been detected at other nearby LADWP municipal-supply wellfields.

In September 2009, USEPA issued its Record of Decision (ROD) for the NHOU Second Interim Remedy (NHOU IR2). To increase the effectiveness of plume containment and contaminant removal, the plan is to deepen several of the existing extraction wells,

construct new wells, and also construct a treatment facility that will treat VOCs, chromium, 1,4 dioxane and other contaminants of concern.

Hexavalent chromium levels have increased significantly, forcing LADWP to discontinue operating one of its NHOU wells. Under a Cleanup and Abatement Order issued by the LARWQCB, Honeywell began operating this well to treat the water and discharge the effluent to the local sewer system while remedial alternatives are being evaluated. Honeywell has also constructed 31 groundwater monitoring wells to further characterize the water quality and hydrogeology in this eastern portion of the SFB; subsurface data, including geophysical logs from this series of new monitoring wells, were provided to the Watermaster by Honeywell and its consultant.

At this time, LADWP is operating five of its seven active NHOU wells, but current pumping rates from this facility are below the design flows due to decline in the local groundwater table. A total of 1,150 AF of groundwater was treated during Water Year 2010-11.

Pollock Wells Treatment Plant

LADWP's Pollock Wells Treatment Plant treats groundwater pumped from two wells with four liquid-phase granular activated carbon (GAC) vessels at a total design flow of 3,000 gpm. The Pollock Wells Treatment Plant was designed to absorb trichloroethylene (TCE) and perchloroethylene (PCE). The original purpose of this facility was to prevent the loss of groundwater through the Los Angeles River Narrows due to rising groundwater outflow. An evaluation of the Pollock area in 1990 showed that an average of approximately 2,000 AF/Y of excess rising groundwater occurring in the Los Angeles River Narrows as a result of delivered water, precipitation, and percolation along the unlined portion of the river within the Narrows area. This is part of Los Angeles' water right, and much of this groundwater is lost from the SFB when a sufficient volume is not extracted from the Pollock Wells. During the recent water year, a total of 3,127 AF of groundwater was pumped and treated at this facility.

Temporary Tujunga Wellfield Treatment Study Project

The Temporary Tujunga Wellfield Treatment Study Project has restored the use of two of the 12 water wells in this wellfield and also restored approximately 12,000 AF/Y of pumping capacity that were previously unavailable from the wellfield due to water quality constraints.

The project utilizes liquid-phase GAC vessels on Well Nos. 6 and 7 to process extracted groundwater and remove volatile organic compounds such as TCE, PCE, carbon tetrachloride, and 1,1 dichloroethene (DCE). Operational testing began in November 2009 and the test water was conserved by being discharged to the Tujunga Spreading Grounds under a General Waste Discharge Requirement (WDR) permit issued by the LARWQCB. A total of 4 AF of groundwater was discharged to these spreading grounds during the 2010-11 Water Year.

The newly-treated water has been discharged into the LADWP distribution system since May 2010. Nearly 12,200 AF of groundwater was pumped and treated for VOC removal during the recent water year.

Verdugo Park Water Treatment Plant

The City of Glendale Verdugo Park Water Treatment Plant (VPWTP) treats groundwater pumped from the Verdugo Basin for turbidity and bacteria, and is operating significantly below its expected rate of 700 gpm. Methods to increase the treatment rate are being investigated. The City is not able to attain the treatment capacity for its VPWTP due to the lack of production capacity from its two Verdugo wells that were constructed in 1992. A total of 390 AF was treated at the VPWTP in the 2010-11 Water Year.

Glenwood Nitrate Removal Plant

The Glenwood Nitrate Removal Plant uses ion exchange to remove nitrate from groundwater pumped by CVWD-owned water wells. CVWD increased the utilization of this plant to increase the amount of groundwater produced. The facility treated 592 AF of groundwater during the 2010-11 Water Year, an increase of 182 AF from the 2009-10 Water Year. In addition, the treatment plant was taken out of service in June 2011 to replace the ion exchange resin. Use of the new resin resulted in longer batch runs, and a lower overall salt content of the wastewater, ultimately resulting in a lower volume of wastewater to be discharged to the Los Angeles sewer system.

Prior CVWD Over-Pumping in the Verdugo Basin (Water Year 2006-07)

During Water Year 2006-07, CVWD pumped 12 AF above its entitlement without Glendale's consent or approval by the then-current Watermaster. CVWD had also extracted in excess of its right during Water Years 2004-05 and 2005-06, but with the permission of Glendale and the approval of the Watermaster. In December 2006, the over-pumping in 2004-05 and 2005-06 was settled between CVWD and Glendale. In April 2011, the CVWD Board of Directors announced approval for compensating Glendale for CVWD's prior over-pumping in the basin in 2006-07. The matter has been resolved to the satisfaction of both parties and the Watermaster.

During the 2010-11 Water Year, CVWD under-pumped its annual right from the Verdugo Basin by 368 AF.

Proposed Increase in Glendale's Pumping Capacity in the Verdugo Basin

Glendale has never pumped its full water right of 3,856 AF/y from the Verdugo Basin. In recent years, Glendale has been actively trying to identify possible new water well sites to increase its groundwater production capacity from this basin. Currently, a majority of Glendale's pumping is from its 8 GOU wells in SFB. In 2007, Glendale drilled two pilot boreholes in the Verdugo Basin and conducted isolated aquifer zone testing in each borehole. Due to the poor results of the zone tests (i.e., the low flow rates), one of the boreholes was permanently destroyed in March 2008. Glendale also drilled a third pilot hole in the Montrose area in February 2009. In October 2007, Glendale initiated the rehabilitation of the Foothill Well and this work was completed in 2010. Currently, the Foothill well is online, and produces groundwater at a rate of approximately 200 gpm. Drilling and construction of the new Rockhaven well at the Rockhaven Sanitarium site began in 2010, and construction of this well was completed in April 2011. Glendale intends to start the development of the site into a full production well in 2014. The Watermaster appreciates Glendale's effort in drilling and testing exploratory boreholes and in rehabilitating existing wells to increase its pumping from the Verdugo Basin.

City of San Fernando Nitrate Removal

Elevated nitrate concentrations are a problem in some wells operated by the City of San Fernando in Sylmar Basin. Specifically, as of September 2010, two of its four wells were

offline due to elevated nitrate concentrations. San Fernando issued an RFP to help select a consultant to design a nitrate removal system and a new transmission line. Engineering and construction of the treatment plant are ongoing at this time.

Mission Wellfield Rehabilitation

LADWP is continuing to pursue capital improvements at its Mission Wellfield and restore the capacity needed to fully utilize its entitlement to groundwater in the Sylmar Basin. These improvements will address the decline in pumping capacity caused by mechanical deterioration and water quality problems that have restricted use of this wellfield. Phase 1 of the project completed the replacement of a water storage tank and related control systems. LADWP is now planning Phase 2, which will allow for the drilling and construction of three offsite groundwater monitoring wells to investigate the contamination affecting the wellfield. Under Phase 3, LADWP will construct three new water-supply wells, destroy two deteriorated/older water wells, and construct additionally-required infrastructure. If investigations indicate that groundwater contamination presents a continuing and expanding problem for this wellfield, LADWP may also pursue the installation of groundwater treatment facilities.

Pacoima B-6, MWD Foothill Feeder Replenishment Project

The new MWD Foothill Feeder connection enables the City of Burbank to import surplus water from the State Water Project into the San Fernando Basin for artificial recharge at the Pacoima Spreading Grounds. This new source of water offers Burbank flexibility to purchase MWD water for spreading as opposed to purchasing physical solution water. On April 26, 2010, the first delivery of MWD water occurred through the new Pacoima B-6 MWD connection, during which 33.6 AF of water were delivered for groundwater recharge in the Pacoima Spreading Grounds. During this 2010-11 Water Year, a total volume of 11,187 AF of MWD water was spread by Burbank in the Pacoima Spreading Grounds.

Water Recycling Programs in the San Fernando Valley

LADWP's Recycled Water Master Planning (RWMP) documents are a series of draft reports that identify opportunities to use recycled water for groundwater replenishment

(GWR), and/or non-potable reuse. These RWMP documents are comprised of the following reports:

- Groundwater Replenishment Master Planning Report
- Groundwater Replenishment Treatment Pilot Study
- Non-Potable Reuse Master Planning Report
- Terminal Island Water Reclamation Plant Barrier Supplement, and Non-Potable Reuse Concepts Report
- Long-Term Concepts Report

LADWP's most recent Urban Water Management Plan (2010 UWMP) established a goal of increasing recycled water use within the City of Los Angeles to 59,000 AF/Y by the year 2035. Of the 59,000 AF/Y, LADWP expects to deliver as much as 29,000 AF of recycled water annually for non-potable reuse within the City of Los Angeles, which includes an estimated 5,350 AF/Y of delivery within the SFB.

Construction of pipelines to supply Valley Presbyterian Hospital and Van Nuys High School with recycled water was completed in February 2010. In late-2010, LADWP began supplying recycled water to the Van Nuys High School for irrigation usage to meet an expected onsite demand of 30 AF/y. Staff continues to work with Valley Presbyterian Hospital personnel on their on-site conversion to recycled water.

Distribution facilities are also being designed to deliver approximately 200 AF/Y and 500 AF/Y of recycled water to Woodley Park and to the Hansen Dam Golf Course, respectively. It is expected that Woodley Park will begin irrigating with recycled water in 2012, whereas the facilities for Hansen Dam Golf Course will be constructed and in service by the middle of 2013.

Los Angeles has entered into agreements with Burbank to provide groundwater storage credits in exchange for recycled water delivery from Burbank. These agreements include expanding Burbank's recycled water distribution system to the city boundary where Los Angeles will receive the recycled water for distribution to potential recycled water customers. It is estimated that Burbank may deliver up to 1,500 AF/Y of recycled water to Los Angeles if all proposed infrastructure improvements are completed.

Headworks Reservoir Project

The former Headworks Spreading Grounds is the site of a multi-objective project to improve water quality, provide the community with an opportunity for passive recreation, and restore a portion of the wetlands along the Los Angeles River. The primary objective of this project is to comply with the Long Term 2 Enhanced Surface Water Treatment Rule and the Stage 2 Disinfectants and Disinfection Byproducts Rule; these regulations were recently promulgated by the USEPA.

LADWP's Silver Lake and Ivanhoe Reservoirs located within the Central Basin will be removed from service, thereby removing two sources of open reservoir storage from the water distribution system and their vulnerability to surface-runoff contamination. The regulatory storage provided by these two reservoirs will be replaced by buried (underground) reservoirs located at the former Headworks Spreading Grounds site, providing a storage capacity of 110-million gallons. The underground facility, which will be divided into two reservoirs (an, east and a west one), is currently under construction. The east reservoir is scheduled to begin operation as early as November 2014.

The Headworks Reservoir Project includes a hydroelectric power plant that will generate approximately four megawatts of green power. LADWP is also working jointly with the United States Army Corps of Engineers to develop wetlands on a portion of the site.

Projects to Enhance Recharge Capacity in the San Fernando Groundwater Basin

LADWP along with the Los Angeles County Flood Control District (LACFCD) and the City of Los Angeles Department of Public Works Bureau of Sanitation (BOS) and Bureau of Engineering (BOE) are cooperating on several projects to enhance recharge of native water at existing spreading grounds along the eastern side of the SFB. These projects include: Big Tujunga Dam Seismic Retrofit Project; the Hansen Spreading Grounds Enhancement Project, the Tujunga Spreading Grounds Enhancement Project, the Pacoima Spreading Grounds Enhancement Project, the Sheldon-Arleta–Cesar Chavez Recreational Complex Project (Phase I), and other distributed recharge efforts to implement non-traditional flood control measures that provide the added benefit of stormwater capture and groundwater recharge. Additional discussion of each of the above-mentioned projects is provided below.

- *Big Tujunga Dam Seismic Retrofit Project*

The project was developed to seismically retrofit the existing dam and to increase its spillway capacity. In addition to preventing flood damage and impacts to public safety associated with a dam failure, the project provides for the conjunctive management of stormwater runoff at the dam that is expected to increase average stormwater capture by 4,500 AF/Y to 6,000 AF/Y.

LADWP and the LACFCD entered into a cooperative agreement in September 2007, with LADWP providing $9 million in funding toward construction of the $105 million project. The project was completed in July 2011.

- *Hansen Spreading Grounds Enhancement Project*

  The Hansen Spreading Grounds is a 156-acre parcel located adjacent to the Tujunga Wash Channel and just downstream from Hansen Dam. Phase 1 basin re-construction to enlarge and deepen the spreading basins was completed in November 2009. Phase 2, which will retrofit and automate the existing intake structure on Tujunga Wash, is scheduled to begin in the summer of 2012. LADWP and LACFCD share equally in the $8.2 million cost for constructing this project, and it is expected that the project will increase average stormwater capture by 1,200 AF/Y.

- *Tujunga Spreading Grounds Enhancement Project*

  Owned by LADWP and operated by LACFCD, the Tujunga Spreading Grounds is a 188-acre parcel located along the Tujunga Wash Channel at its confluence with the Pacoima Wash Channel. Plans are underway to enhance the facility by relocating and automating the current intake structure on Tujunga Wash, installing a second automated intake to receive flows from the Pacoima Wash, and reconfiguring the existing spreading basins. Other enhancements include constructing and/or improving recreational walking trails, native habitat, and educational facilities on property not needed for the primary function of stormwater capture. These improvements will greatly increase stormwater capture and subsequent groundwater recharge while improving flood protection, water quality, and open space attributes.

Design of this project is scheduled to be completed by summer 2012, whereas construction is to occur from 2013 through 2015`. It is expected that this project will increase annual stormwater capture by 8,000 AF/Y.

- *Pacoima Spreading Grounds Enhancement Project*

  The 169-acre Pacoima Spreading Grounds, owned and operated by LACFCD, is located on both sides of the old Pacoima Wash Channel downstream of the Pacoima Dam and Reservoir. LADWP and LACFCD are currently working cooperatively to improve stormwater capture by upgrading and automating the intake facility and revitalizing the recharge basins.

  This project is expected to increase average annual stormwater capture by 2,000 AF/Y. Final concepts and designs are scheduled to be completed by the end of 2012, and are to be followed by construction in 2013 through 2015.

- *Sheldon-Arleta Project – Cesar Chavez Recreational Complex Project (Phase I)*

  The Sheldon-Arleta Project is located at the Sheldon-Arleta Landfill adjacent to the Tujunga Spreading Grounds. During stormwater spreading operations within the Tujunga Spreading Grounds, the potential exists for the recharged water to displace the methane gas produced within the nearby landfill. In recent years, methane gas has migrated offsite and elevated concentrations of this gas have been detected at a nearby school. To avoid such occurrences, limitations were previously placed on the amount of stormwater that can be spread at the Tujunga Spreading Grounds. These limitations have reduced the capacity of the spreading grounds to approximately 20 percent of its original capacity.

  To mitigate the displacement of methane gas, LADWP, and the City BOS and BOE collaborated to replace the existing methane gas collection system at the Sheldon-Arleta Landfill with a new gas collection system. This new system will enhance the containment of the methane gas within the landfill and restore the historic spreading flow capacity of 250 cubic feet per second, as well as bring some of the spreading basins closest to the landfill back into operation. Construction was substantially completed in 2009 and an evaluation to determine the maximum recharge capacity

of the improved facility is currently underway. It is expected that the project will increase average annual stormwater capture by 4,000 AF/Y.

- *LADWP's Distributed Recharge Efforts*

  Across the San Fernando Valley, urban stormwater runoff from impervious surfaces enters the storm drain system and eventually flows into the ocean. LADWP is exploring partnerships, projects, and programs that promote infiltration of rainfall runoff close to its point of origin. Several partnerships that LADWP continues to develop are with the City of Los Angeles Department of Public Works, the LACFCD, the MWD, Tree People, the Council for Watershed Health, and Generation Water. Some of the projects and programs being developed include facility retrofits, neighborhood retrofits, and local recharge projects such as along medians, power line easements, and parkways.

- Integrated Resources Plan (IRP)

  The IRP of the City of Los Angeles is a plan to integrate its wastewater, storm water, potable water, and reclaimed water programs for the next 20 years. The IRP uses a broader "watershed" approach to promote more efficient use of all water within Los Angeles.

  Strategies adopted as a result of the IRP process include a facilities plan that identified immediate upgrades, capital improvements triggered by targeted changes in demographics, and a set of 25 policies covering the four areas of recycled water, conservation, dry-weather runoff, and wet-weather runoff.

  Identified in the adopted strategies is a study of the feasibility of using recycled water for groundwater replenishment. LADWP is the lead agency for this strategy component and has hired a consultant to conduct a study as well as facilitate the involvement of public and private stakeholders. The 5-year review period was initiated and the first stakeholder meeting workshop held on December 15, 2011.

- Standard Urban Stormwater Mitigation Plan (SUSMP)

  Resulting from the municipal stormwater National Pollution Discharge Elimination System Permit (NPDES Permit No. CAS004001) issued by the LARWQCB on December 13, 2001, the County of Los Angeles and 84 cities that are subject to the region-wide permit developed and adopted Standard Urban Stormwater Mitigation Plan (SUSMP) policies or ordinances within their respective

jurisdictions to address stormwater. Under SUSMP all new development and redevelopment projects in the private sector may be required to implement certain Best Management Practices and/or stormwater mitigation measures to contain or treat the first ¾- inch of rainfall runoff from every storm, and to implement on-site stormwater infiltration. The City of Los Angeles-Watershed Protection Division refers projects to the Watermaster that are undergoing a SUSMP evaluation within the City-portion of the San Fernando Basin. The Watermaster reviews the SUSMP mitigation measures and provides his approval or denial of the infiltration portion of each SUSMP based on site specific conditions at each development or redevelopment site. The Watermaster encourages infiltration of collected stormwater whenever feasible, but is concerned about encouraging local recharge in areas having shallow groundwater and/or subsurface contamination.

Dewaterers

Groundwater levels in portions of the SFB are near ground surface. As a result, permanent dewatering is common for certain types of building foundations or structures with deep underground parking and dewatering helps to artificially lower and maintain groundwater levels at depths that are several feet below the building foundations or subterranean parking structure. Wherever such dewatering is needed, the building owner (i.e., the "dewaterer") is required to meter the extracted groundwater (i.e., the rates and volumes of discharge), report the extractions to the Watermaster, and enter into an agreement with the affected party for payment for this extraction. The Watermaster requires and receives groundwater production reports from several dewaterers in the SFB (see Table 2-5).

The Watermaster is currently participating in ongoing meetings with the City's Department of Building and Safety to explore ways in which the Watermaster can be notified when new dewatering projects may begin in the future. The goal of the meetings is to develop a mechanism at the plan check counter at the Los Angeles City Building and Safety in which new temporary or permanent dewatering operations are required to notify the Watermaster before dewatering begins.

Water Licenses

Portions of ULARA located in unincorporated portions of Los Angeles County are without water service. Working in cooperation with the County Department of Public Health and the County Planning Department, prior Watermasters and LADWP have developed a process to identify and monitor water usage through a water license agreement (see Table 2-5). The agreements allow the use of groundwater on overlying property until a water service becomes available to the property owner. The agreements also establish maximum annual groundwater usage, and require the monthly reporting of groundwater production to the Watermaster and annual payment to the City of Los Angeles (the owner of the water rights in these unincorporated areas).

1.6 Summary of Water Operations in ULARA

Highlights of all elements of water operations within ULARA for the 2009-10 and 2010-11 Water Years are summarized in Table 1-3. Details of the 2010-11 operations and hydrologic conditions are provided in Section 2. Locations of the groundwater basins, water service areas of the parties and individual producers, and other pertinent hydrologic facilities that measure precipitation, runoff, and water levels are shown on Plates 1 through 8.

Average Rainfall

Average precipitation determined for all listed raingages (stations) on all valley floor areas during the 2010-11 Water Year in ULARA was 24.44 inches; this value represents 148 percent of the calculated 100-year mean (16.48 inches) for all of these stations. Average precipitation for all listed stations in the hill and mountain areas within ULARA in the 2010-11 Water Year was 25.71 inches; this value is 118 percent of the calculated 100-year mean (21.76 inches) for all of these stations. The weighted average of 25.21 inches of precipitation for all stations throughout ULARA was 128 percent of the 100-year mean (19.64 inches).

Spreading Operations

A total of 90,507 AF of water was spread in ULARA in Water Year 2010-11. The average annual spreading of native water during the period 1968 through 2011 is 33,264 AF.

Groundwater Extractions

Total groundwater extractions in 2010-11 in all four groundwater basins were 73,303 AF. Specific extractions were: 64,313 AF in San Fernando Basin; 4,046 AF in Sylmar Basin; 4,759 AF in Verdugo Basin; and 185 AF in Eagle Rock Basin. This current total represents a decrease of 17,815 AF over the total extractions from these 4 groundwater basins in 2009-10, and is less than the long-term (1968-2011) average of 100,187 AF. Of the total production for the 2010-11 Water Year, 1,116 AF of groundwater were pumped for non-consumptive use. The Groundwater Extractions Report provided in Appendix A summarizes the groundwater extractions for the 2010-11 Water Year by all pumpers.

Imports

Gross imports (including pass-through water) for 2010-11 totaled 466,013 AF; this represents a decrease of 2,997 AF from the 2009-10 total. Net imports used within ULARA in 2010-11 amounted to 253,052 AF (a decrease of 5,735 AF from the volume in 2009-10).

Exports

A total of 250,384 AF was exported from ULARA. Of the total exports, 37,423 AF were from groundwater extractions, whereas the remaining 212,961 AF were from imported supplies (pass-through water).

Treated Wastewater

A total of 84,545 AF of wastewater was treated in ULARA in 2010-11. The majority of the treated water, 54,707 AF, was discharged to the Los Angeles River. A portion of this treated water was exported from ULARA and delivered to the Hyperion Treatment Plant located in Playa Del Rey. The remaining 15 percent of the annual total (approximately 13,023 AF) was used as recycled water as discussed below.

Recycled Water

Total recycled water used in 2010-11 in ULARA was 13,023 AF. This represents an increase of 781 AF from the 2009-10 value. The recycled water is used for landscape irrigation, golf course irrigation, in-plant use, power plant use (i.e. cooling), and other industrial uses.

Groundwater Storage

Groundwater storage in the SFB increased by 71,081 AF during Water Year 2010-11. This increase is attributed to above-average rainfall and recharge during the year, as well as a two-fold increase in the overall volume of water spread in the SFB compared to 2009-10. Compared to the groundwater in storage in 2009-10, the estimated increases in groundwater storage for the Sylmar and Verdugo basins were 2,844 AF and 2,397 AF, respectively, for 2010-11. For Eagle Rock Basin, a decrease in storage of 16 AF is estimated.

Water Wells

Completed during the 2010-11 Water Year, the Rockhaven Well for the City of Glendale (in the Verdugo Basin) was the only new municipal-supply to be constructed. Glendale intends to start the development of the site into a full production well in 2014. No wells were destroyed in any of the four groundwater basins in ULARA in Water Year 2010-11.

TABLE 1-3: SUMMARY OF OPERATIONS IN ULARA

Item	Water Year 2009-10	Water Year 2010-11
Active Pumpers (parties and nonparties)	36	36
Inactive Pumpers (parties)[1]	7	7
Annual Weighted Average Rainfall, in inches		
Valley Floor	19.08	24.44
Mountain Area	21.48	25.71
Total ULARA	20.55	25.21
Spreading Operations, in acre-feet	47,047	90,507
Extractions, in acre-feet	91,113	73,303
Gross Imports, in acre-feet		
Los Angeles Aqueduct Water	241,734	334,294
MWD Water	227,276	131,719
Total	**469,010**	**466,013**
Exports, in acre-feet		
Los Angeles Aqueduct Water	109,220	156,219
MWD Water	101,003	56,742
Groundwater	57,177	37,423
Total	**267,400**	**250,384**
Net Groundwater Used in ULARA, in acre-feet	33,936	35,880
Net Imports Used in ULARA, in acre-feet	258,787	253,052
Recycled Water Used, in acre-feet	12,303	13,023
Total Water Used in ULARA, in acre-feet [2]	305,026	301,955
Treated Wastewater, in acre-feet [3]	84,821	84,545

1. The seven inactive pumpers are Van de Kamp, Disney, Angelica, Santiago Estates, Greeff, Sears, and Waste Management.
2. Extractions used in ULARA plus Net Imports and Recycled Water.
3. Most treated wastewater is discharged to the Los Angeles River, whereas a portion is delivered to the Hyperion Plant or to other locations utilizing recycled water.

1.7 Allowable Pumping for the Forthcoming 2011-12 Water Year

Table 1-4 provides a summary of the groundwater extraction rights in each of the three major groundwater basins in ULARA for the forthcoming 2011-12 Water Year and the Stored Water Credit (as of October 1, 2011), for the cities of Los Angeles, Burbank, Glendale and San Fernando, and for the CVWD. The determination of these values is provided in more detail in Section 2.

TABLE 1-4: ALLOWABLE GROUNDWATER EXTRACTION RIGHTS
2011-12 WATER YEAR - ULARA
(Acre-feet)

	Native Safe Yield Credit [1]	Import Return Credit [2]	Total Native + Import	Available Stored Water Credit [3, 4] (as of Oct. 1, 2011)	Allowable Pumping 2011-12 Water Year
San Fernando Basin					
City of Burbank	---	3,864	3,864	6,832	10,696
City of Glendale	---	4,716	4,716	19,594	24,310
City of Los Angeles	43,660	36,170	79,830	189,709	269,539
Total	43,660	44,750	88,410	216,135	304,545
Sylmar Basin					
City of Los Angeles	3,405	---	3,405	15,262	18,667
City of San Fernando	3,405	---	3,405	1,500	4,905
Total	6,810	---	6,810	16,762	23,572
Verdugo Basin					
CVWD	3,294	---	3,294	---	3,294
City of Glendale	3,856	---	3,856	---	3,856
Total	7,150	---	7,150	---	7,150

1) Native Safe Yield extraction right per page 11 of the Judgment.
2) Import Return extraction right per page 17 of the Judgment.
3) There is no Stored Water Credit assigned in Verdugo Basin.
4) See Table 2-11A for calculation of SFB Totals and Stored Water Credits in reserve.

2. WATER SUPPLY, OPERATIONS, AND HYDROLOGIC CONDITIONS

2. WATER SUPPLY, OPERATIONS, AND HYDROLOGIC CONDITIONS

2.1 Precipitation

Precipitation varies considerably throughout ULARA depending on such local factors as topography and elevation. Mean annual precipitation ranges from about 14 inches at the western end of the San Fernando Valley to 33 inches near the highest elevations of the watershed in the San Gabriel Mountains in the easterly portion of ULARA. Approximately 80 percent of the annual rainfall in ULARA occurs from December through March.

During the 2010-11 Water Year, the weighted average rainfall from all rainfall stations on the valley floor areas was 24.44 inches (148 percent of the 100-year mean), whereas the weighted average annual rainfall from all rainfall stations in the hill and mountain areas was 25.71 inches (118 percent of the 100-year mean). The weighted average from all rainfall stations on the valley floor and in the hill and mountain areas in the 2010-11 Water Year was 25.21 inches (128 percent of the 100-year mean). Table 2-1 provides rainfall data for several rain gages on the valley floor areas and in the hill and mountain areas; Plate 5 illustrates the locations of these rain gages (stations). Figure 2.1 shows the monthly rainfall totals on the valley floor and in the hill and mountain areas in ULARA for 2010-11 for the raingages mentioned above.

Because rainfall has a very important impact on groundwater levels and, hence, on the availability and recharge of groundwater to the four ULARA groundwater basins, the Watermaster acquired additional rainfall data available from a local raingage, the City of Burbank Valley Pump Plant gage, whose database extends from 1946 to the present. These rainfall data were accessed through the website of the Western Regional Climate Center (WRCC). The resulting rainfall data for this gage are shown as a bar graph for each Water Year (i.e., October 1 through September 30) on Figure 2.1A, “Yearly Rainfall Totals, Burbank Valley Pump Plant Gage”. As shown thereon, the long-term average annual rainfall for the period of record for this gage is 16.21 inches.

To help identify possible trends in annual rainfall for each water year at this raingage, the Watermaster further created the graph shown on Figures 2.1B, “Accumulated Rainfall Departure Curve”. This graph illustrates the accumulated departure of annual rainfall for each water year from the long-term average annual rainfall at this gage.

The accumulated rainfall departure values are plotted for each rainfall year relative to the long-term average annual rainfall of inches for this Burbank raingage. The zero line on the

accumulated departure curve represents the long-term average rainfall points; data points above this zero line represent years of excess precipitation whereas points below that line represent years of deficient precipitation, relative to the long-term average. The basic purpose of the accumulated departure curve is to illustrate temporal trends in the rainfall data. To prepare this accumulated departure curve of annual rainfall, the total rainfall in inches for each water year, beginning with the initial year of record, is divided into the long-term average annual rainfall and the result (i.e., the quotient) is converted into a percent value. The percentage of departure from the long-term average is then calculated for each successive water year and this value is algebraically added to the result for the prior water year, and so on through the final year of available data.

Interpretation of the curve presented on Figure 2.1B is as follows:

- Whenever the curve descends over time to the right, the total rainfall in each water year during that period was generally at or below the long-term average annual rainfall. Hence, such a period displayed generally deficient rainfall; in essence, a dry period or drought had been occurring. Examples of such dry periods on Figure 2.1B are: 1944-45 through 1976-77 and 1983-84 through 1991-92.
- In contrast, whenever the curve ascends over time to the right, the total rainfall in each water year during that period was generally at or above the long-term average annual rainfall. Thus, such a period displayed generally excess rainfall. In essence, a wet period had been occurring. Examples of such wet periods on Figure 2.1B are 1977-78 through 1984-85, and 1992-93 through 1998-99.

TABLE 2-1: 2010-11 PRECIPITATION

(inches)

Gage No.	LACDPW Rain Gage Stations	2010-11 Precipitation	100-Year Mean (1881-1981)	Percent of 100-Year Mean
	Valley Floor Stations			
13C	North Hollywood-Lakeside	26.51	16.63	159%
1107D	La Tuna Debris Station	19.70	14.98	132%
465C	Sepulveda Dam	24.22	15.30	158%
21B	Woodland Hills	21.08	14.60	144%
23B	Chatsworth Reservoir	24.10	15.19	159%
1222	Northridge-LADWP	21.29	15.16	140%
251C	La Crescenta	32.31	23.31	139%
293B	Los Angeles Reservoir	27.09	17.32	156%
	Weighted Average[1]	**24.44**	**16.48**	**148%**
	Hill & Mountain Stations			
11D	Upper Franklin Canyon Reservoir	28.85	18.50	156%
17	Sepulveda Canyon at Mulholland	24.13	16.84	143%
33A	Pacoima Dam	23.28	19.64	119%
47D	Clear Creek - City School	40.83	33.01	124%
53D	Colby's Ranch	31.61	29.04	109%
54C	Loomis Ranch-Alder Creek	22.28	18.62	120%
210C	Brand Parks	20.67	19.97	104%
797	DeSoto Reservoir	25.85	17.52	148%
1029C	Tujunga-Mill Creek	18.46	21.79	85%
	Weighted Average[1]	**25.71**	**21.76**	**118%**
	Weighted Average Valley Floor and Hill & Mountain Areas[1]	**25.21**	**19.64**	**128%**

1. Weighted Averages calculated using methodology provided in the Report of Referee-July 1962. Hill & Mountain Station Weighted Average estimated due to incomplete data sets that exist in the 100-year period for which the average is calculated.
2. Data for the months of October, November and December 2011 are not available for rain gages 23B and 797 due to rain gage malfunction. Data were estimated for the missing months using the average rainfall total for gages 21B and 293B.

FIGURE 2.1: 2010-11 MONTHLY WEIGHTED AVERAGE RAINFALL

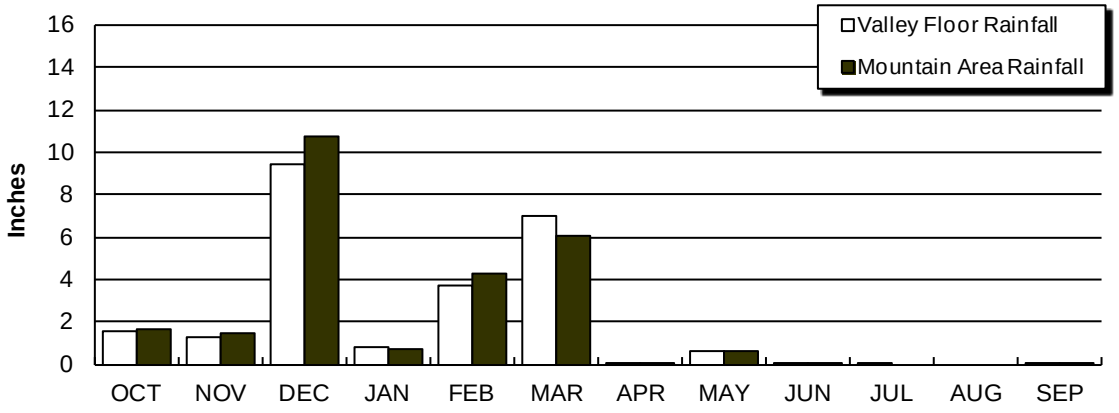
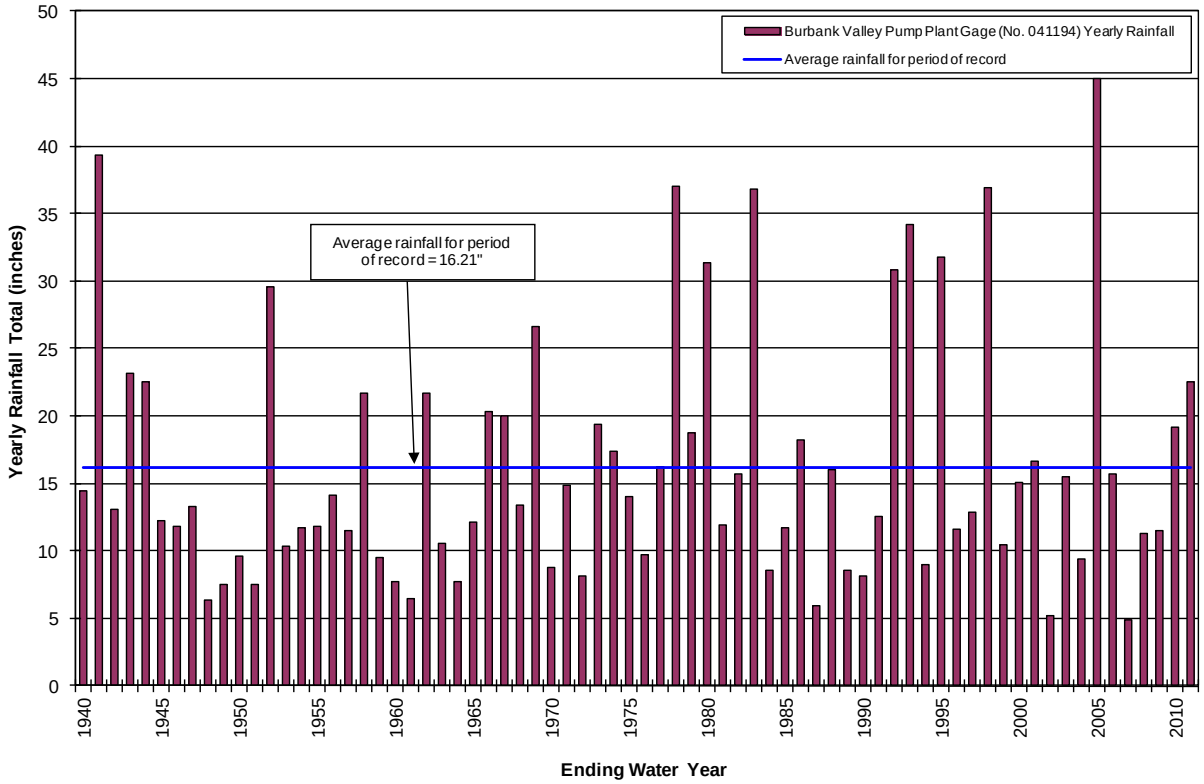
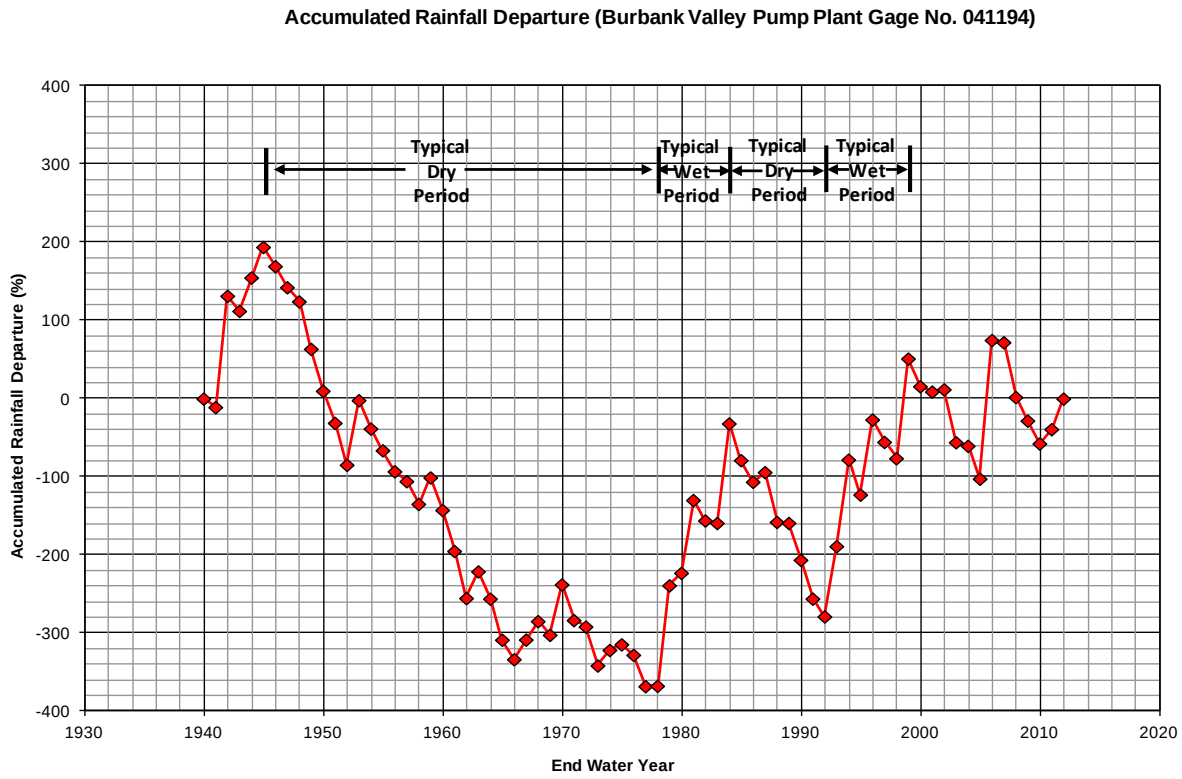


FIGURE 2.1A: YEARLY RAINFALL TOTALS, BURBANK VALLEY PUMP PLANT GAGE



1. Yearly Rainfall Data compiled from Western Regional Climate Center (WRCC)
2. Major divisions are equal to 5 years; minor divisions are equal to 1 year

FIGURE 2.1B: ACCUMULATED RAINFALL DEPARTURE CURVE, BURBANK VALLEY PUMP PLANT GAGE



2.2 Runoff and Outflow from ULARA

The entire watershed of ULARA (including the surface areas of its four groundwater basins) contains 328,500 acres. Of this total, 205,700 acres lie within the tributary hill and mountain areas, whereas the remaining 122,800 acres represent the combined surface areas of the 4 groundwater basins within ULARA. The drainage system in ULARA is made up of the Los Angeles River and its tributaries. Surface flow in ULARA originates as: runoff from the hills and mountains; runoff from the impervious areas of the valley floor; industrial and sanitary waste discharges; domestic irrigation runoff; and rising groundwater.

A number of stream gaging stations are maintained throughout ULARA, either by the Los Angeles County Department of Public Works (LACDPW) or the United States Geological Survey (USGS). For the annual Watermaster report, six key gaging stations have been utilized over the years to illustrate surface water runoff from the main tributary areas of the ULARA watershed. From upstream to downstream, these six gaging stations (the locations for which are shown on Plate 5) are as follows:

1. Station F-118B-R, which registers all releases from Pacoima Dam. Runoff below this point flows to the Los Angeles River through lined channels, or can be diverted to the Lopez and Pacoima spreading grounds.

2. Station F-168-R, which records all releases from Big Tujunga Dam. This dam collects runoff from the watershed which lies in the hill and mountain area to the northeast. Runoff below this point flows to Hansen Dam and then to Los Angeles River. These releases can be diverted to the Hansen or Tujunga spreading grounds for use in artificial recharge.

3. Station F-300-R, which registers all flow in the main channel of the Los Angeles River west of Lankershim Boulevard, and which includes the outflows from Pacoima and Hansen dams which are not otherwise diverted to the spreading grounds. These records also include flow through the Sepulveda Dam and releases of reclaimed wastewater discharged by the City of Los Angeles.

4. Station E-285-R, which registers flow from the westerly slopes of the Verdugo Mountains and tributary areas of the watershed located east of Lankershim

Boulevard. This station also records releases of reclaimed wastewater discharged by the City of Burbank.

5. Station F-252-R, which registers flow from Verdugo Canyon which includes flows from Dunsmore and Pickens canyons.

6. Station F-57C-R, which lies in the main channel of the Los Angeles River and records all surface outflows from ULARA (see location on Plates 1A and 5).

Table 2-2 summarizes the monthly runoff for these six stations for 2009-10 and 2010-11. The 2010-11 daily mean discharge rates for these six stations are summarized in Appendix B.

TABLE 2-2: MONTHLY RUNOFF AT SELECTED GAGING STATIONS

(Acre-feet)

Station	Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
F-118B-R	2009-10	0	0	189	2,540	2,350	2,220	0	2,080	615	464	0	0	**10,458**
Pacoima Dam	2010-11	1	5	3,790	3,970	1,200	6,490	3,860	1,360	654	735	332	1,240	**23,637**
F-168-R	2009-10	0	0	1,840	6,580	8,860	5,310	2,420	1,120	637	630	291	250	**27,938**
Big Tujunga Dam	2010-11	279	345	6,550	7,240	4,900	9,950	6,790	4,390	2,470	3,550	1,670	874	**49,008**
F-300-R	2009-10	9,500	4,010	13,480	34,030	23,070	7,330	9,190	3,980	3,440	3,090	3,180	3,450	**117,750**
L.A. River Tujunga Ave.	2010-11	7,520	6,980	42,390	8,450	17,640	57,180	16,110	4,510	3,250	3,050	3,030	3,580	**173,690**
E-285-R	2009-10	800	601	1,250	2,270	2,530	839	2,000	1,880	676	690	734	654	**14,924**
Burbank Storm Drain	2010-11	1,720	1,840	5,110	2,120	3,700	5,410	2,320	2,230	1,820	585	568	576	**27,999**
F-252-R	2009-10	270	230	1,350	2,790	7,280	528	869	255	190	227	200	141	**14,330**
Verdugo Wash	2010-11	448	620	9,930	639	3,570	2,860	383	451	512	461	287	256	**20,417**
F-57C-R	2009-10	11,440	5,330	18,820	43,250	26,900	8,260	14,240	6,850	4,890	5,340	5,370	5,070	**155,760**
L.A. River Arroyo Seco	2010-11	9,260	8,940	44,230	8,270	25,270	42,770	7,750	6,880	6,050	5,570	5,420	5,650	**176,060**

2.3 Components of Surface Flow

The surface flow of the Los Angeles River at Gaging Station F-57C-R consists of:

1. Storm water runoff;
2. Treated wastewater from the Tillman, Burbank, and Los Angeles-Glendale water reclamation plants (WRPs);
3. Industrial discharges and domestic irrigation runoff; and,
4. Rising groundwater.

Storm flows are typically the largest component of the total surface flow recorded at Gage F-57C-R, and these storm flows occur principally in the winter months (Table 2-3 and Appendix B).

A significant factor affecting surface water runoff in the Los Angeles River has been the releases of treated wastewater over time by the 3 local WRPs mentioned above. Specifically, releases from the Los Angeles-Glendale WRP, the Burbank WRP, and the Tillman WRP appear to have begun in 1976-77, 1967, and 1985, respectively.

Industrial discharges and irrigation runoff upstream of Gage F-57C-R are relatively small but cumulatively contribute a moderate amount of surface flow to the Los Angeles River. Field inspection during 1998-99 confirmed year-round unmetered flows of domestic irrigation runoff from residential areas, golf courses and industrial sites.

Rising groundwater is a constant source of loss from the Verdugo and San Fernando groundwater basins. Rising groundwater occurs above the Verdugo Wash Narrows, and in the unlined reach of the Los Angeles River immediately upgradient from Gage F-57C-R. Outflow at Gage F-57C-R includes rising groundwater leaving the Verdugo Basin past Gage F-252-R (Table 2-3). In 2010-11 rising groundwater was estimated to be 2,397 AF at Gage F-252-R and 6,588 AF at the downstream Gage F-57C-R.

Releases of treated wastewater also have an influence on rising groundwater. These large year-round releases tend to keep the alluvium beneath the Los Angeles River saturated, even in dry years. Nevertheless, there is some opportunity for continuing percolation in the unlined reaches of the river, both upstream and downstream of the lined section near the confluence of the Verdugo Wash and the Los Angeles River. Water percolating in the unlined reach is thought to percolate through the shallow alluvial zones and to re-appear as rising groundwater at a location downstream from Los Feliz Boulevard. Also, there are up to 3,000 AF of recharge

per year from delivered water within the Los Angeles Narrows-Pollock Wellfield area that contributes to the rising groundwater condition.

In the Report of Referee (1962, Volume II, Appendix O), procedures were developed for the calculation of rising groundwater for the original base period of 1928-1958. Some of the important factors of that study that are no longer significant include: releases of Owens River water; operation of the Chatsworth Reservoir; and operation of the Headworks Spreading Grounds. As shown on Figure O-2 of the Report of Referee (1962), excess rising groundwater was considered to have declined to essentially zero by the late-1950s. The January 1993 report by Brown and Caldwell, "Potential Infiltration of Chlorides from the Los Angeles River Narrows into the Groundwater Aquifer" assessed groundwater levels along the course of the Los Angeles River; the then-current Watermaster provided the data for that 1993 evaluation. As of the end of the drought period in 1977, groundwater levels in the Los Angeles River Narrows were very low, with very little potential for creating excess rising groundwater at that time. However, increased rainfall and runoff occurred during the 1978-83 period, which, combined with reduced pumping by the Los Angeles-owned Crystal Springs, Grandview, and Pollock wellfields, induced large rises in groundwater levels in the Los Angeles River Narrows. Such elevated groundwater levels that follow periods of heavy rainfall tend to increase the amounts of rising groundwater.

Finally, the methodology used to calculate rising groundwater (Table 2-3) needs to be improved. Over the years, many of the gaging stations in the Los Angeles River and its tributaries have been lost or abandoned. Actual data from these gaging stations have been replaced by estimates, and the LADWP-operated groundwater flow model has been used to check the results. Although the current methodology provides an approximation, it is considered to be less accurate than using actual gage data. To improve the calculation of rising groundwater, the abandoned or lost gaging stations need to be identified, and then these stations should be either rehabilitated or replaced entirely The first step to be taken by the Watermaster will be a field visit to these types of facilities.

TABLE 2-3: ESTIMATED SEPARATION OF SURFACE FLOW AT STATIONS F-57C-R & F-252-R

(Acre-feet)

	F-57C-R				F-252-R		
Water Year	Rising Groundwater[1]	Waste Discharge	Storm Runoff	Total Outflow [2]	Rising Groundwater[3,4]	Storm Runoff [4]	Total Outflow
2010-11	6,588	88,541	135,815	230,945	2,397	18,023	20,420
2009-10	5,814	74,736	75,150	155,700	2,394	11,936	14,330
2008-09	2,698	73,983	66,882	142,563	2,097	7,808	9,905
2007-08	3,905	76,287	96,548	176,740	1,212	8,700	9,912
2006-07	1,720	72,544	21,236	95,500	1,272	6,668	7,943
2005-06	5,441	74,256	77,063	156,760	1,414	12,717	14,131
2004-05	6,309	70,828	423,293	500,430	5,198	31,874	37,072
2003-04	3,330	90,377	42,153	135,860	2,468	2,851	5,319
2002-03	3,869	75,159	106,862	185,890	3,167	5,183	8,350
2001-02	2,126	74,737	43,937	120,800	1,819	5,721	7,540
2000-01	3,000	91,795	94,065	188,860	1,500	6,370	7,870
1999-00	1,980	78,009	62,202	142,190	824	4,243	8,470
1998-99	2,000	72,790	39,110	113,900	1,000	2,534	7,250
1997-98	4,000	97,681	245,079	346,730	4,000	12,140	16,140
1996-97	3,000	75,827	76,485	155,312	3,000	13,860	16,860
1995-96	3,841	86,127	61,188	151,156	2,577	10,946	13,523
1994-95	4,900	66,209	367,458	438,567	4,809	28,881	33,696
1993-94	2,952	60,594	73,149	136,695	1,387	6,156	7,543
1992-93	4,900	77,000	478,123	560,023	3,335	20,185	23,520
1991-92	3,000	120,789	197,040	320,829	1,412	13,209	14,621
1990-91	3,203	75,647	117,779	196,629	1,157	6,865	8,022
1989-90	3,000	76,789	55,811	167,639	1,182	2,938	4,120
1988-89	3,000	80,020	56,535	136,843	1,995	4,453	6,448
1987-88	3,000	81,920	74,074	156,204	3,548	10,493	14,041
1986-87	3,000	64,125	19,060	83,295	2,100	1,690	3,790
1985-86	3,880	48,370	102,840	155,090	2,470	6,270	8,740
1984-85	3,260	21,600	46,300	71,160	2,710	3,970	6,680
1983-84	3,000	17,780	49,090	69,870	4,000	n/a	n/a
1982-83	3,460	17,610	384,620	405,690	5,330	21,384	26,714
1981-82	1,280	18,180	80,000	99,460	3,710	5,367	9,077
1980-81	4,710	19,580	51,940	76,230	5,780	2,917	8,697
1979-80	5,500	16,500	n/a	n/a	5,150	7,752	12,902
1978-79	2,840	16,450	119,810	139,100	2,470	n/a	n/a
1977-78	1,331	7,449	357,883	366,663	1,168	23,571	24,739
1976-77	839	7,128	58,046	66,013	1,683	2,635	4,318
1975-76	261	6,741	32,723	39,725	2,170	2,380	4,550
1974-75	427	7,318	56,396	64,141	1,333	4,255	5,588
1973-74	2,694	6,366	79,587	88,878	1,772	5,613	7,385
1972-73	4,596	8,776	100,587	113,959	1,706	7,702	9,408
1971-72	---	---	---	---	2,050	2,513	4,563
Average	3,299	56,324	121,735	182,948	2,519	9,284	11,953

1. Includes the influence of treated waste water discharged to the Los Angeles River from the Los Angeles-Glendale Water Reclamation Plant (as of Water Year 1976-77) and the Donald C. Tillman Water Reclamation Plant (as of September 1985).
2. Gage F-57, the major measurement point of discharge to the Los Angeles River, is estimated due to erroneous readings.
3. Includes the influence of declining capacity at Verdugo Park Treatment Plant.
4. Includes influence of dry weather runoff and perennial stream flow.

2.4 Groundwater Recharge

Precipitation has a direct influence on groundwater recharge and, ultimately, on the amount of groundwater in storage in the local groundwater basins. Urban development in ULARA over time has resulted in a significant portion of the rainfall being collected and routed into lined channels that discharge directly into the Los Angeles River. To partially offset the increased runoff due to urbanization, Pacoima, Big Tujunga and Hansen dams, originally built for flood control, are now utilized to regulate storm flows and to allow recapture of a portion of the flow in downstream spreading basins operated by the LACDPW and the City of Los Angeles.

The LACDPW operates the Branford, Hansen, Lopez, and Pacoima spreading grounds. The LACDPW, in cooperation with the City of Los Angeles, operates the Tujunga Spreading Grounds (TSG). These spreading grounds are primarily used for the artificial recharge of native water (stormwater runoff). Table 2-4 summarizes the spreading operations at all spreading basins for the 2010-11 Water Year, and Table 2-4A summarizes recharge since the 1968-69 Water Year. Plate 8 shows the locations of these spreading grounds.

TABLE 2-4: 2010-11 SPREADING OPERATIONS IN THE SAN FERNANDO BASIN

(Acre-feet)

Agency	Spreading Facility	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
LACDPW														
	Branford	92	77	146	37	114	132	6	20	22	15	15	14	690
	Hansen	0	135	4,170	4,710	3,080	1,910	656	0	0	2,920	518	965	19,064
	Lopez	0	0	45	175	58	301	569	682	543	236	727	586	3,922
	Pacoima	24	1,770	2,350	3,070	1,370	3,320	2,660	2,260	2,630	0	1,210	3,500	24,164
	Tujunga	551	614	1,610	5,270	2,170	5,540	6,080	4,760	2,380	698	1,780	23	31,476
	Total	**667**	**2,596**	**8,321**	**13,262**	**6,792**	**11,203**	**9,971**	**7,722**	**5,575**	**3,869**	**4,250**	**5,088**	**79,316**
City of Los Angeles														
	Tujunga [1]	0.12	0.10	0.51	0.52	0.29	0.86	0.21	0.28	0.26	0.71	0.40	0.15	4
	Headworks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
	Total	**0.12**	**0.10**	**0.51**	**0.52**	**0.29**	**0.86**	**0.21**	**0.28**	**0.26**	**0.71**	**0.40**	**0.15**	**4**
City of Burbank														
	Pacoima [2]	0	1,728	272	0	0	0	477	1,533	2,193	0	1,712	3,272	**11,187**
	Basin Total	**667**	**4,324**	**8,594**	**13,263**	**6,792**	**11,204**	**10,449**	**9,255**	**7,768**	**3,870**	**5,962**	**8,360**	**90,507**

1. This water derived from temporary discharge from test pumping of Tujunga Wells into the Tujunga spreading basin and is not considered native water.
2. This is MWD water imported by Burbank & spread at Pacoima Spreading Grounds.

TABLE 2-4A: ANNUAL SPREADING OPERATIONS IN THE SAN FERNANDO BASIN

1968-69 through 2010-11
(Acre-feet)

Water Year	Los Angeles County Department of Public Works (Native)						City of Los Angeles (Imported)			City of Burbank (Imported)[1]	GRAND TOTAL	Rainfall (inches) Weighted Average Valley/Mtns.
	Branford	Hansen	Lopez	Pacoima	Tujunga	TOTAL	Headworks	Tujunga	TOTAL	Pacoima		
2010-11	690	19,064	3,922	24,164	31,476	79,316	0	4	4	11,187	90,507	20.55
2009-10	535	16,766	274	9,080	12,849	39,504	0	7,509	7,509	34	47,047	25.21
2008-09	706	0	1	2,000	7,233	9,940	0	0	0	---	9,940	12.58
2007-08	570	10,517	634	5,025	4,892	21,638	0	0	0	---	21,638	17.27
2006-07	532	5,762	44	436	1,200	7,974	0	0	0	---	7,974	5.36
2005-06	576	20,840	958	7,346	14,895	44,615	0	0	0	---	44,615	17.42
2004-05	1,448	33,301	940	17,394	21,115	74,198	0	0	0	---	74,198	45.66
2003-04	444	6,424	144	1,731	1,322	10,065	0	0	0	---	10,065	12.21
2002-03	932	9,427	518	3,539	1,914	16,330	0	0	0	---	16,330	21.22
2001-02	460	1,342	0	761	101	2,664	0	0	0	---	2,664	6.64
2000-01	562	11,694	172	3,826	1,685	17,939	0	0	0	---	17,939	22.29
1999-00	468	7,487	578	2,909	2,664	14,106	0	0	0	---	14,106	16.77
1998-99	547	8,949	536	696	3,934	14,662	0	0	0	---	14,662	10.83
1997-98	641	28,129	378	20,714	11,180	61,042	0	77	77	---	61,119	38.51
1996-97	415	9,808	724	5,768	6,406	23,121	0	51	51	---	23,172	17.65
1995-96	345	8,232	363	4,532	7,767	21,239	0	0	0	---	21,239	14.48
1994-95	585	35,137	1,086	14,064	18,236	69,108	0	0	0	---	69,108	33.08
1993-94	462	12,052	182	3,156	4,129	19,981	0	0	0	---	19,981	11.86
1992-93	389	26,186	1,312	17,001	19,656	64,544	114	0	114	---	64,658	41.26
1991-92	653	15,461	1,094	12,914	9,272	39,394	230	0	230	---	39,624	32.39
1990-91	509	11,489	241	3,940	2,487	18,666	52	0	52	---	18,718	7.69
1989-90	327	2,029	90	1,708	0	4,154	0	0	0	---	4,154	9.55
1988-89	255	3,844	308	1,306	0	5,713	0	0	0	---	5,713	9.72
1987-88	352	17,252	1,037	4,520	0	23,161	0	0	0	---	23,161	21.36
1986-87	0	7,311	141	467	0	7,919	0	33	33	---	7,952	7.70
1985-86	290	18,188	1,735	6,704	0	26,917	0	1,433	1,433	---	28,350	23.27
1984-85	244	13,274	104	3,375	0	16,997	0	5,496	5,496	---	22,493	13.31
1983-84	213	10,410	0	3,545	0	14,168	0	24,115	24,115	---	38,283	11.18
1982-83	883	35,192	1,051	22,972	10,580	70,678	10	32,237	32,247	---	102,925	46.07
1981-82	345	14,317	243	5,495	0	20,400	3,853	0	3,853	---	24,253	20.16
1980-81	245	14,470	335	3,169	0	18,219	4,652	9,020	13,672	---	31,891	12.89
1979-80	397	31,087	1,097	15,583	0	48,164	5,448	19,931	25,379	---	73,543	33.66
1978-79	295	24,697	1,018	12,036	0	38,046	2,463	31,945	34,408	---	72,454	24.07
1977-78	2,142	28,123	445	20,472	12,821	64,003	3,200	18,247	21,447	---	85,450	44.84
1976-77	377	2,656	63	1,943	0	5,039	3,142	16	3,158	---	8,197	16.02
1975-76	470	3,128	562	1,308	0	5,468	3,837	5,500	9,337	---	14,805	14.20
1974-75	681	5,423	915	2,476	0	9,495	4,070	9,221	13,291	---	22,786	---
1973-74	672	6,287	946	2,378	0	10,283	6,205	0	6,205	---	16,488	---
1972-73	1,271	9,272	0	6,343	2,274	19,160	5,182	0	5,182	---	24,342	---
1971-72	161	1,932	0	1,113	0	3,206	7,389	0	7,389	---	10,595	---
1970-71	507	11,657	727	4,049	0	16,940	6,804	399	7,203	---	24,143	---
1969-70	674	11,927	0	1,577	2,380	16,558	11,021	0	11,021	---	27,579	---
1968-69	461	32,464	893	14,262	13,052	61,132	6,698	3,676	10,374	---	71,506	---
AVG.	552	14,023	600	6,926	5,245	27,346	1,730	3,928	5,658	5,611	33,264	

1. Spreading by Burbank began in 2009-10 Water Year following completion of the Burbank MWD connection.

2.5 Groundwater Extractions

The original Trial Court adjudication of groundwater rights in ULARA, effective October 1, 1968, restricted all groundwater extractions to the maximum safe yield of the 4 ULARA groundwater basins of approximately 104,040 AF/y. This amounted to a reduction of approximately 50,000 AF from the average groundwater extractions for the six years prior to 1968. The State Supreme Court's opinion, as implemented on remand in the Judgment dated January 26, 1979, further restricted groundwater pumping from each groundwater basin, and by each party within each basin.

Figure 2.2 illustrates the imported water used in ULARA and annual groundwater extractions, beginning with the 1954-55 Water Year. It can be noted that for the 14 years prior to pumping restrictions (1954-55 to 1967-68), imported water exceeded extractions by 50,000 to 90,000 AF/y. In contrast, annual imported water volumes exceeded extractions by 110,000 to 250,000 AF/y in the past 42 years (1968-69 to 2010-11).

A total of 73,298 AF of groundwater was pumped from the four ULARA groundwater basins during the 2010-11 Water Year, as follows: 64,313 AF from the SFB; 4,046 AF from the Sylmar Basin; 4,754 AF from the Verdugo Basin; and 185 AF from the Eagle Rock Basin. The respective extraction rights for the 2011-12 Water Year for each basin are: 88,410 AF (Native Safe Yield of 43,660 AF plus an import return credit (or “return water extraction right”) of 44,750 AF) for the SFB; 6,810 AF for the Sylmar Basin; and 7,150 AF for the Verdugo Basin. The Groundwater Extractions Report provided in Appendix A summarizes the groundwater extractions of each party that occurred during Water Year 2010-11. Plate 8 shows the locations of the various wellfields, whereas Plate 11 displays the computer-simulated changes in groundwater elevations; these simulated groundwater elevations have resulted from changes in groundwater extractions and annual rainfall and recharge during the 2010-11 Water Year.

Of the total amount of groundwater pumped in ULARA (73,298 AF), the majority, 70,810 AF, was extracted by Parties to the Judgment; 1,116 AF are considered a non-consumptive use or minimal consumption; and 1,372 AF were pumped for physical solutions, groundwater cleanup, water well development and testing, and dewatering activities by other parties (Appendix E). Table 2-5 summarizes private party pumping in the SFB for Water Year 2010-11, whereas Plate 3 shows the locations of the individual producers.

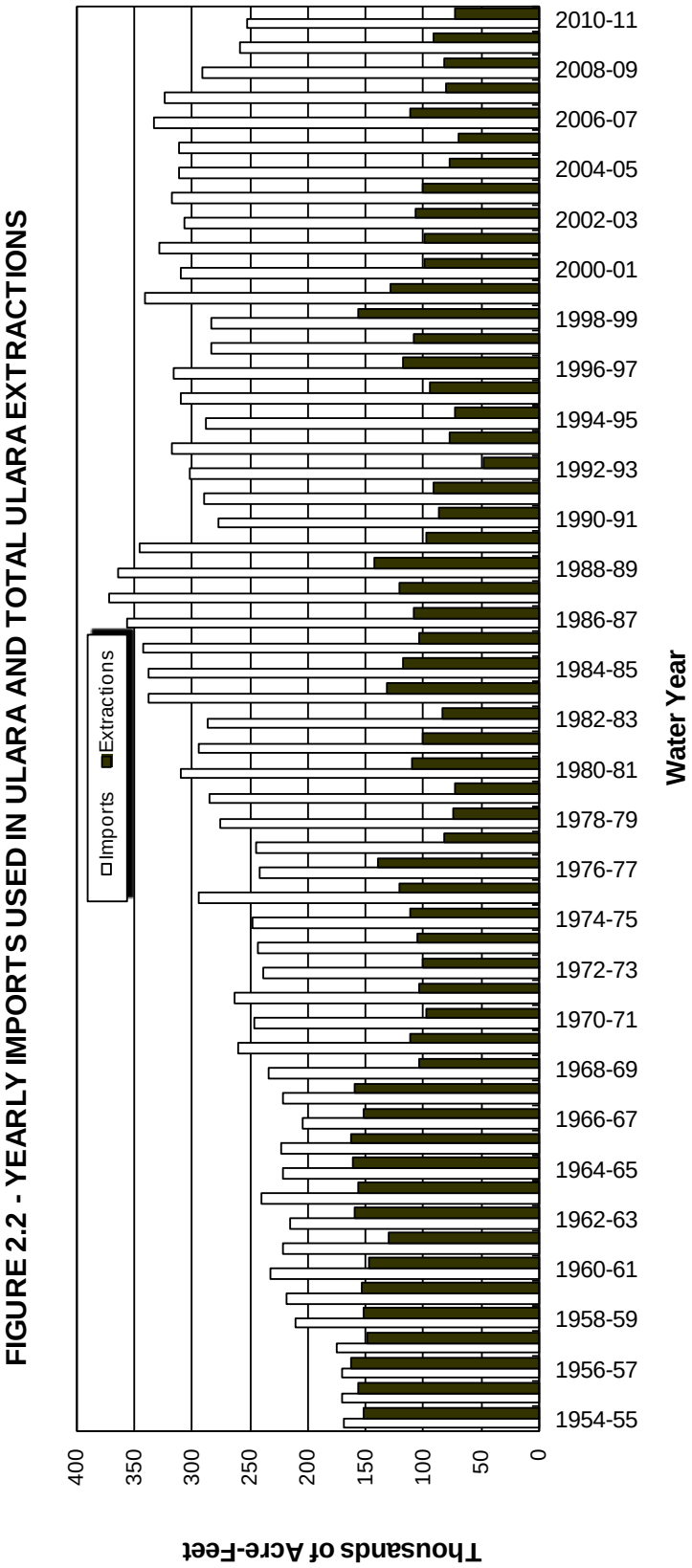


FIGURE 2.2 - YEARLY IMPORTS USED IN ULARA AND TOTAL ULARA EXTRACTIONS
Imports
Extractions
Water Year
2010-11
2008-09
2006-07
2004-05
2002-03
2000-01
1998-99
1996-97
1994-95
1992-93
1990-91
1988-89
1986-87
1984-85
1982-83
1980-81
1978-79
1976-77
1974-75
1972-73
1970-71
1968-69
1966-67
1964-65
1962-63
1960-61
1958-59
1956-57
1954-55
400
350
300
250
200
150
100
50
0
Thousands of Acre-Feet

TABLE 2-5: 2010-11 PRIVATE PARTY PUMPING – SAN FERNANDO BASIN

(Acre-feet)

Nonconsumptive Use or Minimal Consumption	
Sears, Roebuck and Company (Air Conditioning; well disconnected 2000)	0.00
Sportsmens' Lodge	10.88
Toluca Lake Property Owners	0.00
Vulcan (CalMat)* (Gravel washing)	1,104.79
Walt Disney Productions (3 wells inactive/ Not abandoned)	0.00
Total	**1,115.67**

Groundwater Dewatering	
Charged to Los Angeles' water rights	
Avalon Encino	0.00
BFI Sunshine Canyon Landfill	112.74
Glenborough Realty (First Financial)	17.32
Mercedes Benz Encino (formerly known as Auto Stiegler)	11.15
Fassberg Construction	0.12
Metropolitan Transportation Agency	21.50
Metropolitan Water District	161.20
Trillium Corporation	39.95
Warner Properties Plaza 6 and 3	23.60
Total	**387.58**

Groundwater Cleanup	
Charged to Burbank's water rights	
B.F.Goodrich (Menasco/Coltec)	0.10
Home Depot U.S.A. Inc.	5.87
Subtotal	*5.97*
Charged to Los Angeles' water rights	
3M-Pharmaceutical	49.10
Boeing Santa Susana Field Lab	10.34
Honeywell International, Inc.	159.58
Micro Matics USA, Inc.	0.00
Tesoro	0.00
Subtotal	*219.02*
Total	**224.99**

Physical Solution	
Charged to Burbank's water rights	
Valhalla Memorial Park	387.20
Subtotal	*387.20*
Charged to Glendale's water rights	
Forest Lawn Cemetery Assn.	323.22
Subtotal	*323.22*
Charged to Los Angeles' water rights	
Hallelujah Prayer Ctr (Hathaway/deMille)	14.94
Middle Ranch (deMille)	5.57
Toluca Lake Property Owners	22.06
Water Licenses	2.11
Wildlife Waystation	4.37
Subtotal	*49.05*
Total	**759.47**

Total Extractions	**2,487.71**

* Water pumped by Vulcan (Calmat) excludes 85.45 AF of water lost through evaporation.

2.6 Imports and Exports of Water

The continued growth of residential, commercial, and industrial developments has required that more water be imported to supplement the local groundwater supplies in ULARA over time.

Imported supplies to ULARA are from the Los Angeles Aqueduct and the MWD. Imported water in the Los Angeles Aqueduct consists of runoff from the Eastern Sierra Nevada and groundwater from Owens Valley. The imported MWD supplies consist of State Water Project and water from the Colorado River Aqueduct.

Exports from ULARA include imported Los Angeles Aqueduct water and MWD water (pass-through water), and groundwater extracted from the San Fernando Basin by LADWP. Exports of wastewater not treated and released into the Los Angeles River are by pipeline to the Hyperion Treatment Plant.

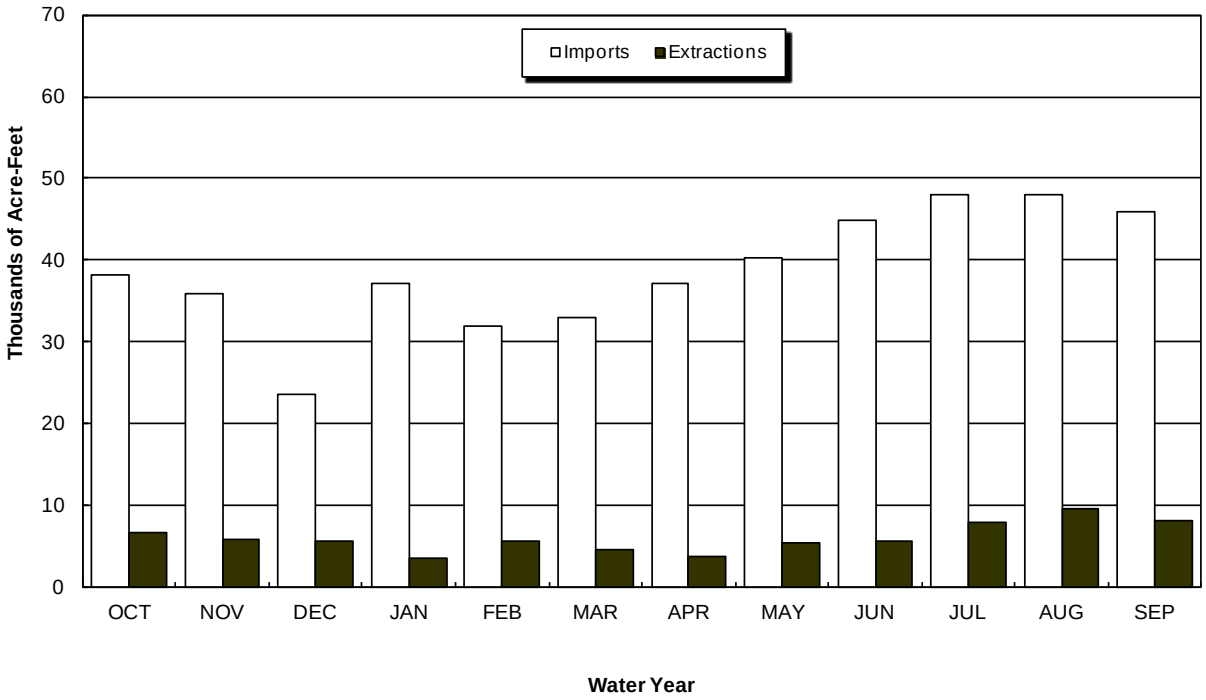
Table 2-6 summarizes the imports and exports from ULARA during the 2009-10 and 2010-11 Water Years, whereas Figure 2.3 shows the monthly extractions and imports for 2010-11. Recent constraints on water supply sources in the Eastern Sierra Nevada and Owens Valley have reduced the availability of water from these sources for import into ULARA; however, the Parties have tried to manage this water supply challenge, in part, by enacting water conservation measures thereby reducing overall water demand during the period.

TABLE 2-6: ULARA WATER IMPORTS AND EXPORTS
(Acre-feet)

Source and Agency	Water Year 2009-10	2010-11
Gross Imported Water		
Los Angeles Aqueduct		
City of Los Angeles	241,734	334,294
MWD Water		
City of Burbank [1]	8,401	18,563
Crescenta Valley Water District	1,754	1,437
City of Glendale	16,310	17,357
City of Los Angeles	192,920	97,455
La Canada Irrigation District [2]	1,027	994
Las Virgenes Municipal Water District [2]	6,813	7,082
City of San Fernando	51.38	17.58
MWD Total	**227,276**	**142,906**
Grand Total	**469,010**	**477,200**
Exported Water (Pass-Through)		
Los Angeles Aqueduct		
City of Los Angeles	109,220	156,219
MWD Water		
City of Los Angeles	101,003	56,742
Total	**210,223**	**212,961**
Net Imported Water	**258,786**	**264,239**

1. Total includes water imported for potable use and for groundwater replenishment (spreading).
2. Deliveries to those portions of these agency service areas that are within ULARA.

FIGURE 2.3 – TOTAL MONTHLY EXTRACTIONS AND GROSS IMPORTS



2.7 Wastewater Recycling

Wastewater recycling presently provides a source of water for irrigation, industrial, and recreational uses. In the future, wastewater recycling may provide additional water for groundwater recharge at existing and/or new spreading basins, and/or at new aquifer storage and recovery wells (ASR wells, a method to inject water directly into the aquifer systems). Four water reclamation plants are in operation in ULARA: the Tillman, Burbank, Los Angeles-Glendale, and the Las Virgenes Municipal Water District plants; the latter facility is located west of the southwestern boundary of ULARA but a part of the water treated at this facility is used in ULARA. Table 2-7 summarizes the operations at these 4 WRPs in Water Year 2010-11, whereas Plate 5 shows the locations of these facilities.

TABLE 2-7: 2010-11 WASTEWATER RECYCLING OPERATIONS
(Acre-feet)

Plant/Agency	Plant Influent [1]	Effluent to L.A. River	Flow to Hyperion	Recycled Water Use	Recycled Water Use [7] (%)	Recycled Water Delivered to SFB
City of Burbank	9,052	7,484	0	1,568 [4]	17%	1,568
Los Angeles-Glendale	23,060 [2]	16,160	2,100	4,351	19%	
Los Angeles				2,925 [6]		270
Glendale				1,426 [5]		1,184
Donald C. Tillman	52,433	31,063	19,767	5,620 [3]	11%	1,531
Las Virgenes MWD				1,517		1,517
Total	**84,545**	**54,707**	**21,867**	**13,056**		**6,070**

1. Does not include plant overflow/ by pass.
2. Plant influent does not equal to the effluent due to metering error and/or plant use.
3. Includes deliveries of 1,531 AF of recycled water by Los Angeles to valley fill for irrigation, 2,651 AF of Tillman in-plant use discharged to Hyperion, and 1,438 AF delivered to Valley Generation Station discharged to Hyperion.
4. Of the total recycled water (1,568.2 AF), 870.7 AF was delivered to the Burbank power plant, 697.5 AF was used by CalTrans, DeBell Golf Course and various other landscape irrigation sites.
5. Of the total recycled water delivered, 1,426 AF was delivered to Glendale for use in Glendale's Power Plant and for irrigation water for CalTrans, Forest Lawn Project, Verdugo School, and Brand Park;
6. Total includes 1,030.9 AF for in-plant use; 768 AF delivery to Griffith Park for irrigation; 1,060.6 AF deliveries to CalTrans, Lakeside, Mt. Sinai Memorial Park, Forest Lawn H.H., and Universal City for irrigation; 14.4 AF delivery to former Headworks Spreading Grounds for construction dust control; and 51.3 AF exported from ULARA delivered to Taylor Yard for irrigation.
7. Recycled Water Use (%) is calculated as percentage of plant influent.

2.8 Groundwater Elevations and Hydrographs

The simulated groundwater elevation contour maps for the Spring (April) and the Fall (September) of 2011 for the San Fernando Basin were created by the ULARA Watermaster Support Staff at LADWP using the SFB Groundwater Flow Model. The SFB model was initially developed during the Remedial Investigation (RI) study of groundwater contamination in the eastern portion of the San Fernando Valley in the early-1990s, and was funded through the USEPA's Superfund program.

The model is comprised of up to four hydrostratigraphic layers established by others in the deepest portion of the eastern SFB, and includes 6,883 cells, ranging in size from 1,000 by 1,000 feet to 3,000 by 3,000 feet. The model parameters were calibrated by matching the simulated hydraulic-head fluctuations with the historical water level fluctuations measured at selected key monitoring wells for a 10-year period. The simulated 2011 contours for San Fernando Basin were estimated by incorporating the actual monthly recharge (e.g. the amount of spread water, precipitation, etc.) and groundwater extraction values for the 2010-11 Water Year as model input. The model was then run to simulate the actual operations in the San Fernando Basin during the period October 2010 to September 2011. The simulated head values (simulated groundwater elevations) at the end of the months of April and September of the 2010-11 Water Year for SFB were then plotted by utilizing groundwater contouring software.

The simulated Groundwater Elevation Contour Maps for Spring and Fall 2011 are shown on Plates 9 and 10, respectively, to depict the regional direction of groundwater flow within the San Fernando Basin during these periods. Current groundwater elevations in different portions of the four ULARA groundwater basins may be obtained by contacting the Watermaster Support Staff at LADWP at (213) 367-2117. Additional water level data may also be available from Los Angeles County via http://gis.dpw.lacounty.gov/wells/viewer.asp.

Plate 11 has been prepared to illustrate the simulated change in groundwater elevations from Fall 2010 to Fall 2011 for the San Fernando Basin. The increase in simulated groundwater elevations ranged between 36 feet and 46 feet in the portion of the SFB near the Hansen, Pacoima, and Tujunga spreading grounds. This increase is attributed to the considerably high volume (79,316 AF) of native runoff water that was artificially spread at these spreading grounds during that time period. In addition, Burbank spread 11,187 AF of imported water from MWD at Pacoima spreading grounds. The long-term average of native runoff water spread within SFB has been approximately 26,000 AF.

Simulated groundwater elevations increased by 25 feet to 35 feet near the LADWP-owned Rinaldi-Toluca and North Hollywood wellfields primarily due to the increased volume of water that was artificially spread and recharged at the spreading basins that lie upgradient from these wellfields. The groundwater elevation increase was also due to the reduction in total extraction from these two LADWP-owned wellfields. The amount of recharge at these upgradient spreading basins increased by about 48 percent, from 47,047 AF in 2009-10 to 90,507 AF in 2010-2011. Pumping at these major wellfields during this same period was decreased by 66 percent, from 32,658 AF in 2009-10 to 10,946 AF in 2010-11.

Similarly, due to increased recharge at the Tujunga spreading grounds and other upgradient spreading grounds, the simulated groundwater elevations near the LADWP-owned Tujunga Wellfield (TWF) increased as much as 40 feet.

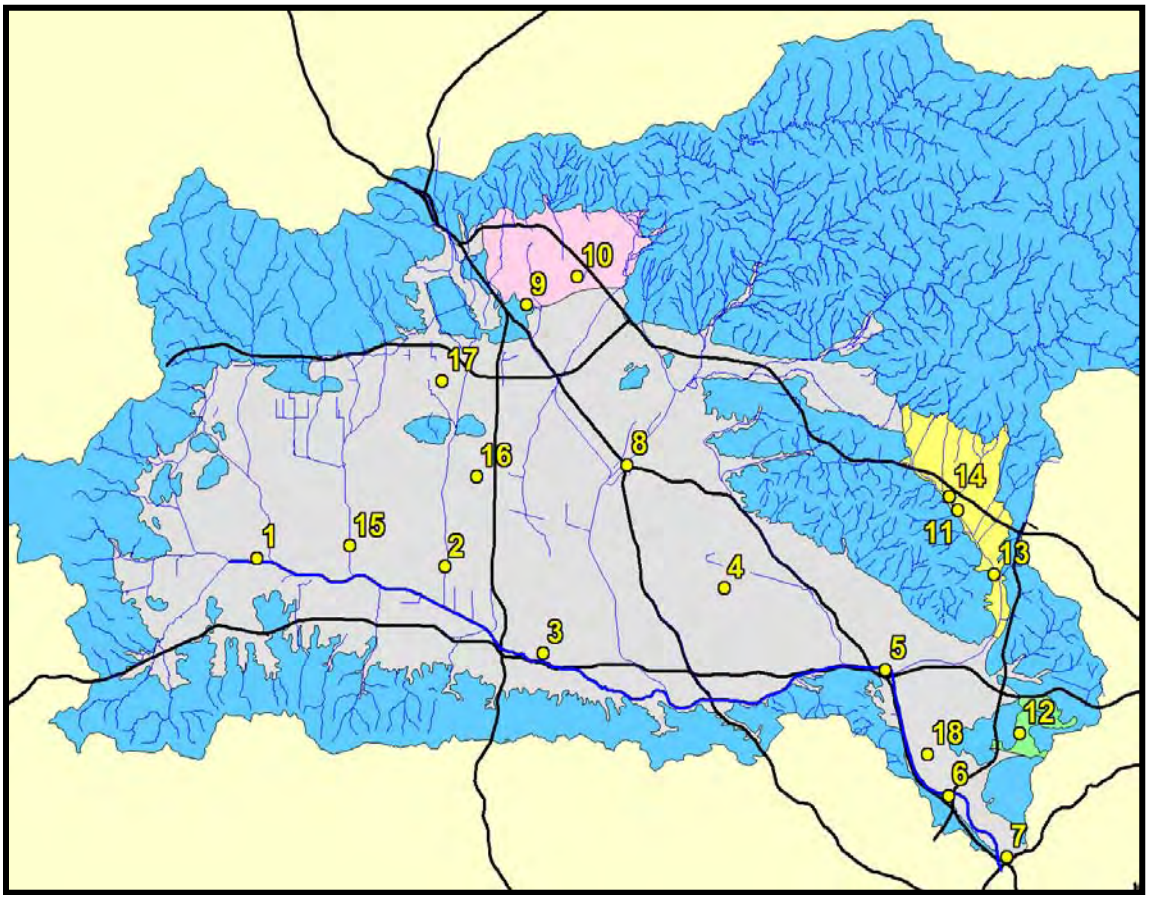
Also, the simulated groundwater elevations near the wellfield of the Burbank Operable Unit (BOU) increased by approximately 10 feet due to the significant increase in the volume of both native runoff and imported water that was artificially spread at those upgradient spreading grounds between 2009-10 and 2010-11. Pumping from this BOU facility increased by only 351 AF during this same period (10,043 AF vs. 10,394 AF, respectively).

In general, simulated groundwater elevations increased in most areas of the SFB, mainly due to the significant increase in the artificial recharge at the spreading grounds, the above-average rainfall, and the significant decrease in municipal-supply groundwater extractions by the purveyors in 2010-11.

Over the years, the water level data collected from 11 wells within the valley fill areas of ULARA have been used to create hydrographs; these graphs illustrate the fluctuations in water levels in these wells on a seasonal basis for each year and also on a year to year basis in response to variations in seasonal/annual groundwater extractions and recharge. Actual water levels for each well are plotted on the hydrographs as depth to water for each available data point; the ground surface elevation (GSE) of each well is listed on each respective hydrograph. For this current Annual Report, the Watermaster collected water level data for another ±20 wells in ULARA, as available from LADWP and the Los Angeles County Department of Public Works – Water Resources Division. Using available location data for each of these wells, Watermaster staff plotted the locations and period of available water level data for each of these ±20 additional wells on a map for in-house use; well depth and casing perforation records were listed, if available, for each well. The locations and data for these ±20 additional wells were then reviewed and compared to the locations of the 11 wells for which hydrographs have been presented for many years in the prior Annual Watermaster reports.

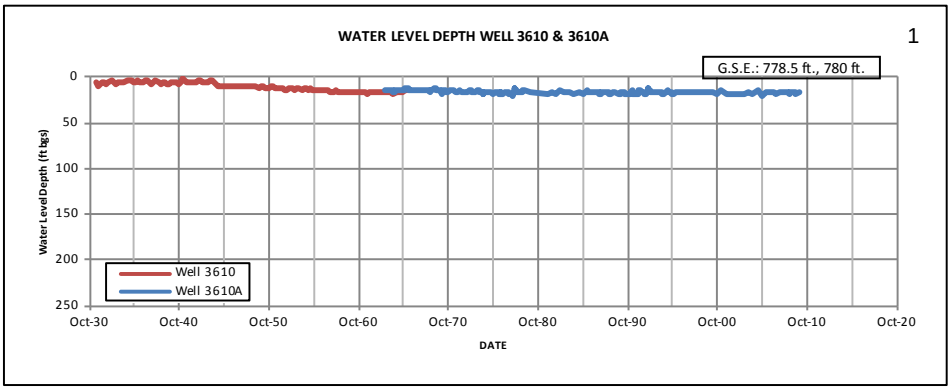
As a result, the Watermaster has decided to begin including the hydrographs for 7 additional wells in the ULARA groundwater basins in this and forthcoming Annual Reports. One of these additional wells (shown as No. 12 on Figure 2.4) now provides, for the first time, the fluctuations in water levels in the Eagle Rock Groundwater Basin. Figure 2.4 illustrates the locations of the wells for which hydrographs have been prepared, whereas the hydrographs for each respective well are shown on the ensuing pages.

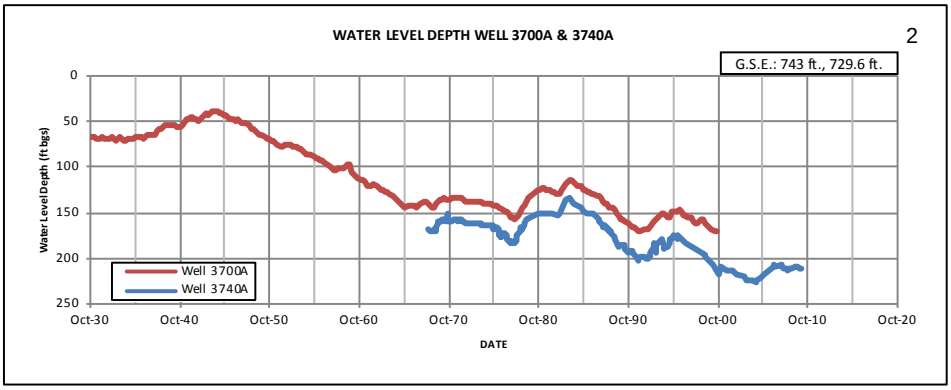
FIGURE 2.4 LOCATIONS OF WELLS WITH HYDROGRAPHS

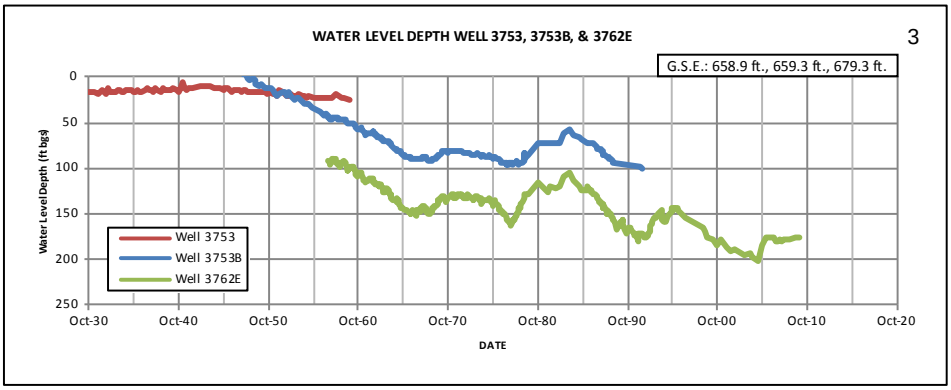


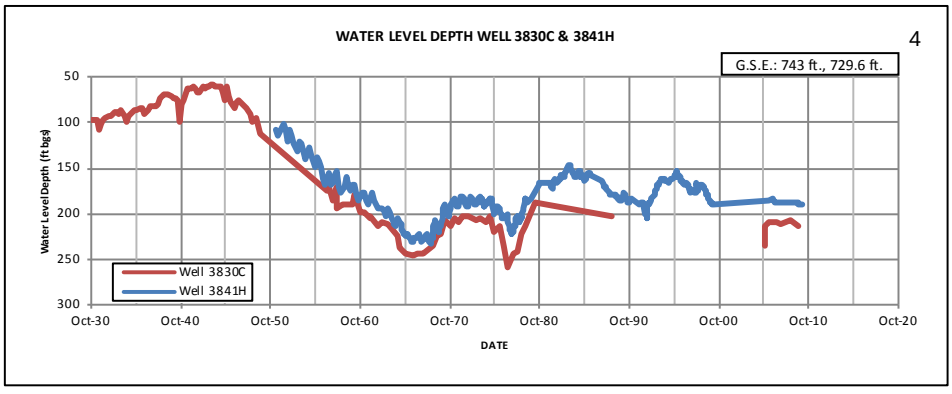
NOTE: See Hydrographs for each well shown above in the accompanying figures.

SAN FERNANDO BASIN

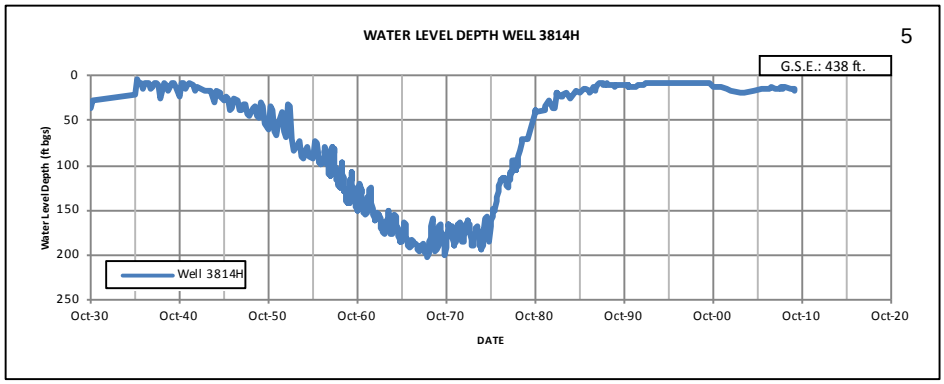


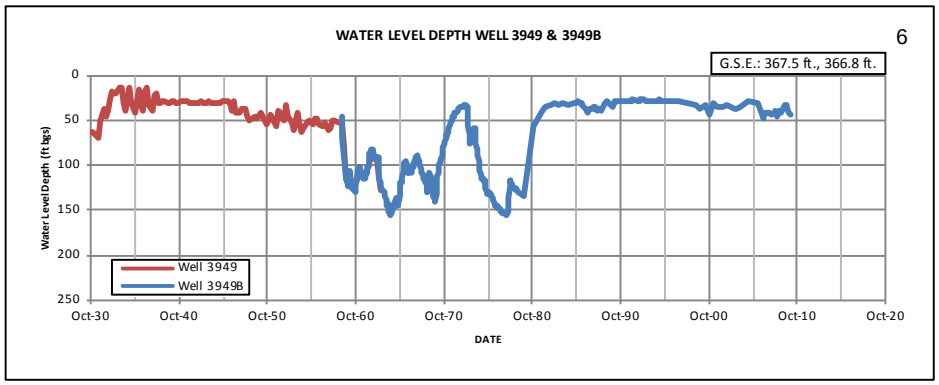


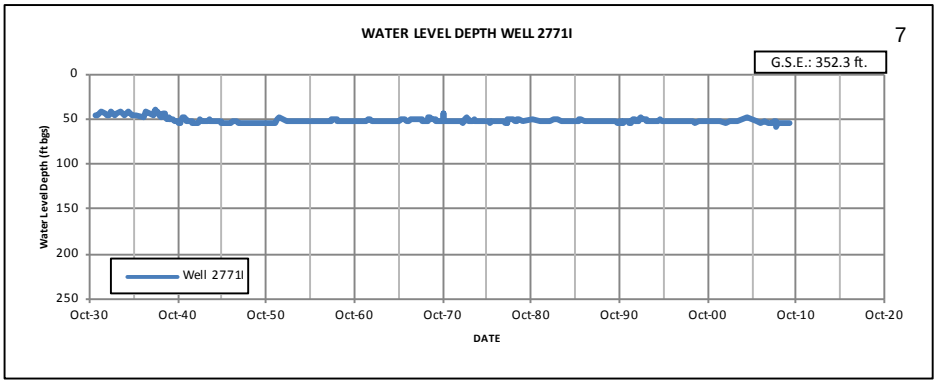


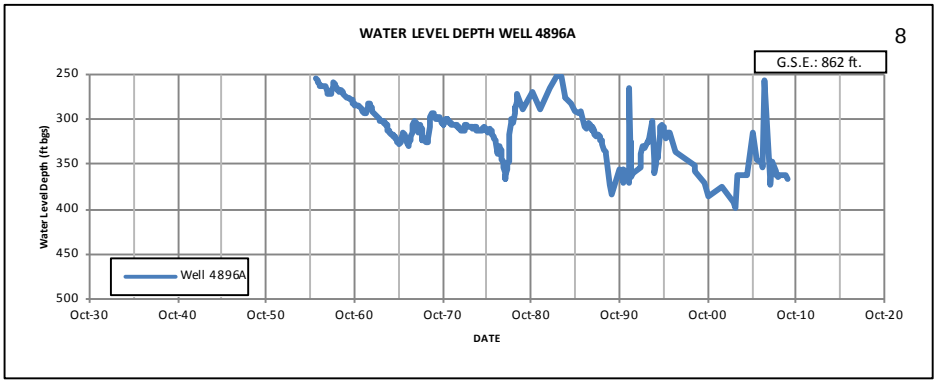


SAN FERNANDO BASIN

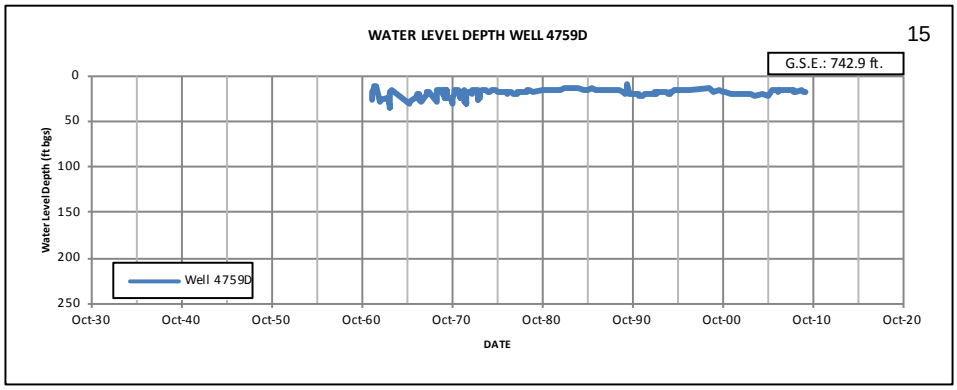


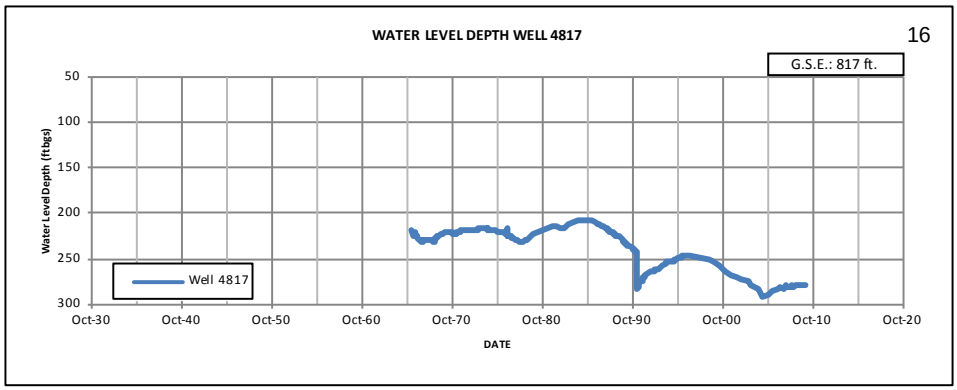


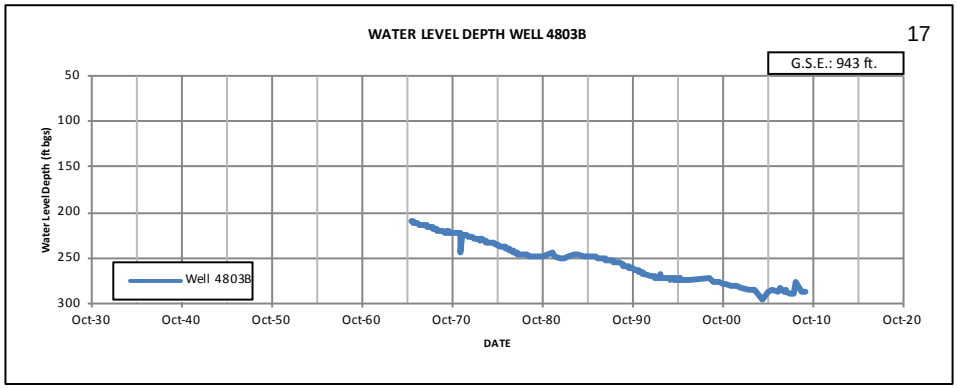


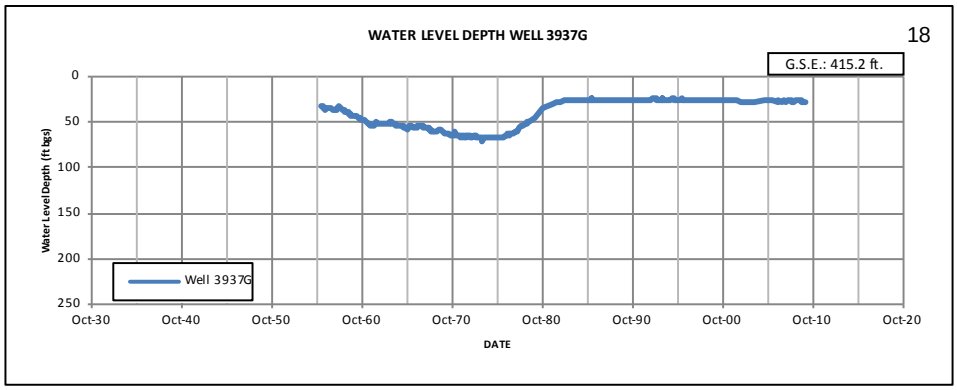


SAN FERNANDO BASIN

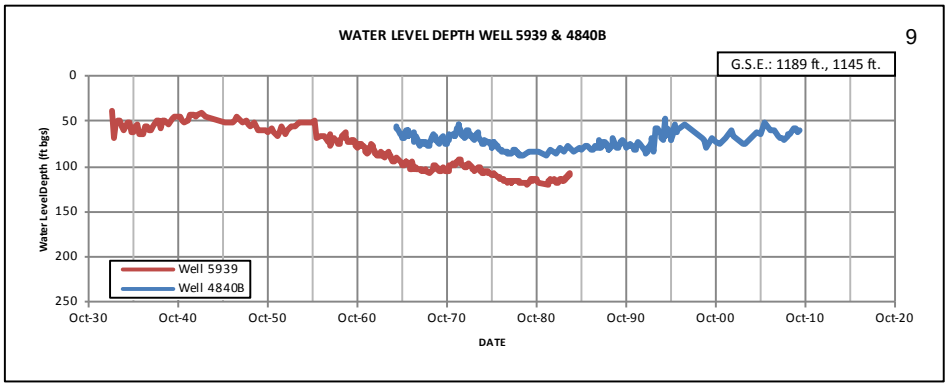


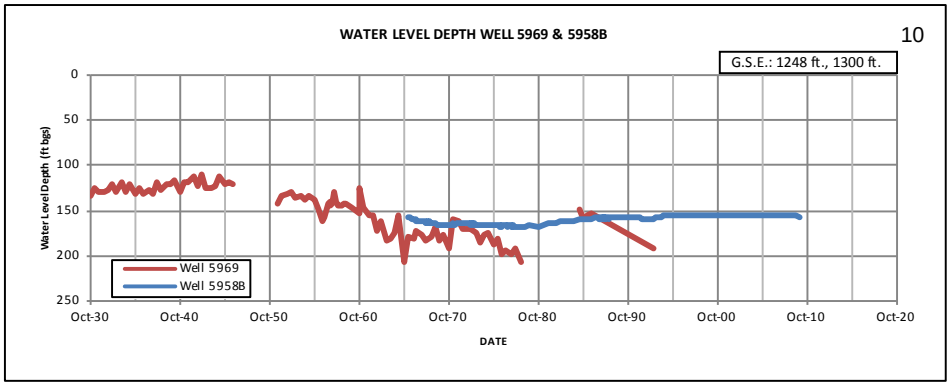




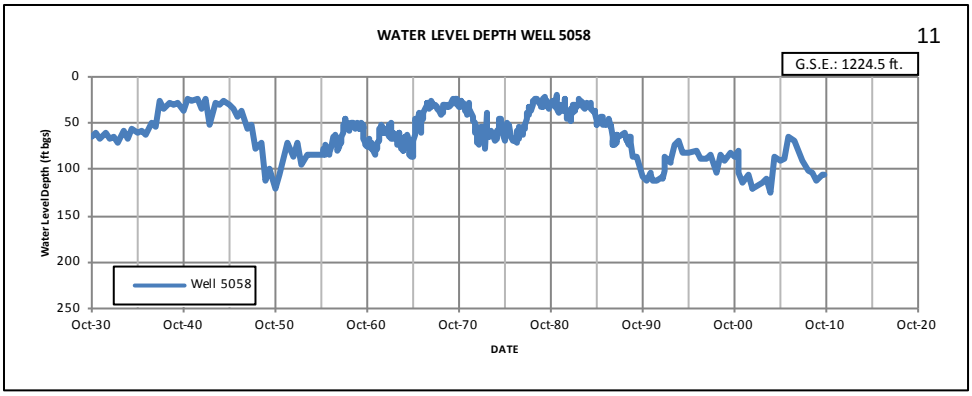


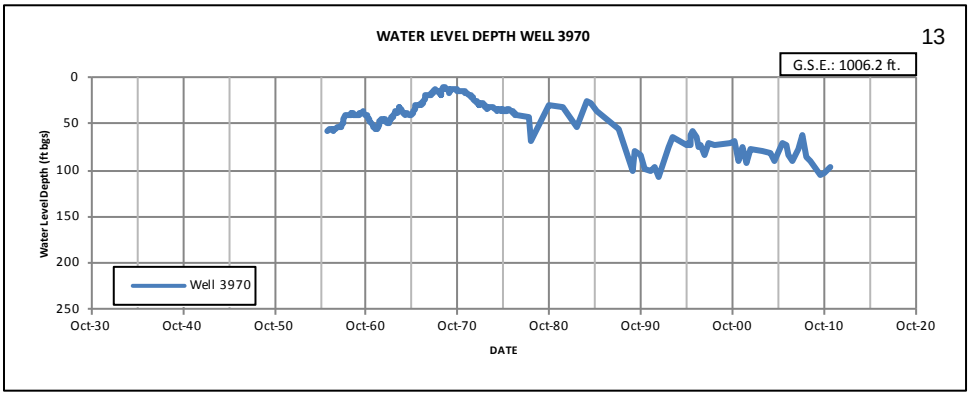
SYLMAR BASIN

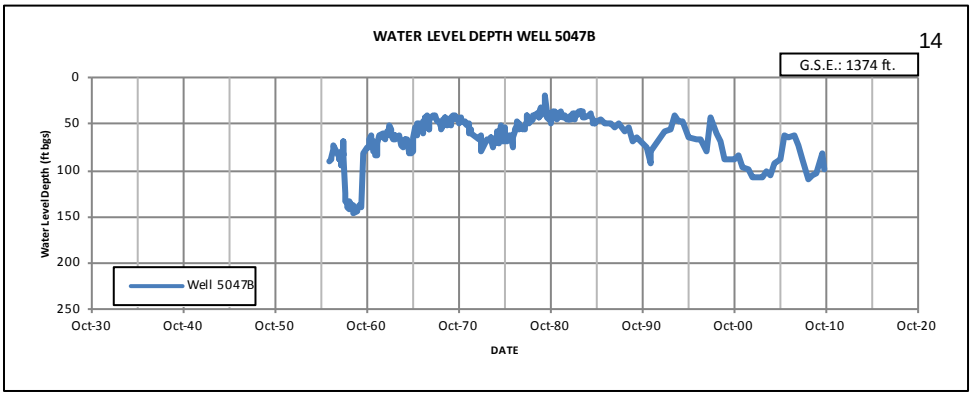




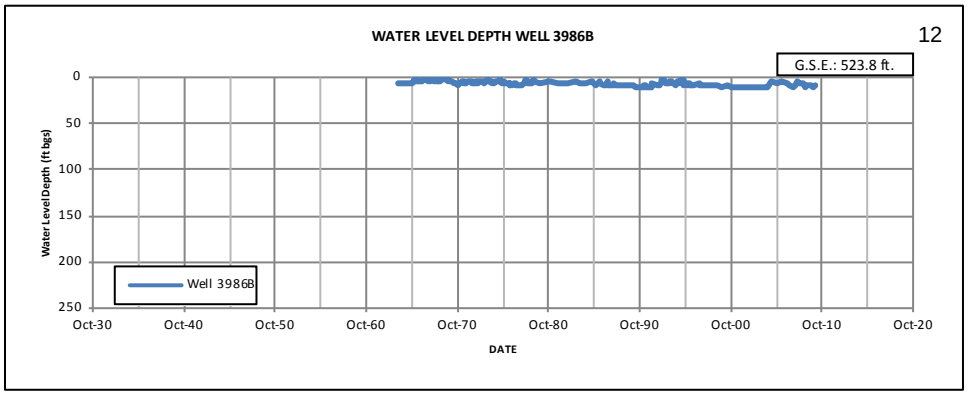
VERDUGO BASIN







EAGLE ROCK BASIN



2.9 Groundwater Storage

San Fernando Basin

Each year, the change in the amount of groundwater stored in the San Fernando Basin is evaluated in three ways: between the current water year and the previous water year; for the cumulative change since Safe Yield Operation began in 1968; and, for the cumulative change since 1928, the date at which sufficiently detailed records are considered to have become available.

In Fall 1968, following the Trial Court decision, Safe Yield Operation was implemented by the Court in an effort to halt the overdraft of the San Fernando Basin that began in 1954 (indicated on Plate 13 by the blue-colored line). Methodology established by the State Water Rights Board, also referenced in Appendix R of the 1962 Report of Referee, was used to derive a regulatory storage requirement of 360,000 AF for the SFB that considered normal wet-dry cycles, operational flexibility, and annual pumping based on the calculated safe yield. The upper regulatory storage limit of 210,000 AF above the 1954 storage volume was established to prevent excess rising groundwater from leaving the basin, whereas the lower regulatory storage limit of 150,000 AF below the 1954 storage level was established to help provide additional storage space for wet years. The amount of stored groundwater should be kept between the upper and lower limits of the regulatory storage range (indicated on Plate 13 by the horizontal-dashed red line). As shown on Plate 13, with only a few brief exceptions, the San Fernando Basin has rarely been operated within the regulatory storage range after 1968.

Plate 13 illustrates two important items:

1. The estimated change in groundwater storage within the San Fernando Basin; this item is presented graphically by the blue line on Plate 13, and in tabular form on Table 2-8. Each year, groundwater levels are measured in numerous wells throughout the SFB and these groundwater levels are used to calculate the overall increase or decrease in the volume of groundwater stored in this basin; the resulting change in storage is plotted annually on the graph. This blue line on Plate 13 depicts the fluctuations in the calculated change in groundwater storage beginning in approximately 1980; the very slight declining trend from 1980 to 2010-11 is impacted (reversed) during years of above-average rainfall and/or years of above-average spreading operations, and/or periods of decreased groundwater extractions. This long-term decline in storage is caused by more water leaving the basin than is being recharged on an average annual basis. Causes of this decline include: pumping in excess of long-term recharge; reduced natural recharge caused by increased urbanization and runoff leaving the basin; groundwater underflow and rising groundwater leaving the basin; and reductions in the

volumes of artificial recharge due to restrictions at the spreading grounds located on the northeast side of San Fernando Basin.

2. For the San Fernando Basin, the Judgment provides a right to the cities of Burbank, Glendale, and Los Angeles (the "Parties") to reduce their pumping and to store, or "carry over", any unused water rights into future years. These "un-pumped" water rights are accounted for as Stored Water Credits. The red line on Plate 13 represents the calculated change in storage minus the total combined Stored Water Credits that all 3 Parties have accumulated over time in San Fernando Basin. In other words, the red line illustrates what the change in storage would have been had the Parties fully pumped their annual water rights each year beginning in 1968. As depicted by this scenario, groundwater levels in the SFB would be far below the level at which the Court declared Safe Yield Operation in 1968. This concept clearly demonstrates that the San Fernando Basin cannot supply the total amounts of groundwater to which the Parties are entitled under the Judgment, and that there is a significant shortfall between water rights and actual hydrologic conditions.

Compounding this problem is the fact that the Judgment does not limit either the amount of Stored Water Credits that a Party can accumulate or the time period over which those Stored Water Credits are allowed to accumulate. As of October 1, 2011, the 3 Parties had accumulated a total of 554,883 AF of Stored Water Credits in SFB. If the Parties were to have pumped their full water rights beginning in 1968, the San Fernando Basin (as of October 1, 2011) would be 338,748 AF below the 1968 level at which the Court imposed Safe Yield Operation (Plate 13, red line); this would return the basin to a condition of overdraft. Clearly, basin recharge is not keeping up with the pumping rights defined in the 1979-dated Judgment. Because more than about 338,748 AF of these Stored Water Credits are below the level at which Safe Yield Operation was mandated by the Court in 1968, it has been the opinion of each Watermaster that this groundwater does not actually exist in the San Fernando Basin. These non-existent Stored Water Credits currently represent about 61% of the total credits accumulated by the cities of Burbank, Glendale, and Los Angeles.

Furthermore, the basin "leaks" a significant amount of water each year due to rising groundwater (Table 2-3) and to subsurface outflow (underflow) at its southern terminus. Accounting for these losses would help reduce the large imbalance between Stored Water Credits and the actual volume of groundwater in storage. The Judgment requires the Watermaster to account for these losses, but until the past few years, this accounting had never been performed.

The challenge facing the Parties, the Watermaster, and the Court for the San Fernando Basin continues to be the following: a long-term decline in the actual volume of stored groundwater; and an accumulation of a large quantity of Stored Water Credits for which there is an insufficient volume of "real" groundwater in storage in the SFB. Accounting for these non-existent Stored Water Credits is controversial, and trying to gain consensus among the Parties to reduce their future pumping to match the actual basin recharge may be very difficult. Nevertheless, it is the duty of the Watermaster and the Parties to manage the SFB in a responsible manner that helps to sustain its long-term viability as a source of groundwater.

Toward that goal, in July 2005, the former Watermaster (Mr. Mark Mackowski) provided a Draft White Paper to the Parties entitled "Is the San Fernando Groundwater Basin Undergoing a Long-Term Decline in Storage?" For nearly two years thereafter, that Watermaster and the Parties discussed the issues presented in the Draft White Paper. That Watermaster eventually finalized and filed the White Paper with the Court in March 2007, even though the Parties did not agree with the recommendations of the White Paper. (A copy of the text of the White Paper is in Appendix F; attachments to the White Paper are on file at the Watermaster Support Staff office at LADWP and are available upon written request.)

Regardless, in September 2007, the Parties entered into a 10-year Stipulated Agreement entitled "Interim Agreement for the Preservation of the San Fernando Basin Water Supply" ("Agreement") to begin to address the problems and to develop solutions where agreement had been attained. The Agreement, importantly, contains several key provisions designed to help address the imbalance between the decline in stored groundwater and the large accumulation of Stored Water Credits (a copy of this Stipulated Agreement is in Appendix G). Three key provisions of the Stipulated Agreement are the following:

- First, the Agreement, which is for 10 years, segregates total Stored Water Credits into "Available Credits" and "Reserved Credits". Reserved Credits are the amount of Stored Water Credits that lie below the 1968 storage level (represented on Plate 13 by the horizontal-dashed brown line). Reserved Credits are not supported by actual groundwater in storage and, with the exception of the EPA OUs, such credits may not be pumped until stored water within the SFB recovers sufficiently to allow their use. Conversely, Available Credits are the amount of Stored Water Credits that lie above the 1968 storage level, and may be pumped by the Parties without restriction.
- Second, the Agreement memorializes the support of the City of Los Angeles to work closely with LACDPW to restore and enhance artificial recharge of stormwater runoff within the SFB. This provision is important to enable the eventual recovery of actual stored water in the basin.

- Third, beginning October 1, 2007, an estimated volume of the loss from the SFB due to rising groundwater and underflow is being debited from the Party's Stored Water Credits, in accordance with Section 8.2.9 of the Judgment. The importance of this provision of the Stipulated Agreement is to help bring the water rights of each party back into balance with basin hydrology. These losses from the basin are estimated to be 1% of the total Stored Water Credits and the Stipulated Agreement provides that this amount is to be subtracted each year from all Stored Water Credits until the determination of the volume of rising groundwater is better defined.

Fortunately, in recent years, the City of Los Angeles and the Los Angeles County Department of Public Works have been working together to seismically retrofit and/or enlarge the reservoir capacity of certain dams and to rehabilitate and/or enlarge the existing spreading basins in the eastern portion of ULARA. These projects are oriented, in part, to capture and store additional amounts of surface water runoff in the San Fernando Basin. Those agencies are also considering additional plans, such as optimizing the methods and/or timing for operating those reservoirs and spreading basins, to further enhance recharge opportunities.

The volume of groundwater in storage in San Fernando Basin is estimated to have increased by 71,081 AF between Water Years 2009-10 and 2010-11. This is due, in part, to the above average rainfall and to the recent efforts of the city and county of Los Angeles, as mentioned above. Based on the 2010-11 calculation for change in storage, there remains approximately 439,235 AF of storage space available in the SFB. This space can be used to capture and store additional native water or imported water supplies during wet (above-average rainfall) years. Basin storage space is a valuable resource, and it has been the opinion of all ULARA Watermasters to use this storage space for the benefit of all Parties.

TABLE 2-8: CHANGE IN GROUNDWATER STORAGE

SAN FERNANDO BASIN

Water Year	Valley Floor Precipitation (in)	Artificial Recharge (acre-feet)	Change in Storage (acre-feet)	Cumulative Change in Storage (acre-feet)	Groundwater Extractions (acre-feet)
2010-11	24.44	90,507	71,081	216,135	64,313
2009-10	19.08	47,013	17,856	145,054	80,487
2008-09	11.64	9,940	(15,750)	127,198	72,140
2007-08	15.10	21,638	9,443	142,948	67,228
2006-07	4.39	7,974	(33,693)	133,505	94,430
2005-06	16.46	44,615	16,303	167,198	59,375
2004-05	42.64	74,198	66,476	150,895	67,865
2003-04	9.52	10,065	(22,367)	84,419	89,346
2002-03	19.41	16,330	(15,835)	106,786	95,431
2001-02	5.95	2,664	(27,094)	122,621	87,992
2000-01	19.52	17,939	(6,930)	149,715	86,946
1999-00	14.84	14,106	(31,044)	156,645	116,357
1998-99	9.81	14,662	(82,673)	187,689	141,757
1997-98	37.04	61,119	44,113	270,362	94,682
1996-97	15.17	23,172	(35,737)	226,249	105,899
1995-96	12.03	21,239	(49,223)	261,986	82,862
1994-95	33.36	69,108	79,132	311,209	58,121
1993-94	10.19	19,981	(22,238)	232,077	62,990
1992-93	36.62	64,658	106,317	254,315	36,419
1991-92	30.05	39,624	411	147,998	76,213
1990-91	14.38	18,718	(14,122)	147,587	71,065
1989-90	8.20	4,154	(29,941)	161,709	81,466
1988-89	9.12	5,713	(30,550)	191,650	127,973
1987-88	18.62	23,161	(5,000)	222,200	105,470
1986-87	5.99	7,952	(31,940)	227,200	91,632
1985-86	20.27	28,350	(7,980)	259,140	86,904
1984-85	11.00	22,493	(31,690)	267,120	101,591
1983-84	9.97	38,283	(63,180)	298,810	115,611
1982-83	39.64	102,925	121,090	361,990	68,394
1981-82	17.18	24,253	(530)	240,900	84,682
1980-81	11.04	31,891	(32,560)	241,430	92,791
1979-80	30.25	73,543	99,970	273,990	58,915
1978-79	21.76	72,454	78,080	174,020	59,843
1977-78	35.43	85,450	136,150	95,940	66,314
1976-77	14.19	8,197	(50,490)	(40,210)	125,445
1975-76	9.90	14,805	(30,090)	10,280	103,740
1974-75	14.74	22,786	(22,580)	40,370	95,830
1973-74	15.75	16,488	(21,820)	62,950	88,017
1972-73	20.65	24,342	17,020	84,770	82,004
1971-72	8.10	10,595	(17,090)	67,750	84,140
1970-71	15.57	24,143	15,340	84,840	79,010
1969-70	10.50	27,579	(9,740)	69,500	88,856
1968-69	29.00	71,506	79,240	79,240 [1]	84,186
43 Year Average	**18.10**	**33,264**	**5,026**		**85,691**

1. Accumulation of Storage commenced as of October 1, 1968.

Sylmar Basin

The groundwater storage capacity of the Sylmar Basin is approximately 310,000 AF. The volume of groundwater in storage in this basin is estimated to have increased by 2,844 AF between Water Year 2009-10 and 2010-11.

Verdugo Basin

The groundwater storage capacity of the Verdugo Basin is approximately 160,000 AF; the volume of groundwater in storage in this basin is estimated to have increased by 2,397 AF between Water Year 2009-10 and 2010-11.

Whereas there was a calculated increase in the volume of groundwater in storage in 2010-11, the overall decline in storage observed in Verdugo Basin since 1968 is likely caused by: increased urbanization and a resulting increase in runoff leaving the basin; and a significant reduction in groundwater recharge from the deep percolation of fluids from former cesspools and septic systems that were removed from service following the installation of sewers in much of this area beginning in the 1980s.

Eagle Rock Basin

The volume of groundwater in storage is estimated to have decreased by 16 AF from Water Year 2009-10 to 2010-11.

2.10 Water Supply and Disposal - Basin Summaries

Tables 2-9A, 2-9B, 2-9C, and 2-9D summarize water supply and disposal activities in the San Fernando, Sylmar, Verdugo, and Eagle Rock basins, respectively. Outflows are based on computations made by the State Water Rights Board in the 1962 Report of Referee.

2.11 Extraction Rights and Stored Water Credits - Basin Summaries

San Fernando Basin

Tables 2-10A and 2-11A show the calculation of SFB extraction rights for the 2010-11 Water Year and Stored Water Credits (as of October 1, 2011) for the cities of Burbank, Glendale, and Los Angeles. All rights are based on the Judgment in City of Los Angeles vs. City of San

Fernando, et al., dated January 26, 1979 and the "Interim Agreement for the Preservation of the San Fernando Basin Water Supply, 2008" provided in Appendix G.

Sylmar Basin

Tables 2-10B and 2-11B show the calculation of Sylmar Basin extraction rights for the 2009-10 Water Year and Stored Water Credit (as of October 1, 2011) for the cities of Los Angeles and San Fernando. All rights are based on: the March 22, 1984 stipulation between the City of San Fernando and the City of Los Angeles; and the action by the Administrative Committee on July 16, 1996 to temporarily increase the safe yield of this basin from 6,210 AF/y to 6,510 AF/y. The 1996 temporary increase expired on October 1, 2005 but the safe yield was re-evaluated by the former Watermaster in 2006. Another stipulation, dated December 13, 2006, increased the safe yield of the Sylmar Basin to 6,810 AF/y (effective October 1, 2006), subject to certain conditions and currently provides the basis for these water rights. Currently, the Watermaster is conducting a new re-assessment of the safe yield of this basin; the resulting document may be filed with the Court in the summer of 2012.

Verdugo Basin

Glendale and CVWD have rights to extract 3,856 and 3,294 AF/y, respectively, from this basin. Los Angeles has a right to extract its Import Return water in the Verdugo Basin, but has never exercised this right. No Stored Water Credits are currently permitted by the Judgment in the Verdugo Basin.

Eagle Rock

Los Angeles has the right to extract, or cause to be extracted, the entire safe yield of this basin. This safe yield consists mostly of return flows of delivered water by Los Angeles. Neither Los Angeles nor any other parties pump groundwater from the Eagle Rock Basin. DS Waters, as successor to the Sparkletts and the Deep Rock water companies, has a physical solution right to extract groundwater to supply its bottled drinking water facility. DS Waters pumped 185 AF in the 2010-11 Water Year from this basin.

TABLE 2-9A: SUMMARY OF 2010-11 WATER SUPPLY AND DISPOSAL, SAN FERNANDO BASIN

(Acre-feet)

Water Source and Use	City of Burbank	City of Glendale	City of Los Angeles	City of San Fernando	All Others	Total
Extractions						
Municipal Use	10,398	7,476	43,951	---	0	61,825
Basin Account	0	0	0	---	0 [1]	0
Physical Solution	---	---	---	---	759 [2]	759
Cleanup/Dewaterers	---	---	---	---	613	613
Non-consumptive Use	---	---	---	---	1,116	1,116
Total	**10,398**	**7,476**	**43,951**	**0**	**2,488**	**64,313**
Imports						
LA Aqueduct Water	---	---	334,294	---	---	334,294
MWD Water	7,376 [7]	17,357	73,104	16	7,082 [3]	104,942
Groundwater from						
Sylmar Basin	---	---	964	2,805	---	3,769
Verdugo Basin	---	390	---	---	---	390
Total	**7,376**	**17,747**	**408,362**	**2,821**	**7,082**	**443,395**
Delivered Reclaimed Water	1,568	1,184	1,801 [4]	0	1,517 [3]	6,070
Exports						
LA Aqueduct Water						
out of ULARA	---	---	146,557	---	---	146,557
to Verdugo Basin	---	---	471	---	---	471
to Sylmar Basin	---	---	6,803	---	---	6,803
to Eagle Rock Basin	---	---	12,377	---	---	12,377
MWD Water						
out of ULARA	---	---	34,756	---	---	34,756
to Verdugo Basin	---	2,046	103	---	---	2,149
to Sylmar Basin	---	---	1,488	---	---	1,488
to Eagle Rock Basin	---	---	0	---	---	0
Groundwater	20 [5]	782 [5]	37,238	---	---	38,050
Total	**20**	**2,828**	**239,793**	**0**	**0**	**242,651**
Delivered Water						
Hill & Mountain Areas	---	---	40,429	---	---	40,429
Total - All Areas	19,322	23,580	214,321	2,821	11,087	271,130
Water Outflow						
Storm Runoff (F-57C-R)	---	---	---	---	135,815	135,815
Rising Groundwater (F-57C-R)	---	---	---	---	6,588	6,588
Subsurface	---	---	---	---	391	391
Recycled Water to the LA River	7,484	5,116	42,107	---	490 [3]	55,197
Wastewater to Hyperion	0 [8]	665 [6]	21,202 [6]	---	---	21,867

1. Basin Account water is not charged to any party.
2. Includes pumping from Hill and Mountain areas tributary to SFB.
3. Las Virgenes Municipal Water District.
4. LA total recycled water is 8,545 AF of which 1,801 AF were delivered to valley fill and 6,744 delivered to hill/mountains and other uses.
5. Glendale OU and Burbank OU treated groundwater discharged to Los Angeles River or sewer.
6. Water discharged from Tillman and LA-Glendale plants. Annual cities' portion from LAG based on proportion of reclaimed water.
7. Does not include water imported for groundwater replenishment (spreading)

8. Erroneous meter readings show a negative flow from Burbank to Los Angeles Hyperion; the parties are aware of the problem and exploring a solution

TABLE 2-9B: SUMMARY OF 2010-11 WATER SUPPLY AND DISPOSAL SYLMAR BASIN

(Acre-feet)

Water Source and Use	City of Los Angeles	City of San Fernando	All Others	Total
Total Extractions	964	3,082	0 [1]	4,046
Imports				
LA Aqueduct Water	6,803	--	--	6,803
MWD Water	1,488	2	--	1,490
Total	**8,291**	**2**	**0**	**8,293**
Exports - Groundwater to San Fernando Basin	964	2,805	0	3,769
Total Delivered Water	8,291	279	0	8,570
Water Outflow				
Storm Runoff	5,000 [2]	--	--	5,000
Subsurface	540 [3]	--	--	540
Total	**5,540**	**0**	**0**	**5,540**

1. Pumping for landscape irrigation by Santiago Estates. The well was capped in 1999.
2. Surface outflow is not measured. Estimate based on Mr. F. Laverty – SF Exhibits 57 and 64.
3. Estimated in the Report of Referee, and later revised by the Watermaster.

TABLE 2-9C: SUMMARY OF 2010-11 WATER SUPPLY AND DISPOSAL VERDUGO BASIN

(Acre-feet)

Water Source and Use	Crescenta Valley Water District	City of Glendale	La Canada Irrigation District	City of Los Angeles	Other	Total
Total Extractions	2,917	1,826	---	---	10	4,753
Imports						
LA Aqueduct Water	---	---	---	471		471
MWD Water	1,437	2,046	994	103		4,580
Total	1,437	2,046	994	574		5,051
Exports to San Fernando Basin	0	390	0	0		390
Delivered Reclaimed Water		242				242
Total Delivered Water	4,354	3,724	994	574	10	9,656
Water Outflow						
Storm Runoff (Sta. F-252)					18,023	18,023
Rising Groundwater (Sta. F-252)					2,397	2,397
Subsurface to:						
Monk Hill Basin	---	---	---	---	300	300
San Fernando Basin	---	---	---	---	80	80
Total	**0**	**0**	**0**	**0**	**20,800**	**20,800**

1. Private party extractions.
2. Estimated.

3. Includes rising groundwater.

TABLE 2-9D: SUMMARY OF 2010-11 WATER SUPPLY AND DISPOSAL EAGLE ROCK BASIN

(Acre-feet)

Water Source and Use	City of Los Angeles	DS Waters	Total
Total Extractions	0	185 [1]	185
Imports			
LA Aqueduct Water from SFB	12,377	--	12,377
MWD Water (LA25+LA35) [3] from SFB	0		0
MWD Water (LA17) [3]	22,760		22,760
Groundwater from SFB	0	--	0
Total	**35,137**	**0**	**35,137**
Exports			
LA Aqueduct Water out of ULARA	9,662		9,662
MWD Water (LA17) [3] out of ULARA	22,166		22,166
Groundwater	0	185	185
Total	**31,828**	**185**	**32,013**
Total Delivered Water	3,309	0	3,309
Water Outflow			
Storm Runoff	--	--	--
Subsurface	50 [2]	--	50
Total	**50**	**0**	**50**

1. DS Waters (formed by the merger of Suntory/Deep Rock Water Co. and McKesson/Danone Water Products) is allowed to pump as successor to Deep Rock and Sparkletts, under a stipulated agreement with the City of Los Angeles and export equivalent amounts.
2. Estimated in Supplement No. 2 to Report of Referee.
3. LA25, LA35, and LA17 are connections between the MWD and LADWP water systems where MWD imported water is supplied to Los Angeles.

TABLE 2-10A: CALCULATION OF 2011-12 EXTRACTION RIGHTS SAN FERNANDO BASIN

(Acre-feet)

	City of Burbank	City of Glendale	City of Los Angeles
Total Delivered Water, 2010-11	19,322	23,580	214,321
Water Delivered to Hill and Mountain Areas, 2010-11	---	---	40,429
Water Delivered to Valley Fill, 2010-11	19,322	23,580	173,892
Percent Recharge Credit	20.0%	20.0%	20.8%
Return Water Extraction Right	3,864	4,716	36,170
Native Safe Yield Credit	---	---	43,660
Annual Extraction Right for the 2011-12 Water Year[1]	**3,864**	**4,716**	**79,830**

1. Does not include Stored Water Credit and Physical Solution.

TABLE 2-10B: CALCULATION OF 2011-12 EXTRACTION RIGHTS SYLMAR BASIN

(Acre-feet)

	City of Los Angeles	City of San Fernando	All Others
Annual Extraction Right for the 2011-12 Water Year[1]	3,405	3,405	--- [2]

1. Does not include Stored Water Credit. The safe yield of the Sylmar Basin was increased to 6,810 AF/y effective October 1, 2006. Effective October 1, 1984 safe yield less pumping by Santiago Estates is equally shared by Los Angeles and San Fernando.
2. Santiago Estates (Home Owners Group) capped well in 1999.

TABLE 2-11A: CALCULATION OF STORED WATER CREDITS SAN FERNANDO BASIN

(Acre-feet)

Item Number and Description	City of Burbank	City of Glendale	City of Los Angeles
1. Stored Water Credit (as of Oct. 1, 2010)	13,208	53,823	456,146
1a. Credits and Debits [1]	0	(56)	56
1b. Credits and Debits	0	0	0
1c. Prior Year Adjustments [2]	0	0	(23)
1d. Prior Year Adjustments [3]	0	(59)	59
2. Extraction Right for the 2010-11 Water Year	4,103	4,871	80,022
3. 2010-11 Extractions			
Party Extractions	10,398	7,476	43,951
Physical Solution Extractions	387	323	49
Clean-up/Dewaterers	6	0	607
Total	10,791	7,799	44,607
4. Spread Water 2010-11 Water Year	11,187	0	4
5. Stored Water Credits [4] per City (as of Oct. 1, 2011)	17,707	50,780	491,657
6. 1% Basin Loss Factor [5]	177.07	507.80	4,916.57
7. **Stored Water Credits** (less Basin Loss) **for each City** (as of Oct. 1, 2011)	**17,530**	**50,272**	**486,740**
8. **Total Stored Water Credits** (less Basin Loss)		**554,543**	
9. **Total Available Stored Water Credits** [3,4] (from Plate 13)		**216,135**	
10. Percentage of Total Credits per City	3.161%	9.066%	87.773%
11. **Available Stored Water Credits for each City** (as of Oct. 1, 2011) (Item 9 x Item 10)	**6,832**	**19,594**	**189,709**
12. **Total Reserved Stored Water Credits** [3,4] (Item 8 - Item 9)		**338,408**	
13. **Reserved Stored Water Credits for each City** (as of Oct. 1, 2011) (Item 7 - Item 11)	**10,698**	**30,678**	**297,032**

1. An exchange of 55.64 AF of stored water credits between Glendale and Los Angeles for groundwater pumping at Los Angeles County Waterworks district No. 21, Kagel Canyon in Water Year 2010-11.
2. Groundwater extractions associated with Construction dewatering by Fassberg Construction was incorrectly accounted for in prior years' reports due to erroneous totalizer readings. This adjustment is applied to correct those erroneous readings.
3. An exchange of 58.76 AF of stored water credits between Glendale and Los Angeles for groundwater pumping at Los Angeles County Waterworks district No. 21, Kagel Canyon in Water Year 2009-10.
4. Item 5 = 1 +1a + 1b + 1c + 1d + 2 – 3 + 4.
5. Basin Loss Factor, Available and Reserved Stored Water Credits are determined pursuant to Interim Agreement for the Preservation of the San Fernando Basin Water Supply, 2008 (see Appendix G)

TABLE 2-11B: CALCULATION OF STORED WATER CREDITS SYLMAR BASIN

(Acre-feet)

	City of Los Angeles	City of San Fernando
1. Stored Water Credit (as of Oct. 1, 2010)	12,821	1,177
2. Extraction Right for the 2010-11 Water Year [1]	3,405	3,405
3. Total 2010-11 Extractions	964	3,082
Santiago Estates[2]	0.0	0.0
4. Stored Water Credit[3] (as of Oct. 1, 2011)	**15,262**	**1,500**

1. The safe yield of the Sylmar Basin was increased to 6,810 AF/y as of 10/1/06.
2. Santiago Estates pumping is subtracted equally from the rights of San Fernando and Los Angeles. Santiago Estates capped well in 1999.
3. Item 4 = 1 + 2 - 3

3. WATER QUALITY, TREATMENT, AND REMEDIAL INVESTIGATION ACTIVITIES

3. WATER QUALITY, TREATMENT, AND REMEDIAL INVESTIGATION ACTIVITIES

3.1 Water Quality

Imported Water

1. *LOS ANGELES AQUEDUCT* water is sodium bicarbonate in character and is the highest quality water available to ULARA. Total Dissolved Solids (TDS) concentration in this water source averaged about 210 milligrams per liter [mg/L; equivalent to parts per million, ppm] for 30 years before 1969. The highest TDS value on record was 320 mg/L and this occurred on April 1, 1946. The average TDS concentration for Fiscal Year 2010-11 was 193 mg/L.

2. *COLORADO RIVER* water is predominantly sodium-calcium sulfate in character, but this water supply changes to a sodium sulfate character after it has been treated to reduce total hardness. Samples taken at the MWD Burbank Turnout between 1941 and 1975 showed that TDS concentrations ranged from a high of 875 mg/L in August 1955, to a low of 625 mg/L in April 1959. The average TDS concentration over this 34-year period was approximately 740 mg/L. Tests conducted of Colorado River water at the Eagle Rock Reservoir showed an average TDS concentration of 422 mg/L for Fiscal Year 2010-11.

3. *NORTHERN CALIFORNIA* Water (delivered via the State Water Project) is sodium bicarbonate-sulfate in character. It generally contains lower concentrations of TDS and is softer than local groundwater and imported Colorado River water. Since the time that State Project water was first imported to Southern California in April 1972, the TDS concentrations of this water have ranged from a high of 410 mg/L to a low of 247 mg/L. Laboratory tests of this water conducted at the Joseph Jensen Filtration Plant showed an average TDS concentration of 330 mg/L during Fiscal Year 2010-11.

4. *COLORADO RIVER/NORTHERN CALIFORNIA* waters were first blended at the Weymouth Plant beginning in May 1975. Blending ratios vary, and laboratory tests conducted at the Weymouth Plant after treatment and blending

processes showed an average TDS concentration of 570 mg/L during Fiscal Year 2010-11.

Surface Water

Surface runoff contains salts dissolved from sediments and rocks in the tributary areas of ULARA and is considered to display a sodium-calcium to sulfate-bicarbonate water character. Tests taken in September 1995 from flows in the Los Angeles River at the Arroyo Seco showed a TDS concentration of 666 mg/L and a total hardness (TH) of 270 mg/L. These values also reflect the inclusion of rising groundwater in the Los Angeles River between Los Feliz Blvd and Gage F-57C-R.

Chlorides in Surface Water

In 1997 the Los Angeles Regional Water Quality Control Board (LARWQCB) adopted Resolution No. 97-02 in order to help develop a long-term solution to the chloride compliance problems stemming from elevated concentrations of chloride along the Los Angeles River in the SFB. These increased chloride concentrations are likely caused by drought conditions and the use of water softeners in water imported into the Los Angeles region. Water Quality Objectives for chloride within the reach of the Los Angeles River between Sepulveda Flood Control Basin and Figueroa Street (including Burbank Western Channel only) have been raised from 100 mg/L to 190 mg/L; chloride concentrations are reported in Appendix D.

Nitrogen in Surface Water

As part of a Total Maximum Daily Load (TMDL) program, the LARWQCB ordered the cities of Burbank and Los Angeles to determine the source of nitrogen in the Los Angeles River Narrows. The studies, which included nitrogen from rising groundwater into the Los Angeles River, were completed in 2007 by an outside consultant. The 2007 report concluded that nitrogen levels present in groundwater rising into the Los Angeles River were well below the target loadings for the receiving water and may be considered a *de minimus* source with no loading allocation necessary.

Groundwater

Groundwater in ULARA is considered to be moderately hard to very hard. The character of groundwater from the major water-bearing formations is of two general types, each reflecting the composition of the surface runoff in the area. In the western part of the San Fernando

Basin, the groundwater is calcium sulfate-bicarbonate in character, whereas in the eastern part, including the Sylmar and Verdugo basins, it is calcium bicarbonate in character.

The overall quality of the groundwater is generally within the recommended limits of the California Title 22 Drinking Water Standards, except for: 1) areas in the eastern SFB which display high concentrations of trichloroethylene (TCE), perchloroethylene (PCE), hexavalent chromium, and nitrate as NO_3 (or nitrogen as N); 2) areas in the western portion of the SFB which tend to have excess concentrations of naturally-occurring sulfate and TDS; 3) areas within the Verdugo Basin that have shown high concentrations of a gasoline additive, methyl-tertiary-butyl-ether (MTBE), and nitrate as NO_3, and 4) areas within the Sylmar Basin that have elevated concentrations of nitrate as NO_3 and detections of certain VOCs. In each area, the pumped groundwater is being treated or blended to meet State Drinking Water Standards, or the impacted wells have been temporarily removed from service.

A history of the TDS concentrations and the general mineral analyses of imported water, surface water and groundwater are contained in Appendix D.

3.2 Groundwater Quality Management Plan

The "Groundwater Quality Management Plan - San Fernando Valley Basins" was issued in July 1983, in part to protect and improve the quality of stored water within the groundwater basins of ULARA. Special emphasis on the overall management is placed on monitoring and removing the volatile organic contaminants TCE and PCE, and hexavalent chromium, which have been encountered in the groundwater. Table 3-1 summarizes the number of ULARA wells that are contaminated at the indicated levels above the Maximum Contaminant Level (MCL) of the California Drinking Water Standards of 5 micrograms per liter [µg/L, which is equivalent to parts per billion, ppb] for TCE and 5 µg/L for PCE.

TABLE 3-1: 2010-11 NUMBER OF WELLS IN THE ULARA WELLFIELDS EXCEEDING STATE MCL FOR TCE AND PCE

	Number of Wells													
	City of Los Angeles[2]									Sub-	Others[2]			Grand
Total Number of	NH	RT	P	HW	E	W	TJ	V	AE	Total	B	G	C	Total
Wells in Well Field[2]	35	15	3	4	7	8	12	5	7	96	10	13	12	131
Number of Wells Exceeding Contaminant Level[1]														
TCE Levels ppb														
5-20	7	3	1	-	1	1	4	1	2	**20**	1	0	0	**21**
20-100	0	0	0	-	0	0	4	0	3	**7**	3	3	0	**13**
>100	0	0	0	-	0	0	0	0	0	**0**	4	3	0	**7**
Total	7	3	1	-	1	1	8	1	5	**27**	8	6	0	**41**
PCE Levels ppb														
5-20	1	0	1	-	0	1	3	0	4	**10**	0	3	0	**13**
20-100	0	0	0	-	0	0	2	0	0	**2**	1	1	0	**4**
>100	0	0	0	-	0	0	0	0	0	**0**	7	2	0	**9**
Total	1	0	1	-	0	1	5	0	4	**12**	8	6	0	**26**

1. Wells were included in these categories based upon the maximum concentrations of TCE and PCE measured during the 2009-10 Water Year.
2. Well Fields: NH - North Hollywood; P - Pollock; HW - Headworks; E - Erwin; W - Whitnall; RT Rinaldi Toluca; TJ - Tujunga; V - Verdugo; AE - LADWP Aeration Tower Wells; B - City of Burbank; G - City of Glendale; C - Crescenta Valley Water District

3.3 Underground Tanks, Sumps, and Pipelines

The City of Los Angeles Fire Department (LAFD) continues to implement the State-mandated Underground Storage Tank (UST) Program and is actively conducting a program to bring the large number of underground tanks in the San Fernando Valley into compliance with current law. During Water Year 2010-11, a total of 21 sites were remediated under the direction of the LAFD. Currently, the Environmental Unit of the LAFD is monitoring the remediation of 71 other sites. The main focus of the LAFD UST Program in ULARA has been the monitoring and removal of gasoline, diesel, and their related constituents from the soil to help prevent contamination of the underlying groundwater. If a site investigation indicates contamination of

the underlying groundwater, then the site is referred to the LARWQCB for further action. Since October 1, 2010, 30 sites have been re-assigned from the Underground Tank Plan Check Unit to the LARWQCB in the City of Los Angeles.

3.4 Private Sewage Disposal Systems (PSDS)

To reduce the potential for groundwater contamination from septic tanks, the City of Los Angeles enacted Ordinance No. 160388, on September 17, 1985, of the Los Angeles Municipal Code Section 64.26 [LAMC Section 64.26]. This Ordinance is entitled "Mandatory Abandonment of Private Sewage Disposal Systems (PSDS)."

This Ordinance requires all owners of industrial, commercial, and multiple dwelling residential [five or more units] properties to connect to the public sewer when the sewer becomes available, and to discontinue use of their PSDS within one year of the date of the issuance of a "Notice to Connect" by the City of Los Angeles. In addition, this Ordinance requires the Director of the Los Angeles Bureau of Sanitation (Director) to issue a "Reminder Notice" and a "Final Notice to Connect" to the owner of the property four months and one month, respectively, prior to the compliance deadlines. LAMC Section 64.26 further requires the Director to take the following actions whenever a property is found to be in violation of the Code requirements:

a) Request that the City's Department of Water and Power to discontinue water service to the subject property;

b) Request the Superintendent of Buildings to order any building(s) on the subject property to be vacated; and,

c) Request the City Attorney to take the necessary legal action(s) against the property owner.

In June 2005, the Wastewater Engineering Services Division (WESD) identified a list of approximately 840 properties owning and operating a PSDS that had access to a City sewer. These properties were subsequently referred to the Bureau's Industrial Waste Management Division (IWMD) for further investigation and to determine applicability of the provisions of the Ordinance (LAMC 64.26) to these properties.

IWMD staff conducted its own investigation before requiring the referred properties to be connected to the City sewer. Investigations included: contacting the property owner or tenant; site visits and if necessary, "dye tests" to ensure that each of the property owners in question did own and operate a PSDS; and, verifying that the property had access to a City sewer.

Following IWMD investigations of the 840 referred properties, 413 were found to fit the criteria such as being an industrial site or a commercial facility, or a multiple dwelling residential

building [with five or more units] subject to the Ordinance provisions. Of the 413 properties that were subject to the Ordinance, 234 properties were found to be already connected to the City sewer, leaving 179 properties not connected.

IWMD issued 179 “Notice to Connect to the City Sewer and Abandonment of the PSDS” (NTC) letters to those properties subject to the Ordinance. As of June 30, 2011, and of the 179 properties that were issued a NTC letter, 165 have already connected to the City sewer, four have received a two-year variance to connect to the City sewer, and three are still within the one-year requirement to connect to the City sewer. Ten NTC letters were returned to IWMD for various reasons including change of business ownership or refusal to accept the certified letter containing the NTC. These properties are being investigated further by IWMD.

3.5 Landfills

The Solid Waste Assessment Test (SWAT) reports for major SWAT Rank 1 to Rank 4 landfills in the Los Angeles area have been completed and submitted to the LARWQCB for approval. The reports reviewed by the LARWQCB are listed in Table 3-2. As stipulated by Article 5 of Title 27, a follow-up sampling program under an Evaluation Monitoring Plan was required for some landfills due to the presence of VOCs in the underlying groundwater. Further updates to the SWAT would be triggered by post-closure land use. Landfill locations in ULARA are shown on Plate 6.

Bradley Landfill closed in April 2007 and construction of its final cover was completed in the summer of 2010. Waste Management, Inc., the owner of that landfill, is currently operating a green waste composting facility at the site. Furthermore, several groundwater monitoring wells at this landfill are actively monitored for water levels and water quality data in conformance with the existing LARWQCB Monitoring and Reporting Program No. 6434 for this facility.

TABLE 3-2: LANDFILLS WITH SWAT INVESTIGATIONS

Name	Rank	Current Owner	Location	SWAT Report Completed	Final SWAT Submitted	Phase II SWAT Req.	Approved by RWQCB	Site Leak -1	Type of Emission -2	Further Monitoring
Open										
CalMat (Sun Valley #3)	2	CalMat Properties	Sun Valley District, NE of Glenoaks Blvd	Jul-88	Nov-90		Jun-92	N	Inert site	N,7
Scholl Canyon	1	City of Glendale	San Rafael Hills, 1 mile West of Rose Bowl	Jul-87	Apr-88		Aug-90	G	NHA (I/O)	3
Stough Park	2	City of Burbank	Bel Air Drive & Cambridge Drive	Jun-88	Dec-88		Apr-90	G	NHA Inert Site	3
Sunshine Cyn. LA City/LA County	2	Browning - Ferris Industries	SE Santa Susana Mtns W of Golden State Fwy	Jul-88	Jul-89		Apr-94		MSW	6
Closed										
Bradley East	2	WMDSC	SE of Sheldon St	Jun-87	Nov-90		Apr-92	G	NHA (I/O)	4, 8
Bradley West	1	WMDSC	Sun Valley, SE of Sheldon St.	Jun-87	Nov-90		Apr-92	G	NHA (I/O)	3
Bradley West Extension	3	WMDSC	Near Canyon Blvd & Sheldon St	Jul-88	Jul-89		Apr-92	G	MSW	3, 8
Branford	2	City of Los Angeles Bureau of Sanitation	Sun Valley District, NW of Tujunga Wash	Jul-88	Oct-90	X	Jun-92		MSW	4,7
Gregg Pit/Bentz	2	CalMat Properties	Between Pendleton St & Tujunga Ave	Jul-89	Jul-89		Feb-90	G	NHA	4
Hewitt Pit	2	CalMat Properties	North Hollywood District Hollywood Fwy, Laurel	Jun-88	Jul-89		May-91	G	NHB (I)	N
Lopez Canyon	2	City of Los Angeles Bureau of Sanitation	N of Hansen Dam near Lopez and Kagel Cyn	Jun-88	Jun-88	X				8
Newberry	3	Los Angeles (LA By-Products Co.)	N of Strathern St, Tujunga Ave	Jun-88	Jul-89		Sep-89	G	NHB (I/O)	4
Pendleton St.	4	City of Los Angeles Bureau of Sanitation	Sun Valley, Pendelton St & Glenoaks Blvd	Jul-90	May-91		Jun-92	N	Inert Site	5
Penrose	2	Los Angeles (LA By-Products Co.)	N of Strathern St, Tujunga Ave	Jun-88	Jul-89		Sep-89	G	NHB (I/O)	4
Scholl Canyon	2	City of Glendale	San Rafael Hills, 1 mile West of Rose Bowl	Jul-87	Aug-90		Dec-93	G	NHA	5
Sheldon-Arleta	1	City of Los Angeles Bureau of Sanitation	Sun Valley District near Hollywood & Golden State Fwys	May-87	May-87		Feb-90	G	MSW	4,7
Sunshine Cyn. LA City	2	Browning - Ferris Industries	SE Santa Susana Mtns W of Golden State Fwy	Jul-88	Jul-89		Apr-94	G	MSW	6
Toyon Canyon	2	City of Los Angeles Bureau of Sanitation	Griffith Park	Jun-88	Mar-89		Apr-91	L	NHA (I/O MSW)	3
Tuxford Pit	2	Aadlin Bros. (LA By-Products Co.)	Sun Valley District, SW of Golden State Fwy & Tujunga Ave	Jun-88	Dec-90		Jun-92		MSW	4, 8, 9
Incomplete										
Strathern		Never completed. Application 12/88.	Strathern St. & Tujunga Ave							10

1. G – Gas, L – Liquid.
2. MSW – Municipal Solid Waste
   NHA - Non-Hazardous but above state drinking water regulatory levels
   NHB - Non-Hazardous but below state drinking water regulatory levels
   I – Inorganic, O – Organic; N-No, Y-Yes
3. Under Title 27 Corrective Action Program (CAP), after completion of EMP.
4. Closed landfills with groundwater monitoring required under Title 27. Monitoring results are submitted to the LARWQCB periodically.
5. Subject to SWAT requirements. Further monitoring may be required under Title 27.
6. All open landfills are required to have groundwater monitoring under Title 27. Monitoring results are submitted to the LARWQCB quarterly or semi-annually.
7. Semi-annual groundwater monitoring.
8. Groundwater contamination Evaluation Monitoring Program (EMP) required under Title 27.
9. USEPA involved in evaluation.
10. Under permit as Inert Landfill.

3.6 San Fernando Valley Remedial Investigation Activities

A remedial investigation (RI) of groundwater contamination in the eastern portion of the San Fernando Valley was initiated in July 1987 by the USEPA to characterize the groundwater in the San Fernando Basin and the Verdugo Basin due to the presence of TCE and PCE contamination in the soils and/or groundwater. The LADWP was selected by the USEPA to serve as the lead agency in conducting the RI and they entered into a cooperative agreement that has provided over $22 million in federal funding to LADWP beginning July 1987. In August 1987, the LADWP selected James M. Montgomery, Consulting Engineers (JMM), to serve as its consultant to perform various RI tasks.

The JMM report, "Remedial Investigation of Groundwater Contamination in the San Fernando Valley," was completed in December 1992 and it is a comprehensive, five-volume report that presented the findings and characterizations of the SFB and the Verdugo Basin with regard to their geologic and hydrogeologic conditions, and to the nature and extent of contamination known at that time. The RI report also provided: a description, along with the documentation, of the SFB Groundwater Flow Model; a summary of the RI field investigation activities; and an evaluation of potential risks to human health and the environment.

The existing SFB Groundwater Flow Model was developed as a part of the San Fernando Valley RI and is a comprehensive, three-dimensional, regional-scale model, which was developed using the MODFLOW (version 2005) software package. A three-dimensional mass transport model has also been developed for the SFB. The model has been utilized for various groundwater projects to help analyze the storage and physical characteristics of groundwater in the SFB. The main purposes for the development of the basinwide model include:

- Helping to forecast the potential consequences of changes in groundwater management in the SFV (pumping and recharge regimes) by the major water purveyors
- Assessing the potential for contaminated groundwater to impact production and extraction wells within the valley
- Aiding in predicting groundwater elevation contours for basinwide projected withdrawal and recharge (i.e., as a planning tool for LADWP and Watermaster)

USEPA's existing consultant, CH2M HILL, continues to periodically sample the 87 groundwater monitoring wells that were installed as part of the RI. CH2M HILL also obtains groundwater quality and groundwater elevation data from the various municipalities and from the various

facilities in the San Fernando Valley to update the SFV Basinwide database in electronic format. CH2M HILL utilizes the data to produce contaminant plume maps.

The RI Report and the semi-annual sampling reports are available for public review at the Superfund Primary Information Repositories, which are located in the following libraries: City of Glendale, City of Burbank, LADWP, California State University-Northridge, and the University of California - Los Angeles. Data are also available from the USEPA Region 9 Superfund website (http://www.epa.gov/region9/superfund/superfundsites.html).

The LADWP also maintains a current SFB database for use with the SFB groundwater flow model and continues to generate groundwater contour maps and contaminant plume maps for the SFB. CH2M HILL continues to provide updated groundwater quality data for incorporation into the LADWP database. The Watermaster has established a program to collect and scan geologic logs, driller's logs and electric logs of all groundwater monitoring wells constructed in ULARA, and also to collect and scan the electric logs of the numerous wildcat and producing oil wells drilled in the San Fernando Valley over the years. All of these scanned documents are to be eventually incorporated into a new electronic database for subsurface data.

3.7 Water Treatment

USEPA Operable Units

The USEPA is proceeding with enforcement actions against Potentially Responsible Parties (PRPs) as part of their overall, long-term groundwater remediation activities in the SFB. The NHOU is described below.

1. *NORTH HOLLYWOOD OU* - The NHOU construction was funded by the USEPA, CDPH, and LADWP. Operations and Maintenance activities in the NHOU are funded by the USEPA and LADWP. In Water Year 2010-11, 1,150 AF of groundwater containing VOCs were treated by air stripping at this facility.

   Air discharged to the atmosphere from the treatment process continues to be monitored for VOCs. Air quality samples are taken six times a year and reported to the South Coast Air Quality Management District on a quarterly basis. Air emissions were in compliance with permit requirements for all four quarters of the water year.

   Groundwater production at NHOU continues to be limited due to declining groundwater levels in the SFB. Although the 15-year NHOU Consent Decree expired on December 31, 2004, the VOC plume has not been fully

remediated. In addition, a nearby hexavalent chromium groundwater plume has been identified; however the NHOU treatment facility was not designed to remove this contaminant. In fall 2006, chromium levels began to increase in NHOU Aeration Well No. 2, and this well was taken out of service. The former Honeywell site in North Hollywood is suspected of being a major contributor to this chromium plume. Honeywell has submitted a remedial action plan to the LARWQCB for review and approval. To date, Honeywell has constructed 31 groundwater monitoring wells to further characterize the water quality and hydrogeology in the eastern area of the SFB. Fortunately, Honeywell has shared the basic subsurface date acquired from this drilling exploration with the Watermaster.

The USEPA issued its ROD for the NHOU Second Interim Remedy (NHOU IR2) in September 2009. The plan is to deepen several of the existing extraction wells, construct new wells, and construct a treatment facility that will treat volatile organic compounds, chromium, 1,4 dioxane and other contaminants of concern. The ROD also calls for construction of additional monitoring wells to further characterize the water quality and hydrogeology of the area.

2. *BURBANK OU* - The Burbank OU (BOU), funded by Lockheed-Martin under a USEPA Consent Decree and operated by the City of Burbank, uses air stripping and liquid-phase GAC to remove VOCs from groundwater (that also contains elevated concentrations of nitrate and chromium), and then blends the treated water with imported water from the MWD for delivery to the City of Burbank.

   Burbank assumed operation and maintenance of the BOU in 2001. Initially, the facility had difficulty in sustaining operation at the designed treatment rate of 9,000 gpm. Burbank, Lockheed-Martin, and the USEPA cooperated in efforts to determine the cause(s) of the reduced production. Over the past few years, several process enhancements and repairs have been made to the liquid-phase GAC vessels and to the vapor-phase GAC vessels.

   As part of the requirement to close the first consent decree, USEPA required Burbank to demonstrate that the BOU would operate at its design capacity. In the summer of 2010, Burbank successfully completed a 60-day performance test at the BOU operating at 9000 gpm. To ensure the

effectiveness of the remedy EPA monitored drawdown and the extent of the cone of depression by conducting a multi-well pumping test for 30 days during the demonstration time frame. EPA used water levels and pumping ratio data monitored during this pumping test to update BOU hydraulic conductivity, transmissivity, and storativity values in the Basinwide groundwater model.

Burbank is also concerned about hexavalent chromium in groundwater produced at the BOU and has been blending its pumped groundwater with imported water to keep the concentration of total chromium at or below the City's goal of 5 µg/L. The BOU treatment facility was not designed to treat chromium.

A total of 10,394 AF of contaminated groundwater was treated by the BOU in the 2010-11 Water Year, an increase of 351 AF over the prior year's volume of groundwater treated by this facility.

3. *GLENDALE NORTH AND SOUTH OUS (also referred to as one single "GOU")*- Construction of the Glendale North and South Operable Units (GOU) was completed and treated water was ready for delivery on August 1, 2000. The system includes four Glendale North OU extraction wells (with a total pumping capacity of 3,300 gpm) and four Glendale South OU extraction wells (with a total capacity of 1,700 gpm). The treatment process uses aeration and liquid-phase GAC to treat groundwater contaminated with VOCs and then blends the treated water with imported MWD water at the Grandview Pump Station. A total of 7,473 AF of contaminated groundwater was treated in 2010-11.

Other Treatment Facilities

1. *VERDUGO PARK WATER TREATMENT PLANT (VPWTP)* – Glendale's VPWTP serves as a filtration and disinfection facility. A total of 389.6 AF of groundwater was treated in the 2010-11 Water Year.
2. *GLENWOOD NITRATE WATER TREATMENT PLANT* - CVWD's Glenwood Nitrate Water Treatment Plant, which uses an ion-exchange process for nitrate removal, treated 592 AF in the 2010-11 Water Year
3. *POLLOCK WELLS TREATMENT PLANT* (PWTP) – The 3,000-gpm PWTP was dedicated on March 17, 1999. This treatment plant uses four liquid phase

GAC vessels to remove VOCs from Pollock Well Nos. 4 and. 6. The operation of these production wells helps reduce the amount of groundwater lost to the Los Angeles River by reducing the amount of groundwater rising into the unlined reaches of the drainage channel. A total of 3,127 AF of groundwater was treated in the 2010-11 Water Year.

. *BURBANK GAC TREATMENT PLANT* - The City of Burbank GAC system (Lake St. wells) was shut down in March 2001 due to the elevated concentrations of hexavalent chromium in the groundwater and remained out of service throughout the 2007-08 Water Year. The plant saw limited use for non-potable purposes in Water Year 2008-09, whereas in Water Years 2009-10 and 2010-11, the plant was used only when necessary to obtain water quality data from the wells. The total water treated at Lake Street GAC and sent to City of Burbank's power plant for non-potable beneficial use in Water Year 2010-11 was 4.19 AF. The City of Burbank has a goal of accepting a maximum of 5 µg/L of total chromium after blending for distribution within its water system. If the plant is returned to service, production may be considered as part of the average pumping goal of 9,000 gpm for the Burbank OU.

5. *TEMPORARY TUJUNGA WELLFIELD TREATMENT STUDY PROJECT* – The project installed ten granular activated carbon treatment vessels on two production wells at the Tujunga Wellfield and has restored the use of 12,000 AF/Y of pumping capacity that were unavailable due to water quality constraints. The treatment process removed volatile organic compounds such as TCE, PCE, carbon tetrachloride, and 1,1 dichloroethene. Operational testing began in November 2009 and the CDPH permit for conveying treated groundwater into the distribution system was issued in May 2010. Nearly 12,200 AF of groundwater was processed through these treatment vessels during the recent water year.

3.8 Groundwater Quality Investigations

There are several ongoing groundwater quality investigations in ULARA. Some of the major sites and related activities are summarized below.

Boeing/Rocketdyne Santa Susana Field Lab, Simi Hills

This facility, located in the hills at the western end of the San Fernando Valley, was the site of rocket testing until the 1980s. As a result, soil and groundwater became contaminated; key constituents of concern include VOCs, perchlorate, and radionuclides. Several hundred monitoring wells have been constructed at this site and they are being monitored for water levels and sampled and tested for key water quality constituents on a regular basis. Contaminated soil and groundwater are also being remediated at selected locations. The upgraded groundwater treatment system construction was completed in December 2009 and it is currently undergoing start-up and commissioning. The system will be fully operational in late-2010 upon completion of the necessary pipelines between the planned extraction wells and the treatment system. A Draft Sitewide Groundwater Characterization Report was prepared and submitted to the California Department of Toxic Substances Control (DTSC) on December 15, 2009 and is available at the public repositories.

CVWD-MTBE Investigation

In February 2004, MTBE was detected in CVWD Well No. 5 during the annual VOC water quality sampling program in all CVWD active water-supply wells. MTBE is a gasoline additive that was used from 1990 to 2003; gasoline containing MTBE has leaked from underground storage tanks and contaminated local soils and groundwater. In 2005, CDPH directed CVWD to continue monitoring Well No. 5 on a quarterly basis. As a result, MTBE continued to be detected. CVWD retained McGuire Malcolm Pirnie Environmental Consultants (McGuire) to provide an evaluation of possible MTBE sources for the contamination in CVWD Well No. 5. In addition, the prior Watermaster requested the LARWQCB to perform an investigation into potential sources of MTBE. LARWQCB met with CVWD in 2005 and began the investigation. In March 2006, the McGuire report was completed and forwarded to LARWQCB. The report identified several potential source sites.

In August 2006, MTBE concentrations in CVWD Well No. 7 increased to 29 µg/L which is significantly above the Primary MCL of 13 µg/L for this constituent, and, as a result, this well

was shut down. CVWD started out testing all its wells on a weekly basis and the MTBE concentration in Well No. 7 rose to values as high as 50 µg/L in October 2006. After that, the MTBE levels in this well have dropped to a low of 0.50 µg/L in October 2007.

In October 2006, CVWD utilized McGuire to evaluate and prioritize the available methods to treat groundwater from this well and other nearby water-supply wells in order to begin cleanup of groundwater before the MTBE plume spreads to other wells in the system. The report was completed in January 2007 and it was determined that a granulated active carbon (GAC) treatment system would be the best treatment method. In addition, as part of the study, groundwater samples were tested with different types of GAC to determine the best type of GAC to be used. It was determined that a "coconut shell" based GAC would provide the best medium for MTBE removal. It was also discovered that groundwater that also contained high levels of nitrate would see “spikes” in nitrate concentrations in the effluent stream after the GAC system was shut down for a period of time. This has been referred to as "nitrate adsorption", or release of nitrates from the GAC into the water.

In November 2006, the prior Watermaster, at the request of CVWD, formed the Verdugo Basin MTBE Task Force to expedite the MTBE investigation and cleanup of the contamination in order to return CVWD’s wells to full operational capacity. Since November 2006, LARWQCB has been aggressively continuing its investigation and has been meeting with CVWD and potentially responsible parties, and the Watermaster at the CVWD offices. The Task Force determined that 11 of the 27 potential contamination sites need additional site investigation and remedial action work. In 2008-09, the following activities occurred: three sites continued clean-up activities; site remediation plans were approved at two sites, and no progress at four sites.

CVWD received a grant from the CDPH’s Drinking Water Research and Treatment Fund for the cost to build and operate the proposed GAC treatment system at CVWD's Mills Facility. The grant was for $1.1 million, however, money for the Drinking Water Fund has not become available and CDPH has included the project under Proposition 84.

In 2009-10, the MTBE levels in Well 5 rose above the MCL and CVWD requested and received approval to utilize the Drinking Water Research and Treatment grant for a proposed GAC treatment facility at the Well 5 site. During 2010, CVWD retained AECOM to design the facility and the project was to be under construction during 2010-11. However, MTBE levels decreased in Well 5 during in 2010-11. A 5-day pumping test was done on Well 5 in February 2011 to determine if the MTBE levels would rise during a period of constant pumping. Results of this pumping test showed that the MTBE level in Well 5 remained at 0.20 ug/L during the entire test; this value is below the MCL for MTBE. In March 2011, Well 5 was approved by

CDPH to be put back into service. As a result of the test, CVWD's grant under CDPH's "Drinking Water Treatment and Research Fund" for a GAC treatment system was put on hold by CDPH. Should the MTBE levels increase in Well 5 in the future, it is unknown if the grant will be reinstated.

DriLube, 711 W. Broadway and 718 W. Wilson, Glendale

DriLube Company, a plating facility located in Glendale, was issued a Cleanup and Abatement Order (CAO) by the LARWQCB in 2002. DriLube was named a Responsible Party identified by the USEPA as a source responsible for discharging contaminants from its site into the groundwater affecting the Glendale South Operable Unit. The results of subsurface investigations to date have detected chlorinated solvents, petroleum hydrocarbons, PCBs, and heavy metals (including chromium) within the underlying soils and groundwater to date. On November 15, 2002 a fire at the DriLube Company totally destroyed the Plant 1 facility and records.

Although one single site previously, the two addresses have been separated for cleanup management purposes. USEPA, which previously managed the entire site, returned the 711 W. Broadway site back to the LARWQCB. The site has been determined to have no metals contamination, and is contaminated with VOCs only. The LARWQCB is expected to issue a cleanup and abatement order in the near future.

Management of the 718 W. Wilson site remains within the purview of the USEPA due to chromium contamination; VOC contamination also exists at the site. In 2010, approximately 460 tons of hexavalent chromium contaminated soils were removed from the site. During this removal work, infrastructure (piping) was installed to facilitate future in-situ remediation of hexavalent chromium. This in-situ treatment will focus on adding amendments to the site to reduce hexavalent chromium to trivalent chromium.

PRC-DeSoto (formerly Courtaulds Aerospace), 5430 San Fernando Road, Glendale

The LARWQCB issued a Cleanup and Abatement order (CAO) to PRC-DeSoto (formerly Courtaulds Aerospace) on August 22, 2002. This facility has been named a responsible party and was identified by USEPA as a source for releasing chlorinated organic solvents within the groundwater affecting Glendale South Operable Unit. Additionally, the USEPA has issued a General Notice Letter and a 104E Letter to the site owners; this facility is considered a Potentially Responsible Party (PRP) for the Glendale Operable Unit. Historically, the facility's principal industrial activities involved chemical formulation of adhesives and sealants used by

the U.S. Department of Defense for various aerospace applications. Trichloroethane (1,1,1-TCA), dichloroethane (DCA), TCE, PCE, chromium, hexavalent chromium, and nickel have been found in soil and groundwater beneath the facility. Three down-gradient wells were constructed in May 2006 and are sampled on a quarterly basis as required by the CAO. PRC-DeSoto has submitted a Remedial Action Plan (RAP) for the in-situ reduction of hexavalent chromium. The RAP was approved and is being implemented. As part of the implementation, LARWQCB issued a General Waste Discharge Requirement (WDR) permit to the facility in February 2009 for the remediation of the hexavalent chromium. A soil gas investigation was completed and submitted for this facility and a final report has been reviewed by the LARWQCB. Groundwater monitoring continues on a quarterly basis as part of the CAO.

Other activities at this site included the demolition of buildings and the excavation and removal of potential contaminant sources (underground storage tanks, clarifiers, sumps, etc), completed in December 2009. A geosynthetic clay liner was installed at the bottom of excavations of potential chromium source areas, and then the excavations were backfilled with clean materials.

Recently, the cleanup operation received its final injection of calcium polysulfate. A workplan is underway to describes= a confirmation sampling program for the site. Work toward closure of the site in regard to soils contamination will begin with the LARWQCB. Work regarding chromium contamination of the local groundwater will be transferred to the USEPA. PRC DeSoto has been identified as a PRP for chromium contamination.

Excello Plating, 4057 Goodwin Ave., Los Angeles

The LARWQCB issued a CAO to Excello Plating on June 20, 2003. The CAO was revised and re-issued, on June 2, 2005. The facility's owners were identified under CERCLA as having responsibility for releasing VOCs, hexavalent chromium, nickel, cadmium, zinc and lead. The purpose of issuing this CAO was to ensure that Excello Plating completes the on-site and off-site assessment to delineate the lateral and vertical extent of heavy metal contaminants (specifically chromium) and, as necessary, undertake remediation of the affected soil and groundwater, on-site and off-site. Additionally, the USEPA has issued a General Notice Letter and a 104E Letter and the facility is considered as a source of the contaminates that impact the Glendale Operable Unit.

On September 23, 2004 the Los Angeles City Attorney charged Excello with a violation of the federal Clean Water Act for failure to comply in a timely manner with the CAO. This criminal citation has corresponding financial penalties including fines of $50,000 per day. In 2006 there was an out-of-court settlement that included a plan for more monitoring wells for plume

delineation. The facility has completed onsite soil and groundwater assessment and has submitted a Remedial Action Plan (RAP) for the remediation of heavy metals including hexavalent chromium and for Volatile Organic Compounds (VOCs) including trichloroethylene (TCE) and perchloroethylene (PCE). As part of the RAP, the facility plans to apply for a General Waste Discharger Requirement (WDR) permit for the remediation of hexavalent chromium. In April 2008, three additional groundwater monitoring wells were constructed at the facility; two of these wells were constructed downgradient and offsite to help define the contaminant plumes that may have migrated offsite. Groundwater monitoring continues on a semi-annual basis.

A prospective buyer is interested in obtaining the property. The buyer has reportedly agreed to perform soil cleanup operations at the site regarding hexavalent chromium contamination, in exchange for a Prospective Purchaser Agreement intended to declare that the purchaser is not responsible for the underlying groundwater contamination.

B.F. Goodrich (formerly Menasco/Coltec Industries, Inc.) 100 E. Cedar Ave., Burbank

The LARWQCB issued a CAO to Coltec Industries, Inc on July 5, 2002. This facility was identified as a Responsible Party by the USEPA as a source of discharging contaminants to the groundwater, and affecting Glendale North Operable Unit. Additionally, the USEPA has issued a General Notice Letter and a 104E Letter and the facility is considered a Principle Responsible Party for the Glendale Chromium Operable Unit. The facility's former industrial activities involved machining, manufacturing, metal plating, anodizing of parts and equipment used by the U.S. Department of Defense for various aerospace applications. Volatile Organic Compounds (VOCs) including TCE, PCE, 1,1-Dichloroethylene (1,1-DCE) 1,1,1-Trichloroethane (1,1,1 TCA) and hexavalent chromium have been detected in the subsurface soil and in the groundwater underlying the site. Groundwater monitoring wells constructed in certain offsite areas are being sampled on a quarterly basis. The amended General Waste Discharge Requirement has been performed (the facility has completed a pilot study for the remediation of hexavalent chromium in the soil and groundwater). The facility is now implementing a site-wide program to remediate the hexavalent chromium. The facility has operated a Soil Vapor Extraction (SVE) system to remediate the VOCs. A risk assessment report was submitted, reviewed, and the results approved by OEHHA and the LARWQCB. Groundwater monitoring continues on a semi-annual basis. Currently the soil clean-up operations are managed by the LARWQCB. Once complete, the site will be turned over to the USEPA for groundwater remediation purposes. This site has been identified as a PRP for chromium contamination.

ITT/Home Depot, 1200 S. Flower St., Burbank

Home Depot has completed construction of a store and parking lot on the site of the former ITT Aerospace Controls property. By agreement between Home Depot and ITT, Home Depot is responsible for the soil assessment and remediation from ground surface down to the depth of an underlying continuous clay layer. The contamination beneath the clay layer, which includes the saturated zone (i.e., groundwater), is the responsibility of ITT Aerospace Controls, a former parts manufacturer and metal finisher and plater. Groundwater contamination at the site consists of VOCs, petroleum hydrocarbons, nickel, and hexavalent chromium. In 2004, Home Depot built a slurry wall around the site to help prevent lateral migration of groundwater contamination. A naturally occurring low-permeability zone located 50 feet below ground surface is expected to reduce vertical migration of the contaminants. ITT is responsible for cleanup of the area below the Home Depot's slurry wall barrier.

A Cleanup and Abatement Order (CAO) issued to ITT in 2004 is being revised to require development and submittal of a Remedial Action Plan for the cleanup of the underlying groundwater contamination. ITT may apply for a General WDR for the remediation of hexavalent chromium. Groundwater monitoring continues on a semi-annual basis. Additionally, the USEPA has issued a General Notice Letter and a 104E Letter to ITT because this facility is considered a source of contamination affecting the General Operable Unit. Soil vapor extraction treatment at the site is ongoing.

Honeywell (formerly Allied Signal/Bendix) 11600 Sherman Way, North Hollywood

Honeywell was issued a Cleanup and Abatement Order (GAO) on February 21, 2003 and an amended CAO followed in September 2004. The facility was directed to prepare a work plan for additional onsite and offsite subsurface assessment of soil and groundwater. This work plan was submitted and approved, and the field work has been completed. A final report has been submitted and is presently undergoing review by the LARWQCB. The facility prepared and submitted a Remedial Action Plan (RAP) for in-situ chromium remediation. The RAP has been approved and is being implemented in conjunction with the facility's General WDR permit. The installation of additional offsite groundwater monitoring wells was approved by the USEPA and LARWQCB, and the wells have been constructed. The facility was required to submit a wellhead treatment work plan for treating hexavalent chromium and 1,4-dioxane at the LADWP's extraction well NHE-2. This well was shut down by the LADWP because elevated concentrations of total chromium were detected in the pumped groundwater. Honeywell's work

plan was approved as well as their short-term remediation plan. Recently, Honeywell submitted their long-term remediation plan for the NHE-02 wellhead treatment to the LARWQCB for their review and comment/approval.

In September 2008, Honeywell began pumping NHE-2 and processing the groundwater through a wellhead treatment system to remove VOCs before discharging the effluent to the sanitary sewer system. Because the VOC and other contaminant concentrations were below the limits identified in the sewer discharge permit, Honeywell was allowed to remove the wellhead treatment system, and to discharge the effluent from well NHE-2 directly into the sanitary sewer. Honeywell is currently working with LADWP and CDPH to comply with CDPH Policy Memorandum 97-005 by preparing a Source Water Assessment and Treatment Report. This would recommend installation of a wellhead treatment system to remove VOCs and chromium such that the treated effluent is Title 22 compliant and the groundwater can then be distributed by LADWP.

Honeywell utilized its consultant (Montgomery Watson Harza) in the past 2 to 3 years to site, design and construct 31 groundwater monitoring wells to further characterize the water quality and hydrogeology in the eastern portion of the SFB.

Former Price Pfister site, Pacoima, California

The Price Pfister site was previously used for manufacturing plumbing fixtures involving casting, machining, and chrome plating. Since 2002, the LARWQCB has been the lead agency overseeing the investigation, monitoring and remediation of the soil and groundwater contamination at the former Price Pfister, Inc. site, located at 13500 Paxton Street. Current soil remediation activities include a soil vapor extraction system, and removal of free hydrocarbon products. This Brownfield site was redeveloped in 2010 into a Costco, a Lowe's, and a Best Buy shopping center.

Hexavalent chromium concentration of 8,300 µg/L was detected in the groundwater beneath the Price Pfister site on August 19, 2010. During the same period, 1,4-dioxane levels were at/near 85 µg/L (950 µg/L of 1,4-dioxane was detected in August 2007). Price Pfister was required to submit to LARWQCB a revised remedial action plan for hexavalent chromium and 1,4-dioxane in late-2010.

General Electric (formerly Pacific Airmotive), 2940 North Hollywood Way, Burbank

The LARWQCB has identified an apparent continuing source of VOCs at the former site of the Pacific Airmotive (PAC) property that is currently owned by General Electric. The soil vapor

extraction system has been removing PCE soil vapor from underneath an adjacent property (2960 No. Hollywood Way). PAC owned the subject property from 1947 until 2006 and their activities (such as testing, maintenance, repair and overhaul of commercial and military aircraft engines) resulted in VOC impacts (primarily PCE) to soil and groundwater. Confirmation sampling has not yet been completed at this site. As of September 2011, PAC water quality data are now included in the Lockheed-Martin semi-annual groundwater report for the BOU.

Raytheon (formerly Hughes Missile Systems Company), 8433 Fallbrook Avenue, Canoga Park

Contaminants at the site reportedly include 1,1-DCE, TCE, PCE, 2,4,6 trichloroanisole (TCA), benezene, toluene, ethyl benzene and zylene (BTEX), and 1,1-dichloroethane (DCA). Because TDS concentrations are in excess of the Basin Plan objectives, the treated water may not be discharged to the Los Angeles River. As a result of the high TDS concentrations, the treatment plant effluent is stored in holding tanks, and used for onsite irrigation. Raytheon continues to utilize and has expanded its use of Enhanced In-Situ Bioremediation to reduce contaminants with the shallow groundwater beneath the site.

3M (formerly Riker Lab), 19901 Nordhoff, Northridge

Contaminants at this site include chloroform, 1,2-DCE, 1,2-DCA, and Freon 11. A groundwater treatment system has been in operation since 1997. At least 15 groundwater extraction wells and two air-stripping towers in series capable of treating 60,000 gallons per day have been in operation at the site. In March 2005, 3M and its consultant, Weston Solutions, Inc. completed installation of a system to re-use the discharged portion of the treated groundwater for landscape irrigation. All of the treated groundwater is now beneficially used onsite.

Micro Matics, 19791 Bahama St., Northridge

The soil and groundwater beneath a portion of the Micro Matics property have been contaminated with PCE and 1,1,1-TCA. One or more contaminant plumes have moved offsite to the west beneath a portion of the former 3M property, and also to the south beneath Bahama Street. The 3M parcel contaminated by Micro Matics was sold to a developer, Nordhoff Industrial, in December 2004.

Soil vapor extraction (SVE) was initiated in 2006 to remediate the VOC-impacted soil beneath the site and was continued for at least 29 months. Soil closure was requested in 2009 from the LARWQCB.

Interim groundwater remediation included pump and treat activities and injection of the hydrogen-donating compound (HRCTM) between 1999 and 2005. In October 2007, a containment treatment line using ozone gas was operating on the north side of Nordhoff Street.

In April 2009, a full-scale groundwater treatment system using ozone gas began operation. The full-scale system includes numerous ozone sparge points in the source area, and several treatment lines downgradient of the source area. Groundwater treatment continues using ozone gas and the results reportedly continue to be successful. Groundwater treatment using liquid-phase GAC was discontinued in 2008.

Tesoro Petroleum (former Fast Fuel, 11051 Victory Blvd., N. Hollywood)

Tesoro Petroleum is the owner of a gasoline station in North Hollywood. A large, leaking underground tank caused a plume of gasoline hydrocarbons containing MTBE to move downward into the local groundwater. Over time, this contamination plume has migrated offsite toward several municipal-supply wells in LADWP's Whitnall Wellfield. Tesoro and its consultants have been performing soil remediation using soil vapor extraction.

Working with its consultants, and with LADWP, LARWQCB, and the former Watermaster, Tesoro implemented a groundwater cleanup plan that utilizes ex-situ bioremediation and re-injection of the treated groundwater. Full-scale re-injection began in October 2005 and is now complete, restoring groundwater quality and allowing LADWP's Whitnall wells to return to service. Work on this site was designed to test alternative MTBE restoration methods, resulting in a dramatic reduction in MTBE in the groundwater. Upon review of the data, the LARWQCB determined that the groundwater influent into the remediation system showed substantial reduction in MTBE concentrations; thus, the LARWQCB approved the permittee's request to discontinue water treatment operations. All water treatment equipment has been decommissioned and removed from the site. Some of the groundwater monitoring wells have been destroyed and/or will be destroyed in the near future.

Taylor Yard (Los Angeles River Narrows Area)

The Union Pacific Railroad owns a large parcel adjacent to the Los Angeles River Narrows. The parcel has been subdivided into two parts: the "active yard," and the "sale parcel". The 25-acre "active yard" has been contaminated with VOCs, semi-volatile organic compounds, fuel hydrocarbons, and metals. Remediation is under the jurisdiction of the DTSC. A Risk Assessment was approved for the site and a Feasibility Study and Remedial Action Plan are being prepared for the site.

The "sale parcel" has attracted the attention of several agencies and stakeholders, including the State Parks Department and the California State Coastal Conservancy, who consider the site as a potential future location for habitat restoration and recreation near the Los Angeles River.

Status on the existence of Hexavalent Chromium in the San Fernando Basin

In January 2003, the prior Watermaster published a report on hexavalent chromium contamination in the SFB. The LARWQCB published a report based on its four-year investigation of hexavalent chromium in December 2002. The presence of this contaminant threatens the use of SFB groundwater as a reliable source of water for Burbank, Glendale and Los Angeles, and also jeopardizes the remedy (i.e., the cleanup plan) and the treatment plants constructed with funding from the USEPA to clean up VOCs on a regional basis. None of the treatment plants that treat VOCs in the groundwater in the San Fernando Basin were designed to treat chromium.

Total chromium is comprised of hexavalent chromium and trivalent chromium. Hexavalent chromium is reportedly a carcinogen when inhaled, but the effects when ingested are a subject of continuing debate. Trivalent chromium is a nutrient when ingested in small amounts.

On July 27, 2011 the California Office of Environmental Health Hazard Assessment (OEHHA) published a final Public Health Goal (PHG) for hexavalent chromium of 0.02 µg/L (or 0.02 ppb). With the final PHG published, a Maximum Contaminant Level (MCL) will be established by the CDPH. The Federal and State drinking water MCLs for total chromium are currently 100 µg/L and 50 µg/L, respectively. There are no separate standards for hexavalent chromium at this time.

Hexavalent chromium affects the operation of the treatment plants, because they were designed to treat only for VOCs. The Consent Decrees between the USEPA and the responsible parties require that certain pumping rates be maintained in the OUs to control VOC plume migration and to provide contaminant removal. As these OU wells are pumped, the chromium plumes tend to migrate toward the wells, albeit at a slower rate than the VOCs. Hexavalent chromium has now appeared in all of the OUs in the SFB. Fortunately, its concentrations are currently low enough to meet all drinking water standards, under certain operational controls. High hexavalent chromium concentrations have caused several wells to be pumped at reduced rates (particularly in the GOU), and at least one well has been shut down (in the NHOU). Should hexavalent chromium concentrations become excessive, the operation of the OUs will be compromised.

In October 2006 the results of pilot studies by Malcolm Pirnie were presented to an expert panel that identified two promising technologies for chromium treatment: weak-base anion exchange (WBA) and reduction-coagulation-filtration (RCF). Funding from EPA, California Proposition 50, and local industry allowed for the construction of the facilities. The treatment facilities using the two technologies identified in the Malcolm Pirnie study were constructed and placed into service

in March and April 2010; these facilities have been effective in removing chromium in the groundwater to concentrations below 5 µg/L.

In a meeting of the Project Advisory Committee in September 2010, where the preliminary results were presented, it was recommended that microfiltration be tested as an enhancement to the RCF dual media filters to see if 1 µg/L chromium levels could be achieved. This was in light of the draft PHG of 0.06 µg/L (a final PHG of 0.02 µg/L was adopted in July 2011). The microfiltration study received funding from the State, the WaterRF, and the US Bureau of Reclamation, and began in February 2012.

General Waste Discharge Requirements Permit (WDR)

On March 1, 2007 the LARWQCB adopted a revision to the General Waste Discharge Requirements Permit. This marks significant progress in the effort to expedite cleanup of chromium and other contaminants in ULARA. In the Notice of Preparation of Mitigated Negative Declaration, the LARWQCB proposed:

> "to adopt General Waste Discharge Requirements for groundwater remediation at sites impacted by petroleum fuel, volatile organic compounds and/or hexavalent chromium. The adoption of WDRs for in-situ groundwater remediation/cleanup or the extraction of polluted groundwater with above ground treatment and the return of treated groundwater to the same aquifer zone would: a) simplify the application process for discharges; b) allow more efficient use of LARWQCB staff time; c) reduce LARWQCB time by enabling the Executive Officer to notify the discharger of the applicability of the general WDRs; d) enhance the protection of surface water quality by eliminating the discharge of wastewater to surface waters; and e) provide a level of protection comparable to individual, site-specific WDRs."

Former Chase Chemical/Holchem Site, 3540 and 13546 Desmond Street, Pacoima

A significant VOC contaminant plume was identified in the Pacoima area near the intersection of the Simi Valley Freeway (118 Freeway) and San Fernando Road. This area is approximately 3 miles upgradient of LADWP's Tujunga wellfield, which can supply up to 47,000 gallons per minute (gpm) of groundwater. LADWP constructed two monitoring wells downgradient of the contaminant plume.

The former Chase Chemical/Holchem site is located on approximately two acres of land. Chase Chemical Company used the site from 1967 to 1987 to store industrial chemicals in underground storage tanks, aboveground storage tanks and other containers for packaging and resale. Holchem, Inc. leased the property in 1987, purchased it in 1999, and continued the storage and re-sale of industrial chemicals. Site operation ended in 2001. In 2003, an interim remedial action (IRA) consisting of a Soil Vapor Extraction (SVE) System began to clean the contaminated soil. To date, approximately 27,725 pounds of VOCs have removed from the subsurface by SVE and bioventing systems, according ARCADIS, consultant for Soco West Inc., (current owner of the site). These systems have been turned off since March 2010 in preparation for collecting soil samples. According to a May 2010 report, "ARCADIS is requesting from the DTSC that the Site IRA remain off, and requests a no further action status for soil at the site."

According to third quarter 2010 groundwater sample results, the maximum TCE and PCE levels were 25 µg/L and 33 µg/L, respectively. Other chlorinated VOCs were also detected at various monitoring wells; the maximum 1,4-dioxane concentration is 12 µg/L.

3.9. SUSMP Projects – San Fernando and Sylmar Basins

Since becoming ULARA Watermaster in January 2009, this Watermaster has been reviewing information and reports from various private engineers and/or owners in regard to SUSMP requirements for all proposed developments and re-developments of existing properties within those portions of the City of Los Angeles that overlie the San Fernando and Sylmar basins. Plate 18, "Locations of SUSMP Projects – San Fernando & Sylmar Basins", illustrates the approximate locations of the ±60 such SUSMP properties that have been reviewed by the Watermaster to date. The background of SUSMP projects and the role of the Watermaster in the SUSMP approval process are described below. SUSMP projects in the cities of Burbank, Glendale and San Fernando have not been reviewed to date by this Watermaster, but rather only by representatives of those cities.

The State Regional Water Quality Control Board-Los Angeles Region (RWQCB-LA) promulgated its National Pollutant Discharge Elimination System (NPDES) permit process in 1990 to help minimize the impacts of stormwater and urban runoff on the receiving water bodies in its sphere of influence (i.e., local rivers and the Pacific Ocean). The goal of their NPDES process was to minimize the impacts on the river, and ultimately to the ocean, by reducing the amount and improving the quality of surface water runoff from each storm event. For the ULARA region, the main receiving waters are the Los Angeles River and the Pacific Ocean.

Several years after the implementation of the NPDES process, the City of Los Angeles, Department of Public Works, Bureau of Sanitation – Watershed Protection Division (LAWPD), promulgated a series of guidelines intended to increase onsite infiltration of stormwater at all proposed developments and re-developments throughout the City. These guidelines established the requirements and limitations for infiltration (and recharge) of onsite stormwater and also specified an order of preference (via a set of Best Management Practices---BMPs) for providing SUSMP improvements at each development and/or re-development site in the City.

The specific order of the BMP preference list was established by the LAWPD to collect and provide basic "treatment" of onsite stormwater runoff, and to help increase the amount of infiltration (i.e., deep percolation) from the initial ¾-inch of rainfall from each storm event at all new development and re-development sites in the City. The end result is intended to reduce the volumes of stormwater runoff that enter the storm drain system (from each new storm event) and simultaneously help reduce the volume and enhance the quality of the runoff that enters the Los Angeles River and ultimately the Pacific Ocean. Potential urban-derived contaminants and turbidity in the captured runoff could be reduced by the "treatment" effects of the various stormwater infiltration systems proposed via the BMPs. From a hydrogeologic perspective, and in the opinion of this Watermaster, whenever and wherever deep percolation (infiltration) of "treated" stormwater can be appropriately enhanced, then recharge to the local groundwater basin can be beneficially increased.

Per the SUSMP Information Guidelines of the LAWPD, the five BMP options, in order of preference, are:

1. Infiltration Systems (design based on the volume of stormwater);
2. Bio-Filtration/Retention Systems (design based on flow of stormwater);
3. Stormwater Capture and Re-Use (optional; subject to County Health Department approval);
4. Mechanical/Hydrodynamic Units;
5. Combination of any of the above.

As a result, this Watermaster has been working with Mr. Ammar Eltawil of the LAWPD as part of the SUSMP approval process for each new development/redevelopment site in those portions of the City of Los Angeles that overlie the San Fernando and Sylmar groundwater basins. Plate 18, as noted above, shows the approximate locations of the ±60 such SUSMP sites reviewed to date by this Watermaster within those two groundwater basins. As part of the SUSMP permit application process, Mr. Eltawil of LAWPD also provides each applicant with a 2-page Memorandum prepared by the Watermaster (current version is dated August 13, 2010)

that lists the types of data and reports requested by the Watermaster from each SUSMP applicant. The approval process is basically as follows:

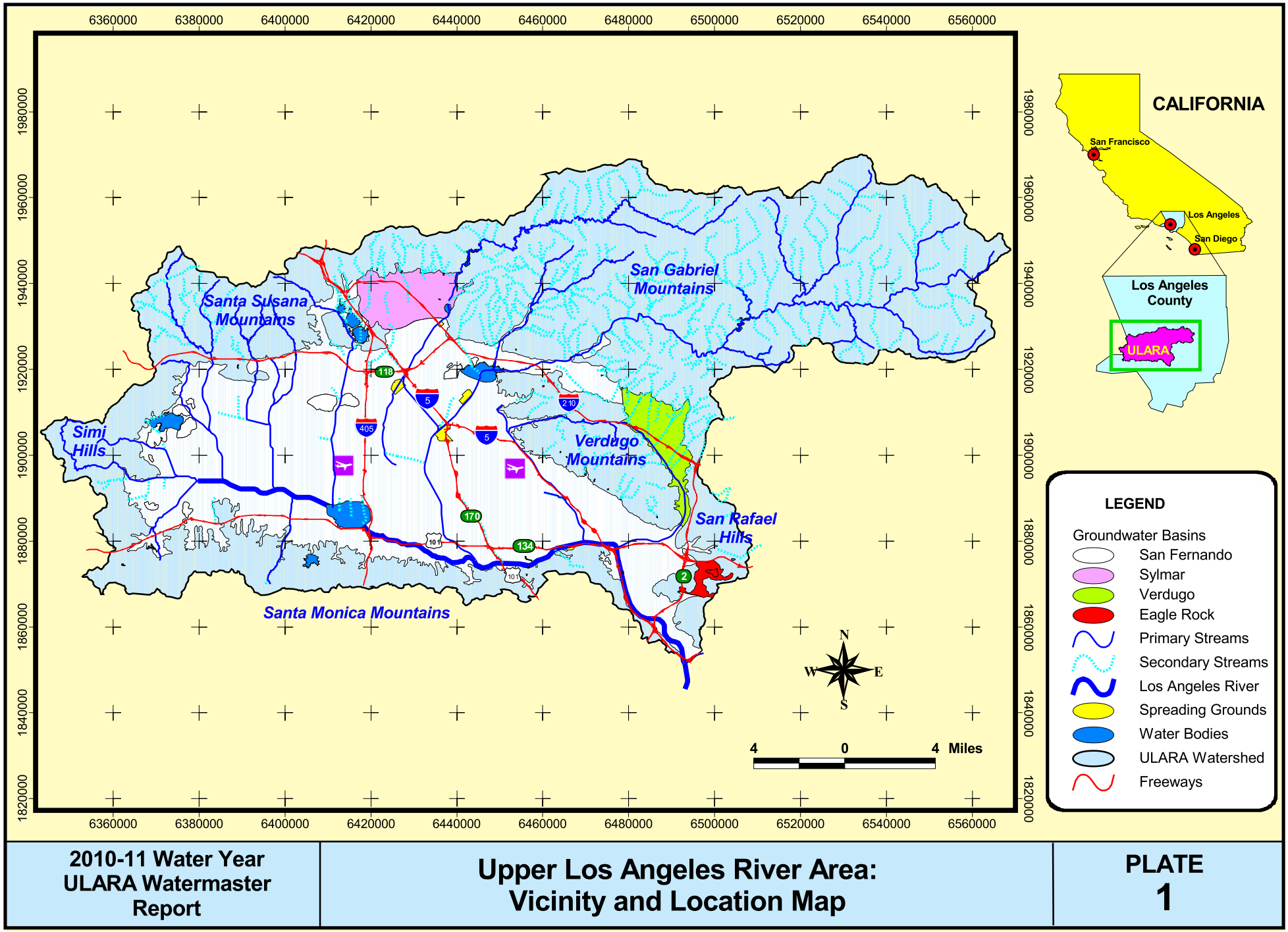
a. Applicant provides substantial reports, data and SUSMP-defined runoff calculations as required by the LAWPD.

b. LAWPD provides applicant with the 2-page Watermaster data request Memorandum.

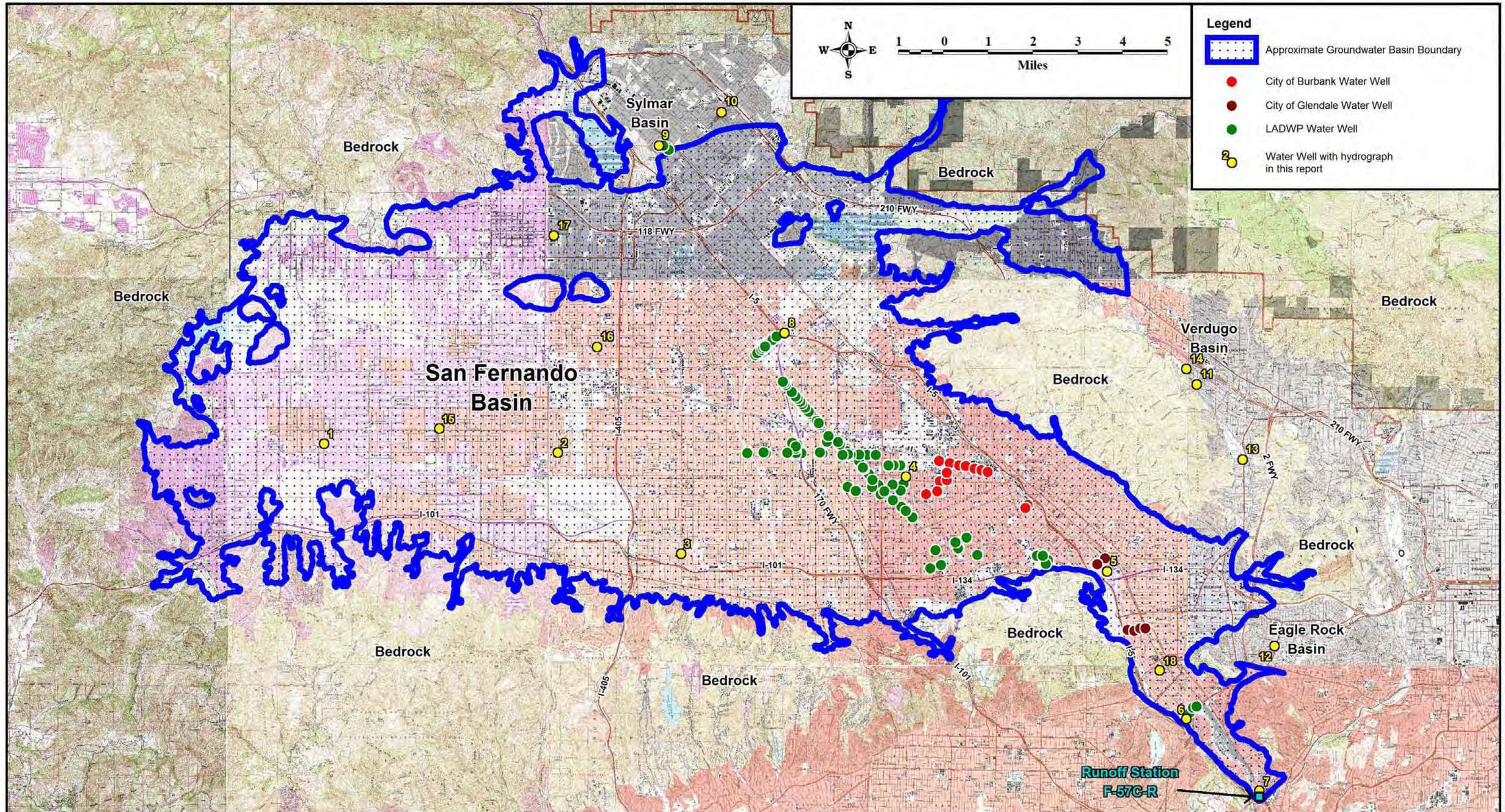
c. LAWPD reviews, evaluates and provides approval or denial of the specific SUSMP and the runoff calculations provided by the applicant.

d. The Watermaster reviews the information on subsurface conditions, etc, as provided by the applicant, and provides an opinion letter with his approval or denial of the SUSMP based on the potential of the infiltration potential of the SUSMP to enhance recharge to the local groundwater basin without interfering with proximal area(s) of groundwater contamination and/or area(s) of groundwater remediation.

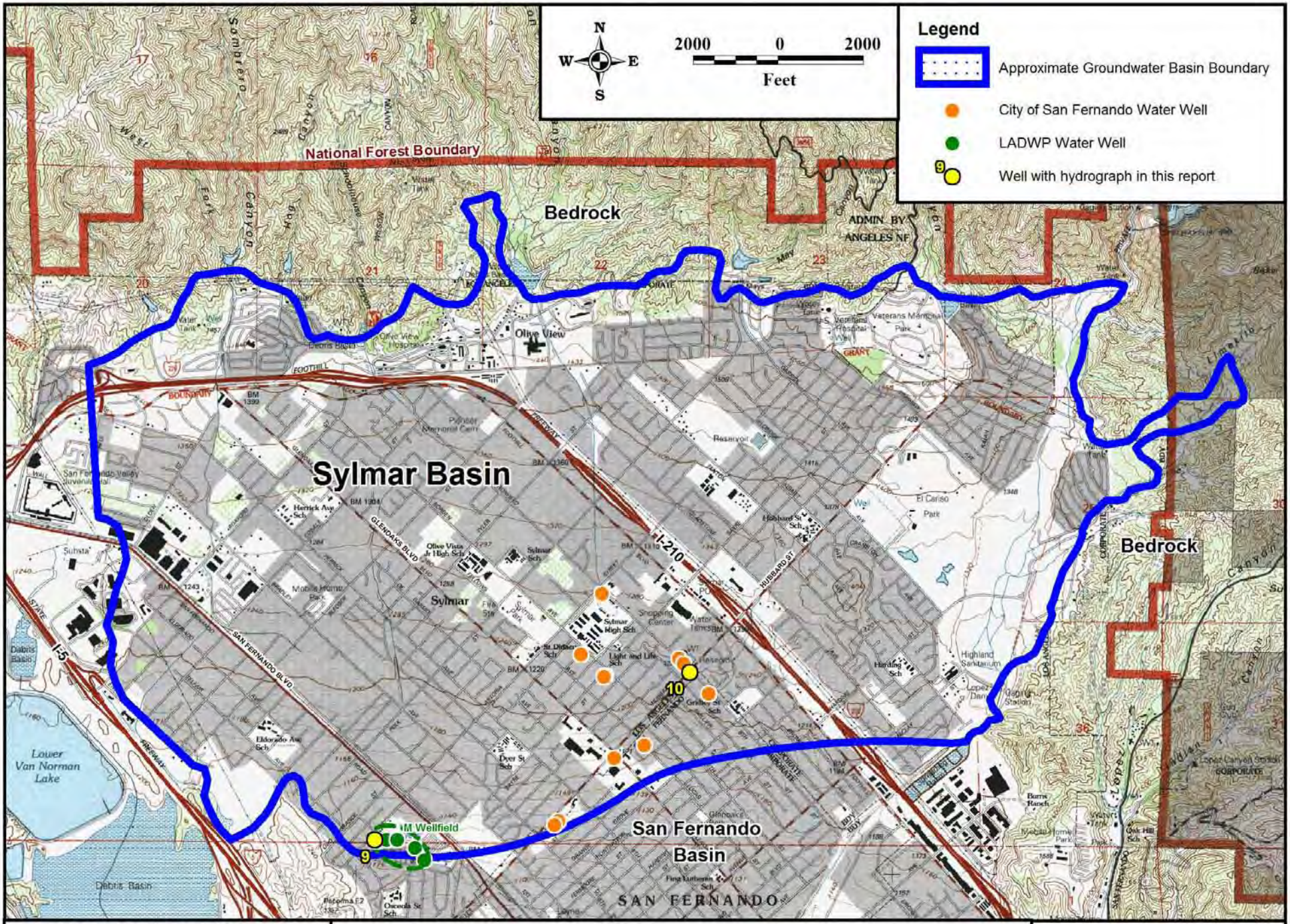
PLATES



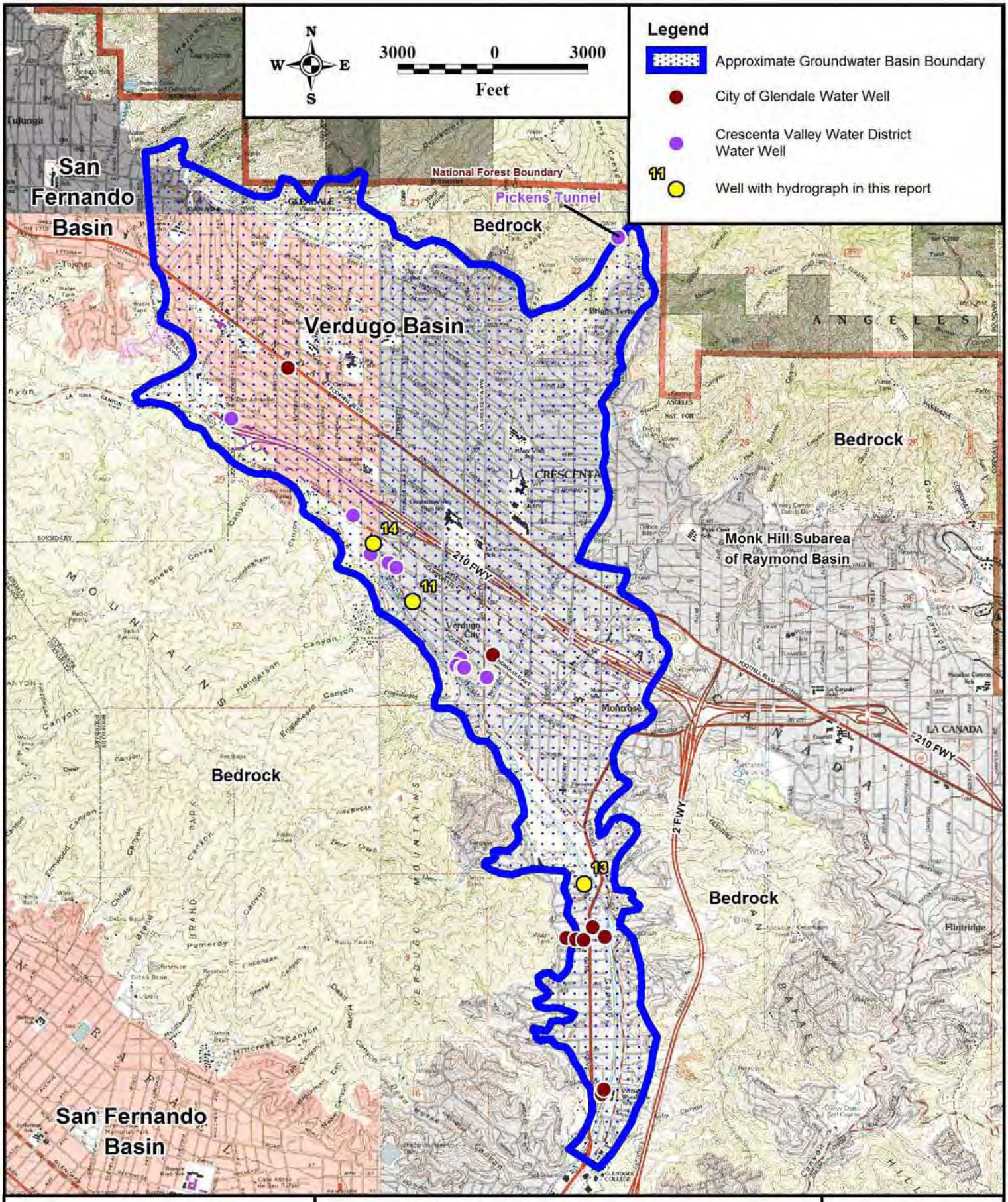
2010-11 Water Year ULARA Watermaster Report	**Upper Los Angeles River Area: Vicinity and Location Map**	**PLATE 1**



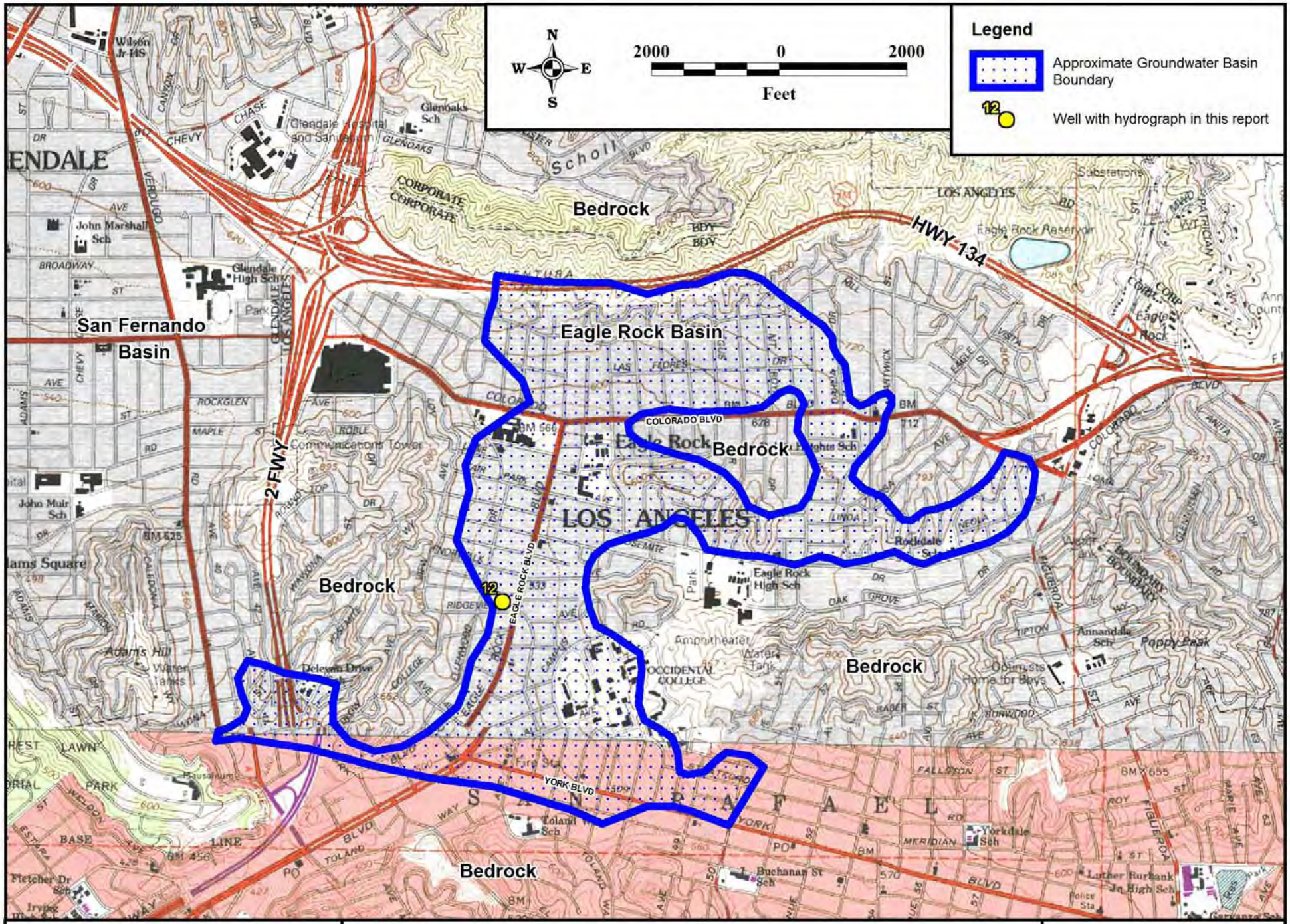
2010-2011 Water Year ULARA Wastermaster Report	Upper Los Angeles River Area: San Fernando Groundwater Basin	PLATE 1A



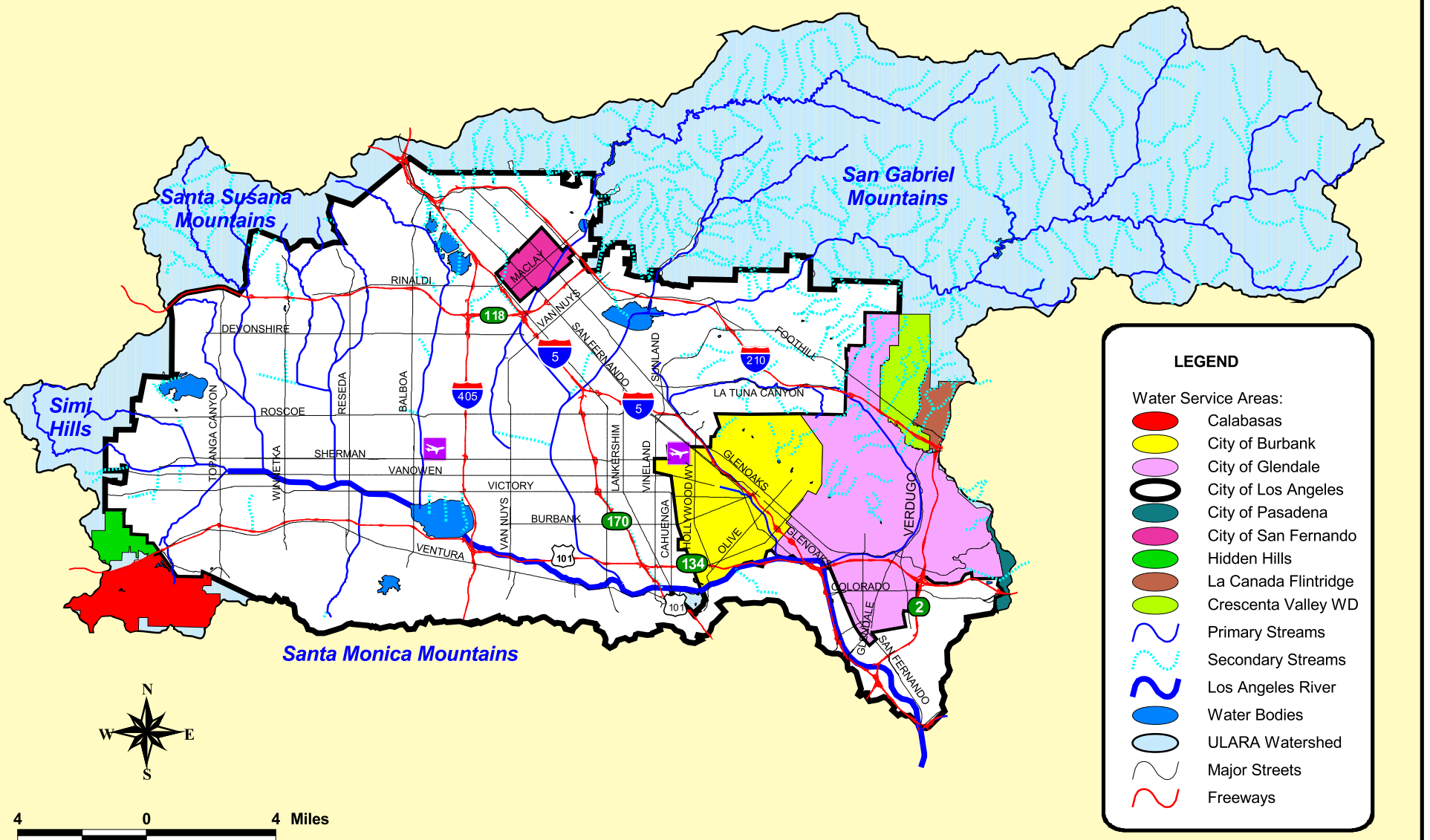
2010-2011 Water Year ULARA Watermaster Report	**Upper Los Angeles River Area: Sylmar Groundwater Basin Map**	**PLATE 1B**



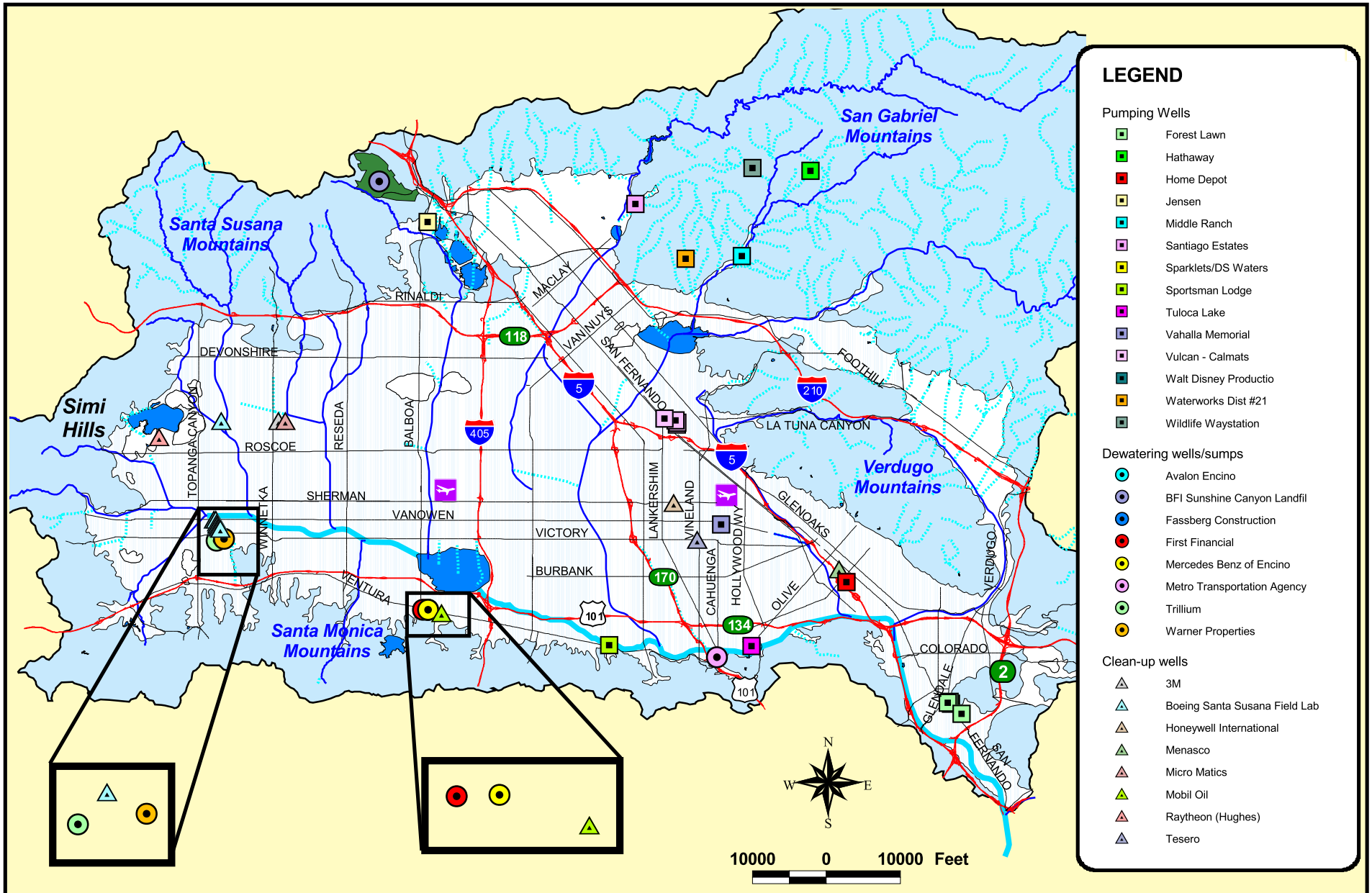
2010-2011 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Verdugo Groundwater Basin Map	PLATE 1C



2010-2011 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Eagle Rock Groundwater Basin Map	PLATE 1D



2010-11 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Water Service Areas of Public Agencies	PLATE 2



2010-11 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Location of Individual Producers	PLATE 3

UPPER LOS ANGELES RIVER AREA

LOCATION OF WELLS AND HYDROLOGIC FACILITIES

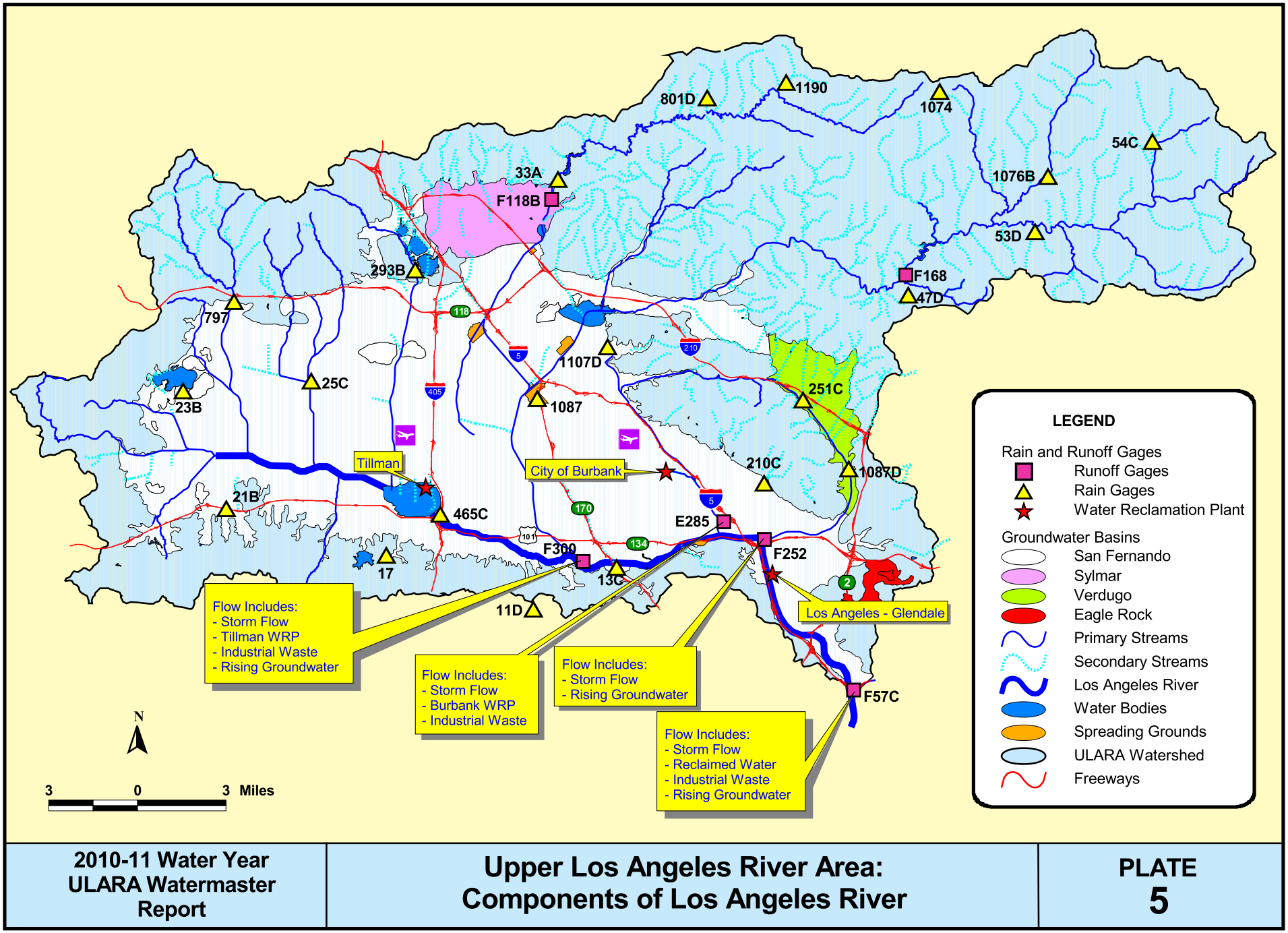
LEGEND

- IMPEDIMENTS TO GROUNDWATER FLOW
- GROUNDWATER CASCADES
- QUESTIONABLE IMPEDIMENT OR GROUNDWATER CASCADE
- CLIMATIC STATION
- SURFACE WATER GAGING STATION
- SURFACE WATER SAMPLING POINT
- KEY WELL USED FOR HYDROGRAPHS
- KEY WELL USED FOR SAMPLING
- ACTIVE, OBSERVATION, OR TEST WELL
- SURFACE AND GRAVITY DIVERSION

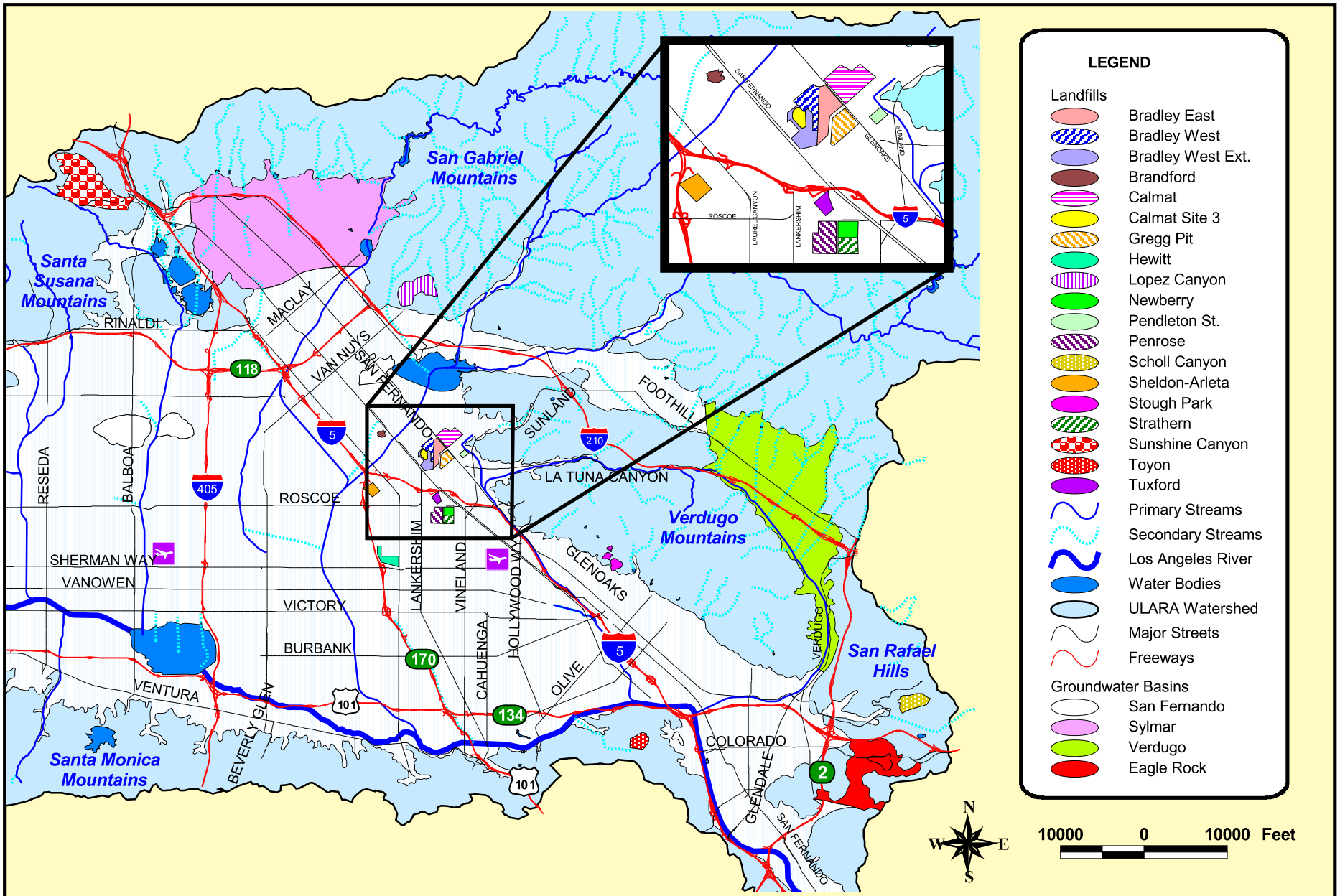
SCALE

FEET

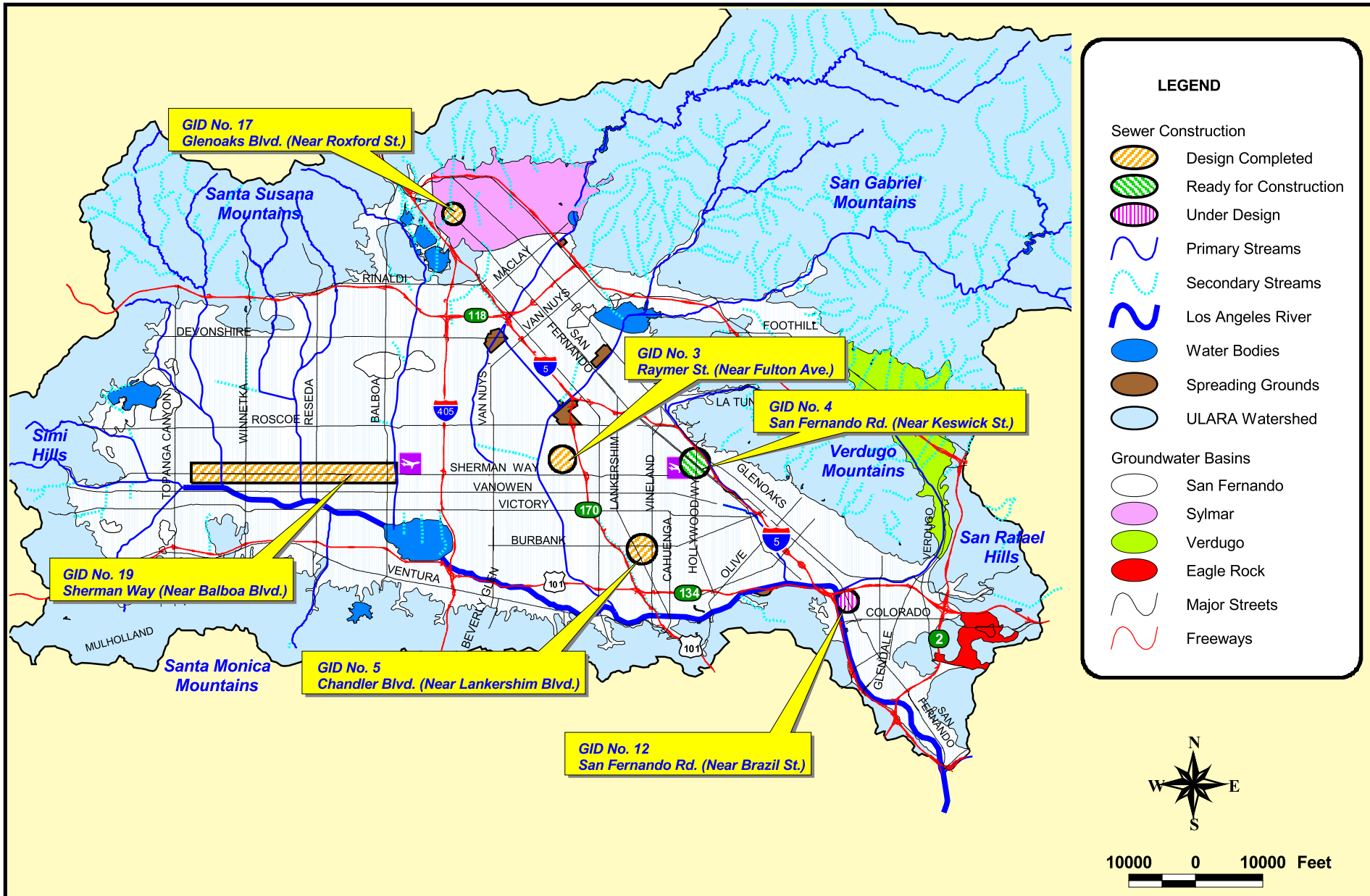
NOTE: 4.25 miles to Tapia Water Reclamation Plant which delivers water to a portion of the west end of ULARA area.



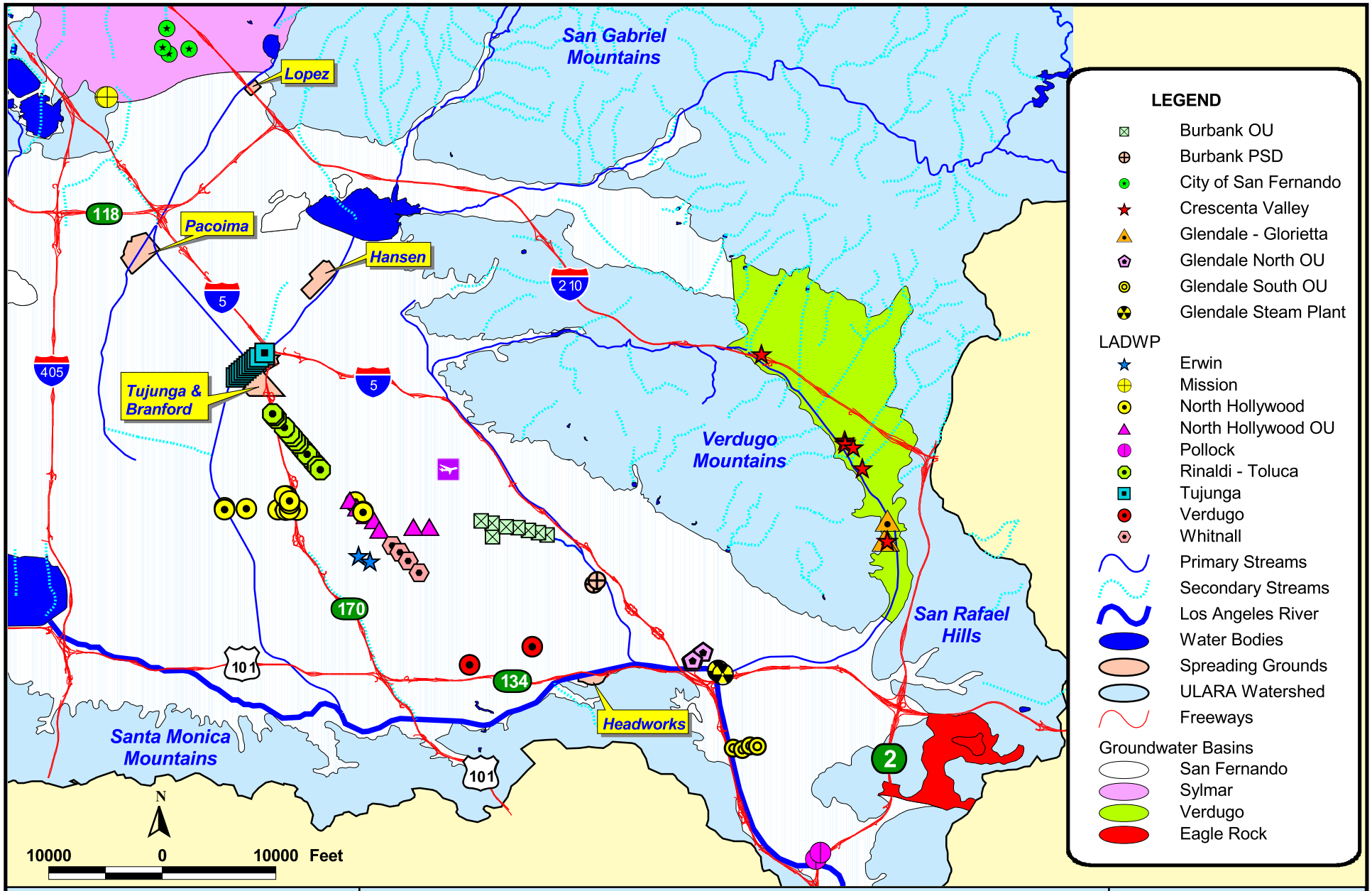
2010-11 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Components of Los Angeles River	PLATE 5



2010-11 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Landfill Locations	PLATE 6



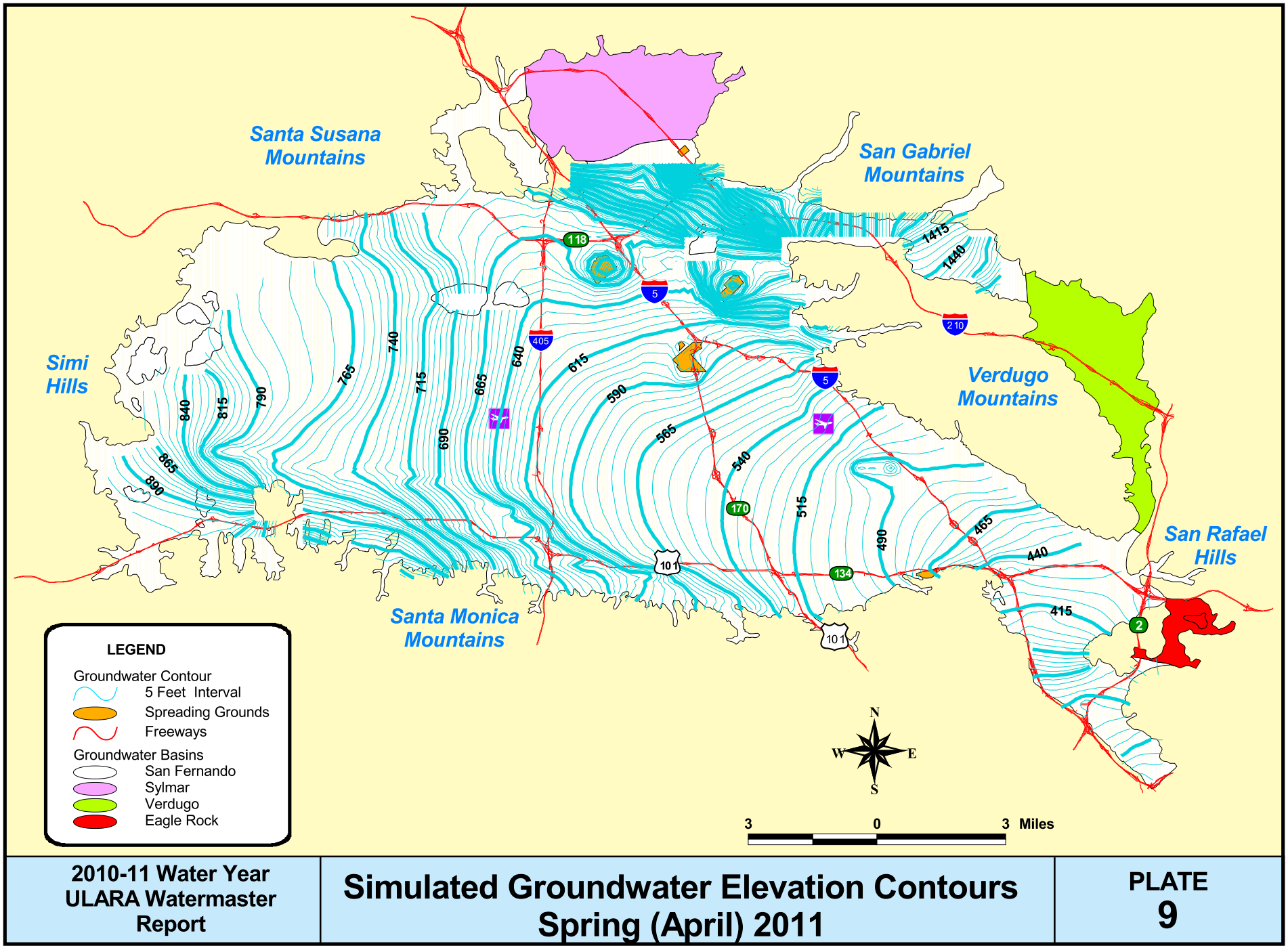
20010-11 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Los Angeles Bureau of Sanitation Sewer Construction Program for Commercial Parcels	PLATE 7



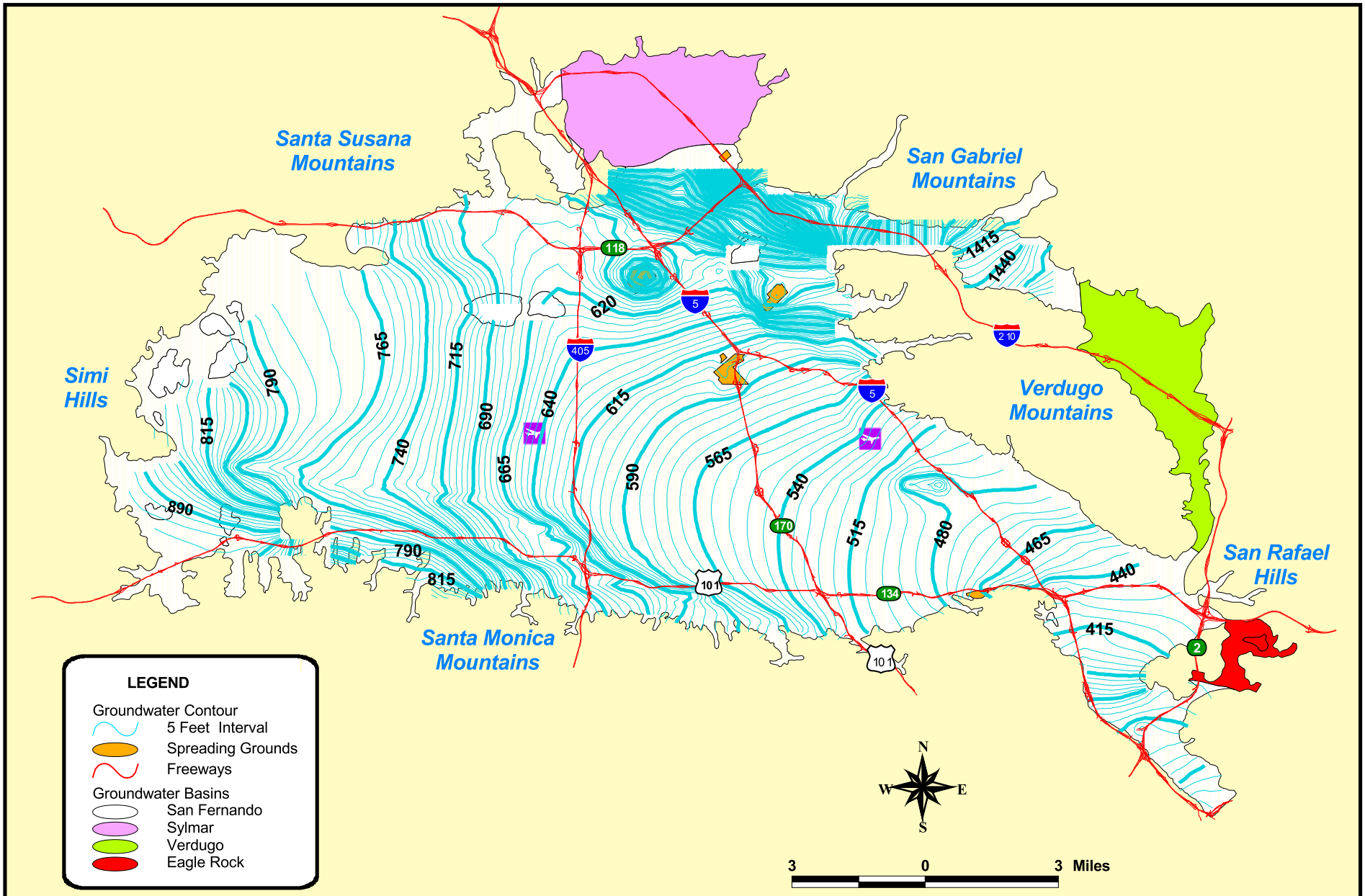
2010-11 Water Year
ULARA Watermaster
Report

Upper Los Angeles River Area: Major Well Fields and Spreading Grounds

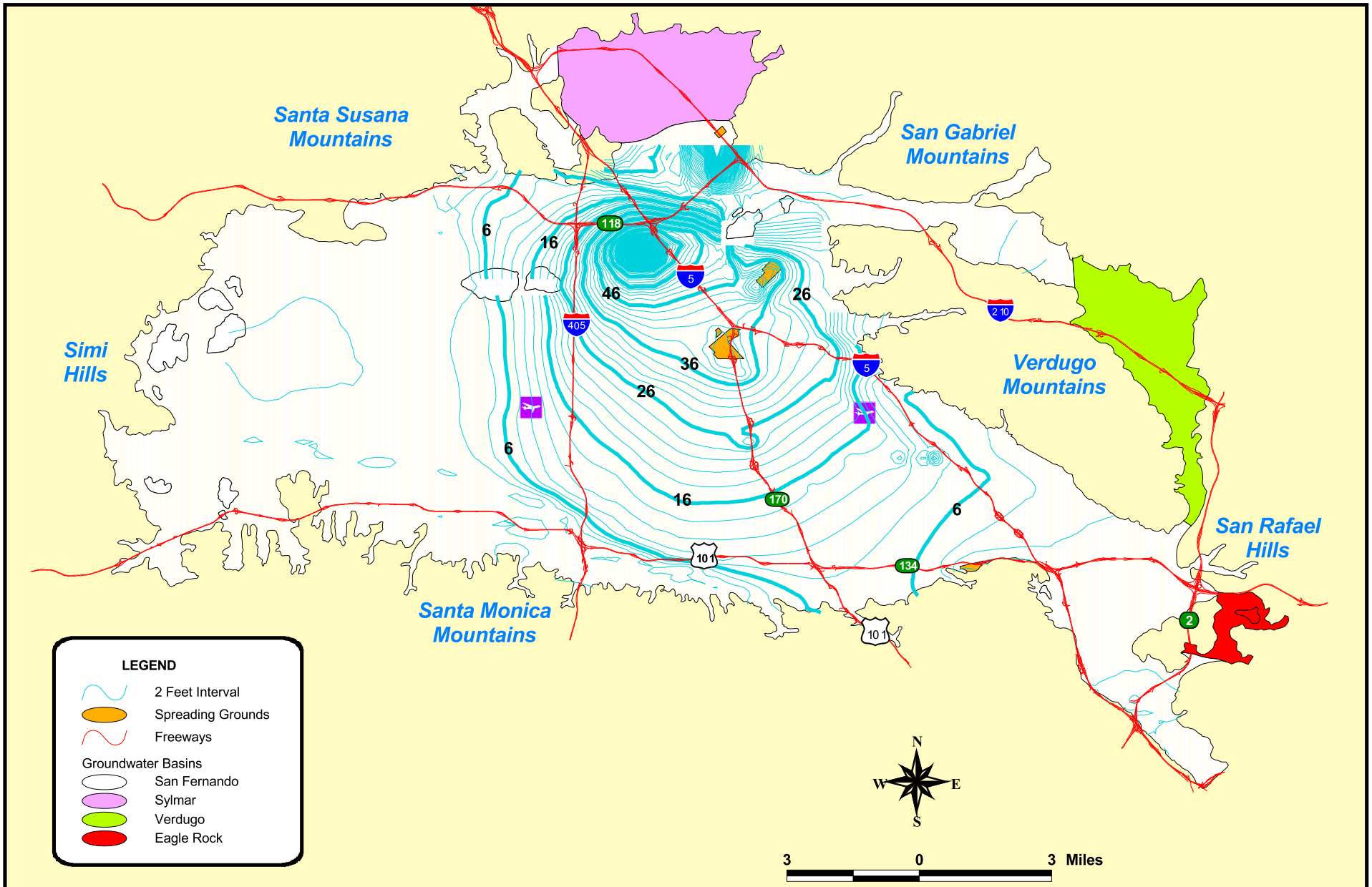
PLATE
8



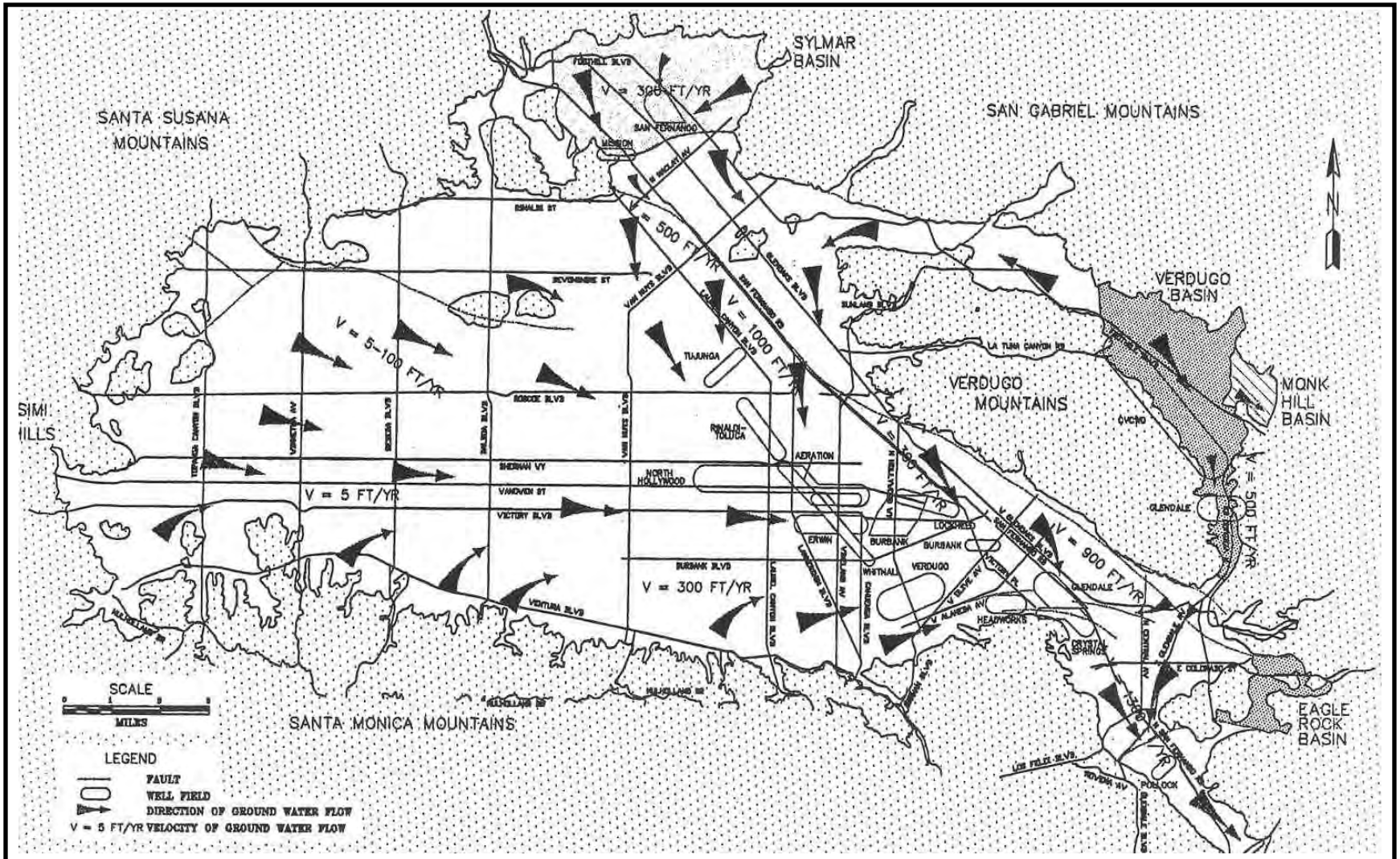
2010-11 Water Year ULARA Watermaster Report	Simulated Groundwater Elevation Contours Spring (April) 2011	PLATE 9



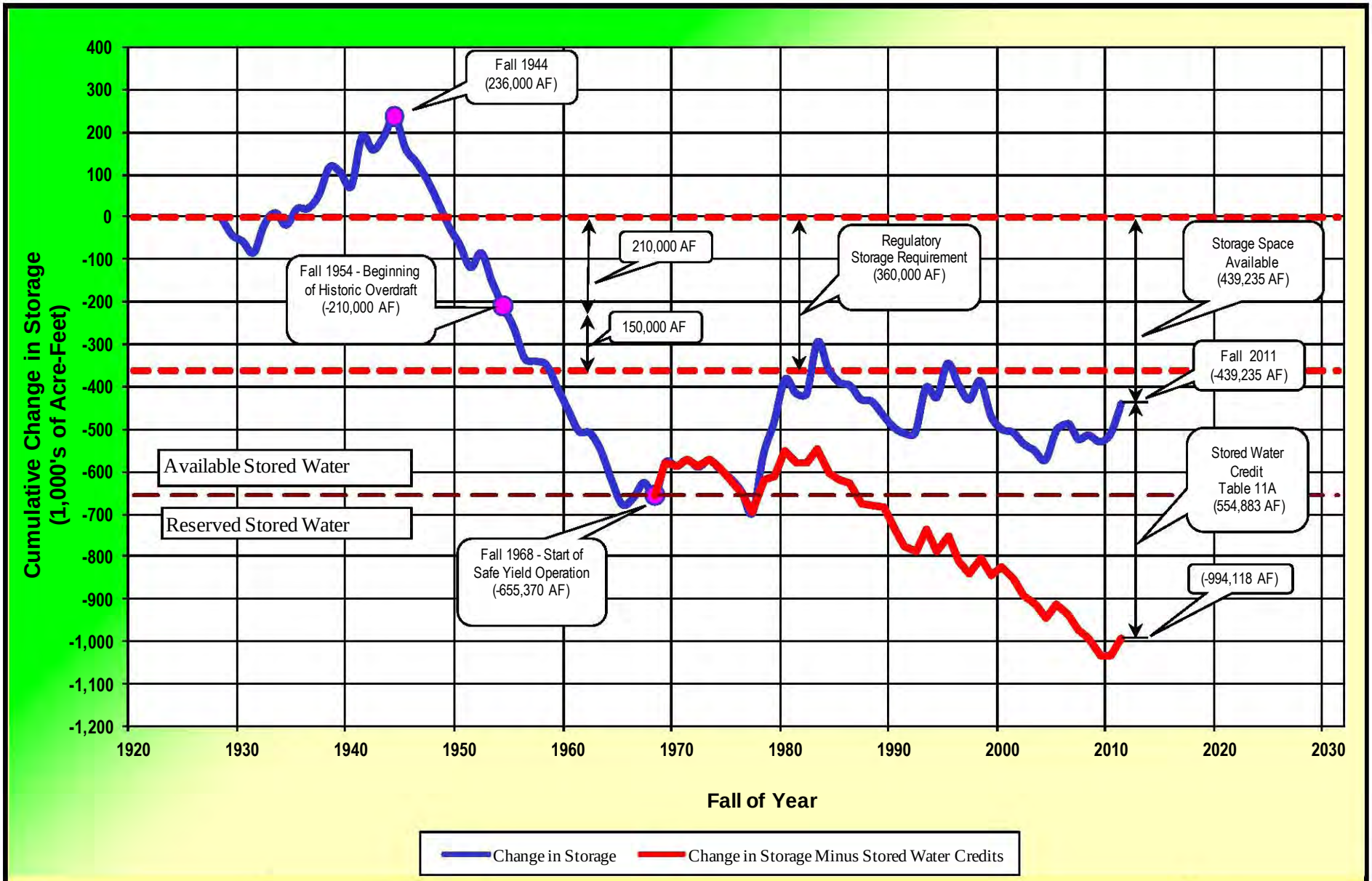
2010-11 Water Year ULARA Watermaster Report	Simulated Groundwater Elevation Contours Fall (September) 2011	PLATE 10



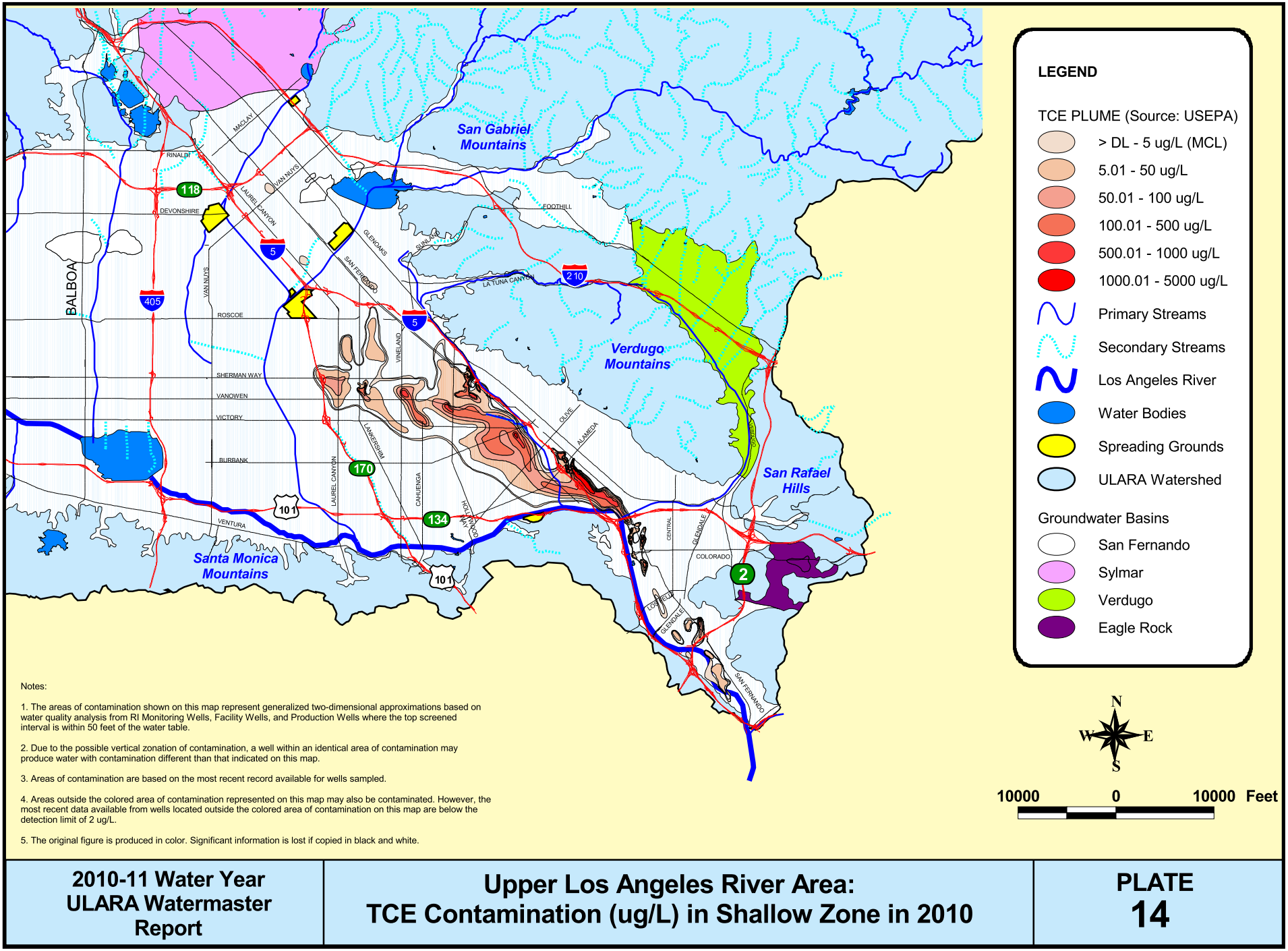
2010-11 Water Year ULARA Watermaster Report	Simulated Change in Groundwater Elevations Fall 2010 - Fall 2011	PLATE 11



2010-11 Water Year ULARA Watermaster Report	**Upper Los Angeles River Area: Estimated Directions and Velocities of Groundwater**	PLATE **12**



2010-11 Water Year **ULARA Watermaster Report**	**San Fernando Basin:** **Cumulative Change in Groundwater Storage**	**PLATE** **13**



Notes:

1. The areas of contamination shown on this map represent generalized two-dimensional approximations based on water quality analysis from RI Monitoring Wells, Facility Wells, and Production Wells where the top screened interval is within 50 feet of the water table.

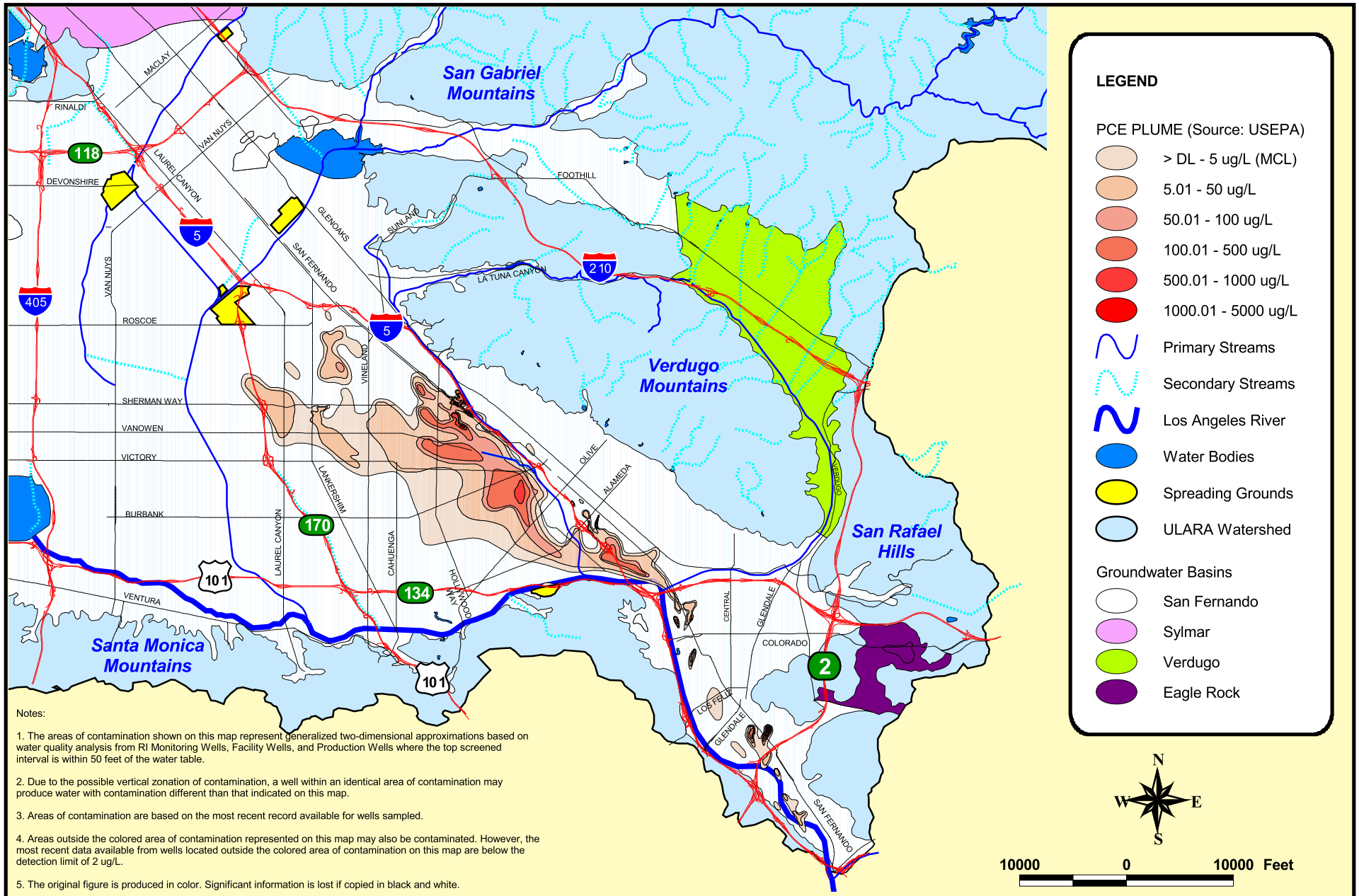
2. Due to the possible vertical zonation of contamination, a well within an identical area of contamination may produce water with contamination different than that indicated on this map.

3. Areas of contamination are based on the most recent record available for wells sampled.

4. Areas outside the colored area of contamination represented on this map may also be contaminated. However, the most recent data available from wells located outside the colored area of contamination on this map are below the detection limit of 2 ug/L.

5. The original figure is produced in color. Significant information is lost if copied in black and white.

2010-11 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: TCE Contamination (ug/L) in Shallow Zone in 2010	PLATE 14



Notes:

1. The areas of contamination shown on this map represent generalized two-dimensional approximations based on water quality analysis from RI Monitoring Wells, Facility Wells, and Production Wells where the top screened interval is within 50 feet of the water table.

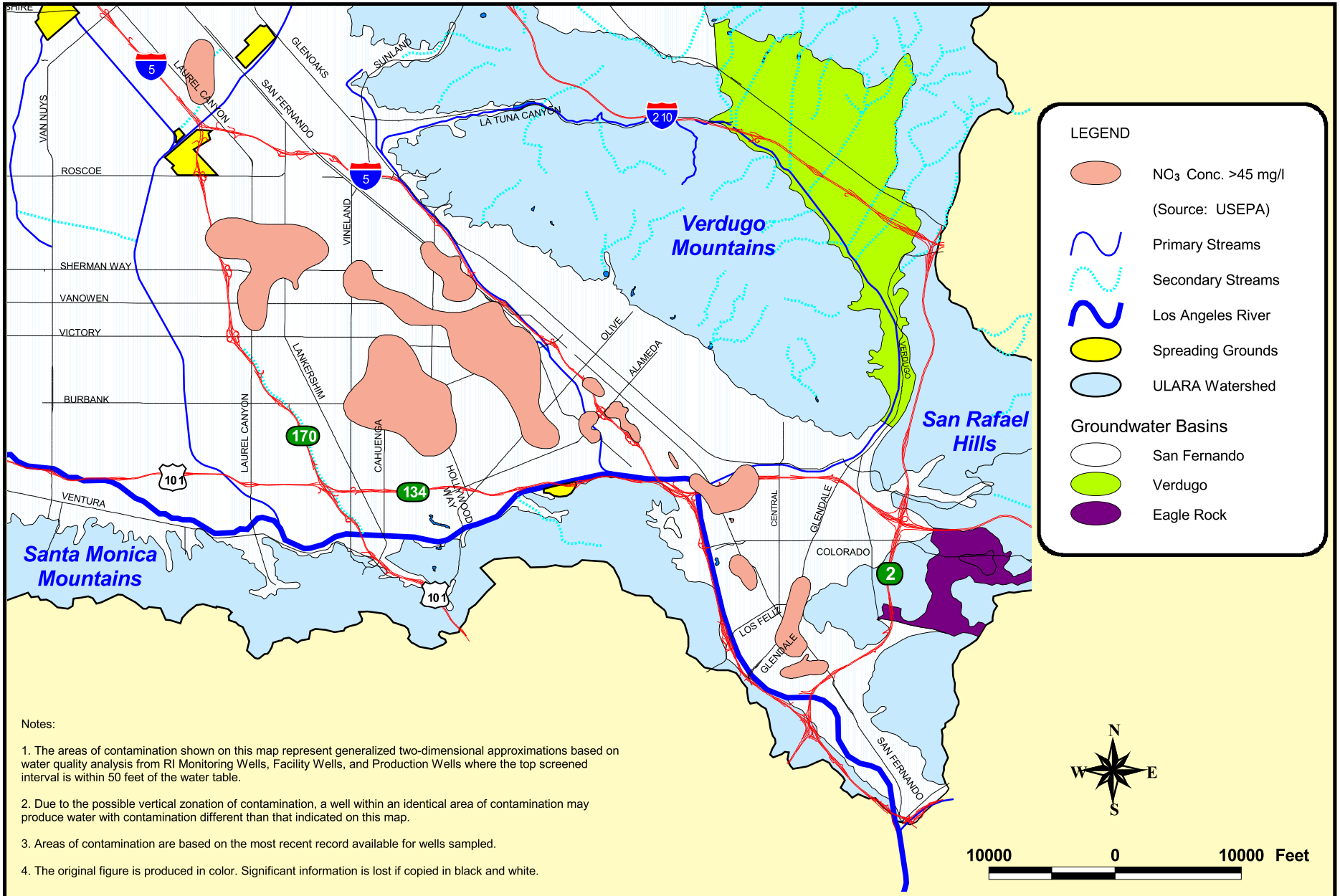
2. Due to the possible vertical zonation of contamination, a well within an identical area of contamination may produce water with contamination different than that indicated on this map.

3. Areas of contamination are based on the most recent record available for wells sampled.

4. Areas outside the colored area of contamination represented on this map may also be contaminated. However, the most recent data available from wells located outside the colored area of contamination on this map are below the detection limit of 2 ug/L.

5. The original figure is produced in color. Significant information is lost if copied in black and white.

2010-11 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: PCE Contamination (ug/L) in Shallow Zone in 2010	PLATE 15



Notes:

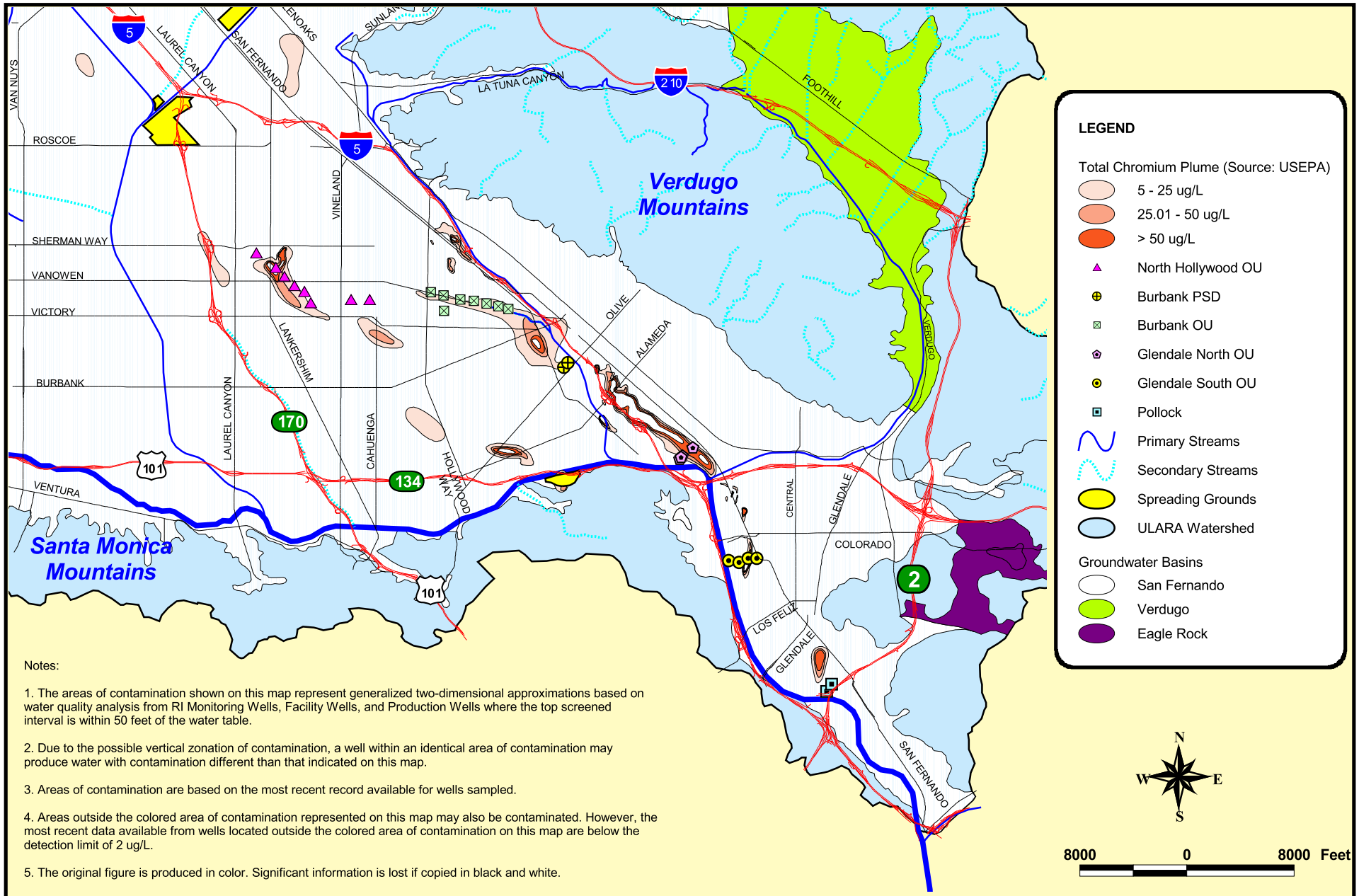
1. The areas of contamination shown on this map represent generalized two-dimensional approximations based on water quality analysis from RI Monitoring Wells, Facility Wells, and Production Wells where the top screened interval is within 50 feet of the water table.

2. Due to the possible vertical zonation of contamination, a well within an identical area of contamination may produce water with contamination different than that indicated on this map.

3. Areas of contamination are based on the most recent record available for wells sampled.

4. The original figure is produced in color. Significant information is lost if copied in black and white.

2010-11 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: NO_3 Contamination (mg/L) in Shallow Zone in 2010	PLATE 16



Notes:

1. The areas of contamination shown on this map represent generalized two-dimensional approximations based on water quality analysis from RI Monitoring Wells, Facility Wells, and Production Wells where the top screened interval is within 50 feet of the water table.

2. Due to the possible vertical zonation of contamination, a well within an identical area of contamination may produce water with contamination different than that indicated on this map.

3. Areas of contamination are based on the most recent record available for wells sampled.

4. Areas outside the colored area of contamination represented on this map may also be contaminated. However, the most recent data available from wells located outside the colored area of contamination on this map are below the detection limit of 2 ug/L.

5. The original figure is produced in color. Significant information is lost if copied in black and white.

2010-11 Water Year ULARA Watermaster Report	Upper Los Angeles River Area: Total Dissolved Chromium Contamination (ug/L) in Shallow Zone in 2010	PLATE 17

N
W E
S
1 0 1 2 3 4 5
Miles

Legend

Approximate Groundwater Basin Boundary

Approximate location of Standard Urban Stormwater Mitigation Plan (SUSMP) site

Sylmar Basin

Bedrock

Bedrock

Bedrock

Bedrock

San Fernando Basin

Verdugo Basin

Bedrock

Bedrock

Bedrock

Bedrock

Bedrock

Eagle Rock Basin

I-5

I-405

I-101

I-210

I-134

I-710

2010-2011 Water Year ULARA Wastermaster Report	Locations of SUSMP Projects San Fernando & Sylmar Basins	PLATE 18

APPENDIX A
GROUNDWATER EXTRACTIONS

2010-11 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	2010 Oct.	Nov.	Dec.	2011 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
San Fernando Basin														
A. W. Warner Properties														
Plaza Six		1.07	0.88	1.69	0.94	0.92	1.10	1.20	1.18	1.07	1.08	0.99	0.87	12.99
A. W. Warner Properties														
Plaza Three		0.69	0.64	1.34	0.80	0.79	0.95	1.01	1.00	0.95	0.90	0.83	0.71	10.61
Angelica Healthcare Services		(abandoned 12/97)												
3934A	M050A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Avalon Encino														
---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bally, Nico														
---	---	0.06	0.01	0.04	0.04	0.03	0.03	0.03	0.03	0.06	0.06	0.06	0.06	0.51
BFI Sunshine Canyon Landfill														
---	---	6.15	7.16	10.34	10.37	8.71	6.83	12.99	11.28	9.35	9.80	11.81	7.97	112.74
Boeing (Rockwell International)														
---	E-1 to E-9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boeing Santa Susana Field Laboratory														
Delta	WS-09A	0.00	0.08	0.21	1.45	0.84	0.00	0.00	0.41	3.64	0.00	2.58	1.13	10.34
	RD-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	0.00	0.08	0.21	1.45	0.84	0.00	0.00	0.41	3.64	0.00	2.58	1.13	10.34
Burbank, City of														
3841C	6A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3882P	7	0.00	0.48	0.00	0.00	0.55	0.00	0.00	0.78	0.00	0.00	0.63	0.00	2.44
3851E	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3851K	13A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3882T	15	0.00	0.43	0.00	0.00	0.52	0.00	0.00	0.42	0.00	0.00	0.38	0.00	1.75
3841G	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	0.00	0.91	0.00	0.00	1.07	0.00	0.00	1.20	0.00	0.00	1.01	0.00	4.19
Burbank Operable Unit														
3871L	VO-1	101.11	86.30	62.26	6.16	0.22	28.62	69.15	91.36	136.63	92.60	141.99	155.58	971.98
3861G	VO-2	128.39	122.03	80.87	95.84	0.89	38.35	1.61	15.89	79.41	115.66	112.96	11.64	803.54
3861K	VO-3	56.63	0.00	0.00	0.00	0.60	69.81	60.88	89.08	87.19	159.82	132.81	150.43	807.25
3861L	VO-4	66.70	80.26	60.85	152.53	154.30	120.96	144.41	145.65	140.24	142.30	114.83	142.55	1,465.58
3850X	VO-5	92.41	161.95	206.43	67.19	61.77	160.17	202.28	123.51	190.11	108.05	136.75	154.00	1,664.62
3850Z	VO-6	154.93	15.55	22.86	187.63	202.03	142.56	51.83	130.11	224.95	251.76	169.47	75.16	1,628.84
3850AB	VO-7	109.87	188.10	180.12	89.99	125.20	111.72	185.17	199.95	120.18	118.31	166.83	199.06	1,794.50
3851C	V0-8	182.33	193.97	119.70	46.31	157.65	88.58	153.91	150.62	102.11	0.00	0.00	62.57	1,257.75
	Total:	892.37	848.16	733.09	645.65	702.66	760.77	869.24	946.17	1,080.82	988.50	975.64	950.99	10,394.06
Douglas Emmett Management, LLC (Trillium)														
Well #1	---	1.98	1.70	0.96	0.00	1.41	1.78	2.08	2.18	2.06	2.17	2.26	2.18	20.76
Well #2	---	1.46	1.62	1.61	1.77	1.40	1.65	1.70	1.76	1.62	1.71	1.40	1.49	19.19
	Total:	3.44	3.32	2.57	1.77	2.81	3.43	3.78	3.94	3.68	3.88	3.66	3.67	39.95
Fassberg Construction														
N/A		0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
First Financial Plaza Site														
N/A	F.F.P.S.	0.03	0.08	0.64	1.55	1.19	2.59	3.87	2.29	1.54	1.22	1.19	1.13	17.32
Forest Lawn Memorial Park														
3947B	3	1.83	1.79	0.00	0.00	0.00	0.00	4.51	6.53	13.42	12.09	11.05	10.48	61.70
3947C	4	1.78	1.74	0.00	0.00	0.00	0.00	3.89	3.32	2.03	2.80	10.20	9.69	35.45
3947M	8	7.05	6.93	0.00	0.00	0.00	0.00	16.96	23.87	51.37	45.68	37.70	36.51	226.07
	Total:	10.66	10.46	0.00	0.00	0.00	0.00	25.36	33.72	66.82	60.57	58.95	56.68	323.22

2010-11 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	2010 Oct.	Nov.	Dec.	2011 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
							San Fernando Basin (cont'd)							
Glendale, City of														
3924N	STPT 1	0.00	0.32	0.30	0.00	0.12	0.19	0.00	0.09	0.05	1.31	0.28	0.26	2.92
3924R	STPT 2	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.13
GVENT	GVENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	0.00	0.36	0.30	0.00	0.12	0.19	0.00	0.09	0.05	1.31	0.37	0.26	3.05
Glendale North/South														
	GN-1	101.21	99.42	85.24	105.63	82.86	93.59	96.30	99.74	45.57	53.11	92.85	87.20	1,042.72
	GN-2	101.96	98.27	67.42	81.70	71.41	81.12	88.63	93.47	44.90	45.31	92.97	87.56	954.72
	GN-3	40.24	43.08	38.49	44.53	34.37	39.25	35.57	35.04	5.18	25.67	48.05	41.64	431.11
	GN-4	231.28	222.44	224.59	229.29	207.92	226.71	213.37	225.85	67.24	156.83	237.77	226.49	2,469.78
	GS-1	54.21	53.28	50.71	54.40	49.42	45.13	39.83	48.82	15.07	31.59	54.38	49.36	546.20
	GS-2	59.82	58.21	60.81	58.24	57.70	28.81	0.00	0.00	22.64	74.77	64.70	56.21	541.91
	GS-3	55.15	55.72	52.95	59.64	53.98	57.47	50.51	57.51	53.75	58.58	48.21	56.36	659.83
	GS-4	59.70	59.09	70.07	78.81	61.89	72.68	75.46	82.58	80.51	68.99	64.56	52.50	826.84
	Total:	703.58	689.51	650.28	712.24	619.55	644.76	599.67	643.01	334.86	514.85	703.49	657.32	7,473.12
Greeff Fabrics														
----	-----	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grigsby, Wood														
----	-----	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.03	0.03	0.03	0.03	0.02	0.27
Hallelujah Prayer Center of USA (Hathaway - successor to deMille)														
----	1	1.30	0.09	0.09	0.09	0.08	0.08	0.08	0.16	0.32	0.91	0.83	1.16	5.19
	2	0.35	0.43	0.43	0.43	0.38	0.38	0.38	0.16	0.03	2.23	1.47	0.91	7.58
	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	1.51	0.00	0.28	0.00	2.17
	Total:	1.65	0.52	0.52	0.52	0.46	0.46	0.46	0.70	1.86	3.14	2.58	2.07	14.94
Home Depot U.S.A., Inc.														
----		0.44	0.77	0.51	0.45	0.33	0.29	0.37	0.58	0.31	0.36	0.64	0.82	5.87
Honeywell International, Inc.														
----		11.55	19.15	15.65	12.68	14.62	14.86	14.29	2.98	7.71	13.19	17.68	15.22	159.58
Jose Diaz (010022)														
---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Khatcher Atamian (010006)														
----		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.12
Lopez-Zamarripa (010007T)														
---	---	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.08	0.62
Menasco/Coltec Site														
---	---	0.02	0.03	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.10
Mercedes Benz of Encino (Auto Stiegler)														
---	---	0.00	0.00	0.00	1.39	1.62	1.18	1.14	1.18	1.14	1.18	1.18	1.14	11.15
Metropolitan Transportation Authority														
---	1065	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
---	1075	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
---	1130	0.12	0.10	0.29	1.52	1.52	1.52	1.52	1.52	0.47	0.52	0.60	0.46	10.16
---	1140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
---	1150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
---	1070	1.07	0.82	0.95	0.24	0.24	0.24	0.24	0.24	1.90	1.64	1.99	1.77	11.34
---	1075	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	1.19	0.92	1.24	1.76	1.76	1.76	1.76	1.76	2.37	2.16	2.59	2.23	21.50

2010-11 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	2010 Oct.	Nov.	Dec.	2011 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
					San Fernando Basin (cont'd)									
Metropolitan Water District														
	Jensen	13.10	11.80	12.40	13.40	12.40	12.60	14.30	14.20	13.60	14.50	14.90	14.00	161.20
Micro Matics														
JEW	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JEW	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Middle Ranch (Successor to deMille)														
4931 x	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4940-1	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
new	5	0.00	0.01	0.00	0.02	0.02	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.10
4940-3	6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4940-2	7	0.00	0.14	0.10	0.30	0.25	0.31	0.51	0.63	0.77	0.53	0.57	0.80	4.91
new	8	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.08	0.01	0.01	0.00	0.15	0.26
Spring 1&2		0.01	0.02	0.01	0.01	0.01	0.02	0.03	0.05	0.04	0.03	0.04	0.03	0.30
	Total	0.01	0.17	0.11	0.33	0.28	0.35	0.58	0.76	0.82	0.57	0.61	0.98	5.57
Mobil Oil Corporation														
---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(NEIS) Northeast Interceptor Sewer City of LA BOS														
---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Raytheon (Formerly Hughes Missile Systems)														
----	-----	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Quaranto, John (010004)														
----	----	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.01
Sears Roebuck & Co. (Well disconnected 10/2000)														
3945	3945	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sportsmen's Lodge														
3785A	1	0.23	0.76	0.45	0.39	1.13	1.13	1.13	0.71	1.22	1.72	1.27	0.75	10.88
Stallcup, Jackosn & Susan (010021)														
---	---	0.05	0.02	0.01	0.01	0.01	0.02	0.07	0.04	0.09	0.10	0.11	0.05	0.58
3M-Pharmaceuticals														
---	---	3.99	2.68	4.41	4.17	3.69	4.05	4.09	4.82	4.30	4.14	4.55	4.21	49.10
Tesoro Petroleum Corporation														
---	MW-15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Toluca Lake Property Owners Association														
3845F	3845F	0.43	1.17	0.29	0.28	0.07	0.37	1.10	3.75	3.49	5.13	2.80	3.18	22.06
Valhalla Memorial Park and Mortuary														
3840K	4	0.00	48.32	6.09	16.25	8.33	8.19	27.87	36.29	50.05	74.19	63.23	48.39	387.20
Vulcan Materials														
4916A	3	15.95	14.13	4.51	15.55	13.67	10.72	13.51	9.85	27.16	18.78	24.68	18.25	186.76
4916	2	21.29	21.31	7.96	26.08	21.26	17.80	18.56	22.51	35.49	26.81	35.86	27.14	282.07
4916(x)	1	32.84	32.06	4.45	0.00	0.00	1.85	23.17	32.52	37.68	28.14	39.34	29.79	261.84
Sheldon Pond		52.97	15.80	29.32	25.99	22.51	40.70	48.71	3.48	53.18	48.27	25.01	8.18	374.12
	Total:	123.05	83.30	46.24	67.62	57.44	71.07	103.95	68.36	153.51	122.00	124.89	83.36	1,104.79

2010-11 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	2010 Oct.	Nov.	Dec.	2011 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
							San Fernando Basin (cont'd)							
Waste Management Disposal Services of Calif.														
4916D		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walt Disney Pictures and Television														
3874E	EAST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3874F	WEST	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3874G	NORTH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Walt Disney Riverside Building														
---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waterworks District No. 21														
---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wildlife Waystation														
Rehab Canyon		0.06	0.06	0.09	0.11	0.11	0.11	0.12	0.13	0.09	0.11	0.13	0.12	1.24
Foreman Hill Spring		0.15	0.16	0.25	0.21	0.26	0.26	0.36	0.43	0.27	0.27	0.26	0.25	3.13
	Total:	0.21	0.22	0.34	0.32	0.37	0.37	0.48	0.56	0.36	0.38	0.39	0.37	4.37
Los Angeles, City of														
Aeration (A)														
3800E	A-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810U	A-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810V	A-3	12.47	10.33	8.10	3.10	6.93	0.00	1.01	1.08	11.73	7.16	8.45	12.19	82.55
3810W	A-4	0.00	0.00	0.00	0.00	0.00	0.00	2.07	11.02	14.37	10.35	11.48	17.17	66.46
3820H	A-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3821J	A-6	40.93	36.78	34.66	11.80	36.02	0.00	26.35	36.87	44.33	31.04	32.39	48.44	379.61
3830P	A-7	36.32	32.76	20.09	5.85	2.98	0.00	7.30	40.56	50.67	34.32	36.27	54.66	321.78
3831K	A-8	3.83	0.00	0.00	3.17	41.67	0.00	29.91	41.94	51.88	34.00	37.28	55.99	299.67
	A Total:	93.55	79.87	62.85	23.92	87.60	0.00	66.64	131.47	172.98	116.87	125.87	188.45	1,150.07
Erwin (E)														
3831H	E-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3821I	E-2A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3831G	E-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3821F	E-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3831F	E-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3821H	E-6	8.22	0.39	0.00	0.00	68.76	39.51	0.00	0.25	0.44	65.01	280.10	196.72	659.40
3811F	E-10	113.50	0.28	0.00	0.00	47.54	27.73	0.00	0.11	0.32	52.46	195.57	143.11	580.62
	E Total:	121.72	0.67	0.00	0.00	116.30	67.24	0.00	0.36	0.76	117.47	475.67	339.83	1,240.02
Headworks (H)		Inactive Well Field												
3893Q	H-27A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3893R	H-28A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3893S	H-29A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3893T	H-30A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	H Total:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2010-11 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	2010 Oct.	Nov.	Dec.	2011 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
					San Fernando Basin (cont'd)									
North Hollywood (NH)														
3800	NH-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3780A	NH-4	149.59	101.42	159.76	0.00	0.00	0.00	0.28	37.42	63.34	174.98	154.16	138.25	979.20
3770	NH-7	23.62	15.84	24.27	0.00	0.00	0.09	0.11	7.23	0.00	36.36	32.25	27.43	167.20
3810	NH-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810A	NH-13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810B	NH-14A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3790B	NH-15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3820D	NH-16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3820C	NH-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3820B	NH-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3830D	NH-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3830C	NH-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3830B	NH-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3790C	NH-22	213.91	139.26	219.17	0.21	23.37	0.00	0.18	51.54	0.28	12.65	0.34	0.00	660.91
3790D	NH-23	0.80	0.00	0.55	0.00	0.00	0.48	0.32	0.30	0.00	0.00	0.00	0.00	2.45
3800C	NH-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3790F	NH-25	128.76	80.19	129.20	0.00	0.00	0.11	0.05	0.00	0.00	145.91	143.30	119.10	746.62
3790E	NH-26	46.81	0.00	0.46	0.00	0.00	0.51	0.46	0.14	0.00	89.78	245.06	163.11	546.33
3820F	NH-27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810K	NH-28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810L	NH-29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3800D	NH-30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3770C	NH-32	156.27	112.12	176.08	0.00	0.23	0.00	0.02	42.03	0.00	199.59	174.52	155.72	1,016.58
3780C	NH-33	0.09	0.00	0.18	0.00	0.00	0.00	0.32	0.00	0.00	0.37	0.11	0.11	1.18
3790G	NH-34	0.73	0.00	101.19	0.00	35.26	0.00	0.30	80.33	136.27	355.51	316.90	266.32	1,292.81
3830N	NH-35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3790H	NH-36	0.60	0.00	0.73	0.00	0.00	0.00	0.51	1.49	0.00	0.53	0.51	18.62	22.99
3790J	NH-37	0.37	0.00	0.67	0.00	0.85	0.00	0.34	0.21	0.00	0.44	0.32	0.23	3.43
3810M	NH-38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810N	NH-39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810P	NH-40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810Q	NH-41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3810R	NH-42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3790K	NH-43A	1.06	0.00	0.94	0.37	0.80	0.00	0.87	0.32	0.00	0.69	0.34	0.30	5.69
3790L	NH-44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3790M	NH-45	1.95	0.00	1.12	0.00	0.00	0.00	1.72	0.51	0.00	1.19	0.53	371.40	378.42
	NH Total:	724.56	448.83	814.32	0.58	60.51	1.19	5.48	221.52	199.89	1,018.00	1,068.34	1,260.59	5,823.81
Pollock (P)														
3959E	P-4	113.15	168.32	203.12	174.15	190.05	0.00	26.42	272.53	276.14	200.59	190.37	5.37	1,820.21
3958H	P-6	72.87	175.57	189.33	158.15	172.38	0.00	22.70	172.70	7.35	183.68	147.29	5.04	1,307.06
3958J	P-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	P Total:	186.02	343.89	392.45	332.30	362.43	0.00	49.12	445.23	283.49	384.27	337.66	10.41	3,127.27

2010-11 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	2010 Oct.	2010 Nov.	2010 Dec.	2011 Jan.	2011 Feb.	2011 Mar.	2011 Apr.	2011 May	2011 June	2011 July	2011 Aug.	2011 Sept.	TOTAL
San Fernando Basin (cont'd)														
Rinaldi-Toluca (RT)														
4909E	RT-1	0.00	1.15	0.00	0.00	0.00	0.00	0.00	0.55	0.48	0.44	0.00	0.00	2.62
4898A	RT-2	15.22	484.04	432.83	0.00	0.00	0.00	0.00	0.76	0.60	0.39	0.00	0.00	933.84
4898B	RT-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.06	0.00	0.00	0.00	0.00	95.06
4898C	RT-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	358.54	270.09	262.51	0.00	0.00	891.14
4898D	RT-5	376.74	181.40	460.70	0.00	0.00	0.00	0.00	0.55	30.28	243.37	0.00	0.00	1,293.04
4898E	RT-6	14.16	29.13	1.88	0.00	0.00	0.00	0.00	0.34	377.13	244.01	0.00	0.00	666.65
4898F	RT-7	0.46	0.00	0.94	0.00	0.00	0.00	0.00	0.57	0.44	0.00	0.00	0.00	2.41
4898G	RT-8	217.70	0.00	2.13	0.00	0.00	0.00	0.00	0.48	15.98	268.25	0.00	0.00	504.54
4898H	RT-9	89.74	0.00	0.44	0.00	0.00	0.00	0.00	109.96	264.72	255.65	0.00	0.00	720.51
4909G	RT-10	0.00	1.06	0.00	0.00	0.00	0.00	0.00	0.94	0.60	0.39	0.00	0.00	2.99
4909K	RT-11	0.00	1.08	0.00	0.00	0.00	0.00	0.00	0.73	0.64	0.32	0.00	0.00	2.77
4909H	RT-12	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.60	0.48	0.41	0.00	0.00	2.36
4909J	RT-13	0.00	1.17	0.00	0.00	0.00	0.00	0.00	0.51	0.64	0.46	0.00	0.00	2.78
4909L	RT-14	0.00	0.99	0.00	0.00	0.00	0.00	0.00	0.62	0.55	0.39	0.00	0.00	2.55
4909M	RT-15	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.18	0.02	0.05	0.00	0.00	0.32
	RT Total:	714.02	700.96	898.92	0.00	0.00	0.00	0.00	570.39	962.65	1,276.64	0.00	0.00	5,123.58
Tujunga (T)														
4887C	T-1	315.20	509.34	320.25	193.30	658.13	345.82	0.00	1.54	0.11	0.00	138.04	247.91	2,729.64
4887D	T-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.00	287.65	434.62	581.06	1,303.70
4887E	T-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.00	79.06	489.69	559.37	1,128.60
4887F	T-4	0.96	0.46	0.48	0.00	155.26	0.69	0.00	2.02	0.00	171.58	282.51	0.51	614.47
4887G	T-5	2.16	1.42	1.49	0.00	450.16	421.90	0.87	160.86	242.19	1.52	242.29	1.54	1,526.40
4887H	T-6	635.35	615.82	604.75	417.52	497.45	613.52	497.45	530.62	476.63	498.28	603.26	498.14	6,488.79
4887J	T-7	490.75	442.72	458.77	397.04	441.51	599.20	473.05	504.59	423.07	458.38	558.17	452.11	5,699.36
4887K	T-8	1.22	1.03	1.29	0.00	95.22	112.30	0.90	164.83	36.04	167.95	298.60	1.33	880.71
4886B	T-9	107.23	0.94	0.60	0.00	0.00	0.69	0.39	0.55	0.00	1.01	0.57	0.62	112.60
4886C	T-10	0.00	0.00	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.03	0.53	2.32
4886D	T-11	1.24	0.85	0.00	0.00	0.00	1.77	0.28	0.41	0.00	1.17	0.41	0.51	6.64
4886E	T-12	565.08	527.89	0.94	151.12	474.45	273.35	538.73	284.44	246.65	236.80	622.52	518.20	4,440.17
	T Total:	2,119.19	2,100.47	1,389.33	1,158.98	2,772.18	2,369.24	1,511.67	1,650.71	1,424.69	1,903.40	3,671.71	2,861.83	24,933.40
Verdugo (V)														
3863H	V-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3863P	V-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3863J	V-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3863L	V-11	161.13	0.25	0.18	0.00	76.72	45.02	0.00	0.16	0.11	82.99	307.74	232.99	907.29
3853G	V-13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3854F	V-22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3844R	V-24	151.08	0.21	0.21	0.00	75.44	31.98	0.00	0.25	0.34	75.02	270.55	202.00	807.08
	V Total:	312.21	0.46	0.39	0.00	152.16	77.00	0.00	0.41	0.45	158.01	578.29	434.99	1,714.37

2010-11 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	2010 Oct.	Nov.	Dec.	2011 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
							San Fernando Basin (cont'd)							
Whitnall (W)														
3820E	W-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3821B	W-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3821C	W-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3821D	W-4	0.71	0.28	0.34	0.25	0.51	0.14	0.00	0.32	0.55	0.51	0.00	0.00	3.61
3821E	W-5	0.44	0.18	0.23	0.23	0.00	0.44	0.14	0.14	0.32	0.34	0.00	0.00	2.46
3831J	W-6A	140.29	0.18	0.16	0.16	79.45	46.92	0.00	0.00	0.32	71.01	242.01	251.97	832.47
3832K	W-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3832L	W-8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3832M	W-9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3842E	W-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	W Total:	141.44	0.64	0.73	0.64	79.96	47.50	0.14	0.46	1.19	71.86	242.01	251.97	838.54
	Los Angeles, City of Total:	4,412.71	3,675.79	3,558.99	1,516.42	3,631.14	2,562.17	1,633.05	3,020.55	3,046.10	5,046.52	6,499.55	5,348.07	43,951.06
	San Fernando Basin Total:	6,186.84	5,407.31	5,047.83	3,010.89	5,072.43	4,099.61	3,321.86	4,801.64	4,789.86	6,871.54	8,497.64	7,205.75	64,313.18

							Sylmar Basin							
Los Angeles, City of														
Plant	Mission													
4840J	5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4840K	6	0.00	0.00	0.00	1.42	0.00	0.00	0.00	2.43	168.71	226.74	221.85	212.81	833.96
4840S	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	52.18	59.39	17.75	0.00	129.96
		0.00	0.00	0.00	1.42	0.00	0.00	0.00	3.07	220.89	286.13	239.60	212.81	963.92
Santiago Estates														
5998	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
							Sylmar Basin (cont'd)							
San Fernando, City of														
5969D	2A	226.43	198.64	181.10	187.88	182.68	213.74	242.64	267.19	272.98	281.41	287.22	274.80	2,816.71
5959	3	0.03	0.00	0.00	0.10	0.00	0.04	0.03	0.00	0.00	0.17	0.03	0.06	0.46
5969	4	25.90	30.76	29.60	30.92	14.97	0.97	1.72	1.07	1.55	44.00	44.47	38.78	264.71
5968	7A	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.11
	Total:	252.36	229.40	210.70	218.90	197.65	214.75	244.50	268.26	274.53	325.58	331.72	313.64	3,081.99
	Sylmar Basin Total:	252.36	229.40	210.70	220.32	197.65	214.75	244.50	271.33	495.42	611.71	571.32	526.45	4,045.91

2010-11 WATER YEAR
(acre-feet)

LACDPW Well No.	Owner Well No.	2010 Oct.	Nov.	Dec.	2011 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL
							Verdugo Basin							
Crescenta Valley County Water District														
5058B	1	14.61	22.05	15.12	15.10	11.37	12.34	3.83	7.92	11.94	12.96	11.91	9.09	148.24
5036A	2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5058H	5	0.03	0.03	0.02	0.49	14.07	32.27	37.72	66.20	65.38	56.21	66.79	62.86	402.07
5058	6	8.95	6.22	8.95	10.61	9.50	9.22	9.69	10.04	4.81	9.08	9.27	8.60	104.94
5047B	7	31.95	32.47	23.58	25.94	14.31	11.34	6.70	13.05	23.88	25.15	20.94	15.33	244.64
5069J	8	29.26	30.54	28.91	31.01	26.63	32.01	30.30	31.56	30.32	30.67	32.90	30.62	364.73
5047D	9	18.68	17.58	13.11	14.50	7.87	6.82	3.72	7.75	13.63	14.62	12.30	9.09	139.67
5058D	10	29.50	28.73	26.29	27.94	23.84	25.84	25.22	26.95	28.27	26.46	24.96	22.72	316.72
5058E	11	1.40	8.68	37.84	41.47	39.05	42.42	36.33	40.86	41.44	39.15	40.52	36.45	405.61
5058J	12	31.52	27.86	29.41	29.97	26.75	32.02	31.04	32.51	32.76	31.83	32.12	28.84	366.63
5069F	14	37.29	32.68	31.34	34.06	28.74	3.32	32.60	31.33	21.35	36.15	35.27	30.85	354.98
	15	0.02	0.02	0.02	0.01	0.01	3.62	4.37	2.38	0.02	3.89	4.38	3.18	21.92
	PICKENS (CVWD)	3.97	3.79	3.97	3.88	2.36	4.01	3.99	4.29	4.22	4.34	4.31	4.14	47.27
	Total:	207.18	210.65	218.56	234.98	204.50	215.23	225.51	274.84	278.02	290.51	295.67	261.77	2,917.42
Knowltons														
	PICKENS	0.82	0.80	0.80	0.82	0.74	0.82	0.80	0.80	0.79	0.79	0.82	0.82	9.62
Glendale, City of														
3961-3971	GL3-4	78.01	51.47	48.09	54.39	49.12	54.19	29.77	85.89	89.49	92.47	92.47	89.49	814.85
3970	GL-6	44.79	40.27	39.32	45.03	42.50	37.27	27.45	44.78	47.15	49.85	48.80	46.05	513.26
---	VPCKP	32.26	27.18	28.97	31.39	30.47	33.09	36.29	31.72	34.52	36.88	35.07	31.76	389.60
---	MM-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	FHM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.32	25.80	25.18	23.82	21.75	108.87
	Total:	155.06	118.92	116.38	130.81	122.09	124.55	93.51	174.71	196.96	204.38	200.16	189.05	1,826.58
Verdugo Basin Total:		363.06	330.37	335.74	366.61	327.33	340.60	319.82	450.35	475.77	495.68	496.65	451.64	4,753.62
							Eagle Rock Basin							
Sparkletts														
3987A	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3987B	2	4.59	4.76	3.53	4.55	3.57	5.53	2.58	0.00	3.10	5.03	5.47	4.41	47.12
3987F	3	3.10	2.96	2.46	3.05	2.35	3.70	2.41	2.85	3.38	3.53	3.91	2.98	36.68
3987G	4	7.01	6.46	5.26	6.34	5.22	8.40	7.58	10.29	12.97	11.00	12.02	8.95	101.50
	Total:	14.70	14.18	11.25	13.94	11.14	17.63	12.57	13.14	19.45	19.56	21.40	16.34	185.30
Eagle Rock Basin Total:		14.70	14.18	11.25	13.94	11.14	17.63	12.57	13.14	19.45	19.56	21.40	16.34	185.30

ULARA Total:		6,816.96	5,981.26	5,605.52	3,611.76	5,608.55	4,672.59	3,898.75	5,536.46	5,780.50	7,998.49	9,587.01	8,200.18	73,298.01

APPENDIX B
KEY GAGING STATIONS OF SURFACE RUNOFF

Los Angeles County Dept of Public Works

USDAY V91 Output 10/26/2011

Summary Report

Site: F57C Los Angeles River Above Arroyo Seco
USGS #:
Beginning Date: 10/01/2010
Ending Date: 09/30/2011

10/26/11

Daily Mean Discharge in Cubic feet/second Water Year Oct 2010 to Sep 2011

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91.7	93.3	90.1	130	164	85.6	138	86.4	97.0	91.0	88.7	89.6
2	90.9	90.1	86.6	753	157	84.5	142	91.8	98.6	89.5	88.6	88.7
3	92.0	88.0	88.4	383	153	177	135	93.3	98.1	93.1	89.9	90.4
4	114	90.9	90.9	89.4	158	86.1	336	97.6	101	90.8	87.7	89.6
5	117	90.8	195	87.5	175	86.3	594	93.8	106	91.5	87.6	87.0
6	631	92.5	623	79.9	187	83.1	139	94.3	110	91.8	88.6	84.7
7	104	93.1	93.8	79.9	209	87.3	107	95.6	106	91.4	90.1	82.9
8	102	279	89.3	80.1	225	84.4	98.5	98.6	107	92.9	84.9	87.6
9	100	97.6	90.7	79.0	232	84.3	97.2	97.0	107	93.2	86.0	96.7
10	99.0	96.7	93.6	80.8	237	85.9	108	98.6	107	96.0	87.1	102
11	98.1	97.3	94.9	80.0	255	89.5	111	99.5	110	93.1	85.9	99.5
12	101	95.6	96.2	80.5	248	91.6	110	98.7	112	94.8	90.3	92.4
13	104	97.2	97.8	82.3	253	96.5	117	97.4	112	95.3	89.2	95.2
14	105	98.0	100	82.1	266	102	93.6	98.3	102	94.6	92.7	98.7
15	107	99.4	104	81.5	288	105	97.2	129	104	96.8	88.6	101
16	106	99.3	107	83.4	2120	108	100	94.9	102	96.3	88.7	98.2
17	114	101	238	85.1	171	101	107	211	105	97.1	86.4	100
18	133	102	2850	86.7	1660	88.7	108	456	102	93.2	84.6	104
19	151	105	3840	87.5	1400	379	107	98.7	103	93.3	89.5	92.7
20	104	797	3100	88.4	396	11500	110	94.0	101	91.9	92.7	84.2
21	116	796	1400	89.2	95.2	3170	106	93.5	99.5	82.4	93.8	88.4
22	113	101	4160	90.8	94.1	390	103	94.9	98.7	82.4	89.4	92.0
23	105	95.1	1000	91.9	92.3	1000	104	95.1	98.8	87.9	90.2	99.0
24	105	95.1	606	94.1	92.7	774	108	95.3	97.1	89.9	88.0	99.0
25	377	92.6	595	102	1020	1360	98.6	94.8	96.9	83.6	75.5	102
26	103	90.9	1020	104	2160	413	88.3	95.7	97.7	80.8	84.1	102
27	102	145	110	105	126	280	85.6	94.3	93.5	77.7	87.3	98.6
28	104	106	82.2	108	104	253	91.4	95.7	93.9	88.2	88.4	103
29	99.8	91.2	956	120	------	98.4	84.2	96.4	93.0	91.3	86.9	99.2
30	682	90.4	91.2	420	------	97.8	83.3	94.6	91.6	88.1	89.6	99.0
31	96.6	------	111	162	------	120	------	95.2	------	89.8	93.0	------
Total	4668.1	4507.1	22300.7	4167.1	12738.3	21562.0	3907.9	3470.0	3051.4	2809.7	2734.0	2847.3
Mean	151	150	719	134	455	696	130	112	102	90.6	88.2	94.9
Max	682	797	4160	753	2160	11500	594	456	112	97.1	93.8	104
Min	90.9	88.0	82.2	79.0	92.3	83.1	83.3	86.4	91.6	77.7	75.5	82.9
Acre-Ft	9260	8940	44230	8270	25270	42770	7750	6880	6050	5570	5420	5650

Wtr Year 2011	Total	88763.6	Mean	243	Max	11500	Min	75.5	Inst Max	28600	Acre-Ft	176100
Cal Year 2010	Total	92055.0	Mean	252	Max	5890	Min	68.6	Inst Max	32500	Acre-Ft	182600

Los Angeles County Dept of Public Works

USDAY V91 Output 10/26/2011

Summary Report

Site: F118B Pacoima Creek Flume below Pacoima Dam
USGS #:
Beginning Date: 10/01/2010
Ending Date: 09/30/2011

Daily Mean Discharge in Cubic feet/second Water Year Oct 2010 to Sep 2011

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	0	0	63.5	0	85.6	161	17.6	14.7	7.35	0	16.8
2	0	0	0	63.5	0	96.1	162	17.8	16.1	6.93	0	26.0
3	0	1.78	0	63.5	35.8	42.8	164	25.0	16.5	7.09	0	26.4
4	0	0	0	63.5	56.0	42.2	138	26.3	16.8	6.01	0	26.4
5	0	0	0	63.2	56.0	60.4	112	26.3	17.1	5.40	0	26.2
6	0	0	0	90.8	55.5	55.0	81.9	26.3	17.4	10.5	0	26.1
7	0	0	0	105	54.2	101	70.6	26.3	17.8	12.9	0	26.0
8	0	.18	14.1	104	55.2	124	75.4	26.2	18.1	12.8	0	25.7
9	0	0	0	105	18.5	122	80.5	26.4	13.5	12.8	6.51	25.6
10	0	0	0	145	0	90.2	85.5	26.5	11.1	12.7	8.25	25.3
11	0	0	0	120	0	75.1	88.6	26.6	11.4	12.7	12.6	25.2
12	0	0	0	43.5	0	73.3	84.1	26.7	11.7	15.6	15.7	25.0
13	0	0	0	61.9	0	71.6	70.6	26.7	11.3	16.6	15.5	24.9
14	0	0	0	71.6	0	69.9	66.4	26.7	9.41	15.5	15.4	24.8
15	0	0	0	71.3	0	68.2	61.3	26.7	8.05	15.1	19.4	24.6
16	0	0	0	70.8	.09	70.9	56.1	26.7	8.06	15.1	15.4	24.4
17	0	0	.23	69.7	0	21.9	35.1	21.6	8.10	15.1	0	24.1
18	0	0	.82	69.2	.34	0	23.9	21.5	8.10	15.1	0	23.8
19	0	0	1.38	40.4	.24	.08	30.3	21.5	8.09	15.1	0	23.5
20	0	.18	15.1	52.6	.04	.95	19.2	21.5	8.10	15.1	0	23.2
21	0	.12	277	70.1	0	253	20.1	21.5	8.10	15.1	0	23.9
22	0	0	268	69.6	64.0	245	20.3	21.5	8.10	15.1	17.2	24.8
23	0	0	276	66.9	98.2	159	20.5	18.0	8.10	15.1	25.6	24.8
24	0	0	247	109	57.2	134	20.5	16.5	8.10	15.0	13.9	24.8
25	0	0	196	112	.66	145	38.0	16.5	8.10	15.0	0	24.7
26	0	0	195	34.3	.21	149	46.0	16.5	8.11	15.0	0	7.89
27	0	0	129	0	.78	152	46.1	16.5	8.10	15.0	0	0
28	0	0	72.0	0	50.5	181	34.4	16.5	6.82	15.0	0	0
29	0	0	73.7	0	------	200	16.9	16.5	6.78	4.59	0	0
30	.26	0	74.4	.20	------	201	17.3	16.5	8.10	0	0	0
31	0	------	71.7	0	------	182	------	16.5	------	0	1.83	------
Total	0.26	2.26	1911.43	2000.10	603.46	3272.23	1946.6	683.9	329.82	370.37	167.29	624.89
Mean	.008	.075	61.7	64.5	21.6	106	64.9	22.1	11.0	11.9	5.40	20.8
Max	.26	1.78	277	145	98.2	253	164	26.7	18.1	16.6	25.6	26.4
Min	0	0	0	0	0	0	16.9	16.5	6.78	0	0	0
Acre-Ft	.52	4.5	3790	3970	1200	6490	3860	1360	654	735	332	1240

Wtr Year 2011	Total	11912.61	Mean	32.6	Max	277	Min	0	Inst Max	613	Acre-Ft	23630
Cal Year 2010	Total	7096.47	Mean	19.4	Max	277	Min	0	Inst Max	290	Acre-Ft	14080

Los Angeles County Dept of Public Works

USDAY V91 Output 10/27/2011

Summary Report

Site: P300 Los Angeles River at Tujunga Avenue
USGS #:
Beginning Date: 10/01/2010
Ending Date: 09/30/2011

Daily Mean Discharge in Cubic feet/second Water Year Oct 2010 to Sep 2011

JL 11/1/11

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56.1	69.5	53.1	442	102	104	1200	57.0	52.8	53.6	48.1	54.3
2	56.1	64.1	56.1	983	82.2	86.3	1040	54.9	52.5	53.6	48.4	60.1
3	56.0	61.7	61.4	504	79.5	179	823	53.0	52.1	53.6	48.4	59.9
4	57.3	68.2	62.8	114	76.8	100	1050	49.3	52.1	52.9	48.4	59.7
5	66.2	63.0	236	106	78.1	86.4	1010	45.6	52.5	52.5	48.4	59.5
6	713	61.8	447	76.2	79.8	80.6	342	47.3	54.3	52.3	48.4	59.3
7	118	60.0	63.6	75.8	77.5	95.4	275	47.9	54.7	51.9	48.4	59.1
8	64.1	307	59.4	76.0	76.9	84.5	220	47.9	54.7	51.9	48.4	58.9
9	60.8	66.4	57.6	73.0	75.2	79.5	209	49.9	54.5	51.9	48.4	58.7
10	57.8	65.0	59.6	73.1	73.4	77.6	239	54.6	54.1	51.9	48.4	60.7
11	54.6	64.6	60.3	71.0	72.6	81.0	200	53.2	54.1	51.5	48.4	65.4
12	57.3	61.9	58.3	73.7	74.1	77.3	197	53.9	54.3	51.4	48.9	64.8
13	57.2	62.8	58.2	76.5	72.8	80.9	146	55.4	55.5	51.4	49.5	63.9
14	55.1	62.7	60.1	67.0	77.9	83.5	71.9	53.9	55.8	51.4	50.0	63.7
15	50.6	64.1	67.4	64.0	97.3	85.9	68.4	97.8	55.8	51.4	50.4	63.2
16	50.7	62.6	66.9	68.0	1090	83.6	69.7	53.8	55.8	51.4	50.8	63.3
17	50.8	60.4	225	71.6	89.5	86.8	80.5	171	55.8	51.4	51.2	63.4
18	61.3	62.5	2490	72.1	1650	86.5	76.9	438	55.8	51.4	50.9	63.6
19	237	63.0	3430	75.1	955	437	76.7	89.4	55.8	51.0	50.9	63.3
20	110	773	2570	74.9	355	10600	77.8	70.2	55.8	50.9	51.3	60.4
21	49.3	738	1320	68.9	88.0	3770	77.2	62.7	55.8	47.4	51.3	57.4
22	58.6	78.5	3420	69.6	85.3	1340	76.0	60.6	55.8	43.0	51.2	56.2
23	58.6	65.4	1380	70.3	80.2	2120	77.6	59.9	55.3	42.9	51.1	56.3
24	69.3	62.9	1160	66.9	79.3	1740	83.0	59.1	55.2	43.6	51.0	57.1
25	439	59.4	1050	79.9	858	2230	65.3	58.2	54.7	44.4	49.3	58.3
26	65.4	58.0	1020	67.0	1690	1320	48.6	57.5	54.7	44.6	47.9	59.6
27	69.9	57.8	272	67.6	438	1080	54.6	56.0	54.2	44.9	47.9	60.6
28	73.5	68.6	84.3	68.6	239	930	57.9	54.9	54.1	45.9	47.9	61.6
29	62.1	54.3	927	69.2	------	455	54.7	54.2	54.1	46.7	47.9	60.3
30	683	51.9	129	306	------	444	56.7	53.7	53.6	47.1	47.9	54.5
31	74.1	------	369	87.2	------	721	------	53.3	------	47.5	48.1	------
Total	3792.8	3519.1	21374.1	4258.2	8893.4	28825.8	8124.5	2274.1	1636.3	1537.3	1527.5	1807.1
Mean	122	117	689	137	318	930	271	73.4	54.5	49.6	49.3	60.2
Max	713	773	3430	983	1690	10600	1200	438	55.8	53.6	51.3	65.4
Min	49.3	51.9	53.1	64.0	72.6	77.3	48.6	45.6	52.1	42.9	47.9	54.3
Acre-Ft	7520	6980	42390	8450	17640	57180	16110	4510	3250	3050	3030	3580

Wtr Year 2011	Total	87570.2	Mean	240	Max	10600	Min	42.9	Inst Max	29300	Acre-Ft	173700
Cal Year 2010	Total	74441.5	Mean	204	Max	4500	Min	42.8	Inst Max	20500	Acre-Ft	147700

Los Angeles County Dept of Public Works

USDAY V91 Output 10/20/2011

Summary Report

Site: F168 Big Tujunga Creek Below Big Tujunga Dam
USGS #:
Beginning Date: 10/01/2010
Ending Date: 09/30/2011

Daily Mean Discharge in Cubic feet/second Water Year Oct 2010 to Sep 2011

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.82	4.63	5.05	174	34.1	202	200	88.1	44.4	68.6	117	15.0
2	3.82	4.72	5.11	175	34.9	182	200	79.4	45.0	46.7	106	14.9
3	3.82	4.96	5.18	175	34.9	173	200	79.4	44.0	42.4	106	14.9
4	3.82	5.22	5.26	175	34.9	173	200	79.5	44.8	38.4	72.8	14.8
5	3.82	5.54	5.35	175	34.9	173	200	79.5	42.8	34.3	33.0	14.8
6	3.82	5.88	5.44	175	34.9	125	194	79.5	35.3	30.4	28.8	14.9
7	3.82	6.24	5.53	175	23.5	38.2	179	79.5	32.8	26.3	24.6	15.0
8	3.82	6.61	5.62	175	6.02	0	185	79.6	41.6	12.1	21.1	15.0
9	3.82	6.60	5.71	175	0	0	200	79.6	32.3	32.2	18.1	14.9
10	3.82	6.20	5.81	175	0	116	200	79.6	31.5	48.6	15.4	14.9
11	3.82	5.82	5.90	175	0	182	200	79.7	30.1	22.4	12.9	14.9
12	3.91	5.45	6.00	175	0	143	194	79.7	30.9	18.2	10.7	14.9
13	4.09	5.13	6.09	175	0	169	93.8	79.7	50.0	12.2	8.66	14.8
14	4.28	4.86	6.19	175	0	178	0	79.8	51.8	.04	11.0	14.8
15	4.47	4.61	6.24	175	0	171	0	79.8	53.6	0	14.7	14.8
16	4.66	4.63	6.24	175	0	163	0	79.8	55.5	47.2	15.0	14.7
17	4.86	4.92	6.24	175	106	156	0	79.8	57.4	47.2	15.0	14.7
18	5.06	5.24	6.24	125	208	149	0	79.9	59.3	16.7	15.0	14.7
19	5.29	5.63	88.7	70.5	200	142	0	79.9	61.2	38.7	15.0	14.6
20	5.56	6.05	245	60.1	192	170	0	79.9	63.2	50.8	15.0	14.6
21	5.65	6.50	415	50.6	184	202	98.9	80.0	65.3	65.9	15.0	14.6
22	5.53	6.96	461	42.8	177	201	152	80.0	33.1	83.4	15.0	14.5
23	5.41	7.44	373	39.0	178	201	110	80.0	38.2	103	15.0	14.5
24	5.30	7.47	302	38.4	186	201	94.7	62.0	39.1	126	15.0	14.5
25	5.20	7.05	229	37.7	191	201	77.4	44.0	58.3	118	15.0	14.4
26	5.11	6.64	190	37.0	197	201	81.6	44.0	57.4	100	15.0	14.4
27	5.03	6.24	186	36.3	203	201	85.9	44.0	0	104	15.0	14.4
28	4.94	5.86	182	35.7	209	201	89.6	44.0	0	108	15.0	14.3
29	4.86	5.49	179	35.0	------	200	92.5	44.0	0	112	15.0	14.3
30	4.78	5.16	175	34.4	------	200	95.4	44.0	44.1	116	15.0	14.3
31	4.70	------	173	33.7	------	200	------	44.0	------	120	15.0	------
Total	140.71	173.75	3301.90	3650.2	2469.12	5014.2	3423.8	2211.7	1243.0	1789.74	840.76	440.8
Mean	4.54	5.79	107	118	88.2	162	114	71.3	41.4	57.7	27.1	14.7
Max	5.65	7.47	461	175	209	202	200	88.1	65.3	126	117	15.0
Min	3.82	4.61	5.05	33.7	0	0	0	44.0	0	0	8.66	14.3
Acre-Ft	279	345	6550	7240	4900	9950	6790	4390	2470	3550	1670	874

Wtr Year 2011	Total	24699.68	Mean	67.7	Max	461	Min	0	Inst Max	512	Acre-Ft	48990
Cal Year 2010	Total	16776.81	Mean	46.0	Max	461	Min	0	Inst Max	512	Acre-Ft	33280

Los Angeles County Dept of Public Works

USDAY V91 Output 10/26/2011

Summary Report

Site: E285 Burbank-Western Storm Drain
USGS #:
Beginning Date: 10/01/2010
Ending Date: 09/30/2011

Daily Mean Discharge in Cubic feet/second Water Year Oct 2010 to Sep 2011

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.7	24.4	27.1	24.5	38.6	36.7	27.9	40.3	32.8	10.9	9.93	9.55
2	21.7	24.0	25.6	75.7	40.9	45.4	30.1	41.3	32.4	8.94	9.02	8.65
3	22.3	17.9	24.9	46.5	39.4	57.0	30.2	39.2	32.6	10.8	8.59	9.68
4	26.4	16.4	26.9	26.4	36.9	38.7	31.9	35.4	32.6	9.76	8.31	9.10
5	21.4	16.8	83.4	27.4	37.4	41.2	32.1	32.1	31.6	10.6	9.16	8.76
6	75.6	19.4	44.2	28.6	39.4	43.2	34.0	38.1	33.2	10.3	9.46	10.1
7	19.5	20.2	25.5	28.1	38.5	43.0	32.8	38.9	33.4	9.31	8.92	9.44
8	18.8	48.9	26.0	27.8	39.9	43.6	32.8	36.9	32.2	10.0	8.97	8.77
9	19.4	27.4	25.8	28.5	37.5	48.0	35.7	41.4	33.7	9.74	9.40	9.44
10	19.8	28.0	25.5	30.4	34.6	48.5	36.2	38.6	32.2	9.45	9.74	9.11
11	21.1	31.2	25.6	30.0	34.7	46.9	36.6	41.7	32.2	9.49	9.13	9.02
12	20.9	30.3	25.2	29.7	38.9	49.1	37.0	42.4	32.9	9.62	9.86	9.12
13	22.9	28.8	26.3	30.9	39.4	51.4	38.1	36.6	32.8	9.44	9.52	9.05
14	24.3	29.3	26.9	31.1	44.1	53.1	41.7	37.4	31.1	9.29	8.78	9.65
15	23.6	28.2	27.7	30.0	45.4	52.3	41.3	41.3	34.9	9.37	9.49	10.3
16	22.8	28.4	28.6	28.9	231	53.5	40.9	32.6	38.5	9.59	7.49	10.1
17	29.6	28.9	34.4	28.4	35.8	54.2	40.3	33.8	35.9	9.51	9.05	9.52
18	29.3	29.3	221	29.3	169	52.8	46.5	73.5	28.6	9.25	9.47	9.96
19	34.1	28.5	320	61.6	163	105	43.1	31.0	29.2	9.11	9.87	10.2
20	34.3	61.3	350	28.1	42.9	1180	47.1	31.1	29.1	9.33	9.97	9.81
21	26.2	110	203	28.8	29.9	111	47.5	28.2	28.5	8.86	9.40	10.3
22	23.9	29.0	524	27.6	31.9	34.7	46.8	29.7	28.0	9.40	9.60	10.7
23	22.4	28.4	35.6	29.0	31.4	85.2	45.0	33.1	27.2	9.55	9.74	10.1
24	24.0	27.4	26.4	29.0	34.6	35.3	45.2	31.5	26.4	9.45	8.52	9.73
25	28.9	27.4	71.4	34.3	260	119	43.7	29.8	27.1	9.59	8.24	9.80
26	26.2	24.4	79.6	36.6	177	32.4	42.2	31.5	26.3	9.34	9.33	9.92
27	25.4	35.0	23.1	34.7	38.7	37.0	39.9	30.3	24.8	9.24	9.32	10.1
28	26.0	26.2	25.5	35.4	36.5	32.0	40.0	30.4	25.4	9.64	8.99	10.4
29	26.3	25.3	120	39.6	------	32.6	40.3	31.7	25.3	7.89	9.84	10.4
30	83.1	26.4	22.0	60.4	------	35.1	42.1	30.2	24.5	8.28	9.30	9.49
31	24.8	------	23.4	39.3	------	29.8	------	32.4	------	9.96	9.74	------
Total	865.7	927.1	2574.6	1066.6	1867.3	2727.7	1169.0	1122.4	915.4	295.00	286.15	290.27
Mean	27.9	30.9	83.1	34.4	66.7	88.0	39.0	36.2	30.5	9.52	9.23	9.68
Max	83.1	110	524	75.7	260	1180	47.5	73.5	38.5	10.9	9.97	10.7
Min	18.8	16.4	22.0	24.5	29.9	29.8	27.9	28.2	24.5	7.89	7.49	8.65
Acre-Ft	1720	1840	5110	2120	3700	5410	2320	2230	1820	585	568	576

Wtr Year 2011	Total	14107.22	Mean	38.6	Max	1180	Min	7.49	Inst Max	5060	Acre-Ft	27980
Cal Year 2010	Total	10551.79	Mean	28.9	Max	530	Min	1.68	Inst Max	7050	Acre-Ft	20930

Los Angeles County Dept of Public Works

USDAY V91 Output 10/17/2011

Summary Report

Site: F252 Verdugo Wash At Estelle Avenue
USGS #:
Beginning Date: 10/01/2010
Ending Date: 09/30/2011

Daily Mean Discharge in Cubic feet/second Water Year Oct 2010 to Sep 2011

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.46	3.21	3.27	72.0	3.02	13.5	3.84	1.16	10.3	9.48	5.42	3.90
2	6.07	3.21	2.72	45.4	3.11	2.97	6.67	3.36	9.52	8.62	5.42	3.90
3	4.81	3.21	2.57	37.5	2.00	2.68	10.0	5.92	9.26	7.80	5.42	3.90
4	8.54	3.21	2.57	25.4	2.76	1.77	13.9	8.52	9.01	7.01	4.67	3.90
5	8.83	3.42	6.69	14.5	3.01	1.86	18.1	9.03	8.08	6.25	4.65	3.90
6	16.6	3.68	44.4	8.37	3.26	2.54	7.38	8.99	7.01	8.62	4.65	3.90
7	13.0	3.21	22.7	5.12	3.64	3.80	2.84	8.26	6.48	9.80	4.65	3.90
8	6.95	14.1	13.0	3.27	4.53	3.40	2.72	8.35	6.44	9.67	4.65	3.90
9	5.74	2.73	8.24	2.31	4.83	1.19	4.23	7.18	7.75	9.53	4.65	3.90
10	4.79	2.24	5.74	2.41	5.56	1.13	7.22	6.72	7.99	9.40	4.65	3.90
11	3.96	1.93	5.21	2.93	6.45	1.32	8.67	6.81	7.99	9.27	4.65	3.90
12	3.90	3.71	4.65	3.97	6.56	1.56	10.2	6.89	7.99	9.14	4.65	3.90
13	3.33	1.09	3.56	5.14	6.05	2.33	6.84	6.74	7.99	8.59	4.65	3.90
14	3.21	.97	3.21	6.12	5.55	3.09	2.91	6.20	7.99	7.95	4.65	3.96
15	3.21	.92	3.21	7.44	5.06	2.43	3.33	6.28	7.99	7.83	4.65	4.80
16	3.21	1.29	3.21	7.51	307	.68	3.79	5.94	8.79	7.71	4.65	5.42
17	3.21	1.12	5.23	7.10	187	5.01	4.72	5.61	8.93	7.58	4.65	5.42
18	5.45	1.03	84.8	7.10	144	7.95	5.90	5.69	8.93	7.46	4.65	5.42
19	5.44	2.00	568	7.10	326	4.64	6.05	5.76	8.93	7.35	4.65	5.42
20	19.6	61.3	618	6.48	268	219	6.52	5.84	8.93	7.08	4.65	5.42
21	18.6	147	505	5.61	84.6	274	6.26	5.92	8.93	6.81	4.65	4.97
22	11.6	20.4	661	4.94	22.6	209	5.90	6.00	8.93	6.24	4.65	4.65
23	6.60	5.93	383	4.65	5.71	141	5.99	6.08	8.93	6.24	4.65	4.65
24	5.02	2.36	255	4.65	.20	93.6	6.11	6.15	8.93	6.24	4.65	4.65
25	7.52	1.07	223	4.28	63.6	220	5.94	7.57	8.93	6.24	4.65	4.65
26	5.96	.75	488	3.90	218	129	6.33	11.1	8.93	6.24	4.65	4.05
27	5.42	1.89	309	3.90	71.3	48.6	6.43	11.3	8.93	6.24	4.65	3.90
28	4.66	8.20	228	3.60	34.9	25.0	6.55	11.0	9.54	5.70	4.65	3.90
29	4.65	4.20	223	3.21	------	11.8	5.78	10.7	9.91	5.42	4.56	3.90
30	17.2	3.28	192	3.21	------	6.11	1.99	11.4	9.91	5.42	3.90	3.33
31	3.21	------	129	3.21	------	2.50	------	11.1	------	5.42	3.90	------
Total	225.75	312.66	5006.98	322.33	1798.30	1443.46	193.11	227.57	258.17	232.35	144.89	129.21
Mean	7.28	10.4	162	10.4	64.2	46.6	6.44	7.34	8.61	7.50	4.67	4.31
Max	19.6	147	661	72.0	326	274	18.1	11.4	10.3	9.80	5.42	5.42
Min	3.21	.75	2.57	2.31	.20	.68	1.99	1.16	6.44	5.42	3.90	3.33
Acre-Ft	448	620	9930	639	3570	2860	383	451	512	461	287	256

Wtr Year 2011	Total	10294.78	Mean	28.2	Max	661	Min	.20	Inst Max	2300	Acre-Ft	20420
Cal Year 2010	Total	11818.36	Mean	32.4	Max	1630	Min	0	Inst Max	8030	Acre-Ft	23440

APPENDIX C
COMPONENTS OF LOS ANGELES RIVER FLOW

UPPER LOS ANGELES RIVER AREA: COMPONENTS OF LOS ANGELES RIVER FLOW								
2010-11 WATER YEAR								
TOTAL FLOW AT GAGE F-57C-R			F-57C-R: Storm, Reclaimed, Industrial, Rising Ground Water					
			F300-R: Storm, Tillman, Industrial Waste, and Rising Water					
Total:	230,945		E285-R :Storm, Burbank WRP, Industrial Waste					
			F252-R: Storm, Rising Water					
I. RECLAIMED WATER DISCHARGED TO L.A. RIVER IN ULARA								
Tillman:	30,554	: Record						
L.A.-Glendale:	16,160	: Record						
Burbank WRP:	7,484	: Record						
Total:	**54,198**							
II. INDUSTRIAL WATER and STORM FLOWS DISCHARGED TO L.A. RIVER IN ULARA								
Upstream of F300-R								
Industrial Water	355	: From F300-R separation of flow						
F168	48,990							
F118	23,630							
Storm Flows @300	54,359	Storm flows less F168 and F118						
	127,334							
Between F300-R and E-285								
Burbank OU	20	Burbank Operable Unit						
MTA	22							
Storm Drains and Unaccounted water	4,852	: 6.7 cfs assumes 4,852						
Headworks:	0	: pilot project record						
Western Drain:	11,649	: From E285-R separation of flow						
Storm Flows @285	8,836							
	25,379							
Between E-285 and F57C-R								
Storm Flows, DryWeather Flow, perennial stream flow, VPWTP @ 252	16,626	: From F252-R separation of flow						
Glendale Operable Unit	782							
Eagle Rock Blow Off	0							
Pollock Treatment	0							
Sycamore Canyon	1,100	Estimated from historic flows						
Storm Drains and Unaccounted water	3,982	: 5.5 cfs assumes 3,982						
	22,490							
Total Part II	**175,203**							
III. RISING WATER IN L.A. RIVER IN ULARA								
Total:	6,588	: See Section 2.3 of the Watermaster's Report						

APPENDIX D
WATER QUALITY DATA

REPRESENTATIVE MINERAL ANALYSES OF WATER

Well Number or Source	Date Sampled	Spec. Cond. µS/cm	Mineral Constituents in milligrams per liter (mg/l)												TDS mg/l	Hardness as $CaCO_3$ mg/l
			pH	Ca	Mg	Na	K	CO_3	HCO_3	SO_4	Cl	NO_3	F	B		
Imported Water																
Colorado River Water at Eagle Rock Reservoir	2010/11 FY	688	7.8	48	19	75	3.8	-	121	156	77	1.5	0.7	0.1	422	198.25
State Water Project at Joseph Jensen Filtration Plant (effluent)	2010/11 FY	580	8.2	30	12	67	2.7	-	107	63	79	0.6	0.8	0.2	330	120
Colorado River/ State Water Project Blend Point at the Weymouth Treatment Plant	2010/11 FY	950	7.9	64	26	94	4.6	-	146	210	93	ND	0.8	0.1	570	260
LA Aqueduct No 1. Influent	2010/11 FY	318	8.2	25	6.5	39	4.7	2.4	136	25	23	-	0.7	0.5	189	88
LA Aqueduct Filtration Plant Influent	2010/11 FY	352	9.1	22	7.2	40	4.0	0.9	128	27	31	1.0	0.5	0.4	196	78
Surface Water																
Tillman Rec. Plant Discharge to LA River	2010/11 FY	-	7.0	-	-	-	-	-	-	103	109	5.3	0.6	0.6	526	161
Los Angeles River at Arroyo Seco	9/95	981	8.0	68	24	97	9.8	ND	171	191	108	7.4	0.3	0.6	666	270
LA/Glendale Rec. Plant Discharge to LA River	2010/11 FY	-	7.5	-	-	-	-	-	-	104	132	5.3	0.5	0.5	605	218
Groundwater																
(San Fernando Basin - Western Portion)																
4757C (Reseda No. 6)	10/13/83	944	7.8	115	31	43	2.1	-	301	200	33	2.6	0.31	0.24	595	416
(San Fernando Basin - Eastern Portion)																
3800 (No. Hollywood No. 33)	5/19/2004	-	7.6	82	27	134	4.9	-	204	336	66	3.3	0.4	0.5	781	317
3851C V0-8/Burbank No. 10	2010-11 WY	-	7.8	81	22	31	4.7	<2.0	280	71	28	25	0.5	0.2	445	293
Glendale OU GN-1	2010/11 FY	-	7.5	110	28	45	-	<2	290	140	-	38	0.3	0.2	580	240
(San Fernando Basin - L.A. Narrows)																
3959E (Pollock No. 6)	2010/11 FY	-	7.1	107	37	59	2.9	-	322	144	84	37	0.2	0.2	663.8	421
(Sylmar Basin)																
4840K (Mission No. 6)	2010/11 FY	691	7.6	-	-	-	-	-	227	76	33	14	0.3	0.1	378	240
5969 (San Fernando No. 4A)	2010/11 FY	460	8.0	52	9.7	30	4.4	ND	170	49	15	18	0.2	-	280	170
(Verdugo Basin)																
3971 (Glorietta No. 3)	2010/11 FY	980	6.9	100	39	48	3.2	190	-	150	-	31	0	-	660	420
5069F (CVWD No. 14)	2010/11 FY	813	7.4	87	31	34	3.4	ND	190	110	72	46	0.3	0.7	530	340

APPENDIX E
DEWATERING AND REMEDIATION PROJECTS

DEWATERING PROJECTS

No.	Company	Contact	Address	Start Date
		Permanent Dewatering Required		
1	A H Warner Properties Plaza 3	Bernier, Dave	21650 Oxnard	June 4, 1997
2	A H Warner Properties Plaza 6	Bernier, Dave	21700 Oxnard	June 4, 1997
3	BFI Sunshine Canyon Landfill	Dave Hauser	14747 San Fernando Rd.	October 1, 2006
4	Brent & Miller	Brent, Stanley	4328 Mammoth Ave	January 13, 2000
5	Commercial Project	Helfman, Haloosim & Assoc.: Varadi, Ivan	5550 Topanga Canyon	June 19, 1989
6	Encino Spectrum Project	Helfman, Haloosim & Assoc.: Varadi, Ivan	15503 Ventura Blvd.	June 14, 1989
7	Glenborough Realty (First Financial)	Slade, Richard	16830 Ventura Blvd.	October 9, 1987
8	Home Savings of America	Eli Silon & Associates	13949 Ventura Blvd.	June 14, 1989
9	LAMCO	O'Neil, John	21300 Victory Blvd	April 27, 1988
10	La Reina Fashion Plaza	Blumenfeld, Dolores	14622 Ventura Blvd.	April 27, 1988
11	Mercedes Benz of Encino (formerly Auto Stiegler)	Bucnis, Mark	16721 Ventura Blvd.	October 31, 1987
12	Metropolitan Transportation Authority	Laury, Victor	Metro Red Line	April 1, 1995
13	Park Hill Medical Plaza	Anjomshoaa, Mahmoud	7303 Medical Center Dr.	December 27, 1989
14	Trillium	Arnold, Daryl	6310 Canoga Ave.	April 27, 1988
15	Warner Center Ent. Complex	Tsuchiyama and Kaino	5955 Owensmouth Ave.	June 26, 1989
		Potential for Future Dewatering		
1		Carter, Dennis	4547 Murietta Ave	
2		Eccleston, C. W.	22020 Clarendon St.	
3		Henkin, Doug	8806 Etiwanda Ave.	
4		Marks, Ronald	5348 Topanga Canyon	
5	Danalex Engineering		12050 Ventura Blvd.	
6	Danalax Engineering Corp.	Krell, Alex	11239 Ventura Blvd.	
7	Delta Tech. Engineering	Abbasi, Z. A.	12800 Ventura Blvd.	
8	Ellis Plumbing Co.	Ellis, Chris	4235 Mary Ellen Ave.	
9	Ellis Plumbing Co.	Ellis, Chris	19951 Roscoe Blvd.	
10	Helfman, Haloosim & Assoc.	Varadi, Ivan	21820 Burbank Blvd.	
11	Helfman, Haloosim & Associates	Varadi, Ivan	5350 White Oak Ave.	
12	Sherway Properties	Vasquez, Rodney	4477 Woodman Ave.	
13	Tarzana Office Plaza	Varadi Engineering	18701 Burbank Ave.	
14	T Violes Construction Company	Viole, Tim, Jr.	15840 Ventura Blvd.	
		Temporary Dewatering		
1	Avalon Bay	Rob Salkovitz	16350 Ventura Blvd	January 26, 2006
2	Eagle Rock Interceptor Sewer	Baron Miya	Bureau of Engineering	May 8, 2003
3	Fassberg Construction [2]	Jeff Hawthorne	16710 Ventura Blvd	May 1, 2009
4	Glendale Sewer Project	Andre Haghverdian	800 Air Way	October 17, 2007
5	MTA Underground Pedestrian Crossing	Tim Lindholm	MTA	November 1, 2001
6	MWD Sepulveda Feeder Pipeline Const.	David Dean	Jensen Plant	August 1, 1998
7	Northeast Interceptor Sewer	Nick Demos	Bureau of Engineering	October 1, 2001

Notes:

1) Start Date - Date project was brought to the attention of the ULARA Watermaster.

2) Fassberg Construction ended temporary dewatering operations during the 2010-11 Water Year

APPENDIX F
WHITE PAPER – "Is the San Fernando Groundwater Basin Undergoing a Long – Term Decline in Storage?"
(ATTACHMENTS ON FILE IN ULARA WATERMASTER OFFICE)

NOSSAMAN, GUTHNER, KNOX & ELLIOTT, LLP
Frederic A. Fudacz (SBN 050546)
Alfred E. Smith (SBN 186257)
445 South Figueroa Street
Thirty-First Floor
Los Angeles, California 90071
Telephone: (213) 612-7800
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Attorneys for Upper Los Angeles River Area Watermaster

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

THE CITY OF LOS ANGELES,

Plaintiff,

v.

CITY OF SAN FERNANDO, et al.,

Defendants.

Case No. C650 079

NOTICE OF LODGING OF WATERMASTER WHITE PAPER RE: QUARTERLY STATUS CONFERENCE

Conference:

Date: April 27, 2007
Time: 8:30 a.m.
Dept: 52

Before the Hon. Susan Bryant-Deason

NOTICE IS HEREBY GIVEN that the court-appointed Watermaster hereby lodges with the Court the attached White Paper in connection with the quarterly Upper Los Angeles River Area Watermaster status conference scheduled for April 27, 2007, in Department 52 of the above-entitled Court.

DATED: March 23, 2007

NOSSAMAN, GUTHNER, KNOX & ELLIOTT, LLP
Frederic A. Fudacz
Alfred E. Smith

By: _____
Alfred E. Smith

Attorneys for Upper Los Angeles River Area Watermaster

PROOF OF SERVICE

The undersigned declares:

I am employed in the County of Los Angeles, State of California. I am over the age of 18 and am not a party to the within action; my business address is c/o Nossaman, Guthner, Knox & Elliott, LLP, 445 S. Figueroa Street, 31st Floor Los Angeles, California. 90071-1602.

On March 23, 2007, I served the foregoing **NOTICE OF LODGING OF WATERMASTER WHITE PAPER RE: QUARTERLY STATUS CONFERENCE** on parties to the within action by placing ( ) the original (x) a true copy thereof enclosed in a sealed envelope, addressed as shown on the attached service list.

(XX) (By U.S. Mail) On the same date, at my said place of business, said correspondence was sealed and placed for collection and mailing following the usual business practice of my said employer. I am readily familiar with my said employer's business practice for collection and processing of correspondence for mailing with the United States Postal Service, and, pursuant to that practice, the correspondence would be deposited with the United States Postal Service, with postage thereon fully prepaid, on the same date at Los Angeles, California.

( ) (By Facsimile) I served a true and correct copy by facsimile pursuant to C.C.P. 1013(e), to the number(s) listed on the attached sheet. Said transmission was reported complete and without error. A transmission report was properly issued by the transmitting facsimile machine, which report states the time and date of sending and the telephone number of the sending facsimile machine. A copy of that transmission report is attached hereto.

(.) (By Overnight Service) I served a true and correct copy by overnight delivery service for delivery on the next business day. Each copy was enclosed in an envelope or package designated by the express service carrier; deposited in a facility regularly maintained by the express service carrier or delivered to a courier or driver authorized to receive documents on its behalf; with delivery fees paid or provided for; addressed as shown on the accompanying service list.

Executed on March 23, 2007.

(XX) (STATE) I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

( ) (FEDERAL) I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Charlyn Jones

ATTORNEYS OF RECORD

Name	Party
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Mr. H. Jess Senecal, Special Counsel Lagerlof, Senecal, Swift and Bradley 301 North Lake Avenue - 10th Floor Pasadena, CA 91101 Telephone: 626-793-9400	Crescenta Valley, Vulcan-CalMat

ADMINISTRATIVE COMMITTEE AND ALTERNATES

Name	Party
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Mr. Peter Kavounas (Member) Water Services Administrator City of Glendale 141 North Glendale Avenue Glendale, CA 91206-4496 Telephone: 818-548-2137	Glendale

Name	Party
Mr. Raja Takidin (Alternate) City of Glendale 141 North Glendale Avenue Glendale, CA 91206-4496 Telephone: 818-648-3906	Glendale
Mr. Tony Salazar (Member) Operations Manager City of San Fernando 117 Macneil Street San Fernando, CA 91340 Telephone: 818-898-7350	San Fernando
Mr. Dennis Erdman (Member) General Manager Crescenta Valley Water District 2700 Foothill Boulevard La Crescenta, CA 91214 Telephone: 818-248-3925	Crescenta Valley Water District
Mr. David Gould (Alternate) District Engineer Crescenta Valley Water District 2700 Foothill Boulevard La Crescenta, CA 91214 Telephone: 818-248-3925	Crescenta Valley Water District

UPPER LOS ANGELES RIVER AREA WATERMASTER

CITY OF LOS ANGELES VS. CITY OF SAN FERNANDO, ET AL
CASE NO. 650079 – COUNTY OF LOS ANGELES

MARK G. MACKOWSKI – WATERMASTER

OFFICE LOCATION:
111 North Hope Street, Room 1450
Los Angeles, CA 90012
TELEPHONE: (213) 367-0896
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MAILING ADDRESS:
ULARA WATERMASTER
P.O. Box 51111, Room 1450
Los Angeles, CA 90051-0100

March 22, 2007

The Honorable Susan Bryant-Deason
Judge of the Los Angeles County Superior Court
111 N. Hill Street, Dept. 52
Los Angeles, CA 90012

Dear Judge Bryant-Deason:

Subject: Meeting on April 27, 2007 to discuss the Decline in Storage in the San Fernando Groundwater Basin (basin)

At our last meeting with the Court on December 13, 2006 you generously offered to spend some time with the Watermaster and the Cities of Los Angeles, Burbank, and Glendale (Cities) to discuss the decline in groundwater storage in the basin during our next meeting on April 27.

As Watermaster for the Upper Los Angeles River Area (ULARA), I have been regularly informing the Court and the Cities regarding my growing concern over declining water levels and accumulating groundwater pumping credits in the basin.

In July 2005, I distributed a DRAFT White Paper to the Cities titled "Is the San Fernando Groundwater Basin Undergoing a Long-Term Decline in Storage?" describing the problems, causes, and some possible solutions. Since then, we have been meeting with the Cities in an attempt to resolve these issues.

In preparation for the April 27 meeting, I feel it is appropriate to share the enclosed White Paper with the Court so that you may become more familiar with the background and details regarding the decline in storage.

We look forward to meeting with you at 8:30 a.m. on April 27, 2007 to explore the challenges we face regarding the decline in groundwater storage in the basin.

If you have any questions or comments, please call me at (213) 367-0896.

Sincerely,

MARK G. MACKOWSKI
ULARA Watermaster

MGM:mm

c:
Mr. Bill Mace, City of Burbank
Mr. Peter Kavounas, City of Glendale
Mr. Thomas Erb, City of Los Angeles
Mr. Dennis Erdman, Crescenta Valley Water District
Mr. Ron Ruiz, City of San Fernando

Watermaster Staff
Mr. Mark G. Mackowski, Watermaster
Ms. Patricia T. Kiechler, Assistant Watermaster
Mr. Fred Fudacz, Special Counsel
Mr. Melvin Blevins, Consultant

Is the San Fernando Groundwater Basin Undergoing a Long-Term Decline in Storage?

by

Mark Mackowski, ULARA Watermaster

March 2007

Executive Summary

This report addresses the long-term decline in storage in the San Fernando Groundwater Basin (hereinafter SFB or "basin") caused by over-pumping due to an excessive allocation of water rights; reduced natural and artificial recharge; unaccounted underflow and rising groundwater leaving the basin; and unaccounted or under-accounted pumping by third parties. It also addresses the large accumulation of stored water credits for which there is insufficient actual water in storage, and makes recommendations to reverse these trends.

The Watermaster has discussed this issue in the Annual Watermaster Report for the last four years; has informed and updated the Court during the last two years; and in July 2005 presented a draft of this paper to the Cities of Los Angeles, Burbank, and Glendale (hereinafter "parties"). Subsequently, several workshops were held with the parties to answer their questions and discuss potential solutions.

The parties have responded by proposing to study several projects to increase long-term artificial recharge of the basin. The Watermaster fully supports those studies, but does not believe that the current proposed projects will be either timely enough or adequate to completely address the serious and ongoing decline in storage and avoid the potential for the basin to re-enter overdraft.

Introduction

This paper addresses the question: "Is the San Fernando Groundwater Basin undergoing a long-term decline in storage?"

Plate 13 (Attachment 1) of the 2004-05 Annual Watermaster Report illustrates the change in storage in the SFB between 1928 and Fall 2005.

It is clear that the SFB has experienced a progressive decline of real water in storage (Plate 13 blue line) since 1928. The decline began in 1944, and overdraft was eventually declared beginning in 1954 when water in storage had reached 210,000 acre-feet (AF) below the 1928 level. Litigation over water rights commenced in 1955, and continued until 1979 when the Judgment was entered. Section 4.2.6.1 of the Judgment states that the SFB **"...remained in overdraft continuously until 1968, when an injunction became effective. Thereafter, the basin was placed on safe yield operation."** (Safe yield operation means that extractions from the basin do not exceed recharge on a long-term average.) When safe yield operation was ordered by the Court in 1968 the basin was 655,370 AF below the 1928 level.

From 1968 until 1977, the amount of real water in storage (Plate 13 blue line) declined an additional 40,210 AF, to 695,580 AF below the 1928 level, despite the fact that the basin was supposedly under safe yield operation. Fall 1977 was the historically lowest level of basin storage.

Plate 13 shows a sharp increase in stored water beginning in 1977, suggesting that the basin began to recover. However, a large portion of the increase was due to water imported by Los Angeles to the SFB from outside sources such as the Owens Valley and spread at Tujunga Spreading Grounds, and was not part of the safe yield of the basin. Table 2-22 from Watermaster Relevant Data (Attachment 2) shows spreading from 1968-2005. Under the column "City of Los Angeles – Tujunga", 142,457 AF were spread from 1977-1987. Therefore, because Plate 13 (blue line) does not differentiate between various water sources that recharge the basin, the water level increase beginning in 1977 *does not* represent a significant recovery of the basin.

Furthermore, beginning in the late 1970s, groundwater extractions began to decline as a result of the decision in San Fernando that restricted pumping, especially by Glendale and Burbank, followed in the early 1980s by the discovery of widespread groundwater contamination that affected all the parties' ability to pump their full adjudicated rights (Relevant Data Table 2-1, Attachment 3). As a result, stored water credits began to accumulate rapidly, and continue to accrue whenever a party does not pump its full right. As of October 1, 2005 a combined total of 410,033 AF of stored water credits in the SFB belonged to Los Angeles, Burbank, and Glendale.

Section 8.2.10 of the Judgment requires the effects of stored water to be excluded from consideration when evaluating the safe yield. Judgment Section 8.2.10 states, **"Upon request of the Administrative Committee, or on motion of any party and subsequent Court order, Watermaster shall recalculate safe yield of any basin within ULARA. If there has been a material long-term change in storage over a base period (excluding any effects of stored water) in San Fernando Basin the safe yield shall be adjusted by making a corresponding change in native safe yield of the basin."**

The graph shown in red on Plate 13 is the result of subtracting stored water credits from the change in storage shown in blue, as required by Judgment Section 8.2.10. When stored water credits are subtracted from the change in storage, the basin is 914,508 AF below the 1928 level, and 259,138 AF below the 1968 level when safe yield operation was required to be implemented.

In summary, Plate 13 clearly shows that the SFB is undergoing a long-term decline in storage that is temporarily interrupted during above-normal rainfall or below-normal pumping. However, spread imported water from 1977-1987 and an ongoing large accumulation of stored water credits obscures this decline.

Import Return Credits

Import return water is defined by the Judgment as "Ground water derived from percolation attributable to delivered imported water."

The Judgment allows the parties to recapture a portion of delivered imported water based on the reasonable assumption that some of it percolates into the aquifer and is available for pumping once it reaches the groundwater table. This water accrues to the parties as import return credits using formulas provided in Section 5.2.1.3 of the Judgment.

The California Supreme Court decision (1975, Vol. 14-3d, p. 261-262, Attachment 4) states, **"Defendants contend that if any party is given rights to a return flow from delivered *imported* water, it is 'obvious' and 'axiomatic' that the same rights should be given to the return flow from delivered water derived from all other sources, including native water extracted from local wells. This argument misconceives the reason for the prior right to return flow from imports. Even though all deliveries produce a return flow, only deliveries derived from imported water add to the ground supply...Returns from deliveries of extracted native water do not add to the ground supply but only lessen the diminution occasioned by the extractions."**

Despite the unequivocal language in the Supreme Court decision, the Cities of Los Angeles, Burbank, and Glendale negotiated an agreement to use *all* delivered water in the formulas for calculating import return credits. In the "Memorandum re Proposed Settlement with Cities of Glendale and Burbank, City of Los Angeles v. City of San Fernando, et al., and Damage Cases" dated November 22, 1978, Item 4 on page 5 (Attachment 5) states, **"A fixed formula for determining Glendale and Burbank rights to return flow from delivered imported water, including recirculation rights, as being equivalent to 20% of all delivered water in the immediate watershed of the San Fernando Basin. This has been determined to be a better administrative method than the method based on 20.8% of delivered imported water to valley-fill lands, which method was presented to the Supreme Court and approved by that Court in this case. Los Angeles' return flow rights will be determined by a comparable fixed formula, also somewhat a [sic] variance with the Supreme Court language, but consistent with simple future administration."**

Furthermore, the language in the Judgment addressing import return credits is contradictory and appears to have been influenced by the aforementioned agreement. Section 5.2.1.1 states, **"Each of said parties has a right to extract from San Fernando Basin that portion of the safe yield attributable to such import return waters."** Section 5.2.1.3 states, **"The extraction rights of Los Angeles, Glendale, and Burbank...shall only extend to the amount of any accumulated import return water credit of such party by reason of imported water delivered after September 30, 1977."** The foregoing language is consistent with the Supreme Court decision, and implies that only delivered waters that are imported from outside the basin (such as from the Los Angeles/Owens Valley Aqueduct and the Metropolitan Water District) would

qualify for import return credits. However, the formulas in Judgment Section 5.2.1.3 for calculating import return credits apparently contradict the Supreme Court decision, namely, **"Los Angeles: 20.8% of all delivered water...Burbank: 20.0% of all delivered water...Glendale: 20.0% of all delivered water..."**

Since 1979 the Watermaster Office has used the latter, more generous interpretation of the Judgment, giving the parties import return credits for *all* water delivered to their applicable service areas regardless of its source. This has caused the pumping of groundwater that would not have been allowed under the Supreme Court decision, and has also contributed to the accumulation of a large amount of stored water credits that are not supported by actual water in storage.

Thus, the Supreme Court decision and the technical issues related to basin hydrology were misunderstood, or not fully considered, in an effort to simplify the administration of the parties' rights, resulting in excessive groundwater pumping and an accumulation of pumping credits for which there is insufficient actual water in storage.

Changed Conditions in the SFB

Probable causes of the decline in storage also include changes in land and water use in the SFB.

The Report of Referee (1962) was accepted as prima facie evidence in San Fernando. Data for the Report of Referee was obtained in the late 1950s and early 1960s, which was used to calculate the safe yield of the SFB.

At that time, a significant portion of the land in the San Fernando Valley was still being used for agricultural purposes, or had not yet been developed. Rainfall runoff and irrigation water had a much better opportunity to percolate and re-enter the groundwater basin compared to the present, when much of the land has subsequently been developed and covered by rooftops, sidewalks, streets, and other "hardscape".

In addition, at the time the Report of Referee was prepared sewers had not yet been installed in much of the San Fernando Valley, and overflow from cesspool/septic systems was a significant source of recharge to the basin aquifer. During the 1956-57 Water Year, the Report of Referee estimated that 16,750 acre-feet per year (AF/Y) re-entered the groundwater basin from septic systems located in the SFB west of Burbank (Appendix N, Table N-7, p. N-32). Nearly everywhere in the SFB septic systems have been replaced by sewers, with a resulting decrease in recharge from this source. This has had the beneficial effect of eliminating a significant source of nitrate contamination, but has also contributed to the decline in storage. We have observed a similar phenomenon in the Verdugo Basin.

Present-day land and water use have changed in the intervening 40-50 years since the Report of Referee was researched and written, but provisions in the Judgment require the basin to be managed as if those conditions still exist.

Reduced Artificial Recharge

Artificial recharge capacity has declined in the basin during the past 20-25 years. 'Artificial recharge' means collecting rainfall runoff or imported water and percolating it into the groundwater basin at spreading grounds designed for that purpose.

Headworks Spreading Grounds (Headworks) is located on the Los Angeles River near Griffith Park. Headworks was operated until the early 1980s, when volatile organic compound (VOC) contamination was discovered in the underlying groundwater, and treated sewage effluent began to be discharged from Tillman Treatment Plant into the Los Angeles River. Headworks has not been used as a spreading ground since approximately 1982.

In the late 1990s, methane gas was detected at a school adjacent to the Sheldon-Arleta Landfill (SAL) and Tujunga Spreading Grounds (TSG). When stormwater is spread heavily at TSG, it compresses the air within the underlying vadose zone. Some of this air moves laterally and displaces methane gas from the adjacent SAL. The methane migrates out of the SAL, and some of it surfaces in the nearby neighborhood. To control this methane migration, spreading at TSG has been restricted to less than 100 cubic feet per second (cfs), or about 40% of the historic spreading capacity of 250 cfs. When storms produce runoff in excess of 100 cfs in the adjacent Tujunga Wash, this extra water cannot be diverted into TSG and is instead wasted to the ocean.

In addition, during past wet years, the Los Angeles County Department of Public Works (LACDPW) has curtailed spreading at Hansen Spreading Grounds (HSG) to prevent rising groundwater from inundating trash in the nearby Bradley Landfill. Alert levels were established nearby monitoring wells to monitor groundwater levels near the landfill. During the exceptionally wet winter of 2004-05 these alert levels were reached and spreading at HSG was stopped for a while, resulting in additional runoff being wasted to the ocean.

As a result of the elimination of Headworks and reduced spreading at TSG and HSG, a significant amount of stormwater runoff cannot be recharged into the SFB and is wasted to the ocean, especially during above-average rainfall years.

Safe Yield and Native Safe Yield

Safe Yield is defined by the Judgment as "The maximum amount of water which can be extracted annually from a ground water basin under a given set of cultural conditions and extraction patterns, based on the long-term supply, without causing a continuing reduction of water in storage."

Safe yield in the SFB consists of two parts: the aforementioned import return credits, and the native safe yield consisting of "native water", which the Judgment defines as "Surface

and ground waters derived from precipitation within ULARA". The Judgment affirmed Los Angeles' exclusive Pueblo water right to all native groundwater in the SFB.

The safe yield and native safe yield of the basin were determined to be 90,680 AF/Y and 43,660 AF/Y, respectively, in 1964-65 (Judgment Section 4.2.4) but have not been re-evaluated since then.

Each year, the Judgment gives Los Angeles a native safe yield pumping credit of 43,660 AF/Y based on studies performed for the Report of Referee. In dry years, it is doubtful whether 43,660 AF actually recharge the SFB. In wet years the amount can be substantially larger. The long-term average native recharge is unknown. However, as previously mentioned, the hydrologic conditions that existed when the Report of Referee was written may no longer be present in the SFB today.

If the long-term native safe yield is lower than 43,660 AF/Y, it would contribute proportionally to the decline in storage we observe on Plate 13 (blue line) and an increase in stored water credits (Plate 13 red line) for which there is insufficient water in storage.

Basin Losses from Rising Groundwater and Underflow

Groundwater constantly flows out of the basin in two ways: via underflow in the Los Angeles River Narrows area, and through groundwater rising into the Los Angeles River channel that subsequently leaves the SFB as surface flow. (The City of Los Angeles recognized this, and constructed the Pollock Wells Treatment Plant to reduce the amount of excess rising groundwater leaving the basin by pumping and treating groundwater in the Narrows that is contaminated with VOCs.)

The average annual loss due to rising groundwater was approximately 3,442 AF/Y from 1979-2005. The average annual loss due to underflow through the Narrows area was approximately 400 AF/Y. The total average loss from the basin was therefore approximately 3,842 AF/Y from 1979-2005.

Although Judgment Section 8.2.9 requires the Watermaster to "...record and verify additions, extractions and losses..." there is no clear mechanism in the Judgment to debit the parties for groundwater that leaves the basin in ways other than through pumping. With the exception of minor losses debited from Los Angeles due to under-pumping at the Pollock Wells, losses due to rising groundwater and underflow have never been debited from the parties.

In summary, stored water credits accumulate indefinitely until they are pumped by the parties, but a portion of the actual groundwater is constantly leaving the SFB unaccounted through underflow and rising groundwater.

Hill and Mountain Pumping

Unauthorized pumping in the hill and mountain areas tributary to the SFB reduces the amount of underflow from these regions to the basin. The City of Los Angeles claims this native water as part of its Pueblo water right, and the Watermaster has begun a program to identify these pumpers, quantify their water use, and require them to enter a water license agreement with Los Angeles. Under the license agreement, licensees report their pumping to the Watermaster Office and pay Los Angeles for the amount pumped, and the Watermaster debits Los Angeles. There are unauthorized pumpers who do not have license agreements and who do not report their pumping to the Watermaster Office.

Dewatering

There are areas within the SFB that have a high water table. Projects within these areas sometimes pump groundwater to maintain dry excavations during construction. In addition, there are some dewatering operations that keep subterranean parking and other below-ground structures dry on a permanent basis. This water is typically discharged to the storm drain or sewer, and is thereby lost from the basin. The Watermaster has identified several permanent dewatering systems, and the owners of these properties report their pumping monthly to the Watermaster Office. However, our efforts to institute a reliable program to account for temporary construction dewatering within the basin have not been effective.

Conclusions

The Watermaster has historically calculated import return credits based on all delivered water. This is clearly inconsistent with the Supreme Court decision, and in the Watermaster's opinion is the single largest contributor to the imbalance between actual water in storage and the parties' stored water credits. The 1978 agreement among all three parties with respect to import return credits departed from the Supreme Court decision (Attachment 5) and, as applied under today's circumstances, is seemingly inconsistent with Section 5.2.1.1 of the Judgment.

Furthermore, import return credits of 20% may have been appropriate for hydrologic conditions in the late 1950s and early 1960s, but may now be too high considering the urbanization that has occurred in the San Fernando Valley during the last 40-50 years. However, Section 7.1 of the Judgment explicitly precludes the Watermaster, or even the Court, from modifying these formulas.

Although real water in storage has increased by 150,895 AF since safe yield operation was declared in 1968, stored water credits have accumulated to 410,033 AF since 1978. When stored water credits are subtracted from real storage (Plate 13 red line), the SFB is more than 914,000 AF below the 1928 level.

In other words, if the parties had pumped their full adjudicated rights, the basin would be more than 259,000 AF below the 1968 level at which safe yield operation was supposed to begin (Plate 13).

This clearly indicates that groundwater rights in the SFB are significantly "oversubscribed", and the basin is undergoing a long-term decline in storage that is effectively masked by the accumulation of stored water credits. An argument could be made that the basin re-entered a condition of overdraft in the late 1980s when the red line fell below the 1968 level.

The general downward trend of the change in real storage (Plate 13 blue line), beginning in the early 1980s and interrupted only temporarily during wet years, is also disturbing. Although we observed a significant rebound in basin storage in the 2004-05 Water Year due to above-normal rainfall and below-normal pumping by Los Angeles, similar occurrences in the past suggest that this effect will be temporary and short-lived.

The downward trend in real storage coincides with the cessation of spreading at Headworks Spreading Grounds in the early 1980s and has accelerated with a significant reduction of spreading capacity at Tujunga Spreading Grounds due to the migration of methane gas from the nearby Sheldon-Arleta Landfill. The decline in actual storage due to reduced basin recharge has been exacerbated because the parties have received pumping rights since their negotiated settlement in 1978 that the basin cannot support.

Recommendations

The Watermaster recommends that the safe yield of the SFB be re-evaluated. The 1979 San Fernando Judgment was based on a safe yield study conducted in 1964-65, more than 40 years ago. At that time, the SFB safe yield was calculated to be 90,680 AF/Y. However, basin hydrology can change significantly over time, and we do not know the existing safe yield of the SFB. If we are to resolve this problem and manage the basin properly in the future it is imperative that we re-evaluate the safe yield of the SFB, and continue to re-evaluate it periodically.

As a component of the safe yield, the native safe yield of 43,660 AF/Y may be too large, which would contribute to a continuing decline in stored water and exacerbate the imbalance between actual water in storage and stored water credits. A safe yield study, as recommended above, would determine whether the existing native safe yield is appropriate for current hydrologic conditions in the SFB.

The parties and the Watermaster could agree to allocate pumping rights consistent with the language and intent of the Supreme Court decision, namely, giving the parties import return credits only for the amount of *imported* water served to their customers.

Or, following a safe yield re-evaluation, the Watermaster could implement Judgment Section 8.2.10 to correct any imbalance in the basin by adjusting the native safe yield of the SFB. This solution would affect only Los Angeles' water rights, since it has the

exclusive right to the entire native safe yield of the SFB under its Pueblo right. However, it is the Watermaster's opinion that implementing Section 8.2.10 of the Judgment in this manner would fail to address the major hydrologic cause of the current imbalance, and that the parties would continue to be given rights to water that are inconsistent with the Supreme Court decision.

A hydrologic study should be performed in the Narrows area to determine the actual amount of water lost due to underflow and excess rising groundwater, and the Watermaster and the parties should consider ways to account for this lost water. To that end, in March 2007 the ULARA Administrative Committee requested the Watermaster to conduct a study to determine ways to improve the methodology for the calculation of losses from the basin due to rising groundwater and underflow. While it is not practical to stop all rising groundwater and underflow, keeping water levels low in the Narrows through diligent pumping and monitoring would minimize these losses. As a related matter, Los Angeles should operate the Pollock Wells Treatment Plant at least 2,000 AF/Y to reduce the amount of rising groundwater that leaves the basin.

Tujunga Spreading Grounds should be restored to its full capacity without delay. Additional spreading and/or storage facilities, such as Boulevard Pit, should be acquired whenever possible. They may not be needed during dry-to-normal rainfall years, but their additional capacity would be invaluable during years when runoff exceeds our ability to store it using existing infrastructure.

Modernizing and upgrading facilities and operations at the spreading grounds might result in increased basin recharge. The Watermaster, LADWP, and LACDPW have begun to explore these opportunities within the framework of the Basin Recharge Task Force.

The parties and Watermaster should take advantage of opportunities such as the upcoming Los Angeles River Revitalization Master Plan to build projects that enhance basin recharge.

Hill and mountain pumping should be fully accounted. It may not be politically feasible to restrict it, but it is probably a component, albeit a small one, of the decline in stored water in the basin.

Likewise, permanent and temporary construction dewatering should be fully accounted. The Watermaster and the cities of Los Angeles, Burbank, and Glendale should develop a program to more closely track water lost from the basin due to dewatering.

It is the duty of the Watermaster to inform the parties and the Court about issues affecting the groundwater basins in ULARA. We look forward to working closely with the parties to reverse the decline in storage and ensure the long-term reliability of the SFB.

APPENDIX G
INTERIM AGREEMENT FOR THE PRESERVATION OF THE SAN FERNANDO BASIN WATER SUPPLY, 2008

ORIGINAL

DEPT #52

FILED
LOS ANGELES SUPERIOR COURT
OCT -2 2007
JOHN A CLARKE CLERK
BY M J FOLLINGS, DEPUTY

NO FEE - GOV'T CODE SEC. 6103
AMOUNT RECOVERABLE PURSUANT
TO 6103.5 GC $ _____
PLUS A ONE TIME ADMINISTRATIVE FEE UPON JUDGMENT
IF THE PARTY BECOMES A JUDGMENT CREDITOR.

SCOTT S. SLATER (SBN 117317)
STEPHANIE OSLER HASTINGS (SBN 186716)
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Attorneys for Defendants CITY OF BURBANK and CITY OF GLENDALE

CITY OF LOS ANGELES
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Deputy City Attorney
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P.O. Box 5111
Los Angeles, California 90051-0100
Telephone: (213) 367-4513
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Attorneys for Plaintiff, CITY OF LOS ANGELES

RECEIVED
SEP 25 2007
A. Caballero

A. Caballero

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

THE CITY OF LOS ANGELES,

Plaintiff,

vs.

CITY OF SAN FERNANDO, et al.,

Defendants.

CASE NO. **C 650 079**

Assigned for All Purposes to the Honorable Susan Bryant-Deason

STIPULATION AND ~~[PROPOSED]~~ ORDER RE. INTERIM AGREEMENT FOR THE PRESERVATION OF THE SAN FERNANDO BASIN WATER SUPPLY

This Stipulation re. Interim Agreement for the Preservation of the San Fernando Basin Water Supply ("Stipulation") is entered into this 19th day of Sept., 2007, by and among the City of Los Angeles, the City of Glendale and the City of Burbank (individually, "Party," and collectively, the "Parties"), all of whom are parties to this action, with reference to the following facts:

WHEREAS, on September 20, 2007, the Parties have entered into the *Interim Agreement for the Preservation of the San Fernando Basin Water Supply* ("Agreement"), a true and correct copy of which is attached hereto as Exhibit A.

WHEREAS, the Agreement is consistent with the 1979 judgment entered by stipulation in this action ("Judgment").

NOW, THEREFORE, the Parties hereby stipulate as follows and respectfully request that the Court enter the proposed Order submitted herewith:

The Parties stipulate that they have entered into the Agreement, the terms of which are hereby adopted and incorporated by this reference as though fully set forth herein.

The Parties further stipulate that the terms of the Agreement shall be judicially enforceable.

The Parties further stipulate to, and request that, the Court enter an order the terms of which are the same as the Agreement.

IN WITNESS WHEREOF, this Stipulation is entered into as of the first date set forth above.

Dated: Sept. 20, 2007

HATCH & PARENT, A LAW CORPORATION

BY Amy Steinfeld FOR:
SCOTT S. SLATER
STEPHANIE OSLER HASTINGS
ATTORNEYS FOR DEFENDANTS, CITY OF BURBANK AND CITY OF GLENDALE

Dated: Sept 24, 2007

CITY OF BURBANK

By:
Carolyn A. Barnes

Dated: Sept. 24, 2007

CITY OF GLENDALE

By:
Christine A. Godinez

Dated: 24 Sept., 2007

CITY OF LOS ANGELES

ROCKARD J. DELGADILLO, City Attorney
RICHARD M. BROWN, General Counsel, Water and Power
JULIE CONBOY RILEY, Deputy City Attorney

By:
Julie Conboy Riley

INTERIM AGREEMENT
FOR THE PRESERVATION OF THE SAN FERNANDO BASIN WATER SUPPLY

This Interim Agreement for the Preservation of the San Fernando Basin Water Supply (Agreement) is entered into as of _____, 2007 between and among the City of Los Angeles acting by and through the Los Angeles Department of Water and Power (Los Angeles), the City of Glendale, a municipal corporation (Glendale) and the City of Burbank, a municipal corporation (Burbank) (each a Party and collectively, the Parties), with reference to the following facts and intentions, which the Parties agree are true and correct to the best of their knowledge and belief:

RECITALS

A. The Parties are parties to the 1979 judgment entered by stipulation in *City of Los Angeles v. City of San Fernando* (California Superior Court Case No. 650079) (the Judgment). Each Party holds rights in and to the San Fernando Basin (Basin), one of the several groundwater basins subject to the Judgment, as set forth in the Judgment. The Parties are also all of the voting members of the Administrative Committee of the Basin, which is authorized by Section 8.3 of the Judgment.

B. The Basin has been, and continues to be, operated in accordance with the terms and conditions of the Judgment. The Superior Court of the County of Los Angeles (Court) retains continuing jurisdiction over the Judgment and the parties to it.

C. On March 23, the Upper Los Angeles River Area Watermaster (Watermaster), which is authorized by Section 8 of the Judgment to assist the Court in its administration and enforcement of the provisions of the Judgment, filed a White Paper with the Court expressing two concerns that the Parties seek to redress by agreement: (i) a reduction in the stored water in the Basin; and (ii) the accumulation of Stored Water credits, as that term is defined in Section 5.2 of the Judgment, by the Parties in excess of the quantity of water available to be pumped by them.

D. The Parties wish to enter into this Agreement to promote a physical solution to the observed falling groundwater levels by promoting artificial replenishment of the Basin in a manner that ensures the viability of the Basin as a long-term reliable water supply. The Parties also wish to enter into this Agreement to provide interim guidelines on the Parties' exercise of their Stored Water credits so as to avoid harm to the Basin.

E. The Parties wish to coordinate their actions to circumvent unnecessary and potentially protracted litigation over the meaning and implementation of the Judgment.

AGREEMENT

NOW, THEREFORE, in consideration of the foregoing recitals, which are incorporated into the operative provisions of this Agreement by this reference, and for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the **PARTIES HERETO AGREE** as follows:

1. **Purpose.** The purpose of this Agreement is to address two issues: (a) reduction in the stored groundwater in the Basin; and (b) the accumulation of Stored Water credits by the Parties in excess of the quantity of water available to be pumped by them. By entering into this Agreement, and by undertaking the actions described herein, the Parties seek to ensure that necessary long-term improvements are made to capture and recharge sufficient quantities of rainfall whenever available to correct declining water levels and to guard against any short-term deficiencies in Basin replenishment as might be associated with drought conditions. In the interim, while these Projects are being implemented, the Parties also agree that some guidelines must be established to avoid harm to the Basin and all Parties.

2. **Term.** The term of this Agreement shall be ten years and shall commence with the 2007-08 Water Year (beginning October 1, 2007). The 2007-08 Water Year shall be Year 1; the 200 8-09 Water Year shall be Year 2, and so on. At the conclusion of the term of this Agreement, on or about September 30, 2017, the Parties, in coordination with the Watermaster, will evaluate the effectiveness of this Agreement including, but not limited to, the status of the Projects, and determine whether this Agreement shall be extended.

3. **Enhancement of Recharge Capacity.** Los Angeles has previously expressed its support for several artificial recharge projects. The Parties acknowledge that if implemented as planned, these projects, individually and collectively, will augment replenishment of the Basin in a manner that arrests the observed decline in groundwater levels. The projects presently being pursued include, but are not limited to: the Sheldon-Arleta Project, the Big Tujunga Dam Seismic Restoration Project, the Hansen Spreading Grounds Project, and the Tujunga Spreading Grounds Project (collectively, the Projects).

3.1 By the conclusion of Year 10, Los Angeles, in collaboration with the Los Angeles County Department of Public Works (a separate public agency which is not a party to this Agreement), intends to support and contribute resources towards the design, construction and implementation of the Projects in a manner that increases the Basin's total artificial recharge capacity over conditions existing as of the date of this Agreement. By taking these actions, Los Angeles anticipates that the long-term average native replenishment of the Basin may be increased by at least 12,000 acre-feet per year. Although the exact quantity of additional recharge that will be derived from these Projects, when completed, is unknown and is dependent ultimately on the quantity and variability of precipitation, it is reasonable to assume the additional recharge of the Basin made possible by these Projects will be substantial. While Los Angeles may also elect to contribute funding towards these Projects, this Agreement does not obligate Los Angeles to fund any of the Projects either in part or in whole.

3.2 Mutual Cooperation. Burbank and Glendale agree to coordinate and cooperate with Los Angeles and the Los Angeles County Department of Public Works as may be necessary to increase the likelihood of timely implementation of the Projects.

3.3 Reporting. Within 60 days of the conclusion of each Water Year during the term of this Agreement, Los Angeles shall file a report with the Administrative Committee, the Watermaster and the Court documenting the status of the Projects, including but not limited to the extent by which the Projects have increased the Basin's total artificial recharge capacity.

4. Pumping Limitation. For the term of this Agreement, the Parties agree not to pump their pro-rata share of the total Stored Water credits held by the Parties collectively that, if pumped, would cause the total quantity of water in storage to fall below -655,370 acre-feet (the 1968 level). The quantity of water that the Parties otherwise could have pumped pursuant to their respective Stored Water credits shall be placed in a reserve, and not lost, until such time as there is sufficient water in storage to permit the pumping of those credits without causing the quantity of water in storage to fall below the 1968 level.

4.1 Calculation of Available Stored Water Credits and Reserved Stored Water Credits. The Parties authorize the Watermaster to calculate, annually, the quantity of Stored Water credits available to be pumped by each Party (Available Stored Water credits) and the quantity of Stored Water credits reserved for later use by each Party (Reserved Stored Water credits), as agreed upon herein.

(a) For purposes of making this calculation, the Watermaster shall: (1) compute each Party's Stored Water credits as of the first day of each Water Year for the term of this Agreement, including the one percent (1%) loss described in Section 5 below; (2) assign a percentage to each Party that reflects the relative proportion of each Party's Stored Water credits to the total quantity of credits available to all Parties; (3) determine the quantity of Stored Water available to be pumped by all Parties and calculate each Party's relative proportion of that total quantity; and (4) calculate the quantity of Stored Water Credits not available to be pumped in that Water Year and reserved for later use. For the 2006-07 Water Year (beginning October 1, 2006), which is not subject to this Agreement, the calculation would be as follows:

Party	Stored Water Credits (AF), Minus 1% Losses	Percentage of Total Quantity of Stored Water Credits for Each Party	Available Stored Water Credits (AF)	Reserved Stored Water Credits (AF)
Los Angeles	370,350	83.146%	139,018	231,334
Glendale	61,215	13.743%	22,978	38,236
Burbank	13,859	3.111%	5,202	8,656
Total	**445,424**	**100%**	**167,198**	**278,226**

4.2 Exception to Satisfy Consent Decree Obligations. Nothing herein shall be construed as causing Burbank or Glendale to pump less groundwater from the Basin than required by the United States Environmental Protection Agency's Consent Decrees for the Burbank Operable Unit [Civil Action 91-4527-MRP (Tx), dated 06-22-1998] and the Glendale North and South Operable Units [CV99-00552 MRP (ANx), dated 05-17-2000], respectively, all of which are incorporated by this reference as if fully set forth herein, and as may be modified or amended from time to time during the term of this Agreement (collectively, Consent Decrees). In the event that the pumping limitations set forth in Section 4 above are triggered by a decline in storage, Burbank and Glendale may pump Reserved Stored Water credits to meet their Consent Decree obligations subject to the following conditions:

(a) In the event Los Angeles is able to produce the full quantity of its Extraction Right to meet the water requirements of its inhabitants for the Water Year in which Glendale's or Burbank's Available Stored Water Credits are not sufficient to meet that Party's Consent Decree obligations, Glendale or Burbank shall be required to purchase Physical Solution water pursuant to Section 9.4 of the Judgment as necessary to meet their respective Consent Decree obligations. For purposes of this Agreement, "Extraction Right" shall mean the total quantity of Los Angeles' Return Water Extraction Right plus Native Safe Yield Credit, as set forth in Table 2-1 1A of the Watermaster's most recent annual report prepared pursuant to section 8.2.11 of the Judgment.

(b) In the event the conditions of paragraph 4.2(a) above are not satisfied, Los Angeles may elect to exchange water or stored water credits with the Party requiring additional water to meet its Consent Decree obligations upon such terms and conditions as the affected Parties may agree upon. In the event an agreement to exchange water or stored water credits sufficient to permit either Glendale or Burbank to satisfy their Consent Decree obligations cannot be reached, Glendale or Burbank may pump Reserved Stored Water credits as necessary to meet their Consent Decree obligations, subject to Paragraph 4.2(c) below.

(c) Any pumping by Glendale and Burbank of Reserved Stored Water credits pursuant to this exception shall not exceed a maximum combined total of 2,000 acre-feet per year over the term of this Agreement. Any pumping in excess of a combined total of 2,000 acre-feet per year over the term of this Agreement shall be pursuant to Section 9.4 of the Judgment.

4.3 Exception for Unforeseen Circumstances. Additionally, to the extent that any Party is required to pump water in excess of that Party's Available Stored Water credits and in reliance upon that Party's Reserved Stored Water credits, to meet presently unspecified federal or state regulatory obligations that may be established in the future or unforeseen material changes in the Parties' operations or Basin conditions, the affected Party(ies) shall coordinate with the Administrative Committee and the Watermaster to determine whether and to what extent additional quantities of groundwater may be extracted in a manner that does not cause harm to the Basin or any other Party.

5. **Account for Groundwater Losses.** The Parties acknowledge that Stored Water losses may occur from the Basin. The Parties further acknowledge that Section 8.2.9 of the Judgment requires the calculation of such losses from Stored Water. The Parties estimate that as much as one percent (1%) of all Stored Water is lost from the Basin annually.

5.1 For the term of this Agreement, or until such time as the Basin loss calculation is re-evaluated, the Parties authorize Watermaster to deduct one percent (1%) annually from each Parties' respective Stored Water credits account.

6. **Basin Safe Yield Study.** The Parties acknowledge that, from time to time, it may be appropriate to study information regarding the hydrology of the Basin, including the Basin's Safe Yield, as that term is defined in the Judgment.

6.1 Within six months of the date of execution of this Agreement, the Parties, in coordination and consultation with the Watermaster, will develop a proposal for conducting a study of the Basin's Safe Yield. The proposal will include each of the following elements: (1) timing for designing, conducting and implementing the study and each of its phases, (2) trigger(s) and parameters for implementing the study, or any part or phase, (3) procedures for managing and allocating costs and for authorizing expenditures during and throughout the study; (4) methods and manner for conducting the study; and (5) anticipated goals or outcomes of the study. Thereafter, the Parties will commence a study of the Basin's Safe Yield that is consistent with the proposal required by this Section, as may be agreed upon by the Parties.

6.2 In the event the Parties are unable to agree to a proposal for studying the Basin's Safe Yield within six months of the date of execution of this Agreement, the Parties, individually or collectively, shall lodge their respective proposals, if any, with the Court. The Court, upon at least 30 days notice thereof and after a hearing, shall make such further or supplemental orders as may be necessary or appropriate and consistent with the Judgment.

7. **Recalculation of Safe Yield.** Regardless of any information collected or reports made pursuant to Section 6 above, the Parties agree to forebear from exercising any and all rights they may have arising under or related to Section 8.2.10 of the Judgment for the term of this Agreement, except as may be necessary to respond to, support or oppose any Watermaster recommendation or action that may be inconsistent with this Agreement, the provisions herein, or any Party's respective rights, remedies and defenses arising under the Judgment or applicable law. After the expiration of this Agreement, the rights of any and all Parties arising under or related to Section 8.2.10 will not be prejudiced by the existence of this Agreement or their agreement to forebear pursuant to its terms.

8. **Annual Accounting by Watermaster.** Watermaster will collect, record and verify, or otherwise arrange for the collection, recordation and verification of, any and all data and information as may be required or generated by this Agreement and as may be otherwise directed by the Administrative Committee or the Court. Upon written request by any Party, all such data and information shall be made available to the Parties. The

Watermaster shall include such data and information in its annual Watermaster Report, prepared pursuant to Section 8.2.11 of the Judgment, a copy of which is filed with the Court.

9. Administrative Committee and Watermaster Authority. Watermaster and the Administrative Committee are not Parties to this Agreement. This Agreement is made among the Parties and nothing herein shall be construed as a limitation on the powers and responsibilities of the Administrative Committee or the Watermaster arising under the Judgment.

10. Reservation of All Rights. Subject to Section 7 above, neither this Agreement, nor any provision herein, shall be construed as a waiver or limitation on any Party's respective rights, remedies and defenses arising under the Judgment or applicable law including, but not limited to, the right to respond to, support or oppose further Watermaster recommendations.

11. Consistency with Judgment and Continuing Jurisdiction. The actions contemplated by this Agreement, if implemented, facilitate a physical solution and are intended as measures that arise under, are consistent with, and in furtherance of, the Judgment. Accordingly, this Agreement shall be subject to the Court's continuing jurisdiction as provided by Section 7 of the Judgment.

12. Further Actions. The Parties contemplate that additional opportunities may arise to further augment the available yield of the Basin during the term of this Agreement. Upon a request by any Party, the Watermaster or the Administrative Committee, the Parties will exercise good faith to fairly evaluate opportunities to exchange water, enhance recharge, evaluate a replenishment program and conserve water. Further, Burbank is actively pursuing an inter-connection with the Metropolitan Water District of Southern California to permit the delivery of replenishment water to Burbank for storage in the Basin. Burbank will file annual status reports with the Watermaster, the Administrative Committee and the Court in a manner similar to Los Angeles' reporting as provided in Section 3.3 above.

13. General Provisions.

13.1 Assignment. This Agreement shall not be assigned by any Party.

13.2 Attorneys' Fees. Should legal action be instituted by any Party to this Agreement, to enforce or interpret any provision of this Agreement, each Party shall bear its own attorneys' fees.

13.3 Authorizations. All individuals executing this Agreement on behalf of the respective Parties certify and warrant that they have the capacity and have been duly authorized to so execute this Agreement on behalf of the entity so indicated.

13.4 Construction. The provisions of this Agreement shall be liberally construed to effectuate its purposes. The language of this Agreement shall be construed

simply according to its plain meaning and shall not be construed for or against any Party, as each Party has participated in the drafting of this Agreement.

13.5 Counterparts. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

13.6 Entire Agreement and Amendment. In conjunction with the matters considered herein, this Agreement contains the entire understanding and agreement of the Parties and there have been no promises, representations, agreements, warranties or undertakings by any of the Parties, either oral or written, of any character or nature binding except as stated herein. This Agreement may be modified, altered or amended only by an instrument in writing, executed by the Parties to this Agreement and by no other means. Each Party waives its right to claim, contest or assert that this Agreement was modified, canceled, superseded or changed by any oral agreement, course of conduct, waiver or estoppel.

13.7 Good Faith. The Parties agree to exercise their reasonable best efforts and utmost good faith to effectuate all the terms and conditions of this Agreement and to execute such further instruments and documents as are necessary or appropriate to effectuate all of the terms and conditions of this Agreement.

13.8 Notices. All notices, approvals, acceptances, demands and other communication required or permitted under this Agreement, to be effective, shall be in writing and delivered in person or by U.S. Mails (prepaid postage, certified, return receipt requested) or by overnight delivery service to the Party to whom the notice is directed at the addresses identified below:

To Los Angeles:

Director of Water Resources
Los Angeles Department of Water and Power
111 N. Hope Street, Room 1460
Los Angeles, CA 90012

With copy to:

Julie Conboy Riley, Deputy City Attorney
Office of the City Attorney
City of Los Angeles
111 N. Hope Street, Room 340
Los Angeles, CA 90012

To Glendale:

Peter Kavoumas, Water Services Administrator
Glendale Water and Power
City of Glendale
141 North Glendale Ave., 4th Level
Glendale, CA 9 1206-4496

With copy to:

Christine Godinez, Assistant City Attorney
City of Glendale
613 East Broadway, Suite 220
Glendale, CA 91206-4394

To Burbank:

William Mace, Assistant General Manager
Burbank Water and Power
City of Burbank
164 West Magnolia Boulevard
P.O. Box 631
Burbank, CA 91503-063 1

With copy to:

Carolyn Barnes, Senior Assistant City Attorney
City of Burbank
275 East Olive Avenue
Burbank, CA 91510-6459

To the Watermaster:

Mark Mackowski
Upper Los Angeles River Area Watermaster
111 N. Hope Street, Room 1450
Los Angeles, CA 90012

To the Court:

The Honorable Susan Bryant-Deason
Judge of the Los Angeles County Superior Court
111 N. Hill Street, Dept. 52
Los Angeles, CA 90012

Any written communication given by mail shall be deemed delivered two (2) business days after such mailing date. Any communication given by overnight delivery service

shall be deemed delivered one (1) business day after the dispatch date. Either Party may change its address by giving the other Party written notice of its new address as provided above.

13.9 Recitals. The recitals set forth at the beginning of this Agreement of any matters or facts shall be conclusive proof of the truthfulness thereof and the terms and conditions set forth therein shall be deemed a part of this Agreement.

13.10 Successors and Assigns. This Agreement shall be binding on and shall inure to the benefit of the Parties and their respective successors.

13.11 Court Approval. The Parties hereto shall seek Court approval of this Agreement prior to September 30, 2007.

14. Waiver. No waiver of any provision or consent to any action shall constitute a waiver of any other provision or consent to any other action, whether or not similar. No waiver or consent shall constitute a continuing waiver or consent or commit a Party to provide a waiver or consent in the future except to the extent specifically stated in writing. No waiver shall be binding unless executed in writing by the Party making the waiver, based on a full and complete disclosure of all material facts relevant to the waiver requested.

[continued on next page]

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement.

DEPARTMENT OF WATER AND POWER OF
THE CITY OF LOS ANGELES BY
BOARD OF WATER AND POWER COMMISSIONERS
OF THE CITY OF LOS ANGELES

Date: 9/19/07 By: _____
ROBERT K. ROZANSKI
Acting General Manager

And: Barbara E. Moseley
Secretary

AUTHORIZED BY RES. 108 048
SEP 04 2007

APPROVED AS TO FORM AND LEGALITY
ROCKARD J. DELGADILLO, CITY ATTORNEY

AUG 22 2007
BY _____
JULIE CONBOY RILEY
Deputy City Attorney

CITY OF GLENDALE

Date: 9/3/07

James E. Starbird, City Manager

Approved as to Form:

By _____
City Attorney

CITY OF BURBANK

Date: 9/13/07

Ronald E. Davis, General Manager,
Burbank Water and Power

Attest:

By
Margarita Campos, City Clerk

Approved as to Form:

By
Carolyn Barnes, Senior Assistant City Attorney

SB 440012 v1:011538.0001

ORDER

Having read and reviewed the foregoing stipulation, **IT IS HEREBY ORDERED** that the terms of the *Interim Agreement for the Preservation of the San Fernando Basin Water Supply*, dated September 20, 2007 ("Agreement"), which is entered into by and between the City of Los Angeles, the City of Glendale and the City of Burbank, all of whom are parties to this action, a copy of which is attached hereto and incorporated herein by this reference, shall be the Order of the Court. The Parties are hereby ordered to comply with the terms of the Agreement.

DATED: October 2, 2007 Judge Susan Bryant-Deason
JUDGE OF THE SUPERIOR COURT

PROOF OF SERVICE

I am employed in the County of Los Angeles; I am over the age of eighteen years and am not a party to the within entitled action; my business address is 111 North Hope Street, Suite 340, Los Angeles, California 90012-2694. On September 25, 2007, I served the within documents:

STIPULATION AND [PROPOSED] ORDER RE. INTERIM AGREEMENT FOR THE PRESERVATION OF THE SAN FERNANDO BASIN WATER SUPPLY

[ ] by transmitting via facsimile the document(s) listed above to the fax number(s) set forth below on this date.

[X] by placing the document(s) listed above in a sealed envelope with postage thereon fully prepaid, in the United States mail at Los Angeles, California addressed as set forth below.

[ ] by personally delivering the document(s) listed above to the person(s) at the address(es) set forth below.

PLEASE SEE THE ATTACHED LIST.

I am readily familiar with the firm's practice of collection and processing correspondence for mailing. Under that practice it would be deposited with the U.S. Postal Service on that same day with postage thereon fully prepaid in the ordinary course of business.

I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

Executed on September 25, 2007, at Los Angeles, California.

Lillian M. Catena

Lillian M. Catena

THE CITY OF LOS ANGELES v. CITY OF SAN FERNANDO, ET AL.
LASC CASE NO. C 650 079

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SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

THE CITY OF LOS ANGELES, Plaintiff, v. CITY OF SAN FERNANDO, et al., Defendants.	Case No. C650 079 **WATERMASTER STATEMENT RE: INTERIM AGREEMENT FOR THE PRESERVATION OF THE SAN FERNANDO BASIN WATER SUPPLY** Before the Hon. Susan Bryant-Deason

The court-appointed Watermaster hereby submits the following statement regarding the Stipulation and [Proposed] Order re: Interim Agreement for the Preservation of the San Fernando Basin Water Supply, submitted by the Cities of Los Angeles, Glendale and Burbank ("Agreement").

The Watermaster supports this Court's approval of the Agreement. The Watermaster appreciates the efforts on the part of the Cities of Los Angeles, Glendale and Burbank to reach a negotiated solution to the complex issues affecting the declining stored groundwater levels in the San Fernando Basin. The Watermaster believes the Agreement

represents significant progress in addressing the issues set forth in the Watermaster White Paper lodged with this Court on March 23, 2007. The Agreement contains many elements that will help restore the long-term sustainability of the Basin, and the Agreement expressly provides for the preservation of all Watermaster authority under the Judgment.[1]

While the Watermaster supports approval of the Agreement, and while the Watermaster is hopeful that the Agreement will facilitate improved storage levels in the Basin, the Watermaster is obligated to raise several issues that may materialize in the future.

First, the Watermaster believes that a Basin Safe Yield Study is a critical component of understanding the true and correct hydrologic conditions in the Basin. It has been over 40 years since a Basin Safe Yield Study has been performed. Section 6 of the Agreement provides that the Parties will develop a proposal for a Basin Safe Yield Study. This paragraph further provides that if the Parties do not come to an agreement on a single proposal, then the Parties will submit their separate proposals to this Court. The Agreement therefore has the potential to delay the Basin Safe Yield Study. The Watermaster agrees that a six month period is ample time for the Parties to agree upon the proposal for the Basin Safe Yield Study. Indeed, the Parties should endeavor to commence the study prior to the time allocated by the Agreement. In any case, the Safe Yield Study should begin no later than the completion of the six month study period.

Second, the Watermaster believes that actual losses must be calculated, not merely estimated. Section 5.1 of the Agreement provides that for the 10-year term of the Agreement, the Parties authorize Watermaster to deduct one-percent annually from each Party's respective Stored Water Credit, or until such time as the Basin loss calculation is re-evaluated. The Watermaster believes the one-percent estimate is reasonable on an interim basis. However, Section 8.2.9 of the Judgment requires that Watermaster shall calculate and

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[1] Paragraph 9 of the Agreement provides: "Watermaster and the Administrative Committee are not Parties to this Agreement. This Agreement is made among the Parties and nothing herein shall be construed as a limitation on the powers and responsibilities of the Administrative Committee or the Watermaster arising under the Judgment."

account for stored water losses.[2] It is therefore imperative that Watermaster calculate the true and correct Basin losses from rising groundwater and underflow. Upon obtaining the necessary data to accurately perform that calculation, Watermaster believes it is necessary and appropriate to deduct actual losses, not estimated losses, from the Parties' Stored Water Credits. Therefore, the Watermaster will recommend that the calculation for determining Basin losses be re-evaluated as part of the Basin Safe Yield Study, and implemented upon completion of the Study.

Third, Section 4.2.6.1 of the Judgment states that the San Fernando Basin "...remained in overdraft continuously until 1968, when an injunction became effective. Thereafter, the basin was placed on safe yield operation." The Parties anticipate that the actions required of them under the Agreement will forestall the Basin's decline and prevent groundwater levels from slipping below the 1968 benchmark. However, if progress does not materialize as anticipated and groundwater levels fall below the 1968 level, the Watermaster may be obligated to declare overdraft and consider further options consistent with the Judgment to protect the Basin.

The Watermaster is hopeful that the Parties will reach consensus on the implementation of a Basin Safe Yield Study, the calculation of losses, and conjunctive use projects to replenish the Basin. In that regard, the Watermaster hopes that the reservations expressed herein will not need to be addressed by this Court. Nonetheless, in light of the Agreement's dependence on additional action by the Parties over the next 10 years, and in particular the next six months, the Watermaster is obligated to inform this Court of the aforementioned issues.

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[2] Section 8.2.9, in relevant part, provides: "Watermaster shall record and verify additions, extractions and losses and maintain an annual and cumulative account of all (a) stored water and (b) import return water in San Fernando Basin."

The Watermaster expresses its appreciation to the Parties and this Court for their attention in developing solutions to enhance the long-term sustainability of the San Fernando Basin.

DATED: September 25, 2007

NOSSAMAN, GUTHNER, KNOX & ELLIOTT, LLP
Frederic A. Fudacz
Alfred E. Smith

By: _____
Alfred E. Smith
Attorneys for Upper Los Angeles River Area Watermaster

PROOF OF SERVICE

The undersigned declares:

I am employed in the County of Los Angeles, State of California. I am over the age of 18 and am not a party to the within action; my business address is c/o Nossaman, Guthner, Knox & Elliott, LLP, 445 S. Figueroa Street, 31st Floor Los Angeles, California 90071-1602.

On September 25, 2007, I served the foregoing **WATERMASTER STATEMENT RE: INTERIM AGREEMENT FOR THE PRESERVATION OF THE SAN FERNANDO BASIN WATER SUPPLY** on parties to the within action by placing ( ) the original (x) a true copy thereof enclosed in a sealed envelope, addressed as shown on the attached service list.

(X) (By U.S. Mail) On the same date, at my said place of business, said correspondence was sealed and placed for collection and mailing following the usual business practice of my said employer. I am readily familiar with my said employer's business practice for collection and processing of correspondence for mailing with the United States Postal Service, and, pursuant to that practice, the correspondence would be deposited with the United States Postal Service, with postage thereon fully prepaid, on the same date at Los Angeles, California.

( ) (By Facsimile) I served a true and correct copy by facsimile pursuant to C.C.P. 1013(e), to the number(s) listed on the attached sheet. Said transmission was reported complete and without error. A transmission report was properly issued by the transmitting facsimile machine, which report states the time and date of sending and the telephone number of the sending facsimile machine. A copy of that transmission report is attached hereto.

( ) (By Overnight Service) I served a true and correct copy by overnight delivery service for delivery on the next business day. Each copy was enclosed in an envelope or package designated by the express service carrier; deposited in a facility regularly maintained by the express service carrier or delivered to a courier or driver authorized to receive documents on its behalf; with delivery fees paid or provided for; addressed as shown on the accompanying service list.

Executed on September 25, 2007.

(X) (STATE) I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

( ) (FEDERAL) I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Charlyn Jones

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APPENDIX H
WELLS DRILLED, REACTIVATED, ABANDONED, OR DESTROYED

ACTIVITIES INVOLVING THE CONSTRUCTION, REHABILITATION, AND/OR DESTRUCTION OF WATER WELLS

2010-11 WATER YEAR

Foothill Well Rehabilitation (City of Glendale)

During the 2010-11 Water Year, the City of Glendale investigated an abandoned well on Foothill Boulevard in the City of Glendale. The well, originally constructed in 1924, is located in the Verdugo Basin. After a video log and water quality testing were completed, it was recommended by the City's consultant that this well is suitable for rehabilitation. Thus, this Foothill well, located at 3720 Foothill Blvd in Glendale, was rehabilitated and connected to the City's water supply system via the New York Reservoir, approximately 3,500 feet away.

Rehabilitation of the well commenced in January 2010 and all work, including connection to the City's water supply system, was completed in May 2011. The Foothill well originally had a 12-inch diameter casing, but an 8-inch diameter PVC liner casing was installed as part of its re-development. This newly-lined well is approximately 300 ft deep, and has a discharge rate of approximately 200 gpm; it is connected to the City's New York reservoir via a newly-installed 8-inch ductile iron pipeline running along Foothill Blvd and New York Ave. Groundwater from this Foothill well is blended with Metropolitan Water District (MWD) imported water at the New York Reservoir before being distributed to customers.

Rockhaven Well Construction (City of Glendale)

Also in July 2011, Bakersfield Well & Pump Company completed the drilling and development of the new Rockhaven Well on the Rockhaven Sanitarium site south of La Crescenta Avenue, at 2740 Hermosa Avenue in the City of Glendale. The results from downhole testing of the pilot well were very favorable, and the site consultant estimated a yield of 500 to 700 gpm for the new production well. Nitrate levels of the water were at or slightly above the Primary MCL of 45 mg/L for nitrate as NO_3. Tetrachloroethylene (PCE) was also detected in the water at concentrations of 4.9 µg/L; this concentration is below the 5.0 µg/L Primary MCL for this constituent. The City intends to start the development of the site into a full production well in 2012.

Well 4A Rehabilitation (City of San Fernando)

In May 2011, an incident occurred at Well 4A, during start-up whereby, the pump and motor thrusted backwards causing the column pipe assembly to be pulled out one-inch from a transition coupling assembly. The cause of the incident could not be identified. The pump and motor assembly was pulled for inspection and rehabilitation by General Pump Company

to ensure no internal damage occurred. A total of 370 ft of 6-inch diameter column pipe were removed for inspection and rehabilitation. Their inspection showed only normal wear.

Other work completed by General Pump Company consisted of reconditioning of the pump bowls, motor, suction pipe, strainer, and packing box assembly. All worn parts were replaced and the perforated portions of the well were wire brushed and cleaned. The well was also video logged by Sonar Jet Company before and after the well casing had been wire brushed cleaned. Well 4A is approximately 580 ft deep and had a static water level of 140 ft when the work was being done; its typical discharge rate is approximately 500 gpm. It discharges water into Reservoirs #2A and #5 which feed into the City's distribution system (lower pressure zone).

APPENDIX I
ACTION ITEMS 2011-12 WATER YEAR

ACTION ITEMS

WATERMASTER ACTIVITIES FOR 2011-12 WATER YEAR

1. Begin the work needed for the four ULARA groundwater basins to be in conformance with the new DWR regulations regarding the California Groundwater Elevation Monitoring (CASGEM) program.

2. Continue to support ways to maximize the spreading of native water and increase the infiltration of urban runoff in the SFB.

3. Continue to work with the cities of Los Angeles and San Fernando to finalize the Watermaster's recent Draft of the safe yield re-assessment of the Sylmar Basin; part of this effort will also be to make the new re-assessment more consistent with the provisions in the Judgment for this basin.

4. Initiate work efforts on a Salt and Nutrient Management Plan (SNMP) for the 4 groundwater basins within ULARA. This SNMP is a new program promulgated by the State Water Resources Control Board for all groundwater basins in the State.

5. Continue to work with the City of Los Angeles Department of Water and Power--Watershed Protection Division and their Standard Urban Stormwater Mitigation Program (SUSMP) for the proposed development and/or the re-development of properties within the City portion of the San Fernando Valley.

6. Collect, organize, convert to electronic format, and correlate the driller's logs, geologic logs and electric logs for new water wells and groundwater monitoring wells in the ULARA groundwater basins.

7. Collect, organize, convert to electronic format, and correlate electric logs of wildcat and/or producing oil wells in the San Fernando and Sylmar groundwater basins.

8. Collect, scan, and convert to electronic format all prior Annual Watermaster Reports, the Judgment and the 2-volume set of the Report of Referee.

9. Continue to work with the Parties and regulatory agencies, such as the USEPA and RWQCB – Los Angeles, to enforce chromium cleanup in the SFB.

10. Continue to work with the Parties to implement a meter calibration program to verify the accuracy of the flowmeter at each of their active pumping wells within ULARA. This program will include the replacement of meters that cannot be re-calibrated or properly repaired.

11. Begin to work with the California Department of Public Health and other regulators to assess the feasibility of either the direct recharge or the spreading of recycled water into the ULARA groundwater basins, via the use of ASR wells and/or artificial spreading basins, respectively.

12. Continue to assess groundwater extractions by private pumpers in the hill and mountain areas within ULARA.

13. Continue to attend meetings of technical groups, such as the Association of Groundwater Agencies (AGWA) and the Groundwater Resources Association (GRA), to exchange ideas and information regarding water quality and groundwater basin management.

14. Conduct field visits to selected contamination sites and meet with regulators and site owners and/or their consultants in an effort to help accelerate the time schedules and effectiveness of cleanup activities at these sites.

APPENDIX J
WATER EQUIVALENTS

WATER EQUIVALENTS

Volume

1 gallon* ……	= 3.7854 liters (L)	= 231** cubic inches (in^3)
……	= 0.003785 cubic meters (m^3)	= 0.132475 cubic feet (ft^3)
100 cubic feet (HCF)**** …….....	= 748 gallons (gal)	= 2.83317 cubic meters (m^3)
…….....	= 2,832 liters (L)	= 3.70386 cubic yards (yd^3)
…….....	= 6,230.8 pounds of water (lb)	= 2,826.24 kilograms (kg)
1 acre-foot (AF)*** ……..	= 43,560** cubic feet (ft^3)	= 1233.5 cubic meters (m^3)
……..	= 325,851 gallons (gal)	= 1,233,476.3754 liters (L)
……..	= the average amount of water used by two families for one year.	

Flow

1 cubic foot per second (cfs) …	= 448.83 gallons per minute (gpm)	= 0.028317 cubic meters/sec (m^3/s)
…	= 646,317 gallons per day (gal/day)	= 1.70 cubic meters/min
…	= 1.98 AF/day	= 2446.6 cubic meters/day
1,000 gallons per Minute(gpm) …	= 2.23 cubic feet per second (cfs)	= 0.063 cubic meters/sec (m^3/s)
...	= 4.42 AF/day	= 5452.6 cubic meters/day
...	= 11,613.01 AF/year	= 1.99 million cubic meters/yr
1 million gallons per day (mgd) …	= 3.07 AF/day	= 3785 cubic meters/day
...	1,120.14 AF/year	= 1.38 million cubic meters/yr

Concentration

…	= 1.0 milligrams per liter (mg/L)	= 1.0 part per million (ppm)
…	= 1.0 micrograms per liter (μg/L)	= 1.0 part per billion (ppb)

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* U.S. gallons
** Exact Value
*** An acre-foot of water covers one acre of land one foot deep
**** This is a billing unit of DWP

APPENDIX K
LIST OF ABBREVATIONS

LIST OF ABBREVIATIONS

AF	Acre-feet
AF/Y	Acre-feet per Year
BOU	Burbank Operable Unit
BTEX	Benzene, tolulene,ethylbenzene,and total xylene
CVWD	Crescenta Valley Water District
Cal-EPA	California Environmental Protection Agency
DCA	Dichloroethane
DCE	Dichloroethylene
CDPH	California Department of Public Health
DTSC	California Department of Toxic Substances Control
DWP	Department of Water and Power (see also LADWP)
EPA	Environmental Protection Agency (see also USEPA)
EVWRP	East Valley Water Recycling Project
LAFD	Los Angeles Fire Department
GAC	Granular Activated Carbon
GOU	Glendale Operable Unit
GNOU	Glendale North Operable Unit
GSOU	Glendale South Operable Unit
gpm	Gallons Per Minute
LACDPW	Los Angeles County Department of Public Works
LADWP	Los Angeles Department of Water and Power
MCL	Maximum Contaminant Level
mg/L	Milligrams per Liter, same as PPM
MTA	Metropolitan Transportation Authority
MWD	Metropolitan Water District of Southern California
NHOU	North Hollywood Operable Unit
OEHHA	Office of Environmental Health Hazard Assessment
OU	Operable Unit
PCE	Tetrachloroethylene
PHG	Public Health Goal
PPB	Parts Per Billion, same as micrograms per liter
PPM	Parts Per Million, same as milligrams per liter
PSDS	Private Sewage Disposal Systems
RAW	Removal Action Workplan
RI	Remedial Investigation
RWQCB	Regional Water Quality Control Board
SFB	San Fernando Basin
SUSMP	Standard Urban Stormwater Mitigation Plan
SWRCB	State Water Resouces Control Board
SWAT	Solid Waste Assessment Test
TCA	1,1,1- Trichloroethane
TCE	Trichloroethylene
TDS	Total Dissolved Solids
TSG	Tujunga Spreading Grounds
µg/L	Micrograms per Liter, same as PPB
ULARA	Upper Los Angeles River Area
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound

LIST OF ABBREVIATIONS

VPWTP	Glendale-Verdugo Park Water Treatment Plant
USGS	United States Geological Survey