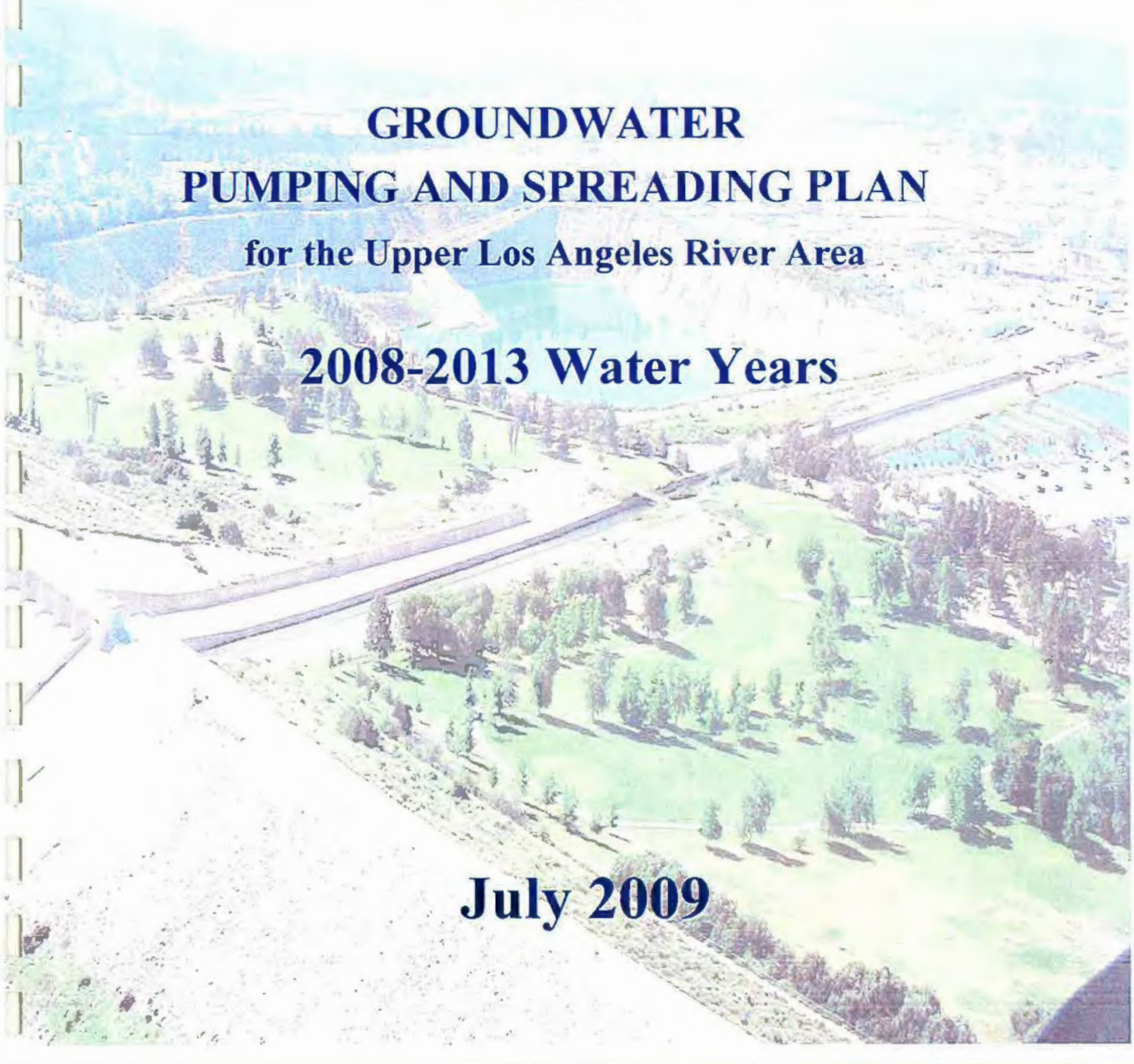
Annual Report

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



GROUNDWATER
PUMPING AND SPREADING PLAN

for the Upper Los Angeles River Area

2008-2013 Water Years

July 2009

ANNUAL REPORT

UPPER LOS ANGELES RIVER AREA WATERMASTER

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GROUNDWATER PUMPING AND SPREADING PLAN FOR THE UPPER LOS ANGELES RIVER AREA (ULARA) LOS ANGELES COUNTY, CALIFORNIA

2008-2013 WATER YEARS
October 2008 – September 2013

ULARA WATERMASTER
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JULY 2009

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I. EXECUTIVE SUMMARY

As the new Watermaster for the Upper Los Angeles River Area (ULARA) as of January 1, 2009, I am pleased to submit this Annual Report for the ULARA Groundwater Pumping and Spreading Plan for the 2008-2013 Water Years. This report is prepared in compliance with Section 5.4 of the ULARA Watermaster's Policies and Procedures that established the Watermaster's responsibility for management of the four groundwater basins in ULARA (the San Fernando, Verdugo, Sylmar and Eagle Rock basins). The Pumping and Spreading Plan includes, as appendices, the individual plans submitted by the five major pumping parties (the cities of Burbank, Glendale, Los Angeles and San Fernando, and the Crescenta Valley Water District), and the plan reports estimated changes in recharge, spreading, pumping, and pumping patterns, especially in relation to the present and future plans for groundwater cleanup in the San Fernando Groundwater Basin.

In the Sylmar Basin, the City of San Fernando expects to pump its full groundwater right in the current Water Year, while the City of Los Angeles expects to pump less than its annual entitlement. In the San Fernando Basin (SFB), the cities of Glendale and Burbank plan to pump more than their full adjudication, while Los Angeles is planning to pump less than its adjudicated amount in the 2008-09 Water Year. Glendale has limited pumping capacity in the Verdugo Basin but plans to pump its full water right beginning in 2010-11. Crescenta Valley Water District (CVWD) plans to pump less than its full water right from the Verdugo Basin in 2008-09.

Currently, there are five major groundwater cleanup plants in operation in ULARA: the North Hollywood Operable Unit (OU) and the Pollock Wells Treatment Plant in the City of Los Angeles; the Burbank OU (BOU) in Burbank; the Glendale OU (GOU) in Los Angeles; and the CVWD Glenwood Nitrate Removal Plant in La Crescenta. Glendale is constructing the Chromium Removal Demonstration Facilities that will remove hexavalent chromium from a portion of the groundwater produced by the Glendale OU. The demonstration project will be operational by September 2009, using weak-base anion exchange (WBA), and reduction, coagulation and filtration (RCF) technologies.

The Watermaster has continued to address the decline of groundwater stored in the SFB. As part of that effort, the prior Watermaster (Mr. Mark Mackowski) filed a "white paper" with the Superior Court in March 2007 entitled, "Is the San Fernando Groundwater Basin Undergoing a Long-Term Decline in Storage?" As a result, the cities of Glendale, Burbank, and Los Angeles entered into a Stipulated Agreement in 2007 that limited pumping of their Stored Water Credits in the SFB. Details about this agreement and a copy are provided in the Annual Watermaster

Report dated May 1, 2009. In addition, a re-evaluation of the safe yield of the SFB was ordered by the Superior Court, and the work is a provision of the aforementioned Stipulated Agreement. The firm of Stetson Engineers, Inc. was selected by the ULARA Administrative Committee in late-2008 to perform the safe yield re-evaluation of the San Fernando Basin; this study is still in-progress at this time.

The groundwater model prepared and updated this year by the Los Angeles Department of Water and Power simulates the combined effects of projected pumping on groundwater elevations in the SFB for the next five years. The most significant effects shown by model results continue to be the cones of depression formed in Layer 1 (Upper Zone) as a result of pumping by Los Angeles at the Tujunga, Rinaldi-Toluca, and North Hollywood Wellfields and Burbank's pumping at the BOU (see graphical simulation on Plate 3). Also a noteworthy result from the model is the minor rebound of groundwater levels in the vicinity of some wellfields, spreading grounds, and other areas of the basin located away from the effects of these wellfields. This rebound was attributed to the estimated cumulative amounts of recharge exceeding cumulative extractions by 74,415 AF over the next five years as simulated by the model.

In closing, I wish to acknowledge the timely responses of each party and express appreciation to each of those parties for providing information and data that were essential to the completion of this Annual Report.

RICHARD C. SLADE
ULARA Watermaster

II. <u>INTRODUCTION</u>

As a result of the groundwater contamination that was discovered in the San Fernando Basin in the late-1970s, the ULARA Watermaster and the Administrative Committee, together with the Los Angeles Regional Water Quality Control Board (LARWQCB), revised the ULARA Watermaster's <u>Policies and Procedures</u> in July 1993 to help prevent further degradation of groundwater quality and to limit the spread of contamination in the four ULARA groundwater basins. The <u>Policies and Procedures</u> were revised again in February 1998 to organize the material into a more accessible and complete document.

Section 5.4 of the <u>Policies and Procedures</u> assigns the responsibility to each of the five municipal-supply purveyors (parties) in ULARA to prepare its own Groundwater Pumping and Spreading Plan. These five parties include the cities of Burbank, Glendale, Los Angeles, and San Fernando, and the Crescenta Valley Water District (CVWD). Thus, each municipal pumper is required to annually submit (on or before May 1 of each Water Year) a <u>Groundwater Pumping and Spreading Plan</u> to the ULARA Watermaster. This plan is to include five-year projected groundwater pumping and spreading volumes, recent water quality data for each well, and any modifications planned for key facilities (e.g., wells, treatment plants, etc).

The ULARA Watermaster is required to evaluate and report on the impact of the combined pumping and spreading activities by all parties regarding the implementation of the San Fernando Judgment of January 26, 1979 and to provide, if needed, recommendations for improving groundwater management and/or for protecting groundwater quality in the ULARA groundwater basins. The Watermaster's evaluation and recommendations are to be included in each Annual <u>Groundwater Pumping and Spreading Plan</u>, and the Administrative Committee is to review and approve the plan by July 1 of each Water Year.

This Annual Report represents the July 2009 <u>Groundwater Pumping and Spreading Plan</u> for the 5-year period of 2008-2013 for ULARA, and it has been prepared pursuant to the <u>Policies and Procedures</u>. This report provides guidance to the Administrative Committee for use in improving basin management, providing protection of the water rights of each party, and protecting water quality within ULARA.

III. PLANS FOR THE 2008-2013 WATER YEARS

A. Projected Groundwater Pumping for 2008-09 Water Year

The total groundwater pumping by all parties this year is projected to be 80,415 acre feet (AF) as shown on Table 3-1B; this volume is 15,547 AF below the 29-year historical average (1979-2008). The estimated pumping for 2009-10 is 90,789 AF, also below the historical average by 5,173 AF.

As shown in Table 3-1B, the City of Burbank plans to pump 10,297 AF of groundwater from the SFB, which exceeds its annual entitlement. Excluding 420 AF of pumping by Valhalla Mortuary, extractions by Burbank will be 1,324 AF more than its five-year average and higher than its long term average by more than 5,000 AF. Burbank's annual entitlement for the 2008-09 Water Year was 4,855 AF, based on its 20 percent import return credit. The planned extractions support groundwater clean-up operations at the BOU plant, which has a capacity of 9,000 gallons per minute (gpm) or about 14,000 acre-feet per year (AF/Y). Pumping in excess of the annual import return credit can come from Physical Solution purchases from Los Angeles of up to 4,200 AF/Y. Burbank can also draw from its *available* groundwater storage credits, which were 5,550 AF as of October 1, 2008 (Burbank also has an additional 13,134 AF of stored water credits *on reserve*). Burbank may also purchase and import water from the Metropolitan Water District of Southern California (MWD) and store it in the SFB, or obtain stored water credits from Los Angeles and/or Glendale.

CVWD plans to pump 3,050 AF in 2008-09, which is slightly less than its full right of 3,294 AF/Y. This planned pumping by CVWD from the Verdugo Basin is more than its long-term average pumping by 204 AF since 1979, but is lower than its five-year average by 109 AF. In past years, CVWD has pumped a portion of the allocation of Glendale from the safe yield of the Verdugo Basin, from which Glendale was unable to pump.

The City of Glendale resumed significant pumping from the SFB when the GOU began operating in September 2000. Glendale plans to pump 7,725 AF from the SFB in the 2008-09 Water Year, an increase of 229 AF from its five-year average. In the SFB, Glendale's annual water right is approximately 5,800 AF, based on its 20 percent import return credit for water delivered to its service area within the SFB during the 2007-08 Water Year. Glendale has the right to purchase up to 5,500 AF/Y of Physical Solution water from Los Angeles to cover the excess pumping. Glendale can also draw from its *available* stored water credits, which were 16,838 AF as of October 1, 2008 (Glendale also has an additional 39,909 AF of stored water credits *on reserve*).

In the Verdugo Basin, Glendale plans to pump 2,393 AF in 2008-09, an increase of 97 AF over its 29-year historical average, and 31 AF less than its average pumping during the past five years.

The City of Los Angeles plans to pump 52,518 AF this year from the SFB, a volume that is 24,494 AF less than its long-term (1979-2008) annual average and 3,884 AF less than its average pumping over the past five years. Los Angeles will pump 1,027 AF of groundwater from the Sylmar Basin; this volume is 1,876 AF less than its 1979-2008 average. As of October 1, 2008, Los Angeles' available stored water credits were 120,560 AF in the SFB (Los Angeles also has an additional 285,753 AF of stored water credits *on reserve* in the SFB) and 9,423 AF in the Sylmar Basin.

In 2008-09, the City of San Fernando plans to pump 3,405 AF from the Sylmar Basin. This volume is 201 AF more than its average pumping for the past five years and 318 AF more than its 29-year average. San Fernando has a stored water credit of 983 AF as of October 1, 2008.

Estimated pumping capacities of the ULARA wellfields are provided in Table 3-1. Actual and projected amounts of pumping and spreading by the major parties during 2008-09 are shown in Tables 3-1A, 3-1B, and 5-1A.

B. Constraints on Pumping as of 2008-09

SAN FERNANDO BASIN

In September 2008, the cities of Los Angeles, Glendale, and Burbank signed a Stipulated Agreement entitled, "Interim Agreement for the Preservation of the San Fernando Basin Water Supply." The Agreement became effective in the 2007-08 Water Year. One of the provisions of that Agreement limits the pumping of the Stored Water Credits of these three cities in the SFB to amounts that would not cause the stored groundwater volume to fall below its 1968 volume; this 1968 date is when the Superior Court placed the SFB on safe yield operation (Judgment Section 4.2.6.1). A copy of the Agreement is in Appendix G of the Annual Watermaster Report dated May 2009 or it can be obtained upon request from the Watermaster Office.

City of Burbank - In January 1996, a portion of the pumping capability of Burbank was restored when the Lockheed-Burbank Operable Unit (BOU) was activated under Phase I of the Consent Decree with the United States Environmental Protection Agency (USEPA). Burbank assumed the 18-year operation of the facility on March 12, 2001 under provisions of the Second Consent Decree. Although the USEPA turned over operating control of the BOU facility to the City of Burbank, negotiations continued with Lockheed-Martin (Lockheed) over several issues including the pumping capacity of the eight water-supply wells in the BOU Wellfield.

In January 2002, USEPA approved a mode of operation using the existing wells and then blending the groundwater extractions with imported MWD water to keep total chromium at concentrations at or below 5 micrograms per liter (μg/L); 1 μg/L is equivalent to one part per billion (ppb). This 5 μg/L concentration limit is the goal established by the Burbank City Council for delivered water within the City. Part of the pumping plan includes the voluntary shut down of the Lake Street/ granulated activated carbon (GAC) wells, which contained elevated total chromium concentrations that could not be blended to a concentration of 5 μg/L or less. Except for a small amount of pumping in 2008 (130 AF used for cooling tower waters at Burbank's power plant), the Lake Street/GAC wells continue to be off-line.

The Burbank OU will pump approximately 9,747 AF of groundwater during the 2008-09 Water Year, compared to its design capacity of 14,000 AF/Y. The cause of the reduced pumping was the subject of a study by Montgomery Watson Harza (MWH), a consulting firm retained by Burbank. MWH conducted the Performance Attainment Study to evaluate the BOU Wellfield and appurtenant facilities in an effort to increase groundwater extractions up to 9,000 gpm. The Well Field Performance Attainment Study was completed and reviewed by the USEPA and Lockheed-Martin. An operation plan is being developed to implement various recommendations in the report, including the possible deflation of inflatable packers that had been previously installed in the BOU wells.

City of Glendale – The Glendale OU began operating in September 2000 but hexavalent chromium was encountered shortly thereafter in the pumped groundwater. However, because the Glendale OU was not designed to treat for chromium, Glendale must blend the treated water with imported supplies from MWD to maintain the concentrations of this contaminant below 6 μg/L, the goal set by the Glendale City Council.

Glendale has received several grants from federal appropriations and the American Water Works Association Research Foundation (AWWARF) to investigate technology capable of large-scale treatment of hexavalent chromium. As a result, Glendale is constructing the Chromium Removal Demonstration Facilities to remove hexavalent chromium from groundwater produced by GOU Well GS-3 using weak base anion (WBA) exchange and from a small amount of the groundwater processed by the Glendale Water Treatment Plant using reduction, coagulation and filtration (RCF) technology. Construction should be completed by September 2009.

City of Los Angeles - All wellfields of Los Angeles within the SFB have been impacted by groundwater contamination, primarily from volatile organic compounds (VOCs), such as trichloroethylene (TCE) and perchloroethylene (PCE). The Pollock Wellfield was partially restored when the Pollock Wells Treatment Plant was placed into service on March 17, 1999. The Tujunga and Rinaldi-Toluca Wellfields, overtime, have also experienced increasing concentrations of TCE, PCE, and nitrate above their respective Maximum Contaminant Level (MCL) at the wellheads; these trends are being evaluated. Low concentrations of perchlorate have recently been detected in both the Rinaldi-Toluca and Tujunga Wellfields. Los Angeles is installing liquid-phase GAC wellhead treatment on two of its wells in its Tujunga Wellfield to treat for VOC contamination. These facilities should be operational by Fall 2009.

SYLMAR BASIN

City of San Fernando - All of the groundwater pumped by the City of San Fernando is extracted from the Sylmar Basin, where VOC contamination has not been detected in their municipal-supply wells or restricted their pumping. However, elevated nitrate concentrations have been detected in wells owned by San Fernando, but, to date, these concentrations have remained below the 45 milligrams per liter (mg/L) MCL set for this contaminant. Old septic systems and past agricultural practices are the likely causes of these elevated nitrate concentrations. San Fernando is pursuing state grants to fund the installation of wellhead treatment facilities.

City of Los Angeles - Los Angeles was unable to pump its full adjudicated water right from the Sylmar Basin in 2008-09 due to physical deterioration of the Mission Wells facility. Elevated levels of VOCs were also detected in one of the supply wells. A project to rehabilitate the Mission Wells facilities is underway, including recent installation of a new tank and the planning for a new pumping station and three supply wells. The new facilities will enable Los Angeles to pump both its annual water right and its stored water credits.

Judgment Section 5.2.2.3 limits the accumulation of Stored Water Credits in the Sylmar Basin to a maximum of five years. Of the 9,423 AF of Stored Water Credits of the City of Los Angeles, 6,081 AF currently exceed the five year limitation. Due to underflow losses from the Sylmar Basin, it should be assumed that all Stored Water Credits older than five years no longer exist.

VERDUGO BASIN

Crescenta Valley Water District - All of the groundwater rights of CVWD occur in the Verdugo Basin. Contamination from VOCs is minimal, however, nitrate contamination is widespread and methyl tertiary butyl ether (MTBE), a component of gasoline, was detected in a few wells also. Elevated nitrate concentrations are mitigated in the water supply by treating a portion of the pumped groundwater using anion exchange at the Glenwood Nitrate Removal Plant, and by blending untreated groundwater with treated groundwater and/or with imported MWD supplies to meet drinking water standards.

In past years, CVWD was given permission on an annual basis by the Watermaster to pump in excess of its right until the City of Glendale is able to pump its entire right from Verdugo Basin. During Water Years 2004-05, 2005-06, and 2006-07, CVWD pumped in excess of its adjudication without obtaining permission from the Watermaster. The Watermaster did not grant CVWD permission to over-pump because Glendale had expressed its intention to increase its production from the Verdugo Basin in the near future; Glendale has not increased its production from Verdugo Basin for several years. CVWD and Glendale reached an agreement to settle past over-pumping for Water Years 2004-05 and 2005-06. Glendale and CVWD have continued their discussions about the over-pumping that occurred during the 2006-07 Water Year.

Since 2005, CVWD has detected concentrations of MTBE ranging from just above 0.22 μg/L to as high as 50 μg/L in all of its 12 groundwater wells. In August 2006, concentrations of MTBE increased to values above its Primary MCL of 13 μg/L in Well 7 and this well was taken out of service. The Watermaster responded by establishing the Verdugo Basin MTBE Task Force in November 2006 which included the California Department of Public Health (CDPH), the LARWQCB, the ULARA Watermaster's Office, Glendale Water and Power, CVWD and various oil companies and independent gas station owners. The Task Force has been meeting on a bi-monthly basis to coordinate site-remediation activities among the responsible parties.

In 2007, the MTBE concentrations in Well 7 decreased to less than 3.0 µg/L and Well 7 was put back into service. Since then, CVWD has continued to monitor its groundwater wells for MTBE. From initial observations in July 2008, the MTBE concentration in Well 5 increased to as high as 14 µg/L in September 2008. As a result, Well 5 was taken out of service and CVWD continued to monitor for this contaminant in this well on a weekly basis. The loss of groundwater production from Well 5, CVWD's largest producing well at 500 gpm, has seriously impacted their ability to utilize a local resource in a time of a state-wide drought. Recent MTBE concentrations have varied from 47 µg/L in February 2009 to 24 µg/L in May 2009. CVWD is working with CDPH on grant funding for construction of a GAC treatment system for MTBE removal with the goal of completing the treatment system by the end of Water Year 2009-10.

City of Glendale - The City of Glendale has made limited use of its adjudicated rights to 3,856 AF/Y of groundwater from the Verdugo Basin, due to water quality problems, groundwater level declines, and limited extraction capacity. Glendale is in the process of identifying a suitable location for one new municipal-supply well and rehabilitating a previously-abandoned water well. It is expected that Glendale will begin pumping its full adjudicated right from the Verdugo Basin by 2011.

TABLE 3-1: ESTIMATED CAPACITY OF ULARA WELLFIELDS

Party/Well Field	Number of Standby Wells	Number of Active Wells	Estimated Capacity (All Wells) (cfs)	(gpm)
SAN FERNANDO BASIN				
City of Los Angeles				
Aeration	---	7	2.6	1,170
Erwin	---	2	5.8	2,600
North Hollywood	---	17	86.0	38,600
Pollock	---	2	6.3	2,830
Rinaldi-Toluca	---	15	107.0	48,030
Tujunga	---	12	105.9	47,530
Verdugo	---	2	7.2	3,230
Whitnall	---	4	18.8	8,440
City of Burbank	2	8	24.5	11,000
City of Glendale	---	8	10.2	4,600
TOTAL	2	77	374.3	168,030
SYLMAR BASIN				
City of Los Angeles	---	2	6.2	2,780
City of San Fernando	---	3	8.0	3,590
TOTAL	---	5	14.2	6,370
VERDUGO BASIN				
CVWD	---	12	6.46	2,900
City of Glendale	---	5	3.8	1700
TOTAL	---	17	10.26	4,600

TABLE 3-1A: 2007-08 ACTUAL GROUNDWATER EXTRACTIONS

(Acre-feet)

Party/Well Field	2007			2008									Total
	Oct.	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
						SAN FERNANDO BASIN							
City of Los Angeles													
Aeration	131	12	39	85	72	96	93	117	46	119	115	116	1,038
Erwin	219	0	0	0	0.25	0.25	0.25	0	0.34	0	0.36	98	319
North Hollywood	2,543	479	1,190	1,412	638	837	1,104	1,044	1,182	1,262	1,404	1,057	14,152
Pollock	222	200	375	399	31	270	133	126	338	262	219	0	2,573
Rinaldi-Toluca	1,536	936	1,482	3,147	1,776	1,748	2,093	2,196	2,342	2,260	2,119	2,935	24,568
Tujunga	1,067	0	502	956	14	4	874	8	0	19	1,569	1,594	6,606
Verdugo	244	0	0	0	0.21	1.35	0.39	0.58	1.10	0	1.04	0.69	250
Whitnall	205	0	0.83	0	1.58	1.53	0.78	0	2.04	0	1.42	290	503
SUB TOTAL City of Los Angeles:	6,166	1,626	3,588	5,999	2,532	2,958	4,297	3,490	3,911	3,922	5,429	6,091	50,009
City of Burbank (A)	947	590	681	737	553	16	412	638	496	652	565	866	7,153
City of Glendale	624	640	642	578	578	634	651	635	609	590	601	628	7,411
TOTAL San Fernando Basin:	**7,736**	**2,857**	**4,912**	**7,313**	**3,663**	**3,608**	**5,360**	**4,763**	**5,016**	**5,163**	**6,594**	**7,586**	**64,573**
						SYLMAR BASIN							
City of Los Angeles	365	365	349	354	246	318	200	348	289	0	162	0	2,997
City of San Fernando	315	292	252	236	222	279	301	320	358	377	373	345	3,670
TOTAL Sylmar Basin:	**681**	**657**	**601**	**590**	**468**	**597**	**501**	**667**	**647**	**377**	**536**	**346**	**6,667**
						VERDUGO BASIN							
Crescenta Valley Water Dist.	280	290	271	228	216	269	289	265	281	292	294	294	3,270
City of Glendale	208	230	238	227	218	248	239	245	213	196	249	176	2,687
TOTAL Verdugo Basin:	**489**	**520**	**509**	**455**	**435**	**517**	**527**	**511**	**494**	**488**	**543**	**470**	**5,957**
ULARA TOTAL:	**8,906**	**4,034**	**6,022**	**8,358**	**4,566**	**4,722**	**6,388**	**5,941**	**6,158**	**6,028**	**7,673**	**8,401**	**77,197**

Note:

A. Includes BOU and Valhalla.

TABLE 3-1B: HISTORICAL AVERAGE AND PROJECTED PUMPING

(Acre-feet)

Party/Wellfield (years of operation)	Historic Average Pumping (AF)		Projected Groundwater Pumping (AF)				
SAN FERNANDO BASIN							
City of Los Angeles	1979-2008 (A)	2003-2008 (B)	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
Aeration (19 yrs)	-	1,261	869	1,353	1,353	1,353	1,353
Erwin	-	1,767	1,423	1,555	1,555	1,555	1,555
North Hollywood	-	16,774	13,752	8,995	8,995	8,995	8,995
Pollock (20 yrs)	-	2,027	1,383	1,994	1,994	1,994	1,994
Rinaldi-Toluca (21 yrs)	-	17,328	14,431	10,849	10,849	10,849	10,849
Tujunga (16 yrs)	-	12,854	9,483	23,963	23,963	23,963	23,963
Verdugo	-	2,044	2,993	4,111	4,111	4,111	4,111
Whitnall	-	2,348	8,184	7,337	7,337	7,337	7,337
SUBTOTAL City of Los Angeles	77,012	56,402	52,518	60,157	60,157	60,157	60,157
City of Burbank (C)	4,763	8,553	10,297	11,184	10,884	10,884	10,884
City of Glendale (D)	3,055	7,496	7,725	7,725	7,725	7,725	7,725
TOTAL San Fernando Basin:	**84,830**	**72,451**	**70,540**	**79,066**	**78,766**	**78,766**	**78,766**
SYLMAR BASIN							
City of Los Angeles	2,903	2,647	1,027	2,178	2,178	4,825	4,825
City of San Fernando	3,087	3,204	3,405	3,405	3,405	3,405	3,405
TOTAL Sylmar Basin:	**5,990**	**5,850**	**4,432**	**5,583**	**5,583**	**8,230**	**8,230**
VERDUGO BASIN							
Crescenta Valley Water District	2,846	3,159	3,050	3,075	3,270	3,294	3,294
City of Glendale	2,296	2,424	2,393	3,065	3,549	3,856	3,856
TOTAL Verdugo Basin:	**5,142**	**5,583**	**5,443**	**6,140**	**6,819**	**7,150**	**7,150**
TOTAL ULARA:	95,962	83,885	80,415	90,789	91,168	94,146	94,146

A. 29-year average of muncipal well field pumping (Appendix F). 1979-2008 total pumping includes wells that are no longer in service.

B. 5-year average.

C. Includes Lake St/GAC Wells and BOU. Valhalla pumping included in the projected numbers only.

D. Includes Forest Lawn, GOU, and sewer installation pumping.

IV. GROUNDWATER PUMPING AND TREATMENT FACILITIES

A. Wellfields

There are ten municipal-supply wellfields located in the SFB, two in the Sylmar Basin, and two in the Verdugo Basin; none of the parties has a wellfield in the Eagle Rock Basin. The locations of wellfields within the SFB are shown on Plate 3. The estimated capacity and the current number of active wells in each wellfield are provided in Table 3-1.

B. Active Groundwater Pumping and Treatment Facilities

Glendale OU (GOU)

The GOU has been producing and treating groundwater for VOCs since September 2000. On April 23, 2001, the City of Glendale assumed operation of the Glendale Water Treatment Plant. Prior to that time, the Glendale Respondents Group had operated the plant through a contract with Camp Dresser & McKee, a consulting engineering firm.

The GOU is comprised of a treatment plant, eight groundwater extraction wells, a pumping plant, a disinfection facility, and associated piping. The facility is designed to treat groundwater contaminated by TCE and PCE at a combined rate of 5,000 gpm using aeration and GAC. The treated water is then blended with imported supplies to control nitrate concentrations. Currently, the wells are being pumped and operated in a manner to limit hexavalent chromium concentrations to 6 μg/L, or less, in the treated, blended effluent. As a longer term solution to the problem of hexavalent chromium contamination, Glendale is constructing the Chromium Removal Demonstration Facilities, which will use weak base anion exchange (WBA) and reduction, coagulation and filtration (RCF) technologies to remove chromium from some of the groundwater produced at the GOU. The facilities should be operational by Fall 2009.

Burbank OU (BOU)

The remediation of groundwater contamination in the SFB was significantly enhanced by the startup of the BOU on January 3, 1996. The BOU, which consists of eight wells and air-stripping towers followed by liquid- and vapor-phase GAC, has a total design capacity of 9,000 gpm (14,000 AF/yr). Under the terms of the Second Consent Decree, Burbank assumed operation of the BOU on March 12, 2001 and will be the long-term primary operator for the next 18 years. Although the USEPA has turned over operation of the facility to the City of Burbank, there have been continuing negotiations with Lockheed over several issues including the pumping capacity of the eight wells. These issues are being resolved and the design and maintenance problems are being corrected.

GAC Treatment Plant - City of Burbank

This facility, which includes the two Lake Street wells, was operated by the City of Burbank from 1992-2001. These two wells can deliver water at a combined rate of 2,000 gpm to the liquid-phase GAC plant for removal of VOCs. When the plant is in use, the treated water supplements production from the BOU and can be delivered to the Burbank distribution system. The plant operated for a brief period during November and December 2008, producing 130 AF of groundwater for non-potable use in cooling towers at Burbank's power plant. However, current plans are to keep the plant shut down due to elevated chromium concentrations in the pumped groundwater.

North Hollywood OU (Aeration Facility) - City of Los Angeles

This facility is designed to treat up to 2,000 gpm of VOC-contaminated groundwater by air-stripping and to then deliver the treated water to the water distribution system of the City of Los Angeles. The facility operates below design capacity due to numerous mechanical issues and a declining water table in the area. The USEPA and the Los Angeles Department of Water and Power (LADWP) have been discussing a proposal to increase production at the NHOU by drilling additional wells and replacing the existing shallow wells with deeper ones. The goal would be to enhance contaminant removal and to reduce the opportunity for the plumes to migrate to other wellfields in the SFB. The issue is complicated by the presence of hexavalent chromium in the groundwater located upgradient from the wells. The USEPA, LADWP, and the Watermaster are currently evaluating additional treatment and funding alternatives.

The five-year USEPA review of the NHOU published September 2003 determined that the interim remedy of the NHOU "currently protects human health and the environment because the concentration of TCE and PCE in treated groundwater is less than the Record of Decision (ROD) selected cleanup goals and no other Contaminants of Concern (COCs) currently exceed health-based standards." Wells in the NHOU have not been successful in controlling the migration of the VOC and/or COC contaminant plumes, and as a result, the USEPA is conducting a Focused Feasibility Study to provide further plume containment and accelerated mass removal. The draft report is undergoing public agency review, which will be followed by a public review and comment period.

Pollock Wells Treatment Plant - City of Los Angeles

Pollock Wells Treatment Plant, with a capacity of 3,000 gpm, began operating in March 1999. This project is funded, owned, and operated by the City of Los Angeles. Wells that pump to the Pollock Wells Treatment Plant help reduce rising groundwater in the area that otherwise would flow out of ULARA. These wells also serve to enhance overall groundwater cleanup in the Los Angeles River Narrows area of the SFB. The groundwater is treated by liquid-phase GAC vessels for VOC removal, followed by chlorination and then blending to reduce nitrate concentrations. The treated water is then delivered to LADWP's distribution system.

Glenwood Nitrate Removal Plant - CVWD

Groundwater pumped from wells operated by CVWD in the Verdugo Basin is high in nitrate. A portion of the pumped groundwater is treated by ion exchange and is then blended with untreated water and/or imported MWD water to reduce nitrate concentrations to values that are below its MCL of 45 mg/L.

TABLE 4-1 ACTUAL GROUNDWATER TREATMENT IN ULARA

(Acre-feet)

Water Year	Burbank GAC	Lockheed Aqua Detox	Burbank OU	Glendale North/South OU	CVWD Glenwood Nitrate Removal Plant	North Hollywood OU	Pollock Wells Treatment Plant	Total AF
1985-86		1						1
1986-87		1						1
1987-88		1						1
1988-89		924						924
1989-90		1,108				1,148		2,256
1990-91		747				1,438		2,185
1991-92		917			847	786		2,550
1992-93	1,205	692			337	1,279		3,513
1993-94	2,395	425	378		1,550	726		5,474
1994-95	2,590		462		1,626	1,626		6,304
1995-96	2,295		5,772		1,419	1,182		10,668
1996-97	1,620		9,280		1,562	1,448		13,910
1997-98	1,384		2,580		1,391	2,166		7,521
1998-99	1,555		9,184		1,281	1,515	1,513	15,048
1999-00	1,096		11,451	979	1,137	1,213	1,851	17,727
2000-01	995		9,133	6,345	989	1,092	1,256	19,810
2001-02	0		10,540	6,567	515	998	1,643	20,263
2002-03	0		9,170	7,508	216	1,838	1,720	20,452
2003-04	0		9,660	6,941	164	1,150	1,137	19,052
2004-05	0		6,399	7,541	782	1,042	1,752	17,517
2005-06	0		10,108	6,777	997	1,766	2,442	22,090
2006-07	0		9,780	7,562	644	1,307	2,231	21,524
2007-08	0		6,817	7,347	660	1,038	2,573	18,435
Total AF	15,135	4,815	110,715	57,567	16,117	24,758	18,119	247,226

TABLE 4-2 PROJECTED GROUNDWATER TREATMENT IN ULARA

(Acre-feet)

	Burbank GAC	Burbank OU	Glendale North/South OUs	CVWD Glenwood Nitrate Removal Plant	Los Angeles North Hollywood OU	Los Angeles Pollock Wells Treatment Plant	Annual Total
2008-09	130	9,747	7,300	700	869	1,383	20,129
2009-10	0	10,884	7,300	700	1,353	1,994	22,231
2010-11	0	10,884	7,300	700	1,353	1,994	22,231
2011-12	0	10,884	7,300	700	1,353	1,994	22,231
2012-13	0	10,884	7,300	700	1,353	1,994	22,231
TOTAL	130	53,283	36,500	3,500	6,281	9,359	109,053

C. Other Issues

1. Future Groundwater Pumping and Treatment Facilities

Verdugo Basin Wells – Glendale

Glendale is working to identify a suitable location for one new extraction well and to rehabilitate one of its previously-abandoned wells in the Verdugo Basin to enable it to pump its full groundwater right from this basin by 2011.

Chromium Removal Demonstration Facilities – Glendale

Glendale is constructing the Chromium Removal Demonstration Facilities to remove hexavalent chromium from groundwater produced from GOU Well GS-3 using weak base anion exchange (WBA) and to treat a small amount of the groundwater processed by the Glendale Water Treatment Plant using reduction, coagulation, and filtration (RFC) technology. Construction should be completed by September 2009.

GAC Treatment Facility at Mills Plant – Crescenta Valley Water District

CVWD is working with CDPH on grant funding for the design and construction of a GAC treatment system and an anion exchange nitrate removal system at CVWD's Mills Plant where the groundwater extractions from four wells (Wells 1, 5, 7 and 9, which has the highest concemtrations of MTBE) confluence, before going into the distribution system. The treatment system should be operational by Fall 2010.

Tujunga Wells Wellhead Treatment Facility – Los Angeles

Los Angeles is installing wellhead treatment facilities to remove VOCs from two of its Tujunga Wells using liquid-phase GAC. The facilities should be operational by Fall 2009.

2. Other Groundwater Remediation Projects

Many privately-owned properties in ULARA have been found to have groundwater contamination, and some are under Cleanup and Abatement Orders from the LARWQCB. Each contaminated site typically has groundwater monitoring wells and some have extraction wells and treatment facilities.

The USEPA began including hexavalent chromium in the quarterly sampling from its monitoring wells as a step in containment and cleanup of this contaminant.

3. Dewatering Operations

Temporary Construction Dewatering

Temporary construction excavations, such as building foundations and pipelines, sometimes require dewatering in areas that have a high groundwater table. Water that is discharged is required to be accounted for by the Watermaster, and the annual groundwater withdrawals by these dewatering activities are deducted from the water right holder.

Permanent Dewatering Operations

Some facilities along the southern and western boundaries of the SFB have deep foundations that have been excavated into areas of shallow groundwater; these facilities require permanent dewatering. The amount of groundwater pumped at each of these facilities is required to be reported to the Watermaster. These activities are subject to approval by the affected municipal-supply party, and the dewaterer is required to pay for the replacement cost of the extracted groundwater. The pumped groundwater is subtracted from the affected party's water right by the Watermaster.

4. Unauthorized Pumping in the County

There are numerous individuals, primarily within the unincorporated hill and mountain area of ULARA, who are pumping groundwater without reporting the annual volume of production to the Watermaster, as is required by the Judgment. This groundwater was adjudicated and is the property of the City of Los Angeles. Although the volume produced by each pumper is probably small, the cumulative effect may be significant. Working in cooperation with the Los Angeles County Department of Public Health and Los Angeles County Planning, the Watermaster and LADWP have developed a process to help identify and monitor the water usage of these private pumpers through a water license agreement.

V. GROUNDWATER RECHARGE FACILITIES AND PROGRAMS

A. Agency-Owned Spreading Facilities

There are five active spreading facilities located in the SFB (Plate 1). The Los Angeles County Department of Public Works (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. These spreading facilities are used for spreading native and imported water. Improvements are being designed to deepen and reconfigure the Tujunga Spreading Grounds, and improvements to the Hansen Spreading Grounds are under construction, expected to be completed and in operation by the 2011-12 Water Year. The agencies are also planning improvement projects for the Branford, Lopez, and Pacoima Spreading Grounds. The LACDPW and LADWP are also working to identify ways to maximize spreading, including possible changes to spreading basin operations. The City of Burbank expects to use MWD's new Foothill Feeder connection to the Pacoima Spreading Grounds to deliver and spread imported surface water when a surplus of such water is available. Estimated capacities of the existing spreading facilities in the San Fernando Basin are shown in Table 5-2.

B. Proposed Spreading Facilities

Boulevard Pit

Vulcan Materials, CalMat Division, is currently mining sand and gravel from its Boulevard Pit, located between the existing Hansen and Tujunga Spreading Grounds. The LADWP, LACDPW, and the Watermaster are investigating the feasibility of acquiring the Boulevard Pit for conversion into a new stormwater retention and/or recharge facility.

Sheldon Pit

Vulcan Materials also owns Sheldon Pit, the former site of gravel mining, located northeast of Hansen Spreading Grounds. Sheldon Pit is included in the Los Angeles County-Sun Valley Watershed Management Plan as a potential project for conversion into a stormwater retention facility.

Strathern Pit

Located near the Hansen Spreading Grounds, Strathern Pit is a former gravel pit that is now being used as a landfill for inert materials. The pit is being considered for conversion into a stormwater retention and recharge facility.

C. Actual and Projected Spreading Operations

Table 5-1A shows the actual and projected volumes of water spread in the San Fernando Basin for the 2008-09 Water Year. Approximately 7,766 AF of native runoff will be spread compared to both the 40-year historical average of 4,227 AF of native runoff and imported water and the past five-year average of 7,480 AF. Precipitation on the valley fill area in the San Fernando Basin is estimated at 9.52 inches for 2008-09 compared to the long-term average of 18.07 inches per year; the previous five-year average was 17.6 inches per year.

TABLE 5-1A 2008-09 ACTUAL AND PROJECTED SPREADING OPERATIONS IN ULARA

(Acre-feet)

Month	Basin Operator						Total
	LACDPW				LADWP	LACDPW and LADWP	
	Branford	Hansen	Lopez	Pacoima	Headworks*	Tujunga**	
Actual							
Oct-08	20	0	0	106		177	303
Nov-08	119	0	0	1		248	368
Dec-08	109	0	0	1		466	576
Jan-09	46	0	0	5		367	418
Feb-09	243	0	0	775		2,880	3,898
Mar-09	76	0	0	6		1,366	1,448
Projected							
Apr-09	18	0	0	0		522	540
May-09	18	0	0	600		500	1,118
Jun-09	18	0	0	0		450	468
Jul-09	18	0	0	0		300	318
Aug-09	18	0	0	0		280	298
Sep-09	18	0	0	0		210	228
TOTAL	721	0	0	1,494	-	7,766	9,981
2003-2008 Average	714	15,369	544	6,387	-	8,685	31,698
1968-2008 Average	545	14,179	540	6,564	1,859	4,349	28,036

* Out of service since 1981-82.

**Includes native and imported water.

TABLE 5-1B HISTORICAL PRECIPITATION ON THE VALLEY FILL

(Inches per year)

1968-08	2003-08	2003-04	2004-05	2005-06	2006-07*	2007-08	2008-09**
18.07	17.6	9.52	42.64	16.46	4.39	15.10	9.52

* Historic Low

** Projected

TABLE 5-2 ESTIMATED CAPACITIES OF ULARA SPREADING GROUNDS

Spreading Ground	Type of Facility	Total Wetted Area (acres)	Capacity (AF/Y)
Operated by the LACDPW			
Branford	Deep basin	7	1,000
Hansen	Shallow basin	105	35,000
Lopez	Shallow basin	12	2,000
Pacoima	Med. Depth basin	107	23,000
Operated by LACDPW and LADWP			
Tujunga	Shallow basin	83	43,000
	TOTAL:	314	104,000

D. Stormwater Recharge Capacity Enhancements

Background Information

During the 1997-98 Water Year, weighted-average precipitation in the valley-fill and hill-and-mountain areas in ULARA was approximately 225 percent of normal. This event provided an above-average volume of stormwater runoff that could be captured in upstream reservoirs and diverted into spreading grounds. In April 1998, the Watermaster Office received notice from the LACDPW that spreading at both the Hansen and Tujunga Spreading Grounds would be temporarily suspended. The reasons for curtailing spreading were that: the water table had risen to a level that threatened to inundate the base of the Bradley-East Landfill near the Hansen Spreading Grounds; and methane gas was migrating from the Sheldon-Arleta Landfill, which lies adjacent to the Tujunga Spreading Grounds, and into the surrounding neighborhood. At that time, reservoirs in Los Angeles County were full, meaning that thousands of acre-feet of surface water runoff would be spilled and lost to the ocean. The spreading activities were suspended for at least one month at that time.

In response to this undesirable condition, in May 1998, the Watermaster Office formed the Tujunga and Hansen Spreading Grounds Task Force which later became the San Fernando Basin Recharge Task Force. The task force was comprised of representatives from the LACDPW, LADWP, Los Angeles Bureau of Sanitation and the Watermaster Office. After a series of meetings, the task force developed preliminary mitigation measures to help improve the utilization of both spreading grounds, particularly during years of above-normal runoff.

The task force met as the Stormwater Recharge Committee for a period of time, and has since become a collaborative effort between LACDPW and LADWP to focus on projects to enhance the recharge capacity of spreading basins. As a result, watershed management groups have been formed within both the LACDPW and LADWP to address the entire cycle of pumping and recharge as an interrelated discipline, and these groups are working in partnership to study and develop solutions to enhance groundwater supply in the San Fernando Basin.

Projects

- Hansen Spreading Grounds Plan

Capital improvements planned for the spreading basins and intake diversion structure at Hansen Spreading Grounds will increase the capacity and efficiency for flood protection and stormwater retention at this facility. LACDPW is leading the project, working in partnership with LADWP. Construction is underway and expected to be completed and in operation by the 2011-12 Water Year.

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

Located adjacent to the Tujunga Spreading Grounds is the Sheldon-Arleta Landfill, which has caused an environmental concern over the methane gas that is produced as a byproduct of landfill operations.

During the spreading of surface water at the adjoining Tujunga Spreading Grounds, recharge water moving downward through the underlying soil displaces the air from voids within the unsaturated soil matrix. The resulting lateral migration of the air mass has the potential to displace methane gas out of the adjacent landfill. In recent years, the methane has occasionally migrated and caused elevated gas concentrations in the air on a nearby high school campus, and, in at least one instance, has also forced an evacuation of the school grounds. In order to avoid these problems, a methane gas monitoring system was constructed. When methane gas is detected at specific concentrations, the spreading activities are suspended as a safety precaution, but, as a consequence, local storm water runoff not diverted into the spreading grounds is lost to the ocean.

The Sheldon-Arleta Project, a collaborative effort between LADWP and the Los Angeles Bureaus of Sanitation and Engineering, will replace the existing methane gas collection system at the landfill with a new gas collection system. This system will enhance the containment of the methane gas within the landfill and restore the historic spreading capacity of 250 cfs to the Tujunga Spreading Grounds. An additional benefit of the new gas collection system is that it will help bring some of the spreading basins closest to the landfill back into operation. Upon completion of construction, a consultant will begin an evaluation to determine the maximum possible recharge capacity. This project is expected to increase the average annual stormwater capture by 3,000 to 5,000 AF at the nearby basins. The new facilities are expected to be in operation by Fall 2009.

- Big Tujunga Dam Seismic Retrofit

Big Tujunga Dam was constructed by LACDPW in the 1930s primarily as a flood control facility. In the 1970s a seismic analysis indicated the dam was susceptible to damage from a large earthquake. Since then, the dam was operated at a reduced capacity for safety reasons. LACDPW has begun a seismic retrofit of the dam to restore its storage capacity for flood control and water conservation.

This project will entail structural improvements to Big Tujunga Dam to increase its storage capacity from 1,500 AF to 6,000 AF. This will greatly enhance LACDPW's ability to retain and manage stormwater for flood protection, water conservation, and environmental restoration. Structural improvement work began in 2007 and is expected to be completed by the end of 2010.

- Additional Recharge Projects

LADWP and LACDPW are considering additional projects to enhance water conservation in the SFB. For example, stormwater recharge projects are being proposed at the Valley Generating Station, and along various power transmission line easements.

VI. GROUNDWATER INVESTIGATION PROGRAMS

Pacoima Area Groundwater Investigation

A significant VOC contaminant plume exists in the SFB groundwater in an area of Pacoima near the intersection of San Fernando Road and the Simi Valley Freeway (118 Freeway). This area is located approximately 2.5 miles north of and upgradient from the LADWP Tujunga Wellfield; groundwater pumped at this wellfield has experienced increasing concentrations of VOCs over time.

To help characterize the extent of contaminant migration in the Pacoima area, LADWP constructed two groundwater monitoring wells in 1997, including: PA-01, approximately 0.5 miles downgradient; and PA-02, approximately 1.25 miles downgradient from the suspected source area. This suspected source, known as the Brenntag/Holchem site (Brenntag), is under the jurisdiction of the California Department of Toxic Substances Control (DTSC). Brenntag is currently operating a soil vapor extraction system and has constructed monitoring wells both onsite and offsite. The immediate remedial goal is to remove the VOCs from the soil, and eventually from the groundwater.

Another facility in the area, the Black & Decker (formerly Price-Pfister) site, is under the jurisdiction of the LARWQCB. The LARWQCB has reviewed and responded to a Work Plan submitted by Black & Decker in March 2007 for additional groundwater investigation to delineate the extent of the chromium groundwater plume at/near the site. Due to the close proximity of the Brenntag and the Black & Decker sites, DTSC and LARWQCB are coordinating their oversight efforts.

Chromium Investigations

The LARWQCB, funded in part with a grant from the USEPA, reviewed 4,040 sites for potential hexavalent chromium contamination in the SFB and published its findings in December 2002. After this review, 255 suspected hexavalent chromium sites were identified and inspected. As a result of these inspections, the LARWQCB recommended closure for 150 sites and the further assessment for 105 sites. In addition, the LARWQCB has issued Cleanup and Abatement Orders to B.F. Goodrich (formerly Menasco Aerospace Division), PRC-Desoto (formerly Courtauld), Drilube, Honeywell (formerly Allied Signal), Lockheed (2), ITT, and Excello Plating, and may eventually issue several more. The Cleanup and Abatement Orders require a responsible party to assess, clean up, and abate the effects of contamination encountered in the soil and groundwater.

Increasing concentrations of hexavalent chromium in the groundwater have caused the shutdown or reduced pumping of several wells associated with groundwater treatment plants that were not designed to remove either this contaminant or any other emerging chemicals. Shutdowns of these wells allow the continued vertical and lateral migration of VOCs and chromium to other production wells, and also continue to complicate the extraction, management, and delivery of potable water within the SFB.

The USEPA is coordinating with the cities of Burbank, Glendale and Los Angeles and various agencies, including DTSC, California Department of Public Health (CDPH) and LARWQCB, and the Watermaster to develop a Chromium Action Plan that implements remedial actions for the operable units in the San Fernando Basin and enhanced treatment of VOCs and emerging chemicals.

California Office of Environmental Health Hazard Assessment (OEHHA) continues to work towards establishing a new Public Health Goal (PHG) for hexavalent chromium. Once the PHG is established for hexavalent chromium, it is expected that the CDPH would subsequently set a new Maximum Contaminant Level for this constituent.

VII. ULARA WATERMASTER MODELING ACTIVITIES

A. Introduction

LADWP continues to support the ULARA Watermaster by performing groundwater modeling of the San Fernando Basin. The purpose of this groundwater modeling is to evaluate the combined effects of the proposed groundwater pumping and estimated groundwater recharge in the SFB projected over a five-year period. The projected pumping values used in the model were obtained from the "Year 2008-13 Pumping and Spreading Plans" submitted by each party pursuant to the provisions established in the revised February 1998 Policies and Procedures report. The pumping and spreading plan of each party is included in the appendices of this report.

The groundwater flow model used is a comprehensive three-dimensional computer model that was developed originally for the USEPA during the Remedial Investigation Study of the San Fernando Valley (December 1992). The model is a tool to estimate the future response to pumping and spreading in the SFB for the next five years.

The model code, "Modular Three-Dimensional Finite-Difference Groundwater Flow Model," commonly called MODFLOW, was developed by the U.S. Geological Survey (McDonald-Harbaugh) and was used to develop the San Fernando Basin Groundwater Flow Model. This model consists of 64 rows, 86 columns, and up to four layers to reflect the varying geologic and hydrogeologic characteristics of the SFB in three dimensions. In the deepest portion of the San Fernando Basin, the model is subdivided into four layers, each layer characterizing a specific depth zone. The model has a variable horizontal grid that ranges from 1,000 by 1,000 feet in the southeastern portion of the SFB, to 3,000 by 3,000 feet in the northwestern portion of this basin (Figure 7-1) or where less data are available. LADWP regularly updates this model.

B. Model Inputs

The input data for this model are illustrated in Table 7-1. Table 7-1A provides the various elements of recharge into the San Fernando Basin; recharge occurs from precipitation, delivered water, hill and mountain runoff, spreading, and subsurface inflow. Table 7-1B provides the volumes of groundwater extracted from this basin by each major producer: the City of Los Angeles; City of Burbank; City of Glendale; and other individual pumpers. Both tables show projected values for the five-year study, from Fall 2008 to Fall 2013, as well as any actual values that have been reported for the first half of the 2008-09 Water Year.

In Table 7-1A, the projected values for percolation and spreading activities were estimated using the long-term average rainfall and recharge amounts and the estimates were then used as inputs to the model. The projections for 2008-09 include the actual amounts reported for the first half of the year. The spreading estimates reflect temporary shutdowns during construction of the Hansen Spreading Grounds (HSG) and the Tujunga Spreading Grounds (TSG). Construction to enhance the spreading capacity at the HSG is currently underway and is expected to be completed by 2011, after which construction at the TSG will occur from 2011 through 2013. The anticipated spreading of imported water at the Pacoima Spreading Grounds (PSG) by the City of Burbank is also included in these projections. Subsurface inflows to the SFB occur from the Sylmar Basin (through the Sylmar Notch and Pacoima Notch) and the Verdugo Basin. The amounts of subsurface inflow from these sources were determined by the 1962 Report of Referee and used as constants in the model throughout the five-year study.

The values for all groundwater extractions shown on Table 7-1B and used as model inputs were obtained from the "Pumping and Spreading Plans" submitted by the municipal producers; a copy of each of these plans is included in the appendices of this report. The total extraction by each wellfield was initially allocated among the individual wells comprising each wellfield, and then a percentage of the pumping allocated to each well was assigned to each model layer based on the percentage of well-casing perforations considered to be contained within each layer.

The initial head values (groundwater elevations) were obtained from the actual data from Water Year 2008-09, during which the SFB experienced a minor rebound in simulated groundwater elevations on the east side of the SFB. This minor rebound was likely caused by the reduced pumping and the increased artificial recharge in the spreading grounds, as compared to the 2006-07 Water Year.

At the close of every Water Year, the Watermaster staff updates the model input files with the actual basin recharge and extraction data; this activity was performed by LADWP on an annual basis since 1981.

C. <u>Simulated Groundwater Elevations and Flow Directions</u>

After running the model for five stress periods (Water Years 2008-2013), with each year entailing 365 days, MODFLOW was used to simulate the following numerical data in the SFB: the heads (groundwater elevations); the drawdown (change in groundwater elevations); and the cell-by-cell flow (vector or flow direction data). These numerical data were used to develop the following figures and plates:

- The simulated groundwater (water-table) contour results for Model Layer 1 for Fall 2013 are shown on Plate 1, whereas Plate 2 provides the simulated results for Model Layer 2 for that same period.

- The changes in the simulated groundwater elevation contours were generated from the drawdown data from the Fall 2008 to Fall 2013 stress period and the results are shown on Plate 3 for Layer 1 and on Plate 4 for Layer 2.

- The simulated horizontal groundwater flow directions for Fall 2013 are shown on Plate 5 for Model Layer 1 and on Plate 6 for Layer 2 for the same period.

- Plates 7-10 depict the most recently generated contaminant plumes for TCE, PCE, NO_3, and total dissolved chromium (as adapted from the 2007-dated work of the USEPA), superimposed onto the Layer 1 simulated horizontal groundwater flow direction for the year 2013.

D. <u>Evaluation of Model Results</u>

Plate 1: Simulated Groundwater Contour Model Layer 1 – Fall 2013

- The most noticeable feature of the groundwater contours shown on Plate 1 is the cone of depression (pumping cone) that has developed around the Burbank OU. The extractions by this facility occur primarily from Layer 1, although Layer 2 does provide some recharge to Layer 1. The Burbank OU projected about 10,884 AF/Y in pumping for the period from Fall 2008 to Fall 2013. The radius of influence extends as far as 4,300 feet in the downgradient (southeasterly) direction. The upgradient radius of influence is usually larger than the downgradient radius of influence.

- In a more subtle manner, Plate 1 illustrates the pumping influence of the North Hollywood Operable Unit Aeration Wells (AE), North Hollywood-West Wells, the Glendale OU wells, and the Pollock Treatment Plant Wells.

Plate 2: Simulated Groundwater Contour Model Layer 2 – Fall 2013

- The most significant features of the groundwater contours shown on Plate 2 are the simulated cones of depression near the Rinaldi-Toluca, Tujunga and North Hollywood-West Wellfields, and the Burbank OU. Over 75 percent of the groundwater pumping from the Rinaldi-Toluca, Tujunga, and North Hollywood-West Wellfields is considered to be from model Layers 2, 3 and 4.

Plate 3: Change in Groundwater Elevation Model Layer 1 – Fall 2008 to Fall 2013

- The area in the vicinity of Tujunga Spreading Grounds (TSG) shows a simulated decline in water elevation of about 5 feet, as a result of the temporary suspension of spreading activities expected during 2011 through 2013, when TSG will be under construction to deepen and enlarge the spreading basins to improve their recharge capacity.

- The area in the vicinity of HSG shows an increase in simulated water elevation of about 10 feet in response to the reactivation of spreading operations expected at the beginning of Water Year 2011-12, after construction to enhance its capacity has been completed.

- The increase in simulated water levels in the vicinity of PSG is due to proposed spreading of about 20,000 AF of imported water by Burbank in addition to the normal recharge of native water by LACDPW.

- The water table rebounded within the cone of depressions at the Rinaldi-Toluca and North Hollywood West Wellfields, showing an increase in the simulated groundwater elevation by nine feet.

- The area near the Erwin, Whitnall and Verdugo Wellfields was projected to decline in groundwater elevation by three to five feet, as simulated by the model.

- The groundwater level near the Burbank OU showed an expected decline by about five feet and the groundwater level near Glendale North OU projected a smaller decline of less than one-foot.

In general, the model simulation showed a minor increase in groundwater elevations in the vicinity of certain wellfields, spreading grounds and other areas of the basin located away from the pumping effects of the wellfields. The minor rebound is due to estimated total recharge amounts exceeding total extractions through the five-year study by about 74,415 AF.

Plate 4: Change in Groundwater Elevation Model Layer 2 – Fall 2008 to Fall 2013

- The model simulated an increase in the groundwater table by six to ten feet in the area near the Rinaldi-Toluca and North Hollywood-West Wellfields. Simulated groundwater elevations in the area near the Erwin, Whitnall and Verdugo Wellfields were projected by the model to decline by three to five feet The model also simulated a rebound in the groundwater elevations by about five feet in the area upgradient of the Tujunga Wellfield.

Plate 5: Simulated Groundwater Flow Direction Model Layer 1 – Fall 2013

- Plate 5 consists of superimposed groundwater flow direction arrows to illustrate the general (or regional) direction of groundwater flow within Layer 1 of the model.

- Water pumped at the Rinaldi-Toluca, Tujunga, North Hollywood, GOU, and BOU Wellfields and water spread at the Hansen, Pacoima and Tujunga Spreading Grounds caused the most pronounced effect on the direction of groundwater movement in the SFB. In particular, the BOU may create such a significant cone of pumping depression that groundwater appears to flow toward the wellfield from all directions (radial flow*)*.

- A groundwater is simulated by the model in the area just north of the Verdugo wells and south of the Whitnall, Erwin, and Burbank OU wells. This is primarily due to the 'pumping trough" formed by the pumping at the BOU and at the North Hollywood Wellfield.

Plate 6: Simulated Groundwater Flow Direction Model Layer 2 – Fall 2013

- Similar to Plate 5, Plate 6 also shows a groundwater divide in the simulated groundwater elevations in Layer 2 between the Verdugo wells and the BOU, Erwin and Whitnall wells. The effect of pumping by wells in the Rinaldi-Toluca, Tujunga, North Hollywood, and BOU Wellfields creates the most significant impact to the regional simulated direction of groundwater movement and the formation of this divide.

Plates 7 – 10: Simulated Groundwater Flow Direction and TCE, PCE, NO_3, and Chromium (Cr) Contamination in Model Layer 1 – Fall 2013

- Plates 7-10 depict the most recent TCE, PCE, NO_3, and Cr contaminant plumes that are superimposed onto the horizontal direction of groundwater movement in Layer 1, Fall 2013. The locations for these contaminant plumes have been adapted from 2007-dated work by the USEPA. The BOU appears to contain most of the 1,000 to 5,000 μg/L TCE and PCE plumes and a large portion of the 0-5, 5-50, 100-500, and 500-1,000 μg/L TCE and PCE plumes. The uncaptured portions of these plumes are likely to continue migrating southeasterly in the direction of the Los Angeles River Narrows area and toward the Glendale OU.

- The Burbank OU pumping (10,849 AF/Y) tends to flatten the horizontal gradient in a southeasterly direction and slows the natural movement of groundwater southeasterly of the Burbank OU area plume.

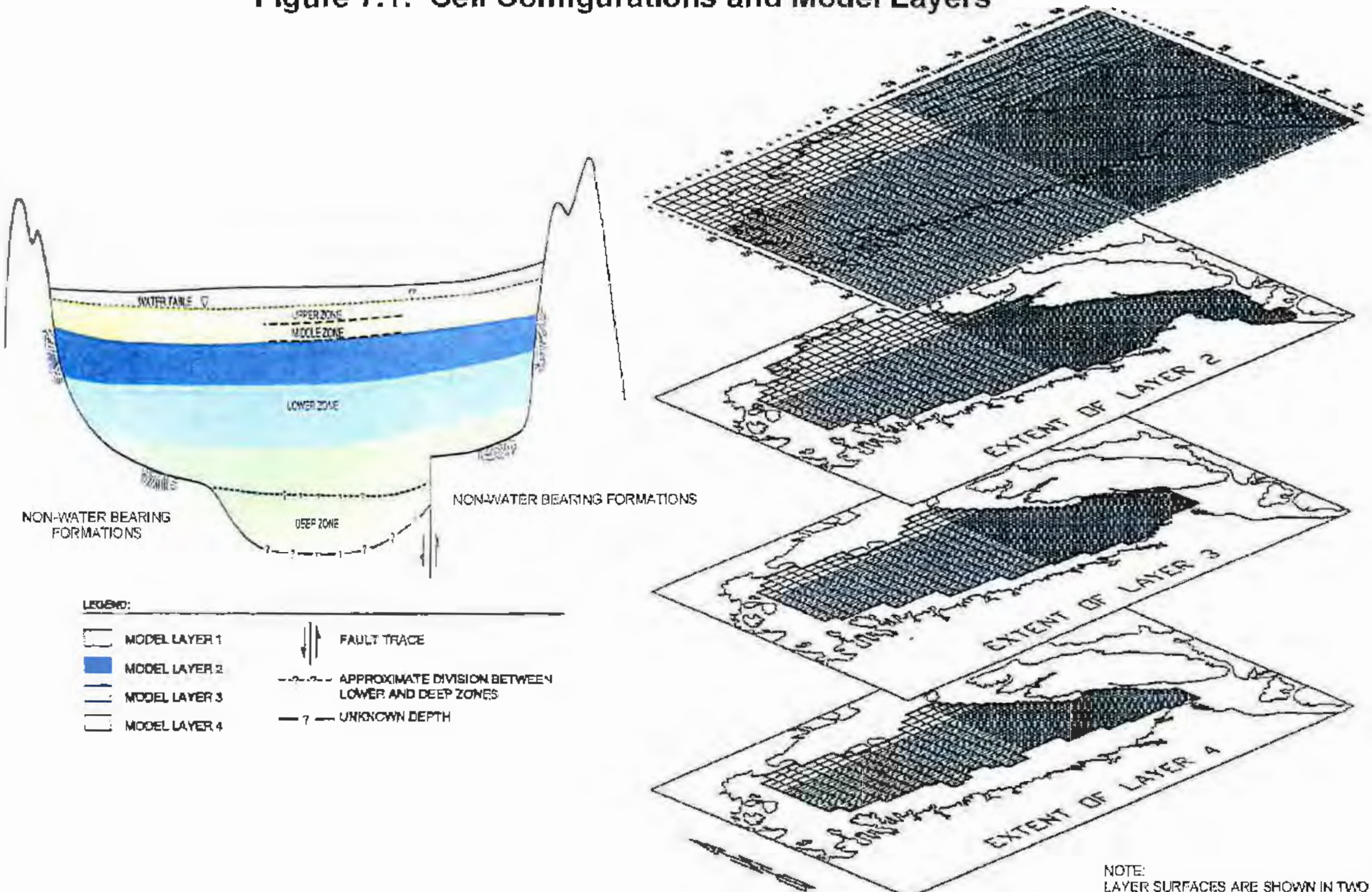
- The Glendale NOU and SOU wells capture a portion of the plume(s) uncaptured by the Burbank OU Wells.

- Pumping by the Pollock wells (1,994 AF/Y) appears to have little effect on Layer 1 because approximately 75 percent of the pumping by this facility extracts groundwater from the zones within Layer 2.

- Plate 9 (NO_3 Contamination) indicates that Layer 1 extractions by the BOU and GOU wells may be impacted by NO_3.

- Plate 10 (Total Dissolved Chromium) indicates that Layer 1 extractions by NHOU, BOU, and both GOU may be impacted by the chromium plume(s).

Figure 7.1: Cell Configurations and Model Layers



NOTE:
LAYER SURFACES ARE SHOWN IN TWO DIAMENSIONS FOR THE PURPOSE OF THIS ILLUSTRATION ONLY. ACTUAL MODEL LAYER THICKNESS VARIES BY NODE.

Source: Remedial Investigation Report of Groundwater Contamination in the San Fernando Valley, December 1992

Table 7-1
MODEL INPUT
Projected Pumping and Spreading Scenario
Water Years 2008-2013

Table 7-1A

	SAN FERNANDO BASIN RECHARGE (AF/Y)																		
	RAINFALL (IN/Y)		PERCOLATION			H&M (C)	SPREADING GROUNDS							SUB-SURFACE INFLOW				TOTAL RECHARGE
WATER YEAR	VALLEY	HILL & MTN	VALLEY FILL	RETURN WATER	SUB TOTAL	HILL & MTN	BRANFORD	HANSEN (A)	HEADWORKS	LOPEZ	PACOIMA	TUJUNGA (B)	SUB-TOTAL	PACOIMA NOTCH	SYLMAR NOTCH	VERDUGO BASIN	SUB-TOTAL	
2008-09	9.52	13.04	6,614	56,829	63,443	2,227	631	-	-	-	894	6,026	7,551	350	400	70	820	74,041
2009-10	18.00	22.00	12,505	56,338	68,843	3,758	545	-	-	540	8,364	11,400	20,849	350	400	70	820	94,270
2010-11	18.00	22.00	12,505	56,338	68,843	3,758	545	-	-	540	12,564	11,400	25,049	350	400	70	820	98,470
2011-12	18.00	22.00	12,505	56,338	68,843	3,758	545	14,179	-	540	12,564	-	27,828	350	400	70	820	101,249
2012-13	18.00	22.00	12,505	56,338	68,843	3,758	545	14,179	-	540	12,564	-	27,828	350	400	70	820	101,249

Table 7-1B

	SAN FERNANDO BASIN EXTRACTION (AF/Y)																		
	LADWP										BURBANK			GLENDALE			OTHERS		
WATER YEAR	AERATION	ERWIN	HEADWORKS	NORTH HOLLYWOOD	POLLOCK	RINALDI-TOLUCA	TUJUNGA	VERDUGO	WHITNALL	TOTAL LADWP	GAC	BOU	NON-BURBANK (VMP)	CITY OF GLENDALE	OU-NORTH	OU-SOUTH	TOTAL NON-LADWP	TOTAL NON-GLENDALE (E. LAWN)	TOTAL EXTRACTION
2008-09	-869	-1,423	0	-13,752	-1,383	-14,431	-9,483	-2,993	-8,184	-52,518		-9,747	-420	-25	-4,745	-2,555	-1,818	-400	-72,228
2009-10	-1,353	-1,555	0	-8,995	-1,994	-10,849	-23,963	-4,111	-7,337	-80,157	0	-10,884	-300	-25	-4,745	-2,555	-1,818	-400	-80,884
2010-11	-1,353	-1,555	0	-8,995	-1,994	-10,849	-23,963	-4,111	-7,337	-80,157	0	-10,884	0	-25	-4,745	-2,555	-1,818	-400	-80,584
2011-12	-1,353	-1,555	0	-8,995	-1,994	-10,849	-23,963	-4,111	-7,337	-80,157	0	-10,884	0	-25	-4,745	-2,555	-1,818	-400	-80,584
2012-13	-1,353	-1,555	0	-8,995	-1,994	-10,849	-23,963	-4,111	-7,337	-80,157	0	-10,884	0	-25	-4,745	-2,555	-1,818	-400	-80,584

NOTES:

(A) Hansen Spreading Grounds will be activated in the water year of 2011-12 after the completing modification work

(B) Tujunga Spreading Grounds will be taken out of service during the water years of 2011-13 for modification to increase storage capacity

(C) Hill & Mountain run off

VIII. WATERMASTER EVALUATION AND RECOMMENDATIONS

In the SFB, declining groundwater levels combined with rapidly growing Stored Water Credits represent serious problems that require a realistic view of groundwater basin hydrology and management. The recent Stipulated Agreement between the cities of Burbank, Glendale, and Los Angeles will help to limit the future pumping of non-existent Stored Water Credits in the SFB. As part of that Agreement, the first re-evaluation of the safe yield of the basin since 1964-65 was initiated by Stetson Engineers in late-2008; this study is to be completed in the next few months. Depending on the results, groundwater pumping by the municipal-supply parties could be reduced until basin recharge and the water rights of the parties become more in equilibrium over time. Further, in an effort to increase stormwater recharge, Los Angeles has embarked upon an ambitious program to increase the recharge capacity in several of the spreading grounds in the SFB, and is investigating additional alternatives to increase water conservation.

Due to the shallow, steeply-tilted structure of the Verdugo Basin, groundwater tends to rise to ground surface near the Verdugo Wash Narrows and leaves the basin as surface outflow. Glendale is unable to pump its full right from the Verdugo Basin, but by rehabilitating one of its previously-abandoned wells and pursuing the construction of a new municipal-supply well, Glendale has taken steps to increase its extractions from the Verdugo Basin and help prevent the continued outflow of groundwater that leaves the basin. Water is becoming an increasingly scarce commodity and its waste is unacceptable. The Watermaster commends Glendale's efforts to increase its pumping capacity and CVWD for their continued efforts to evaluate potential stormwater recharge projects in the Verdugo Basin.

VOC contamination continues to be the most serious challenge to water quality and to pumping non-contaminated groundwater in the SFB. The various contaminant plumes are still very large, despite years of pumping and treatment. The VOC plume in North Hollywood has not been completely controlled by the NHOU, due in large part to a declining groundwater table which has resulted in the reduced pumping capacity of the NHOU wells. The Watermaster encourages the USEPA to pursue an aggressive approach to VOC capture and increased treatment capacity in its nearly completed draft NHOU Focused Feasibility Study.

The Watermaster is concerned about the recent increasing trends in chromium in several production wells in the SFB. As of this date, none of the existing treatment plants are capable of removing chromium. The Watermaster continues to recommend an aggressive approach by regulatory agencies including USEPA, LARWQCB, and DTSC in identifying the source sites and requiring cleanup by the responsible parties. The Watermaster is very encouraged by

Glendale's lead in the development of chromium treatment technology and the construction of the Chromium Removal Demonstration Facilities.

Another concern of the Watermaster is that MTBE has not only been detected at higher concentrations but it has also been encountered in additional CVWD production wells in the Verdugo Basin. The MTBE Task Force was successful in identifying several potential source sites and, along with the LARWQCB, is pursuing additional subsurface investigations and cleanup by the responsible parties. The support and enforcement actions of the LARWQCB have been very helpful in defining and mitigating the MTBE problems in this basin.

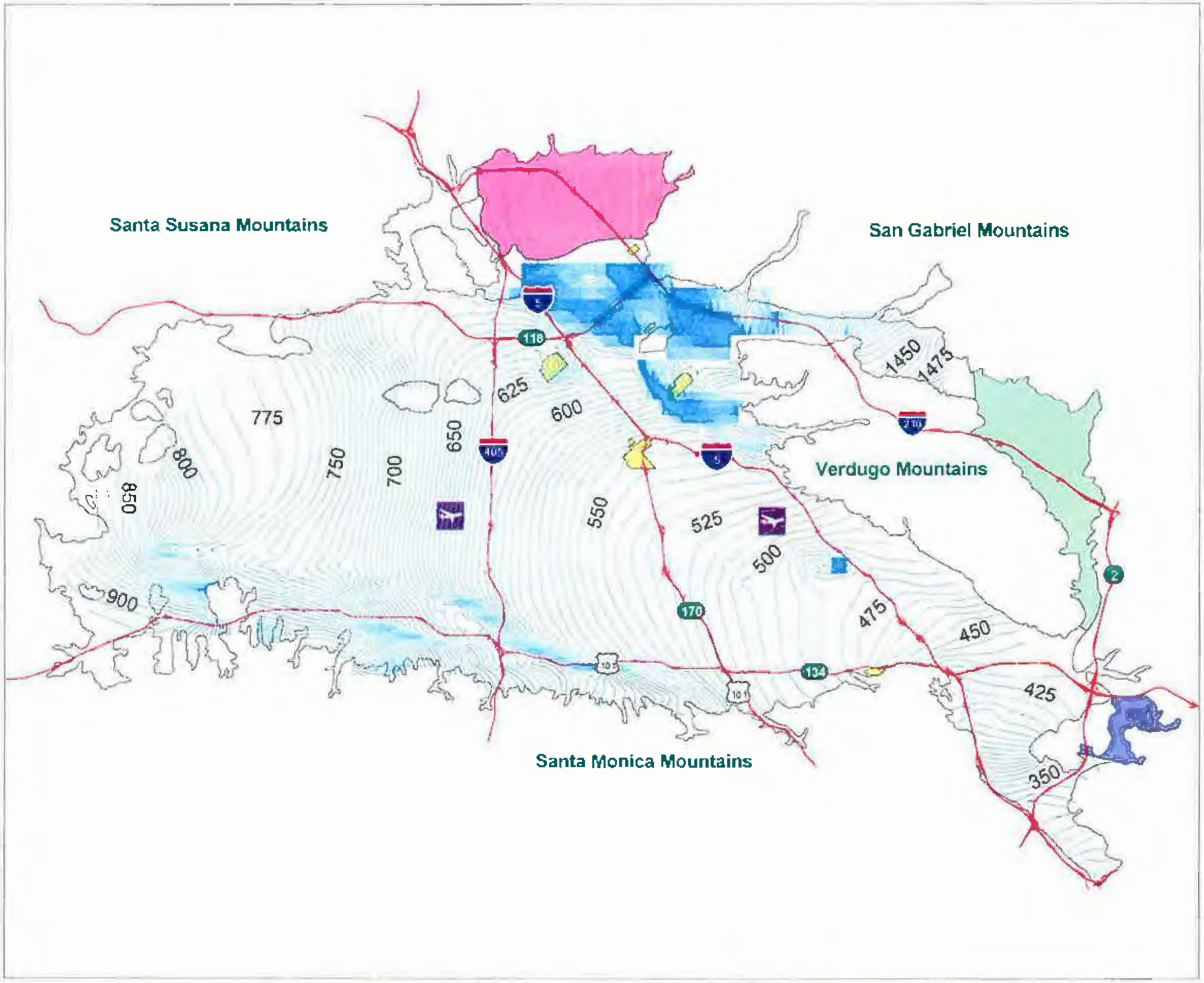
The coming years will be interesting as the major parties face unprecedented challenges to both water quality and quantity in the ULARA groundwater basins.

It is the opinion of the Watermaster that, over the forthcoming years, it will be essential for the continuing safe yield operation of the ULARA groundwater basins to continue to: provide more recharge at existing spreading basins; define and implement new locations and/or other methods (such as with the use of Aquifer Storage and Recovery, ASR, wells) for recharging these groundwater basins; and to seriously reconsider the possibility of using recycled water to augment those recharge facilities and recharge options.

PLATES

PLATE 1

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2008- 2013 Water Years



LEGEND

Groundwater Contour
Spreading Grounds
Airport

Groundwater Basins
San Fernando
Sylmar
Verdugo
Eagle Rock

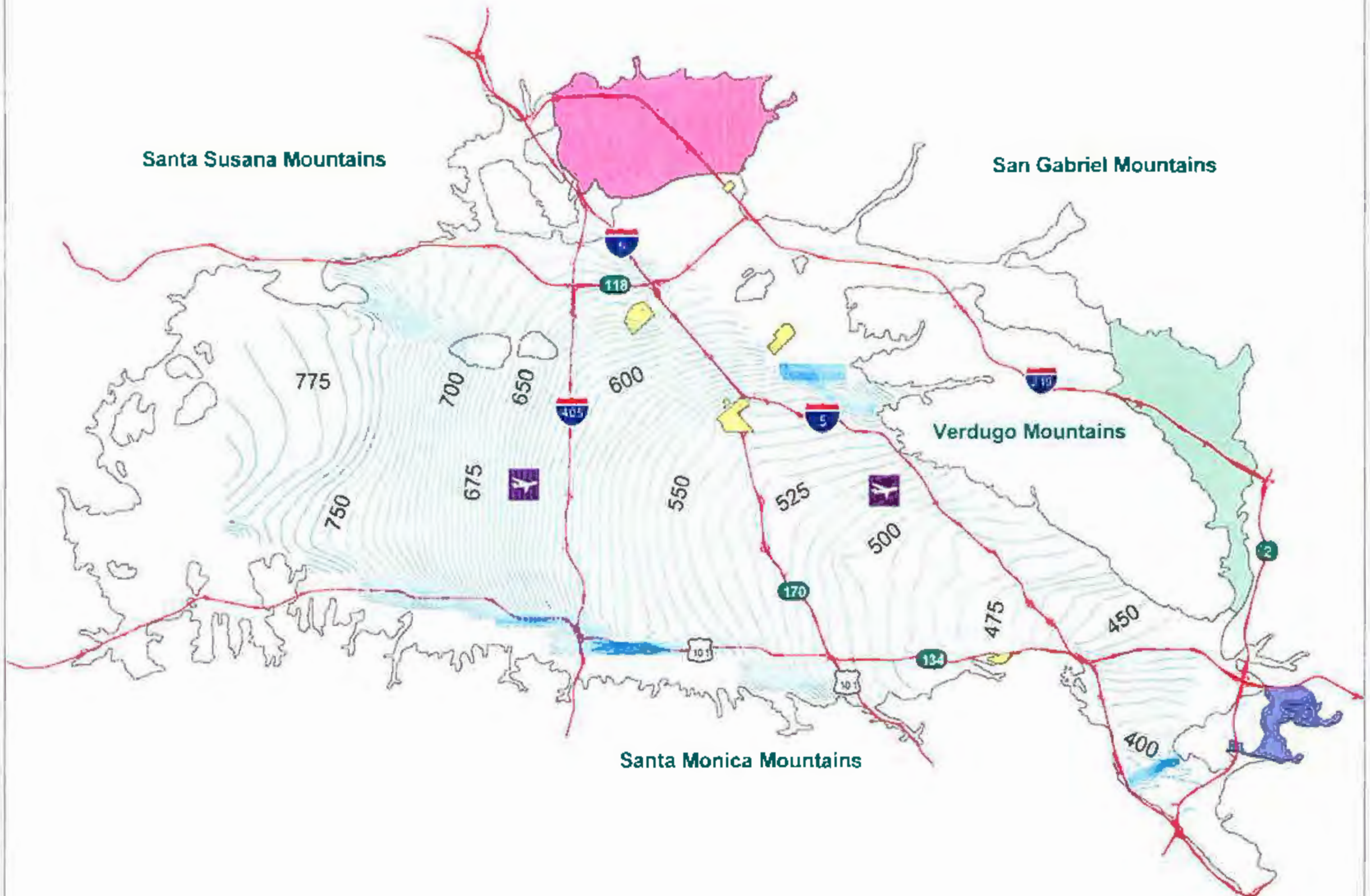
N

2 0 2 Miles

Simulated Groundwater Contours - Model Layer 1
FALL 2013

PLATE 2

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2008 - 2013 Water Years



LEGEND

Groundwater Contour
Spreading Grounds
Airport
Groundwater Basins
San Fernando
Sylmar
Verdugo
Eagle Rock

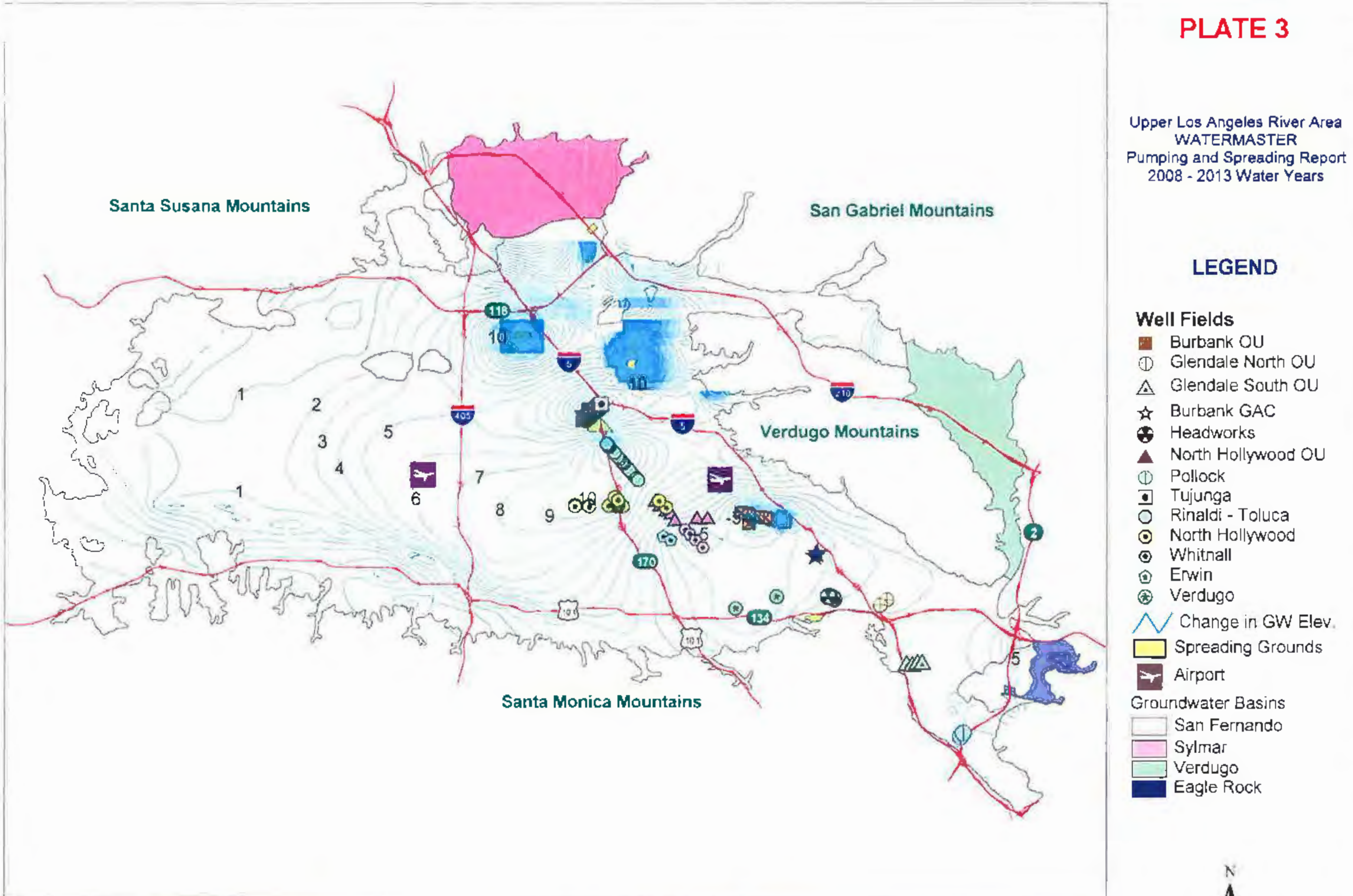
N

2 0 2 Miles

Simulated Groundwater Contours - Model Layer 2
FALL 2013

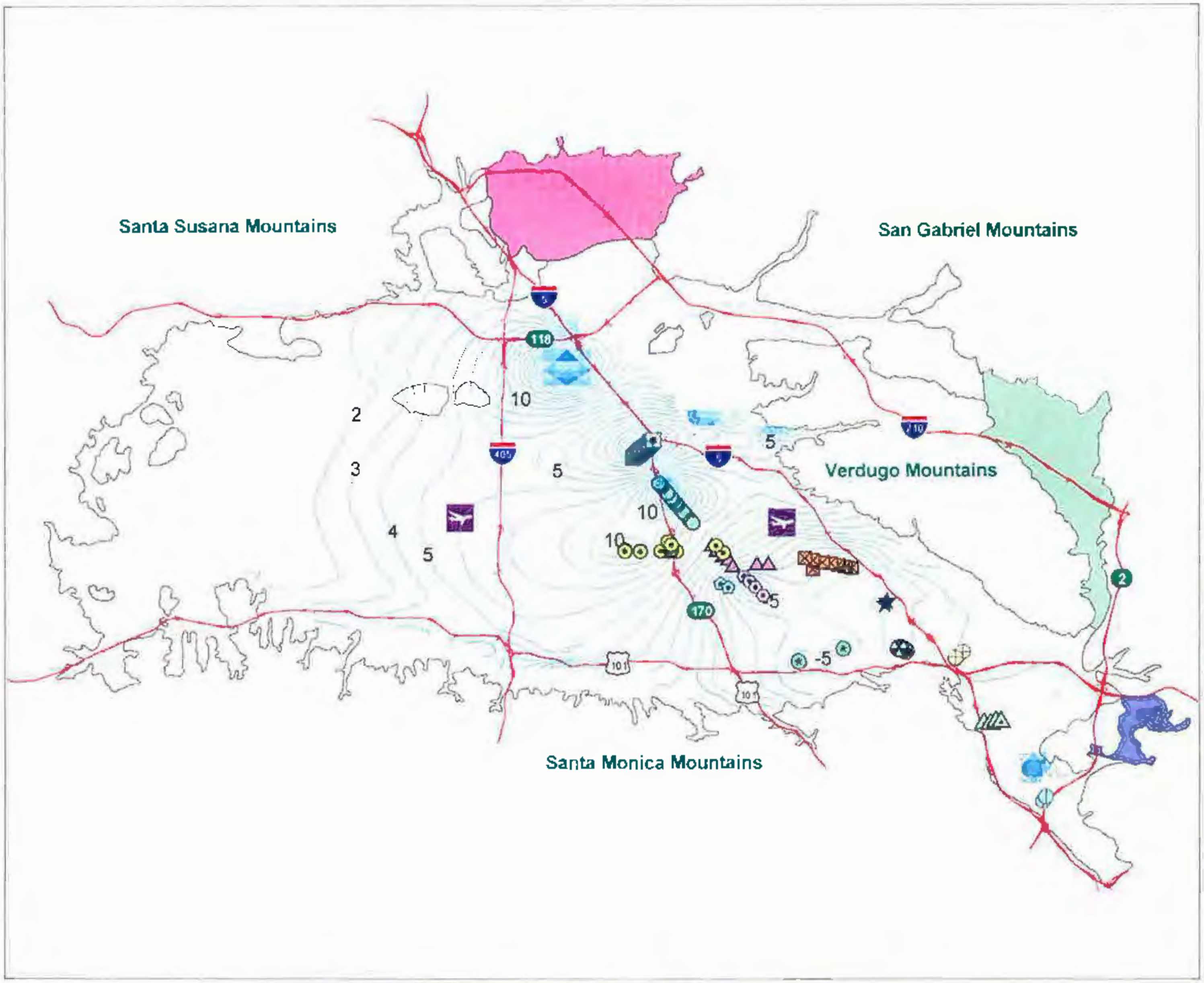
PLATE 3

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2008 - 2013 Water Years



Simulated Change in Groundwater Elevation - Model Layer 1
Fall 2008 - Fall 2013

PLATE 4



Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2008 - 2013 Water Years

LEGEND

Well Fields
- Burbank OU
- Glendale North OU
- Glendale South OU
- Burbank GAC
- Headworks
- North Hollywood OU
- Pollock
- Tujunga
- Rinaldi - Toluca
- North Hollywood
- Whitnall
- Erwin
- Verdugo

Change in GW Elev.
Spreading Grounds
Airport

Groundwater Basins
- San Fernando
- Sylmar
- Verdugo
- Eagle Rock

N

2 0 2 Miles

Simulated Change in Groundwater Elevation - Model Layer 2
Fall 2008 - Fall 2013

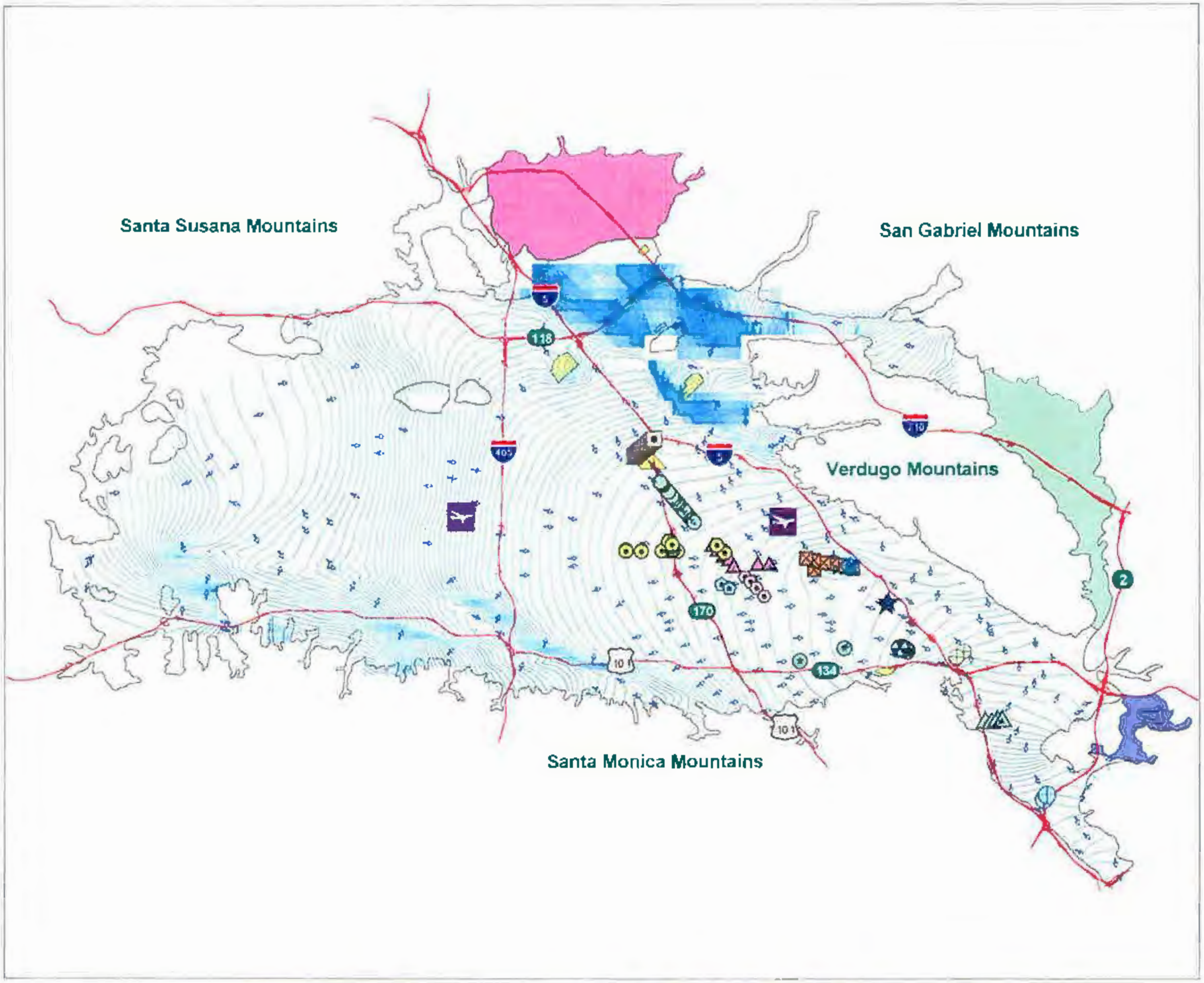


PLATE 5

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2008- 2013 Water Years

LEGEND

Well Fields
- Burbank OU
- Glendale North OU
- Glendale South OU
- Burbank GAC
- Headworks
- North Hollywood OU
- Pollock
- Tujunga
- Rinaldi - Toluca
- North Hollywood
- Whitnall
- Erwin
- Verdugo

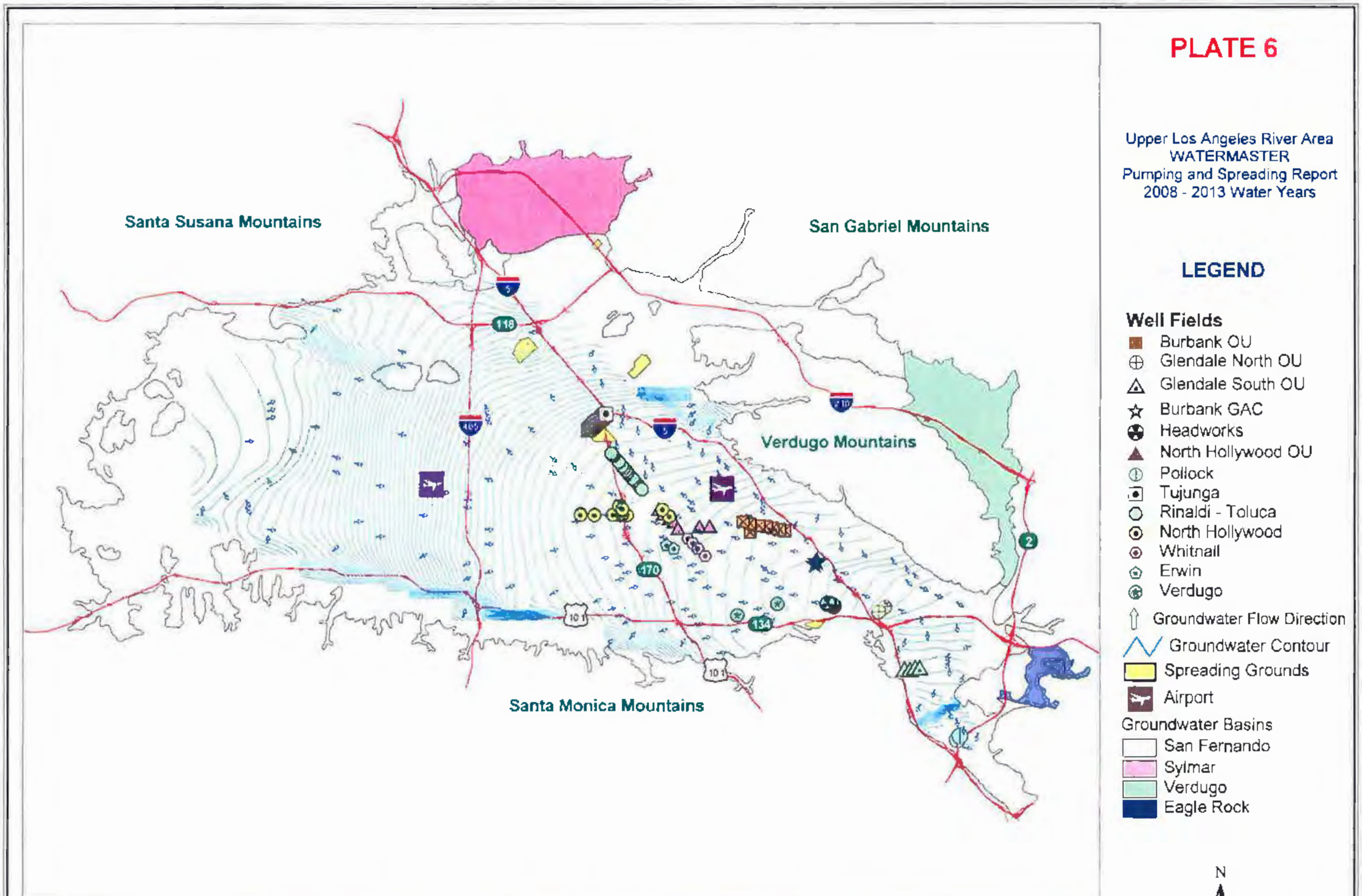
Groundwater Flow Direction
Groundwater Contour
Spreading Grounds
Airport

Groundwater Basins
- San Fernando
- Sylmar
- Verdugo
- Eagle Rock

N

2 0 2 Miles

Simulated Groundwater Flow Direction - Model Layer 1
FALL 2013



Simulated Groundwater Flow Direction - Model Layer 2
FALL 2013

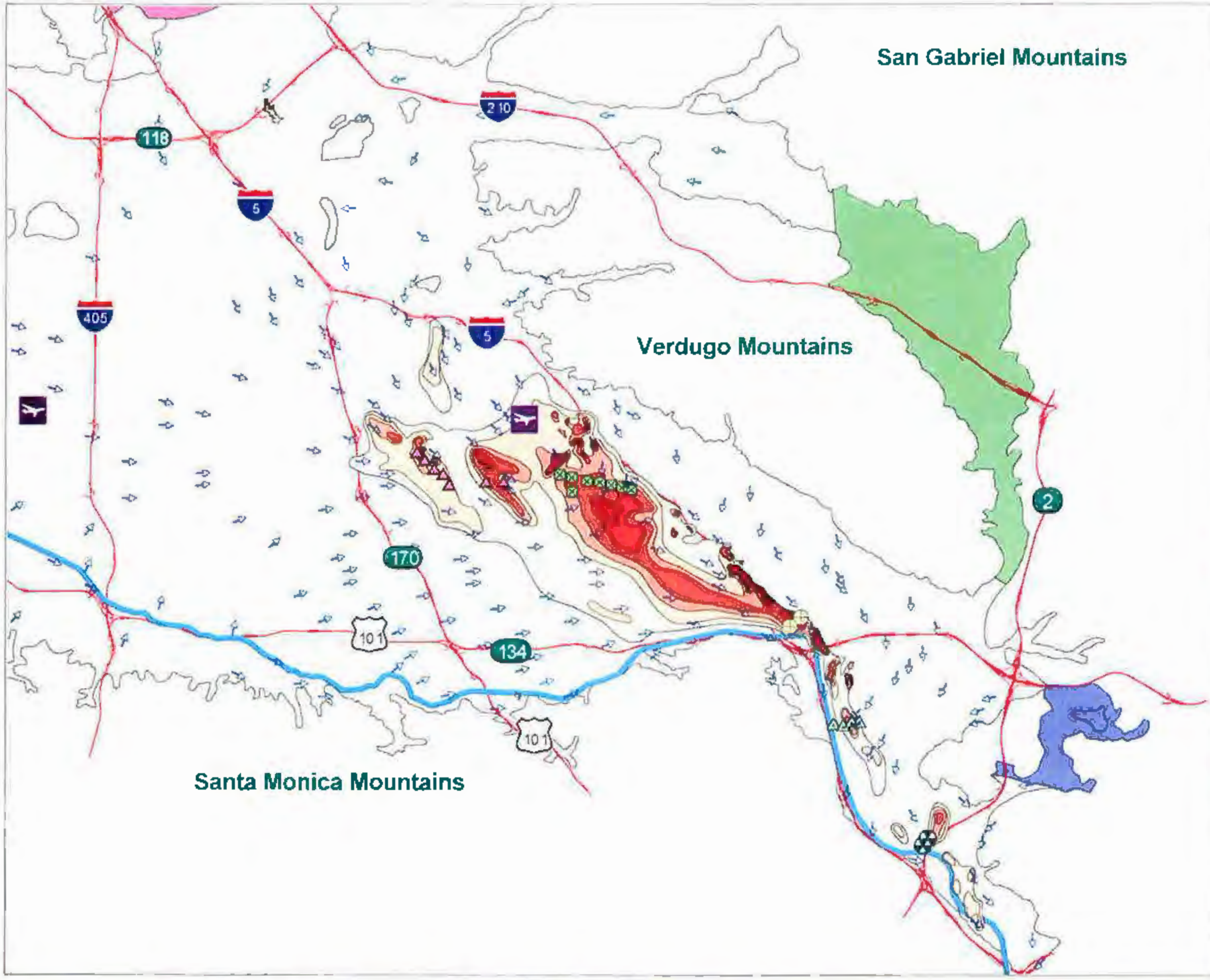


PLATE 7

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2008 - 2013 Water Years

LEGEND

- Burbank OU
- Glendale North OU
- Glendale South OU
- North Hollywood OU
- Pollock Wells

TCE Plume (Source: EPA)

- > DL - 5 ug/L (MCL)
- 5.01 - 50 ug/L
- 50.01 - 100 ug/L
- 100.01 - 500 ug/L
- 500.01 - 1000 ug/L
- 1000.01 - 5000 ug/L
- Groundwater Flow Direction
- Los Angeles River
- Airport

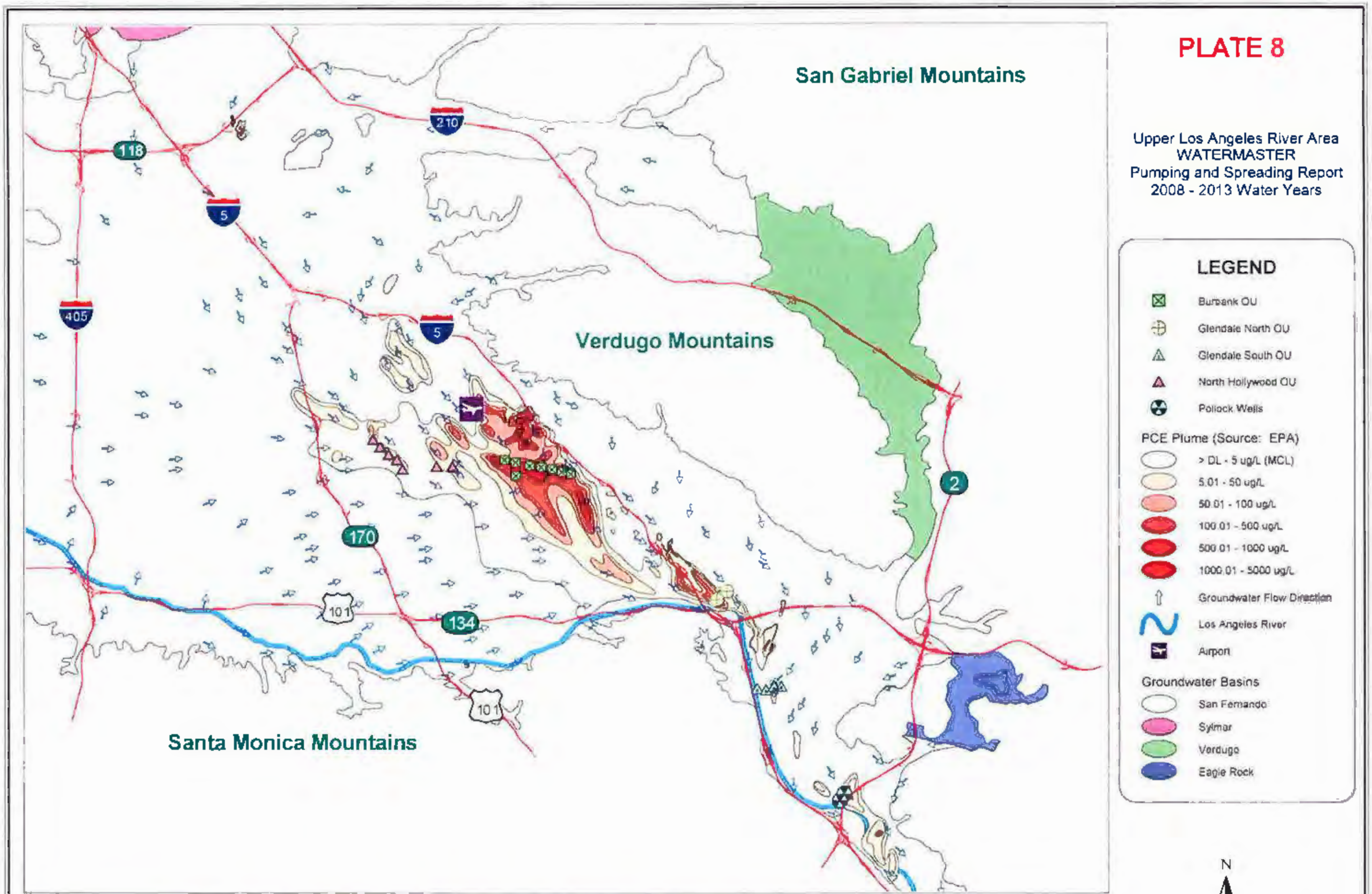
Groundwater Basins

- San Fernando
- Sylmar
- Verdugo
- Eagle Rock

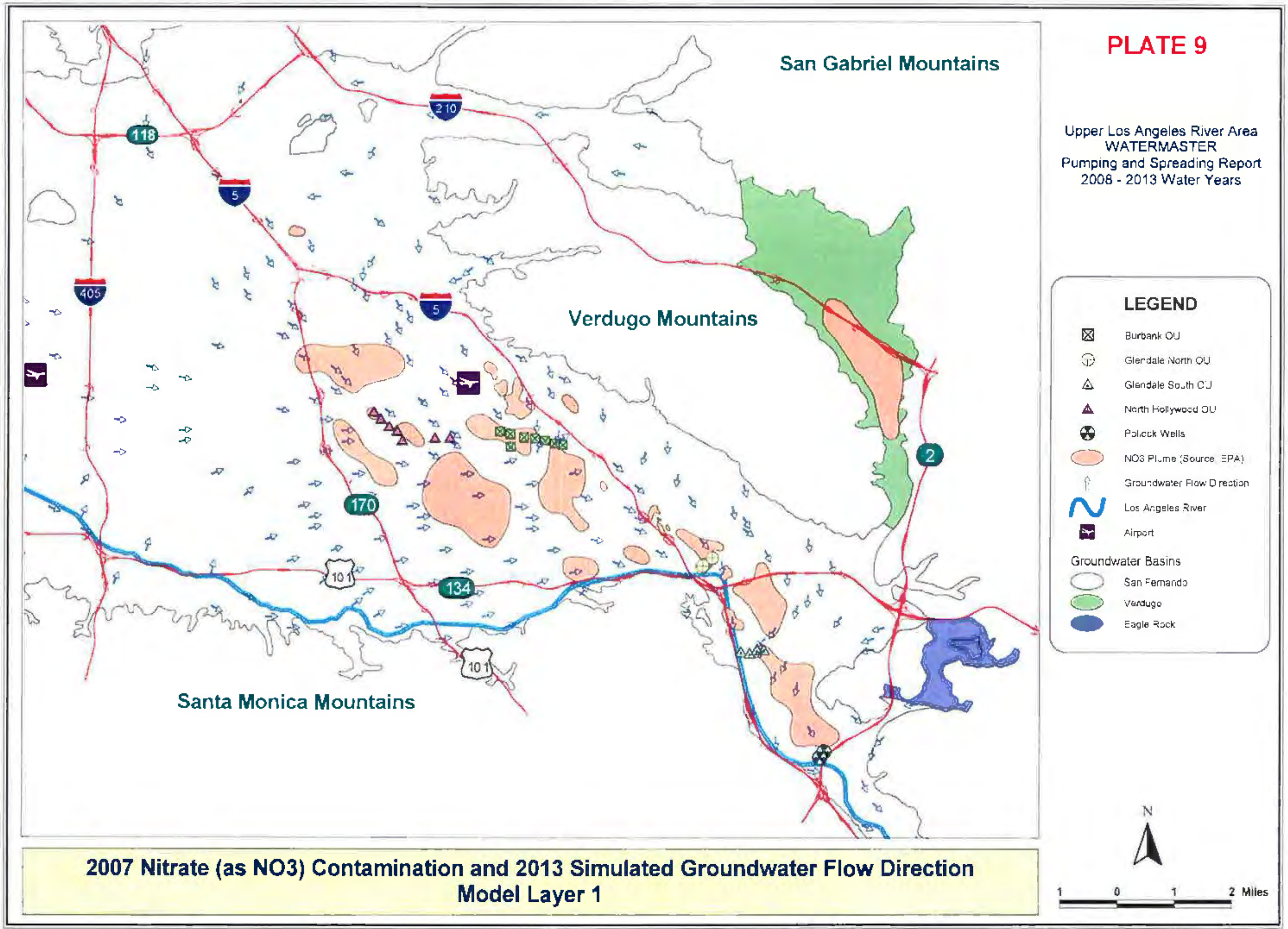
N

1 0 1 2 Miles

2007 TCE Contamination and 2013 Simulated Groundwater Flow Direction
Model Layer 1



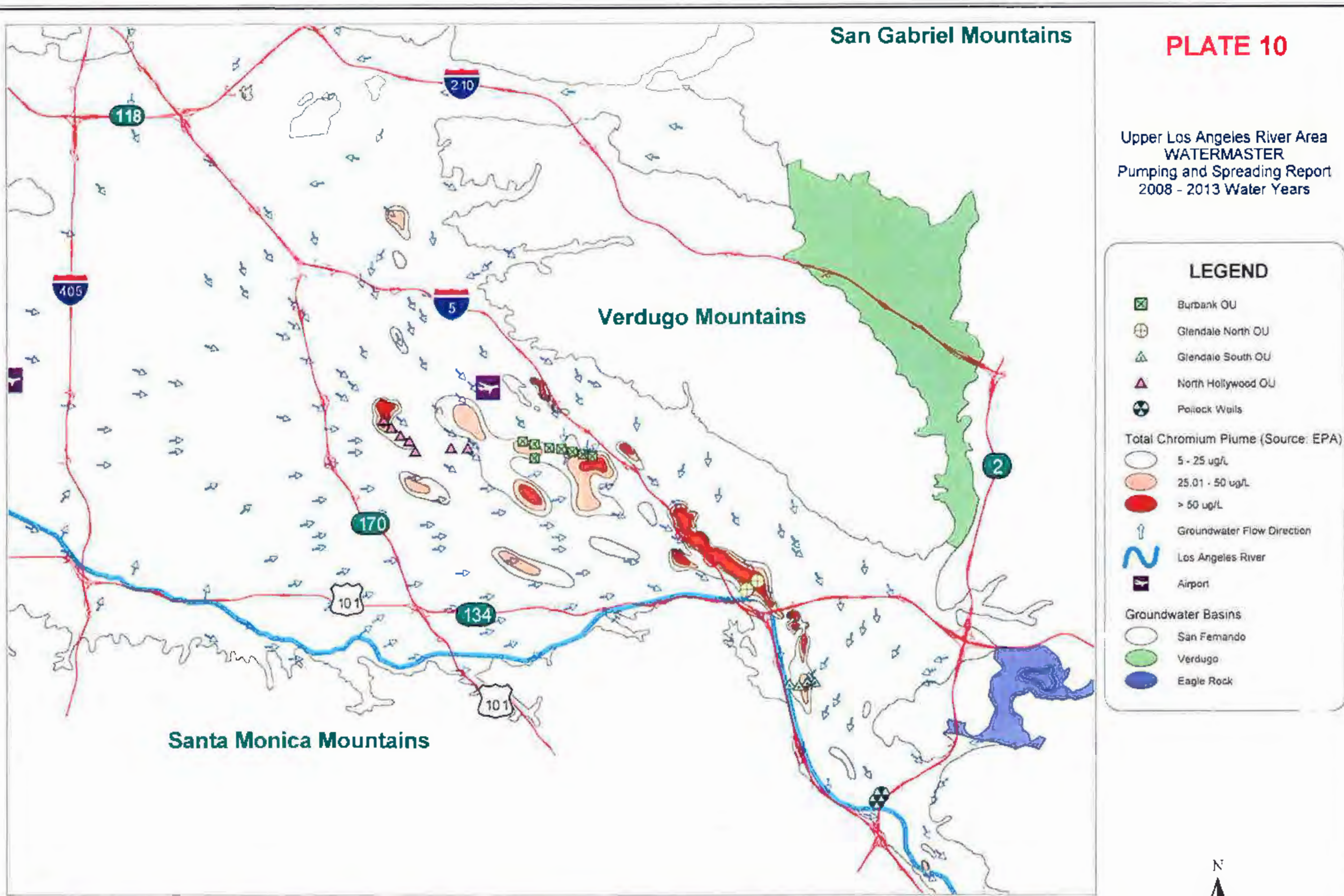
2007 PCE Contamination and 2013 Simulated Groundwater Flow Direction
Model Layer 1



2007 Nitrate (as NO3) Contamination and 2013 Simulated Groundwater Flow Direction
Model Layer 1

PLATE 10

Upper Los Angeles River Area
WATERMASTER
Pumping and Spreading Report
2008 - 2013 Water Years



2007 Total Dissolved Chromium Contamination and 2013 Simulated Groundwater Flow Direction
Model Layer 1

APPENDIX A

CITY OF LOS ANGELES

PUMPING AND SPREADING PLAN

2008-2013 Water Years

CITY OF LOS ANGELES
GROUNDWATER PUMPING AND SPREADING PLAN
IN THE UPPER LOS ANGELES RIVER AREA
FOR THE 2008-2013 WATER YEARS

MAY 2009

Prepared by:
Groundwater Management Group
WATER QUALITY DIVISION
Los Angeles Department of Water and Power

TABLE OF CONTENTS

Introduction

The water rights in the Upper Los Angeles River Area (ULARA) were set forth in a Final Judgment, entered on January 26, 1979, ending litigation that lasted over 20 years. The ULARA Watermaster's Policies and Procedures give a summary of the decreed extraction rights within ULARA, together with a detailed statement describing the ULARA Administrative Committee operations, reports to and by the Watermaster and necessary measuring tests and inspection programs. The ULARA Policies and Procedures have been revised several times since the original issuance, to reflect current groundwater management thinking.

In Section 5.4 of the ULARA Policies and Procedures as amended in February 1998, it is stated that:

"...all parties or non-parties who pump groundwater are required to submit annual reports by May 1 to the Watermaster that include the following:

- *A 5-year projection of annual groundwater pumping rates and volumes.*
- *A 5-year projection of annual spreading rates and volumes.*
- *The most recent water quality data for each well."*

This report constitutes Los Angeles' 2009 Groundwater Pumping and Spreading Plan for the Water Years 2008 - 2013.

Section 1: Facilities Description

This section describes facilities that influence groundwater conditions in ULARA and relate to Los Angeles.

a.) Spreading Grounds: There are five spreading ground facilities that can be used for groundwater recharge of native water in ULARA. The Los Angeles County Department of Public Works (LACDPW) operates the Branford, Hansen, Lopez, and Pacoima spreading grounds. LACDPW and LADWP operate the Tujunga Spreading Grounds cooperatively. Estimated capacities for these are shown in Table 1-1 and their locations are shown in Figure 1-1.

Table 1-1

Estimated Capacities of ULARA Spreading Grounds			
Spreading Ground	Type	Total wetted area [ac]	Capacity [ac-ft/yr.]
Operated by LACDPW			
Branford	Deep basin	7	1,000
Hansen	Shallow basins	105	35,000
Lopez	Shallow basins	12	2,000
Pacoima	Med. Depth basins	107	23,000
Operated by LACDPW and LADWP			
Tujunga	Shallow basins	83	43,000
		TOTAL:	104,000

b.) Extraction Wells: The LADWP has nine well fields in the San Fernando Basin, and one in the Sylmar Basin. The well fields are shown in Figure 1-1, and their rated capacities are shown in Table 1-2. The rated capacities are approximate as operating capacities vary depending on the water levels. Actual groundwater pumping is dependent on maintenance schedules and water quality for each well.

Table 1-2

Rated Capacities of LADWP Well Fields in ULARA					
Well Field	Number of Wells			Rated Capacity	
San Fernando Basin	Active	Stand-by	Total	cfs	gpm
Aeration	7	---	7	2.6	1,170
Crystal Springs (A)	---	---	---	---	---
Erwin	2	0	2	5.8	2,600
Headworks			---	---	---
North Hollywood	17	0	17	86	38,600
Pollock	2	0	2	6.3	2,830
Rinaldi-Toluca	15	---	15	107	48,030
Tujunga	12	---	12	105.9	47,530
Verdugo	2	---	2	7.2	3,230
Whitnall	4	---	4	18.8	8,440
Sylmar Basin					
Mission	2	---	2	6.2	2,780
TOTAL	63	0	63	345.8	155,210

(A) Wellfield has been abandoned pursuant to sale of property to DreamWorks, Inc.

c.) Groundwater Treatment Facilities: The LADWP operates two groundwater treatment facilities. Water treated at these facilities is delivered to the water distribution system for consumption.

North Hollywood Groundwater Treatment Facility: This plant was placed into service in December 1989 to treat up to 2,000 gpm of groundwater to remove VOCs by using aeration with granular activated carbon (GAC) for off-gas treatment. This facility is a part of the North Hollywood Operable Unit (NHOU) that also includes a system of shallow wells. The NHOU is financed, in part, by the U.S. Environmental Protection Agency.

Pollock Wells Treatment Plant: This plant was placed into service in March 1999 to remove VOCs from the groundwater at a rate up to 3,000 gpm from the Pollock Well Field. The facility features the use of liquid-phase GAC, restores the use of Pollock Wells, and addresses the excessive rising groundwater discharges from the San Fernando Basin into the Los Angeles River.

Section 2: Annual Pumping And Spreading Projections

a.) Pumping Projections for the Water Years 2008-2013: The City of Los Angeles has the following four sources of water supply: 1.) Los Angeles Aqueduct supply imported from the Owens Valley/Mono Basin area; 2.) Local groundwater supply from the Central, San Fernando, and Sylmar Basins; 3.) Purchased water from the Metropolitan Water District of Southern California (MWD); and 4) Recycled water. The MWD sources of supply are the State Water Project and the Colorado River Aqueduct. Use of San Fernando Basin groundwater can fluctuate annually depending on the availability of imported water which varies due to climatic and operational constraints; the increasing levels of hexavalent chromium and other emerging chemicals; and the migration of volatile organic compounds that have spread beyond the sphere of influence created by the small capacity of the NHOU.

The San Fernando Basin and Sylmar Basin provide most of the City's local groundwater supply. The City of Los Angeles has the following average annual water rights which comprise approximately 11% of the City's supply:

San Fernando Basin	87,000 AF
Sylmar Basin	3,405 AF

Table 2-1 shows the amount of groundwater extractions that are expected during the 2008-09 Water Year from the San Fernando and Sylmar Basins. Appendix B provides groundwater extraction projections from 2008 to 2013. These projections are based upon assumed demand and Los Angeles Aqueduct flows, and are subject to yearly adjustments.

Table 2-1

CITY OF LOS ANGELES
ACTUAL AND PROJECTED PUMPING FOR WY 08-09

San Fernando Basin		Actual Extraction (Acre-Feet)						Projected Extraction (Acre-Feet)					
	TOTAL	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09
AERATION	869	14	10	22	15	2	130	77	135	131	112	113	108
ERWIN	1,423	263	178	1	0	0	1	167	228	220	123	123	119
HEADWORKS	0	0	0	0	0	0	0	0	0	0	0	0	0
NORTH HOLLYWOOD	13,752	1,455	1,748	1,384	1,190	452	382	1,071	1,230	1,190	1,230	1,230	1,190
POLLOCK	1,383	134	401	214	358	178	98	0	0	0	0	0	0
RINALDI-TOLUCA	14,431	611	1,001	838	784	949	942	1,619	431	1,780	1,845	1,845	1,786
TUJUNGA	9,483	1,355	639	853	8	416	272	0	0	1,012	1,661	1,661	1,607
VERDUGO	2,993	309	197	243	198	146	0	173	228	220	431	431	417
WHITNALL	8,184	499	374	450	360	253	2	774	1,085	1,042	1,167	1,107	1,071
SAN FERNANDO BASIN TOTAL:	52,518	4,641	4,549	4,004	2,912	2,395	1,827	3,881	3,337	5,595	6,569	6,510	6,298
Sylmar Basin													
MISSION	1,027	1	0	0	0	0	0	113	185	179	185	185	179
ULARA TOTAL:	53,545	4,642	4,549	4,004	2,912	2,395	1,827	3,994	3,522	5,774	6,754	6,695	6,477

b.) <u>Spreading Projections for the 2008-09 Water Year</u>: Native groundwater recharge from captured storm runoff occurs primarily as a result of the use of man-made spreading grounds. Spreading grounds operations are primarily controlled by the LACDPW. Table 2-2 represents the anticipated spreading volumes for 2008-09.

Table 2-2

Actual and Projected Spreading in ULARA Spreading Grounds in 2008-09 (in acre-feet)							
Operated by:							
	LACDPW				LADWP	LACDPW and LADWP	Monthly Total
Month	Branford	Hansen	Lopez	Pacoima	Headworks (A)	Tujunga	
Actual							
Oct-08	20	0	0	106	0	177	303
Nov-08	119	0	0	1	0	248	368
Dec-08	109	0	0	1	0	466	576
Jan-09	46	0	0	5	0	367	418
Feb-09	243	0	0	775	0	2880	3898
Mar-09	76	0	0	6	0	1366	1448
Projected							
Apr-09	18	0	0	0	0	522	540
May-09	18	0	0	600	0	500	1118
Jun-09	18	0	0	0	0	450	468
Jul-09	18	0	0	0	0	300	318
Aug-09	18	0	0	0	0	280	298
Sep-09	18	0	0	0	0	210	228
Total	721	0	0	1494	0	7766	9981

(A) 1992-93 Water Year was the last year of spreading.

Section 3: Water Quality Monitoring Program Description

All of LADWP's 63 active wells in ULARA are monitored in conformance with the requirements set forth in Title 22, California Code of Regulations. For all active wells, monitoring is required whether the well is in production or not. State regulations require the following types of monitoring regimens:

1. Inorganic compounds
2. Organic compounds
3. Phase II and V Initial monitoring
4. Radiological compounds
5. Quarterly organics compounds

Each well, whether on active or standby status, is monitored every three years for a full range of inorganic and organic compounds. Phase II and V Initial monitoring involves analysis for newly regulated organic compounds at all wells. Each well must be sampled for four consecutive quarters within a three-year period. Quarterly organic compounds analysis monitoring are performed four times a year for each well where organic compounds have been detected. A complete list of the parameters that must be tested for is contained in Title 22 of the California Code of Regulations. Appendix A provides a recent report for TCE, PCE, and nitrates in Los Angeles' San Fernando and Sylmar Basins wells.

Section 4: Groundwater Treatment Facilities Operations Summary

North Hollywood Operable Unit (NHOU): Throughout the 2008-2009 Water Year Wells No..5 and No.4 were out of service due to reduced water level above the pump intake of these wells as a result of declined water table elevations. From October 2008 to February 2009 the Aeration Towers were out of service for maintenance. Starting January 2009, Honeywell is operating Well No. 2 and dischargring the water to the sewer system. LADWP is reimbursed for the amount of water being pumped by Honeywell. Honeywell will continue to discharge the water to the sewer system until the 97-005 approval is obtained from the California Department of Public Health in order to serve the water to LADWP customers.

Table 2-3

Groundwater Production from North Hollywood OU (Aeration Wells)

	Aeration Well No. (AF)							Total (AF)	Influent to Facility TCE/PCE (ug/L)	Effluent from Facility TCE/PCE (ug/L)
Mon/Yr	2	3	4	5	6	7	8			
Apr-08	0.02	4.73	0.00	0.00	29.45	35.1	23.44	92.74	28.0/6.3	5-May
May-08	0.02	5.14	0.02	0.00	36.66	41.85	32.97	116.66	15.2/8.39	ND/ND
Jun-08	0.00	3.86	0.02	0.00	14.74	15.38	11.62	45.62	46.5/7.85	ND/ND
Jul-08	0.00	10.19	0.00	0.00	36.85	40.73	31.61	119.38	32.6/6.81	ND/ND
Aug-08	0.07	10.35	0.00	0.00	35.72	37.9	30.58	114.62	40.2/8.75	ND/ND
Sep-08	1.29	9.37	0.00	0.00	35.54	39.62	30.51	116.33	NS/NS	NS/NS
Oct-08	2.55	0.9	0.00	0.00	3.72	3.97	3.17	14.31	NS/NS	NS/NS
Nov-08	10.4	0.00	0.00	0.00	0.00	0.00	0.00	10.4	NS/NS	NS/NS
Dec-08	21.65	0.00	0.00	0.00	0.00	0.00	0.00	21.65	NS/NS	NS/NS
Jan-09	14.81	0.00	0.00	0.00	0.00	0.00	0.00	14.81	13.0/13.5	NS/NS
Feb-09	1.42	0.00	0.00	0.00	0.00	0.00	0.00	1.42	26.0/6.75	ND/ND
Mar-09	0.41	12.21	0.02	0.00	31.66	47.91	37.81	130.02	32.6/5.80	ND/ND

Note:
ND: Not Detected
NS: No Sample

Section 5: Plans For Facilities Modifications

This section describes any plans for modifications to existing facilities, or plans to construct new facilities in the 2008-09 and the 2009-10 Water Years, as of the printing of this report (May 2009).

a.) Spreading Grounds:

Hansen Spreading Grounds During 2009-10 Water Year the Hansen Spreading Grounds will be out of service while major upgrades are made to the facility. These upgrades include deepening and combining the basins to increase storage, and retrofitting the intake facility to improve operations efficiency. Construction should be complete by December 2009. However, improving the intake facility will start after the basins construction is completed.

Tujunga Spreading Grounds The full groundwater recharge capacity of the Tujunga Spreading Grounds should be restored by fall 2009 through the completion of the mitigation action plan to control the methane gas migration from the Sheldon-Arleta Landfill. Plans are underway to improve the Tujunga Spreading Grounds to increase the storage capacity, improve the intake facilities, and add a second intake downstream of the confluence of the Tujunga and Pacoima Wash channels. The project design is anticipated to start in July 2009 and will take approximately 18 months to complete.

Pacoima Spreading Grounds Conceptual plans are underway to improve the Pacoima Spreading Grounds to increase the storage capacity and improve the intake facilities. This project is currently undergoing a feasibility analysis and different alternatives being considered.

Lopez Spreading Grounds Conceptual plans are underway to improve the Lopez Spreading Grounds to increase the storage capacity and improve the intake facilities. This project is currently undergoing a feasibility analysis.

Branford Spreading Basin Conceptual plans are underway to improve the Branford Spreading Basin to increase percolation rates. This project is currently undergoing a feasibility analysis.

Headworks Spreading Grounds The Headworks Spreading Grounds is the site of multi-objective projects to improve water quality and storage, and to provide the community with an opportunity for passive recreation. This project includes a buried 110-million gallon reservoir for potable water storage. The other project component is the proposed wetlands project that is a joint effort between LADWP and the Army Corps of Engineers. This project is currently undergoing a feasibility analysis.

b.) Groundwater Treatment Facilities:

North Hollywood Operable Unit (NHOU). A feasibility study is being developed by the USEPA to improve and upgrade the production capacity of the NHOU well system; to enhance the NHOU capture zone; and to improve the reliability of the NHOU. This plan includes the construction of additional new wells in the NHOU area. The USEPA, the City of Los Angeles, DTSC, and the RWQCB are also investigating the source of various contaminant plumes in the area.

c.) Recycled Water Projects:

Water Recycling Projects in the San Fernando Valley. LADWP is developing the Recycled Water Master Plan, which will identify options to maximize recycled water use throughout the entire City of Los Angeles. The Master Plan is anticipated to be completed by 2012 and will result in projects that will connect various users to the recycled water distribution network. Other water recycling projects currently in progress include establishing recycled water delivery to the Van Nuys Golf Course, Hansen Dam Golf Course, Valley Presbyterian Hospital, and Van Nuys High School. LADWP expects to deliver as much as 19,350 AF of recycled water, annually, by 2014, which includes an estimated 3,000 AF of delivery to the SFB. The City of Los Angeles' water supply goals set by Mayor Antonio Villaraigosa provides that by 2019 as much as 50,000 AF of recycled water will be delivered city-wide each year for non-potable reuse and conjunctive use.

APPENDIX A:
2007-2008 Water Quality Sampling Results

SAN FERNANDO AND SYLMAR BASINS WELL FIELDS
NITRATE (AS NO3), PCE, TCE, PERCHLORATE, CHROMIUM, IRON, MANGANESE
1,2-DICHLOROETHENE-CIS, CARBON TETRACHLORIDE, TOTAL COLIFORM
1,1-DEA, 1,1-DCE, 1,4-DIOXANE, BROMIDE, AND MTBE CONCENTRATIONS
SAMPLES TAKEN BETWEEN 4/1/2008 AND 3/31/2009

WELL NAME	ANALYTE	RESULT	DATE	UNIT
AT002	1,1-DCA	3.95	4/23/2008	µg/L
AT002	1,1-DCA	3.6	5/20/2008	µg/L
AT002	1,1-DCE	21.7	4/23/2008	µg/L
AT002	1,1-DCE	20	5/20/2008	µg/L
AT002	1,2-Dichloroethene-cis	16.1	4/23/2008	µg/L
AT002	1,4-Dioxane	6.2	4/23/2008	ug/L
AT002	1,4-Dioxane	6.3	5/20/2008	ug/L
AT002	Carbon tetrachloride	2.71	4/23/2008	µg/L
AT002	Carbon tetrachloride	2.1	5/20/2008	µg/L
AT002	Chromium (Cr) Total	297	4/23/2008	ug/L
AT002	Chromium (Cr) Total	292	5/20/2008	ug/L
AT002	Chromium (Cr+6)	281	4/23/2008	µg/L
AT002	Chromium (Cr+6)	296	5/20/2008	µg/L
AT002	Nitrate (as NO3)	61.1	4/23/2008	mg/L
AT002	Nitrate (as NO3)	56.3	5/20/2008	mg/L
AT002	PCE	55.3	4/23/2008	µg/L
AT002	PCE	46	5/20/2008	µg/L
AT002	TCE	1002	4/23/2008	µg/L
AT003	1,1-DCA	0.5	5/20/2008	µg/L
AT003	1,1-DCA	0.659	7/28/2008	µg/L
AT003	1,1-DCA	0.752	8/28/2008	µg/L
AT003	1,1-DCA	0.596	2/18/2009	µg/L
AT003	1,1-DCA	0.605	3/18/2009	µg/L
AT003	1,1-DCE	3.2	4/23/2008	µg/L
AT003	1,1-DCE	3	5/20/2008	µg/L
AT003	1,1-DCE	3.68	7/28/2008	µg/L
AT003	1,1-DCE	4.24	8/28/2008	µg/L
AT003	1,1-DCE	3.34	2/18/2009	µg/L
AT003	1,1-DCE	3.18	3/18/2009	µg/L
AT003	1,2-Dichloroethene-cis	3.26	4/23/2008	µg/L
AT003	1,2-Dichloroethene-cis	3.27	7/28/2008	µg/L
AT003	1,2-Dichloroethene-cis	3.45	8/28/2008	µg/L
AT003	1,2-Dichloroethene-cis	2.81	2/18/2009	µg/L
AT003	1,2-Dichloroethene-cis	2.74	3/18/2009	µg/L
AT003	1,4-Dioxane	1.7	4/23/2008	ug/L
AT003	1,4-Dioxane	2	5/20/2008	ug/L
AT003	1,4-Dioxane	1.5	7/28/2008	ug/L
AT003	1,4-Dioxane	1.4	8/28/2008	ug/L
AT003	1,4-Dioxane	1.5	2/18/2009	ug/L
AT003	1,4-Dioxane	1.5	3/18/2009	ug/L
AT003	Chromium (Cr) Total	14	4/23/2008	ug/L
AT003	Chromium (Cr) Total	13.8	5/20/2008	ug/L
AT003	Chromium (Cr) Total	13	7/28/2008	ug/L
AT003	Chromium (Cr) Total	13	8/28/2008	ug/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
AT003	Chromium (Cr) Total	13.7	2/18/2009	ug/L
AT003	Chromium (Cr) Total	13.1	3/18/2009	ug/L
AT003	Chromium (Cr+6)	13.7	4/23/2008	µg/L
AT003	Chromium (Cr+6)	13.9	5/20/2008	µg/L
AT003	Chromium (Cr+6)	13.9	7/28/2008	µg/L
AT003	Chromium (Cr+6)	13.8	8/28/2008	µg/L
AT003	Chromium (Cr+6)	14.1	2/18/2009	µg/L
AT003	Chromium (Cr+6)	14.2	3/18/2009	µg/L
AT003	Nitrate (as NO3)	40.4	4/23/2008	mg/L
AT003	Nitrate (as NO3)	39.4	5/20/2008	mg/L
AT003	Nitrate (as NO3)	35.7	7/28/2008	mg/L
AT003	Nitrate (as NO3)	37.4	8/28/2008	mg/L
AT003	Nitrate (as NO3)	36	2/18/2009	mg/L
AT003	Nitrate (as NO3)	37.3	3/18/2009	mg/L
AT003	PCE	9.11	4/23/2008	µg/L
AT003	PCE	8.1	5/20/2008	µg/L
AT003	PCE	8.09	7/28/2008	µg/L
AT003	PCE	9.82	8/28/2008	µg/L
AT003	PCE	7	2/18/2009	µg/L
AT003	PCE	7.61	3/18/2009	µg/L
AT003	TCE	38.1	4/23/2008	µg/L
AT003	TCE	38.7	7/28/2008	µg/L
AT003	TCE	47.2	8/28/2008	µg/L
AT003	TCE	38.8	2/18/2009	µg/L
AT003	TCE	38.1	3/18/2009	µg/L
AT004	1,1-DCA	0.502	4/23/2008	µg/L
AT004	1,1-DCA	0.9	5/20/2008	µg/L
AT004	1,1-DCA	1.03	2/18/2009	µg/L
AT004	1,1-DCE	0.867	7/28/2008	µg/L
AT004	1,1-DCE	1.22	8/28/2008	µg/L
AT004	1,2-Dichloroethene-cis	1.39	4/23/2008	µg/L
AT004	1,2-Dichloroethene-cis	0.698	7/28/2008	µg/L
AT004	1,2-Dichloroethene-cis	0.787	8/28/2008	µg/L
AT004	1,2-Dichloroethene-cis	4.74	2/18/2009	µg/L
AT004	1,4-Dioxane	1.9	4/23/2008	ug/L
AT004	1,4-Dioxane	3.3	5/20/2008	ug/L
AT004	1,4-Dioxane	1.2	7/28/2008	ug/L
AT004	1,4-Dioxane	1	8/28/2008	ug/L
AT004	1,4-Dioxane	2.9	2/18/2009	ug/L
AT004	Carbon tetrachloride	0.898	7/28/2008	µg/L
AT004	Carbon tetrachloride	1.34	8/28/2008	µg/L
AT004	Chromium (Cr) Total	8	4/23/2008	ug/L
AT004	Chromium (Cr) Total	4.1	5/20/2008	ug/L
AT004	Chromium (Cr) Total	1.6	7/28/2008	ug/L
AT004	Chromium (Cr) Total	1.3	8/28/2008	ug/L
AT004	Chromium (Cr) Total	5.2	2/18/2009	ug/L
AT004	Chromium (Cr+6)	6.77	4/23/2008	µg/L
AT004	Chromium (Cr+6)	3.76	5/20/2008	µg/L
AT004	Chromium (Cr+6)	1.45	7/28/2008	µg/L
AT004	Chromium (Cr+6)	1.34	8/28/2008	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
AT004	Chromium (Cr+6)	5.14	2/18/2009	µg/L
AT004	Coliform Total	1	4/23/2008	NUM/100ml
AT004	Nitrate (as NO3)	49.2	4/23/2008	mg/L
AT004	Nitrate (as NO3)	41.2	5/20/2008	mg/L
AT004	Nitrate (as NO3)	25.4	7/28/2008	mg/L
AT004	Nitrate (as NO3)	27.9	8/28/2008	mg/L
AT004	Nitrate (as NO3)	45.6	2/18/2009	mg/L
AT004	PCE	9.99	4/23/2008	µg/L
AT004	PCE	10	5/20/2008	µg/L
AT004	PCE	7.01	7/28/2008	µg/L
AT004	PCE	8.61	8/28/2008	µg/L
AT004	PCE	10	2/18/2009	µg/L
AT004	TCE	23	4/23/2008	µg/L
AT004	TCE	29.4	7/28/2008	µg/L
AT004	TCE	38.9	8/28/2008	µg/L
AT004	TCE	22.6	2/18/2009	µg/L
AT006	1,1-DCA	0.575	4/23/2008	µg/L
AT006	1,1-DCA	0.523	8/28/2008	µg/L
AT006	1,1-DCA	0.592	2/18/2009	µg/L
AT006	1,2-Dichloroethene-cis	1.18	4/23/2008	µg/L
AT006	1,2-Dichloroethene-cis	1.26	7/28/2008	µg/L
AT006	1,2-Dichloroethene-cis	1.34	8/28/2008	µg/L
AT006	1,2-Dichloroethene-cis	1.55	2/18/2009	µg/L
AT006	1,4-Dioxane	0.71	4/23/2008	ug/L
AT006	1,4-Dioxane	0.72	5/20/2008	ug/L
AT006	1,4-Dioxane	0.59	7/28/2008	ug/L
AT006	1,4-Dioxane	0.57	8/28/2008	ug/L
AT006	1,4-Dioxane	0.75	2/18/2009	ug/L
AT006	Chromium (Cr) Total	3.3	4/23/2008	ug/L
AT006	Chromium (Cr) Total	3.2	5/20/2008	ug/L
AT006	Chromium (Cr) Total	3.1	7/28/2008	ug/L
AT006	Chromium (Cr) Total	2.5	8/28/2008	ug/L
AT006	Chromium (Cr) Total	3	2/18/2009	ug/L
AT006	Chromium (Cr+6)	3.72	4/23/2008	µg/L
AT006	Chromium (Cr+6)	3.08	5/20/2008	µg/L
AT006	Chromium (Cr+6)	3.04	7/28/2008	µg/L
AT006	Chromium (Cr+6)	2.99	8/28/2008	µg/L
AT006	Chromium (Cr+6)	3.26	2/18/2009	µg/L
AT006	Nitrate (as NO3)	21.6	4/23/2008	mg/L
AT006	Nitrate (as NO3)	21.5	5/20/2008	mg/L
AT006	Nitrate (as NO3)	19	7/28/2008	mg/L
AT006	Nitrate (as NO3)	21.2	8/28/2008	mg/L
AT006	Nitrate (as NO3)	22.1	2/18/2009	mg/L
AT006	PCE	8.75	4/23/2008	µg/L
AT006	PCE	6.7	5/20/2008	µg/L
AT006	PCE	7.97	7/28/2008	µg/L
AT006	PCE	9.49	8/28/2008	µg/L
AT006	PCE	8.48	2/18/2009	µg/L
AT006	TCE	10.1	4/23/2008	µg/L
AT006	TCE	9.87	7/28/2008	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
AT006	TCE	12.3	8/28/2008	µg/L
AT006	TCE	9.94	2/18/2009	µg/L
AT007	1,1-DCA	0.529	4/23/2008	µg/L
AT007	1,1-DCE	1.1	4/23/2008	µg/L
AT007	1,1-DCE	0.9	5/20/2008	µg/L
AT007	1,1-DCE	1.13	7/28/2008	µg/L
AT007	1,1-DCE	1.42	8/28/2008	µg/L
AT007	1,1-DCE	0.674	2/18/2009	µg/L
AT007	1,1-DCE	0.654	3/18/2009	µg/L
AT007	1,2-Dichloroethene-cis	0.535	4/23/2008	µg/L
AT007	1,2-Dichloroethene-cis	0.519	7/28/2008	µg/L
AT007	1,2-Dichloroethene-cis	0.615	8/28/2008	µg/L
AT007	1,4-Dioxane	2	4/23/2008	ug/L
AT007	1,4-Dioxane	2	5/20/2008	ug/L
AT007	1,4-Dioxane	1.7	7/28/2008	ug/L
AT007	1,4-Dioxane	1.7	8/28/2008	ug/L
AT007	1,4-Dioxane	1.1	2/18/2009	ug/L
AT007	1,4-Dioxane	1.3	3/18/2009	ug/L
AT007	Carbon tetrachloride	0.626	4/23/2008	µg/L
AT007	Carbon tetrachloride	0.618	7/28/2008	µg/L
AT007	Carbon tetrachloride	0.826	8/28/2008	µg/L
AT007	Carbon tetrachloride	0.525	2/18/2009	µg/L
AT007	Carbon tetrachloride	0.547	3/18/2009	µg/L
AT007	Chromium (Cr) Total	1.6	4/23/2008	ug/L
AT007	Chromium (Cr) Total	1.4	5/20/2008	ug/L
AT007	Chromium (Cr) Total	1.2	7/28/2008	ug/L
AT007	Chromium (Cr) Total	1.2	8/28/2008	ug/L
AT007	Chromium (Cr) Total	1.1	3/18/2009	ug/L
AT007	Chromium (Cr+6)	1.23	4/23/2008	µg/L
AT007	Chromium (Cr+6)	1.27	7/28/2008	µg/L
AT007	Chromium (Cr+6)	1.24	8/28/2008	µg/L
AT007	Chromium (Cr+6)	1.12	2/18/2009	µg/L
AT007	Chromium (Cr+6)	1.11	3/18/2009	µg/L
AT007	Nitrate (as NO3)	33.5	4/23/2008	mg/L
AT007	Nitrate (as NO3)	31.8	5/20/2008	mg/L
AT007	Nitrate (as NO3)	30.6	7/28/2008	mg/L
AT007	Nitrate (as NO3)	32.5	8/28/2008	mg/L
AT007	Nitrate (as NO3)	30.2	2/18/2009	mg/L
AT007	Nitrate (as NO3)	28.9	3/18/2009	mg/L
AT007	PCE	5.85	4/23/2008	µg/L
AT007	PCE	4.5	5/20/2008	µg/L
AT007	PCE	5.27	7/28/2008	µg/L
AT007	PCE	6.32	8/28/2008	µg/L
AT007	PCE	4.09	2/18/2009	µg/L
AT007	PCE	3.97	3/18/2009	µg/L
AT007	TCE	72.2	4/23/2008	µg/L
AT007	TCE	56.5	7/28/2008	µg/L
AT007	TCE	72.7	8/28/2008	µg/L
AT007	TCE	38.8	2/18/2009	µg/L
AT007	TCE	35.7	3/18/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
AT008	1,1-DCA	0.537	4/23/2008	µg/L
AT008	1,1-DCE	1.9	4/23/2008	µg/L
AT008	1,1-DCE	1.7	5/20/2008	µg/L
AT008	1,1-DCE	2.11	7/28/2008	µg/L
AT008	1,1-DCE	2.5	8/28/2008	µg/L
AT008	1,1-DCE	2.42	2/18/2009	µg/L
AT008	1,1-DCE	2.24	3/18/2009	µg/L
AT008	1,4-Dioxane	1.2	4/23/2008	ug/L
AT008	1,4-Dioxane	1.2	5/20/2008	ug/L
AT008	1,4-Dioxane	1.1	7/28/2008	ug/L
AT008	1,4-Dioxane	1	8/28/2008	ug/L
AT008	1,4-Dioxane	1.1	2/18/2009	ug/L
AT008	1,4-Dioxane	1.1	3/18/2009	ug/L
AT008	Carbon tetrachloride	2.97	4/23/2008	µg/L
AT008	Carbon tetrachloride	2.4	5/20/2008	µg/L
AT008	Carbon tetrachloride	2.85	7/28/2008	µg/L
AT008	Carbon tetrachloride	3.73	8/28/2008	µg/L
AT008	Carbon tetrachloride	4.17	2/18/2009	µg/L
AT008	Carbon tetrachloride	3.89	3/18/2009	µg/L
AT008	Chromium (Cr) Total	1.3	4/23/2008	ug/L
AT008	Chromium (Cr) Total	1.5	5/20/2008	ug/L
AT008	Chromium (Cr) Total	1.1	7/28/2008	ug/L
AT008	Chromium (Cr) Total	1.1	8/28/2008	ug/L
AT008	Chromium (Cr+6)	1.02	4/23/2008	µg/L
AT008	Chromium (Cr+6)	1.07	7/28/2008	µg/L
AT008	Chromium (Cr+6)	1.03	8/28/2008	µg/L
AT008	Nitrate (as NO3)	31.2	4/23/2008	mg/L
AT008	Nitrate (as NO3)	31.1	5/20/2008	mg/L
AT008	Nitrate (as NO3)	28.2	7/28/2008	mg/L
AT008	Nitrate (as NO3)	31	8/28/2008	mg/L
AT008	Nitrate (as NO3)	31.7	2/18/2009	mg/L
AT008	Nitrate (as NO3)	32.2	3/18/2009	mg/L
AT008	PCE	9.49	4/23/2008	µg/L
AT008	PCE	7.7	5/20/2008	µg/L
AT008	PCE	8.78	7/28/2008	µg/L
AT008	PCE	11.1	8/28/2008	µg/L
AT008	PCE	7.18	2/18/2009	µg/L
AT008	PCE	7.91	3/18/2009	µg/L
AT008	TCE	26.5	4/23/2008	µg/L
AT008	TCE	27.8	7/28/2008	µg/L
AT008	TCE	34.6	8/28/2008	µg/L
AT008	TCE	24.9	2/18/2009	µg/L
AT008	TCE	28.7	3/18/2009	µg/L
ER006	Nitrate (as NO3)	15.5	5/28/2008	mg/L
ER006	Nitrate (as NO3)	19.1	8/26/2008	mg/L
ER006	Nitrate (as NO3)	28	9/16/2008	mg/L
ER006	Nitrate (as NO3)	28.3	10/28/2008	mg/L
ER006	Nitrate (as NO3)	28.8	11/26/2008	mg/L
ER006	Nitrate (as NO3)	26.8	12/16/2008	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
ER006	Nitrate (as NO3)	27.2	1/28/2009	mg/L
ER006	Nitrate (as NO3)	23.9	2/25/2009	mg/L
ER006	Nitrate (as NO3)	23.8	3/26/2009	mg/L
ER006	PCE	0.787	4/18/2008	µg/L
ER006	PCE	0.609	5/28/2008	µg/L
ER006	PCE	0.696	8/26/2008	µg/L
ER006	PCE	2.7	9/16/2008	µg/L
ER006	PCE	3.47	10/28/2008	µg/L
ER006	PCE	3.28	11/26/2008	µg/L
ER006	PCE	3.26	12/16/2008	µg/L
ER006	PCE	2.11	1/28/2009	µg/L
ER006	PCE	1.26	2/25/2009	µg/L
ER006	PCE	1.2	3/26/2009	µg/L
ER006	TCE	5	4/18/2008	µg/L
ER006	TCE	3.73	5/28/2008	µg/L
ER006	TCE	3.32	8/26/2008	µg/L
ER006	TCE	11.7	9/16/2008	µg/L
ER006	TCE	10.5	10/28/2008	µg/L
ER006	TCE	9.07	11/26/2008	µg/L
ER006	TCE	14.5	12/16/2008	µg/L
ER006	TCE	15.7	1/28/2009	µg/L
ER006	TCE	10.3	2/25/2009	µg/L
ER006	TCE	10.1	3/26/2009	µg/L
ER010	Bromide	0.195	7/30/2008	mg/L
ER010	Nitrate (as NO3)	3.46	5/28/2008	mg/L
ER010	Nitrate (as NO3)	3.5	6/19/2008	mg/L
ER010	Nitrate (as NO3)	3.37	7/30/2008	mg/L
ER010	Nitrate (as NO3)	3.46	8/26/2008	mg/L
ER010	Nitrate (as NO3)	3.41	9/16/2008	mg/L
MI006	Bromide	0.112	7/22/2008	mg/L
MI006	Chromium	2.4	7/22/2008	ug/L
MI006	Nitrate (as NO3)	10.6	4/2/2008	mg/L
MI006	Nitrate (as NO3)	10.6	5/2/2008	mg/L
MI006	Nitrate (as NO3)	11.9	7/22/2008	mg/L
MI006	Nitrate (as NO3)	10.9	3/25/2009	mg/L
MI006	TCE	0.556	4/2/2008	µg/L
MI006	TCE	0.515	5/2/2008	µg/L
MI007	Bromide	0.104	7/22/2008	mg/L
MI007	Chromium	4.1	7/22/2008	ug/L
MI007	Coliform Total	9.5	7/22/2008	NUM/100ml
MI007	Coliform Total	488.4	8/6/2008	NUM/100ml
MI007	Coliform Total	410.6	8/6/2008	NUM/100ml
MI007	Coliform Total	686.7	8/6/2008	NUM/100ml
MI007	Coliform Total	365.4	8/6/2008	NUM/100ml
MI007	Coliform Total	1	3/25/2009	NUM/100ml
MI007	Iron (Fe)	14.2	7/22/2008	ug/L
MI007	Iron (Fe)	247	12/3/2008	ug/L
MI007	Nitrate (as NO3)	22.6	4/2/2008	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
MI007	Nitrate (as NO3)	22.8	5/2/2008	mg/L
MI007	Nitrate (as NO3)	23.6	7/22/2008	mg/L
MI007	Nitrate (as NO3)	36.9	12/3/2008	mg/L
MI007	Nitrate (as NO3)	22.2	3/25/2009	mg/L
MI007	TCE	5.9	4/2/2008	µg/L
MI007	TCE	5.39	5/2/2008	µg/L
MI007	TCE	6.64	7/22/2008	µg/L
MI007	TCE	5.18	3/25/2009	µg/L
NH004	Nitrate (as NO3)	4.43	4/11/2008	mg/L
NH004	Nitrate (as NO3)	8.95	6/4/2008	mg/L
NH004	Nitrate (as NO3)	8.68	7/17/2008	mg/L
NH004	Nitrate (as NO3)	8.51	8/13/2008	mg/L
NH004	Nitrate (as NO3)	8.77	9/10/2008	mg/L
NH004	Nitrate (as NO3)	8.82	10/2/2008	mg/L
NH004	Nitrate (as NO3)	9.17	11/5/2008	mg/L
NH004	Nitrate (as NO3)	9.3	12/3/2008	mg/L
NH004	Nitrate (as NO3)	9.04	1/7/2009	mg/L
NH004	Nitrate (as NO3)	8.51	2/25/2009	mg/L
NH004	Nitrate (as NO3)	8.51	3/24/2009	mg/L
NH007	Nitrate (as NO3)	9.75	4/29/2008	mg/L
NH007	Nitrate (as NO3)	13.8	5/28/2008	mg/L
NH007	Nitrate (as NO3)	14.1	6/4/2008	mg/L
NH007	Nitrate (as NO3)	14.4	7/17/2008	mg/L
NH007	Nitrate (as NO3)	13.9	8/13/2008	mg/L
NH007	Nitrate (as NO3)	14	9/10/2008	mg/L
NH007	Nitrate (as NO3)	13.6	10/2/2008	mg/L
NH007	Nitrate (as NO3)	14.6	11/5/2008	mg/L
NH007	Nitrate (as NO3)	13.7	12/3/2008	mg/L
NH007	Nitrate (as NO3)	14.3	1/8/2009	mg/L
NH007	Nitrate (as NO3)	14.1	2/4/2009	mg/L
NH007	Nitrate (as NO3)	11.2	3/24/2009	mg/L
NH007	PCE	0.554	4/29/2008	µg/L
NH007	PCE	0.85	3/24/2009	µg/L
NH022	1,1-DCE	1.4	5/21/2008	µg/L
NH022	1,1-DCE	1.4	6/10/2008	µg/L
NH022	1,1-DCE	0.941	3/19/2009	µg/L
NH022	Bromide	0.247	6/10/2008	mg/L
NH022	Chromium	3.4	6/10/2008	ug/L
NH022	Coliform Total	1	8/21/2008	NUM/100ml
NH022	Coliform Total	14.6	9/11/2008	NUM/100ml
NH022	Nitrate (as NO3)	23.2	5/21/2008	mg/L
NH022	Nitrate (as NO3)	23.6	6/10/2008	mg/L
NH022	Nitrate (as NO3)	20.2	7/29/2008	mg/L
NH022	Nitrate (as NO3)	22.3	8/21/2008	mg/L
NH022	Nitrate (as NO3)	24.7	9/11/2008	mg/L
NH022	Nitrate (as NO3)	14.1	10/21/2008	mg/L
NH022	Nitrate (as NO3)	26.5	11/25/2008	mg/L
NH022	Nitrate (as NO3)	24.1	12/11/2008	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH022	Nitrate (as NO3)	13.5	2/19/2009	mg/L
NH022	Nitrate (as NO3)	14.8	3/19/2009	mg/L
NH022	PCE	1.05	5/21/2008	µg/L
NH022	PCE	0.954	6/10/2008	µg/L
NH022	TCE	2.44	5/21/2008	µg/L
NH022	TCE	2.59	6/10/2008	µg/L
NH022	TCE	0.662	7/29/2008	µg/L
NH022	TCE	0.554	8/21/2008	µg/L
NH022	TCE	0.679	2/19/2009	µg/L
NH022	TCE	1.46	3/19/2009	µg/L
NH023	Bromide	0.162	9/17/2008	mg/L
NH023	Chromium	2.5	9/17/2008	ug/L
NH023	Chromium (Cr) Total	2.3	9/17/2008	ug/L
NH023	Chromium (Cr+6)	1.96	9/17/2008	µg/L
NH023	Iron (Fe)	221	9/17/2008	ug/L
NH023	Iron (Fe)	83.2	10/21/2008	ug/L
NH023	Iron (Fe)	264	11/25/2008	ug/L
NH023	Iron (Fe)	96.8	12/11/2008	ug/L
NH023	Iron (Fe)	63.4	2/19/2009	ug/L
NH023	Iron (Fe)	71	3/19/2009	ug/L
NH023	Manganese	3.6	9/17/2008	ug/L
NH023	Nitrate (as NO3)	27.7	9/17/2008	mg/L
NH023	Nitrate (as NO3)	23.8	10/21/2008	mg/L
NH023	Nitrate (as NO3)	38.9	11/25/2008	mg/L
NH023	Nitrate (as NO3)	34.1	12/11/2008	mg/L
NH023	Nitrate (as NO3)	13.6	1/8/2009	mg/L
NH023	Nitrate (as NO3)	21	2/19/2009	mg/L
NH023	Nitrate (as NO3)	22.1	3/19/2009	mg/L
NH023	PCE	2.85	9/17/2008	µg/L
NH023	PCE	1.86	10/21/2008	µg/L
NH023	PCE	5.2	11/25/2008	µg/L
NH023	PCE	4	12/11/2008	µg/L
NH023	PCE	1.41	2/19/2009	µg/L
NH023	PCE	1.74	3/19/2009	µg/L
NH023	TCE	17.1	9/17/2008	µg/L
NH023	TCE	22.5	10/21/2008	µg/L
NH023	TCE	23.3	11/25/2008	µg/L
NH023	TCE	20	12/11/2008	µg/L
NH023	TCE	23.2	2/19/2009	µg/L
NH023	TCE	28.9	3/19/2009	µg/L
NH025	1,1-DCE	0.533	7/17/2008	µg/L
NH025	Nitrate (as NO3)	18.7	4/11/2008	mg/L
NH025	Nitrate (as NO3)	17.6	5/21/2008	mg/L
NH025	Nitrate (as NO3)	19	6/4/2008	mg/L
NH025	Nitrate (as NO3)	18.4	7/17/2008	mg/L
NH025	Nitrate (as NO3)	18.2	8/13/2008	mg/L
NH025	Nitrate (as NO3)	17.9	9/10/2008	mg/L
NH025	Nitrate (as NO3)	17.4	10/2/2008	mg/L
NH025	Nitrate (as NO3)	18	11/5/2008	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH025	Nitrate (as NO3)	17.4	12/3/2008	mg/L
NH025	Nitrate (as NO3)	17.9	1/7/2009	mg/L
NH025	Nitrate (as NO3)	8.51	2/25/2009	mg/L
NH025	Nitrate (as NO3)	7.8	3/24/2009	mg/L
NH025	TCE	0.517	4/11/2008	µg/L
NH025	TCE	0.692	7/17/2008	µg/L
NH025	TCE	0.62	8/13/2008	µg/L
NH025	TCE	0.506	9/10/2008	µg/L
NH026	1,1-DCE	0.502	9/10/2008	µg/L
NH026	1,1-DCE	0.604	11/13/2008	µg/L
NH026	1,1-DCE	0.528	12/3/2008	µg/L
NH026	1,1-DCE	0.796	1/7/2009	µg/L
NH026	1,1-DCE	1.26	2/19/2009	µg/L
NH026	1,1-DCE	0.89	3/19/2009	µg/L
NH026	Bromide	0.236	11/13/2008	mg/L
NH026	Chromium	2	11/13/2008	ug/L
NH026	Coliform Total	1	3/19/2009	NUM/100ml
NH026	Nitrate (as NO3)	25.2	4/11/2008	mg/L
NH026	Nitrate (as NO3)	25.2	5/22/2008	mg/L
NH026	Nitrate (as NO3)	24.7	6/4/2008	mg/L
NH026	Nitrate (as NO3)	24.3	7/17/2008	mg/L
NH026	Nitrate (as NO3)	24.1	8/13/2008	mg/L
NH026	Nitrate (as NO3)	23.8	9/10/2008	mg/L
NH026	Nitrate (as NO3)	26.2	11/13/2008	mg/L
NH026	Nitrate (as NO3)	26.5	12/3/2008	mg/L
NH026	Nitrate (as NO3)	26	1/7/2009	mg/L
NH026	Nitrate (as NO3)	24.5	2/19/2009	mg/L
NH026	Nitrate (as NO3)	18.6	3/19/2009	mg/L
NH026	PCE	1.55	4/11/2008	µg/L
NH026	PCE	2.21	5/22/2008	µg/L
NH026	PCE	2.47	6/4/2008	µg/L
NH026	PCE	2.25	7/17/2008	µg/L
NH026	PCE	2.02	8/13/2008	µg/L
NH026	PCE	1.82	9/10/2008	µg/L
NH026	PCE	1.64	11/13/2008	µg/L
NH026	PCE	1.52	12/3/2008	µg/L
NH026	PCE	1.97	1/7/2009	µg/L
NH026	PCE	3.47	2/19/2009	µg/L
NH026	PCE	2.6	3/19/2009	µg/L
NH026	TCE	6.69	4/11/2008	µg/L
NH026	TCE	9.51	5/22/2008	µg/L
NH026	TCE	9.96	6/4/2008	µg/L
NH026	TCE	8.6	7/17/2008	µg/L
NH026	TCE	7.95	8/13/2008	µg/L
NH026	TCE	8.33	9/10/2008	µg/L
NH026	TCE	7.41	11/13/2008	µg/L
NH026	TCE	6.43	12/3/2008	µg/L
NH026	TCE	8.35	1/7/2009	µg/L
NH026	TCE	9.98	2/19/2009	µg/L
NH026	TCE	4.63	3/19/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH032	Manganese (Mn)	52.2	4/11/2008	µg/L
NH032	Manganese (Mn)	48.2	7/17/2008	µg/L
NH032	Manganese (Mn)	51.2	8/13/2008	µg/L
NH032	Manganese (Mn)	50.7	10/2/2008	µg/L
NH032	Manganese (Mn)	49.1	1/8/2009	µg/L
NH032	Manganese (Mn)	70.4	3/24/2009	µg/L
NH032	Nitrate (as NO3)	4.65	4/11/2008	mg/L
NH032	Nitrate (as NO3)	4.3	5/28/2008	mg/L
NH032	Nitrate (as NO3)	4.61	6/4/2008	mg/L
NH032	Nitrate (as NO3)	4.83	7/17/2008	mg/L
NH032	Nitrate (as NO3)	4.56	8/13/2008	mg/L
NH032	Nitrate (as NO3)	4.96	9/10/2008	mg/L
NH032	Nitrate (as NO3)	4.78	10/2/2008	mg/L
NH032	Nitrate (as NO3)	4.96	11/5/2008	mg/L
NH032	Nitrate (as NO3)	5.05	12/3/2008	mg/L
NH032	Nitrate (as NO3)	4.7	1/8/2009	mg/L
NH032	Nitrate (as NO3)	4.87	2/4/2009	mg/L
NH032	Nitrate (as NO3)	1.68	3/24/2009	mg/L
NH033	Coliform Total	2	12/3/2008	NUM/100ml
NH033	Coliform Total	1	1/8/2009	NUM/100ml
NH033	Coliform Total	6.3	2/25/2009	NUM/100ml
NH033	Coliform Total	1	3/3/2009	NUM/100ml
NH033	Nitrate (as NO3)	4.39	4/11/2008	mg/L
NH033	Nitrate (as NO3)	4.3	5/28/2008	mg/L
NH033	Nitrate (as NO3)	4.12	6/4/2008	mg/L
NH033	Nitrate (as NO3)	4.25	7/17/2008	mg/L
NH033	Nitrate (as NO3)	4.03	8/13/2008	mg/L
NH033	Nitrate (as NO3)	4.39	9/10/2008	mg/L
NH033	Nitrate (as NO3)	4.16	10/2/2008	mg/L
NH033	Nitrate (as NO3)	4.3	11/5/2008	mg/L
NH033	Nitrate (as NO3)	4.34	12/3/2008	mg/L
NH033	Nitrate (as NO3)	4.25	1/8/2009	mg/L
NH033	Nitrate (as NO3)	3.46	2/25/2009	mg/L
NH033	Nitrate (as NO3)	3.5	3/5/2009	mg/L
NH034	1,1-DCE	0.739	7/29/2008	µg/L
NH034	1,1-DCE	0.688	8/13/2008	µg/L
NH034	1,1-DCE	0.732	9/10/2008	µg/L
NH034	1,1-DCE	0.903	10/2/2008	µg/L
NH034	1,1-DCE	1.68	11/5/2008	µg/L
NH034	1,1-DCE	1.61	12/3/2008	µg/L
NH034	Nitrate (as NO3)	11.9	4/16/2008	mg/L
NH034	Nitrate (as NO3)	9.83	5/22/2008	mg/L
NH034	Nitrate (as NO3)	7.71	6/17/2008	mg/L
NH034	Nitrate (as NO3)	15.4	7/29/2008	mg/L
NH034	Nitrate (as NO3)	17.8	8/13/2008	mg/L
NH034	Nitrate (as NO3)	18.1	9/10/2008	mg/L
NH034	Nitrate (as NO3)	7.89	10/2/2008	mg/L
NH034	Nitrate (as NO3)	21.1	11/5/2008	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH034	Nitrate (as NO3)	22.6	12/3/2008	mg/L
NH034	PCE	0.838	7/29/2008	µg/L
NH034	PCE	0.963	8/13/2008	µg/L
NH034	PCE	1.15	9/10/2008	µg/L
NH034	PCE	1.21	10/2/2008	µg/L
NH034	PCE	1.64	11/5/2008	µg/L
NH034	PCE	1.84	12/3/2008	µg/L
NH034	TCE	1.28	7/29/2008	µg/L
NH034	TCE	1.5	8/13/2008	µg/L
NH034	TCE	1.92	9/10/2008	µg/L
NH034	TCE	2.11	10/2/2008	µg/L
NH034	TCE	3.14	11/5/2008	µg/L
NH034	TCE	3.27	12/3/2008	µg/L
NH036	1,1-DCE	0.921	11/25/2008	µg/L
NH036	Nitrate (as NO3)	14.5	4/11/2008	mg/L
NH036	Nitrate (as NO3)	13.9	5/22/2008	mg/L
NH036	Nitrate (as NO3)	7.75	9/10/2008	mg/L
NH036	Nitrate (as NO3)	8.77	10/21/2008	mg/L
NH036	Nitrate (as NO3)	13	11/25/2008	mg/L
NH036	PCE	0.5	4/11/2008	µg/L
NH036	PCE	0.646	5/22/2008	µg/L
NH036	Perchlorate	<2.0	9/10/2008	µg/L
NH036	TCE	0.895	4/11/2008	µg/L
NH036	TCE	0.955	5/22/2008	µg/L
NH036	TCE	1.43	11/25/2008	µg/L
NH037	1,1-DCE	1.51	11/25/2008	µg/L
NH037	1,1-DCE	1.19	12/11/2008	µg/L
NH037	1,1-DCE	1.2	1/8/2009	µg/L
NH037	1,2-Dichloroethene-cis	1.15	11/25/2008	µg/L
NH037	1,2-Dichloroethene-cis	1.08	12/11/2008	µg/L
NH037	1,2-Dichloroethene-cis	0.636	1/8/2009	µg/L
NH037	Nitrate (as NO3)	11	4/16/2008	mg/L
NH037	Nitrate (as NO3)	10.6	5/22/2008	mg/L
NH037	Nitrate (as NO3)	9.13	6/17/2008	mg/L
NH037	Nitrate (as NO3)	7.89	7/29/2008	mg/L
NH037	Nitrate (as NO3)	9.48	8/21/2008	mg/L
NH037	Nitrate (as NO3)	9.75	9/11/2008	mg/L
NH037	Nitrate (as NO3)	9.21	10/21/2008	mg/L
NH037	Nitrate (as NO3)	15.2	11/25/2008	mg/L
NH037	Nitrate (as NO3)	14.4	12/11/2008	mg/L
NH037	Nitrate (as NO3)	21.1	1/8/2009	mg/L
NH037	Nitrate (as NO3)	8.9	2/19/2009	mg/L
NH037	Nitrate (as NO3)	7.84	3/19/2009	mg/L
NH037	PCE	4.84	11/25/2008	µg/L
NH037	PCE	4.41	12/11/2008	µg/L
NH037	PCE	2.56	1/8/2009	µg/L
NH037	TCE	4.58	11/25/2008	µg/L
NH037	TCE	3.96	12/11/2008	µg/L
NH037	TCE	3.11	1/8/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH043A	Coliform Total	1	8/21/2008	NUM/100ml
NH043A	Coliform Total	1	12/11/2008	NUM/100ml
NH043A	Nitrate (as NO3)	7.93	4/16/2008	mg/L
NH043A	Nitrate (as NO3)	7.58	5/22/2008	mg/L
NH043A	Nitrate (as NO3)	7.35	6/17/2008	mg/L
NH043A	Nitrate (as NO3)	7.09	7/29/2008	mg/L
NH043A	Nitrate (as NO3)	7.04	8/21/2008	mg/L
NH043A	Nitrate (as NO3)	7.35	9/11/2008	mg/L
NH043A	Nitrate (as NO3)	7.97	10/21/2008	mg/L
NH043A	Nitrate (as NO3)	12.2	11/25/2008	mg/L
NH043A	Nitrate (as NO3)	11.6	12/11/2008	mg/L
NH043A	Nitrate (as NO3)	11.5	1/8/2009	mg/L
NH043A	Nitrate (as NO3)	7.97	2/19/2009	mg/L
NH043A	Nitrate (as NO3)	8.15	3/19/2009	mg/L
NH043A	PCE	1.92	11/25/2008	µg/L
NH043A	PCE	1.43	12/11/2008	µg/L
NH043A	PCE	1.62	1/8/2009	µg/L
NH043A	TCE	0.713	4/16/2008	µg/L
NH043A	TCE	0.646	5/22/2008	µg/L
NH043A	TCE	0.629	6/17/2008	µg/L
NH043A	TCE	0.543	7/29/2008	µg/L
NH043A	TCE	0.682	8/21/2008	µg/L
NH043A	TCE	0.73	9/11/2008	µg/L
NH043A	TCE	0.852	10/21/2008	µg/L
NH043A	TCE	7.63	11/25/2008	µg/L
NH043A	TCE	5.23	12/11/2008	µg/L
NH043A	TCE	5.61	1/8/2009	µg/L
NH044	Bromide	0.283	3/11/2009	mg/L
NH044	Chromium	1	3/11/2009	ug/L
NH044	Iron (Fe)	59	3/11/2009	ug/L
NH044	Manganese	2.2	3/11/2009	ug/L
NH044	Nitrate (as NO3)	4.87	4/16/2008	mg/L
NH044	Nitrate (as NO3)	4.87	5/22/2008	mg/L
NH044	Nitrate (as NO3)	3.77	6/17/2008	mg/L
NH044	Nitrate (as NO3)	3.19	7/29/2008	mg/L
NH044	Nitrate (as NO3)	3.15	8/21/2008	mg/L
NH044	Nitrate (as NO3)	3.28	9/11/2008	mg/L
NH044	Nitrate (as NO3)	2.92	10/21/2008	mg/L
NH044	Nitrate (as NO3)	3.63	11/25/2008	mg/L
NH044	Nitrate (as NO3)	3.19	12/11/2008	mg/L
NH044	Nitrate (as NO3)	2.53	1/8/2009	mg/L
NH044	Nitrate (as NO3)	2.61	2/19/2009	mg/L
NH044	Nitrate (as NO3)	3.15	3/11/2009	mg/L
NH044	TCE	1.91	11/25/2008	µg/L
NH044	TCE	1.66	12/11/2008	µg/L
NH044	TCE	0.62	1/8/2009	µg/L
NH045	Nitrate (as NO3)	8.86	4/16/2008	mg/L
NH045	Nitrate (as NO3)	8.59	5/22/2008	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
NH045	Nitrate (as NO3)	8.11	6/17/2008	mg/L
NH045	Nitrate (as NO3)	8.24	7/29/2008	mg/L
NH045	Nitrate (as NO3)	8.24	8/21/2008	mg/L
NH045	Nitrate (as NO3)	7.09	9/11/2008	mg/L
NH045	Nitrate (as NO3)	8.33	10/21/2008	mg/L
NH045	Nitrate (as NO3)	9.75	11/5/2008	mg/L
NH045	Nitrate (as NO3)	11.6	12/3/2008	mg/L
NH045	Nitrate (as NO3)	12.2	1/8/2009	mg/L
NH045	Nitrate (as NO3)	7.84	2/19/2009	mg/L
NH045	Nitrate (as NO3)	11.4	3/19/2009	mg/L
NH045	PCE	0.689	12/3/2008	µg/L
NH045	PCE	0.913	1/8/2009	µg/L
NH045	TCE	2.74	11/5/2008	µg/L
NH045	TCE	4.42	12/3/2008	µg/L
NH045	TCE	4.69	1/8/2009	µg/L
NH045	TCE	2.58	3/19/2009	µg/L
PL004	1,1-DCE	3.64	4/17/2008	µg/L
PL004	1,1-DCE	4.03	5/23/2008	µg/L
PL004	1,1-DCE	3.48	6/12/2008	µg/L
PL004	1,1-DCE	3.41	7/10/2008	µg/L
PL004	1,1-DCE	4.4	7/29/2008	µg/L
PL004	1,1-DCE	6.45	8/19/2008	µg/L
PL004	1,1-DCE	2.24	10/17/2008	µg/L
PL004	1,1-DCE	3.49	10/24/2008	µg/L
PL004	1,1-DCE	4.49	11/25/2008	µg/L
PL004	1,1-DCE	2.34	1/16/2009	µg/L
PL004	1,1-DCE	0.831	2/20/2009	µg/L
PL004	1,1-DCE	2.79	3/3/2009	µg/L
PL004	Bromide	0.275	4/17/2008	mg/L
PL004	Chromium	2	4/17/2008	ug/L
PL004	Coliform Total	86.2	12/29/2008	NUM/100ml
PL004	Coliform Total	41	2/20/2009	NUM/100ml
PL004	Nitrate (as NO3)	28.2	4/17/2008	mg/L
PL004	Nitrate (as NO3)	29	5/23/2008	mg/L
PL004	Nitrate (as NO3)	28.2	6/12/2008	mg/L
PL004	Nitrate (as NO3)	27.2	7/10/2008	mg/L
PL004	Nitrate (as NO3)	27.4	8/19/2008	mg/L
PL004	Nitrate (as NO3)	31	10/24/2008	mg/L
PL004	Nitrate (as NO3)	28.8	11/25/2008	mg/L
PL004	Nitrate (as NO3)	30.7	12/29/2008	mg/L
PL004	Nitrate (as NO3)	25.7	1/16/2009	mg/L
PL004	Nitrate (as NO3)	27	2/20/2009	mg/L
PL004	Nitrate (as NO3)	26.4	3/3/2009	mg/L
PL004	PCE	5.15	4/17/2008	µg/L
PL004	PCE	5.63	5/23/2008	µg/L
PL004	PCE	4.62	6/12/2008	µg/L
PL004	PCE	4.95	7/10/2008	µg/L
PL004	PCE	5.13	7/29/2008	µg/L
PL004	PCE	6.67	8/19/2008	µg/L
PL004	PCE	4.22	10/17/2008	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
PL004	PCE	4.89	10/24/2008	µg/L
PL004	PCE	5	11/25/2008	µg/L
PL004	PCE	2.03	12/29/2008	µg/L
PL004	PCE	3.53	1/16/2009	µg/L
PL004	PCE	2.36	2/20/2009	µg/L
PL004	PCE	3.71	3/3/2009	µg/L
PL004	TCE	5.29	4/17/2008	µg/L
PL004	TCE	5.73	5/23/2008	µg/L
PL004	TCE	5.1	6/12/2008	µg/L
PL004	TCE	5.33	7/10/2008	µg/L
PL004	TCE	5.52	7/29/2008	µg/L
PL004	TCE	7.36	8/19/2008	µg/L
PL004	TCE	5.26	10/17/2008	µg/L
PL004	TCE	6.17	10/24/2008	µg/L
PL004	TCE	6.57	11/25/2008	µg/L
PL004	TCE	4.85	12/29/2008	µg/L
PL004	TCE	4.72	1/16/2009	µg/L
PL004	TCE	3.8	2/20/2009	µg/L
PL004	TCE	4.7	3/3/2009	µg/L
PL006	1,1-DCA	0.567	7/10/2008	µg/L
PL006	1,1-DCA	0.797	7/29/2008	µg/L
PL006	1,1-DCA	0.773	8/4/2008	µg/L
PL006	1,1-DCA	0.73	11/25/2008	µg/L
PL006	1,1-DCA	0.715	12/23/2008	µg/L
PL006	1,1-DCA	0.723	1/16/2009	µg/L
PL006	1,1-DCA	0.743	2/10/2009	µg/L
PL006	1,1-DCE	1.52	4/22/2008	µg/L
PL006	1,1-DCE	12	6/12/2008	µg/L
PL006	1,1-DCE	13.2	7/10/2008	µg/L
PL006	1,1-DCE	19.1	7/29/2008	µg/L
PL006	1,1-DCE	17.8	8/4/2008	µg/L
PL006	1,1-DCE	3.64	10/24/2008	µg/L
PL006	1,1-DCE	15.2	11/25/2008	µg/L
PL006	1,1-DCE	16.6	12/23/2008	µg/L
PL006	1,1-DCE	16.2	1/16/2009	µg/L
PL006	1,1-DCE	16.5	2/10/2009	µg/L
PL006	1,1-DCE	1.17	3/12/2009	µg/L
PL006	1,2-Dichloroethene-cis	0.661	6/12/2008	µg/L
PL006	1,2-Dichloroethene-cis	0.63	7/10/2008	µg/L
PL006	1,2-Dichloroethene-cis	0.783	7/29/2008	µg/L
PL006	1,2-Dichloroethene-cis	0.825	8/4/2008	µg/L
PL006	1,2-Dichloroethene-cis	0.659	11/25/2008	µg/L
PL006	1,2-Dichloroethene-cis	0.535	12/23/2008	µg/L
PL006	1,2-Dichloroethene-cis	0.574	1/16/2009	µg/L
PL006	1,2-Dichloroethene-cis	0.594	2/10/2009	µg/L
PL006	Chromium (Cr) Total	2.4	4/22/2008	ug/L
PL006	Chromium (Cr) Total	2.6	5/13/2008	ug/L
PL006	Chromium (Cr) Total	2.4	6/12/2008	ug/L
PL006	Chromium (Cr) Total	2.1	7/10/2008	ug/L
PL006	Chromium (Cr) Total	2.1	8/4/2008	ug/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
PL006	Chromium (Cr) Total	2.6	10/24/2008	ug/L
PL006	Chromium (Cr) Total	2	11/25/2008	ug/L
PL006	Chromium (Cr) Total	1.9	12/23/2008	ug/L
PL006	Chromium (Cr) Total	2	1/27/2009	ug/L
PL006	Chromium (Cr) Total	2	2/10/2009	ug/L
PL006	Chromium (Cr+6)	2.15	4/22/2008	µg/L
PL006	Chromium (Cr+6)	2.3	5/13/2008	µg/L
PL006	Chromium (Cr+6)	2.45	6/12/2008	µg/L
PL006	Chromium (Cr+6)	2.2	7/10/2008	µg/L
PL006	Chromium (Cr+6)	1.98	8/4/2008	µg/L
PL006	Chromium (Cr+6)	2.28	10/24/2008	µg/L
PL006	Chromium (Cr+6)	2.26	11/25/2008	µg/L
PL006	Chromium (Cr+6)	2.22	1/27/2009	µg/L
PL006	Chromium (Cr+6)	2.12	2/10/2009	µg/L
PL006	Nitrate (as NO3)	39.3	4/28/2008	mg/L
PL006	Nitrate (as NO3)	39.4	5/13/2008	mg/L
PL006	Nitrate (as NO3)	36.1	6/12/2008	mg/L
PL006	Nitrate (as NO3)	35.8	7/10/2008	mg/L
PL006	Nitrate (as NO3)	35.3	8/4/2008	mg/L
PL006	Nitrate (as NO3)	38.5	10/24/2008	mg/L
PL006	Nitrate (as NO3)	37.1	11/25/2008	mg/L
PL006	Nitrate (as NO3)	37.7	12/23/2008	mg/L
PL006	Nitrate (as NO3)	35.5	1/16/2009	mg/L
PL006	Nitrate (as NO3)	34.8	2/10/2009	mg/L
PL006	Nitrate (as NO3)	39.3	3/12/2009	mg/L
PL006	PCE	10.1	4/22/2008	µg/L
PL006	PCE	5.85	5/13/2008	µg/L
PL006	PCE	13.8	6/12/2008	µg/L
PL006	PCE	14.3	7/10/2008	µg/L
PL006	PCE	16.7	7/29/2008	µg/L
PL006	PCE	18.6	8/4/2008	µg/L
PL006	PCE	10	10/24/2008	µg/L
PL006	PCE	16.4	11/25/2008	µg/L
PL006	PCE	15.2	12/23/2008	µg/L
PL006	PCE	16.2	1/16/2009	µg/L
PL006	PCE	15.9	2/10/2009	µg/L
PL006	PCE	10.1	3/12/2009	µg/L
PL006	TCE	8.8	4/22/2008	µg/L
PL006	TCE	7.17	5/13/2008	µg/L
PL006	TCE	14.7	6/12/2008	µg/L
PL006	TCE	15.9	7/10/2008	µg/L
PL006	TCE	18.6	7/29/2008	µg/L
PL006	TCE	19.2	8/4/2008	µg/L
PL006	TCE	10.5	10/24/2008	µg/L
PL006	TCE	18.6	11/25/2008	µg/L
PL006	TCE	16.8	12/23/2008	µg/L
PL006	TCE	18.2	1/16/2009	µg/L
PL006	TCE	17.6	2/10/2009	µg/L
PL006	TCE	8.53	3/12/2009	µg/L
TJ001	Nitrate (as NO3)	21.8	4/17/2008	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ001	Nitrate (as NO3)	24.3	5/7/2008	mg/L
TJ001	Nitrate (as NO3)	29.6	7/1/2008	mg/L
TJ001	Nitrate (as NO3)	18.7	8/27/2008	mg/L
TJ001	Nitrate (as NO3)	19.9	9/26/2008	mg/L
TJ001	Nitrate (as NO3)	19	10/22/2008	mg/L
TJ001	Nitrate (as NO3)	19.9	11/19/2008	mg/L
TJ001	Nitrate (as NO3)	19.8	12/11/2008	mg/L
TJ001	Nitrate (as NO3)	16.6	1/22/2009	mg/L
TJ001	Nitrate (as NO3)	16.7	2/18/2009	mg/L
TJ001	Nitrate (as NO3)	16.7	3/25/2009	mg/L
TJ001	Perchlorate	<4.0	7/1/2008	µg/L
TJ002	1,1-DCE	0.501	9/26/2008	µg/L
TJ002	1,1-DCE	0.713	10/22/2008	µg/L
TJ002	1,1-DCE	1.04	11/19/2008	µg/L
TJ002	1,1-DCE	1.02	12/11/2008	µg/L
TJ002	Bromide	0.07	5/7/2008	mg/L
TJ002	Chromium	1.8	5/7/2008	ug/L
TJ002	Nitrate (as NO3)	20.6	4/17/2008	mg/L
TJ002	Nitrate (as NO3)	22.1	5/7/2008	mg/L
TJ002	Nitrate (as NO3)	27.2	7/1/2008	mg/L
TJ002	Nitrate (as NO3)	18	8/27/2008	mg/L
TJ002	Nitrate (as NO3)	18	9/26/2008	mg/L
TJ002	Nitrate (as NO3)	19.3	10/22/2008	mg/L
TJ002	Nitrate (as NO3)	19.4	11/19/2008	mg/L
TJ002	Nitrate (as NO3)	20.6	12/11/2008	mg/L
TJ002	Nitrate (as NO3)	17.4	1/22/2009	mg/L
TJ002	Nitrate (as NO3)	17.8	2/18/2009	mg/L
TJ002	Nitrate (as NO3)	18.4	3/25/2009	mg/L
TJ002	PCE	2.23	4/17/2008	µg/L
TJ002	PCE	1.4	8/27/2008	µg/L
TJ002	PCE	2	9/26/2008	µg/L
TJ002	PCE	2.97	10/22/2008	µg/L
TJ002	PCE	3.67	11/19/2008	µg/L
TJ002	PCE	4.4	12/11/2008	µg/L
TJ002	PCE	1.04	1/22/2009	µg/L
TJ002	PCE	0.925	2/18/2009	µg/L
TJ002	TCE	3.1	4/17/2008	µg/L
TJ002	TCE	0.752	5/7/2008	µg/L
TJ002	TCE	0.655	7/1/2008	µg/L
TJ002	TCE	2.05	8/27/2008	µg/L
TJ002	TCE	3.07	9/26/2008	µg/L
TJ002	TCE	4.39	10/22/2008	µg/L
TJ002	TCE	5.26	11/19/2008	µg/L
TJ002	TCE	6.06	12/11/2008	µg/L
TJ002	TCE	1.88	1/22/2009	µg/L
TJ002	TCE	1.65	2/18/2009	µg/L
TJ002	TCE	0.702	3/25/2009	µg/L
TJ003	1,1-DCE	0.711	4/17/2008	µg/L
TJ003	1,1-DCE	2.11	8/27/2008	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ003	1,1-DCE	3.54	9/26/2008	µg/L
TJ003	1,1-DCE	1.14	10/22/2008	µg/L
TJ003	1,1-DCE	1.41	11/19/2008	µg/L
TJ003	1,1-DCE	1.39	12/17/2008	µg/L
TJ003	1,1-DCE	1.32	1/22/2009	µg/L
TJ003	1,1-DCE	1.18	2/24/2009	µg/L
TJ003	1,1-DCE	0.533	3/25/2009	µg/L
TJ003	Bromide	0.082	7/1/2008	mg/L
TJ003	Iron (Fe)	10.8	7/1/2008	ug/L
TJ003	Nitrate (as NO3)	31.3	4/17/2008	mg/L
TJ003	Nitrate (as NO3)	27.6	5/7/2008	mg/L
TJ003	Nitrate (as NO3)	25.9	7/1/2008	mg/L
TJ003	Nitrate (as NO3)	26.9	8/27/2008	mg/L
TJ003	Nitrate (as NO3)	30	9/26/2008	mg/L
TJ003	Nitrate (as NO3)	29.9	10/22/2008	mg/L
TJ003	Nitrate (as NO3)	28.9	11/19/2008	mg/L
TJ003	Nitrate (as NO3)	29.9	12/17/2008	mg/L
TJ003	Nitrate (as NO3)	24.7	1/22/2009	mg/L
TJ003	Nitrate (as NO3)	28.4	2/24/2009	mg/L
TJ003	Nitrate (as NO3)	19.4	3/25/2009	mg/L
TJ003	PCE	3.45	4/17/2008	µg/L
TJ003	PCE	1.66	5/7/2008	µg/L
TJ003	PCE	2.53	7/1/2008	µg/L
TJ003	PCE	11.4	8/27/2008	µg/L
TJ003	PCE	18.2	9/26/2008	µg/L
TJ003	PCE	4.28	10/22/2008	µg/L
TJ003	PCE	5.2	11/19/2008	µg/L
TJ003	PCE	5.36	12/17/2008	µg/L
TJ003	PCE	4.45	1/22/2009	µg/L
TJ003	PCE	4.67	2/24/2009	µg/L
TJ003	PCE	2.49	3/25/2009	µg/L
TJ003	TCE	4.56	4/17/2008	µg/L
TJ003	TCE	2.8	5/7/2008	µg/L
TJ003	TCE	3.94	7/1/2008	µg/L
TJ003	TCE	15.8	8/27/2008	µg/L
TJ003	TCE	25.1	9/26/2008	µg/L
TJ003	TCE	8.54	10/22/2008	µg/L
TJ003	TCE	7.64	11/19/2008	µg/L
TJ003	TCE	7.47	12/17/2008	µg/L
TJ003	TCE	9.05	1/22/2009	µg/L
TJ003	TCE	6.63	2/24/2009	µg/L
TJ003	TCE	3.51	3/25/2009	µg/L
TJ004	1,1-DCE	0.795	4/17/2008	µg/L
TJ004	1,1-DCE	0.836	5/7/2008	µg/L
TJ004	1,1-DCE	1	7/1/2008	µg/L
TJ004	1,1-DCE	1.01	8/6/2008	µg/L
TJ004	1,1-DCE	2.08	9/29/2008	µg/L
TJ004	1,1-DCE	1.96	10/22/2008	µg/L
TJ004	1,1-DCE	1.3	11/19/2008	µg/L
TJ004	1,1-DCE	1.4	12/17/2008	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ004	1,1-DCE	2.07	1/22/2009	µg/L
TJ004	1,1-DCE	1.08	2/24/2009	µg/L
TJ004	Bromide	0.08	5/7/2008	mg/L
TJ004	Chromium	1.3	5/7/2008	ug/L
TJ004	Nitrate (as NO3)	30.5	4/17/2008	mg/L
TJ004	Nitrate (as NO3)	27.2	5/7/2008	mg/L
TJ004	Nitrate (as NO3)	22.9	7/1/2008	mg/L
TJ004	Nitrate (as NO3)	24.2	8/6/2008	mg/L
TJ004	Nitrate (as NO3)	28.2	9/29/2008	mg/L
TJ004	Nitrate (as NO3)	30.1	10/22/2008	mg/L
TJ004	Nitrate (as NO3)	24.5	11/19/2008	mg/L
TJ004	Nitrate (as NO3)	27.5	12/17/2008	mg/L
TJ004	Nitrate (as NO3)	26.4	1/22/2009	mg/L
TJ004	Nitrate (as NO3)	25.5	2/24/2009	mg/L
TJ004	Nitrate (as NO3)	17	3/25/2009	mg/L
TJ004	PCE	4.09	4/17/2008	µg/L
TJ004	PCE	1.92	5/7/2008	µg/L
TJ004	PCE	4.78	7/1/2008	µg/L
TJ004	PCE	4.89	8/6/2008	µg/L
TJ004	PCE	4.85	9/29/2008	µg/L
TJ004	PCE	2.11	10/22/2008	µg/L
TJ004	PCE	2.79	11/19/2008	µg/L
TJ004	PCE	3.57	12/17/2008	µg/L
TJ004	PCE	4.06	1/22/2009	µg/L
TJ004	PCE	2.66	2/24/2009	µg/L
TJ004	PCE	1.8	3/25/2009	µg/L
TJ004	TCE	5.77	4/17/2008	µg/L
TJ004	TCE	4.32	5/7/2008	µg/L
TJ004	TCE	6.68	7/1/2008	µg/L
TJ004	TCE	6.3	8/6/2008	µg/L
TJ004	TCE	7.87	9/29/2008	µg/L
TJ004	TCE	7.71	10/22/2008	µg/L
TJ004	TCE	5.4	11/19/2008	µg/L
TJ004	TCE	5.76	12/17/2008	µg/L
TJ004	TCE	11.1	1/22/2009	µg/L
TJ004	TCE	4.87	2/24/2009	µg/L
TJ004	TCE	2.43	3/25/2009	µg/L
TJ005	1,1-DCE	1.88	4/17/2008	µg/L
TJ005	1,1-DCE	2.72	5/7/2008	µg/L
TJ005	1,1-DCE	1.55	7/1/2008	µg/L
TJ005	1,1-DCE	1.47	8/6/2008	µg/L
TJ005	1,1-DCE	4.15	9/29/2008	µg/L
TJ005	1,1-DCE	5.08	10/22/2008	µg/L
TJ005	1,1-DCE	2.36	11/20/2008	µg/L
TJ005	1,1-DCE	2.72	12/17/2008	µg/L
TJ005	1,1-DCE	6.52	1/13/2009	µg/L
TJ005	1,1-DCE	2.13	2/24/2009	µg/L
TJ005	1,1-DCE	0.55	3/25/2009	µg/L
TJ005	Bromide	0.116	1/13/2009	mg/L
TJ005	Carbon tetrachloride	0.587	9/29/2008	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ005	Carbon tetrachloride	0.887	10/22/2008	µg/L
TJ005	Carbon tetrachloride	1.05	1/13/2009	µg/L
TJ005	Chromium	1.3	1/13/2009	ug/L
TJ005	Nitrate (as NO3)	36.8	4/17/2008	mg/L
TJ005	Nitrate (as NO3)	34.9	5/7/2008	mg/L
TJ005	Nitrate (as NO3)	24.9	7/1/2008	mg/L
TJ005	Nitrate (as NO3)	22.9	8/6/2008	mg/L
TJ005	Nitrate (as NO3)	33.1	9/29/2008	mg/L
TJ005	Nitrate (as NO3)	35.4	10/22/2008	mg/L
TJ005	Nitrate (as NO3)	23.8	11/20/2008	mg/L
TJ005	Nitrate (as NO3)	27.7	12/17/2008	mg/L
TJ005	Nitrate (as NO3)	36.1	1/13/2009	mg/L
TJ005	Nitrate (as NO3)	26	2/24/2009	mg/L
TJ005	Nitrate (as NO3)	15.1	3/25/2009	mg/L
TJ005	PCE	4.29	4/17/2008	µg/L
TJ005	PCE	2.55	5/7/2008	µg/L
TJ005	PCE	8.26	7/1/2008	µg/L
TJ005	PCE	7.1	8/6/2008	µg/L
TJ005	PCE	6.21	9/29/2008	µg/L
TJ005	PCE	4.68	10/22/2008	µg/L
TJ005	PCE	2.58	11/20/2008	µg/L
TJ005	PCE	3.1	12/17/2008	µg/L
TJ005	PCE	8.67	1/13/2009	µg/L
TJ005	PCE	2.44	2/24/2009	µg/L
TJ005	PCE	2.09	3/25/2009	µg/L
TJ005	Perchlorate	<4.0	7/1/2008	µg/L
TJ005	TCE	7.59	4/17/2008	µg/L
TJ005	TCE	9.09	5/7/2008	µg/L
TJ005	TCE	9.07	7/1/2008	µg/L
TJ005	TCE	7.52	8/6/2008	µg/L
TJ005	TCE	15	9/29/2008	µg/L
TJ005	TCE	17.2	10/22/2008	µg/L
TJ005	TCE	7.62	11/20/2008	µg/L
TJ005	TCE	8.61	12/17/2008	µg/L
TJ005	TCE	24.8	1/13/2009	µg/L
TJ005	TCE	7.49	2/24/2009	µg/L
TJ005	TCE	2.76	3/25/2009	µg/L
TJ006	1,1-DCE	1.48	4/17/2008	µg/L
TJ006	1,1-DCE	1.19	8/6/2008	µg/L
TJ006	1,1-DCE	3.8	9/9/2008	µg/L
TJ006	1,1-DCE	8.81	10/8/2008	µg/L
TJ006	1,1-DCE	3.04	11/20/2008	µg/L
TJ006	1,1-DCE	2.29	12/17/2008	µg/L
TJ006	1,1-DCE	9.57	1/13/2009	µg/L
TJ006	1,1-DCE	2.2	2/24/2009	µg/L
TJ006	1,1-DCE	0.76	3/25/2009	µg/L
TJ006	1,2-Dichloroethene-cis	0.505	1/13/2009	µg/L
TJ006	1,4-Dioxane	0.51	9/9/2008	ug/L
TJ006	Bromide	0.104	9/9/2008	mg/L
TJ006	Bromide	0.142	1/13/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ006	Carbon tetrachloride	1.36	10/8/2008	µg/L
TJ006	Carbon tetrachloride	1.26	1/13/2009	µg/L
TJ006	Chromium	1.3	9/9/2008	ug/L
TJ006	Chromium	2.2	1/13/2009	ug/L
TJ006	Chromium (Cr+6)	1.39	9/9/2008	µg/L
TJ006	Nitrate (as NO3)	39.2	4/17/2008	mg/L
TJ006	Nitrate (as NO3)	35.4	8/6/2008	mg/L
TJ006	Nitrate (as NO3)	35.4	9/9/2008	mg/L
TJ006	Nitrate (as NO3)	39.1	10/8/2008	mg/L
TJ006	Nitrate (as NO3)	37.1	11/20/2008	mg/L
TJ006	Nitrate (as NO3)	36.5	12/17/2008	mg/L
TJ006	Nitrate (as NO3)	40.3	1/13/2009	mg/L
TJ006	Nitrate (as NO3)	34.5	2/24/2009	mg/L
TJ006	Nitrate (as NO3)	30.7	3/25/2009	mg/L
TJ006	PCE	4.26	4/17/2008	µg/L
TJ006	PCE	6.11	8/6/2008	µg/L
TJ006	PCE	8.1	9/9/2008	µg/L
TJ006	PCE	13.9	10/8/2008	µg/L
TJ006	PCE	5.21	11/20/2008	µg/L
TJ006	PCE	5.12	12/17/2008	µg/L
TJ006	PCE	19.4	1/13/2009	µg/L
TJ006	PCE	3.87	2/24/2009	µg/L
TJ006	PCE	3.7	3/25/2009	µg/L
TJ006	TCE	6.56	4/17/2008	µg/L
TJ006	TCE	6.4	8/6/2008	µg/L
TJ006	TCE	28.5	10/8/2008	µg/L
TJ006	TCE	10.2	11/20/2008	µg/L
TJ006	TCE	7.96	12/17/2008	µg/L
TJ006	TCE	35.3	1/13/2009	µg/L
TJ006	TCE	6.98	2/24/2009	µg/L
TJ006	TCE	4.24	3/25/2009	µg/L
TJ007	1,1-DCE	1.12	4/17/2008	µg/L
TJ007	1,1-DCE	1.57	8/5/2008	µg/L
TJ007	1,1-DCE	4.2	9/9/2008	µg/L
TJ007	1,1-DCE	4.02	9/11/2008	µg/L
TJ007	1,1-DCE	5.88	10/8/2008	µg/L
TJ007	1,1-DCE	3.28	11/20/2008	µg/L
TJ007	1,1-DCE	2.76	12/17/2008	µg/L
TJ007	1,1-DCE	9.97	1/22/2009	µg/L
TJ007	1,1-DCE	2.88	2/24/2009	µg/L
TJ007	1,1-DCE	8.64	3/12/2009	µg/L
TJ007	1,2-Dichloroethene-cis	0.516	1/22/2009	µg/L
TJ007	1,4-Dioxane	0.55	9/9/2008	ug/L
TJ007	Bromide	0.103	9/9/2008	mg/L
TJ007	Bromide	0.126	3/12/2009	mg/L
TJ007	Carbon tetrachloride	0.528	9/11/2008	µg/L
TJ007	Carbon tetrachloride	0.903	10/8/2008	µg/L
TJ007	Carbon tetrachloride	1.36	1/22/2009	µg/L
TJ007	Carbon tetrachloride	1.24	3/12/2009	µg/L
TJ007	Chromium	1.2	9/9/2008	ug/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ007	Chromium	2.2	3/12/2009	ug/L
TJ007	Chromium (Cr+6)	1.24	9/9/2008	µg/L
TJ007	Nitrate (as NO3)	40	4/17/2008	mg/L
TJ007	Nitrate (as NO3)	27.3	7/2/2008	mg/L
TJ007	Nitrate (as NO3)	27	8/5/2008	mg/L
TJ007	Nitrate (as NO3)	32.2	9/9/2008	mg/L
TJ007	Nitrate (as NO3)	30.6	9/11/2008	mg/L
TJ007	Nitrate (as NO3)	34.5	10/8/2008	mg/L
TJ007	Nitrate (as NO3)	30.3	11/20/2008	mg/L
TJ007	Nitrate (as NO3)	30.9	12/17/2008	mg/L
TJ007	Nitrate (as NO3)	36.9	1/22/2009	mg/L
TJ007	Nitrate (as NO3)	30.8	2/24/2009	mg/L
TJ007	Nitrate (as NO3)	36.4	3/12/2009	mg/L
TJ007	PCE	2.79	4/17/2008	µg/L
TJ007	PCE	2.32	7/2/2008	µg/L
TJ007	PCE	4.82	8/5/2008	µg/L
TJ007	PCE	10	9/9/2008	µg/L
TJ007	PCE	6.54	9/11/2008	µg/L
TJ007	PCE	9.56	10/8/2008	µg/L
TJ007	PCE	4.04	11/20/2008	µg/L
TJ007	PCE	3.82	12/17/2008	µg/L
TJ007	PCE	18.1	1/22/2009	µg/L
TJ007	PCE	3.71	2/24/2009	µg/L
TJ007	PCE	13.7	3/12/2009	µg/L
TJ007	Perchlorate	<4.0	7/2/2008	µg/L
TJ007	TCE	4.43	4/17/2008	µg/L
TJ007	TCE	2.68	7/2/2008	µg/L
TJ007	TCE	5.89	8/5/2008	µg/L
TJ007	TCE	11	9/11/2008	µg/L
TJ007	TCE	18.9	10/8/2008	µg/L
TJ007	TCE	8.34	11/20/2008	µg/L
TJ007	TCE	7.04	12/17/2008	µg/L
TJ007	TCE	31.1	1/22/2009	µg/L
TJ007	TCE	7.75	2/24/2009	µg/L
TJ007	TCE	25.5	3/12/2009	µg/L
TJ008	1,1-DCA	0.532	8/5/2008	µg/L
TJ008	1,1-DCE	1.61	4/17/2008	µg/L
TJ008	1,1-DCE	0.531	7/1/2008	µg/L
TJ008	1,1-DCE	8.44	8/5/2008	µg/L
TJ008	1,1-DCE	1.36	9/29/2008	µg/L
TJ008	1,1-DCE	7.62	10/22/2008	µg/L
TJ008	1,1-DCE	4.56	11/20/2008	µg/L
TJ008	1,1-DCE	1.64	12/17/2008	µg/L
TJ008	1,1-DCE	10.1	1/22/2009	µg/L
TJ008	1,1-DCE	2.77	2/24/2009	µg/L
TJ008	1,1-DCE	2.19	3/25/2009	µg/L
TJ008	1,2-Dichloroethene-cis	0.761	8/5/2008	µg/L
TJ008	Carbon tetrachloride	0.684	8/5/2008	µg/L
TJ008	Carbon tetrachloride	0.696	10/22/2008	µg/L
TJ008	Carbon tetrachloride	0.883	1/22/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ008	Coliform Total	6.3	3/25/2009	NUM/100ml
TJ008	Nitrate (as NO3)	34.6	4/17/2008	mg/L
TJ008	Nitrate (as NO3)	28.7	7/1/2008	mg/L
TJ008	Nitrate (as NO3)	43.2	8/5/2008	mg/L
TJ008	Nitrate (as NO3)	26	9/29/2008	mg/L
TJ008	Nitrate (as NO3)	35.2	10/22/2008	mg/L
TJ008	Nitrate (as NO3)	32.3	11/20/2008	mg/L
TJ008	Nitrate (as NO3)	30.7	12/17/2008	mg/L
TJ008	Nitrate (as NO3)	38.4	1/22/2009	mg/L
TJ008	Nitrate (as NO3)	31.8	2/24/2009	mg/L
TJ008	Nitrate (as NO3)	31.1	3/25/2009	mg/L
TJ008	PCE	1.89	4/17/2008	µg/L
TJ008	PCE	1.6	7/1/2008	µg/L
TJ008	PCE	27.6	8/5/2008	µg/L
TJ008	PCE	0.846	9/29/2008	µg/L
TJ008	PCE	4.2	10/22/2008	µg/L
TJ008	PCE	2.68	11/20/2008	µg/L
TJ008	PCE	1.23	12/17/2008	µg/L
TJ008	PCE	10.8	1/22/2009	µg/L
TJ008	PCE	1.86	2/24/2009	µg/L
TJ008	PCE	2.4	3/25/2009	µg/L
TJ008	Perchlorate	<4.0	7/1/2008	µg/L
TJ008	TCE	4.03	4/17/2008	µg/L
TJ008	TCE	1.97	7/1/2008	µg/L
TJ008	TCE	32.4	8/5/2008	µg/L
TJ008	TCE	2.52	9/29/2008	µg/L
TJ008	TCE	15.4	10/22/2008	µg/L
TJ008	TCE	8.91	11/20/2008	µg/L
TJ008	TCE	3.37	12/17/2008	µg/L
TJ008	TCE	25.9	1/22/2009	µg/L
TJ008	TCE	5.52	2/24/2009	µg/L
TJ008	TCE	5.69	3/25/2009	µg/L
TJ009	1,1-DCE	1.12	4/30/2008	µg/L
TJ009	1,1-DCE	0.944	8/5/2008	µg/L
TJ009	1,1-DCE	3.32	10/22/2008	µg/L
TJ009	1,1-DCE	2.41	11/20/2008	µg/L
TJ009	1,1-DCE	1.2	12/18/2008	µg/L
TJ009	1,1-DCE	3.32	1/28/2009	µg/L
TJ009	1,1-DCE	1.36	2/24/2009	µg/L
TJ009	1,1-DCE	3.01	3/26/2009	µg/L
TJ009	Nitrate (as NO3)	28.8	4/30/2008	mg/L
TJ009	Nitrate (as NO3)	21.8	7/2/2008	mg/L
TJ009	Nitrate (as NO3)	19.7	8/5/2008	mg/L
TJ009	Nitrate (as NO3)	21.4	9/29/2008	mg/L
TJ009	Nitrate (as NO3)	33	10/22/2008	mg/L
TJ009	Nitrate (as NO3)	30.6	11/20/2008	mg/L
TJ009	Nitrate (as NO3)	29.3	12/18/2008	mg/L
TJ009	Nitrate (as NO3)	40.3	1/28/2009	mg/L
TJ009	Nitrate (as NO3)	30.8	2/24/2009	mg/L
TJ009	Nitrate (as NO3)	34.9	3/26/2009	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ009	PCE	1.25	4/30/2008	µg/L
TJ009	PCE	0.88	7/2/2008	µg/L
TJ009	PCE	0.523	8/5/2008	µg/L
TJ009	PCE	0.589	9/29/2008	µg/L
TJ009	PCE	0.876	10/22/2008	µg/L
TJ009	PCE	0.802	11/20/2008	µg/L
TJ009	PCE	0.725	12/18/2008	µg/L
TJ009	PCE	2.28	1/28/2009	µg/L
TJ009	PCE	0.581	2/24/2009	µg/L
TJ009	PCE	1.44	3/26/2009	µg/L
TJ009	Perchlorate	<4.0	7/2/2008	µg/L
TJ009	TCE	3.41	4/30/2008	µg/L
TJ009	TCE	1.18	7/2/2008	µg/L
TJ009	TCE	1.63	8/5/2008	µg/L
TJ009	TCE	1.33	9/29/2008	µg/L
TJ009	TCE	6.77	10/22/2008	µg/L
TJ009	TCE	4.69	11/20/2008	µg/L
TJ009	TCE	2.59	12/18/2008	µg/L
TJ009	TCE	9.33	1/28/2009	µg/L
TJ009	TCE	2.98	2/24/2009	µg/L
TJ009	TCE	6.95	3/26/2009	µg/L
TJ010	Nitrate (as NO3)	27.9	4/30/2008	mg/L
TJ010	Nitrate (as NO3)	18.7	7/2/2008	mg/L
TJ010	Nitrate (as NO3)	15.9	8/5/2008	mg/L
TJ010	PCE	0.644	4/30/2008	µg/L
TJ010	PCE	0.558	7/2/2008	µg/L
TJ010	Perchlorate	<4.0	7/2/2008	µg/L
TJ010	TCE	2.06	4/30/2008	µg/L
TJ010	TCE	1.2	7/2/2008	µg/L
TJ011	1,1-DCE	0.618	4/30/2008	µg/L
TJ011	1,1-DCE	0.697	10/22/2008	µg/L
TJ011	1,1-DCE	0.699	11/20/2008	µg/L
TJ011	1,1-DCE	0.803	12/18/2008	µg/L
TJ011	1,1-DCE	1.23	1/28/2009	µg/L
TJ011	1,1-DCE	0.708	2/24/2009	µg/L
TJ011	1,1-DCE	1.18	3/26/2009	µg/L
TJ011	Nitrate (as NO3)	24.7	4/30/2008	mg/L
TJ011	Nitrate (as NO3)	16.7	7/2/2008	mg/L
TJ011	Nitrate (as NO3)	17.6	8/5/2008	mg/L
TJ011	Nitrate (as NO3)	16.6	9/29/2008	mg/L
TJ011	Nitrate (as NO3)	28.6	10/22/2008	mg/L
TJ011	Nitrate (as NO3)	27.5	11/20/2008	mg/L
TJ011	Nitrate (as NO3)	30	12/18/2008	mg/L
TJ011	Nitrate (as NO3)	34.3	1/28/2009	mg/L
TJ011	Nitrate (as NO3)	33.5	2/24/2009	mg/L
TJ011	Nitrate (as NO3)	38.3	3/26/2009	mg/L
TJ011	PCE	1.49	4/30/2008	µg/L
TJ011	PCE	0.548	7/2/2008	µg/L
TJ011	PCE	1.29	10/22/2008	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ011	PCE	1.01	11/20/2008	µg/L
TJ011	PCE	1.27	12/18/2008	µg/L
TJ011	PCE	2.08	1/28/2009	µg/L
TJ011	PCE	1.15	2/24/2009	µg/L
TJ011	PCE	1.93	3/26/2009	µg/L
TJ011	Perchlorate	4.6	4/30/2008	µg/L
TJ011	Perchlorate	<4.0	7/2/2008	µg/L
TJ011	Perchlorate	5.01	10/22/2008	µg/L
TJ011	Perchlorate	4.21	12/18/2008	µg/L
TJ011	Perchlorate	6.46	1/28/2009	µg/L
TJ011	Perchlorate	4.67	2/24/2009	µg/L
TJ011	Perchlorate	6.2	3/26/2009	µg/L
TJ011	TCE	9.22	4/30/2008	µg/L
TJ011	TCE	1.97	7/2/2008	µg/L
TJ011	TCE	1.46	8/5/2008	µg/L
TJ011	TCE	1.89	9/29/2008	µg/L
TJ011	TCE	12.8	10/22/2008	µg/L
TJ011	TCE	10.9	11/20/2008	µg/L
TJ011	TCE	11.7	12/18/2008	µg/L
TJ011	TCE	18.9	1/28/2009	µg/L
TJ011	TCE	11.5	2/24/2009	µg/L
TJ011	TCE	18.5	3/26/2009	µg/L
TJ012	1,1-DCE	0.551	10/22/2008	µg/L
TJ012	1,1-DCE	0.81	1/28/2009	µg/L
TJ012	1,1-DCE	0.502	2/24/2009	µg/L
TJ012	1,1-DCE	0.781	3/26/2009	µg/L
TJ012	Nitrate (as NO3)	12.7	4/30/2008	mg/L
TJ012	Nitrate (as NO3)	12.6	7/2/2008	mg/L
TJ012	Nitrate (as NO3)	12.8	8/5/2008	mg/L
TJ012	Nitrate (as NO3)	13.6	9/29/2008	mg/L
TJ012	Nitrate (as NO3)	14.1	10/22/2008	mg/L
TJ012	Nitrate (as NO3)	11.6	11/19/2008	mg/L
TJ012	Nitrate (as NO3)	18	12/18/2008	mg/L
TJ012	Nitrate (as NO3)	16.6	1/28/2009	mg/L
TJ012	Nitrate (as NO3)	17.5	2/24/2009	mg/L
TJ012	Nitrate (as NO3)	18.3	3/26/2009	mg/L
TJ012	PCE	0.717	4/30/2008	µg/L
TJ012	PCE	1.08	8/5/2008	µg/L
TJ012	PCE	1.36	10/22/2008	µg/L
TJ012	PCE	1.21	11/19/2008	µg/L
TJ012	PCE	1.13	12/18/2008	µg/L
TJ012	PCE	1.9	1/28/2009	µg/L
TJ012	PCE	1.27	2/24/2009	µg/L
TJ012	PCE	2.34	3/26/2009	µg/L
TJ012	Perchlorate	<4.0	7/2/2008	µg/L
TJ012	Perchlorate	4.54	3/26/2009	µg/L
TJ012	TCE	1.81	4/30/2008	µg/L
TJ012	TCE	3.6	8/5/2008	µg/L
TJ012	TCE	6.08	10/22/2008	µg/L
TJ012	TCE	5.37	11/19/2008	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
TJ012	TCE	5.2	12/18/2008	µg/L
TJ012	TCE	7.94	1/28/2009	µg/L
TJ012	TCE	5.79	2/24/2009	µg/L
TJ012	TCE	11.1	3/26/2009	µg/L
VE011	Bromide	0.382	7/31/2008	mg/L
VE011	Carbon tetrachloride	1.44	10/28/2008	µg/L
VE011	Carbon tetrachloride	1.3	11/26/2008	µg/L
VE011	Carbon tetrachloride	1.41	1/28/2009	µg/L
VE011	Carbon tetrachloride	0.546	2/27/2009	µg/L
VE011	Nitrate (as NO3)	10.9	4/29/2008	mg/L
VE011	Nitrate (as NO3)	10.7	6/3/2008	mg/L
VE011	Nitrate (as NO3)	10.6	6/26/2008	mg/L
VE011	Nitrate (as NO3)	10.9	7/31/2008	mg/L
VE011	Nitrate (as NO3)	11.2	8/27/2008	mg/L
VE011	Nitrate (as NO3)	12.7	9/16/2008	mg/L
VE011	Nitrate (as NO3)	23.3	10/28/2008	mg/L
VE011	Nitrate (as NO3)	23.2	11/26/2008	mg/L
VE011	Nitrate (as NO3)	22.4	1/28/2009	mg/L
VE011	Nitrate (as NO3)	14	2/27/2009	mg/L
VE011	Nitrate (as NO3)	12.1	3/27/2009	mg/L
VE011	PCE	1.05	10/28/2008	µg/L
VE011	PCE	0.887	11/26/2008	µg/L
VE011	PCE	0.9	1/28/2009	µg/L
VE011	TCE	2.15	4/29/2008	µg/L
VE011	TCE	2.15	5/30/2008	µg/L
VE011	TCE	2.78	7/31/2008	µg/L
VE011	TCE	3.04	8/27/2008	µg/L
VE011	TCE	3.6	9/16/2008	µg/L
VE011	TCE	10.6	10/28/2008	µg/L
VE011	TCE	9.4	11/26/2008	µg/L
VE011	TCE	9.66	1/28/2009	µg/L
VE011	TCE	4.11	2/27/2009	µg/L
VE011	TCE	3.33	3/27/2009	µg/L
VE024	Bromide	0.592	7/31/2008	mg/L
VE024	Nitrate (as NO3)	7.35	4/29/2008	mg/L
VE024	Nitrate (as NO3)	6.07	6/3/2008	mg/L
VE024	Nitrate (as NO3)	8.37	6/26/2008	mg/L
VE024	Nitrate (as NO3)	6.87	7/31/2008	mg/L
VE024	Nitrate (as NO3)	9.79	9/16/2008	mg/L
VE024	Nitrate (as NO3)	6.11	10/28/2008	mg/L
VE024	Nitrate (as NO3)	6.87	11/26/2008	mg/L
VE024	Nitrate (as NO3)	5.76	12/30/2008	mg/L
VE024	Nitrate (as NO3)	7.31	1/28/2009	mg/L
VE024	Nitrate (as NO3)	5.85	2/27/2009	mg/L
VE024	Nitrate (as NO3)	6.56	3/27/2009	mg/L
WH004	1,2-Dichloroethene-cis	0.262	8/26/2008	µg/L
WH004	1,2-Dichloroethene-cis	0.694	9/18/2008	µg/L
WH004	1,2-Dichloroethene-cis	1.12	10/30/2008	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
WH004	1,2-Dichloroethene-cis	1.05	11/26/2008	µg/L
WH004	1,2-Dichloroethene-cis	1.36	12/16/2008	µg/L
WH004	1,2-Dichloroethene-cis	1.26	1/28/2009	µg/L
WH004	1,2-Dichloroethene-cis	0.588	2/25/2009	µg/L
WH004	Bromide	0.076	7/30/2008	mg/L
WH004	Nitrate (as NO3)	10.3	5/28/2008	mg/L
WH004	Nitrate (as NO3)	10.5	6/19/2008	mg/L
WH004	Nitrate (as NO3)	10.2	7/30/2008	mg/L
WH004	Nitrate (as NO3)	10.3	8/26/2008	mg/L
WH004	Nitrate (as NO3)	12.6	9/18/2008	mg/L
WH004	Nitrate (as NO3)	15.2	10/30/2008	mg/L
WH004	Nitrate (as NO3)	15.9	11/26/2008	mg/L
WH004	Nitrate (as NO3)	18	12/16/2008	mg/L
WH004	Nitrate (as NO3)	16.9	1/28/2009	mg/L
WH004	Nitrate (as NO3)	12	2/25/2009	mg/L
WH004	Nitrate (as NO3)	11	3/26/2009	mg/L
WH004	PCE	1.93	4/18/2008	µg/L
WH004	PCE	1.9	5/28/2008	µg/L
WH004	PCE	1.94	6/19/2008	µg/L
WH004	PCE	1.84	7/30/2008	µg/L
WH004	PCE	2.2	8/26/2008	µg/L
WH004	PCE	3.95	9/18/2008	µg/L
WH004	PCE	5.4	10/30/2008	µg/L
WH004	PCE	5.04	11/26/2008	µg/L
WH004	PCE	6.1	12/16/2008	µg/L
WH004	PCE	6.1	1/28/2009	µg/L
WH004	PCE	3.39	2/25/2009	µg/L
WH004	PCE	3.06	3/26/2009	µg/L
WH004	TCE	0.993	4/18/2008	µg/L
WH004	TCE	0.904	5/28/2008	µg/L
WH004	TCE	0.884	6/19/2008	µg/L
WH004	TCE	0.895	7/30/2008	µg/L
WH004	TCE	1.04	8/26/2008	µg/L
WH004	TCE	2.36	9/18/2008	µg/L
WH004	TCE	3.55	10/30/2008	µg/L
WH004	TCE	3.3	11/26/2008	µg/L
WH004	TCE	4.58	12/16/2008	µg/L
WH004	TCE	4.41	1/28/2009	µg/L
WH004	TCE	1.67	2/25/2009	µg/L
WH004	TCE	1.3	3/26/2009	µg/L
WH005	1,2-Dichloroethene-cis	0.833	10/30/2008	µg/L
WH005	1,2-Dichloroethene-cis	0.784	11/26/2008	µg/L
WH005	1,2-Dichloroethene-cis	1.04	12/16/2008	µg/L
WH005	1,2-Dichloroethene-cis	1	1/28/2009	µg/L
WH005	Bromide	0.076	7/30/2008	mg/L
WH005	Bromide	0.083	3/11/2009	mg/L
WH005	Chromium	2.2	3/11/2009	ug/L
WH005	Coliform Total	3.1	4/18/2008	NUM/100ml
WH005	Iron (Fe)	19.3	3/11/2009	ug/L
WH005	Nitrate (as NO3)	11.8	5/28/2008	mg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
WH005	Nitrate (as NO3)	12.1	6/19/2008	mg/L
WH005	Nitrate (as NO3)	11.5	7/30/2008	mg/L
WH005	Nitrate (as NO3)	11.6	8/26/2008	mg/L
WH005	Nitrate (as NO3)	13.7	9/18/2008	mg/L
WH005	Nitrate (as NO3)	13.5	10/30/2008	mg/L
WH005	Nitrate (as NO3)	21.1	11/26/2008	mg/L
WH005	Nitrate (as NO3)	21.1	12/16/2008	mg/L
WH005	Nitrate (as NO3)	20.2	1/28/2009	mg/L
WH005	Nitrate (as NO3)	14.1	2/25/2009	mg/L
WH005	Nitrate (as NO3)	13.2	3/11/2009	mg/L
WH005	PCE	1.17	4/18/2008	µg/L
WH005	PCE	1.01	5/28/2008	µg/L
WH005	PCE	1.22	6/19/2008	µg/L
WH005	PCE	0.917	7/30/2008	µg/L
WH005	PCE	1.12	8/26/2008	µg/L
WH005	PCE	1.82	9/18/2008	µg/L
WH005	PCE	3.91	10/30/2008	µg/L
WH005	PCE	3.75	11/26/2008	µg/L
WH005	PCE	4.42	12/16/2008	µg/L
WH005	PCE	4.64	1/28/2009	µg/L
WH005	PCE	1.67	2/25/2009	µg/L
WH005	PCE	1.39	3/11/2009	µg/L
WH005	TCE	2.5	4/18/2008	µg/L
WH005	TCE	2.34	5/28/2008	µg/L
WH005	TCE	2.38	6/19/2008	µg/L
WH005	TCE	2.3	7/30/2008	µg/L
WH005	TCE	2.27	8/26/2008	µg/L
WH005	TCE	3.06	9/18/2008	µg/L
WH005	TCE	6.28	10/30/2008	µg/L
WH005	TCE	6.1	11/26/2008	µg/L
WH005	TCE	6.81	12/16/2008	µg/L
WH005	TCE	7.43	1/28/2009	µg/L
WH005	TCE	3.32	2/25/2009	µg/L
WH005	TCE	2.75	3/11/2009	µg/L
WH006A	Bromide	0.414	7/30/2008	mg/L
WH006A	Nitrate (as NO3)	2.3	6/19/2008	mg/L
WH006A	Nitrate (as NO3)	2.22	7/30/2008	mg/L
WH006A	Nitrate (as NO3)	2.26	8/26/2008	mg/L
WH006A	Nitrate (as NO3)	5.89	9/18/2008	mg/L
WH006A	Nitrate (as NO3)	7.49	10/30/2008	mg/L
WH006A	Nitrate (as NO3)	7.44	11/26/2008	mg/L
WH006A	Nitrate (as NO3)	7.09	12/16/2008	mg/L
WH006A	Nitrate (as NO3)	6.56	1/15/2009	mg/L
WH006A	Nitrate (as NO3)	2.17	2/25/2009	mg/L
WH006A	Nitrate (as NO3)	2.22	3/26/2009	mg/L
WH006A	PCE	0.901	9/18/2008	µg/L
WH006A	PCE	1.31	10/30/2008	µg/L
WH006A	PCE	1.2	11/26/2008	µg/L
WH006A	PCE	1.18	12/16/2008	µg/L
WH006A	PCE	1.23	1/15/2009	µg/L

WELL NAME	ANALYTE	RESULT	DATE	UNIT
WH006A	TCE	1.35	9/18/2008	µg/L
WH006A	TCE	2.2	10/30/2008	µg/L
WH006A	TCE	1.84	11/26/2008	µg/L
WH006A	TCE	1.84	12/16/2008	µg/L
WH006A	TCE	1.91	1/15/2009	µg/L
WH007	Bromide	0.365	7/30/2008	mg/L
WH007	Bromide	0.35	3/11/2009	mg/L
WH007	Chromium	1.6	3/11/2009	ug/L
WH007	Iron (Fe)	85.4	3/11/2009	ug/L
WH007	Manganese	2.2	3/11/2009	ug/L
WH007	Nitrate (as NO3)	2.53	6/19/2008	mg/L
WH007	Nitrate (as NO3)	2.53	7/30/2008	mg/L
WH007	Nitrate (as NO3)	2.61	8/26/2008	mg/L
WH007	Nitrate (as NO3)	8.59	9/18/2008	mg/L
WH007	Nitrate (as NO3)	9.57	10/30/2008	mg/L
WH007	Nitrate (as NO3)	9.44	11/26/2008	mg/L
WH007	Nitrate (as NO3)	8.95	12/16/2008	mg/L
WH007	Nitrate (as NO3)	8.2	1/15/2009	mg/L
WH007	Nitrate (as NO3)	2.3	2/25/2009	mg/L
WH007	Nitrate (as NO3)	2.39	3/11/2009	mg/L
WH007	PCE	1.46	9/18/2008	µg/L
WH007	PCE	1.51	10/30/2008	µg/L
WH007	PCE	1.38	11/26/2008	µg/L
WH007	PCE	1.31	12/16/2008	µg/L
WH007	PCE	1.19	1/15/2009	µg/L
WH007	TCE	0.774	6/19/2008	µg/L
WH007	TCE	0.731	7/30/2008	µg/L
WH007	TCE	0.791	8/26/2008	µg/L
WH007	TCE	3.73	9/18/2008	µg/L
WH007	TCE	4	10/30/2008	µg/L
WH007	TCE	3.59	11/26/2008	µg/L
WH007	TCE	3.53	12/16/2008	µg/L
WH007	TCE	3.46	1/15/2009	µg/L
WH007	TCE	0.529	3/11/2009	µg/L

APPENDIX B:

Groundwater Extraction Projections 2007-2012

PROJECTED PUMPING BY THE CITY OF LOS ANGELES IN THE SAN FERNANDO BASIN FOR THE NEXT 5 YEARS (IN ACRE-FEET)

WELL FIELD	WATER YEAR				
	2008-09	2009-10	20010-11	2011-12	2012-13
AERATION	869	1,353	1,353	1,353	1,353
ERWIN	1,423	1,555	1,555	1,555	1,555
HEADWORKS	0	0	0	0	0
NO HOLLYWOOD	13,752	8,995	8,995	8,995	8,995
POLLOCK	1,383	1,994	1,994	1,994	1,994
RINALDI-TOLUCA	14,431	10,849	10,849	10,849	10,849
TUJUNGA	9,483	23,963	23,963	23,963	23,963
VERDUGO	2,993	4,111	4,111	4,111	4,111
WHITNAL	8,184	7,337	7,337	7,337	7,337
TOTAL ACRE-FEET	52,518	60,157	60,157	60,157	60,157

Note: The Extraction plan from the San Fernando Basin can be decreased if the wells get contaminated or increased if some of the contaminated wells treated with well head tretements.

Sylmar Basin	1,027	2,178	2,178	4,825	4,825

APPENDIX B

CITY OF BURBANK

PUMPING AND SPREADING PLAN

2008-2013 Water Years

GROUNDWATER PUMPING AND SPREADING PLAN

FIVE WATER YEARS
OCTOBER 1, 2008 TO SEPTEMBER 30, 2013

Prepared by

BURBANK WATER AND POWER
WATER DIVISION

May 2009

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APPENDICES

I. INTRODUCTION

The groundwater rights of the City of Burbank are defined by the JUDGMENT in Superior Court Case No. 650079, entitled "The City of Los Angeles, a Municipal Corporation, Plaintiff, vs. City of San Fernando, et. al., Defendants". The Final Judgment was signed on January 26, 1979.

In 1993, significant revisions were made to the Upper Los Angeles River Area (ULARA) Policies and Procedures with the addition of Section 2.9, Groundwater Quality Management. This addition has been made by the Watermaster and the Administrative Committee to affirm its commitments to participate in the cleanup and limiting the spread of contamination in the San Fernando Valley. This report is in response to Section 2.9.4, Groundwater Pumping and Spreading Plan.

The Groundwater Pumping and Spreading Plan is based on the water year, October 1 to September 30. The Draft Plan for Burbank will be submitted in May to the Watermaster for the current water year.

II. WATER DEMAND

The annual total water demand for the last ten years and the projected annual water demand for the next five years are shown in Table 2.1.

Urgent requests for voluntary conservation began in 2007. With increasing public awareness of water supply issues, the plan was for potable water demand to decrease by two percent per year for five years starting in 2008-09. The allocation recently imposed by MWD for fiscal 2009-10 requires Burbank to achieve an overall demand reduction of about 7.5%. (Local supplies will be used as much as possible in order to reduce the demand on MWD imported supplies.) The projected water demand may vary significantly due to weather and/or economic conditions in the Burbank area. A variance of ±5% may be expected. Recycled water use increased when the Magnolia Power Project began operation in September 2005.

III. WATER SUPPLY

The water supply for the City of Burbank is composed of purchased water from the Metropolitan Water District of Southern California (MWD), locally produced and treated groundwater, and recycled water from the Burbank Water Reclamation Plant.

A. MWD

The amount of treated water purchased from the MWD has been reduced as the result of bringing several water resource projects on-line in the mid-1990s. Burbank continues to rely on MWD for more than half of its water. For continued operation of the local groundwater wells, Burbank needs to purchase additional quantities of untreated water for basin replenishment. Allocation of the MWD supply makes that problematic. See Section IV. Historic and projected use of MWD water is shown in Table 3.1.

B. GAC TREATMENT PLANT

Burbank placed a granular activated carbon (GAC) Treatment Plant in service in November 1992. Historic and projected production from this plant is shown in Table 3.2. The plant was used in November and December 2008 to produce 130 acre-feet of non-potable water that was used in the Power Plant Cooling Towers instead of the usual recycled water.

The GAC Treatment Plant would normally be operated during the summer season from May to October. However, current plans are to keep the plant shut down, except for emergencies, because of hexavalent chromium (Chromium VI) in the well water. The GAC treatment process does not remove chromium, and blending facilities are not available. Total chromium in the plant effluent would exceed the limit of five parts per billion (ppb) set by Burbank City Council policy for water delivered to the distribution system. New Chromium VI regulations will lead to decisions on the future use of the water. However, the California Department of Public Health recently announced that the draft PHG has been postponed indefinitely. When the plant is operated, shutdowns for carbon change-out can be expected every two months. Mechanical maintenance will be performed when the plant is out of service during the winter season. The GAC Treatment Plant uses the groundwater produced from Well No. 7 and Well No. 15 (Figure 3.1). The plant capacity is 2,000 gpm.

Lockheed Martin has arranged to utilize the capacity of the GAC Treatment Plant, when available, to augment the production of the Burbank Operable Unit (BOU) to reach the required annual average of 9,000 gpm. Lockheed Martin will pay a share of the operation and maintenance cost of the GAC in proportion with the volume of water which is credited toward the 9,000 gpm.

C. EPA CONSENT DECREE

The EPA Consent Decree Project became operational January 3, 1996. The source of water is wells VO-1 through VO-8 (Figure 3.1). The Second Consent Decree was entered on June 22, 1998. The plant capacity is 9,000 gpm. Historic and projected water production from the Burbank Operable Unit (BOU) is shown in Table 3.3.

D. RECYCLED WATER

A master plan for the recycled water system was recently completed. The plan lays out a five year expansion of the system and is expected to convert 1,000 acre-feet per year of potable water demand to recycled water demand. Historic and proposed use of recycled water is shown in Table 3.4.

E. PRODUCTION WELLS

Burbank has eight wells that are part of the BOU collector system, plus another four wells which are mechanically and electrically operable, and two others which have had equipment removed. The eight BOU wells are on "Active" status, while all the others are on "Inactive" status with the California Department of Public Health (DPH). Burbank does not plan to operate the inactive wells unless an emergency develops in the 2008-2009 water year.

Active Wells	Inactive Wells	Inactive-Pulled
VO-1	No. 6A	No. 11A
VO-2	No. 7	No. 12
VO-3	No. 13A	
VO-4	No. 15	
VO-5		
VO-6		
VO-7		
VO-8		

IV. JUDGMENT CONSIDERATIONS

A. PHYSICAL SOLUTION

Burbank has a physical solution right of 4,200 acre-feet per year in addition to its import return water extraction rights and use of stored water credits. Depending on availability of MWD replenishment water, a decision must be made each year on the purchase of physical solution credits. Allocation of MWD water begins July 1, 2009, so Burbank will purchase the maximum 4,200 acre-feet of physical solution water for 2008-09 and any subsequent year in which allocation is implemented. Burbank will charge the following physical solution right holders for water used and claim the extractions against Burbank's rights:

Physical Solution Producers	
Valhalla	300 acre-feet
Lockheed Martin	25 acre-feet

Table 3.3 lists the extractions by Lockheed Martin. Table 4.1 lists the extractions by Valhalla.

B. STORED WATER CREDIT

Burbank has a stored water credit of 18,704 acre-feet as of October 1, 2008. Continued BOU operation has drawn down the stored water credits. The objective is to maintain a reserve of 10,000 acre-feet. (See Appendix C.) Some combination of physical solution and spreading water purchases is necessary to avoid depleting the stored water credits.

C. ALLOWANCE FOR PUMPING

The import return water extraction right (20 percent of water delivered the prior year) for the 2008-2009 water year is 4,855 acre-feet. This amount is exclusive of additional extractions allowed due to Burbank's stored water credits, physical solution right or pumping for groundwater clean-up.

Estimated allowable future pumping, based on 24,000 acre-feet of delivered water, will be 4,800 acre-feet per year.

D. SPREADING OPERATIONS AND TRANSFERS OF CREDITS

Burbank has purchased water for basin replenishment since 1989. The water was typically spread at the Pacoima Spreading Grounds by L.A. County Public Works Department with the assistance of the Los Angeles Department of Water and Power (LADWP). Los Angeles Aqueduct water would be spread in exchange for MWD untreated water purchased by Burbank and delivered to Los Angeles. The LADWP water pipelines to the Pacoima Spreading Ground were damaged during the 1994 Northridge earthquake. Replenishment water, beginning in water year 1994-95, was taken "in lieu" through MWD service connection LA-35 at the L.A. Treatment Plant. The historic and projected spreading water is shown in Table 4.2. In lieu replenishment water purchases and transfers of pumping rights, including physical solution purchases, are shown in Table 4.3.

Burbank has completed construction of a new MWD connection at the end of the Foothill Feeder Tunnel. (See Figure 4.1.) The connection is capable of delivering 50 cubic feet per second (cfs) to the Pacoima Wash where the water will flow down to the Pacoima Spreading Grounds. Additionally, the new facilities allow Burbank to direct water to the Lopez Spreading Grounds. These new facilities allow Burbank to spread 6,000 to 8,000 acre-feet per year of purchased untreated replenishment water at the Pacoima Spreading Grounds. MWD needs to complete cleaning of the tunnel. After tunnel cleaning, spreading can commence when replenishment water is available.

V. CAPITAL IMPROVEMENTS

A. WELLS

Burbank plans to continue the use of Wells No. 7 and No. 15 for the GAC Treatment Plant when it is operated.

B. GROUNDWATER TREATMENT FACILITIES

EPA Project: The EPA Consent Decree Project became fully operational on January 3, 1996.

In late June 2000, the treatment plant went off-line due to a breakthrough of 1,2,3- trichloropropane (TCP) in the plant effluent. The plant did not return to service until DPH had approved an operation and sampling plan and the carbon was changed out in the liquid phase contactors. Well VO-6 was removed from service at that time because it had high concentrations of 1,2,3-TCP. The overall production of the BOU was also reduced during this period due to general mechanical problems in the BOU, including the vapor phase GAC screens, the wearing of well pumps/motors and the failure of well level sensors. While these problems were being analyzed, Lockheed Martin invoked a "*force majeure*" provision of the Second Consent Decree in October 2001. EPA has ruled against the *force majeure* claim. The results of the Well Field Performance Attainment Study will guide the next step in optimizing the BOU well field to reliably produce 9,000 gpm. Replacement of distribution headers and underdrains in the liquid phase carbon contactors was completed in December of 2003.

On February 23, 2008 fire erupted in the dehumidifier housing of "A" Train at the BOU. EPA directed that "B" Train be shut down until the cause of the fire could be determined. Safety enhancements were made to "B" Train and "B" Train was returned to service on April 11, 2008. Repairs to the fire-damaged "A" Train were completed in June 2008.

Design of modifications to the vapor phase carbon contactors was completed in November 2007 and a notice to proceed with construction was issued in December 2007. Construction was completed on "A" Train in June 2008 and on "B" Train in September 2008.

The City of Burbank has had responsibility for full operation of the BOU since March 12, 2001. United Water Services was the contract operator of the BOU from March 12, 2001 through November 30, 2005. SWWC Services (formerly Eco Resources) became the contract operator on December 1, 2005.

GAC Treatment Plant: The plant will remain on an active status, but will not be operated except for emergencies.

TABLE 2.1
ACTUAL AND PROJECTED WATER DEMAND

Water Year	Acre-Feet
98-99	22,672
99-00	26,313
00-01	25,619
01-02	24,937
02-03	23,129
03-04	24,357
04-05	21,790
05-06	24,110
06-07	25,745
07-08	24,653
08-09*	24,145
09-10*	24,794
10-11*	24,535
11-12*	24,387
12-13*	24,037

* Projected

NOTES:

(1) Water demand equals the total of MWD, extractions (GAC, Valley/BOU, Valhalla, and cleanup pumpers), and recycled.

(2) The last five year average water demand was 24,131 acre-feet.

TABLE 3.1
ACTUAL AND PROJECTED MWD TREATED WATER DELIVERIES

Water Year	Acre-Feet
98-99	10,536
99-00	10,471
00-01	12,447
01-02	12,086
02-03	13,158
03-04	13,751
04-05	14,415
05-06	11,879
06-07	13,444
07-08	15,299
08-09*	11,868
09-10*	11,213
10-11*	10,771
11-12*	10,338
12-13*	9,913

*Projected

NOTES:

(1) All values shown above are for treated water.

TABLE 3.2
ACTUAL AND PROJECTED LAKE STREET GAC TREATMENT PLANT PRODUCTION

Water Year	Acre-Feet
98-99	1,542
99-00	1,086
00-01	987
01-02	0
02-03	0
03-04	0
04-05	0
05-06	0
06-07	0
07-08	0
08-09*	130
09-10*	0
10-11*	0
11-12*	0
12-13*	0

*Projected

NOTES:

(1) The Lake Street GAC Treatment Plant has a treatment capacity of 2,000 gpm.

(2) Wells No. 7 and No. 15 supply water for the GAC Treatment Plant. Proposed production rates (if the plant is used) are as follows:

Well No. 7	1,050 gpm
Well No. 15	850 gpm

(3) The GAC Treatment Plant has been shut down since March 2001 because of chromium 6 concerns.

(4) The GAC Plant produced 130 AF of non-potable industrial water for the power plant from November 15 to December 22, 2008

TABLE 3.3
ACTUAL AND PROJECTED VALLEY/ BOU TREATED GROUNDWATER PRODUCTION

Water Year	Acre-Feet
98-99	9,042
99-00	11,345
00-01	9,046
01-02	10,402
02-03	9,100
03-04	9,660
04-05	6,399
05-06	10,108
06-07	9,780
07-08	6,817
08-09*	9,747
09-10*	10,884
10-11*	10,884
11-12*	10,884
12-13*	10,884

*Projected

NOTES:

(1) Burbank includes BOU extractions in its pumping rights.
(2) Lockheed Martin has a physical solution right of 25 AF/year.
(3) Table 3.3 shows extractions charged to Burbank. Production for municipal use began in January 1996. GAC flushing and treatment bypass were accounted for separately and charged to a 'basin account' (following table), but beginning June 2003, most such losses are charged to Burbank as "non-municipal use" and included above. Non-municipal use is not included in deliveries used to calculate the 20% return water credit.

Water Year	AF	Water Year	AF	Water Year	AF	Water Year	AF
1996-97	320	1999-2000	107	2002-03	70	2005-06	0
1997-98	478	2000-01	88	2003-04	0	2006-07	0
1998-99	142	2001-02	138	2004-05	0	2007-08	0

(4) The City of Burbank is currently using water from the BOU under an Operation Permit, issued in October 2000, from the California Department of Public Health.

TABLE 3.4
ACTUAL AND PROJECTED RECYCLED WATER DELIVERIES

Water Year	Acre-Feet
98-99	1,210
99-00	2,979
00-01	2,732
01-02	2,087
02-03	488
03-04	549
04-05	681
05-06	1,692
06-07	2,082
07-08	2,192
08-09*	1,972
09-10*	2,389
10-11*	2,872
11-12*	3,157
12-13*	3,232

*Projected

NOTES:

1) The source of recycled water is the Burbank Water Reclamation Plant.
2) The Magnolia Power Project began using recycled water in September 2005.
3) MPP downtime and temporary substitution of groundwater for recycled water for operational reasons lowered the amount of recycled water use in 2008-09.

TABLE 4.1
ACTUAL AND PROJECTED EXTRACTIONS OF GROUNDWATER BY VALHALLA

Water Year	Acre- Feet
98-99	342
99-00	432
00-01	407
01-02	362
02-03	383
03-04	397
04-05	295
05-06	431
06-07	431
07-08	337
08-09*	420
09-10*	300
10-11*	0
11-12*	0
12-13*	0

*Projected

NOTES:

(1) Burbank includes extractions by Valhalla in its pumping rights.

(2) Valhalla has physical solution right of 300 AF/year.

(3) Valhalla is expected to be using recycled water instead of groundwater by Water Year 2010-11.

TABLE 4.2
ACTUAL AND PROJECTED BURBANK SPREADING OPERATIONS

WATER YEAR	ACRE-FEET
98-99	0
99-00	0
00-01	0
01-02	0
02-03	0
03-04	0
04-05	0
05-06	0
06-07	0
07-08	0
08-09*	0
09-10*	1,800
10-11*	6,000
11-12*	6,000
12-13*	6,000

*Projected

NOTES:

1) A new connection to MWD was recently completed that allows spreading at the Pacoima Spreading Grounds (Figure 4.1).
2) If MWD replenishment service is not available, some of the spreading will be replaced by Physical Solution purchases or other transfers of groundwater credits.
3) As long as allocation of the MWD supply is in place, Burbank will not be able to purchase spreading water without incurring penalty rates, which would be the option of last resort.

TABLE 4.3
BURBANK PHYSICAL SOLUTION PURCHASES AND OTHER CREDITS

WATER YEAR	ACRE-FEET
98-99	2,000 (1)
99-00	0
00-01	0
01-02	0
02-03	300 (1)
03-04	44 (2)
04-05	0
05-06	0
06-07	8,200 (1) (3)
07-08	4,200
08-09*	4,200 (4)
09-10*	4,200 (4)
10-11*	0 (4)
11-12*	0 (4)
12-13*	0 (4)

*Projected

NOTES:

1) Burbank exercised its physical solution right in water years 1998-99, 2002-03, 2006-07 (4,200 AF), and 2007-08.
2) In WY 2003-04, 44 AF of stored water credit was transferred from Glendale to Burbank to compensate for April 2004 water transfer via system interconnection.
3) A 4,000 AF exchange of untreated MWD water for groundwater credits was arranged with LADWP for WY 2006-07. If MWD replenishment service for spreading water is unavailable in future years, Physical Solution purchases or other such transfers will be used if they are less expensive than purchasing spreading water at the full MWD untreated volumetric rate.
4) As long as MWD allocation is in place, Burbank expects to purchase the maximum physical solution amount. Allocation is in place for FY 2009-10 Future allocation will be decided on a year-to-year basis.

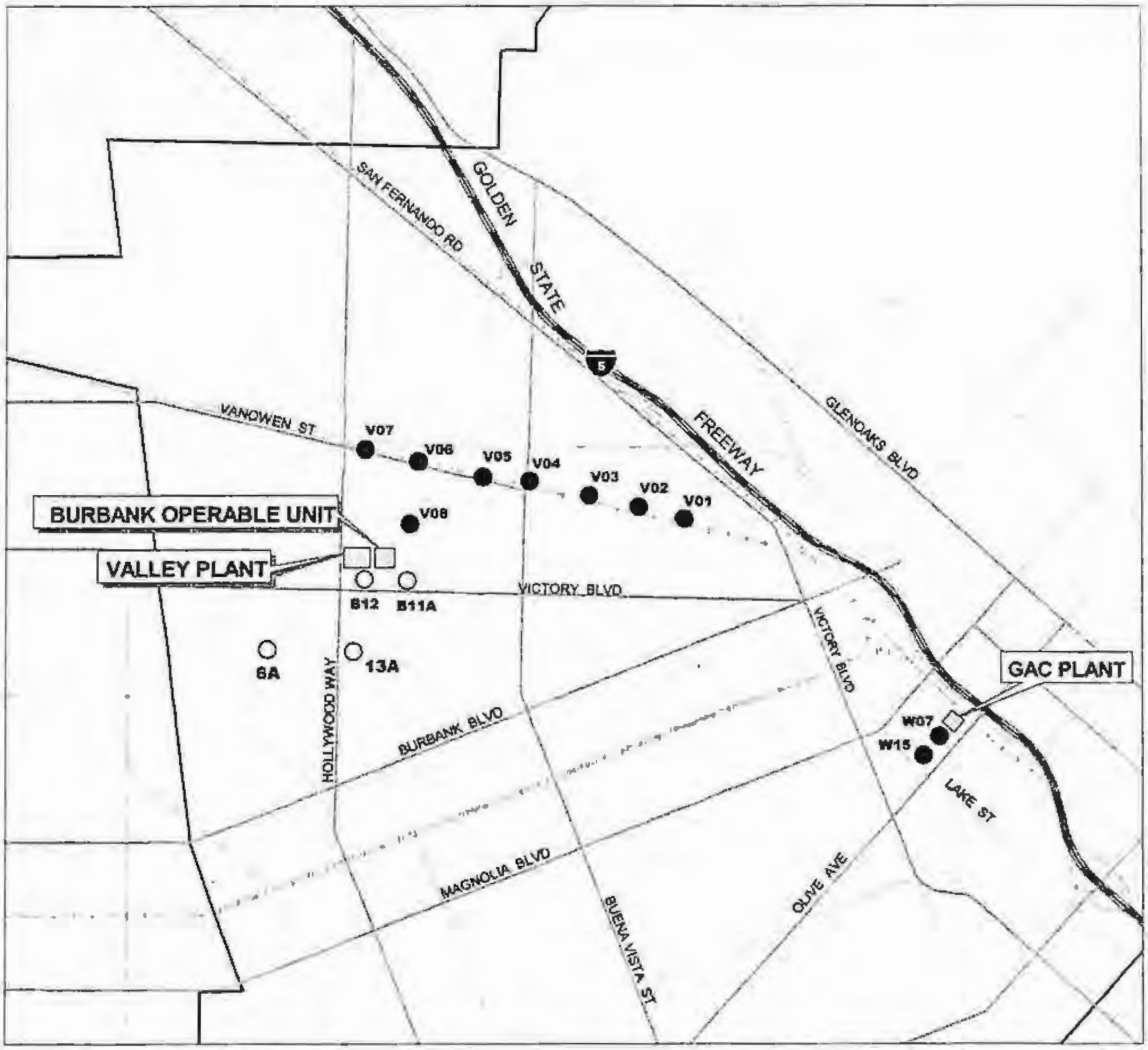


FIGURE 3.1
WELLS AND GROUNDWATER TREATMENT PLANTS

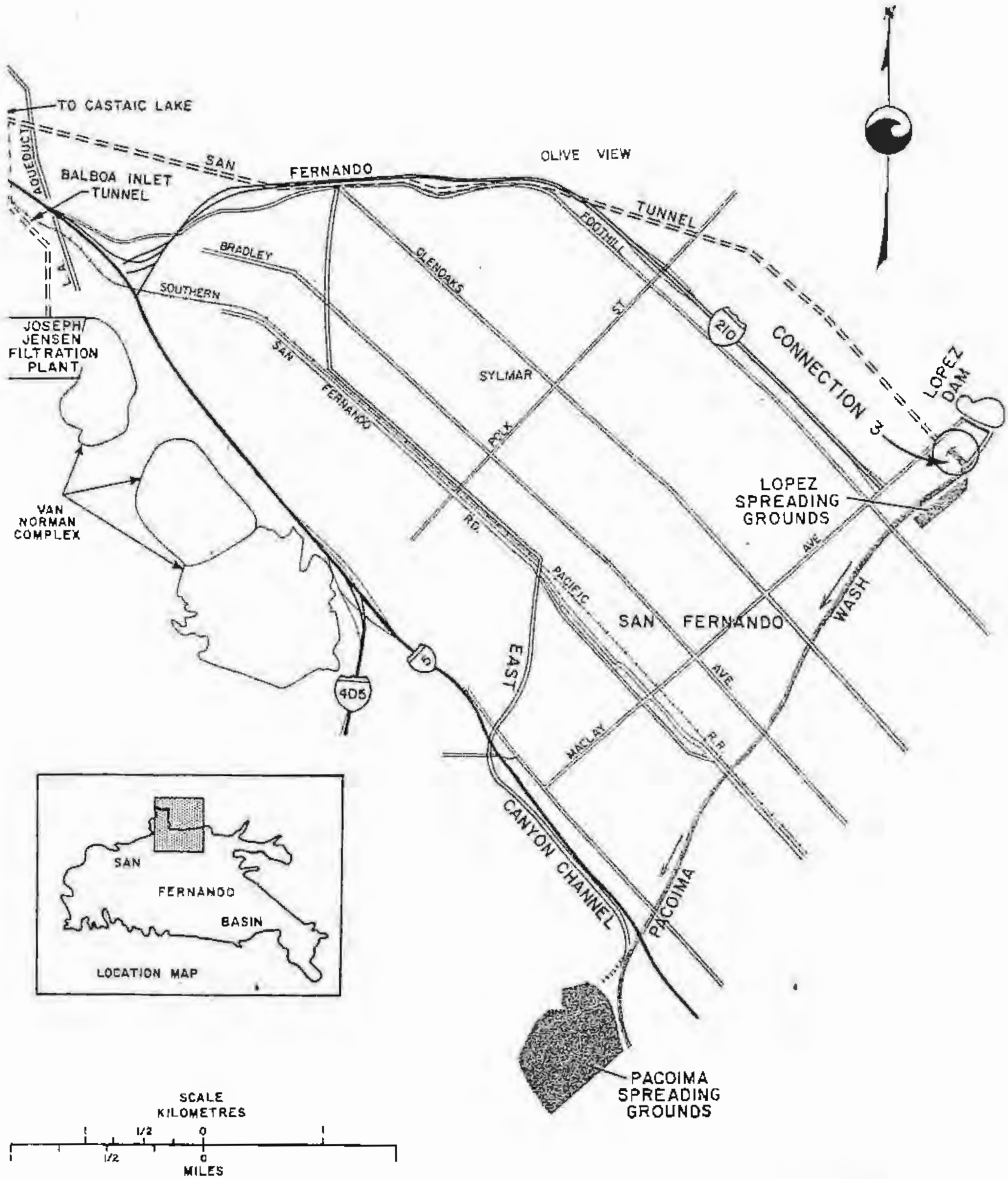


FIGURE 4.1
LOCATION OF PROPOSED MWD UNTREATED WATER CONNECTION

APPENDIX A

WATER QUALITY DATA

The 2008 Annual Water Quality Report is not yet available. Water Quality monitoring and testing of supply sources is not included with this report.

APPENDIX B

WATER TREATMENT FACILITIES

LAKE STREET GAC TREATMENT PLANT

320 North Lake Street
Burbank CA 91502

OPERATOR:

City of Burbank
Burbank Water and Power, Water Division

Albert Lopez, Water Production/ Operations Superintendent

QUANTITY TREATED (10/1/07 through 9/30/08):

None—plant remained on standby

WATER QUALITY:

Contaminant VOC'S: TCE, PCE, 1,2-DCE, 1,2-DCA

DISPOSITION:

Burbank Water System
Potable Water

EPA CONSENT DECREE PROJECT – BURBANK OPERABLE UNIT

2030 North Hollywood Way
Burbank CA 91505

OPERATOR:

City of Burbank
Burbank Water and Power, Water Division

Albert Lopez, Water Production/ Operations Superintendent

QUANTITY TREATED (10/1/07 through 9/30/08):

6,817 acre-feet

WATER QUALITY:

Contaminants: VOCs, Nitrate, Chromium, 1,2,3-TCP

DISPOSITION:

(1) Test Water- Waste

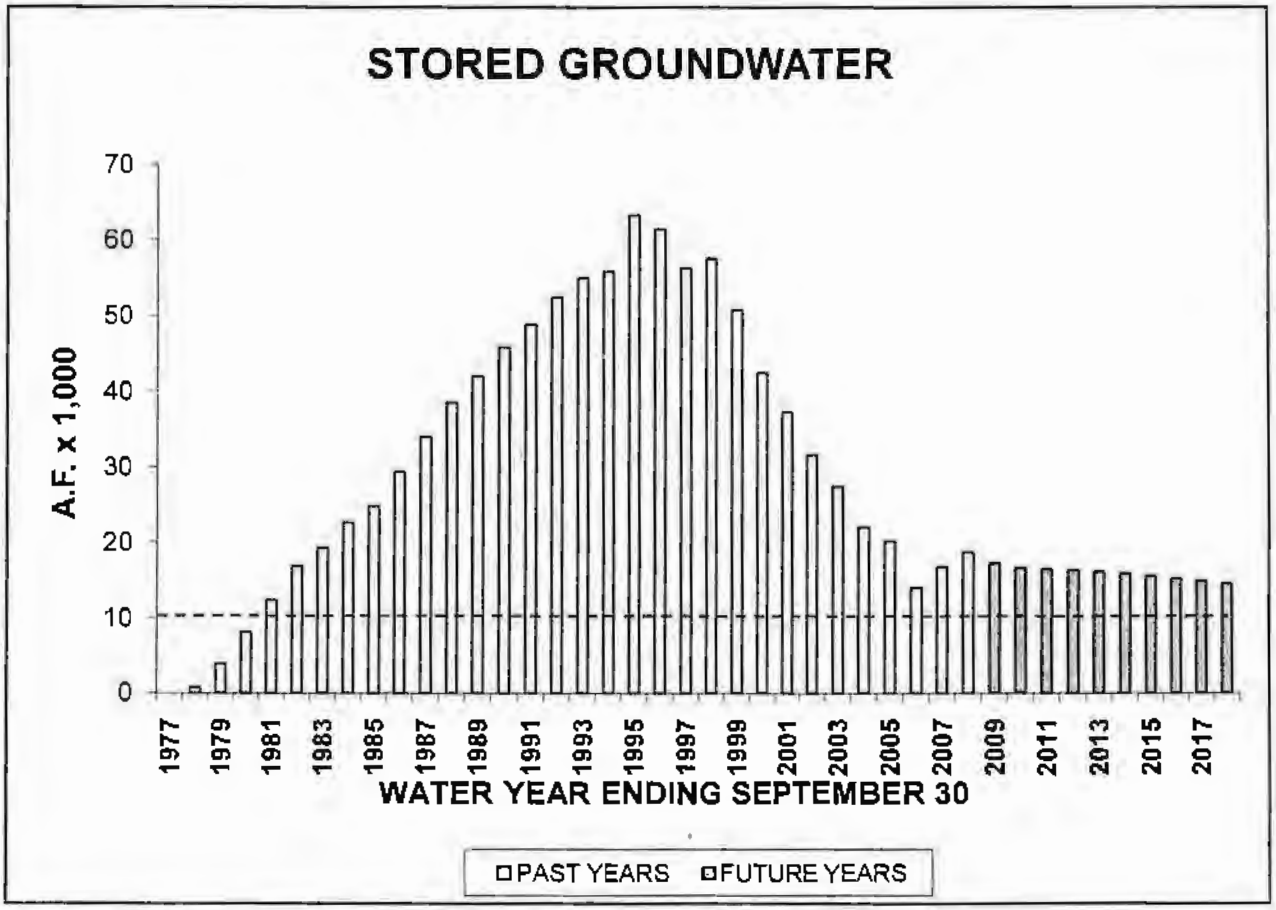
(2) Operation Water (backwash, etc.) - Waste

(3) Burbank Water System-
Potable water after blending

APPENDIX C

STORED GROUNDWATER

BURBANK WATER AND POWER
WATER DIVISION
WY 2006/07



NOTES:

- 10,000 AF RECOMMENDED AS BASIN BALANCE. THIS EQUATES TO ABOUT ONE YEAR OF DOMESTIC SYSTEM PRODUCTION IF REPLENISHMENT NOT AVAILABLE FROM MWD.
- DRAW DOWN STORED WATER BY PRODUCTION EXCEEDING THE RETURN FLOW CREDIT (~4,800 AF) PLUS SPREAD WATER OR PHYSICAL SOLUTION CREDITS.
- GROUNDWATER PRODUCTION EQUALS EPA (10,700 AF) AND VALHALLA (300 AF).
- WY 2006/07 CREDITS ARE 4000 AF PURCHASED FROM LA IN EXCHANGE FOR MWD WATER AND 4200 AF PURCHASED UNDER PHYSICAL SOLUTION
- WY 2007/08 CREDITS ARE 4200 AF PURCHASED UNDER PHYSICAL SOLUTION
- WY 2008/09 AND 2009/10 ASSUME 4200 AF PURCHASED UNDER PHYSICAL SOLUTION
- SPREADING WATER PURCHASES BEGINNING WATER YEAR 2009-10 TO MAINTAIN BASIN BALANCE.

CITY OF BURBANK WATER AND POWER
WATER DIVISION

BURBANK'S STORED GROUNDWATER

75% EPA - With B-6 Spreading

WATER YEAR	DELIVERED WATER AF	RETURN FLOW CREDIT AF	SPREAD WATER AF	OTHER CREDITS AF	PUMPED GROUNDWATER AF	STORED WATER CREDIT AF
1976-77	22,743	4,549				
1977-78	22,513	4,503			3,767	(1) 782
1978-79	24,234	4,847			1,358	(2) 3,947
1979-80	24,184	4,837			677	8,117
1980-81	25,202	5,040			595	12,359
1981-82	22,120	4,424			523	16,876
1982-83	22,118	4,424			2,002	19,298
1983-84	24,927	4,985			1,063	22,659
1984-85	23,641	4,728			2,863	24,781
1985-86	23,180	4,636			123	29,386
1986-87	23,649	4,730			0	34,022
1987-88	23,712	4,742			253	38,498
1988-89	23,863	4,773			1,213	42,027
1989-90	23,053	4,611	378		1,401	45,777
1990-91	20,270	4,054	504		2,032	48,860
1991-92	20,930	4,186	503		938	52,479
1992-93	21,839	4,368	500		(3) 2,184	54,981
1993-94	24,566	4,913	0		(3) 3,539	55,810
1994-95	22,541	4,508	0	5,380	2,888	63,215
1995-96	23,124	4,625	0	2,000	8,308	61,415
1996-97	24,888	4,977	0	1,500	11,243	56,297
1997-98	22,447	4,489	0	0	3,731	57,543
1998-99	22,671	4,534	0	2,000	13,262	50,770
1999-2000	26,312	5,262	0	0	12,862	42,442
2000-01	25,619	5,124	0	0	10,440	37,264
2001-02	24,937	4,987	0	0	10,764	31,624
2002-03	23,108	4,622	0	300	9,483	27,428
2003-04	24,235	4,847	0	44	10,057	22,037
2004-05	21,749	4,350	0	0	6,694	20,190
2005-06	24,084	4,817	0	0	10,543	13,999
2006-07	25,288	5,058	0	8,200	10,220	16,796
2007-08	24,277	4,855	0	4,200	7,161	18,704
2008-09	23,587	4,717	0	4,200	10,305	17,280
2009-10	24,486	4,897	1,800	4,200	11,192	16,637
2010-11	24,527	4,905	6,000		10,892	16,476
2011-12	24,379	4,876	6,000		10,892	16,324
2012-13	24,029	4,806	6,000		10,892	16,145
2013-14	24,077	4,815	6,000		10,892	15,898
2014-15	24,000	4,800	6,000		11,000	15,557
2015-16	24,000	4,800	6,000		11,000	15,203
2016-17	24,000	4,800	6,000		11,000	14,853
2017-18	24,000	4,800	6,000		11,000	14,507

NOTES:
(1) STORED WATER AS OF OCTOBER 1, 1978
(2) STORED WATER AS OF OCTOBER 1, 1979
(3) EXCLUDES 150 A.F. OF PUMPING FOR TESTING.
OTHER CREDITS INCLUDE PHYSICAL SOLUTION PURCHASES, IN-LIEU STORAGE,
AND OTHER TRANSFERS OF GROUNDWATER CREDITS
COLUMNS (1) THROUGH (5) - FROM ULARA WATERMASTER REPORTS
COLUMN (2) = 20% OF COL. (1)
PUMPED GROUNDWATER INCLUDES CITY, VALHALLA, LOCKHEED, DISNEY, MENASCO, HOME DEPOT
BEGINNING 2007-08, 1% IS DEDUCTED FROM THE STORED WATER AT THE END OF EACH YEAR.
SHADED AREAS OF TABLE ARE PROJECTED VALUES .

APPENDIX C

CITY OF GLENDALE

PUMPING AND SPREADING PLAN

2008-2013 Water Years

CITY OF GLENDALE

GROUNDWATER PUMPING AND SPREADING PLAN

WATER YEARS 2008-2013

City of Glendale Water & Power

Reliable • Competitive • Trusted

Prepared By

GLENDALE *WATER & POWER*

APRIL 2009

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WATER YEARS 2008-2013

City of Glendale Water & Power

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Introduction

This report discusses current water supplies to Glendale, future water demands, and projections in local water resource available to meet demands and to reduce Glendale dependency on imported water. This information is needed by a wide group of individuals and organizations including Glendale's City Manager and Council Members, regulatory agencies and others interested in Glendale's water resource future.

Executive Summary

Glendale receives its groundwater supply from San Fernando Basin and Verdugo Basin. Table I illustrates the actual and projected pumping activities in the two basins between 2008 and 2013. Glendale currently does not have any spreading facility.

TABLE 1
ACTUAL & PROJECTED PUMPING ACTIVITIES IN WATER YEAR 2008 – 2013
(Acre Feet per Year)

Source	2008	2009	2010	2011	2012	2013
San Fernando Basin						
Glendale OU	*7,300*	*7,300*	*7,300*	*7,300*	*7,300*	*7,300*
Forest Lawn Memorial Park	*400*	*400*	*400*	*400*	*400*	*400*
Grayson Power Plant	*25*	*25*	*25*	*25*	*25*	*25*
SF BASIN TOTAL	7,725	7,725	7,725	7,725	7,725	7,725
Verdugo Basin	2,393	3,065	3,549	3,856	3,856	3,856

Existing Water Sources and Supplies

The City of Glendale ("City") currently has four sources of water available to meet demands: groundwater from the San Fernando Basin and Verdugo Basin, imported water from the Metropolitan Water District ("Metropolitan") and recycled water from the Los Angeles/Glendale Water Reclamation Plant ("LAGWRP"). Each of these sources is described below. The entry points into the City water system for the various supplies are shown in Figure 1. Over the past forty (40) years, there have been changes in the mix of supplies used to meet water demands in the City. In the future, minor changes are projected in water supplies. These changes and sources are discussed below.

1. San Fernando Basin

The City's water right to San Fernando Basin supplies is defined by the judgment entitled "The City of Los Angeles vs. the City of San Fernando, et al." (1979) hereinafter referred to as the "Judgment"). The Judgment consists of a return flow credit, which is a type of water right based on the assumption that a percentage of water used in the City is returned to the groundwater basin. The City has a right to accumulate its return flow credits annually if its water rights are not used. In the water year of 2008-09, the City has a storage credit of 56,746 acre feet ("AF") within the basin. In addition, the Judgment contains rights for physical solution water. This is a right to produce water in excess of return flow credit and the accumulated credits, subject to a payment obligation to the City of Los Angeles based primarily on the cost of Metropolitan alternative supplies. This option to produce physical solution water in excess of the return flow credit and the accumulated credits is a significant factor in relation to the water production at the Glendale Water Treatment Plant ("GWTP"). The GWTP is part of a U.S. Environmental Protection Agency (EPA) Superfund clean-up project in Glendale. The project consists of a 5,000 gallon per minute (gpm) facility and eight wells that supply the plant. Further discussion regarding the GWTP can be found in the Section: *Past Water Use and Trend* on page 10 in this report. The various San Fernando Basin supplies are:

<u>Return Flow Credit</u> – Glendale is entitled to a return flow credit of twenty (20.0) percent of all City-delivered water, including recycled water, in the San Fernando Basin and its tributary hill and mountain area. A location map is shown in Figure 2 *(Source: 2006-07 Water Year ULARA Watermaster Report)*. This credit ranges from about 5,000 acre feet per year (AFY) to 5,400 AFY depending on actual water use. This is the City's primary water right in the San Fernando Basin.

<u>Physical Solution Water</u> – The City has an agreement to extract water over and above the return flow credit and accumulated credits, and it is chargeable against the rights of the City of Los Angeles upon payment of specified charges generally tied to Metropolitan's water rates. The City's physical solution right is 5,500 AFY.

<u>Pumping for Groundwater Cleanup</u> – Section 2.5 of the Upper Los Angeles River Area's ("ULARA") Policies and Procedures, dated July, 1993, provides for the extraction of basin water for SUPERFUND activities, subject to payment of specified charges similar to physical solution water. This right became a significant factor with the completion of the GWTP in 2000.

<u>Carry-over extractions</u> – In addition to current extractions of return flow water and stored water, Glendale may, in any one year, extract from the San Fernando Basin an amount not to exceed 10 percent of its last annual credit for import return water, subject to an obligation to replace such over-extraction by reduced extraction during the next water year. This provides important year-to-year flexibility in meeting water demands.

San Fernando Basin production has been limited in the past and was eventually eliminated for a time because of volatile organic compounds ("VOC") contamination of the groundwater. The entire San Fernando Valley is part of a U. S. Environmental Protection Agency ("EPA") Superfund cleanup program. Over the past ten years, many water treatment plants had been constructed in the San Fernando Valley to remove VOC from the groundwater. EPA had focused on the construction of cleanup facilities in the City. The GWTP and eight extraction wells have been constructed to pump, treat and deliver water to the City via its Grandview Pumping Station. Significant production from the basin and delivery to the City started in January 2002.

The cleanup facilities consist of seven shallow extraction wells and one deep well; the 5,000 gpm Glendale Water Treatment Plant to remove the VOC; piping to convey the untreated water from the wells to the water treatment plant; a system to convey water from the treatment plant to the City's potable distribution system; a facility to blend the treated groundwater with water from Metropolitan, and a disinfection facility. A general layout of these facilities is shown in Figure 3.

In 2000, major agreements were signed between City of Glendale and Glendale Respondents Group (GRG), which represents forty-plus industries identified by the EPA as potentially responsible for the groundwater contamination, and the EPA. GRG retained CDM Consulting Engineers, Inc. to design, construct and operate the water treatment facilities required by the agreements. The State Department of Public Health ("DPH") issued a permit for the City to operate the facilities in July 2000. The City started taking small quantities of water from this facility on July 23, 2001. The delivery of the water was initially limited because of the City's concern with taking water with higher chromium 6 levels than in the current water supply, even though such water met all water quality standards. In January 2002, the Glendale City Council authorized the City to start delivering 5,000 gpm from the treatment facility into the City's potable water system with a target to minimize the concentration of chromium 6 in the water. This source is expected to provide about 7,300 AFY to the City, which will meet about twenty-two percent (22%) of projected near-term water demands. There is additional groundwater production of 400 AFY by Forest Lawn Memorial Park for irrigation purposes, and about 25 AFY for use on the cooling tower and gas turbine at the Glendale Grayson Power Plant, for a total of approximately 7,725 AFY.

As noted above, the City can pump and treat more groundwater in times of imported water shortages based on accumulated pumping credits. The City, as of October 1, 2008, has 56,746 AF in accumulated pumping credits in the San Fernando Basin. In order to achieve 7,725 AF of San Fernando Basin production per year, Glendale must utilize its return flow credit of 5,500 AF per year and 2,225 AF per year of its accumulated pumping credits. Additional usage of accumulated groundwater credits could be used to meet unexpected demands or in cases of emergency. The usage of additional amounts of accumulated groundwater pumping credits was not considered in the supply-demand analysis of this Water Supply Evaluation, but rather would be in addition to the amounts of available water supplies detailed in that analysis. That these additional amounts of groundwater were not included in the supply-demand analysis further ensures that there are sufficient supplies to meet Plan demands.

2. Verdugo Basin

Historically, groundwater supplies from the Verdugo Basin contributed a small portion to the City's water supplies via five wells and an underground water infiltration system. The Judgment gave Glendale the right to extract 3,856 AFY from the Verdugo Basin. Crescenta Valley Water District also has water rights and is the only other entity allowed to extract water from the Verdugo Basin.

Use of these supplies has been limited in the past due to water quality problems, groundwater levels, and limited extraction capacity. In order to increase the use of these supplies, the City completed construction of the Verdugo Park Water Treatment Plant ("VPWTP") in 1996. This facility has a capacity of 1,150 gpm and treats water from the two low capacity wells, referred to as Verdugo Wells A & B, and from the water supplies in the Verdugo Pickup System, a subsurface horizontal infiltration system. Actual flows from these sources range between 300-400 gpm. The three existing wells referred to as Glorietta Wells 3, 4 and 6 and VPWTP produce about 2,600 AFY and account for about eight percent (8%) of Glendale's total water supply. This alone will not fully utilize the City's entire water rights to the Verdugo Basin supplies. The City is currently seeking new production well sites in the Basin to increase its extraction capacity so that it can utilize its full adjudicated water right from the Verdugo Basin, to the extent possible given the basin's hydrology. This is further discussed in detail later in this report. The location of the VPWTP and existing wells are shown on Figure 1.

3. Metropolitan Water District of Southern California

The City relies on Metropolitan water supply to meet a majority of its current water supply requirements. For the five fiscal years ended June 30, 2007, water deliveries from Metropolitan averaged 7,534 million gallons per day (approximately 23,643 acre feet per year), which constituted approximately seventy percent (70%) of the City's total water supply. The City expects to continue reliance on Metropolitan sales of water to meet most of its future water supply requirements.

The following information regarding Metropolitan has been obtained from Metropolitan and sources that the City believes to be reliable, but the City takes no responsibility for the accuracy or completeness hereof. Additional information about Metropolitan may be obtained on Metropolitan's website at *www.mwdh2o.com*. No information contained on such website is incorporated herein by reference.

3.1. History and Background

The Metropolitan Water District of Southern California is a public agency organized in 1928 by a vote of the electorates of thirteen (13) southern California cities which included the City of Glendale, under authority of the Metropolitan Water District Act (California Statutes 1927, Chapter 429, as reenacted in 1969 as Chapter 209, as amended, herein referred to as the "Metropolitan Act"). The Metropolitan Act authorizes Metropolitan to levy property taxes within its service area; establish water rates; impose charges for water standby and service availability; incur general obligation bonded indebtedness and issue revenue bonds, notes and short-term revenue certificates; execute contracts; and exercise the power of eminent domain for the purpose of acquiring property. In addition, Metropolitan's Board of Directors ("Metropolitan's Board") is authorized to establish terms and conditions under which additional areas may be annexed to Metropolitan's service area.

Metropolitan's primary purpose is to provide a supplemental supply of water for domestic and municipal uses at wholesale rates to its member public agencies. The City is one of the 26 Metropolitan member public agencies. If additional water is available, such water may be sold for other beneficial uses. Metropolitan serves its member agencies as a water wholesaler and has no retail customers.

Metropolitan's charges for water sales and availability are fixed by Metropolitan's Board and are not subject to regulation by the California Public Utilities Commission or any other state or federal agency. Metropolitan imports water from two principal sources: northern California via the Edmund G. Brown California Aqueduct (the "California Aqueduct") of the State Water Project owned by the State of California and the Colorado River via the Colorado River Aqueduct owned by Metropolitan. Water deliveries through the Colorado River Aqueduct began in the early 1940's. This imported water supplemented the local water supplies of the original 13 southern California member cities. In 1972, to meet growing water demands in its service area, Metropolitan started receiving additional water supplies from the California

Aqueduct. Metropolitan owns and operates the Colorado River Aqueduct and has a long-term contract for water from the State Water Project.

The locations of the California Aqueduct and Colorado River Aqueduct are shown in Figure 4. Metropolitan's service area also includes the southern California coastal plain. It extends about 200 miles along the Pacific Ocean from the City of Oxnard on the north to the international boundary with Mexico border on the south, and it reaches seventy (70) miles inland from the coast. Metropolitan is currently composed of twenty-six (26) member agencies, including fourteen (14) cities, eleven (11) municipal water districts, and one (1) county water authority. Glendale is one of the eleven municipal water districts served by Metropolitan.

3.2. State Water Project

One of Metropolitan's two major sources of water is the State Water Project, which is owned by the State and operated by the State Department of Water Resources ("DWR"). The State Water Project transports water from San Francisco Bay/Sacramento-San Joaquin River Delta ("Bay-Delta") south via the California Aqueduct to Metropolitan. The total length of the California Aqueduct is approximately 444 miles. Metropolitan has a long-term contract (the "State Water Contract") with the DWR. Water received from the State Water Project by Metropolitan from 2001 through 2006 varied from a low of 1,126,981 acre feet in calendar year 2001 to a high of 1,801,000 acre feet in 2004. Recent court decisions restrict deliveries from the State Water Project beginning in 2008, as described below. Record dry conditions in Metropolitan's service area in 2006-2007, below average rainfall in the northern Sierra watershed for the State Water Project and a multi-year drought in the Colorado River Basin have further affected water deliveries by Metropolitan. Metropolitan participates in groundwater banking programs, including the Arvin-Edison Water Storage Program and the Semitropic Water Storage Program.

3.3. Colorado River Aqueduct

Metropolitan has a legal entitlement to receive water from the Colorado River under a permanent service contract with the Secretary of the Interior. Water from the Colorado River or its tributaries is also available to other users in California, as well as users in the states of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming, resulting in both competition and the need for cooperation among these holders of Colorado River entitlements. The Colorado River Aqueduct, which is owned and operated by Metropolitan, transports water from the Colorado River approximately 242 miles to its terminus at Lake Mathews in Riverside County.

Historically, Metropolitan had been able to take full advantage of the availability of surplus water and apportioned but unused water. However, other users increased their use of water from the Colorado River beginning in 1998. Although use of water is expected to fluctuate annually, this trend is projected to continue in the future. In addition, a severe drought in the Colorado River Basin has reduced water supplies.

Metropolitan has taken steps to augment its share of Colorado River water through agreements with other agencies that have rights to use such water. Under a 1988 water conservation agreement between Metropolitan and the Imperial Irrigation District ("IID"), IID has constructed and is operating a number of conservation projects that are currently conserving approximately 100,000 AFY. In 2007, the conserved water increased the amount of water available to Metropolitan by 85,000 acre feet.

With Arizona's and Nevada's increasing use of their respective apportionments and the uncertainty of continued surpluses on the Colorado River, in 1997 the Colorado River Board of California, in consultation with Metropolitan, IID, Palo Verde Irrigation District, the Coachella Valley Water District, DWR and the San Diego County Water Authority, embarked on the development of a plan for reducing California's use of Colorado River water to its basic apportionment of 4.4 million acre feet when use of that basic apportionment is necessary.

3.4. Future Water Supply Reliability

Metropolitan faces a number of challenges in providing a reliable and high quality water supply for southern California. These include, among others: (1) the growing population within the service area; (2) the increased competition for low-cost water supplies; (3) variable weather conditions; and (4) increased environmental regulations for clean and safe drinking water. These challenges increased in 2007, with court decisions that restrict deliveries from the State Water Project beginning in 2008, as described above. In response to these challenges, Metropolitan and its member agencies have implemented the following actions:

- The 1994 Bay-Delta Accord, signed by federal and State agencies as well as urban agricultural and environmental water interests, improves near-term State Water Project reliability and lays the foundation for the process to develop comprehensive long-term solutions to the problems in the Bay-Delta system.
- An agreement known as the "Monterey Agreement,". which restructured the State Water Contract, providing Metropolitan with significant water management and financial benefits, including up to 220,000 acre feet of additional storage.
- Groundwater Storage Programs within Metropolitan's service area, which provide additional storage of imported water in the southern California groundwater basins for regional benefit. These programs allow Metropolitan to store imported water during wet years to provide dry year supplies. Programs approved to date provide nearly 422,000 acre feet of groundwater storage that is expected to yield a dry-year supply of approximately 115,263 acre feet for each of three consecutive years.
- Water Transfer and Storage Agreements, executed for the Central Valley provide additional storage of imported water in groundwater basins and the transfer of available water for delivery through the California Aqueduct. These programs provide Metropolitan with a total storage capacity of over 900,000 acre feet and dry-year supply yield of over 300,000 acre feet per year.
- Financial Incentive Programs, which result in increased local investments in conservation, reclamation, and groundwater projects throughout the service area for increased drought protection and reduced costs for Metropolitan's treatment and conveyance facilities. From the programs' inception through June 2007, over $450 million in incentives have been provided for the production and conservation of 2.3 million acre feet of water. To increase conservation efforts locally, Metropolitan increased its conservation subsidy from $154 to $195 per acre-foot for certain programs.
- Diamond Valley Lake, an 810,000 acre-foot surface reservoir completed in March 2000, provides the region with at least 400,000 acre feet of drought storage, with the remaining storage held for emergency protection.
- An IRP, which was initially developed in 1996 by Metropolitan, its member agencies, subagencies, and groundwater basin managers to (1) ensure a reliable and high quality

water supply over the next twenty-five (25) years; (2) coordinate the planning activities among southern California's water providers; (3) avoid redundant investments; and (4) provide a flexible and balanced planning framework.

Metropolitan reports that it will make additional resource and infrastructure improvements similar to those identified in its IRP in order to maintain reliability and high water quality as demands grow. Metropolitan's current practices of diversifying water supplies and securing supply reserves allow Metropolitan and its member agencies to adjust to changes in demands and supplies and maintain a high degree of reliability. Metropolitan's diversified storage capacity, divided among reservoirs, conjunctive use and other groundwater storage programs within Metropolitan's service area and by delivery through the State Water Project or Colorado River Aqueduct, has increased to 3.6 million acre feet of storage capacity.

Approximately 674,000 acre feet of stored water is emergency storage that is reserved for use in the event of supply interruptions from earthquakes or similar emergencies, as well as extended drought. Stored water is drawn down when needed to meet demands for water and refilled when supplies of imported water in excess of demands are available. Historically excess supplies to replenish storage have been available in about seven of every ten years. However, Metropolitan's ability to replenish water storage is likely to be limited by Bay-Delta pumping restrictions under the ruling in *NRDC v. Kempthorne*. As of July 30, 2007, Metropolitan had 2.59 million acre feet of water in storage.

3.5. Drought and Resources Management Plans

Possible causes of water supply deficits are droughts, failures of major water transmission facilities and other adverse events. Metropolitan's current approach to managing water shortages has evolved from its experiences during the droughts of 1976-77 and 1987-92 into the Water Surplus and Drought Management Plan ("WSDM Plan").

The WSDM Plan, which was adopted by Metropolitan's Board in April 1999, establishes broad resource management strategies to meet full service demands over the ten years from 1999-2008 and provides principles for imported supply allocation if the need should arise. The WSDM Plan splits resource actions into two major categories: surplus actions and shortage actions. The WSDM Plan considers the region to be in surplus only after Metropolitan has met all demands for water, including replenishment deliveries. The surplus actions store surplus water, first inside then outside the region. The shortage actions of the WSDM Plan are split into three subcategories: shortage, severe shortage and extreme shortage. The WSDM Plan provides that under shortage conditions, Metropolitan will make withdrawals from storage based on location and ability to access, interrupt groundwater replenishment deliveries and cut agricultural water deliveries. Under severe shortage conditions, Metropolitan will call for extraordinary drought conservation, which may include reductions in municipal and industrial water use and mandatory water allocations or rationing.

Metropolitan's current measures to address potential water supply shortages and interruptions include calling for extraordinary conservation, cutting groundwater replenishment and agricultural water deliveries, maximizing groundwater production, acquiring additional supplies and drawing from dry-year storage. In August 2007, Metropolitan launched a significant water conservation outreach and public education effort for voluntary water conservation, promotion of water-saving rebates and incentives and education of the public about the uncertainties of future water supplies. Metropolitan suspended groundwater replenishment deliveries on May 1, 2007, and had notified member agencies that it will cut deliveries under its Interim Agricultural Water Program by thirty percent (30%) on January 1, 2008. In addition, Metropolitan was pursuing water transfers, including negotiations for the purchase of 200,000 acre feet of previously-stored State Water Project supplies in the San Bernardino groundwater basin and negotiations with water agencies in the Sacramento and San Joaquin Valleys for transfers in 2008. Metropolitan called for additional voluntary fallowing in Metropolitan's agricultural land management program within the Palo Verde Irrigation District and is working with the State of Arizona to withdraw water previously stored in its groundwater basin.

Metropolitan staff, working with member agency staff, prepared a water allocation plan based on the principles contained in the WSDM Plan. The allocation plan was to provide a formula for equitable distribution of available supplies in case of extreme water shortages within Metropolitan's service area. Metropolitan's member agencies and retail water suppliers in Metropolitan's service area also may implement water conservation and allocation programs.

3.6. Metropolitan's Services to Glendale

Glendale receives Metropolitan water through three (3) service connections as shown on Figure 1. The service connection number and capacity are summarized in Table 2 below. In total, Metropolitan has a total delivery capacity of seventy-eight (78) cubic feet-per-second (cfs). During hot summer days, it is common for Glendale to utilize the full capacity of the facilities. Any significant increase in demands on Metropolitan could require another service connection.

TABLE 2
METROPOLITAN CONNECTIONS AND CAPACITY

Service Connection Number	Capacity (cfs)
G-1	48
G-2	10
G-3	20

Over the years, Metropolitan has provided high level of reliability in meeting Glendale's supplemental water supply needs. It is believed that the reliability of water supply to the City will continue in the future as a result of the many water resource programs under way and the proposed future programs now being considered based on Metropolitan's WSDM and IRP . This source will always be a major factor in meeting the water needs of the City. The City closely follows the planning activities at Metropolitan to assure that it has adequate supplies to meet the needs of its member agencies.

4. Recycled Water

The City of Glendale has been delivering recycled water from the LAGWRP since the late 1970's. This is a twenty (20) million gallon-per-day (MGD) facility owned by the Cities of Los Angeles and Glendale. Based on a 1970 contract between the Cities of Los Angeles and Glendale, Glendale is entitled to fifty percent (50%) of any effluent produced at the plant, which is more than sufficient to for all recycled water use within City of Glendale. Treated wastewater that is not used in either the Glendale or Los Angeles system is discharged to the Los Angeles River and eventually reaches the ocean.

Currently, Glendale has forty five (45) recycled water users. These include a landfill, two (2) golf courses, two (2) memorial parks, six schools, ten (10) recreation parks, and other irrigation areas. Also, three (3) high-rise buildings, Glendale Police Headquarter, the Disney Complex on Flower Street, and the new buildings at Glendale Community College are dual-plumbed to use recycled water for sanitary flushing purposes when facilities are in place to provide the water (Figure 6). In 2008, three (3) new users (Americana, Glendale Retirement Home, and the San Fernando Landscape Project) were added to the recycled water system. In the next five years, eight (8) more new recycled water users are expected to be added for irrigation and dual-plumbing, some of which have already been completed. Figure 7 provides a general idea of the scope of the expansion program. The amount of potable water purchased from Metropolitan is expected to have a corresponding reduction.

In the 1990's Glendale Water Department began to require all new high-rise buildings (5-story or higher) to install dual-plumbing system within the Glendale Downtown area. Recycled water customers are solely responsible for funding and installing the connectors from the recycled water pipeline in the public streets to the customer's property, and for all on-site facilities to distribute recycled water to the ultimate use. The main recycled water distribution pipelines and existing recycled water facilities are shown in more detail in Figure 5. The expected deliveries from the various projects are shown in Table 3.

TABLE 3
RECYCLED WATER USE (AFY)

PROJECTS	2008	2010	2015	2020	2025
Brand Park Pipeline	92	260	270	285	300
Forest Lawn Pipeline	416	420	445	470	490
Power Plant Pipeline	230	255	270	280	295
Verdugo-Scholl Pipeline	875	920	1,500	1,575	1,655
TOTAL	**1,613**	**1,855**	**2,485**	**2,610**	**2,740**

5. Summary of Local Supplies

The current use of local groundwater resources available to the City is substantially less than its rights because of water quality and extraction problems. A general summary of the City's rights to local water resources compared to the amount currently being used is shown on Table 4.

TABLE 4
LOCAL WATER PROJECTS AND USE (AFY)

Potential Source	Right	Current Use	Future Use
San Fernando Basin	5,000 - 5,400	7,100 AFY	7,300
Verdugo Basin	3,856	2,600 AFY	3,856
Recycled Water	10,000	1,600 AFY	2,740

Note : Glendale Physical Solution Water Right and Use is not included

Past Water Use and Trends

In the past, the water quality problems in the San Fernando Basin and groundwater levels in the Verdugo Basin have impacted the ability of Glendale to produce water from these Basins. Glendale has only recently been able to better utilize its rights to the San Fernando Basin water supplies accumulated for many years. The EPA has designated several locations in the San Fernando Basin as Superfund sites and required construction of cleanup treatment facilities by the industry group responsible for the contamination. The Glendale cleanup project is the last in a series of EPA-required cleanup facilities and is now complete. The project consists of eight (8) production wells and a water treatment facility.

The GWTP was built to treat VOC. In December 2000, Glendale started operating the treatment plant. But because of the chromium 6 issue, only a small quantity was initially pumped and delivered. Full operation started on January 6, 2002. A study is being made regarding removal of chromium 6.

Glendale currently has five (5) active production wells and a pick-up system (infiltration galleries) in the Verdugo Basin, along with the VPWTP. The lower water levels have reduced supplies for this source, and accordingly, the City has reduced its projections of supply from this source as well.

Historically, the City used groundwater to meet a varying portion of its water demand. In the 1940s and 1950s essentially all of the City's water needs were obtained from the San Fernando and the Verdugo Basins with limited supplies from Metropolitan. In the 1960's, production from the San Fernando Basin reached a peak of about 17,000 AFY. The Grandview well water collection system in the San Fernando Basin and the Grandview Pumping Plant originally pumped a peak capacity of about 24,000 gpm (34.6 MGD) from San Fernando Basin directly into Glendale's potable water system.

In the mid-1970s, Glendale limited production from the San Fernando Basin to about 12,000 AFY as part of a court decree arising from a Water Rights lawsuit by the City of Los Angeles. In 1975, the California Supreme Court issued the Judgment in City of Los Angeles vs. City of San Fernando which further limited Glendale's production right. The current right is about 5,500 AFY based on a Return Flow Credit right from water use in Glendale, with certain additional rights as described above.

Other limitations to groundwater use occurred in the late 1970s, when production from the Verdugo pick-up system in the Verdugo Basin was discontinued because of water quality problems.

In late 1979, Assembly Bill 1803 required that all water agencies using groundwater must conduct tests for the presence of certain industrial solvents. The tests indicated that VOC such as trichlorethylene and perchloroethylene were present in the San Fernando Basin groundwater supplies in concentrations exceeding State Department of Health Services' maximum contaminant levels. Both chemicals were used extensively in the past as degreasers in manufacturing industries.

At that time, the presence and hazards to the water supplies were identified. As a result, Glendale had to further limit its use of San Fernando Basin supplies. From 1980 to 1992, Glendale reduced production; and from 1992 to 2000, Glendale totally suspended production from the basin because of the presence of VOC. During the twenty year period of reduced production, Glendale continued to accumulate the groundwater storage credits that could be used in the future. Glendale's storage account balance was 56,746 AF as of October 1, 2008.

Glendale's Ability To Meet Demands

Reliability of water supplies is a key goal in the operation of Glendale's water distribution system. Glendale is currently importing approximately seventy percent of its water supply from Metropolitan. Consequently, the reliability of Metropolitan water supplies to meet Glendale water needs as well as the needs of its other twenty-five member agencies becomes exceptionally crucial. For Glendale, Metropolitan is the supplier of "last resort" in meeting the needs of our citizens.

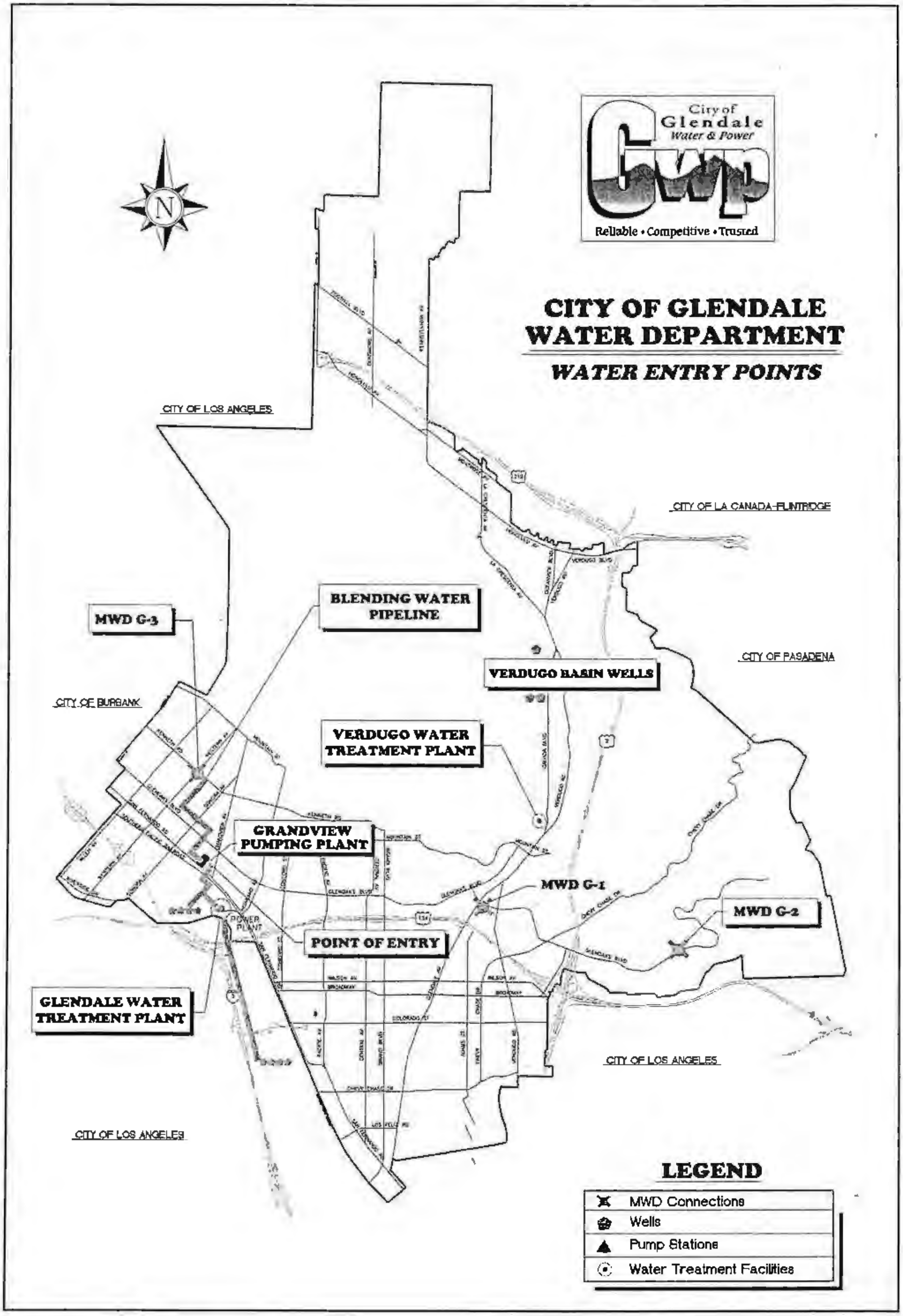
Future Goals

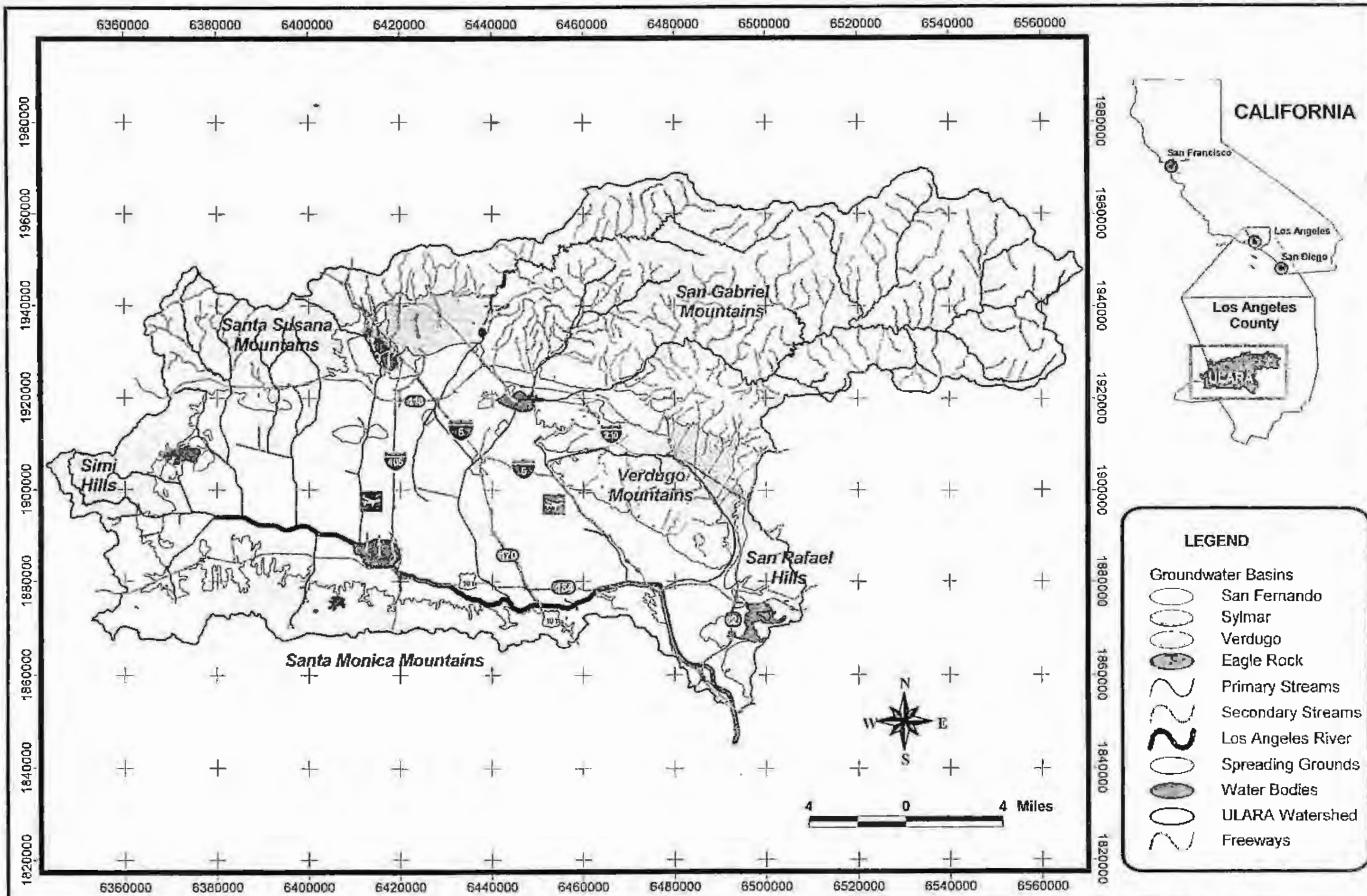
The City has been expanding the use of its local water supplies with operation of the GWTP and increase groundwater extraction of Verdugo Basin. However, because of the chromium 6 related issues, the reliability of the GWTP water supply cannot be guaranteed into the future until a chromium-removal treatment is put into operation. Glendale is working with the Cities of Los Angeles and Burbank, with the help of EPA and American Water Works Research Foundation, to develop a new treatment technology for chromium 6. The plan is to have a complete treatment facility in place by July 2009.

The City's Water Department has immediate plans to increase groundwater production in the Verdugo Basin by constructing two new wells within the basin in 2009 and 2010 and to increase the recycled water use by adding new users and expand the marketing effort to neighboring agencies. Also, the City is committed to aggressively advocate the use of recycled water for irrigation & toilet flushing, which will help increased the conservation of potable water and reduced the dependency on imported supplies.

In 2008, the City has achieved the goal of previous year to import only sixty-five percent (65%) of the total water used from the Metropolitan. It is the goal of the City's Water Department to maintain the City's water purchase from Metropolitan at sixty-five percent (65%) or less of the total water use in the next five years.

FIGURES


City of Glendale Water & Power
GWP
Reliable • Competitive • Trusted
CITY OF GLENDALE
WATER DEPARTMENT
WATER ENTRY POINTS
CITY OF LOS ANGELES
CITY OF LA CANADA-FLINTRIDGE
CITY OF PASADENA
CITY OF BURBANK
BLENDING WATER PIPELINE
MWD G-3
VERDUGO BASIN WELLS
VERDUGO WATER TREATMENT PLANT
GRANDVIEW PUMPING PLANT
MWD G-1
MWD G-2
POWER PLANT
POINT OF ENTRY
GLENDALE WATER TREATMENT PLANT
CITY OF LOS ANGELES
CITY OF LOS ANGELES
LEGEND
MWD Connections
Wells
Pump Stations
Water Treatment Facilities



2006-07 Water Year ULARA Watermaster Report

Upper Los Angeles River Area: Vicinity and Location Map

PLATE 1

FIGURE 13

GLENDALE WATER TREATMENT PLANT SYSTEM LAYOUT

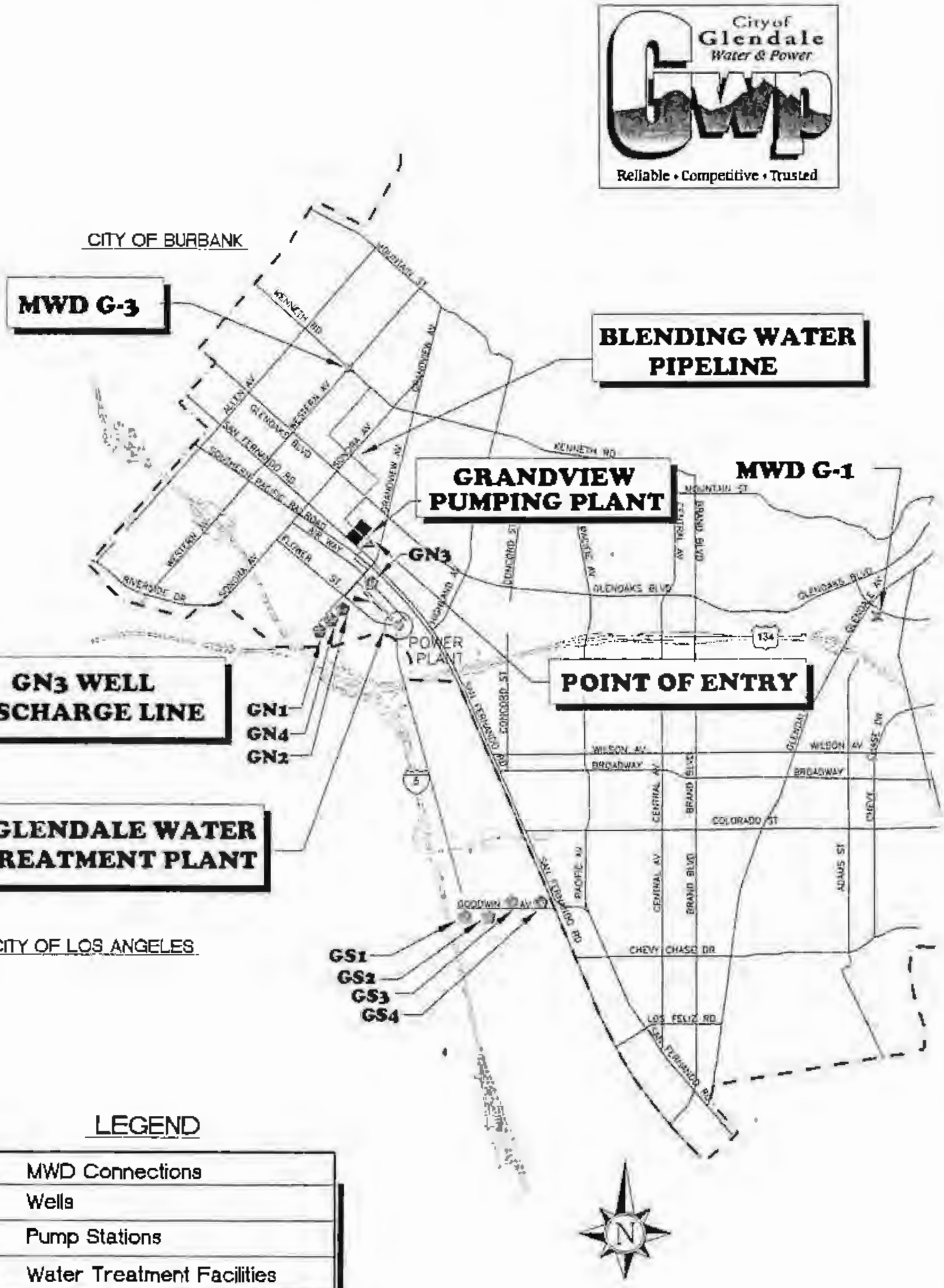
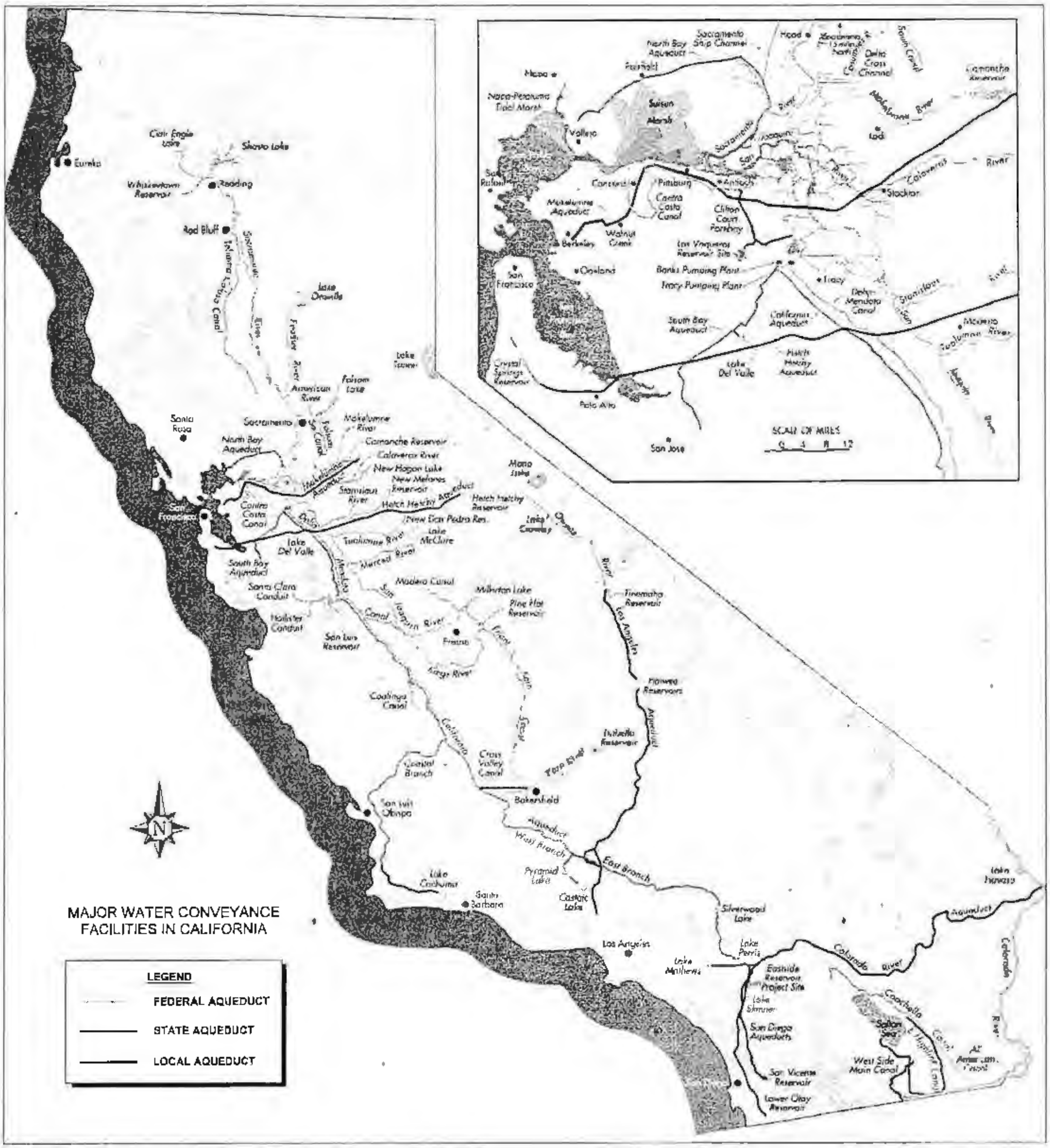
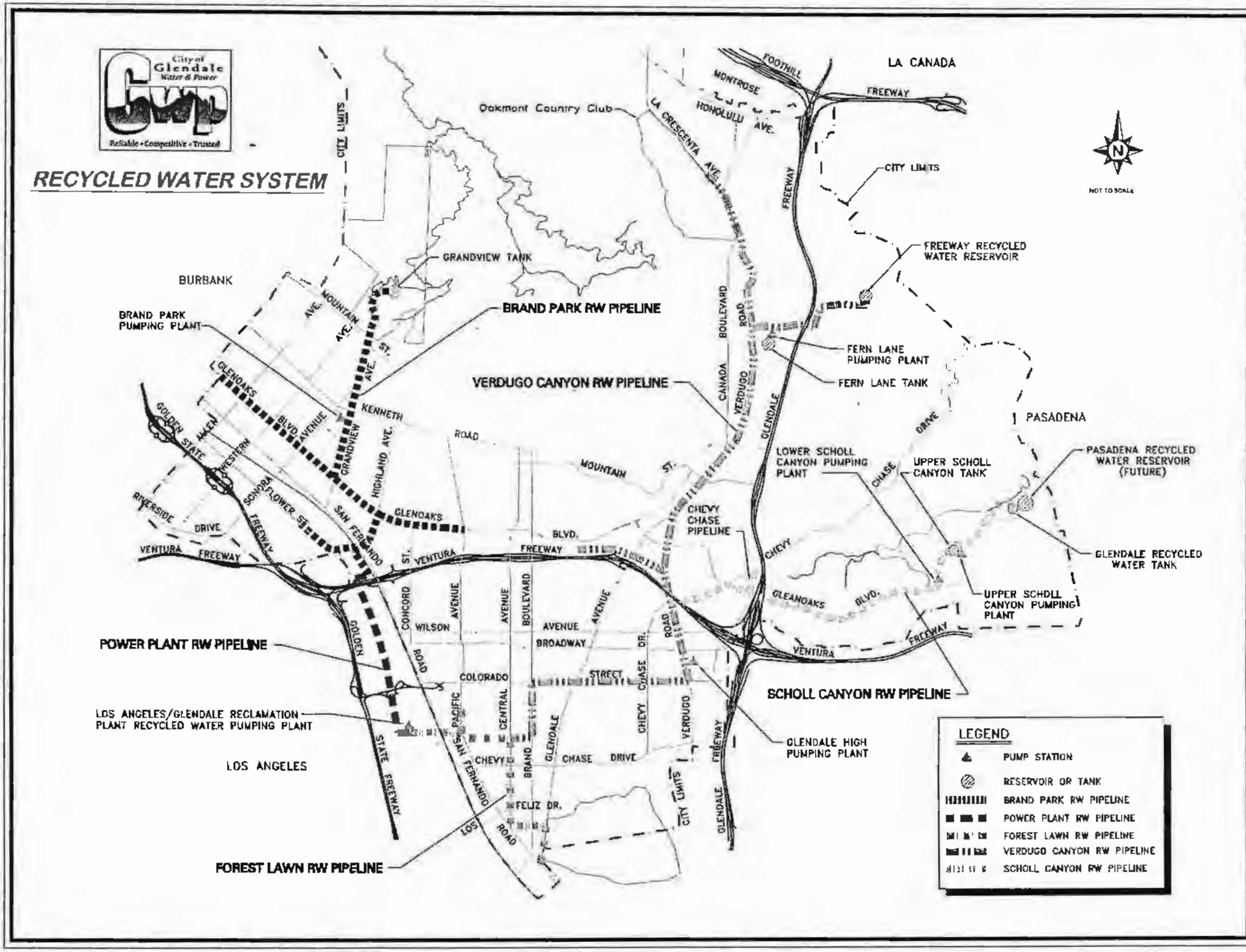


FIGURE 9


MAJOR WATER CONVEYANCE FACILITIES IN CALIFORNIA
LEGEND
FEDERAL AQUEDUCT
STATE AQUEDUCT
LOCAL AQUEDUCT
Eureka
Shasta Lake
Reading
Red Bluff
Lake Oroville
Sacramento
Santa Rosa
North Bay Aqueduct
Camanche Reservoir
Calaveras River
New Hogan Lake
New Melones Reservoir
Stanislaus River
Hetch Hetchy Aqueduct
Hetch Hetchy Reservoir
San Francisco
Contra Costa Canal
Lake Del Valle
South Bay Aqueduct
Santa Clara Conduit
Hollister Conduit
San Luis Reservoir
Tuolumne River
Merced River
Madera Canal
Millerton Lake
Pine Flat Reservoir
Fresno
San Joaquin River
Coalinga Canal
Coastal Branch
Cross Valley Canal
Bakersfield
San Luis Obispo
Lake Cachuma
Santa Barbara
Pyramid Lake
Castaic Lake
East Branch
Silverwood Lake
Los Angeles
Lake Mathews
Lake Perris
Eastside Reservoir Project Site
San Diego Aqueducts
San Vicente Reservoir
Lower Otay Reservoir
West Side Main Canal
Colorado River
Lake Havasu
Mono Lake
Haiwee Reservoirs
Isabella Reservoir
Tinemaha Reservoir
Lake Tahoe
Folsom Lake
American River
Napa
Vallejo
Suisun Marsh
Pittsburg
Antioch
Stockton
Concord
Berkeley
Oakland
Walnut Creek
Clifton Court Forebay
Banks Pumping Plant
Tracy Pumping Plant
Tracy
Delta Mendota Canal
California Aqueduct
Palo Alto
San Jose
Crystal Springs Reservoir
Lodi
Hood
Delta Cross Channel
Mokelumne Aqueduct
SCALE OF MILES


City of Glendale Water & Power
GWP
Reliable • Competitive • Trusted
RECYCLED WATER SYSTEM
LA CANADA
BURBANK
PASADENA
LOS ANGELES
NOT TO SCALE
Oakmont Country Club
GRANDVIEW TANK
BRAND PARK RW PIPELINE
BRAND PARK PUMPING PLANT
VERDUGO CANYON RW PIPELINE
FREEWAY RECYCLED WATER RESERVOIR
FERN LANE PUMPING PLANT
FERN LANE TANK
CITY LIMITS
LOWER SCHOLL CANYON PUMPING PLANT
UPPER SCHOLL CANYON TANK
PASADENA RECYCLED WATER RESERVOIR (FUTURE)
CHEVY CHASE PIPELINE
GLENDALE RECYCLED WATER TANK
UPPER SCHOLL CANYON PUMPING PLANT
POWER PLANT RW PIPELINE
SCHOLL CANYON RW PIPELINE
LOS ANGELES/GLENDALE RECLAMATION PLANT RECYCLED WATER PUMPING PLANT
GLENDALE HIGH PUMPING PLANT
FOREST LAWN RW PIPELINE
LEGEND
PUMP STATION
RESERVOIR OR TANK
BRAND PARK RW PIPELINE
POWER PLANT RW PIPELINE
FOREST LAWN RW PIPELINE
VERDUGO CANYON RW PIPELINE
SCHOLL CANYON RW PIPELINE

CITY OF GLENDALE

CURRENT RECYCLED WATER USERS

As of April 2009

NO.	PROJECT NAME	ADDRESS	METER COUNT	DELIVERY DATE	TYPE OF USE
		FOREST LAWN PROJECT (A - 1)			
1	1600 S Brand Boulevard	1600 S Brand Boulevard	1	1995	Irrigation
2	Forest Lawn Memorial Park	1712 S Glendale Avenue	1	1992	Irrigation
2	Forest Lawn Memorial Park	3690 San Fernando Road	1	1992	Irrigation
3	Silver Crest Homes (323 W. Garfield Avenue)	316 W Windsor Road	1	2000	Irrigation
4	Cerritos Elementary School	120 E Cerritos Avenue	1	6&11-2006	Irrigation
4	Cerritos Elementary School	1715 S Glendale Avenue	1	6&11-2006	Irrigation
5	Cerritos School Park	3690 San Fernando Road	1	2007	Irrigation
6	Edison Elementary & Pacific Park	501 Riverdale Drive	1	Mar-07	Irrigation
		POWER PLANT PROJECT (A - 2)			
7	CalTrans - 943 W. Doran Street	943 W Doran Street	1	1978	Irrigation
8	Grayson Power Plant	800 Air Way	1	1978	Cooling Towers
9	Public Works	non metered	0		Irrigation
		BRAND PARK PROJECT (A - 3)			
10	Glenoaks Median (9 meters)	2008 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	1830 W Glenoaks Boulevard (at Irving)	1	1996	Irrigation
10	Glenoaks Median (9 meters)	1108 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	978 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	720 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	618 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	532 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	1628 W Glenoaks Boulevard	1	1996	Irrigation
10	Glenoaks Median (9 meters)	1400 W Glenoaks Boulevard	1	1996	Irrigation
11	Brand Park	1700 W Mountain Street	1	1997	Irrigation
12	Pelanconi Park	905 Cleveland Road	2	1996	Irrigation
13	Grandview Memorial Park	1341 Glenwood Road	2	2001	Irrigation
14	Disney Complex (Dual Plumbed-Future)	1101 Flower Street	1	2007	Irrigation
14	Disney Complex (Dual Plumbed-Future)	1201 Flower Street	1	2007	Irrigation
15	San Fernando Landscape Project	5775 San Fernando Road	1	Jan-09	Irrigation
		VERDUGO SCHOLL PROJECT (B)			
16	Colorado Blvd - Parkway Irrigation	1401 E Colorado Street	1	1997	Irrigation
16	Colorado Blvd - Parkway Irrigation	1311 E Colorado Street	1	1997	Irrigation
16	Colorado Blvd - Parkway Irrigation	815 E Colorado Street	1	1997	Irrigation
17	CalTrans	1970 E Glenoaks Blvd (E/S,W/S I2)	2	1995	Irrigation
17	Caltrans	406 N Verdugo Rd (at Chevy Chase Dr)	1	1995	Irrigation
17	Caltrans	709 Howard Street (at Monterey Road)	1	1995	Irrigation
17	Caltrans	2000 E Chevy Chase Drive (at Harvey)	1	1995	Irrigation
18	741 S. Brand Median	741 S Brand Boulevard (Median)	1	1995	Irrigation
19	Montecito Park	2978 N Verdugo Road (at Sparr)	1	1995	Irrigation
20	N. Verdugo Rd Median/La Cresenta Ave	3220 N Verdugo Road/Median/ La Crescenta Avenue *OPP	1	1996	Irrigation
21	Verdugo Rd/Canada (North Median)	3021 N Verdugo/Canada Median	1	1996	Irrigation
22	Verdugo Rd/Canada South Overpass	Verdugo/Canada (South) Overpass	1	1995	Irrigation
23	Parque Vaquero	1285 N Verdugo Road	1	1998	Irrigation
24	701 N. Glendale Ave - Median @ Monterey Rd	701 N Glendale Avenue (Median)	1	1995	Irrigation
25	Civic Auditorium	1401 N Verdugo Road	1	1996	Irrigation
26	Sports Complex	2200 Fern Lane	1	1998	Irrigation
27	Adult Recreation Center	201 E Colorado Street	1	1995	Irrigation

CITY OF GLENDALE

CURRENT RECYCLED WATER USERS

As of April 2009

NO.	PROJECT NAME	ADDRESS	METER COUNT	DELIVERY DATE	TYPE OF USE
28	Glenoaks Park	2531 E Glenoaks Boulevard	1	1995	Irrigation
29	Scholl Canyon Park	2849 E Glenoaks Boulevard	1	1996	Irrigation
30	Scholl Canyon Ballfield	3200 E Glenoaks Boulevard	1	1997	Irrigation
31	Glendale High School	1440 E Broadway	1	1995	Irrigation
32	Wilson Junior High School	1220 Monterey Road	1	1995	Irrigation
33	Glendale Adventist Hospital	1520 E Chevy Chase Drive	1	1997	Irrigation / Cooling Towers
34	Glenoaks Elementary School	2015 E Glenoaks Boulevard	1	1998	Irrigation
35	Glendale Community College	1500 N Verdugo Road	2	1996 & 2004	Irrigation / Toilet Flushing
35	Glendale Community College	1500 N Verdugo Road	1	1996 & 2004	Irrigation / Toilet Flushing
36	Oakmont Country Club	3100 Country Club Drive	1	1996	Irrigation
37	Central Library	222 E Harvard Street	2	1995	Irrigation
38	Armory	220 E Colorado Street	1	1996	Irrigation
39	Scholl Canyon Golf Course	3800 E Glenoaks Boulevard	1	1998	Irrigation
40	Scholl Canyon Landfill (PW)	3798 E Glenoaks Boulevard	2	1996	Irrigation/ Soil Compaction/ Dust Control
41	Scholl Canyon Landfill (LACSD)	2847 E Glenoaks Boulevard	1	1997	Irrigation/ Soil Compaction/ Dust Control
42	Public Works (Scholl Canyon)	3798 E Glenoaks Boulevard	1	1996	Irrigation
42	Public Works (Scholl Canyon)	3798 E Glenoaks Boulevard	1	1996	Irrigation
43	Americana	233 S Brand Boulevard	1	Apr-09	Irrigation
44	Fern Lane (Freeway Tank + Median)	1926 Fern Lane	1	1997	Irrigation
45	Glendale Retirement Home	1551 E Chevy Chase Drive	1	Jul-09	Irrigation

CITY OF GLENDALE

FUTURE RECYCLED WATER USERS

As of April 2009

LOC. NO.	FUTURE RECYCLED WATER USERS PROJECT		Anticipated Delivery Date	User	Quantity A.F./year	Type of Use
	FOREST LAWN PROJECT					
	LOS ANGELES			NO		
61	Building - 1255 S. Central Ave (Verdugo Job Center)*		Completed	NO	5	*Irrigation*
	*Dual Plumbing:**					
56		Glendale Plaza - 655 N Central Avenue	Completed	NO	6	*Flushing Toilets*
		Building - 610 N. Central	Completed	NO	6	*Flushing Toilets*
	Glendale Memorial Hospital (1420 S. Central Ave.)		Design	NO	50	*Irrigation & Cooling Towers*
	328 Mira Loma Ave (44 residential units)		Construction	NO	20	*Irrigation*
	POWER PLANT PROJECT					
	VERDUGO SCHOLL PROJECT					
	PASADENA			NO		
64	John Marshall School*		Completed	NO	15	*Irrigation*
	Fremont Elementary School*		Planning Stage	NO	10	*Irrigation*
77	Polygon Homes Housing Tracks (Camino San Rafael)*		Planning Stage	NO	80	*Irrigation*
	Chevy Oaks Homes*		Planning Stage	NO	25	*Irrigation*
	Chevy Chase Country Club*		Planning Stage	NO	200	*Irrigation*
	Building - 111 N. Brand*		Planning Stage	NO	5	*Irrigation*
	Building - 295 E. Garfield*		Planning Stage	NO	5	*Irrigation*
	Building - 1551 E. Chevy Chase Drive (Glendale Retirement Home)		Completed	YES	5	*Irrigation*
	Caltrans Fwy134 & I-5*		Planning Stage	NO	25	*Irrigation*
	Residential Building -720 S. Maryland		Design Stage	NO	5	*Irrigation*
	3-Story Multi Use - 415 E. Broadway		Construction	NO	5	*Irrigation*
	Doran Garden (Mixed Use) 331 W. Doran		Planning Stage	NO	5	*Irrigation*
	Monterey Gardens (Monterey Rd)		Construction	NO	5	*Irrigation*
	*Dual Plumbing:**					
57		Building - 400 N Brand	Completed	NO	6	*Flushing Toilets*
58		Building - 450 N Brand	Completed	NO	6	*Flushing Toilets*
59		Police Building - Isabel Street	Completed	NO	6	*Flushing Toilets*
60		Building - 611 N Brand	Completed	NO	6	*Flushing Toilets*
		Building - 207 Goode Ave	Construction (06/09)	NO	6	*Flushing Toilets*
65	Fire Station No. 21*		Completed	NO	10	*Irrigation*
66		Mayor's Park (Proposed)	Unknown	NO	6	*Irrigation*
67		Park Site C (Proposed)	Unknown	NO	54	*Irrigation*
68		Park Site A (Proposed)	Unknown	NO	69	*Irrigation*
29		Carr Park	Planning Stage	NO	5	*Irrigation*
39		Glorietta Pump Station	2002	NO	5	*Irrigation*
41		Monterey Road Median - WJH	2002	NO	1	*Irrigation*
	PARKS and RECREATION - City of Glendale					
74		Deukmejian Wilderness Park	*Completed*	NO	5	*Irrigation*
	BRAND PARK PROJECT					
69	Homestead Studio Suites (1377 W. Glenoaks Blvd)		Completed	NO	15	*Irrigation*
70	Toll Jr High*		Design (05/09)	NO	10	*Irrigation*
71	Hoover High School*		Design (05/09)	NO	20	*Irrigation*
72	Keppel High School*		Design (05/09)	NO	10	*Irrigation*
	*Dual Plumbing:**					
	Disney Campus*		Planning Stage	NO	90	*Irrigation / Flushing Toilets*
	Dreamworks (Flower Street)		Construction	NO	20	*Irrigation*
	Disney Child Care Center (1500 Flower Street)		Design Stage	NO	10	*Irrigation*
	Disney Landscape (1401 Flower Street)		Design Stage	NO	10	*Irrigation*
	Grandview Condos		Design Stage	NO	5	*Irrigation*
	Fairmont Freeway Extension		Construction	NO	10	*Irrigation*
	Glendale Narrow Riverwalk Project (Fairmont Project)		Design Stage	NO	10	*Irrigation*
	GWP-UOC - Airway		Design Stage	NO	10	*Irrigation / Flushing Toilets*
	TOTAL				***882***	
	Grand Total			**	***2,557 - 3,208***	
		** RW main service not yet available.*				
		*** Pasadena and Los Angeles Demand not included*				

APPENDIX D

CITY OF SAN FERNANDO

PUMPING AND SPREADING PLAN

2008-2013 Water Years

CITY OF SAN FERNANDO

GROUNDWATER PUMPING AND SPREADING PLAN

OCTOBER 1, 2007 TO SEPTEMBER 30, 2012

2007-2008 Water Year

Prepared by:

Public Works Department

Engineering Division

117 Macneil Street

San Fernando, California 91340

May 2009

TABLE OF CONTENTS

I. INTRODUCTION

The ground water rights of the City of San Fernando were defined by the JUDGMENT in Superior Court Case No. 650079, entitled "The City of Los Angeles, a Municipal Corporation, Plaintiff, vs. City of San Fernando, et. al., Defendants." The Final Judgment was signed on January 26, 1979.

On August 26, 1983, the Watermaster reported to the court pursuant to Section 10.2 of the Judgment that the Sylmar Basin was in condition of overdraft. On October 1, 1984, San Fernando and Los Angeles were assigned equal rights to pump the safe yield of the Basin (6,210 acre-feet) thus, San Fernando and Los Angeles were each allowed to pump approximately 3,105 acre-feet per year. Thereafter, on October 1, 1996, the safe yield of the Basin was determined to be 6,510 acre-feet per year. A stipulation approved by the Court, on December 13, 2006, allows for a temporary increase in the safe yield of the Basin to 6,810 AF/Y beginning October 1, 2006. Therefore, San Fernando and Los Angeles are now allowed to each pump approximately 3,405 acre-feet per year.

In 1993, significant revisions were made to the Upper Los Angeles River Area (ULARA) Policies and Procedures with the addition of Section 2.9, Groundwater Quality Management. This addition has been made by the Watermaster and the Administrative Committee to affirm its commitments to participate in the cleanup and limiting the spread of contamination in the San Fernando Valley. This report is in response to Section 2.9.4, Groundwater Pumping and Spreading Plan.

The Groundwater Pumping and Spreading Plan is based on the water year, October 1 to September 30. The Draft Plan for San Fernando will be submitted in May to the Watermaster for the current water year.

II. WATER DEMAND

The annual total water demand for the last five years and the projected annual water demand for the next five years are shown on Table 2.1.

Water demand during the early 1990's was affected by drought conditions in the Southern California region. However, the City of San Fernando has imposed voluntary conservation since 1977.

Projected water demands for the next five years is expected to slightly increase from the 1992-93 base year since public opinion is that drought conditions no longer exist and conservation habits will undoubtedly regress. The increase is therefore not from residential growth, but from a rebound of drought conditions and a re-establishment of commercial and industrial demand.

The projected water demand may vary significantly due to weather conditions, economic conditions and/or social conditions in the San Fernando area. A variance of $\pm$ 10 percent can be expected.

III. WATER SUPPLY

The water supply for the City of San Fernando is composed of locally produced and treated groundwater. Supplemental water is purchased from the Metropolitan Water District of Southern California (MWD). In case of emergency, there is an existing 6-inch water connection to the City of Los Angeles (DWP) water system at 12900 Dronfield Avenue, in Sylmar.

A. MWD: Treated water is purchased from the MWD to supplement ground water supplies. Historic and projected use of MWD water is shown in Table 2.1.

B. Production Wells: The City of San Fernando owns and operates three (3) wells that are on "active status" with the Department of Health Services as indicated below:

1. ***Well 2A***
   Location: 14060 Sayre Street, Sylmar
   Capacity: 2100 GPM

2. ***Well 3***
   Location: 13003 Borden Avenue, Sylmar
   Capacity: 1100 GPM

3. ***Well 4A***
   Location: 12900 Dronfield Avenue, Sylmar
   Capacity: 400 GPM

A fourth well shown below was placed on "inactive status" with the Department of Health Services and has been physically disconnected from the water system.

4. ***Well 7A***
   Location: 13180 Dronfield Avenue, Sylmar
   Capacity: 800 GPM

C. Quantity (Acre-Feet) of Water Pumped From Each Well (2007-2008)

1.	Well 2A	2,270.80
2.	Well 3	1,081.52
3.	Well 4A	314.81
4.	Well 7A	2.47
	Total	3,669.60

D. Wells Groundwater Level Data

1.	Well 2A	1071.5 Taken 07/08
2.	Well 3	1065.2 Taken 07/08
3.	Well 4A	1032.1 Taken 07/08
4.	Well 7A	1066.3 Taken 07/08

E. <u>Well Locations</u>

Well 2A - 14060 Sayre Street, Sylmar

Well 3 - 13303 Borden Street, Sylmar

Well 4A - 12900 Dronfield Avenue, Sylmar

Well 7A 13180 Dronfield Avenue, Sylmar

IV JUDGMENT CONSIDERATIONS

A. Native and Imported Return Water

The safe yield of the Sylmar Basin was 6,510 acre-feet and the cities of San Fernando and Los Angeles have equal rights to pump from this basin. After subtracting the overlaying pumping rights of two private parties, San Fernando and Los Angeles were each allowed to pump approximately 3,255 acre-feet per year.

A stipulation approved by the Court December 13, 2006 allows for a temporary increase in the safe yield of the Basin to 6,810 AF/Y beginning October 1, 2006. Therefore, San Fernando and Los Angeles are now allowed to each pump approximately 3,405 acre-feet per year.

B. Stored Water Credit

San Fernando and Los Angeles each have the right to store water in the Sylmar Basin and the right to extract equivalent amounts.

As of September 30, 2008 the City of San Fernando has a stored water credit of 983.30 acre-feet accumulated during previous years through the 07-08 water year.

TABLE 2.1
FIVE-YEAR HISTORIC AND PROJECTED WATER DEMAND
PUMPED AND IMPORTED WATER
CITY OF SAN FERNANDO

(Acre – Feet)

FY	2002-03	2003-04	2004-05	2005-06	2006-07	2007-008	2008-09	2009-10	2010-11	2011-12	2012-13
DEMAND											
WELLS	3,357.50	3,454	3,143.04	2,856.96	2,894.09	3,669.61	3,405	3,405	3,405	3,405	3,405
MWD	382	508	499.9	733.69	901	0	600	600	600	600	600
TOTAL	3739.50	3,954	3,642.94	3,590.65	3,795.40	3,669.61	4,005	4,005	4,005	4,005	4,005
ACTUAL							PROJECTED				

APPENDIX A

WATER QUALITY DATA

SEE ATTACHED WATER QUALITY REPORT, 2008

CITY OF SAN FERNANDO

- WELL NO. 3
- WELL NO. 4A
- WELL NO. 2A
- WELL NO. 7A

APPENDIX B

POLICIES AND PROCEDURES

(By ULARA)

WATERMASTER SERVICE

UPPER LOS ANGELES RIVER AREA

POLICIES AND PROCEDURES

February 1998

APPENDIX E

CRESCENTA VALLEY WATER DISTRICT

PUMPING AND SPREADING PLAN

2008-2013 Water Years

CRESCENTA VALLEY WATER DISTRICT

GROUNDWATER PUMPING & SPREADING PLAN

FOR

WATER YEARS

OCTOBER 1, 2008 TO SEPTEMBER 30, 2013

Prepared by:
David S. Gould, P.E.
District Engineer

Prepared for:
ULARA Watermaster's Office

May 2009

I. INTRODUCTION

The ground water rights of the Crescenta Valley Water District (CVWD) were defined by the JUDGEMENT in Superior Court Case No. 650079, entitled "The City of Los Angeles, a Municipal Corporation, Plaintiff, vs. City of San Fernando, et. al., Defendants". The Final Judgment was signed on January 26, 1979.

In 1993 and in February 1998, significant revisions were made to the Upper Los Angeles River Area (ULARA) Policies and Procedures with the addition of Sections for Groundwater Quality Management and various new reports and appendices. This addition has been made by the Watermaster and the Administrative Committee to affirm its commitment to participate in the cleanup and limiting the spread of contamination in the San Fernando Valley.

This report as prepared by CVWD is in response to Section 5.4, Groundwater Pumping and Spreading Plan. Since no groundwater spreading was performed by CVWD, only plans/projections for groundwater pumping and treatment are discussed in this report. Note that CVWD's 2005 Verdugo Basin Groundwater Recharge, Storage and Conjunctive Use Feasibility Study had recommended methods of stormwater recharge and storage within the basin and this issue will be investigated more in the next two years by CVWD.

The Groundwater Pumping Plan is based on the water year, October 1, 2008 to September 30, 2013.

II. WATER DEMAND

A. OVERALL WATER DEMAND

The annual total water demand for the last five years and the projected annual water demand for the next five years are shown in Table 2.1.

Water demand during the last five (5) year period (2003/04 – 2007/08) were affected by the amount of annual rainfall within the Crescenta Valley. CVWD has observed major swings in the amount of rainfall in the Verdugo Basin in the past five (5) years. In 2004/05, CVWD saw a near record amount of rainfall and just two years later in 2006/07 it showed a recorded dry year of less than 8 inches of rainfall. In 2007/08 the rainfall amount was 20.6 inches which was 13% below the annual average of 23.7 inches.

Water demand in the CVWD service area seems to vary significantly due to weather conditions, which can be attributed to the residential character of the District and the large percentage of water consumption for outdoor landscaping. However, with the State declaring a drought and Metropolitan Water District imposing penalty charges for over usage, CVWD anticipates an overall annual decrease in water demand of approximately 3% to 5% per year over the next five (5) years.

In 2007/08, CVWD's Board of Directors opted to continue with a voluntary water conservation program utilizing a water conservation alert system. CVWD saw a marginal decrease in overall water production of 4.5% for year 2007/08, which could be attributed to public awareness on water conservation and a mild summer.

Water conservation incentives were offered to CVWD's customers in 2007/08 in the form of rebates for turf replacement, ultra-low flush toilets, and high efficiency clothes washers; along with continuous water conservation information that is posted on CVWD's website. In addition, CVWD was working with MWD on an ET irrigation controller exchange program.

B. GROUNDWATER PRODUCTION

In 2007/08, CVWD observed a decrease in groundwater production as compared to 2006/07. CVWD's wells produced 3,279 ac-ft, which was 15 ac-ft under the adjudicated rights of 3,294 AFY. This was primarily due to Well 5 being taken out of service due to high levels of MTBE.

III. WATER SUPPLY

The water supply for CVWD is composed of locally produced and treated groundwater, water from Metropolitan Water District of Southern California (MWD) which is purchased on a wholesale basis from FMWD.

The localized drought from 1998 – 2004 had serious implications for the Verdugo Basin groundwater supply and CVWD has been looking at additional ways to augment its water supply. The District increased its ability to obtain more imported water from Foothill Municipal Water District (FMWD) and the City of Glendale in 2004. CVWD also finalized a new emergency water supply interconnection with the City of Los Angeles Department of Water and Power (LADWP) as part of a grant funded under Proposition 50, Chapter 3 for construction of new facilities such as pipeline, meters, flow control valves and chlorination stations.

A. PRODUCTION WELLS

CVWD has twelve (12) active wells currently in operation. Historic and projected production from these wells is shown in Table 3.1.

In 2007/08, CVWD observed the water levels and water production in its groundwater wells start to decrease, which is due to the low rainfall amount received in the Crescenta Valley and a decrease in the maximum capacity of the wells from 4.20 MGD in 2006/07 to 3.80 MGD in 2007/08 or 9.5% overall decrease in capacity.

A.1 Nitrates in Wells

CVWD wells produce water which typically contains nitrate concentrations above the 45 mg/L maximum contaminant level (MCL) set by the USEPA and CDPH. The Glenwood Nitrate Removal Plant ion-exchange process is used to treat a portion of the produced water. Untreated water and water treated at the Glenwood Plant are blended to produce water with less than the nitrate MCL. In 2007/08, the ion-exchange plant was in operation for the majority of the year to maximize the use of local groundwater.

Water production at the Mills Plant is blended with MWD water to decrease the nitrate levels below the MCL.

A.2 Methyl tertiary-butyl ether (MTBE) in Wells

In September 2006, Well #7 was taken out of service because of the discovery of methyl tertiary-butyl ether (MTBE) above the 13 ug/L MCL. Prior to September 2006, CVWD had detected low levels of MTBE in Well 5 and had been sampling since 2004.

A.2.1 MTBE Levels

The MTBE levels in Well #7 started at 29 ug/L; went as high as 50 ug/L in October 2006 and dropped down to 0.50 ug/L in 2008.

In March 2007, a pump test was performed to determine if the decreased MTBE levels in Well 7 were due to a lack of pumping activity or if the MTBE plume had decreased.

The results of the pump tested showed that the MTBE levels in Well 7 remained constant at 2.0 ug/L and that plume could have moved away from Well 7, but MTBE levels in other nearby wells had not increased.

In April 2008, CVWD requested from CPDH to put Well 7 back into service since the MTBE levels had declined to less than 0.50 ug/L and groundwater was needed to replace Well 9, which was taken out of service for pump repairs. CVWD also continued monitoring MTBE levels at Well 7 and the Mills Forebay to ensure that if levels began to rise, Well 7 could be shut down.

In July 2008, CVWD observed that the MTBE level in Well 5 was beginning to rise and in early September 2008, Well 5 was taken out of service when the MTBE level reached 14 ppb, which is above the MCL of 13 ppb.

A.2.2 Verdugo Basin MTBE Task Force

In October 2006, CVWD requested that the Watermaster's office create the Verdugo Basin MTBE Task Force that would include RWQCB, CDPH, stakeholders, and RP's on remediation and clean-up of the MTBE in the Verdugo Basin.

In 2007/08, the Task Force met six (6) times throughout the year and progress was made on clean-up of three (3) of the eleven (11) sites that required remediation. Five (5) of the sites are in various stages of clean-up, but funding from the State's Underground Storage Tank fund was delayed and remediation was stopped. The remaining three (3) sites have had no work done towards clean-up and still need to be investigated further.

A.2.3 GAC Treatment System

In April 2007, CVWD completed a preliminary design of a new granulated activated carbon (GAC) water treatment system for removal of MTBE at the Mills Plant. The District applied for construction funding under CDPH's Drinking Water Treatment and Research Fund, however, since the MTBE levels in CVWD wells have dropped below the DLR of 3.0 ug/L, funding was put on hold until the levels rise above the secondary standard of 5.0 ug/L.

B. WELL REPLACEMENT PROGRAM

The District's active wells range in age from 8 to 78 years and are in general beyond their useful life. The District started in 2000 with a well replacement program with the goal of replacing existing groundwater production capacity with new, modern wells over the next 10 years.

Well 15 was drilled in 2000 and had a very low well capacity (110 gpm), but was put into production. Well 17 was drilled in 2001 and did not produce enough water (20 gpm) during development of the well to be put into production and it is currently a monitoring well.

CVWD does not have any plans in the next two (2) years to install new water production wells. In the meantime, CVWD will be working with Glendale on their groundwater replacement program by providing comments on site-locating of new wells, technical assistance on construction, and infrastructure details.

C. WELL REHABILITATION PROGRAM

CVWD continued performing well rehabilitation on its existing wells. In 2007/08, CVWD performed well rehabilitation on Wells 9, 12 & 14.

In addition, CVWD was planning in 06/07 to place Well #2 back into service. Well #2 has been out of service since 1976 due to the high nitrate level. The design was nearly complete, however, in 2007/08, the cost of an installation of a small ion-exchange system at Well #2 was cost prohibitive and CVWD decided to put the project on hold until funding is available.

D. AB303 - DWR LOCAL GROUNDWATER ASSISTANCE GRANTS

In 2001, CVWD received an AB303 Local Groundwater Assistance Grant from DWR to perform the "Verdugo Basin Monitoring Well Study" to drill pilot holes to try to find possible locations of new production wells. The study was completed in 2003 and showed that the new monitoring well sites would result in low water capacity groundwater wells.

In 2002, the District then received a second AB303 local groundwater assistance grant to perform the "Verdugo Basin Groundwater Recharge, Storage, and Conjunctive Use Feasibility Study" which includes a groundwater model and the feasibility of recharging the basin. This feasibility study was completed in 2005 and recommendations were that it is possible to store stormwater in the basin to increase groundwater levels and water production.

In 2004, CVWD was awarded a third AB303 local groundwater assistance grant to perform the "Verdugo Basin Geophysical Study" that included a gravity geophysical survey of the Verdugo Basin to continue with CVWD's work in the basin,. This study was completed in June 2006 and the results from the geophysical survey showed a different configuration of the subsurface and the new data will be entered into the model to assist CVWD with management of the basin.

E. GLENWOOD NITRATE REMOVAL PLANT

The Glenwood ion-exchange nitrate removal plant began operation in January 1990. The plant was out of operation for extended periods in 1992–93 and in 1997 when repairs were necessary.

During 2007/08, the plant was in operation during the entire year to maximize groundwater production. This trend will probably continue in 2008/09, even though well levels are decreasing. Historic and projected production from Glenwood Plant is shown in Table 3.2.

F. PICKENS GRAVITY TUNNEL PRODUCTION

A small portion of the total for CVWD demand is supplied by the Pickens Gravity Tunnel. Historic and projected production from Pickens Tunnel is shown in Table 3.3.

G. FMWD/MWD – IMPORTED WATER

In 2007/08, the amount of treated imported water purchased from MWD via FMWD was less than the previous year due to a decrease in the overall water demands.

For 2008/09, CVWD is anticipating further decreases in the amount of imported water it receives from FMWD to meet MWD's allocation plan for a 10% water shortage. Historic and projected use of FMWD water is shown in Table 3.4.

H. CITY OF GLENDALE INTERCONNECTION

In 2004, CVWD completed the installation of a new water supply interconnection with the City of Glendale. This connection allowed CVWD to increase its water supply capacity by 5.0 cfs or 3.2 mgd. An agreement between City of Glendale, FMWD and CVWD was signed in 2004, where CVWD will pay FMWD for the water and Glendale for the maintenance and operation of bringing the water to CVWD.

CVWD's usages of the Glendale/CVWD interconnect (GCI) was used during periods of outages from FMWD. CVWD experienced a planned FMWD outage in March 2008 and is anticipating another major outage in 2010 when MWD does major upgrades to its Weymouth plant in La Verne.

I. CITY OF LOS ANGELES INTERCONNECTION

In 2005, CVWD received a Proposition 50, Ch 3 Water Security Grant from CDPH to install an emergency water supply connection with the City of Los Angeles. The new connection will provide 2.2 cfs or 1.44 mgd. In addition, the new interconnection and associated facilities will allow CVWD to provide water in low demands to FMWD and its sub-agencies in case of a local disaster. In addition, the interconnection will provide water when MWD's Weymouth plant is out of service. The project is under design and should be completed by the spring of 2010.

IV. JUDGEMENT CONSIDERATIONS

The allowable adjudicated rights of CVWD from the Verdugo Basin are 3,294 acre-feet per year.

From 1978–79 to 91-92, CVWD pumped 1,700 to 2,900 ac-ft/yr from the Verdugo Basin, which was below the adjudication. From 93-94 to 00-01, CVWD pumped over its adjudicated right up to 500 ac-ft/yr, which was allowed by the Watermaster's office. From 01-02 to 03/04, CVWD pumped below its adjudication since basin production was declining.

In 2004/05, CVWD experienced an increase in water production due to higher than normal rainfall and was able to pump over the adjudication by 16 ac-ft. In 2005/06, CVWD pumped over the adjudication by 59 ac-ft.

During 2005/06 CVWD and Glendale came to a mutual agreement on compensation for the amount of water pumped over the adjudication for 2004/05 & 2005/06.

In 2006/07, CVWD planned to maintain well production within the adjudication, however due to operator error, CVWD pumped over the adjudication by 11 ac-ft. CVWD and Glendale are finalizing this issue based on the 05/06 mutual agreement on compensation.

In 2007/08, CVWD adjusted its pumping schedule to maintain well production within the adjudication; however was 15 ac-ft below which was due to Well 5 being out of service for high MTBE levels.

TABLE 2.1
HISTORIC AND PROJECTED WATER DEMAND
(Acre-Feet)

2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
5,874	5,220	5,432	5,599	5,343	5,110	4,970	5,160	5,190	5,250
ACTUAL					PROJECTED				

TABLE 3.1
HISTORIC AND PROJECTED COMBINED WELL AND TUNNEL GROUNDWATER PRODUCTION
(Acre-Feet)

2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
2,575	3,310	3,353	3,305	3,279	3,050	3,075	3,270	3,294	3,294
ACTUAL					PROJECTED				

TABLE 3.2
HISTORIC AND PROJECTED GLENWOOD NITRATE REMOVAL PLANT PRODUCTION BEFORE BLENDING
(Acre-Feet)

2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
164	782	997	644	660	700	700	700	700	700
ACTUAL					PROJECTED				

NOTES:
(1) The Glenwood Treatment Plant has a capacity of 2.7 MGD of blended water.
(2) The Glenwood Treatment Plant began operation January 1990.

TABLE 3.3
HISTORIC AND PROJECTED PICKENS TUNNEL WATER PRODUCTION
(Acre-Feet)

2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
47	64	70	69	64	65	65	65	65	65
ACTUAL					PROJECTED				

TABLE 3.4
HISTORIC AND PROJECTED USE OF MWD TREATED WATER
(Acre-Feet)

2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
3,299	1,909	2,080	2,294	2,064	2,060	1,895	1,895	1,895	1,950
ACTUAL					PROJECTED				

NOTES:
(1) All values shown above are for treated water.

APPENDIX F

ANNUAL MUNICIPAL EXTRACTIONS IN ULARA

1979-2008

ANNUAL MUNICIPAL EXTRACTIONS IN ULARA
1979-80 through 2007-08
(acre-feet)

Water Year	San Fernando Basin*				Sylmar Basin			Verdugo Basin			ULARA
	Burbank	Glendale	Los Angeles	TOTAL	Los Angeles	San Fernando	TOTAL	CVWD	Glendale	TOTAL	TOTAL
2007-08	6,817	7,411	50,009	64,237	2,997	3,670	6,667	3,270	2,687	5,957	76,861
2006-07	9,780	7,622	76,251	93,653	3,919	2,894	6,813	3,294	2,568	5,862	106,328
2005-06	10,108	7,374	38,042	55,523	2,175	2,857	5,032	3,354	2,390	5,744	66,299
2004-05	6,399	7,792	49,085	63,276	1,110	3,143	4,253	3,310	2,358	5,668	73,197
2003-04	9,660	7,282	68,626	85,568	3,033	3,454	6,487	2,568	2,117	4,685	96,740
2002-03	9,170	8,507	73,676	91,353	3,549	3,357	6,906	2,836	1,613	4,449	102,708
2001-02	10,540	6,838	66,823	84,201	1,240	3,766	5,005	3,266	2,129	5,396	94,602
2000-01	12,547	6,886	65,409	84,843	2,606	3,696	6,301	3,422	2,227	5,649	96,793
1999-00	12,547	1,023	98,016	111,586	2,634	3,807	6,441	3,699	2,727	6,426	124,453
1998-99	10,729	31	123,207	133,966	4,536	3,528	8,064	3,797	2,627	6,424	148,455
1997-98	3,964	28	85,292	89,284	3,642	3,308	6,950	3,747	2,820	6,567	102,802
1996-97	11,171	20	89,935	101,126	2,482	3,259	5,741	3,672	2,674	6,346	113,213
1995-96	8,067	26	72,286	80,379	2,766	2,985	5,752	3,705	2,133	5,838	91,969
1994-95	3,052	53	55,478	58,583	2,311	3,421	5,732	3,708	1,633	5,341	69,656
1993-94	2,773	115	60,480	63,368	2,052	3,398	5,451	3,634	1,402	5,037	73,855
1992-93	1,354	91	34,973	36,419	1,369	2,145	3,514	2,557	990	3,547	43,480
1991-92	39	489	75,684	76,213	3,292	2,826	6,118	2,631	633	3,264	85,596
1990-91	1,278	2,755	67,032	71,065	3,281	2,266	5,546	2,615	1,230	3,845	80,456
1989-90	16	1,500	79,949	81,465	2,626	2,763	5,389	2,903	1,329	4,232	91,086
1988-89	29	1,315	126,630	127,974	3,259	2,199	5,459	2,285	2,064	4,349	137,781
1987-88	30	1,020	104,419	105,470	3,133	777	3,911	2,268	2,096	4,364	113,745
1986-87	29	5,758	85,845	91,632	3,113	3,026	6,139	2,255	2,619	4,874	102,645
1985-86	123	5,819	80,963	86,904	3,075	3,166	6,241	2,075	3,418	5,493	98,639
1984-85	2,863	3,086	95,641	101,591	3,130	3,102	6,232	1,997	3,837	5,834	113,657
1983-84	1,063	1,708	112,840	115,611	3,106	3,907	7,013	2,009	3,551	5,560	128,184
1982-83	2,187	1,028	65,178	68,394	3,048	3,133	6,181	1,759	3,427	5,187	79,761
1981-82	523	952	83,207	84,682	3,486	3,290	6,775	1,876	3,732	5,607	97,065
1980-81	595	1,129	91,067	92,791	4,117	3,380	7,497	2,140	2,122	4,262	104,550
1979-80	677	934	57,304	58,915	3,111	2,991	6,102	1,873	1,434	3,307	68,325
Average	4,763	3,055	77,012	84,830	2,903	3,087	5,966	2,846	2,296	5,113	96,644

*Includes municipal pumping only. Does not include any physical solution pumping in the cities of Burbank, Glendale, or Los Angeles.

PG 6/15/2009