

Los Angeles  Department of Water & Power

ERIC GARCETTI
Mayor

Commission
MEL LEVINE, *President*
WILLIAM W. FUNDERBURK JR., *Vice President*
JILL BANKS BARAD
MICHAEL F. FLEMING
CHRISTINA E. NOONAN
BARBARA E. MOSCHOS, *Secretary*

MARCIE L. EDWARDS
General Manager

April 20, 2015

RECEIVED

APR 20 2015

Dr. Robert Harrington, Director
Inyo County Water Department
P.O. Box 337
Independence, CA 93526-0337

Inyo Co. Water Department

Dear Dr. Harrington;

Subject: Transmittal of the Draft First Six Months of 2015 -16 Annual Operations Plan and Annual Owens Valley Report

Enclosed is the Los Angeles Department of Water and Power's (LADWP) draft for the first six months of the 2015-16 Annual Operations Plan and Annual Owens Valley Report. The draft report includes LADWP's Owens Valley Operations Plan for the 2015-16 runoff year; a summary of Owens Valley Conditions; Enhancement/Mitigation project status; and the status of other mitigation measures, studies, projects, and activities.

LADWP will not export any water from the Owens Valley into Los Angeles during the first half of the 2015-16 runoff year, and mostly likely not until November 2015. For the entire runoff year only 42,400 acre-feet (AF) will be exported. However, a net of amount of 32,200 AF from the aqueduct system will be sent to Los Angeles, which includes a reduction of 10,200 AF of aqueduct storage. This will be the lowest amount by far of water delivered to Los Angeles from the Owens Valley.

This extremely low amount of water deliveries is due to the fact that the Eastern Sierra is experiencing the fourth consecutive year of extreme drought. The April 1, 2015, snowpack was measured to be 4% of normal, certainly the lowest by far on record. The resulting estimated runoff forecast for the first six months of this year is 25% of normal. Runoff is estimated to be approximately 36% for the entire runoff year assuming normal precipitation in the summer, fall, and winter months. This will shatter the lowest years on record by far. Contributing to the extremely low runoff this year is that the three previous years had runoffs of 57%, 54%, and 52% of normal, respectively. These were the lowest three consecutive years on record, and now with this year will be the four lowest consecutive years on record. This puts Owens Valley water users and supply for Los Angeles into uncharted territory for water availability.

Los Angeles Aqueduct Centennial Celebrating 100 Years of Water 1913-2013

Bishop, California mailing address: 300 Mandich Street • Bishop, CA 93514-3449 • Telephone: (760) 873-0208 • Fax: (760) 873-0266
111 North Hope Street, Los Angeles, CA 90012-2607 Mailing address: Box 51111, Los Angeles, CA 90051-5700
Telephone: (213) 367-4211 www.LADWP.com



Dr. Robert Harrington
Page 2
April 20, 2015

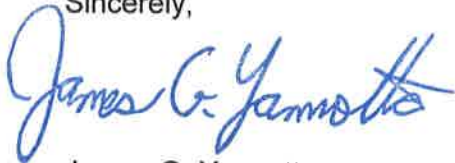
The first six months of the Annual draft Operations Plan has been prepared to provide water to meet obligations for Enhancement/Mitigation, LORP, and other environmental mitigation projects, recreation, dust control at Owens Lake, stockwater, and for Native American Indian land. Unfortunately, though with the extreme lack of water, there is significantly less water available for irrigation. In such a dire situation, LADWP encourages continued efficient use of water for all purposes in the Owens Valley and in Los Angeles. Your input and suggestions on how to use the limited amount of water will be appreciated.

LADWP's groundwater pumping for the first six months of the 2015-16 runoff year is planned to range between 36,250 and 49,020 acre-feet. As in past years, the majority of groundwater pumping is planned for the first six months of the year. For the entire 2015-16 runoff year, LADWP anticipates total pumping to be in the range of approximately 70,000 AF.

Pursuant to Water Agreement Section V.D, LADWP has prepared the first six month Annual Operations Plan for the 2015-16 runoff year and is hereby submitting the enclosed plan to Inyo County's Technical Group representatives for review.

Please review the enclosed Draft first six months of 2015 -16 Annual Operations Plan and Annual Owens Valley Report. We look forward to receiving comments from Inyo County on April 30, 2015.

Sincerely,



James G. Yannotta
Manager of Aqueduct

Enclosure
Hand delivered

2. OWENS VALLEY OPERATIONS PLAN FOR RUNOFF YEAR 2015-16

2. OWENS VALLEY OPERATIONS PLAN FOR RUNOFF YEAR 2015-16

This year's annual operations plan and pumping program is consistent with the management strategy of the Water Agreement between the County of Inyo (County) and the City of Los Angeles (City) dated October 18, 1991. As stated in the Water Agreement:

The overall goal of managing the water resources within Inyo County is to avoid certain described decreases and changes in vegetation and to cause no significant effect on the environment which cannot be acceptably mitigated while providing a reliable supply of water for export to Los Angeles and for use in Inyo County.

The overall goal of the Water Agreement: environmental protections and a reliable water supply are the basis of the Los Angeles Department of Water and Power's (LADWP) operations plans. Groundwater pumping in the Owens Valley is managed in conformance with the provisions of the Water Agreement. The Water Agreement provides:

By April 20th of each year, the Department shall prepare and submit to the Inyo County Technical Group a proposed operations plan and pumping program for the twelve (12) month period beginning on April 1st. (In the event of two consecutive dry years when actual and forecasted Owens Valley runoff for the April to September period is below normal and averages less than 75 percent of normal, the Department shall prepare a proposed plan for the six (6) month period beginning on April 1st and October 1st, and submit such plans by April 20th and October 20th.)

2.1. Eastern Sierra Runoff Forecast

The Eastern Sierra Runoff Forecast for the 2015-16 runoff year (Table 2.1) is based on snow surveys of key Eastern Sierra watersheds in Inyo and Mono counties that contribute the majority of runoff water into the Owens Valley. The Eastern Sierra Runoff Forecast is used for planning aqueduct operations. The April 1 forecast Eastern Sierra runoff for 2015-16 runoff year is 148,600 acre-feet, or about 36% of the 1961-2010 long-term average annual runoff value of 412,284 acre-feet. This will be the driest year for the period of record and together with the low runoff during the last three years, the driest four year runoff period for the period of record in Owens Valley.

For the period of April 1 through September 30, 2014, Eastern Sierra runoff was approximately 143,320 acre-feet, or 47% of long term average value of 303,903 acre-feet. The forecast runoff for the period between April 1 through September 30, 2015, is 76,000 acre-feet for the Owens River Basin or 25% of the long-term average. To emphasize the lack of supply for the 2015 runoff season, only half of the supply will be available this year compared with last year, and last year was tied for the driest year on record.

Figure 2.1 summarizes Owens Valley runoff and groundwater pumping by LADWP since the 1971 runoff year. This figure portrays the extent of the current drought compared to the past runoff in Owens Valley.

Table 2. 1. Owens Valley Runoff Forecast for 2015-16 Runoff Year

**2015 EASTERN SIERRA
RUNOFF FORECAST
April 1, 2015**

APRIL THROUGH SEPTEMBER RUNOFF

	MOST PROBABLE VALUE (Acre-feet)	(% of Avg.)	REASONABLE MAXIMUM (% of Avg.)	REASONABLE MINIMUM (% of Avg.)	LONG-TERM MEAN (1961 - 2010) (Acre-feet)
MONO BASIN:	20,200	20%	32%	7%	103,522
OWENS RIVER BASIN:	76,000	25%	38%	12%	303,903

APRIL THROUGH MARCH RUNOFF

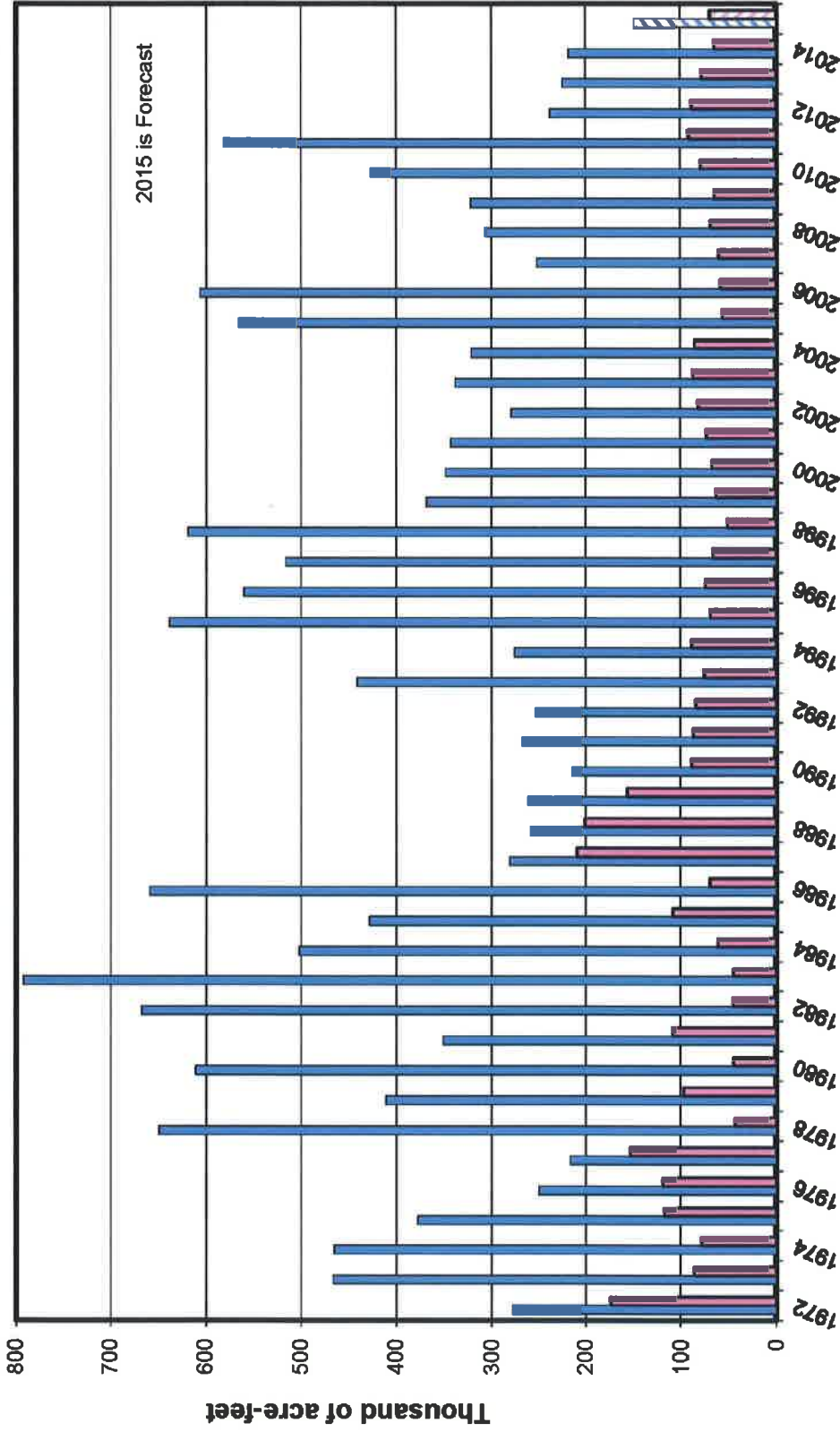
	MOST PROBABLE VALUE (Acre-feet)	(% of Avg.)	REASONABLE MAXIMUM (% of Avg.)	REASONABLE MINIMUM (% of Avg.)	LONG-TERM MEAN (1961 - 2010) (Acre-feet)
MONO BASIN:	30,400	25%	38%	12%	122,333
OWENS RIVER BASIN:	148,600	36%	49%	24%	412,284

NOTE - Owens River Basin includes Long, Round and Owens Valleys (not incl Laws Area)

MOST PROBABLE - That runoff which is expected if median precipitation occurs after the forecast date.

REASONABLE MAXIMUM - That runoff which is expected to occur if precipitation subsequent to the forecast is equal to the amount which is exceeded on the average once in 10 years.

REASONABLE MINIMUM - That runoff which is expected to occur if precipitation subsequent to the forecast is equal to the amount which is exceeded on the average 9 out of 10 years.



Runoff Year



Figure 2. 1. Owens Valley Runoff and Groundwater Pumping

2.2. Owens Valley Groundwater Production

LADWP has prepared its 2015-16 Annual Owens Valley Operations Plan based on the goals and principles of the Water Agreement. The 2015-16 Annual Owens Valley Operations Plan is designed to avoid adverse impacts to the environment while providing a reliable supply of water for in-valley uses and export to Los Angeles for municipal use.

Under the terms of the Water Agreement, the acceptable amount of groundwater pumping from each Owens Valley wellfield is based on the ON/OFF status of monitoring sites located within each wellfield and the capacity of the wells linked to those sites (see Water Agreement Sections V.B and V.C). Table 2.2 lists the ON/OFF status of the monitoring sites within the Owens Valley as of April 2015. The Water Agreement or Technical Group has designated certain town supply wells, irrigation supply wells, fish hatchery supply wells, enhancement/mitigation (E/M) project supply wells, and other wells determined to not significantly impact areas with groundwater dependent vegetation as exempt from the ON/OFF provisions of the Water Agreement. These exempt wells may be pumped for their intended purpose.

Table 2.3 provides a breakdown of available annual pumping capacity and planned groundwater pumping for the first six months of the 2015-16 runoff year by wellfield. Pursuant to Water Agreement Section V.D, LADWP shall submit a plan for the second six months of the runoff year on or about October 20, 2015. Table 2.3 also shows the monitoring sites in ON status as of April 2015, the wells associated with the ON status monitoring sites, and the exempt wells in each wellfield. Approximately 128,300 acre-feet of water are available for groundwater pumping from Owens Valley wellfields under the terms of the Water Agreement during the 2015-16 runoff year. LADWP plans to pump between 36,250 and 49,020 acre-feet during the first six months of the 2015-16 runoff year. Groundwater pumping during the first six months of the 2015-16 runoff year will provide water for Owens Valley uses, while no water is planned to be delivered to Haiwee Reservoir for eventual delivery to the city during this period. For the entire 2015-16 runoff year, LADWP anticipates the total groundwater pumping to be in the range of approximately 70,000 acre-feet.

Working both independently and with the Inyo/Los Angeles Technical Group, LADWP will monitor Owens Valley environmental conditions to assess if further changes to the planned pumping are needed. LADWP's 2015-16 groundwater management approach is substantially more conservative than the environmentally conservative pumping plans advocated by the Standing Committee during the dry years of the early 1990s. While LADWP plans to pump considerably less groundwater than made available under Water Agreement Section V, the Inyo/Los Angeles Standing Committee may agree upon additional reductions in groundwater pumping pursuant to Water Agreement Section IV.A.

Figure 2.2 compares the amount of Owens Valley groundwater pumping provided by the provisions of Water Agreement and the actual groundwater pumping by LADWP for each runoff year since 1992 (available pumping was not calculated prior to 1992). LADWP's anticipated pumping for the 2015-16 runoff year is consistent with its past

conservative pumping plans. LADWP is committed to conducting its operations in a conservative, responsible, and environmentally sustainable manner.

In addition to complying with the ON/OFF provisions and the environmental protection goals of the Water Agreement, LADWP's 2015-16 pumping program considers the groundwater mining provisions of the Green Book. Table 2.4 shows the latest update of the mining calculations based on the procedures described in Section IV.C of the Green Book. As shown in this table, none of the wellfields in the Owens Valley will be in deficit by the end of the first half of the 2015-16 runoff year.

Table 2.5 is a list of Owens Valley wells exempted under the Water Agreement or by approval of the Technical Group from linkage to vegetation monitoring sites and the ON/OFF provisions. The table includes a list of wells by well number, general location of the exempt well, and the reason the well is exempt.

Table 2.6 details planned groundwater pumping for the first six months of the 2015-16 runoff year on a month-to-month basis for each wellfield. Pumping for town water systems, fish hatcheries, and enhancement/mitigation (E/M) projects is included in the pumping distribution. Owens Valley groundwater production for the 2015-16 runoff year is consistent with the provisions of the Water Agreement. No additional testing of wells subject to the Water Agreement is included in this year's planned pumping total and if performed, will be in addition to the planned pumping for 2015-16. Planned pumping may be increased to provide freeze protection for the Los Angeles Aqueduct (LAA).

The following is a discussion of the planned pumping program by wellfield. Figures 2.3, 2.4, and 2.6 through 2.10 locate LADWP's Owens Valley pumping wells by wellfield. These figures show the location of production wells, monitoring wells, and vegetation monitoring sites in each area.

Table 2.2. Soil/Vegetation Water Balance Calculations for April 2015 According to Section III of the Green Book

Site	Oct 2013 soil AWC	40% Annual Precip.	Proj. soil AWC	October 2013 Veg Water Req./ Water Req. for well turn-on	Oct 2013 Status	April 2014 soil AWC	April 2014 Status	Soil AWC req. for well turn-on
	(cm)	(cm)	(cm)	(cm)		(cm)		(cm)
L1	1.4	NA	1.4	2.9/15.6	OFF	3.3	OFF	15.6, OFF
L2	13.6	6.3	19.9	6.1/NA	ON	14.3	ON	NA
L3	7.8	NA	7.8	5.6/25.2	OFF	14.1	OFF	25.2, OFF
BP1	2.7	NA	2.7	4.6/22.9	OFF	3.6	OFF	22.9†, OFF
BP2	1.1	NA	1.1	8.6/28.4	OFF	3.0	OFF	28.4, OFF
BP3	2.9	NA	2.9	7.3/10.6	OFF	5.3	OFF	10.6, OFF
BP4	43.2	6.6	49.8	10.1/NA	ON	45.8	ON	NA
TA3	6.8	NA	6.8	12.9/26.0	OFF	8.5	OFF	26.0, OFF
TA4	14.0	NA	14.0	7.4/23.3	OFF	18.3	OFF	23.3, OFF
TA5	20.8	6.6	27.4	1.9/NA	ON	23.4	ON	NA
TA6	9.7	NA	9.7	7.7/17.6	OFF	11.1	OFF	17.6, OFF
TS1	1.8	NA	1.8	5.3/20.4	OFF	3.1	OFF	20.4†, OFF
TS2	8.0	5.8	13.8	4.9/NA	ON	10.3	ON	NA
TS3	21.7	NA	21.7	16.0/32.9	OFF	28.1	OFF	32.9, OFF
TS4	29.2	NA	29.2	37.0/55.9	OFF	39.8	OFF	55.9, OFF
IO1	21.0	NA	21.0	48.6/42.2	OFF	24.1	OFF	42.2, OFF
IO2	4.6	NA	4.6	4.0/18.9	OFF	4.1	OFF	18.9, OFF
SS1	19.3	5.2	24.5	12.4/NA	ON	18.6	ON	NA
SS2	4.1	NA	4.1	5.4/25.6	OFF	3.7	OFF	25.6, OFF
SS3	20.7	NA	20.7	10.6/33.8	OFF	20.7	OFF	33.8, OFF
SS4	4.2	NA	4.2	4.9/15.9	OFF	6.7	OFF	15.9, OFF
BG	25.3	5.3	30.6	3.7/NA	ON	23.8	ON	NA

†: These values of soil water required for well turn-on were derived using calculations based on %cover that were routinely performed in the past. The values have not been updated to conform to the Green Book equations in Section III.D.2, p. 57-59.

Table 2. 3. Annual Pumping Capacity According to Monitoring Sites with ON Status and Planned Pumping for the First Six Months of Runoff Year 2015-16

Wellfield	Monitoring	Associated Production Wells	Available Capacity (AF/year)	Planned Pumping (AF)
Laws	L2	236, 239, 243, 244	10,426	
	L5*	245, 387, 388	9,122	
	Exempt	236**, 354, 422, 413	3,337	
	Wellfield Pumpage		22,885	5,760-7,200
Bishop	All wells	140, 371, 406, 407, 408, 410, 411, 412	18,000	
	Wellfield Pumpage		18,000	7,200-9,000
Big Pine	BP4	331	7,530	
	Exempt	218, 219, 330, 332, 341, 352, 375, 415	28,750	
	Wellfield Pumpage		36,280	10,200-11,680
Taboose Aberdeen	TA5	349	12,236	
	Exempt	118, 355	2,560	
	Wellfield Pumpage		14,796	1,440-5,480
Thibaut Sawmill	TS2	155	796	
	Exempt	351, 356	8,000	
	Wellfield Pumpage		8,796	4,000-4,300
Indep. - Oak	Exempt	59, 60, 61, 65, 357, 383EM, 384EM, 401	13,973	
	Wellfield Pumpage		13,973	5,280-7,200
Symmes Shepherd	SS1	69, 392, 393	7,385	
	Exempt	402EM	980	
	Wellfield Pumpage		8,365	960-2,660
Bairs Georges	BG2	76, 343, 348, 403	4,770	
	Exempt	343	500	
	Wellfield Pumpage		4,770	660-900
Lone Pine	Exempt	344, 346, 425	900	
	Wellfield Pumpage		900	600
Total Owens Valley			128,765	36,250-49,020

* Monitoring site has yet to be located.

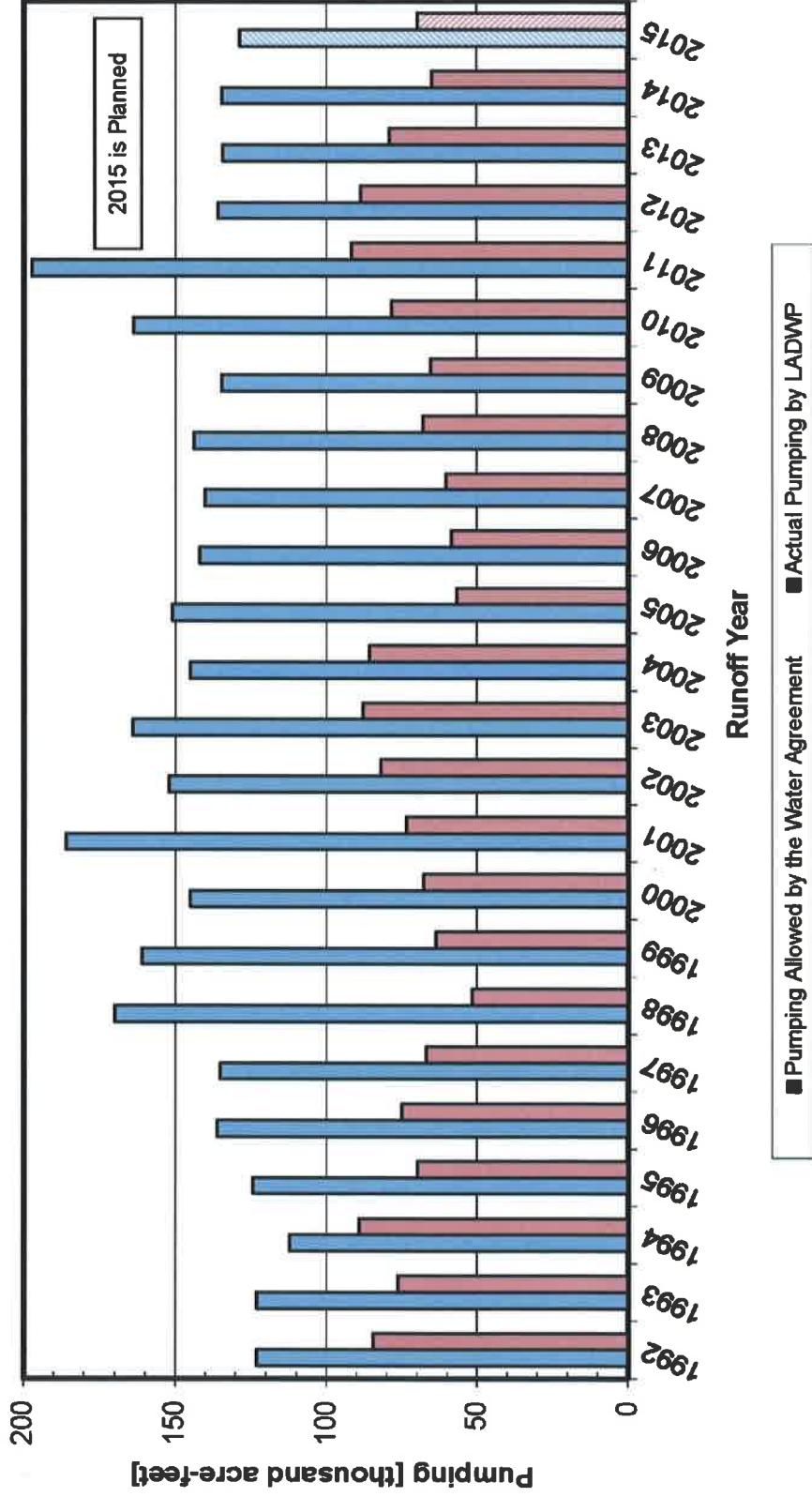


Figure 2. 2. Owens Valley Pumping – Provided by Water Agreement vs Actual

Table 2.4 - Summary of Recharge and Pumping for Water Year 1994 - 2014 and Estimated Pumping Limit for Apr-Sep 2015 in Acre-Feet

Water Year	OWENS VALLEY		LAWS		BISHOP		BIG PINE		TABOOSE-THIBAUT		IND-SYM-BAIRS		LONE PINE		OWENS VALLEY	
	Runoff Percent	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge
1996	123%	12,588	11,535	50,754	9,153	33,228	24,331	42,097	19,906	51,113	12,382	19,757	1,106	209,537	78,413	
1997	125%	15,237	8,349	49,949	9,606	33,474	24,002	42,837	21,774	52,100	9,461	19,962	1,128	213,559	74,320	
1998	139%	28,195	470	55,309	7,159	40,065	23,729	46,845	16,496	55,605	7,946	20,341	1,365	246,361	57,165	
1999	95%	18,546	1,697	42,388	8,672	28,013	21,832	32,426	16,700	41,090	8,424	15,481	2,141	177,944	59,466	
2000	80%	11,102	3,974	39,539	10,804	23,213	20,212	27,567	23,143	37,015	8,497	14,344	1,036	152,780	67,666	
2001	77%	12,259	2,295	38,772	10,176	22,695	26,785	27,960	17,247	33,469	8,685	13,520	1,942	148,674	67,130	
2002	63%	11,184	3,480	35,514	10,839	19,715	26,885	22,495	25,288	28,820	10,599	12,103	1,345	129,831	78,436	
2003	75%	11,454	5,786	38,486	11,407	21,883	25,885	26,166	27,387	32,455	14,294	13,088	1,179	143,532	85,938	
2004	71%	11,138	7,412	37,149	11,777	21,126	26,149	25,044	25,159	29,771	15,750	11,357	1,119	135,586	87,366	
2005	120%	18,389	3,841	47,471	7,093	32,686	19,423	40,500	18,674	46,441	18,585	17,191	1,128	202,678	68,744	
2006	138%	35,336	3,013	54,337	5,667	39,650	20,686	47,757	15,707	53,873	9,944	19,956	1,119	250,911	56,136	
2007	64%	10,947	7,840	34,470	10,516	19,757	20,525	25,855	14,578	27,624	10,674	10,454	1,100	129,108	65,233	
2008	68%	10,855	7,939	35,850	10,228	20,432	20,243	28,619	18,542	27,759	9,219	11,563	858	135,078	67,029	
2009	73%	11,049	6,233	37,416	12,123	21,555	22,891	29,385	14,751	29,359	9,603	12,147	775	140,912	66,376	
2010	93%	11,154	6,333	41,987	10,509	26,566	22,514	35,541	20,239	36,863	13,031	14,252	626	166,362	73,252	
2011	134%	17,375	7,188	52,182	9,889	35,539	27,089	47,562	21,933	50,619	14,527	19,057	998	222,333	81,624	
2012	72%	11,058	9,514	37,315	11,134	21,297	27,220	28,369	26,156	28,905	16,570	11,538	1,048	138,482	91,642	
2013	62%	10,644	6,642	34,811	11,536	19,408	26,115	24,795	25,225	24,749	17,907	10,364	721	124,771	88,146	
2014	50%	10,393	6,301	31,325	10,853	16,871	22,555	21,241	15,766	20,593	11,344	8,960	946	109,382	67,765	
2015 (a)	32%	13,565	213	25,136	1,954	9,672	9,928	12,410	8,216	14,579	3,303	7,012	183	82,374	23,797	
(b) TOTAL		292,469	110,055	820,158	191,095	506,847	458,999	635,472	392,887	722,803	230,745	282,448	21,863	3,260,195	1,405,644	
Estimated Apr-Sep 2015 Pumping Limit			182,414		629,063		47,848		242,585		492,058		260,585		1,854,551	

(a) Estimated Recharge for the 2015 Water Year, Approximate Pumping for First Half of Water year 2015 (Oct-Mar).

(b) Estimated 20 Year Total for Recharge; actual 19.5 Year Total for Pumping.

Table 2. 5 Exempt Wells in Owens Valley

LADWP Groundwater Pumping Wells Exempt from Water Agreement ON/OFF Provisions

Revised June 22, 2010

Well Number	WellField	Duration	Reason
354 p ⁽¹⁾	Laws	Annual	Sole Source-Town Supply
413 b ⁽¹⁾	Laws	Annual	Sole Source-Town Supply and E/M Supply
341 b ⁽¹⁾	Big Pine	Annual	Sole Source-Town Supply
352 b ⁽¹⁾	Big Pine	Annual	Same as above
415 p ^{(1) (6)}	Big Pine	Annual	Same as above
357 p ⁽¹⁾	Independence-Oak	Annual	Same as above
384 b ^{(1) (2)}	Independence-Oak	Annual	Same as above
344 p ⁽¹⁾	Lone Pine	Annual	Same as above
346 b ⁽¹⁾	Lone Pine	Annual	Same as above
330 ⁽³⁾	Big Pine	Annual	Sole Source-Fish Hatcheries
332 ⁽³⁾	Big Pine	Annual	Same as above
409 ⁽³⁾	Big Pine	Annual	Same as above
351	Thibaut-Sawmill	Annual	Same as above
356	Thibaut-Sawmill	Annual	Same as above
375	Big Pine	Annual	Mae-up for Big Pine Re-greening
218	Big Pine	Annual	No impact on areas with groundwater dependent vegetation
219	Big Pine	Annual	Same as above
118	Taboose-Aberdeen	Annual	Same as above
401	Independence-Oak	Annual	Same as above
59	Independence-Oak	Annual	Same as above
60	Independence-Oak	Annual	Same as above
65	Independence-Oak	Annual	Same as above
383 E/M	Independence-Oak	Annual	Same as above
384 E/M ⁽²⁾	Independence-Oak	Annual	Same as above
61	Independence-Oak	Irrigation season	Sole Source-Irrigation; no impact on areas with groundwater dependent vegetation
402 E/M	Symmes-Shepherd	Irrigation season	Same as above
390 E/M	Lone Pine	Irrigation season	Same as above
343	Bairs-Georges	Irrigation season in below average runoff years	Sole Source-Irrigation in below average runoff years
365 ⁽⁴⁾	Laws	Annual	Sole Source-Irrigation; no impact on areas with groundwater dependent vegetation
236 ⁽⁴⁾	Laws	Irrigation Season	Sole Source-Irrigation
413 E/M ⁽⁵⁾	Laws	Irrigation Season	Sole Source-Irrigation

1. Primary town supply well is designated by p; Backup town supply well is designated by b.
2. Well 384 is a dual purpose well, water to Enhancement/Mitigation (E/M) supply is indicated by 384 and Independence domestic supply is indicated as 384 b.
3. Wells 330, 332, and 409 may only be pumped two at a time, unless pumped for testing or emergencies.
4. Well 365 designated as primary and Well 236 designated as backup irrigation supply.
5. Well 413 is a dual purpose well. Water is supplied to the Laws Museum Irrigation Projects east and west of the museum and Laws domestic supply is indicated as 413b.
6. Currently not pump-equipped.

Table 2. 6 Planned Owens Valley Pumping for the First Six Months of 2015-16 Runoff Year (acre-feet)

Month	Laws	Bishop	Big Pine	Taboose- Aberdeen	Thibaut- Sawmill	Independ.- Oak	Symmes- Shepherd	Bairs- Georges	Lone Pine	TOTAL
April	960-1,200	1200-1,500	1,700	240	667-716	880-1,100	160	110	100	6,087-6,596
May	960-1,200	1,200-1,500	1,700	240	667-716	880-1,100	160	110	100	6,117-6,926
June	960-1,200	1,200-1,500	1700-2,170	240-1,250	667-717	880-1,400	160-770	110-170	100	6,117-6,927
July	960-1,200	1,200-1,500	1,700-2,170	240-1,250	667-717	880-1,400	160-770	110-170	100	6,120-8,967
August	960-1,200	1,200-1,500	1,700-1,970	240-1,250	666-717	880-1,100	160-400	110-170	100	6,116-8,967
September	960-1,200	1,200-1,500	1,700-1,970	240-1,250	666-717	880-1,100	160-400	110-170	100	6,116-8,967
TOTAL	5,760-7,200	7,200-9,000	10,200-11,680	1,440-5,480	4,000-4,300	5,280-7,200	960-2,660	660-900	600	36,250-49,020

Laws Wellfield (Figure 2.3)

Monitoring site L2 is in ON status. Production wells controlled by this monitoring site have an available production capacity of 10,426 acre-feet. Wells linked to monitoring site L5 have a capacity of 9,122 acre-feet. Exempt wells within the Laws Wellfield have a capacity of 3,337 acre-feet. The sum total of available pumping capacity in the Laws Wellfield is 22,885 acre-feet. Well 365 has had a reduction in production capacity and is in the process of being replaced. Well 236, associated with monitoring site L2, is used as a backup along with Well 422 as an exempt well irrigation water supply.

Planned groundwater pumping for the first half of the runoff year in the Laws Wellfield is between approximately 5,960 to 7,400 acre-feet, contingent on water needs and environmental conditions. Groundwater pumping is planned to supply Owens Valley demands including the town water system, E/M projects, and irrigated lands.

LADWP modified production wells W385 and W386 associated with monitoring site L4 recently by sealing the screen zone within the shallow aquifer. LADWP is currently equipping these wells and is planning to conduct the initial operation of these wells, starting W385. The pumping test of each well is expected to last approximately 6 months and the goal is to determine potential effects of pumping on shallow groundwater levels in the vicinity of these wells.

Bishop Wellfield (Figure 2.4)

Pumping in the Bishop Wellfield is governed by the provisions of the Hillside Decree and the Water Agreement, which limit LADWP's annual groundwater extractions (pumping and flowing wells) from the Bishop Cone to an amount commensurate with the total amount of water used on City lands on the Bishop Cone (including conveyance and other losses). Under the current audit protocols, recent total water used on City lands within the Bishop Cone area has been approximately 25,000 acre-feet per year. In the 2015-16 Runoff Year, the total water used is likely to be reduced to approximately 18,000 acre-feet. The current total available groundwater extraction capacity in the Bishop Wellfield is approximately 18,000 acre-feet. The planned groundwater pumping from the Bishop Wellfield is between approximately 7,200 to 9,000 acre-feet for the first half of the 2015-16 runoff year, contingent on water needs and environmental conditions.

Figure 2.5 shows water use on City lands on Bishop Cone in comparison with the groundwater extractions (flowing and pumping wells) for runoff years 1996 to present.

The current Bishop Cone Audit does not include a number of known uses and losses, including some uses that are currently being measured. These unaccounted for uses should be added to the total Bishop Cone Audit and the audit protocols should be revised to more accurately reflect actual uses and losses.

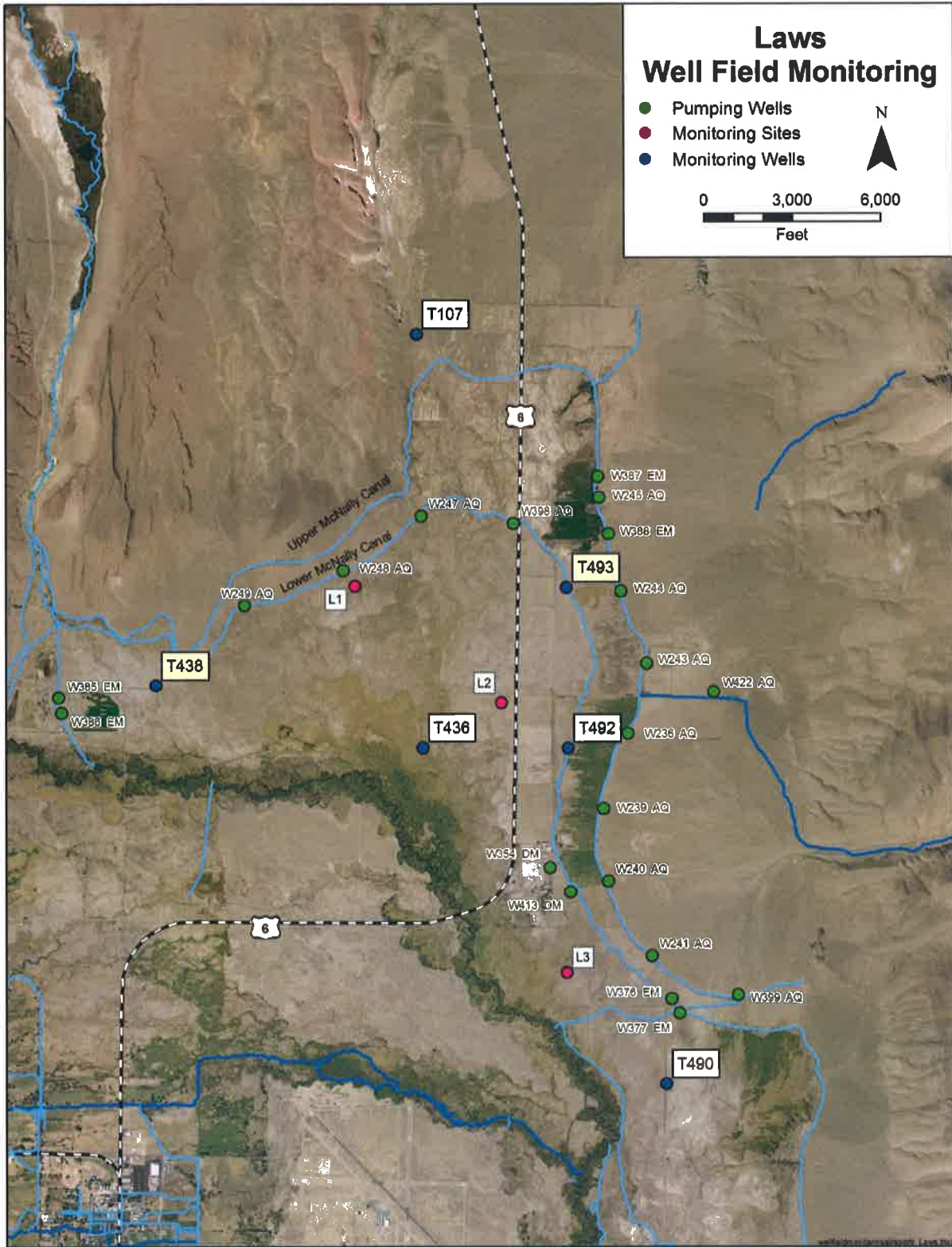


Figure 2.3 Laws Wellfield

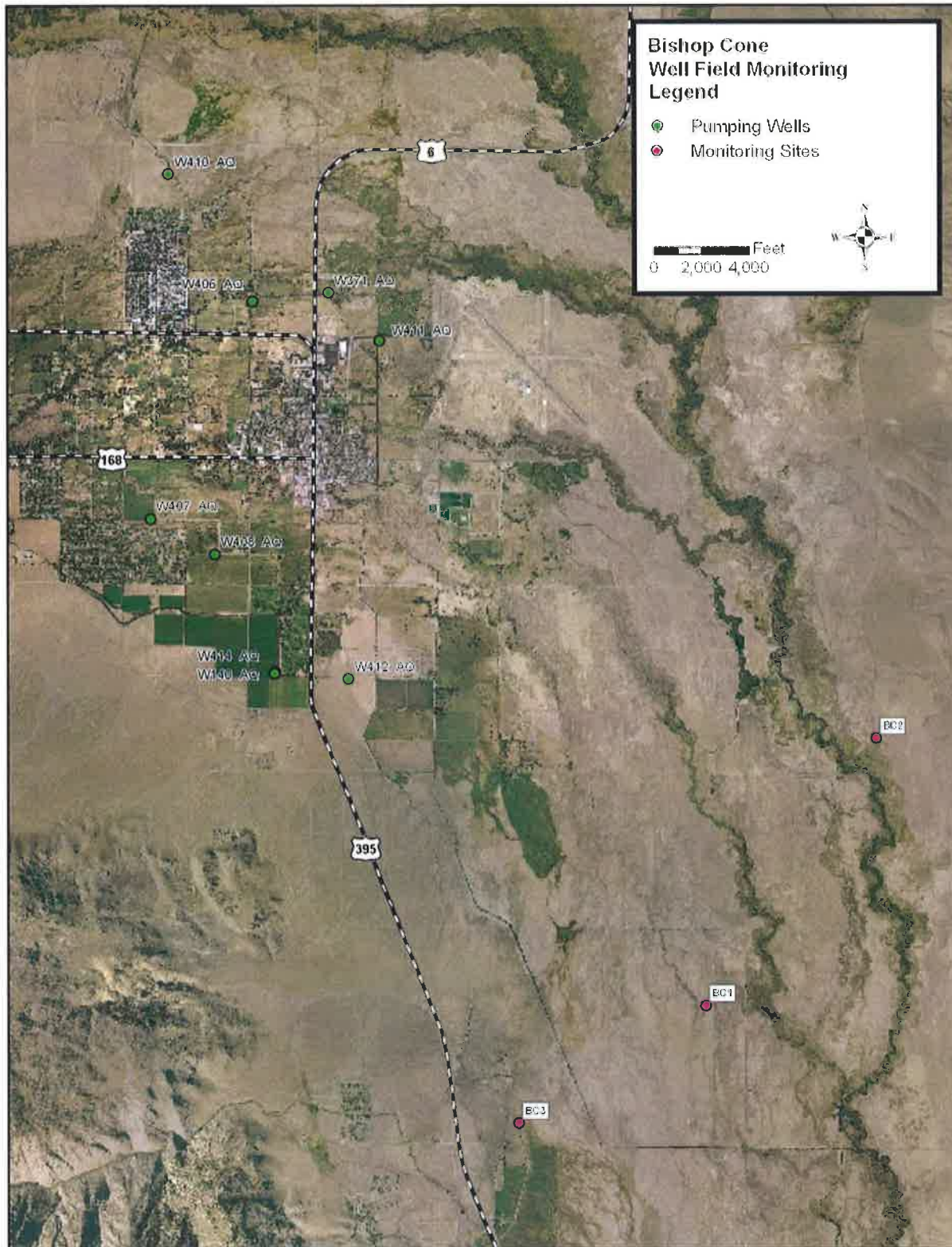


Figure 2. 4 Bishop Wellfield

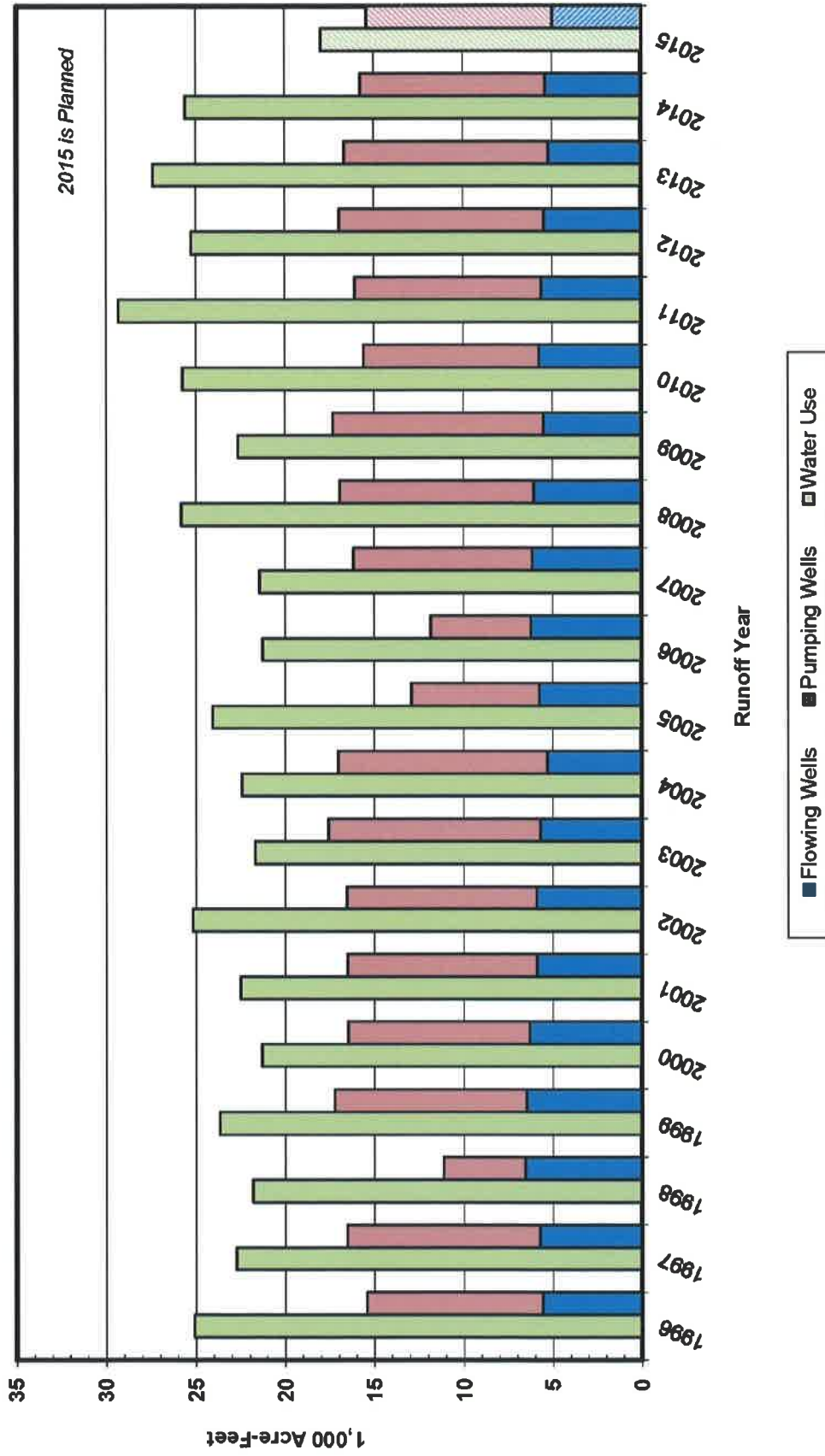


Figure 2.5 Groundwater Extraction (flowing & pumping) and Water Use on Los Angeles Land on Bishop Cone

Big Pine Wellfield (Figure 2.6)

Monitoring sites BP4 is in ON status. Production Well 331, managed in conjunction with monitoring site BP4, has a production capacity of 7,530 acre-feet. Exempt wells including Well 218, Well 219, town supply wells, and Fish Springs Fish Hatchery wells in the Big Pine Wellfield have a combined capacity of 28,750 acre-feet. The total available capacity in the Big Pine Wellfield is 36,280 acre-feet. The total planned pumping in the Big Pine Wellfield is for the first six months of the 2015-16 runoff year is between approximately 10,200 acre-feet and 11,680 acre-feet, contingent on water needs and environmental conditions.

Taboose-Aberdeen Wellfield (Figure 2.7)

Monitoring site TA5 is in ON status. Production Well 349 is controlled by monitoring site TA5 and has an available pumping capacity of approximately 12,236 acre-feet. Exempt Well 118 in the Taboose-Aberdeen Wellfield has a capacity of 2,320 acre-feet. Exempt well W355 pumps approximately 240 acre-feet to supply the Hines Spring project. The total available groundwater pumping capacity in the Taboose-Aberdeen Wellfield is 14,796 acre-feet. The planned groundwater pumping in the Taboose-Aberdeen Wellfield for the first half of the 2015-16 runoff year is contingent on water needs and prevailing environmental conditions and will range between 1,440 acre-feet and approximately 5,480 acre-feet.

Thibaut-Sawmill Wellfield (Figure 2.8)

Monitoring sites TS2 is in ON status. Production well W155, controlled by monitoring site TS2 has a production capacity of 796 acre-feet and can supply water for irrigation to Eight-Mile Ranch to supplement surface water for the ranch. Exempt Blackrock Fish Hatchery supply wells W351 and W356 have capacities of 13,200 acre-feet and 8,000 acre-feet respectively. The total available pumping capacity in the Thibaut-Sawmill Wellfield for the 2015-16 runoff year is about 8,796 acre-feet.

Based on the resolution of a dispute between Inyo County of LADWP regarding the conditions of the vegetation parcel BLK94, located west of the wellfield, the groundwater pumping to supply Blackrock Hatchery will be limited to 8,000 acre-feet per year. Total planned pumping in the Thibaut-Sawmill Wellfield for the first half of the 2015-16 runoff year is planned to range between 4,000 acre-feet and 4,300 acre-feet, subject to hatchery demands, water supply needs, and environmental conditions.

Independence-Oak Wellfield (Figure 2.8)

None of the monitoring sites in the Independence-Oak Wellfield are in ON status. Independence-Oak exempt wells have a combined capacity of 13,973 acre-feet. The total available pumping capacity in the Independence-Oak Wellfield is 13,973 acre-feet. The anticipated range of groundwater pumping in the Independence-Oak Wellfield for the first six months of the 2015-16 runoff year is between 5,280 and 7,200 acre-feet, which includes water for municipal, irrigation, town, and E/M project supply.

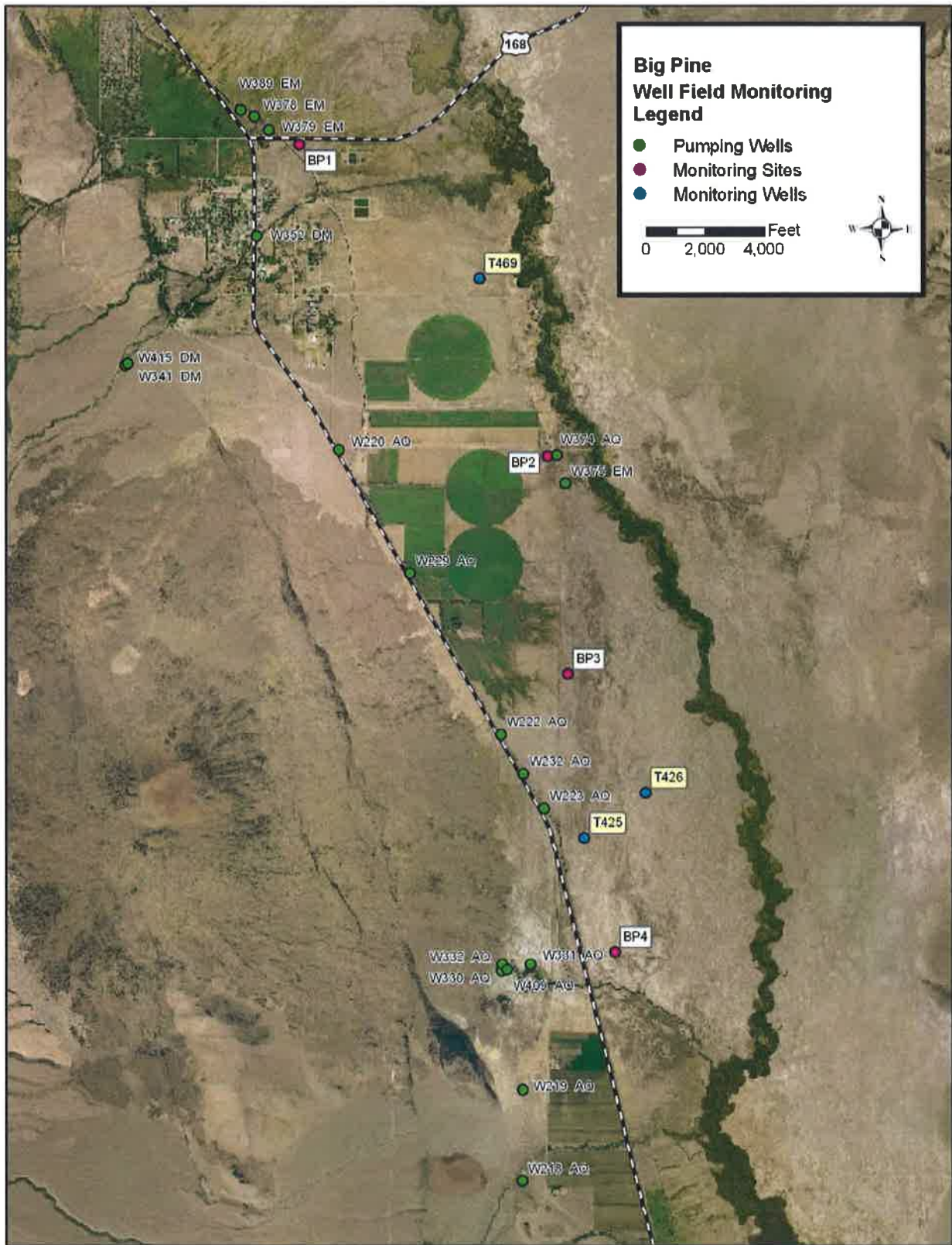


Figure 2. 6 Big Pine Wellfield

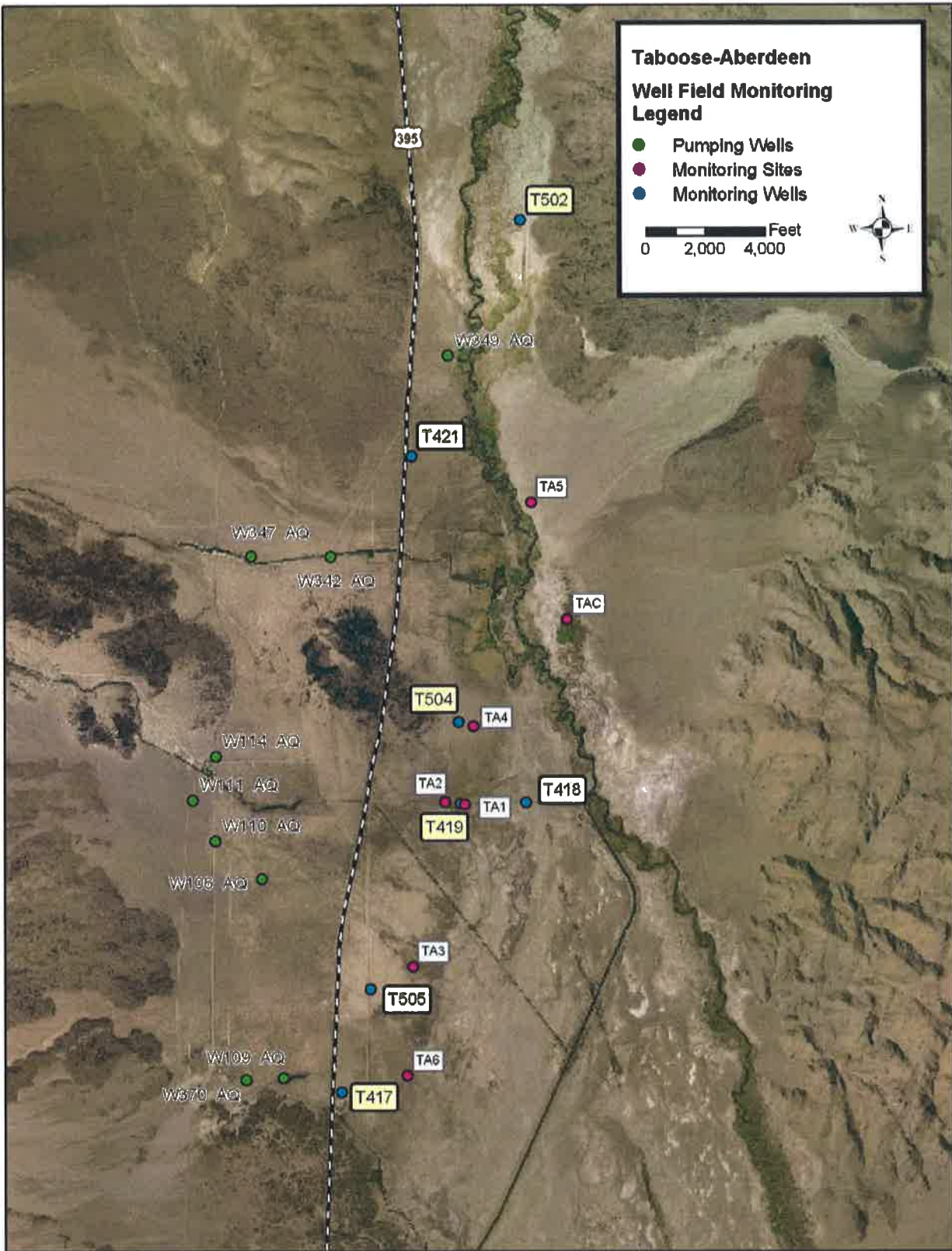


Figure 2.7 Taboose-Aberdeen Wellfield

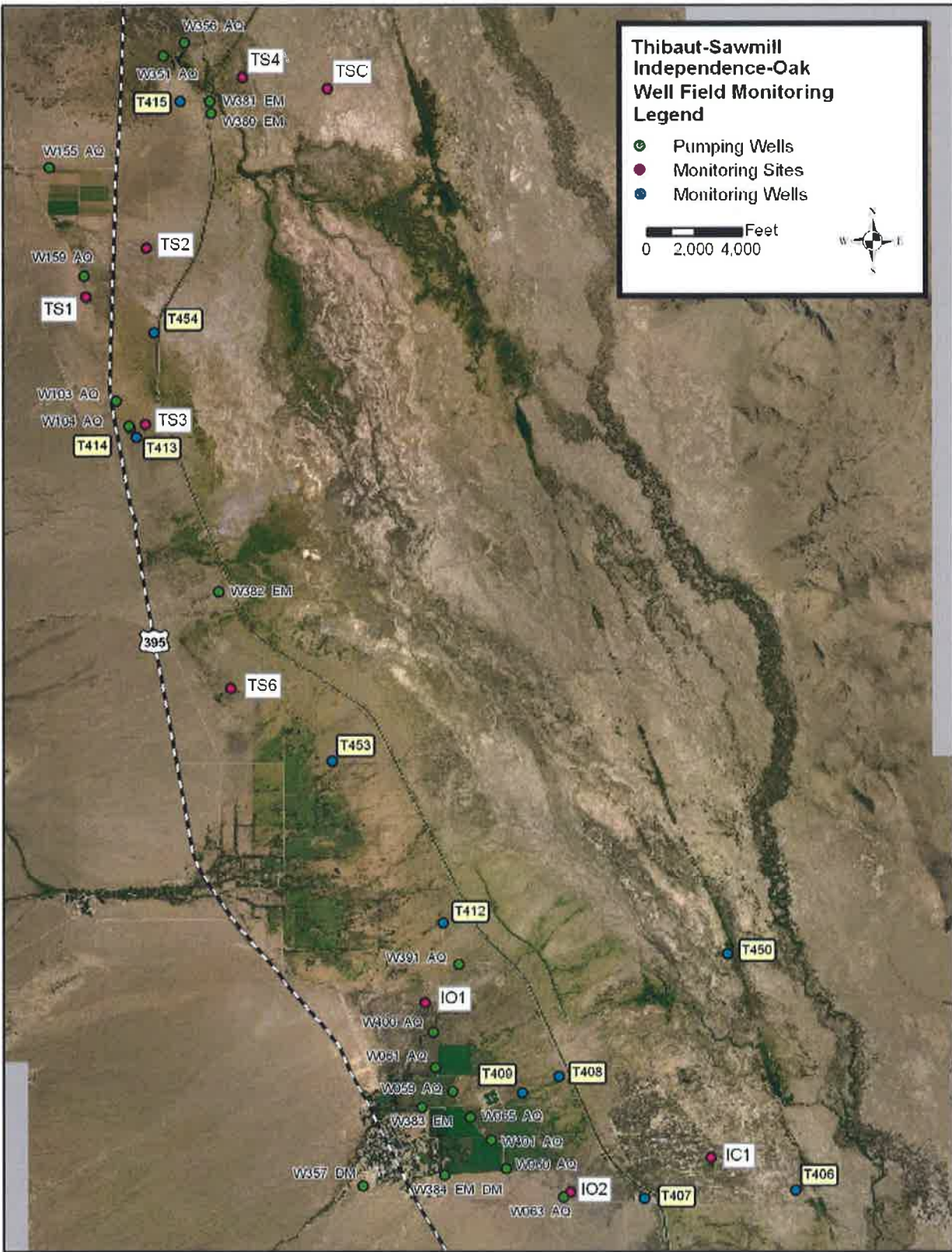


Figure 2. 8. Thibaut-Sawmill and Independence-Oak Wellfields

Symmes-Shepherd Wellfield (Figure 9)

Monitoring sites SS1 is in ON status. Monitoring site SS1 has an annual capacity of 7,385 acre-feet. Exempt Well 402 has a capacity of about 1,000 acre-feet. Total available capacity in the Symmes-Shepherd Wellfield for the 2015-16 runoff year is approximately 8,385 acre-feet. The total pumping in the Symmes-Shepherd Wellfield for the first six months of the 2015-16 runoff year is planned to be between approximately 960 and 2,660 acre-feet, contingent on water needs and environmental conditions.

Bairs-Georges Wellfield (Figure 9)

Vegetation monitoring site BG2 is in ON status. The wells managed under this site have a combined annual capacity of 2,896 acre-feet. Exempt Well 343 has an available capacity of 500 acre-feet (based upon a six month exemption period). The total available capacity in the Bairs-Georges Wellfield for the 2015-16 runoff year is 2,896 acre-feet. Groundwater pumping in the Bairs-Georges Wellfield for the first six months of the runoff year is planned to be between approximately 660 and 900 acre-feet, contingent on water needs and environmental conditions.

Lone Pine Wellfield (Figure 10)

Lone Pine exempt wells are Well 344 and Well 346, and E/M project supply Well 425. These three wells have an annual available capacity of approximately 900 acre-feet. Well 425 is a replacement for the degraded Well W390 acre-feet.

Well 416 is a production well in the Lone Pine Wellfield drilled in 2002. Hydrologic testing was conducted on Well 416 during the 2009-10 runoff year. This well was modified in 2014 to seal the screen portion of the aquifer within the shallow aquifer. LADWP is planning to equip and conduct the initial operation of this well. If initial operation is performed during 2015-16 runoff year, it will be in addition to the currently planned pumping from Lone Pine Wellfield. The Technical Group has been requested to designate a monitoring site for this well.

The planned groundwater pumping from the Lone Pine Wellfield during the first six months of the 2015-16 runoff year is 750 acre-feet, contingent on water supply needs and environmental conditions.

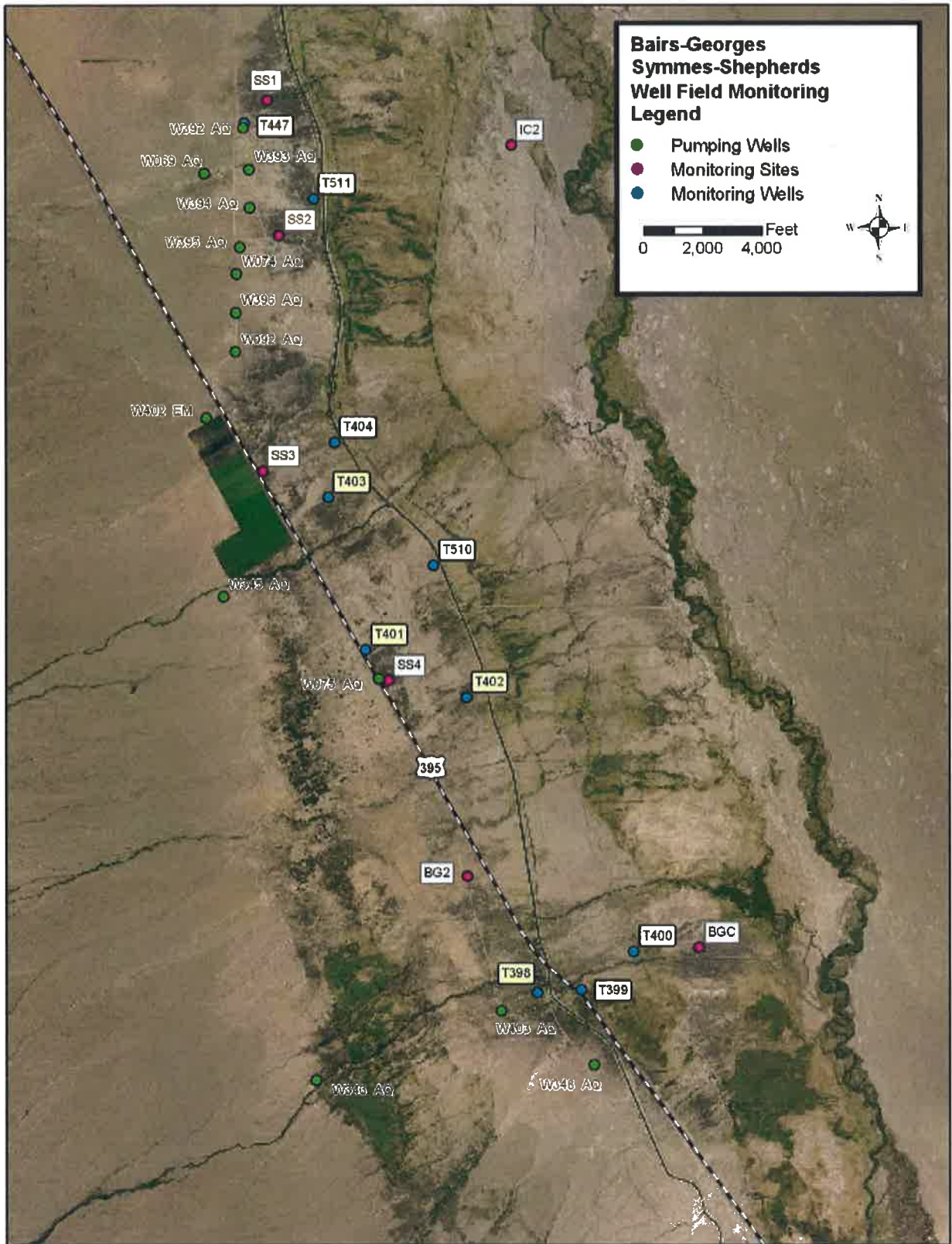


Figure 2. 9 Bairs-Georges and Symmes-Sheperds Wellfields

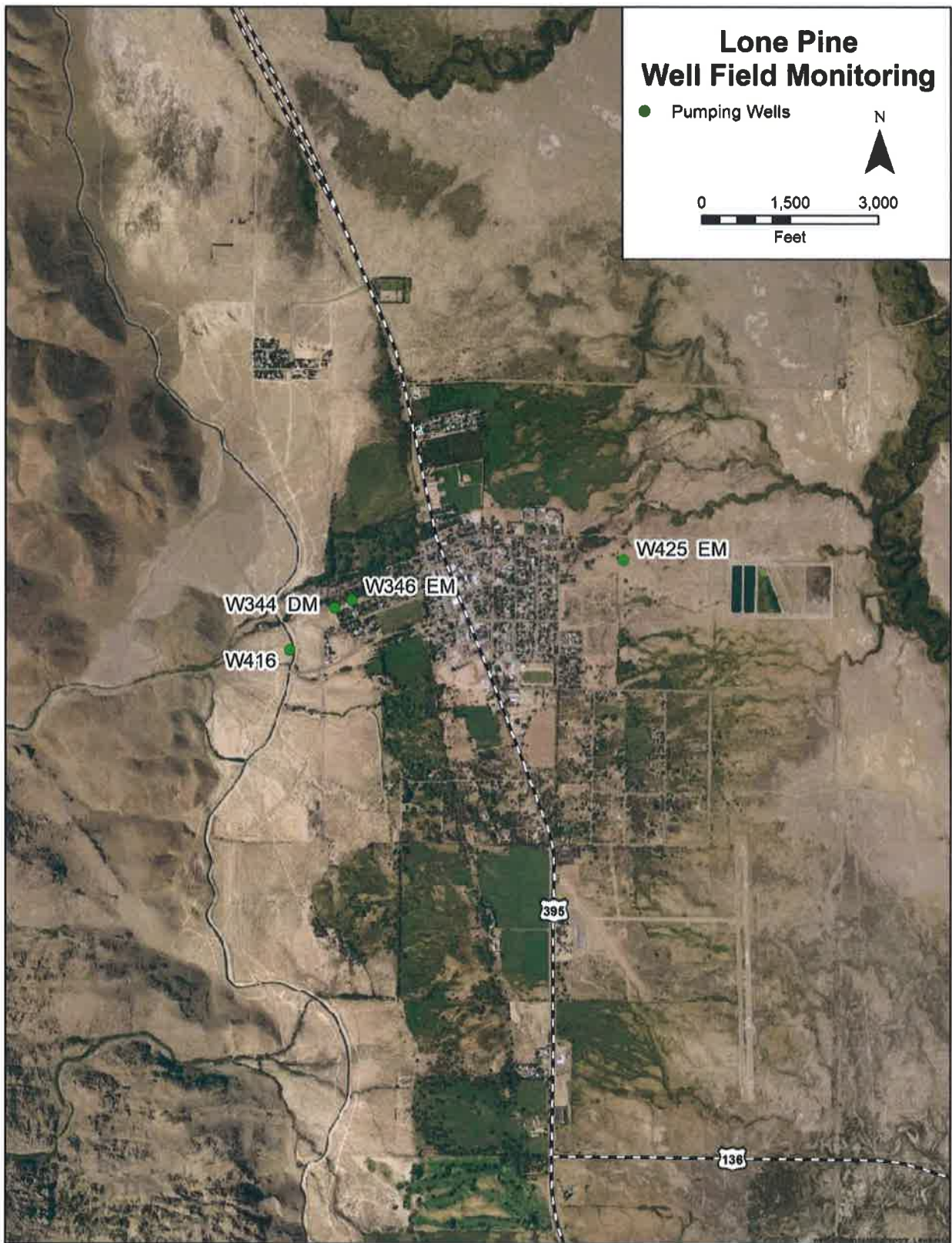


Figure 2. 10 Lone Pine Wellfield

2.3. Owens Valley Uses (Including Enhancement/Mitigation Projects)

Table 2.7 shows the historic (1981-82) uses and the planned monthly uses within the Owens Valley for 2015-16. The in-valley uses shown on Table 2.7 consist of irrigation, stockwater, recreation, and wildlife projects, E/M supply, Lower Owens River Project (LORP) usage, 1600 Acre-Foot Projects, and usage pursuant to California Health and Safety Code Section 42316 for dust abatement projects on Owens Lake. As shown in Table 2.7 and Figure 2.11, LADWP plans to provide approximately 121,200 acre-feet for in-valley uses this runoff year, not including water supplied to the Owens Valley Native American Indian lands.

The most notable change in the Owens Valley water uses for 2015-16 is the significantly low water availability for irrigation. As shown in Figure 2.11, only 16,500 acre-feet of water will be available for irrigation in 2015-16, while in 2014-15 there was approximately 43,500 acre-feet used for irrigation.

The abysmal forecasted runoff for the year is the primary reason that there is significantly less water available for irrigation. The expected supply during a 36% of normal expected runoff year will result in a natural drop in irrigation. 2014-15 was a 52% of normal runoff year, which tied for the lowest year on record. Also, export from the Mono Basin will be 4,500 acre-feet, down from 16,000 acre-feet for the recent past. Even with no water expected to be delivered to Haiwee Reservoir during the irrigation season, typical uses in the Owens Valley would far exceed runoff supply in 2015-16.

The primary consumptive use of water in the Owens Valley is the Owens Lake Dust Mitigation Program (OLDMP). Water use in the 2014-15 runoff year by the OLDMP was 53,700 acre-feet. Water used for dust mitigation in 2015-2016 is anticipated to be 60,700 acre-feet.

Releases to the LORP from the LAA Intake facility began on December 6, 2006. An average flow of over 40 cubic feet per second (cfs) is now maintained throughout the entire 62 mile stretch of the Lower Owens River, south of the Intake structure. When needed, the releases at the Intake are augmented through additional releases at the Independence, Blackrock, Georges, Locust, and Alabama Spill Gates to maintain a continuous flow of at least 40 cfs in the river channel. Table 2.7 shows estimated 2014-15 water use by the Lower Owens River on a monthly basis. Water use by the project during 2014-15 was approximately 14,300 acre-feet. Total LORP uses include the Lower Owens River, Owens Delta, Blackrock Waterfowl Management Area, and project associated losses.

The Water Agreement provides that “... *enhancement/mitigation projects shall continue to be supplied by enhancement/mitigation wells as necessary.*” Due to the monitoring sites controlling some of the production wells supplying E/M projects being in OFF status, the amount of water supplied to E/M projects has often exceeded the amount of water provided by E/M project supply wells. LADWP has chosen to supply certain E/M projects from surface water sources in the past. Future E/M allotments may be influenced by the availability of E/M wells and operational demands. Table 2.8 shows the planned water supply to E/M projects and the forecast imbalance between the E/M project water use and the E/M project groundwater supply through the end of the

2015-16 runoff year. E/M project water demands during the 2015-16 runoff year are expected to be approximately 4,500 acre-feet greater than E/M groundwater pumping. The cumulative E/M water supply shortfall is estimated to be approximately 195,025 acre-feet by the end of the runoff year.

The Technical Group is currently evaluating the water supply issues associated with the E/M projects and will provide its findings to the Inyo/Los Angeles Standing Committee. It is expected that the Standing Committee will be requested to take appropriate action necessary to ensure water supplied to E/M projects is in conformance with the provisions of the Water Agreement.

**Table 2.7 Historic (1981-82) and Projected (2015-16) Water Uses on City of Los Angeles Land in Owens Valley
(acre-feet)**

Use	April		May		June		July		August		September		TOTAL Apr-Sep	
	1981	2015	1981	2015	1981	2015	1981	2015	1981	2015	1981	2015	1981	2015
Irrigation	3,980	2,200	7,958	2,800	10,373	3,000	9,476	3,200	8,295	2,600	6,321	2,000	46,403	15,800
Stockwater	1,141	900	1,319	1,100	1,244	1,100	1,245	1,100	1,219	1,000	1,319	800	7,487	6,000
E / M	0	1,320	0	1,680	0	1,640	0	1,710	0	1,300	0	1,100	0	8,750
LORP	0	500	0	1,700	0	2,700	0	3,200	0	2,700	0	2,100	0	12,900
Owens Lake	0	6,800	0	9,500	0	6,000	0	2,500	0	4,000	0	10,000	0	38,800
Rec. & Wildlife	379	500	804	700	1,160	800	1,455	850	1,381	800	1,406	650	6,585	4,300
1600 ACFT Proj.	0	85	0	91	0	116	0	157	0	74	0	115	0	638
Total	5,500	12,305	10,081	17,571	12,777	15,356	12,176	12,717	10,895	12,474	9,046	16,765	60,475	87,188

Use	October		November		December		January		February		March		TOTAL Oct-Mar		TOTAL Apr-Mar	
	1981	2015	1981	2015	1981	2015	1982	2016	1982	2016	1982	2016	81-82	15-16	81-82	15-16
Irrigation	263	600	0	0	0	0	0	0	0	0	14	100	277	700	46,680	16,500
Stockwater	1,065	700	1,045	700	1,050	700	1,007	700	1,010	700	1,098	700	6,275	4,200	13,762	10,200
E / M	0	250	0	100	0	100	0	100	0	100	0	100	0	750	0	9,500
LORP	0	900	0	250	0	150	0	250	0	250	0	600	0	2,400	0	15,300
Owens Lake	0	8,500	0	3,100	0	2,500	0	1,100	0	2,200	0	4,500	0	21,900	0	60,700
Rec. & Wildlife	781	650	713	550	565	550	478	550	342	400	447	400	3,326	3,100	9,911	7,400
1600 ACFT Proj.	0	215	0	215	0	105	0	97	0	185	0	145	0	962	0	1,600
Total	2,109	11,815	1,758	4,915	1,615	4,105	1,485	2,797	1,352	3,835	1,559	6,545	9,878	34,012	70,353	121,200

NOTE: Rec & Wildlife includes LORP off-river lakes and ponds w water use
An additional 3,200 acre-feet per year is provided to Indian lands

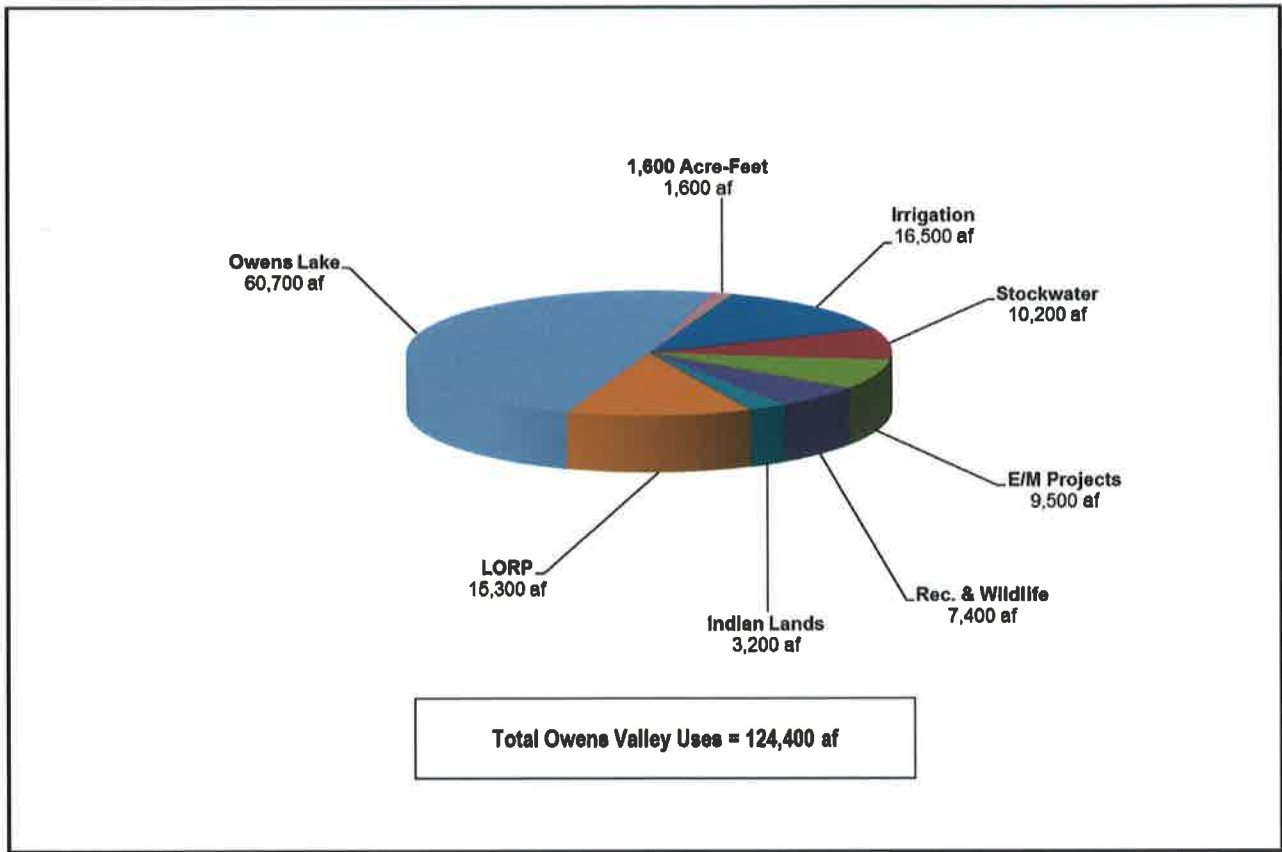


Figure 2. 11 Distribution of Planned Owens Valley Water Use for 2015-16 Runoff Year

Table 2. 8 Owens Valley Groundwater Pumping for Production and E/M Water Use
(1984-85 through 2015-16 Runoff Year (acre-feet))

Runoff Year	Owens Valley Runoff (1)	Total Pumping	Non-E/M Pumping	E/M Pumping	E/M Water Uses	E/M Pumping & Use Imbalance	Cumulative E/M Pumping & Use Imbalance
1984-85	0	61,981	61,981	0	0		0
1985-86	0	107,718	107,718	0	109		0
1986-87	0	69,887	69,887	0	12,696	(3)	0
1987-88	0	209,394	179,884	29,510	29,360		0
1988-89	0	200,443	171,012	29,431	30,872		0
1989-90	0	155,972	133,409	22,563	23,330		0
1990-91	0	88,904	70,817	18,087	17,949		0
1991-92	0	87,310	71,520	15,790	20,517	-4,727	-4,727
1992-93	0	84,453	70,688	13,765	18,357	-4,592	-9,319
1993-94	0	76,329	67,338	8,991	19,310	-10,319	-19,638
1994-95	0	89,219	78,209	11,010	20,812	-9,802	-29,440
1995-96	0	69,752	57,180	12,572	22,914	-10,342	-39,782
1996-97	0	74,904	57,981	16,923	23,949	-7,026	-46,808
1997-98	124	66,914	52,760	14,154	21,500	-7,346	-54,154
1998-99	149	51,574	47,353	4,221	19,672	(3)	-54,154
1999-00	89	63,675	59,342	4,333	24,450	-20,117	-74,271
2000-01	84	67,795	61,456	6,339	20,611	-14,272	-88,543
2001-02	83	73,349	70,055	3,294	21,815	-18,521	-107,064
2002-03	66	81,979	76,059	5,920	21,394	-15,474	-122,538
2003-04	81	87,732	80,734	6,998	21,116	-14,118	-136,656
2004-05	77	85,820	78,110	7,710	18,327	-10,617	-147,273
2005-06	136	56,766	51,695	5,071	19,356	-14,285	-161,558
2006-07	146	58,621	53,925	4,696	17,357	(3)	-161,558
2007-08	61	60,338	53,413	6,925	11,312	-4,387	-165,945
2008-09	74	68,971	61,053	7,918	10,646	-2,728	-168,673
2009-10	77	64,138	57,946	6,192	10,695	-4,503	-173,176
2010-11	104	78,248	71,233	7,015	10,807	-3,792	-176,968
2011-12	142	91,699	84,365	7,334	11,993	-4,659	-181,627
2012-13	57	88,689	83,034	5,655	8,914	-3,259	-184,886
2013-14	54	78,880	73,888	4,992	8,170	-3,178	-188,064
2014-15	51	68,159	62,450	5,709	8,170	-2,461	-190,525
2015-16 (2)	36	70,000	65,000	5,000	9,500	-4,500	-195,025

(1) Based on 1961-2010 average: 415,974 acre-feet. Includes some runoff contribution to the Laws Wellfield from the White Mountains.

(2) this is only Apr-Sep pumping/uses. Forecast for planned pumping of 47,930 acre-feet (planned pumping ranges 36,250-47,830 acre-feet)

(3) surface water was available

2.4. Aqueduct Operations

Table 9 shows planned LAA reservoir storage levels and monthly deliveries to Los Angeles. Based on this plan, approximately 42,377 acre-feet will be exported from Inyo and Mono Counties to the City during the 2015-16 runoff year.

2.5. Water Exports to Los Angeles

Figure 2.12 provides a record of water exports from the Eastern Sierra to Los Angeles, averaging approximately 337,000 acre-feet per year since 1970. Figure 2.13 shows the LAA contribution to the City water supply relative to other sources and the total annual water supplied to Los Angeles since 1970. LADWP estimates that Los Angeles will require about 506,000 acre-feet of water during the 2015-16 runoff year. It is anticipated that water from the Eastern Sierra will make up about 9% of the 2015-16 supply. Water purchases from the Metropolitan Water District of Southern California will provide about 70% of the City's supply, groundwater from Los Angeles area aquifers will provide about 19%, and recycled water will supply about 2% of the City's water needs.

Table 2. 9 Planned Los Angeles Aqueduct Operations for 2015-16 Runoff Year

Month	Owens Valley-Bouquet Reservoir Storage 1st of month Storage (acre-feet)	Flow to Haiwee (acre-feet)	Aqueduct Delivery to Los Angeles (acre-feet)
April	160,819	0	400
May	163,228	0	300
June	157,377	0	300
July	151,707	0	3,000
August	145,270	0	6,000
September	137,163	0	3,000
October	125,129	0	600
November	123,781	5,100	3,000
December	130,495	8,000	7,700
January	135,643	9,900	6,077
February	143,951	9,000	6,000
March	150,609	9,300	6,000
TOTAL	-10,210		42,377

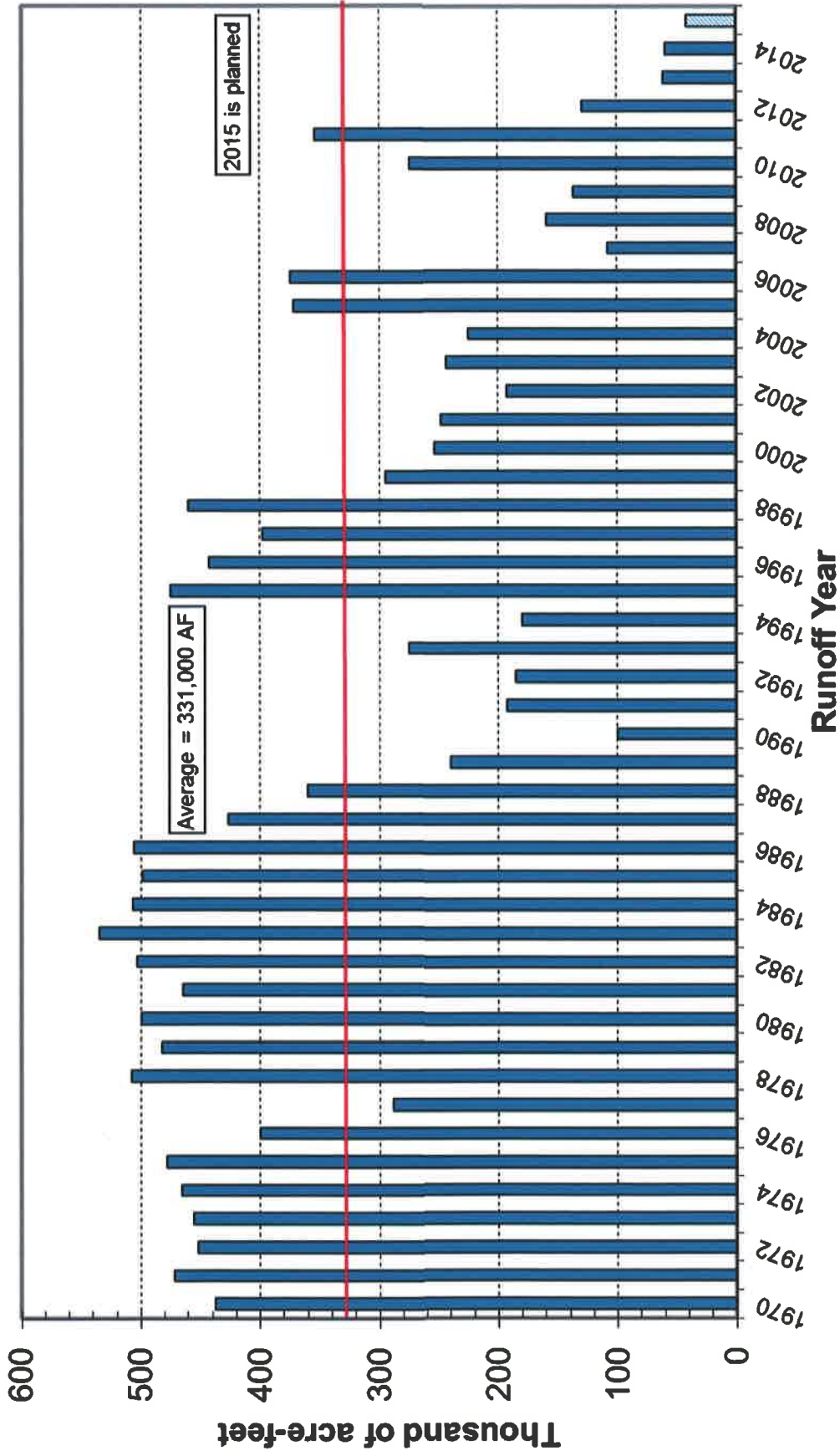


Figure 2.12 Water Export from Eastern Sierra to Los Angeles

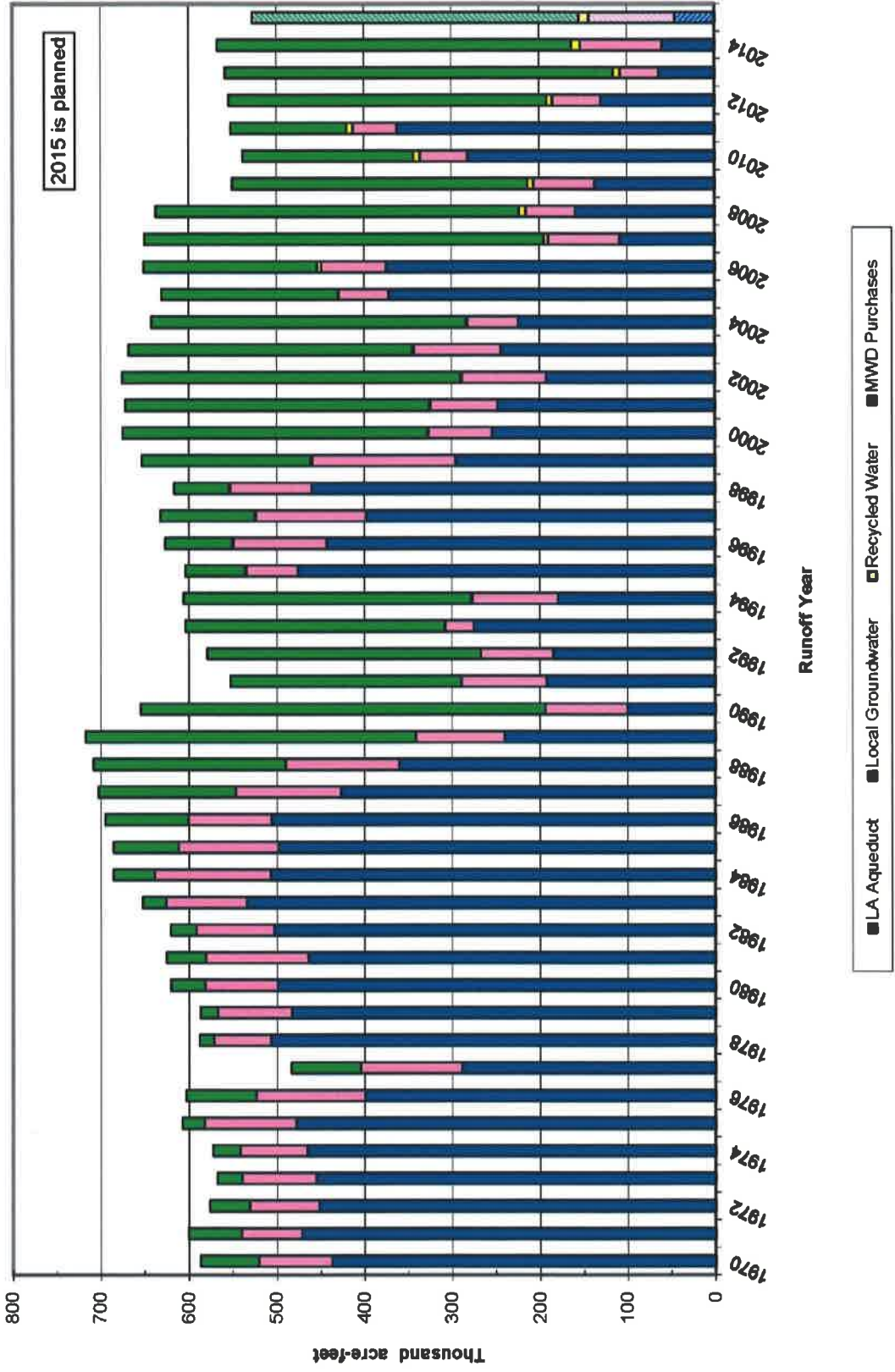


Figure 2. 13 Sources of Water for the City of Los Angeles