Los Angeles Department of Water and Power

2024 Annual Owens Valley Report

- Annual Owens Valley Operations Plan for the 2024 - 25 Runoff Year
- Conditions in the Owens Valley
- LADWP Environmental Mitigation Projects and Other Legal Obligations

LA DWP Los Angeles Department of Water & Power

OWENS VALLEY OPERATIONS PLAN FOR RY 2024-25

1.0 Owens Valley Operations Plan for RY 2024-25

This year's annual Operations Plan and pumping program is consistent with the management strategy of the Water Agreement between the County and the 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 LADWP's 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.*

1.1. Eastern Sierra Runoff Forecast

The Runoff Forecast for Eastern Sierra, including the Owens River Basin and Mono Basin runoffs for the 2024-25 RY (Table 1.1) is based on snow surveys of key Eastern Sierra watersheds in Inyo and Mono counties. The Eastern Sierra Runoff forecast is used for planning aqueduct operations as it is a primary indicator of water supply. The April 1 forecast of the Owens River Basin runoff during the 2024-25 RY is 419,300 AF, or about 103% of the 50-year (1971-2020) average annual runoff value of 409,600 AF.

The runoff forecast for the Owens River Basin from April 1, 2024, through September 30, 2024, is 303,700 AF, which is 102% of the 50-year average (298,780 AF).

Figure 1.1 summarizes Owens River Basin runoff and groundwater pumping by LADWP since the 1972 RY. This figure demonstrates this year's forecasted runoff and planned pumping compared to the past runoff in the Owens Valley Basin.

Table 1.1. Eastern Sierra Runoff Forecast for 2024-25 RY

2024 EASTERN SIERRA RUNOFF FORECAST
April 1, 2024

APRIL THROUGH SEPTEMBER RUNOFF

	MOST PROBABLE VALUE (Acre-feet)	MOST PROBABLE VALUE (% of Avg.)	REASONABLE MAXIMUM (% of Avg.)	REASONABLE MINIMUM (% of Avg.)	LONG-TERM MEAN (1971 - 2020) (Acre-feet)
MONO BASIN:	103,400	103%	116%	91%	100,307
OWENS RIVER BASIN:	303,700	102%	115%	88%	298,780

APRIL THROUGH MARCH RUNOFF

	MOST PROBABLE VALUE (Acre-feet)	MOST PROBABLE VALUE (% of Avg.)	REASONABLE MAXIMUM (% of Avg.)	REASONABLE MINIMUM (% of Avg.)	LONG-TERM MEAN (1971 - 2020) (Acre-feet)
MONO BASIN:	122,100	103%	117%	90%	118,156
OWENS RIVER BASIN:	419,300	103%	116%	91%	406,310

NOTE - Owens River Basin includes Long, Round, and Owens Valleys

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.

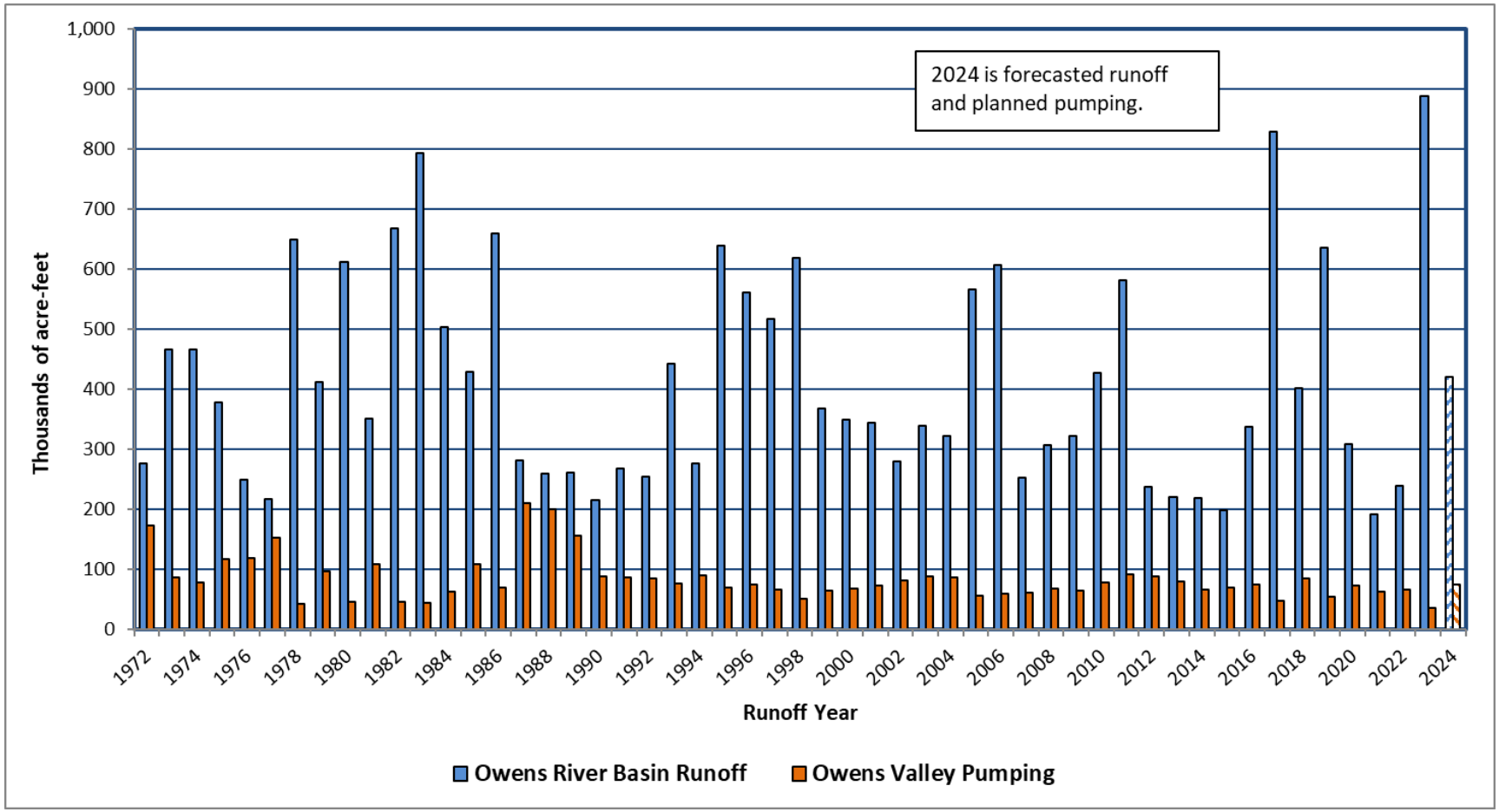


Figure 1.1. Owens River Basin Runoff and Groundwater Pumping

1.2. Owens Valley Groundwater Production

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

The following excerpt from Section S.6 of the 1991 EIR describes the general thoughts regarding groundwater pumping and how pumping was contemplated under the Water Agreement:

Compared to pre-1970 conditions, the project would increase the amount of groundwater and surface water exported from Owens Valley to Los Angeles. The increased amount of water exported would be obtained from an increase in groundwater pumping, from surface water that has been made available by a reduction in the number of irrigated acres owned by Los Angeles and from surface water that formerly did not enter the aqueduct system… However, for the purposes of analysis in this EIR, the average amount of pumping under the Agreement is projected to be 110,000 AFY.

Under the terms of the Water Agreement, the allowable 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 1.2 lists the ON/OFF status of the monitoring sites within the Owens Valley as of April 1, 2024. Based on Table 1.2, 20 vegetation monitoring sites are in ON status, and 2 sites are in OFF status. The vegetation monitoring site IO-1 turned to ON status in April 2024. The Water Agreement or Technical Group has designated certain town supply wells, irrigation supply wells, fish hatchery supply wells, 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 1.3 lists a breakdown of the available annual pumping capacity and planned groundwater pumping for the 2024-25 RY by wellfield. Table 1.3 also shows the vegetation monitoring sites in ON status as of April 1, 2023, the wells associated with the ON status monitoring sites, and the exempt wells in each wellfield. Accordingly, approximately 225,100 AF of water is available for groundwater pumping from Owens Valley wellfields under the terms of the Water Agreement during the 2024-25 RY. However, due to the extreme runoff in 2023 and high-water storage in the aqueduct system, along with a nearly average forecasted runoff year, LADWP plans to pump between 51,470 AF and 77,413 AF of groundwater during the 2024-25 RY, which is between 23 percent and 34 percent of the amount allowed under the terms of the Water Agreement. The planned range of groundwater pumping for the 2024-25 RY. This range of pumping will provide LADWP with the needed operational flexibility to supply water for in-valley uses and export to the City, depending on the hydrologic conditions during the year.

Working independently and with the Inyo/Los Angeles Technical Group, LADWP will monitor Owens Valley runoff and environmental conditions to assess if further changes to the planned pumping are needed for the second half of the 2024-25 RY. LADWP's groundwater management approach during this nearly normal runoff condition is to allow for maintaining the nearly full groundwater system, which is more environmentally conservative than pumping plans advocated by the Standing Committee in the early 1990s.

Figure 1.2 compares the amount of Owens Valley groundwater pumping allowed under the provisions of the Water Agreement and the actual groundwater pumping by LADWP for each RY since 1992 (available pumping was not calculated prior to 1992). LADWP's planned pumping for the 2024-25 RY is comparable to the pumping in 2023-24 runoff year, which was the lowest compared to the pumping in recent times. LADWP is committed to managing water resources in Owens Valley 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 pumping program for the 2024-25 RY complies with the groundwater mining provisions of the Green Book. Table 1.4 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 2024-25 RY.

Table 1.5 lists Owens Valley wells exempted under the Water Agreement or by approval of the Technical Group from linkage to the ON/OFF provisions of the Water Agreement. This table includes a list of wells by well number, the general location of the exempt well, and the reason the well is exempt. The Technical Group revised and approved this table at their May 6, 2016, meeting.

Table 1.6 details the planned month-to-month groundwater pumping for the 2024-25 RY for each wellfield. Pumping for town water systems, fish hatcheries, and E/M projects is included in the pumping distribution. Owens Valley groundwater production for the 2024-25 RY is consistent with the provisions of the Water Agreement. While Table 1.6 provides the planned monthly pumping volumes from each wellfield, the actual pumping amounts could vary due to the uncertainty inherent in runoff conditions, operational needs, and safety concerns of the LAA system, which could result in changes in the operation of surface and groundwater facilities throughout Eastern Sierra. Any pumping for operational tests will be in addition to the planned pumping for the 2024-25 RY. Planned pumping may also be increased to provide freeze protection for the LAA.

The following is a discussion of the planned pumping program by wellfield. Figures 1.3 and 1.5, followed by figures 1.6 through 1.10 show locations of LADWP's Owens Valley pumping wells by wellfield. These figures show the location of production wells, selected monitoring wells, and vegetation monitoring sites in each area.

Table 1.2. Soil/Vegetation Water Balance Calculations for April 2024 According to Section III of the Green Book

Site	October 1, 2023 Actual Soil AWC	50% Annual Precipitation	Projected Soil AWC	October 1, 2023 Vegetation Water Requirement	October 1, 2023 Required Soil AWC For Turn-On	October 1, 2023 On/Off Status	April 1, 2024 Soil AWC	April 1, 2024 Required Soil AWC For Turn-On	April 1, 2024 On/Off Status
LW 1	139.7	7.9	147.6	12.3	NA	ON	137.0	NA	ON
LW 2	58.7	7.9	66.6	4.3	NA	ON	60.8	NA	ON
LW 3	70.9	7.9	78.8	16.1	NA	ON	65.8	NA	ON
BP 1	55.5	7.9	63.4	25.4	NA	ON	45.7	NA	ON
BP 2	8.2	NA	NA	13.7	28.4	OFF (7/98)	14.3	28.4	OFF (7/98)
BP 3	119.2	7.6	126.8	14.1	NA	ON	120.3	NA	ON
BP 4	77.0	8.2	85.2	10.3	NA	ON	91.3	NA	ON
TA 3	18.7	7.3	26.0	19.2	NA	ON	22.2	NA	On
TA 4	24.3	7.3	31.6	12.9	NA	ON	41.1	NA	ON
TA 5	26.3	8.2	34.5	8.4	NA	ON	27.0	NA	ON
TA 6	60.8	7.3	68.1	21.9	NA	ON	68.6	NA	ON
TS 1	47.2	7.3	54.5	26.6	NA	ON	45.4	NA	ON
TS 2	25.3	7.3	32.6	13.1	NA	ON	46.3	NA	ON
TS 3	32.7	7.3	40	12.8	NA	ON	72.7	NA	ON
TS 4	43.4	7.3	50.7	38.5	NA	ON	59.5	NA	ON
IO 1	29.6	NA	NA	35.6	42.2	OFF (10/98)	42.8	NA	ON
IO 2	5.4	6.5	11.9	6.0	NA	ON	5.7	NA	ON
SS 1	45.5	6.5	52.0	15.4	NA	ON	59.0	NA	ON
SS 2	6.1	NA	NA	4.7	25.6	OFF (7/11)	7.3	25.6	OFF (7/11)
SS 3	34.5	6.5	41.0	18.7	NA	ON	50.1	NA	ON
SS 4	16.0	6.6	22.6	9.2	NA	ON	16.7	NA	ON
BG 2	49.7	6.6	56.3	16.8	NA	ON	73.2	NA	ON

Table 1.3. Annual Pumping Capacity According to Monitoring Sites with ON Status and Planned Pumping for 2024-25 RY

Wellfield	Vegetation Monitoring Site	Associated Production Wells	Available Capacity (AF/year)	Planned Pumping (AF)
Laws	L1	398, 247, 248, 249	12,670	
	L2	239, 243, 244, 426	10,430	
	L3	240, 241, 399, 376, 377	9,990	
	L5*	245, 387, 388	9,770	
	Exempt	236, 354, 422, 413	1,520	
	Wellfield Pumpage		**44,380**	**5,500-8,290**
Bishop**	All wells	140, 371, 406, 407, 408, 410, 411, 412	18,310	
	Wellfield Pumpage		**18,310**	**5,120-9,000**
Big Pine	BP1	378, 379, 389, 352	10,430	
	BP3	222, 223,232	4,850	
	BP4	331	7,530	
	Exempt	218, 219, 330, 332, 352, 375, 415	27,700	
	Wellfield Pumpage		**50,510**	**14,700-21,300**
Taboose Aberdeen	TA3	106, 110, 111, 114	11,005	
	TA4	342, 347	19,400	
	TA5	349	12,240	
	TA6	109, 370	5,720	
	Exempt	118, 355	2,560	
	Wellfield Pumpage		**50,925**	**6,750-11,325**
Thibaut Sawmill	TS1	159	1,014	
	TS2	155	800	
	TS3	103, 104, 382	2,970	
	TS4	380, 381	4,350	
	Exempt	351, 356	8,000	
	Wellfield Pumpage		**17,134**	**8,000-9,648**
Indep. - Oak	IO1	391, 400	5,285	
	IO2	63	2,317	
	Exempt	59, 60, 65, 357, 383EM, 384EM, 401, W423, W427	12,200	
	Wellfield Pumpage		**19,802**	**6,960-9,930**
Symmes Shepherd	SS1	069, 392,393	7,385	
	SS3	092, 396	5,647	
	SS4	075, 345	6,009	
	Exempt	402EM/428EM	1,200	
	Wellfield Pumpage		**20,241**	**2,640-5,040**
Bairs Georges	BG2	76, 343, 348, 403	2,830	
	Exempt	343	500	
	Wellfield Pumpage		**2,830**	**900-1,980**
Lone Pine	Exempt	344, 346, 425	990	
	Wellfield Pumpage		**990**	**900**
	Total Owens Valley		**225,122**	**51,470-77,413**

* Monitoring site has yet to be located.

** Pumping is subject to the Hillside Decree

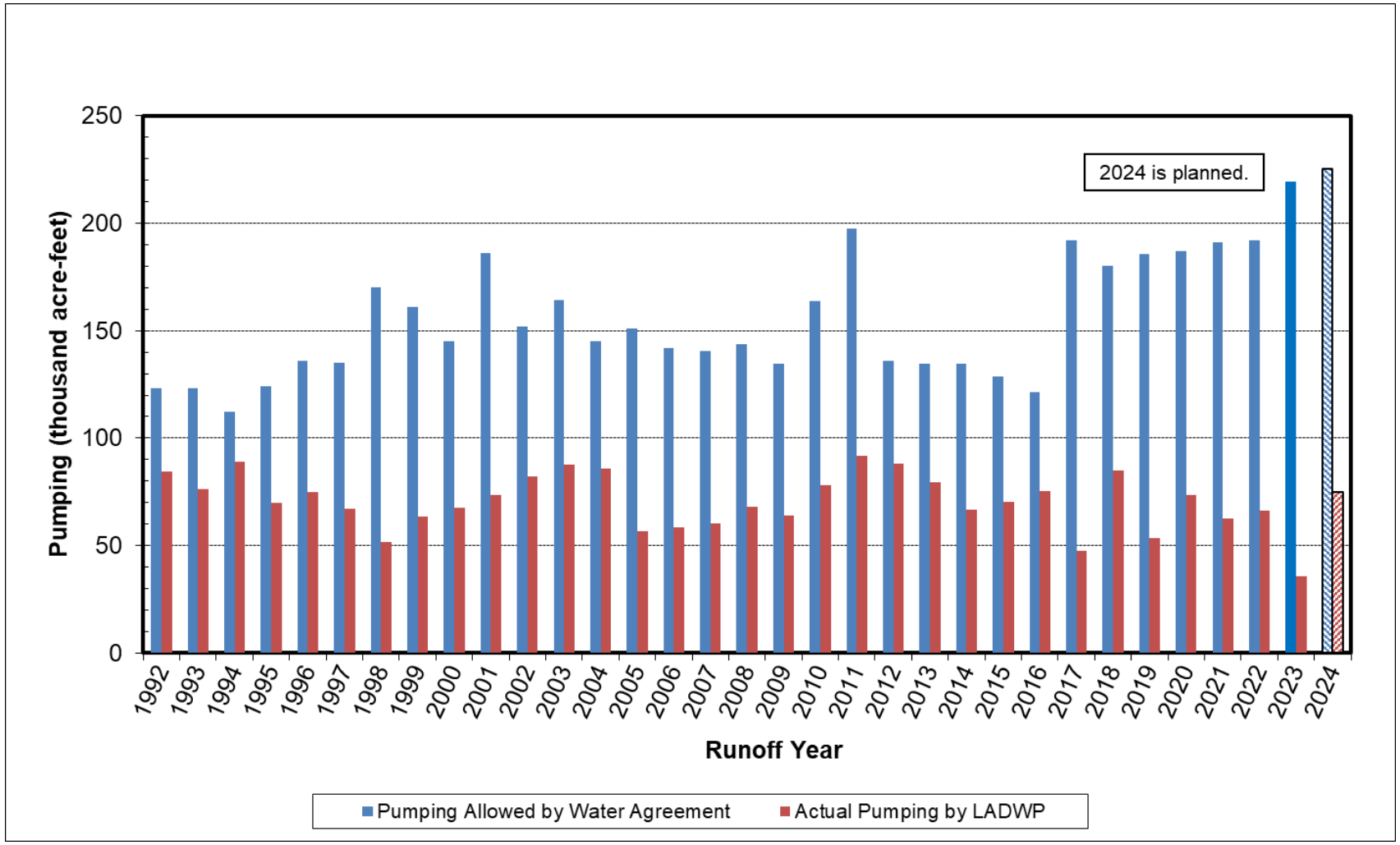


Figure 1.2. Owens Valley Pumping – Provided by Water Agreement and Actual Since Inyo/Los Angeles Water Agreement

Table 1.4. Summary of Recharge and Pumping for Water Year 2005 - 2024 and Estimated Pumping Limit for Apr-Sep 2025 in Acre-Feet

Water	OWENS VALLEY	LAWS		BISHOP		BIG PINE		TABOOSE-THIBAUT		IND-SYM-BAIRS		LONE PINE		OWENS VALLEY	
Year	Runoff Percent (c)	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping	Recharge	Pumping
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	6,287	31,325	10,849	16,871	22,560	21,241	15,778	20,508	11,347	8,960	946	109,297	67,767
2015	43%	10,103	5,824	30,667	10,521	15,380	19,939	18,671	15,563	18,695	11,873	7,995	925	101,512	64,645
2016	63%	10,392	6,038	34,844	10,842	19,551	22,798	25,634	20,642	25,354	18,829	10,306	984	126,082	80,133
2017	175%	45,270	2,000	67,171	4,399	56,730	22,106	71,201	12,959	66,222	9,243	24,741	915	331,335	51,622
2018	93%	14,351	8,646	41,346	9,588	25,911	23,140	34,601	18,896	35,628	12,050	13,807	973	165,643	73,293
2019	132%	34,517	7,127	54,377	5,670	40,650	21,356	48,370	17,000	49,725	9,994	18,534	973	246,174	62,120
2020	76%	11,041	11,170	37,879	9,437	23,190	18,647	29,560	21,503	29,801	9,949	11,742	985	143,212	71,691
2021	46%	10,330	8,337	30,841	10,901	16,215	11,366	20,160	22,339	19,028	9,128	8,036	1,010	104,612	63,081
2022	51%	10,699	8,356	31,498	10,945	17,318	20,086	22,001	20,067	20,708	7,744	8,894	1,005	111,117	68,203
2023	196%	67,558	3,060	72,464	1,491	59,905	15,081	82,745	17,714	75,353	7,580	26,530	861	384,555	45,787
2024 (a)	106%	15,077	276	45,930	0	30,688	5,705	37,718	4,988	40,257	1,108	15,152	179	184,822	12,256
(b) TOTAL		376,539	125,664	854,181	173,338	559,300	409,490	720,284	363,254	727,473	228,905	281,219	18,129	3,518,996	1,318,780
Estimated Apr-Sep 2024 Pumping Limit			250,875		680,843		149,810		357,030		498,567		263,090		2,200,216

(a) Estimated Recharge for the 2024 Water Year; Approximate Pumping for First Half of Water year 2024 (Oct-Mar).

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

(c) Mining calculations are based Water Year (October-September) instead of Rrunoff Year (April-March).

Table 1.5. LADWP Groundwater Pumping Wells Exempt from ON/OFF Provisions of Water Agreement

Revised: May 6, 2016

Well Number	Wellfield	Duration	Reason
354	Laws	Annual	Sole Source-Town Supply
413 (1)	Laws	Annual	Same as above
422(2)	Laws	Annual	Sole Source-Irrigation; no impact on groundwater dependent vegetation
236(2)	Laws	Irrigation Season	Sole Source-Irrigation
413 E/M(1)	Laws	Irrigation Season	Sole Source – Irrigation for Laws Museum irrigation project
415 (3)	Big Pine	Annual	Sole Source-Town Supply
341	Big Pine	Annual	Same as above
352	Big Pine	Annual	Same as above
375 E/M	Big Pine	Annual	Make-up water for Big Pine Regreening Project up to 150 AF per year
330(4)	Big Pine	Annual	Sole Source-Fish Hatchery
332(4)	Big Pine	Annual	Same as above
409(4)	Big Pine	Annual	Same as above
218	Big Pine	Annual	No impact on groundwater dependent vegetation
219	Big Pine	Annual	Same as above
118	Taboose-Aberdeen	Annual	Same as above
355	Taboose-Aberdeen	Annual	Sole Source- supply 1,600 acre project
351	Thibaut-Sawmill	Annual	Sole Source – Fish Hatchery
356	Thibaut-Sawmill	Annual	Same as above
401	Independence-Oak	Annual	No Impact on groundwater dependent vegetation
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(1)	Independence-Oak	Annual	Same as above
61	Independence-Oak	Irrigation season	Sole Source-Irrigation; no impact on groundwater dependent vegetation
423 E/M	Independence-Oak	Irrigation Season	Same as above
357	Independence-Oak	Annual	Sole Source – Town Supply
384 (1)	Independence-Oak	Annual	Same as above
402 E/M	Symmes-Shepherd	Irrigation season	Sole Source-Irrigation; no impact on groundwater dependent vegetation
343(5)	Bairs-Georges	Annual	Sole Source-irrigation and stock water
425 E/M	Lone Pine	Irrigation Season	Sole Source-Irrigation; no impact on groundwater dependent vegetation
344	Lone Pine	Annual	Sole Source – Town Supply
346	Lone Pine	Annual	Same as above

1. Wells 413 in Laws and 384 in Independence are dual purpose wells to supply water for E/M supply and backup for town domestic supply.
2. Well 422 designated as primary and Well 236 designated as backup irrigation supply.
3. Replaced well W341 as the primary Big Pine town supply.
4. Wells 330, 332, and 409 may only be pumped two at a time, unless pumped for testing or emergencies.
5. Well 343 is exempt in below normal RYs to supplement flow in Georges Creek for irrigation and stock water supply

Table 1.6. Planned Owens Valley Pumping for the 2024-25 RY (AF)

Month	Laws	Bishop	Big Pine	Taboose-Aberdeen	Thibaut-Sawmill	Indep.-Oak	Symmes-Shepherd	Bairs-Georges	Lone Pine	TOTAL
April	300	0	1,000-1,700	100	666	700-950	200	0	120	3,086-4,036
May	300	0	1,000-1,700	100	666	700-950	200	0	120	3,086-4,036
June	300-1,300	530-1,500	1,000-1,700	100	666	700-950	200	0	120	3,616-6,536
July	700-1,300	530-1,500	1,300-1,700	100-1,225	666-850	700-1,200	200-440	100-220	120	4,416-8,555
August	700-1,300	530-1,500	1,300-1,700	100-1,225	667-850	700-1,200	200-440	100-220	140	4,437-8,575
September	700-1,300	530-1,500	1,300-1,700	100-1,225	667-850	700-1,200	200-440	100-220	140	4,437-8,575
October	700	500	1,300-1,700	1,025-1,225	667-850	460-580	240-520	100-220	30	5,022-6,325
November	700	500	1,300-1,700	1,025-1,225	667-850	460-580	240-520	100-220	30	5,022-6,325
December	525-520	500	1,300-1,700	1,025-1,225	667-850	460-580	240-520	100-220	20	4,837-6,135
January	525-520	500	1,300-2,000	1,025-1,225	667-850	460-580	240-520	100-220	20	4,837-6,435
February	25	500	1,300-2,000	1,025-1,225	667-850	460-580	240-520	100-220	20	4,337-5,940
March	25	500	1,300-2,000	1,025-1,225	667-850	460-580	240-520	100-220	20	4,337-5,940
TOTAL	5,500-8,290	5,120-9,000	14,700-21,300	6,750-11,325	8,000-9,648	6,960-9,930	2,640-5,040	900-1,980	900	51,470-77,413

Groundwater Level Forecasts

LADWP uses regression models to forecast the approximate changes in groundwater levels in the shallow aquifer. Groundwater pumping for the 2024-25 RY will be contingent on environmental conditions, runoff volumes, and water needs assessed during the year. Given the extremely wet 2023-24 runoff year and resulting recharge of the Owens Valley groundwater aquifers combined with the minimal pumping, resulted in rising groundwater levels during the 2023-24 RY. Based on the forecasted 2024-25 RY runoff, groundwater levels are forecasted to lower with any level of planned pumping.

The range of planned LADWP groundwater pumping for the year by wellfield is included in Table 1.3. The forecasted runoff and planned pumping for the entire year allow for forecasting estimated groundwater levels in April 2025. Based on the planned groundwater pumping in each wellfield during the 2024-25 RY, the forecasted depth-to-water changes between April 1, 2024, and April 1, 2025, in each Owens Valley wellfield and overall, in Owens Valley, utilizing select monitoring wells, are listed in Table 1.7.

Table 1.7. Forecasted Change in Average Wellfield Groundwater Levels between April 1, 2024, and April 1, 2025

Wellfield	Planned 2024-25 Pumping (af)	Select Monitoring Wells	Forecast Change in Average Groundwater Level from April 1, 2024 to April 1, 2025 (ft)*
Laws	*5,500 TO 8,290*	*T107, T435, T490, T492*	*-3.5 TO -4.3*
Big Pine	*14,700 TO 21,300*	*T425, T571, T691, T800*	*0.2 TO -1.7*
Taboose-Aberdeen	*6,750 TO 11,325*	*T502, T586, T801, T803*	*-0.5 TO -1.1*
Thibaut-Sawmill	*8,000 TO 9,648*	*T376, T415, T463, T660*	*0.1 TO -0.6*
Independence-Oak	*6,960 TO 9,930*	*T407, T409, T453, T809*	*-0.8 TO -2.2*
Symmes-Shepherd	*2,640 TO 5,040*	*T403, T601, T644, V009G*	*-0.8 TO -2.3*
Bairs-George	*900 TO 1,980*	*T398, T400, T444, T652** **Previously V087*	*-1.6 TO -1.9*
Owens Valley	*51,470 TO 77,413***	*All Monitoring Wells Listed Above*	*-1.0 TO -2.0*

* Using the forecasted Owens Valley runoff and planned wellfield pumping.

** Including planned pumping in Bishop and Lone Pine.

1.2.1. Laws Wellfield (Figure 1.3)

Monitoring sites L1, L2, and L3 are in ON status. Production wells controlled by these monitoring sites have available production capacities of 12,670, 10,430, and 9,990 AF, respectively. Wells linked to monitoring site L5 have a capacity of 9,770 AF. Exempt wells within the Laws Wellfield have a capacity of 2,100 AF. The total available pumping capacity in the Laws Wellfield is 44,380 AF. Well 426, associated with monitoring site L2, is used as a backup along with Well 422 as an exempt well irrigation water supply.

LADWP's planned groundwater pumping in the Laws Wellfield for the 2024-25 RY ranges between 5,500 AF and 8,290 AF, contingent on runoff and operation conditions, water needs, and environmental conditions. Groundwater pumping is planned to supply water for Owens Valley demands, including the town water system, E/M projects, and irrigated lands, and for export to the City.

LADWP, in cooperation with ICWD, conducted a two-month operational test of modified well W385 between December 2019 and February 2020. Wells W385 and W386 associated with monitoring site L4 were modified in 2014 by sealing the screened zone within the shallow aquifer. The modification resulted in a reduction of pumping capacity in W385 from 10.2 cfs to 2.8 cfs and in W386 from 6.1 cfs to 2.8 cfs based on the initial 24-hour pumping test. The goal of the operational test was to document the effect of well modification and to allow comparison with a similar operational test conducted in 1993-94 based on the effect on nearby shallow groundwater levels both north and south of the Owens River. Using data collected from the operational well, the Bishop-Laws groundwater flow model was updated and recalibrated. The model can simulate the future operation of W385 and W386 wells.

During the two-month operational test of W385, groundwater levels were monitored at 29 locations. Six wells were designated as trigger wells, and trigger levels were assigned to each well by staff from LADWP, ICWD, and CDFW. During the test, groundwater levels in none of the trigger wells reached the preset trigger levels. W385 pumped 463 AF of water during the pumping test. LADWP spread the same volume of water to the Five Bridges Area during the following RY from Bishop Creek Canal. Staff from LADWP and ICWD prepared a joint report that described the operational test and presented the data collected during the test.

Based on the two-month operational test results at W385, LADWP plans to conduct a similar testing of W386 depending on the field conditions. LADWP has expanded hydrologic monitoring in the vicinity of wells W385 and W386 and is currently collecting baseline hydrologic data. Quarterly monitoring data are compiled, and reports are submitted to ICWD and CDFW. LADWP will prepare and submit a W386 testing plan for consideration by the Inyo County/Los Angeles Technical Group. The testing plan for W386 will include an expanded monitoring plan and an updated trigger mechanism that was used during the W385 operational testing.

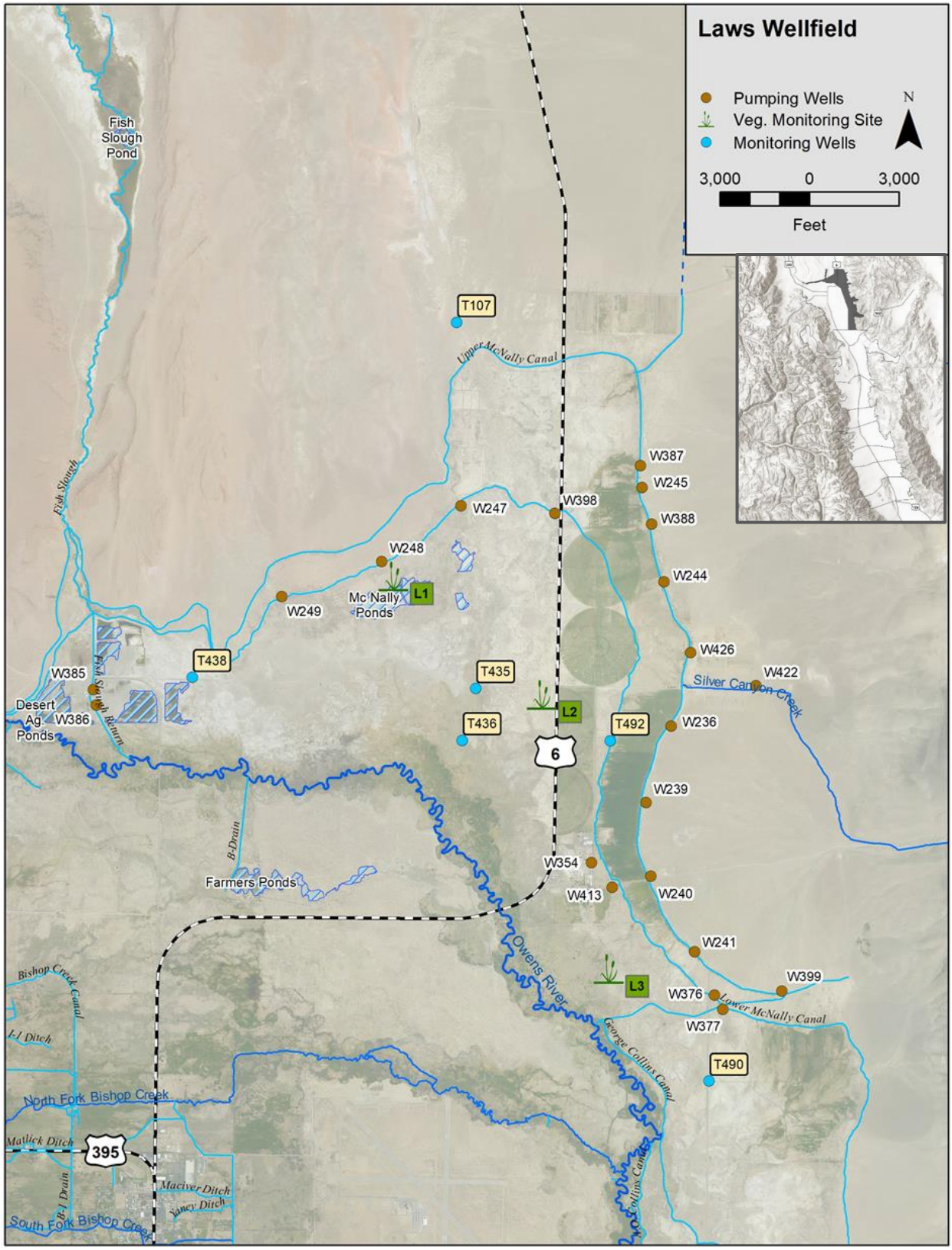


Figure 1.3. Laws Wellfield

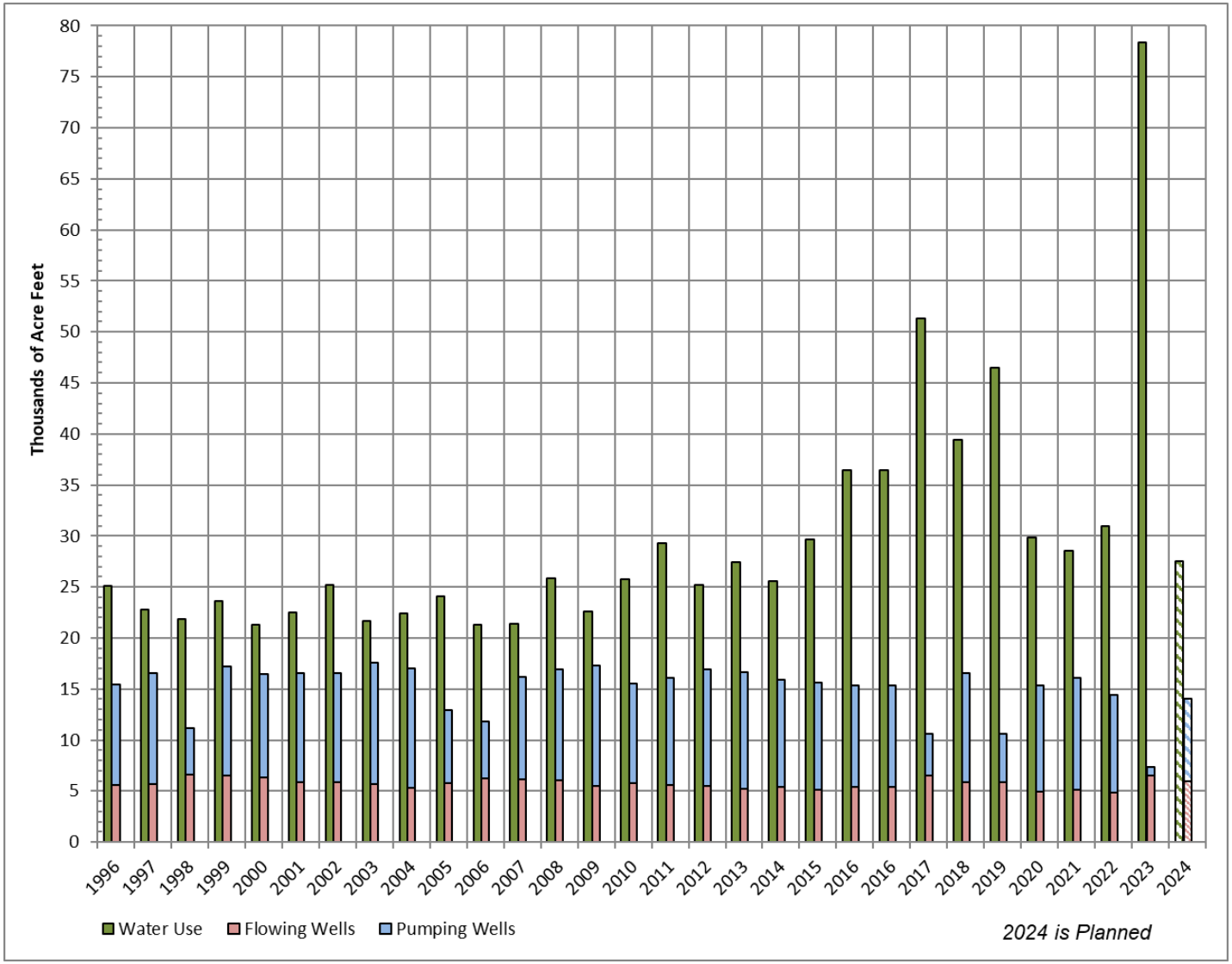
1.2.2. Bishop Wellfield (Figure 1.5)

Figure 1.4 illustrates water use on City-owned Lands on Bishop Cone compared to groundwater extractions (flowing and pumping wells) for RYs 1996 to the present.

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 Bishop Cone to an amount commensurate with the total amount of water used on City lands on Bishop Cone (including conveyance and other losses). Beginning with the 2015-16 RY, the water accounting methods were modified to analyze each area's inflows and outflows to calculate total water use. Under the modified audit protocols, the total water used on City lands within the Bishop Cone area has been approximately 38,000 AF per year in recent years. The estimated water use during the 2024-25 RY will be approximately 28,000 AF. The current total available groundwater extraction capacity in Bishop Wellfield is approximately 18,310 AF. The planned groundwater pumping from the Bishop Wellfield for the 2024-25 RY is between 5,120 and 9,000 AF, contingent on runoff conditions, water needs, and environmental conditions.

LADWP has had operational issues with well W371 in the past irrigation seasons. LADWP drilled well W429 to replace Well W371 in 2021 and plans to equip it during the current RY.

Currently, LADWP has no backup wells in Bishop Cone in case of operational issues with any of its existing supply wells. Installing wells at sites B-2 and B-5 would provide LADWP with the operational flexibility in supplying water to uses on City-owned lands in the Bishop Cone. The planned wells at sites B2 and B5 would also help provide a stable water supply for adjacent irrigation fields during prolonged droughts. LADWP has prepared updated preconstruction evaluation reports for the installation wells at sites B-2 and B-5 that address the County's concern with the potential impacts on nearby non-LADWP wells and is awaiting ICWD's comments before finalizing the reports for consideration by the Inyo/LA Technical Group.



**According to the Hillside Decree, total groundwater extraction cannot be more than water use on City-owned land on the Bishop Cone.*

Figure 1.4. Groundwater Extraction (Flowing & Pumping) and Water Use on City Land in Bishop Cone

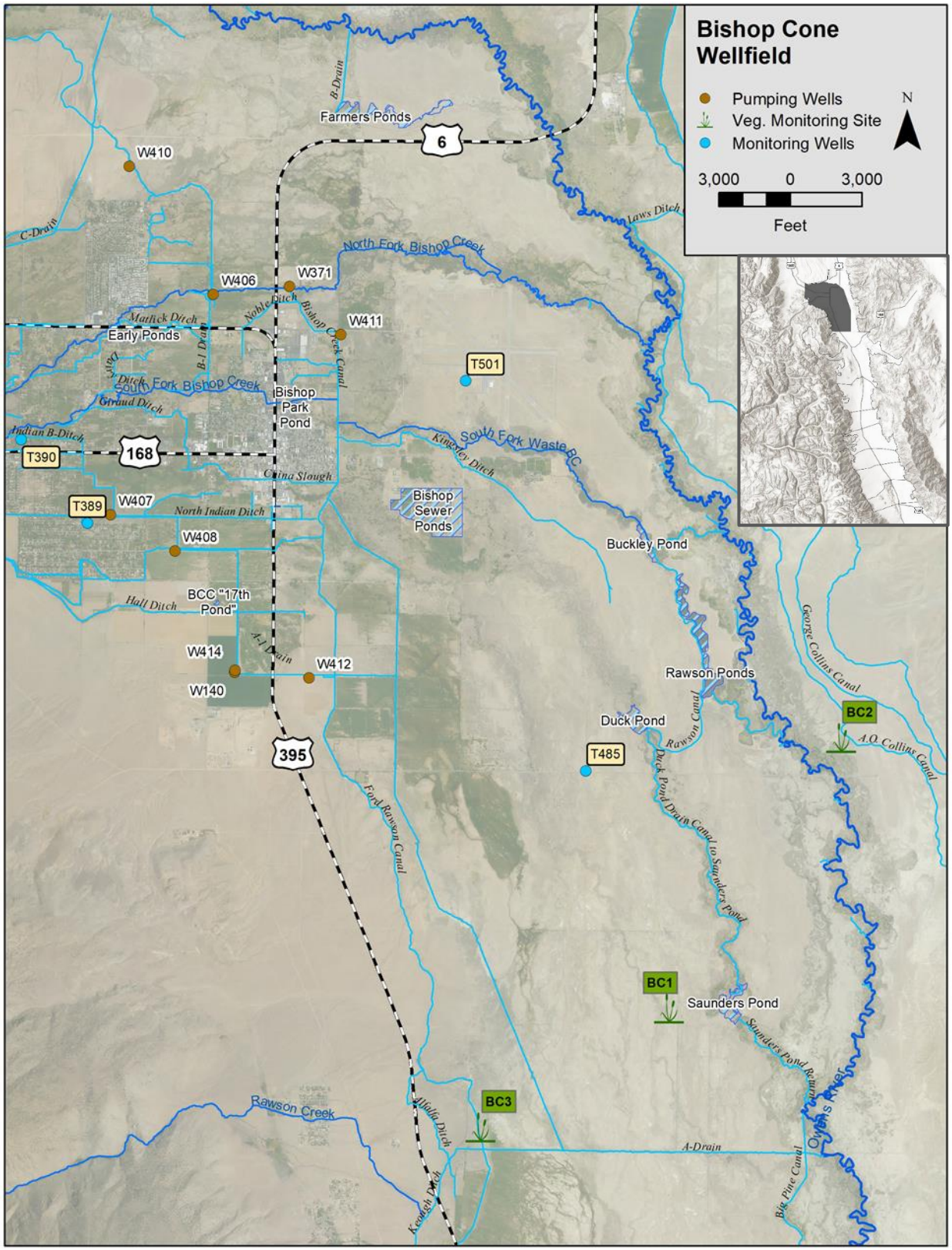


Figure 1.5. Bishop Wellfield

1.2.3. Big Pine Wellfield (Figure 1.6)

Vegetation monitoring sites BP1, BP3, and BP4 are in ON status. Production wells controlled by monitoring site BP1 have 10,430 AF pumping capacity, production wells controlled by monitoring site BP3 have 4,850 AF pumping capacity, and production Well 331, controlled by monitoring site BP4, has 7,530 AF pumping capacity. Exempt wells, including Well 218, Well 219, town supply wells, and Fish Springs Fish Hatchery wells in the Big Pine Wellfield, have a combined 27,00 AF pumping capacity. The total available pumping capacity in the Big Pine Wellfield is 50,510 AF. The planned pumping in the Big Pine Wellfield for the 2024-25 RY ranges between 14,700 AF and 21,300 AF, contingent on runoff conditions, water needs, and environmental conditions.

LADWP installed Well W415 in 2002 to replace Well W341 as the primary town water system source and to provide water to the town ditch system. Following the installation of five new monitoring wells in the vicinity of West Big Pine in 2017 and the completion of permitting requirements, LADWP transferred the town water system supply to Well W415 and decommissioned Well W341. The data from the five new monitoring wells shows the strong barrier effect of the Owens Valley fault separating the groundwater aquifer where W415 draws water from the aquifer east of the fault. Well W341 has been converted to a deep monitoring well utilizing LADWP's current well drilling contract.

A 6-month operational testing of W415 has been proposed by ICWD and approved by the Technical Group to test the capacity of this well when supplying both the Big Pine water system and the town ditch system. The testing plan includes provision for the protection of groundwater-dependent resources, including the Big Pine Paiute Tribe's water supply well.

1.2.4. Taboose-Aberdeen Wellfield (Figure 1.7)

Vegetation monitoring sites TA3, TA4, TA5, and TA6 in Taboose-Aberdeen Wellfield are in ON status. Production wells controlled by monitoring Site TA3 have 11,005 AF available pumping capacity. Production wells controlled by Site TA4 have 19,400 AF available pumping capacity. Production well W349, controlled by the vegetation monitoring site TA5, has 12,240 AF available pumping capacity. Production wells associated with monitoring site TA6 have a 5,720 AF pumping capacity. Exempt wells W118 and W355 have an available pumping capacity of 2,560 AF. The total available groundwater pumping capacity in the Taboose-Aberdeen Wellfield is 50,925 AF. The planned groundwater pumping in the Taboose-Aberdeen Wellfield for the 2024-25 RY ranges between 6,750 AF and 11,325 AF, contingent on runoff conditions, water needs, and environmental conditions.

1.2.5. Thibaut-Sawmill Wellfield (Figure 1.8)

Vegetation monitoring sites TS1, TS2, TS3, and TS4 in Thibaut-Sawmill Wellfield are in ON status. Production well W159, controlled by vegetation monitoring site TS1, has a pumping capacity of 1,090 AF. Production well W155, controlled by vegetation monitoring site TS2, has a pumping capacity of 800 AF. Production wells W103, W104, and W382, controlled by vegetation monitoring site TS3, have 2,970 AF of available pumping capacity, and production wells W380 and W381, controlled by vegetation monitoring site TS4, have 4,350 AF of available pumping capacity. Exempt Blackrock

Fish Hatchery supply wells W351 and W356 are limited to pump 8,000 AFY combined based on the resolution of a dispute between Inyo County and LADWP regarding the conditions of the vegetation parcel BLK94. The total available pumping capacity in the Thibaut-Sawmill Wellfield for the 2024-25 RY is 17,134 AF. The planned pumping in the Thibaut-Sawmill Wellfield for the 2024-25 RY is between 8,000 and 9,648 AF, subject to hatchery demands, runoff conditions, water supply needs, and environmental conditions.

1.2.6. Independence-Oak Wellfield (Figure 1.8)

Production wells W391 and W400 are controlled by the vegetation monitoring site IO1, which was turned to ON status on April 1, 2024. These wells have a combined pumping capacity of 5,285 AF per year. Production well W063, controlled by vegetation monitoring Site IO2, has a pumping capacity of 2,317 AF. Exempt wells in the Independence-Oak Wellfield have a combined pumping capacity of 12,200 AF. The total available pumping capacity of Independence-Oak Wellfield for 2024-25 RY is 19,802 AF. The planned groundwater pumping in the Independence-Oak Wellfield for the 2024-25 RY ranges between 6,960 AF and 9,930 AF, subject to runoff conditions, irrigation, and town water system and E/M projects water demand.

Production well W061 in Independence Wellfield was associated with the vegetation monitoring site IO3 and exempt from ON/OFF provisions of the Green Book during the irrigation season as the sole source for an alfalfa field. Well W061 had become inoperable recent years. LADWP replaced well W061 with a new well, W427, and converted W061 to a multi-string monitoring well. The replacement well is not pump-equipped yet.

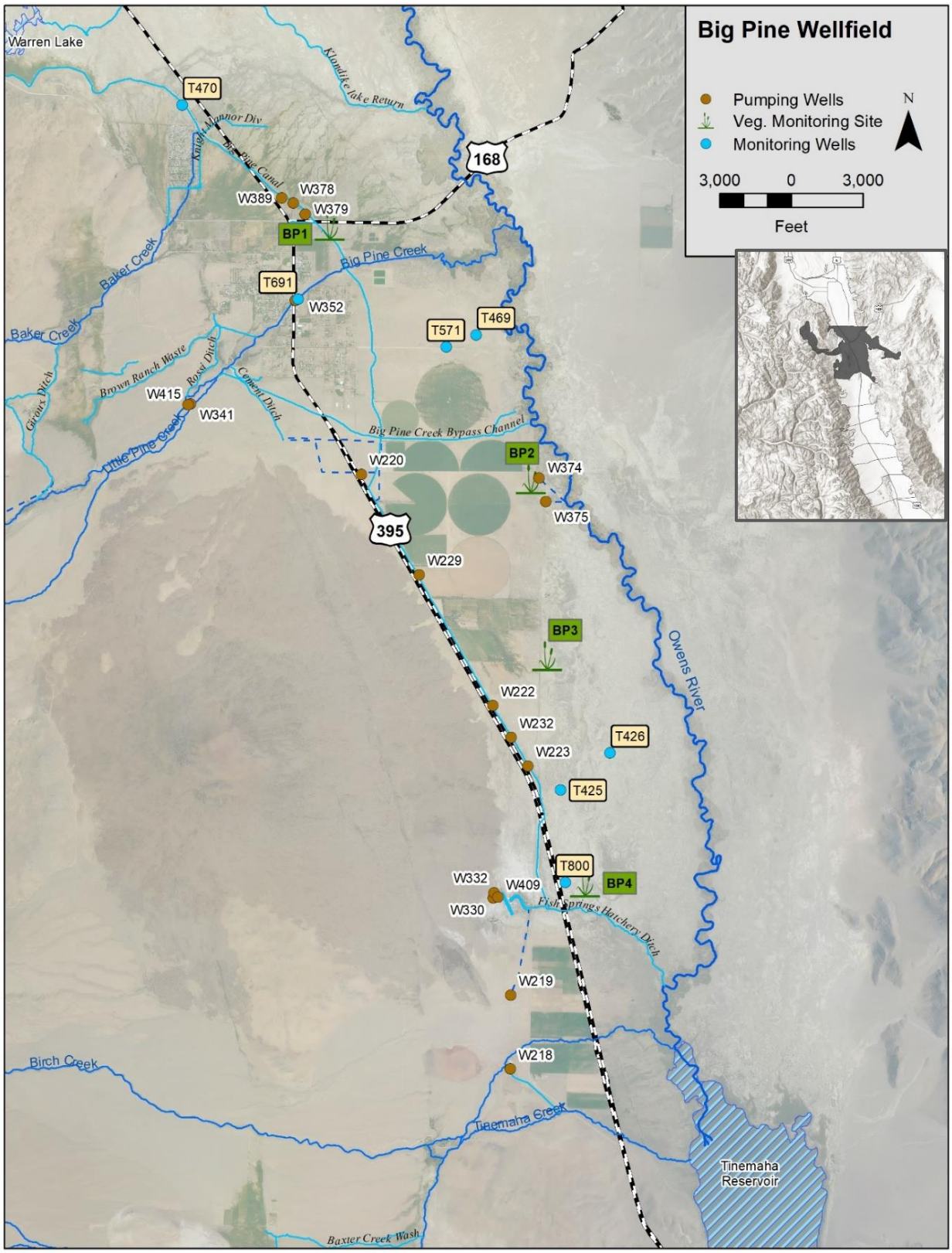


Figure 1.6. Big Pine Wellfield

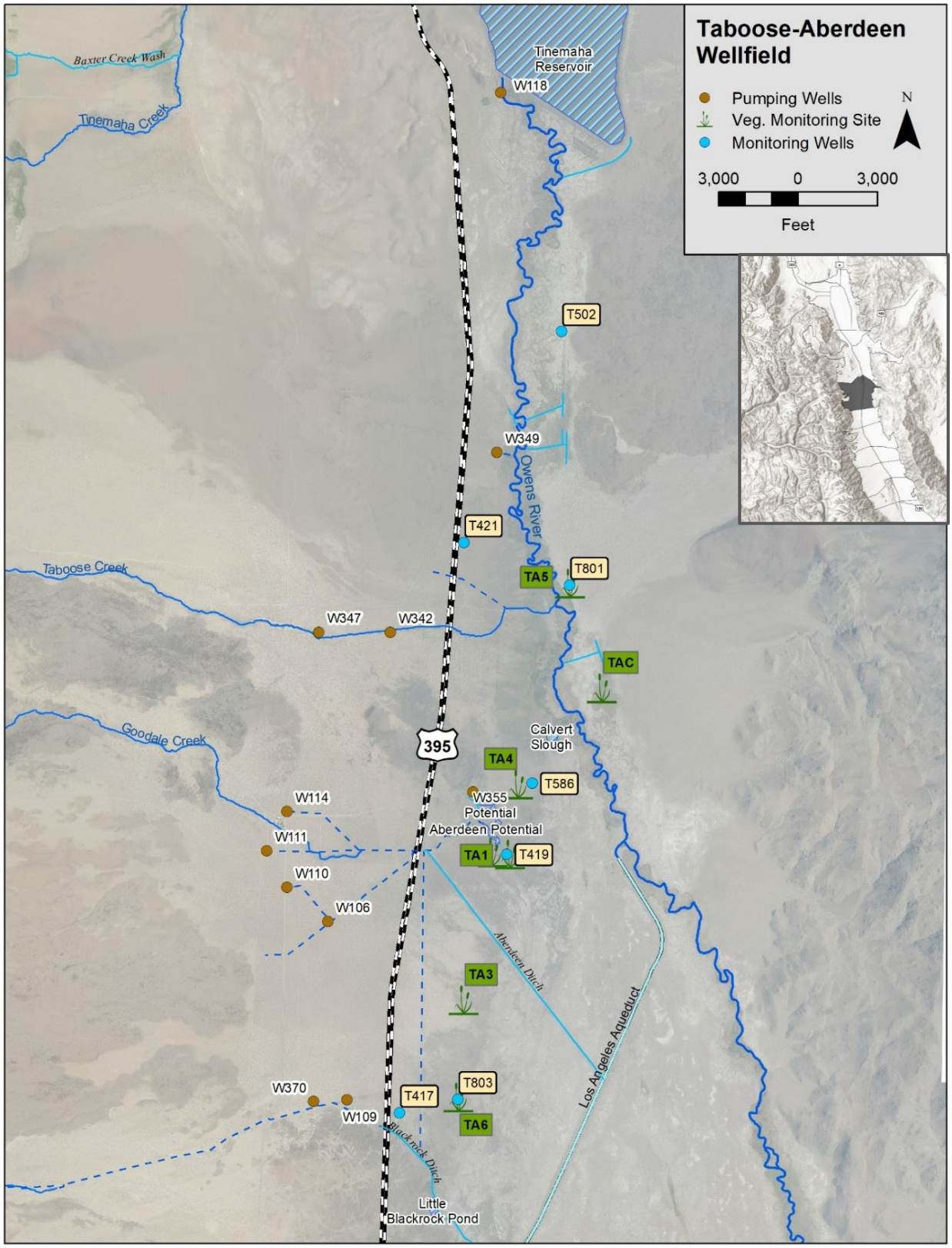


Figure 1.7. Taboose-Aberdeen Wellfield

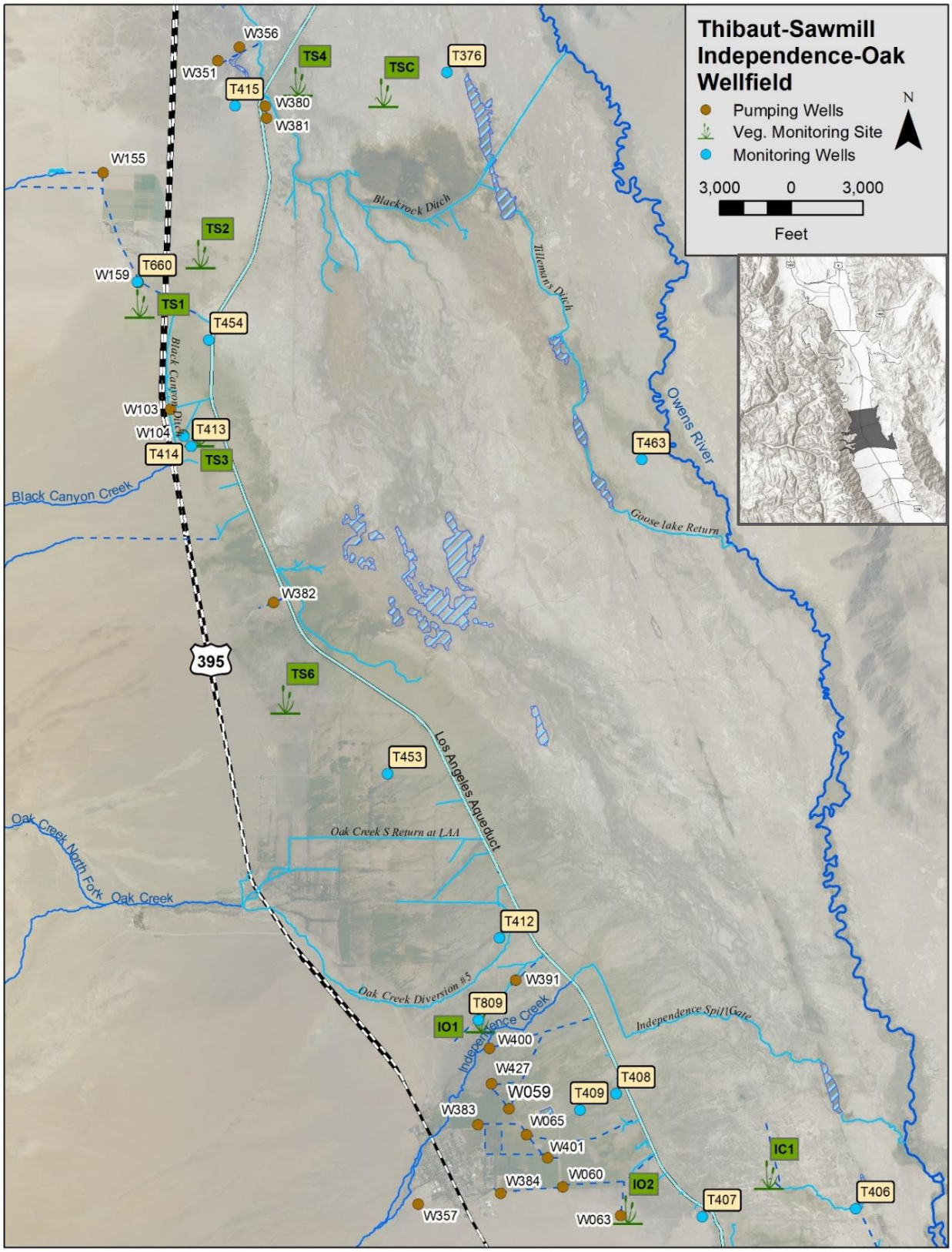


Figure 1.8. Thibaut-Sawmill and Independence-Oak Wellfields

1.2.7. Symmes-Shepherd Wellfield (Figure 1.9)

The vegetation monitoring sites SS1, SS3, and SS4 are in ON status. The available pumping capacity of wells associated with site SS1 is 7,385 AF. The available pumping capacity of wells associated with vegetation monitoring site SS3 is 5,650 AF. The available pumping capacity of wells associated with vegetation monitoring site SS4 is 6,009 AF. Exempt well W402 has a capacity of about 1,200 AF. The total available pumping capacity in the Symmes-Shepherd Wellfield for the 2024-25 RY is approximately 20,244 AF. The planned pumping in the Symmes-Shepherd Wellfield for the 2024-25 RY ranges between 2,640 and 5,040 AF, contingent on runoff conditions, E/M project water needs, and environmental conditions.

LADWP had difficulty operating well W402 in recent years, specifically during the peak of summer, when water demand for irrigation is the highest. As a result, LADWP replaced W402 last year and has equipped the replacement well, well W428, and plans to use it instead of W402 during the 2024-25 runoff to meet the water demand of the lessee for irrigation. Once W428 is fully operational, the existing well W402 will be decommissioned and will either be converted to a deep monitoring well or plugged according to the California well drilling standards.

1.2.8. Bairs-Georges Wellfield (Figure 1.9)

Vegetation monitoring site BG2 is in ON status. The wells controlled by this monitoring site have a combined 2,880 AF pumping capacity. Planned groundwater pumping in the Bairs Georges Wellfield for the 2024-25 RY ranges between 900 and 1,980 AF, contingent on runoff conditions, water needs, and environmental conditions. In this wellfield, LADWP has replaced well W076, which has been out of operation in recent years. The replacement well W430 has not been pump-equipped yet.

1.2.9. Lone Pine Wellfield (Figure 1.10)

Lone Pine Wellfield exempt wells are town supply wells W344 and W346, and E/M project supply Well W425. These three wells have an annual available pumping capacity of approximately 990 AF. The planned groundwater pumping from Lone Pine Wellfield during the 2024-25 RY is approximately 900 AF, contingent on runoff conditions, water supply needs, and environmental conditions.

Well W416 is a production well in the Lone Pine Wellfield, drilled in 2002. An operational pumping test was conducted on Well W416 during the 2009 RY. This well was modified in 2014 to seal the screen portion of the well within the shallow aquifer. LADWP is planning to develop an operational plan for this well to ensure non-LADWP wells are protected and then equip and conduct the initial operation of this well. If the initial operation is performed during the 2024-25 RY, it will be in addition to the currently planned pumping from Lone Pine Wellfield. LADWP has requested the Technical Group to designate a vegetation monitoring site for this well.

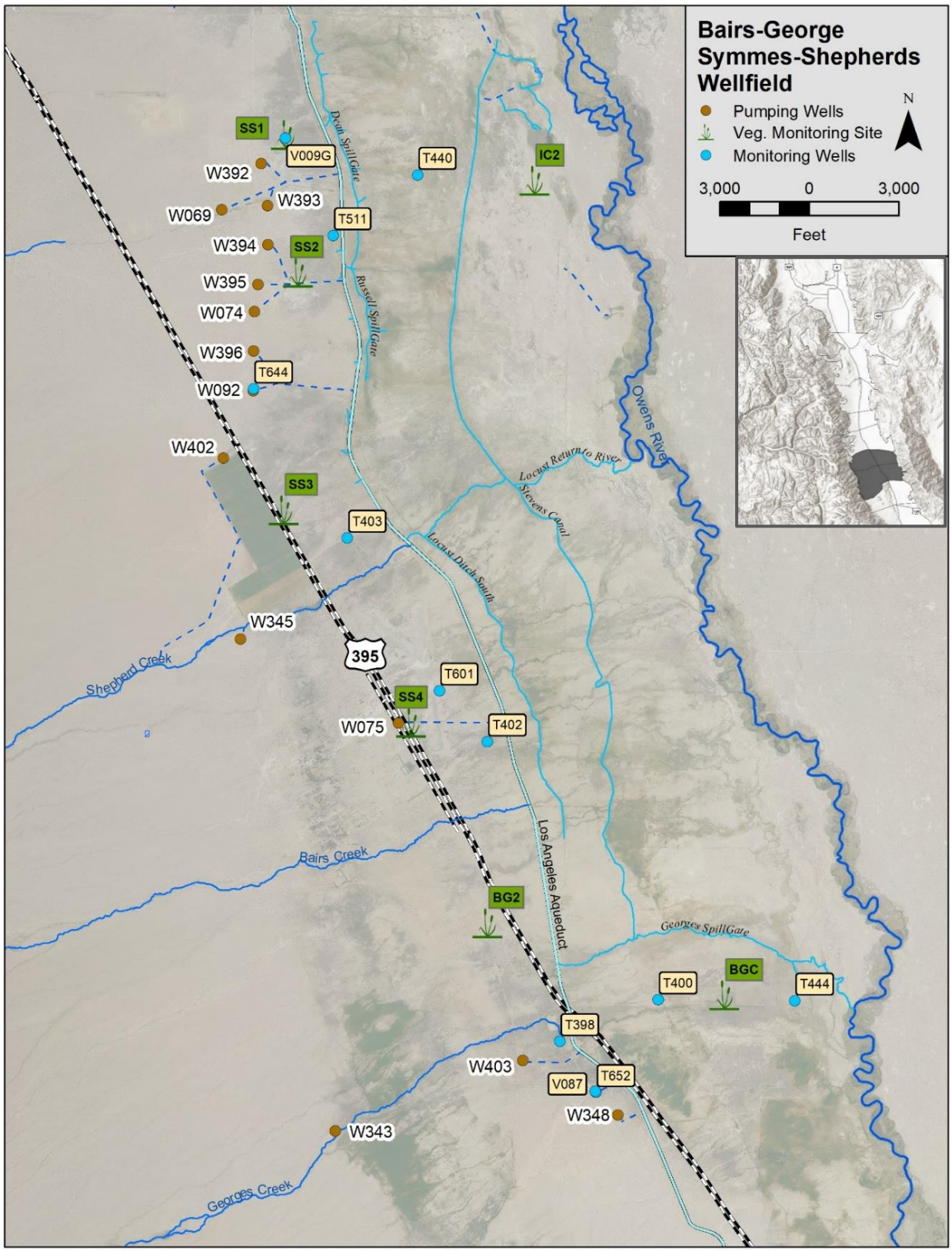


Figure 1.9. Symmes-Sheperds and Bairs-Georges Wellfields

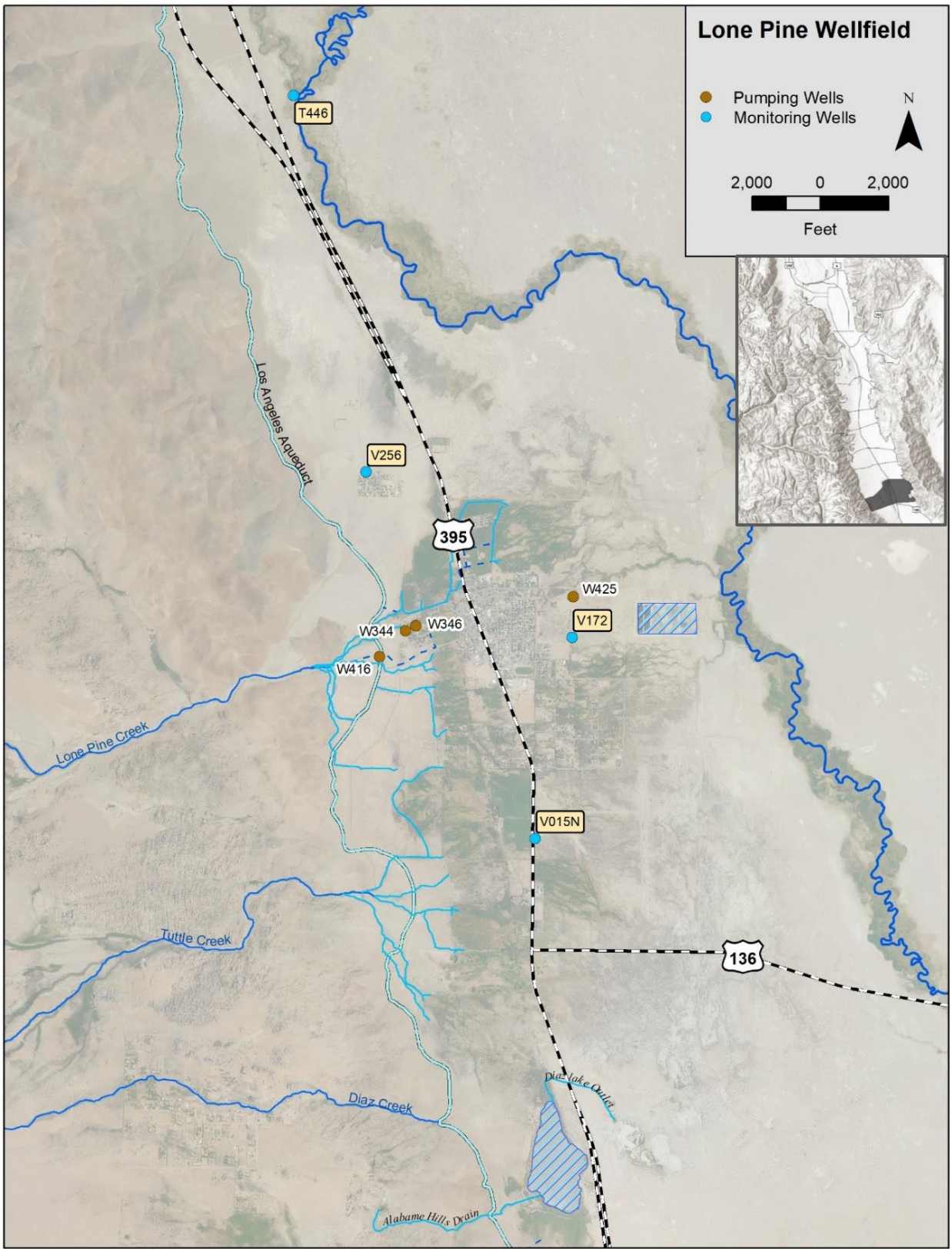


Figure 1.10. Lone Pine Wellfield

1.3. Owens Valley Uses (Including E/M Projects)

Table 1.8 shows the historical (1981-82) uses and the planned monthly uses on City-owned lands within the Owens Valley for the 2024-25 RY. The in-valley uses shown in Table 1.8 consist of irrigation, stockwater, recreation and wildlife projects, E/M projects supply, LORP usage, and 1600 AF Projects. As shown in Table 1.8 and Figure 1.11, LADWP plans to provide approximately 95,130 AF for in-valley uses on City-owned lands this RY, with additional water planned to be released through spreading.

Releases to the LORP from the LAA Intake facility began on December 6, 2006. A minimum flow of over 35 cfs is maintained throughout the 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 required flows in the river channel. Table 1.8 shows projected 2024-25 RY water use by the LORP on a monthly basis, totaling 14,910 AF. Total LORP uses include the Lower Owens River, Owens Delta, BWMA, and project-associated losses.

The Water Agreement provides that "... E/M projects shall continue to be supplied by E/M 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. In the past, LADWP chose to supply certain E/M projects from surface water sources. Future E/M allotments may be influenced by the availability of E/M wells and operational demands. Table 1.9 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 2024-25 RY. E/M project water demands during the 2024-25 RY are expected to be approximately 3,000 AF greater than E/M groundwater pumping. The cumulative E/M water supply shortfall, that began accumulating in the 1992-93 RY, will be approximately 213,000 AF by the end of the 2024-25 RY.

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 the appropriate action necessary to ensure water supplied to E/M projects is in conformance with the provisions of the Water Agreement.

Table 1.8. Water Uses on City-Owned Lands in Owens Valley
Actual Use in 1981-82 and Planned Use in RY 2024-25 (AF)

	April		May		June		July		August		September		TOTAL Apr-Sep	
Use	**1981**	**2024**	**1981**	**2024**	**1981**	**2024**	**1981**	**2024**	**1981**	**2024**	**1981**	**2024**	**1981**	**2024**
Irrigation	3,980	7,730	7,958	9,160	10,373	9,550	9,476	9,240	8,295	8,860	6,321	5,850	**46,403**	50,390
Stockwater	1,141	960	1,319	1,030	1,244	1,060	1,245	1,050	1,219	990	1,319	960	**7,487**	6,050
E / M	0	1,040	0	1,230	0	1,560	0	1,780	0	1,620	0	1,110	**0**	8,340
LORP	0	350	0	1,290	0	3,040	0	3,210	0	2,880	0	2,670	**0**	13,440
Rec. & Wildlife	379	520	804	640	1,160	720	1,455	770	1,381	870	1,406	700	**6,585**	4,220
1600 ACFT Proj.	0	90	0	180	0	90	0	80	0	170	0	80	**0**	690
Total	***5,500***	***10,690***	***10,081***	***13,530***	***12,777***	***16,020***	***12,176***	***16,130***	***10,895***	***15,390***	***9,046***	***11,370***	***60,475***	***83,130***

	October		November		December		January		February		March		TOTAL Oct-Mar		TOTAL Apr-Mar	
Use	**1981**	**2024**	**1981**	**2024**	**1981**	**2024**	**1982**	**2025**	**1982**	**2025**	**1982**	**2025**	**81-82**	**2025**	**81-82**	**24-25**
Irrigation	263	0	0	0	0	0	0	0	0	0	14	10	**277**	10	**46,680**	50,400
Stockwater	1,065	870	1,045	810	1,050	810	1,007	740	1,010	700	1,098	860	**6,275**	4,790	**13,762**	10,840
E / M	0	440	0	380	0	280	0	310	0	40	0	130	**0**	1,580	**0**	9,920
LORP	0	950	0	240	0	190	0	10	0	10	0	70	**0**	1,470	**0**	14,910
Rec. & Wildlife	781	910	713	640	565	570	478	360	342	430	447	330	**3,326**	3,240	**9,911**	7,460
1600 ACFT Proj.	0	180	0	140	0	130	0	150	0	140	0	170	**0**	910	**0**	1,600
Total	***2,109***	***3,350***	***1,758***	***2,210***	***1,615***	***1,980***	***1,485***	***1,570***	***1,352***	***1,320***	***1,559***	***1,570***	***9,878***	***12,000***	***70,353***	***95,130***

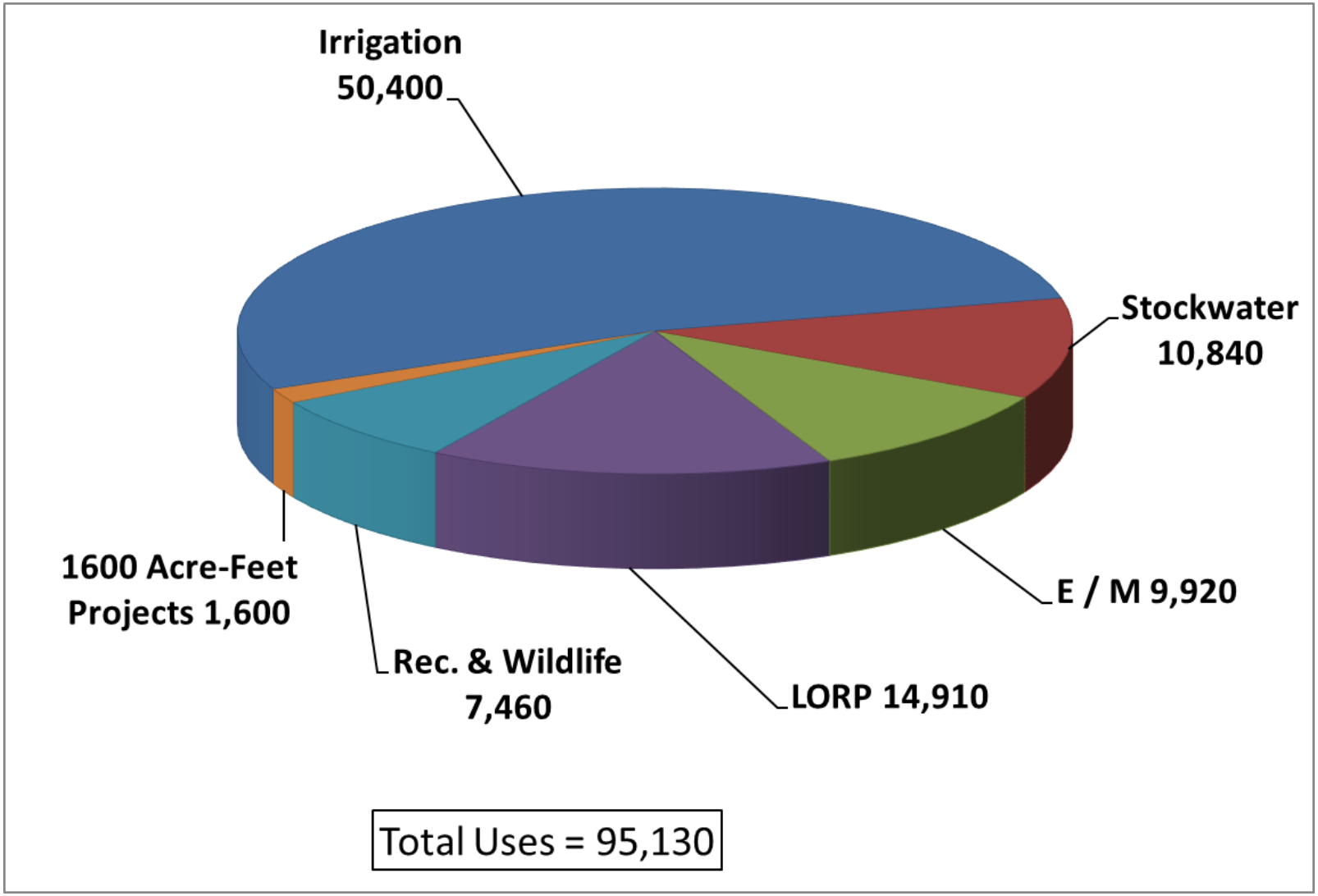


Figure 1.11. Distribution of Planned Water Use in Owens Valley on City-Owned Lands for 2023-24 RY

Table 1.9. Owens Valley Groundwater Pumping and E/M Water Use (1992-93 through 2023-24 RY (AF))

Runoff Year	Owens River Basin 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
1992-93	62%	84,453	70,688	13,765	18,357	-4,592	-9,319
1993-94	108%	76,329	67,338	8,991	19,310	-10,319	-19,638
1994-95	67%	89,219	78,209	11,010	20,812	-9,802	-29,440
1995-96	156%	69,752	57,180	12,572	22,943	-10,342	-39,782
1996-97	137%	74,904	57,981	16,923	23,949	-7,026	-46,808
1997-98	126%	66,914	52,760	14,154	21,608	-7,346	-54,154
1998-99	151%	51,574	47,353	4,221	19,672	(3)	-54,154
1999-00	90%	63,675	59,342	4,333	24,452	-20,117	-74,271
2000-01	85%	67,795	61,456	6,339	20,782	-14,272	-88,543
2001-02	84%	73,349	70,055	3,294	21,815	-18,521	-107,064
2002-03	68%	81,979	76,059	5,920	21,394	-15,474	-122,538
2003-04	83%	87,727	80,729	6,998	21,116	-14,118	-136,656
2004-05	78%	85,820	78,110	7,710	18,918	-10,617	-147,273
2005-06	138%	56,766	51,695	5,071	20,032	-14,285	-161,558
2006-07	148%	58,621	53,925	4,696	17,357	(3)	-161,558
2007-08	61%	60,338	53,413	6,925	11,565	-4,640	-166,198
2008-09	75%	68,149	60,231	7,918	10,646	-2,728	-168,926
2009-10	79%	64,138	57,946	6,192	10,697	-4,505	-173,431
2010-11	104%	78,171	71,156	7,015	10,407	-3,392	-176,823
2011-12	142%	91,728	84,394	7,334	11,462	-4,128	-180,951
2012-13	58%	88,308	82,653	5,655	9,257	-3,602	-184,553
2013-14	54%	79,221	74,090	5,131	8,222	-3,091	-187,644
2014-15	53%	66,561	60,671	5,890	9,520	-3,630	-191,274
2015-16	48%	70,273	65,149	5,124	8,265	-3,141	-194,415
2016-17	82%	75,340	70,070	5,270	10,967	-5,697	-200,112
2017-18	202%	47,443	44,466	2,977	11,652	(3)	-200,112
2018-19	98%	84,709	77,758	6,951	9,895	-2,944	-203,056
2019-20	155%	53,453	49,722	3,731	11,196	(3)	-203,056
2020-21	75%	73,314	64,389	8,925	9,311	-386	-203,442
2021-22	47%	62,410	55,813	6,597	10,223	-3,626	-207,068
2022-23	58%	66,185	59,342	6,843	9,812	-2,969	-210,037
2023-24	214%	35,585	33,702	1,883	12,791	(3)	-210,037
2024-25	*103%*	*(2)*		*7,000*	*9,920*	*-2,920*	-212,957

(1) Based on applicable 50-year mean

(2) Planned pumping range is 51,470 - 77,415 acre-feet

(3) surface water was available

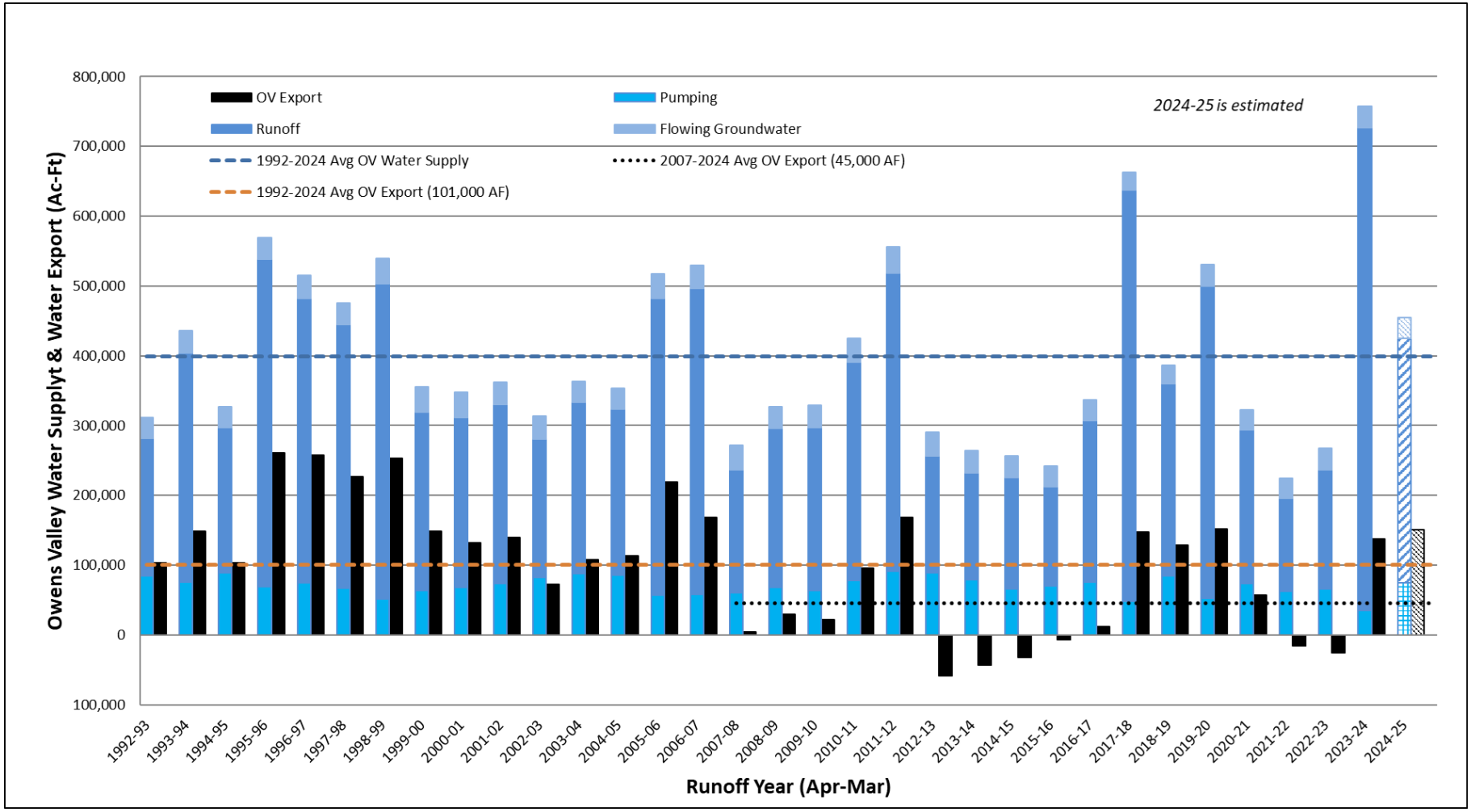
1.4. Aqueduct Operations

Table 1.10 shows planned LAA reservoir storage levels and monthly deliveries to Los Angeles. Based on this plan, approximately 301,000 AF will be exported from Eastern Sierra to the City during the 2024-25 RY. Approximately 151,000 AF of export will come from the Owens Valley water supply. Figure 1.12 shows the historical total Owens Valley water supply (made up of flowing groundwater, runoff, and pumping) alongside the amount of water exported to Los Angeles which comes from that total supply.

The 1991 EIR analyzed water supply for the LAA for pre-project conditions and for conditions under implementation of the Water Agreement. This analysis isolated the Owens Valley to determine what effect implementation of the Water Agreement would have on water supply for the LAA. Table S-1 of the 1991 EIR showed the components of aqueduct supply in average years during the pre-project and under the proposed project (1970-1990 and the Water Agreement). Calculations taken from Table S-1 show that prior to the building of the Second LAA in 1971, 38% of Owens Valley water supply was exported to Los Angeles on an annual basis. The 1991 EIR projected 44% of Owens Valley Water Supply being exported to Los Angeles annually. However, since implementation of the Water Agreement, on average, 26% of the Owens Valley water supply has been exported to Los Angeles.

Table 1.10. Planned LAA Operations for 2024-25 RY

Month	Owens Valley-Bouquet Reservoir Storage 1st of month Storage (acre-feet)	Exports from Eastern Sierra (acre-feet)
April, 2024	*245,000*	*13,000*
May	*230,000*	*39,000*
June	*211,000*	*34,000*
July	*206,000*	*40,000*
August	*206,000*	*25,000*
September	*192,000*	*25,000*
October	*172,000*	*38,000*
November	*160,000*	*24,000*
December	*161,000*	*22,000*
January, 2025	*171,000*	*8,000*
February	*194,000*	*16,000*
March	*200,000*	*17,000*
TOTAL	***-45,000***	***301,000***



Note: The blue bar made up of Runoff, Flowing Groundwater, and Pumping is the Owens Valley water supply.
The black bar is the amount of the Owens Valley water supply exported to Los Angeles. The black bar is below 0 in certain RYs because the Owens Valley uses exceeded the supply and imported water was used to meet the water demands.

Figure 1.12 Owens Valley Water Supply and Export

1.5. Water Exports to Los Angeles

Figure 1.13 provides a record of water exports from the Eastern Sierra to Los Angeles since 1970. Figure 1.14 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 the City will require about 450,000 AF of water during the 2024-25 RY Water from the Owens Valley will make up 34% of the 2024-25 supply for Los Angeles, while water from the entire Eastern Sierra will make up about 65% of the total supply. Los Angeles area aquifers will supply about 12%, MWD will supply about 20%, and recycled water will supply about 3%.

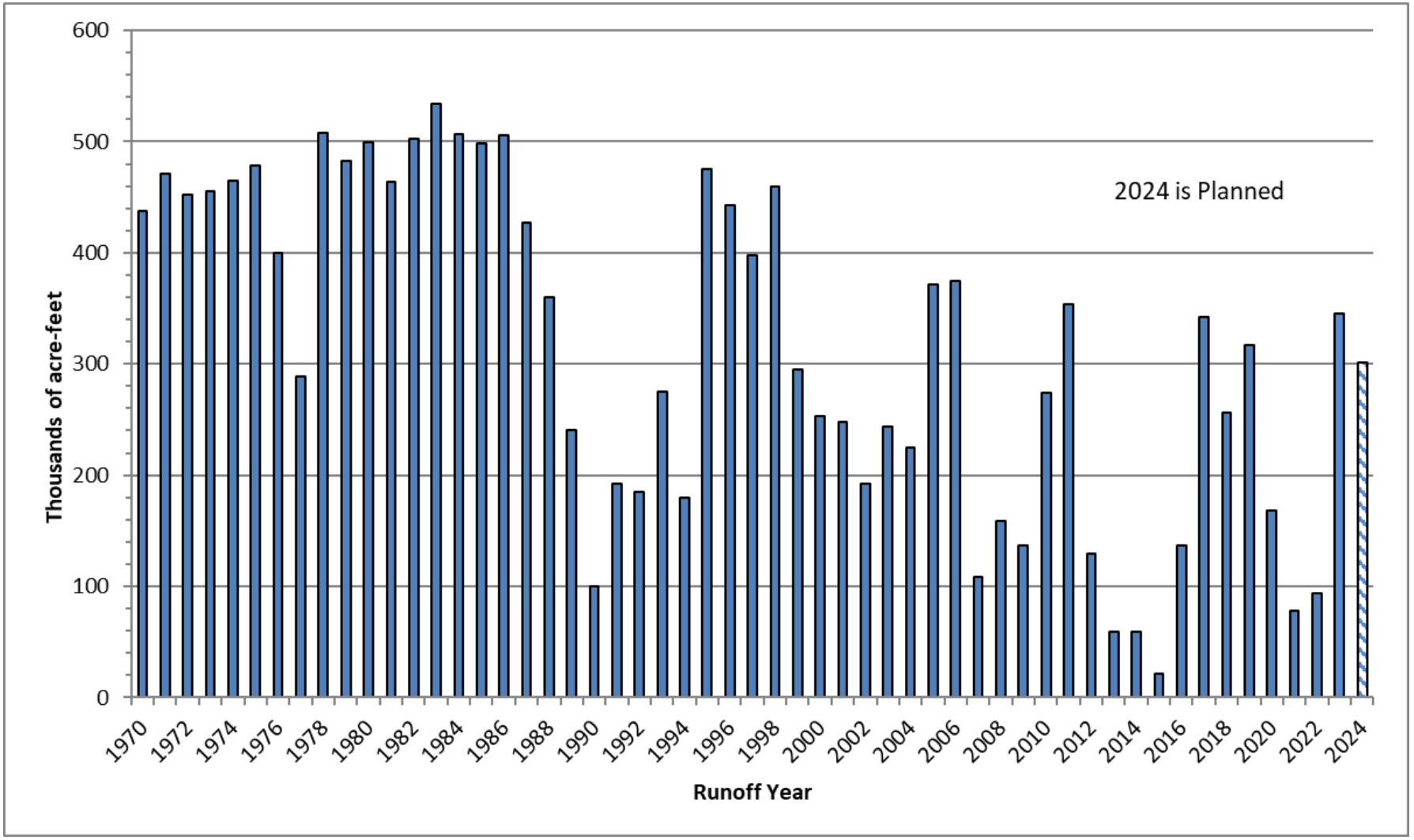


Figure 1.13. Water Export from the Eastern Sierra

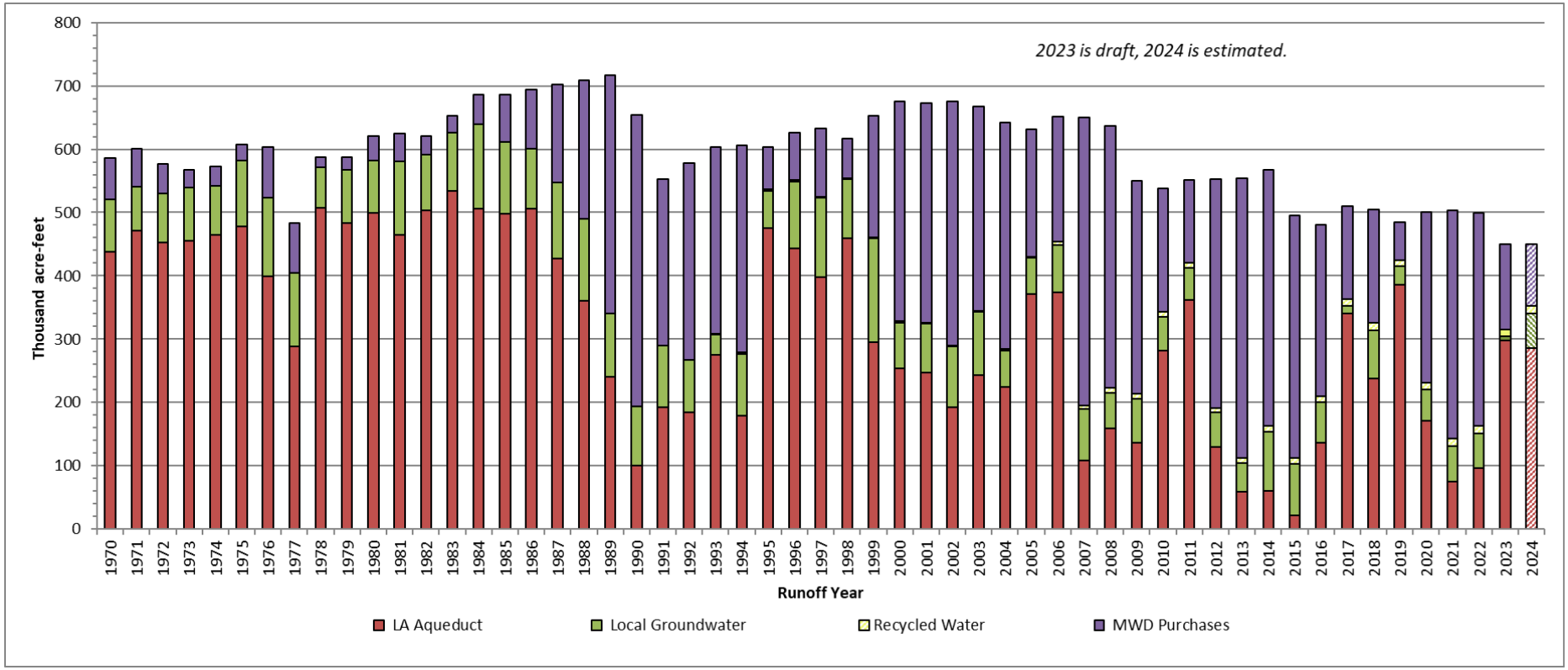


Figure 1.14. Sources of Water for the City

1.6. Water Spreading in the Owens Valley

In years with much greater than normal snowmelt, the volume of runoff may at times exceed the capacity of the LAA system. During periods of high runoff, LADWP may spread runoff water for groundwater recharge purposes. In addition, other operational needs may require LADWP to spread water.

The overall estimated Eastern Sierra snowpack as of April 1, 2024, is 97% of normal, and the forecasted runoff for the Owens River Basin is about 419,300 AF or 103% of the 50-year average. Due to the historic snowpack and runoff in 2023, which left LADWP reservoirs at capacity for the start of the 2024 runoff, LADWP has already spread water in early April. Further water spreading is anticipated during the remainder of April and perhaps into May or June, but it is unlikely to occur later in the year unless temperatures, precipitation, available LAA capacity, and operational needs dictate the need to do so.

CONDITIONS IN THE OWENS VALLEY

2.0 CONDITIONS IN THE OWENS VALLEY

As of April 1, 2024, the Eastern Sierra overall snowpack was measured to be 97% of normal (Table 2.5). Owens River Basin runoff during the 2024-25 RY is forecast to be 419,300 AF or approximately 103% of normal (Section 1, Table 1.1). Owens Valley floor precipitation during the 2023-24 RY was about 159% of average (Table 2.6). Overall, vegetation cover in the Owens Valley is comparable to mid-1980s baseline conditions. A graphical summary of Owens Valley conditions is provided in Figure 2.1. Groundwater levels are generally stable in most areas of the valley, based on depth to water in selected monitoring wells in each of LADWP's nine wellfields, as shown in Figures 2.2 through Figure 2.10.

2.1. Well ON/OFF Status

The Water Agreement includes the vegetation protection provisions of linking pumping wells to specific monitoring sites. If the available soil moisture measured at a vegetation monitoring site is not sufficient to meet the estimated demands of the vegetation associated with that monitoring site, the wells linked to that site are designated as being in the OFF status and may not be operated. The wells linked to a monitoring site may be operated if the available soil water is determined to be sufficient to have met the estimated water requirements of the vegetation at the time that the associated wells were designated as being in the OFF status. The Green Book includes the complete well ON/OFF procedures. Table 2.1 lists Owens Valley monitoring site ON/OFF status as of April 2023, the monitoring wells associated with each monitoring site, and the linked pumping wells.

Some pumping wells are designated as exempt from linkage to vegetation sites and the ON/OFF provisions of the Water Agreement because they are in areas that do not cause significant adverse impacts to the vegetation or because the County and LADWP have determined them to be a necessary source of water. A list of exempt wells and the reasons for exemption are included in Section 1, Table 1.5.

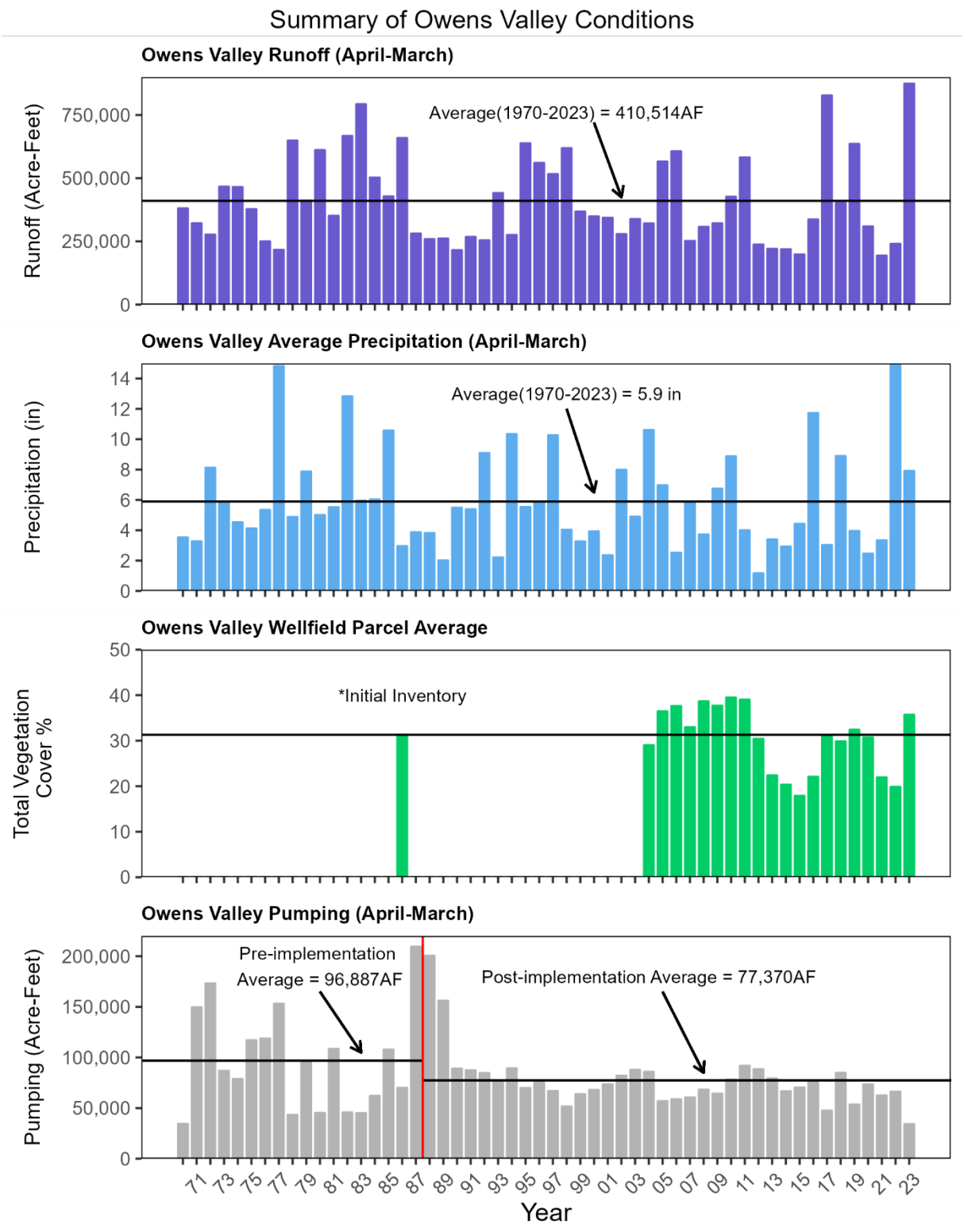


Figure 2.1. Summary of Owens Valley Conditions

Table 2.1. Owens Valley Monitoring Site Status (ON/OFF) as of April 2023

Wellfield	Monitoring Site	Monitoring Well	Pumping Wells	E/M Wells	ON/OFF Status
Laws	L1	795T	247, 248, 249, 398		ON
	L2	USGS 1	236*, 239, 243, 244		ON
	L3		240, 241, 242	376, 377	ON
	L4a, L4b			385, 386	na
	L5**		245	387, 388	na
	Exempt		236*, 354, 422, 413		Exempt
Bishop	All wells		140, 411, 410, 371		na
			406, 407, 408, 412		na
Big Pine	BP1	798T	210, 352	378, 379, 389	ON
	BP2	799T	220, 229, 374		OFF
	BP3	567T	222, 223, 231, 232		ON
	BP4	800T	331		ON
	Exempt		218, 219, 330, 332, 341, 352, 375, 415		Exempt
Taboose-Aberdeen	TA3	505T	106, 110, 111, 114		ON
	TA4	586T	342, 347		ON
	TA5	801T	349		ON
	TA6	803T	109, 370		ON
	Exempt		118		Exempt
Thibaut-Sawmill	TS1	807T	159		ON
	TS2	T806	155		ON
	TS3	454T	103, 104	382	ON
	TS4	804T		380, 381	ON
	Exempt		351, 356		Exempt
Independence-Oak	IO1	809T	391, 400		ON
	IO2	548T	63		ON
	Exempt		59, 60, 61, 65, 401, 357, 384*	383, 384	Exempt
Symmes-Shepherd	SS1	USGS 9G	69, 392, 393		ON
	SS2	646T	74, 394, 395		OFF
	SS3	561T	92, 396		ON
	SS4	811T	75, 345		ON
	Exempt			402	Exempt
Bairs-Georges	BG2	812T	76, 343*, 348, 403		ON
	Exempt		343*		na
Lone Pine	Exempt		344, 346	425	Exempt
	Other		416		na

2.2. Groundwater Level Fluctuations

LADWP's Water Operations hydrographers monitor groundwater levels in over 900 monitoring wells throughout the Owens Valley regularly, which has allowed the evaluation of groundwater levels since the early 1970s when LADWP began to utilize groundwater resources on a more consistent basis. This section presents hydrographs of the average groundwater levels in each wellfield and overall, in the Owens Valley.

Groundwater levels in select monitoring wells were used to calculate the average groundwater level in each wellfield. Four monitoring wells were selected per wellfield, listed in Table 2.2 using the following criteria: 1) be representative of the shallow aquifer that support vegetation, 2) be located spatially distributed throughout the wellfield, and 3) have groundwater level measurements back to the early 1970s.

Table 2.2 Selected Monitoring Wells in Each Wellfield Used to Prepare Hydrographs

Wellfield	Monitoring Wells
Laws	*T107, T436, T438, T490*
Bishop	*T389, T390, T485, T501*
Big Pine	*T425, T426, T469, T470*
Taboose-Aberdeen	*T417, T419, T421, T502*
Thibaut-Sawmill	*T413, T414, T415, T454*
Independence-Oak	*T406, T408, T412, T453*
Symmes-Shepherd	*T402, T403, T440, T511*
Bairs-George	*T398, T400, T444, T652** **Previously V087*
Lone-Pine	*T446, V015N, V172, V256*

A summary of the data analyzed is presented in Table 2.3, showing average wellfield pumping, Owens River Basin runoff, and DTW, for the 1991 through 2022-23 RYs.

The last row of the table shows the same information for the entire Owens Valley based on the data from all of the monitoring wells in Table 2.2.

Table 2.3 Average Annual Pumping and Depth to Groundwater since 1991 RY

Wellfield	Average (1991-2023 RYs)	
	Pumping (AF/Year)	Depth to Groundwater§ (FT)
Laws	*6,762*	*15.6*
Bishop	*9,281*	*12.2*
Big Pine	*22,333*	*16.7*
Taboose-Aberdeen	*7,722*	*20.4*
Thibaut-Sawmill	*11,465*	*12.1*
Independence-Oak	*8,120*	*5.5*
Symmes-Shepherd	*2,893*	*6.5*
Bairs-George	*662*	*6.9*
Lone Pine	*1,121*	*17.5*
Owens Valley	***70,359***	***12.7***

§ Average distance to water from surface is calculated using 1992-2024 April 1 values.

* Average 1991-2023 ROYs Owens River Basin Runoff is 403,790 acre-feet.

† Based on data from select monitoring wells presented in Table 2.2.

The following figures show graphically the change in average groundwater level with Owens River Basin runoff and pumping for each of the wellfields and for the overall Owens Valley from the early 1970s to the 2021 RY. These figures also show the correlation coefficient of the average wellfield groundwater levels with both runoff and pumping. The correlation coefficient (r-value) represents the statistical relationship between two variables and can vary between 0.0 and 1.0 for positively related variables and between -1.0 and 0.0 for negatively related variables. The closer the correlation coefficient is to 1.0 or -1.0, the stronger the relationship between the two variables.

A review of Table 2.3 and the following wellfield and overall Owens Valley hydrographs shows that since the implementation of the Inyo/Los Angeles Water Agreement in 1991:

- Owens River Basin runoff has been highly variable, ranging from 194,000 af in 2021 to 883,000 af in 2023 and an average of 404,000 af/yr,

- LADWP pumping in Owens Valley was relatively stable, ranging from 35,000 af in 2023 to 91,000 af in 2011 and an average of 70,400 af/yr,

- Average Owens Valley groundwater level was generally stable, ranging from 7 to 17 feet below ground surface with an average of 12.7 ft below ground surface and without any long-term rising or declining trends,

- The year-to-year average groundwater level trend in Owens Valley has been relatively stable based on the calculated autocorrelation.

As presented in Figures 2.2 - 2.21, historical average groundwater levels in Owens Valley correlate positively with Owens River Basin Runoff (r = 0.68) and negatively with pumping (r = -0.61). Among all wellfields, groundwater levels in Lone Pine Wellfield correlated strongest with runoff (r = 0.77), while groundwater levels in Bishop Wellfield correlated weakest with runoff (0.46). Groundwater levels in Bairs-Georges Wellfield correlated strongest with pumping (r=-0.64), while groundwater levels in Lone Pine Wellfield correlated weakest with pumping (r=-0.12). Generally, average groundwater levels have a stronger correlation with runoff than pumping in all wellfields, except Taboose-Aberdeen, Symmes-Shepherd, and Bairs-Georges wellfields.

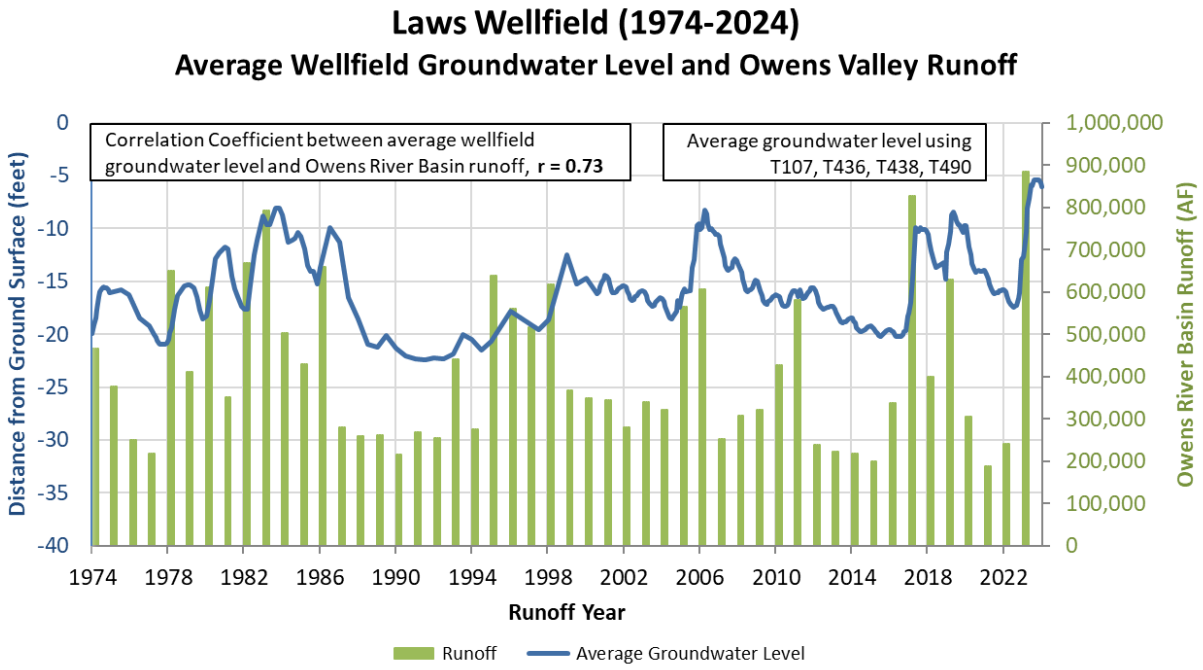


Figure 2.2. Average Laws Wellfield Groundwater Level and Owens River Basin Runoff

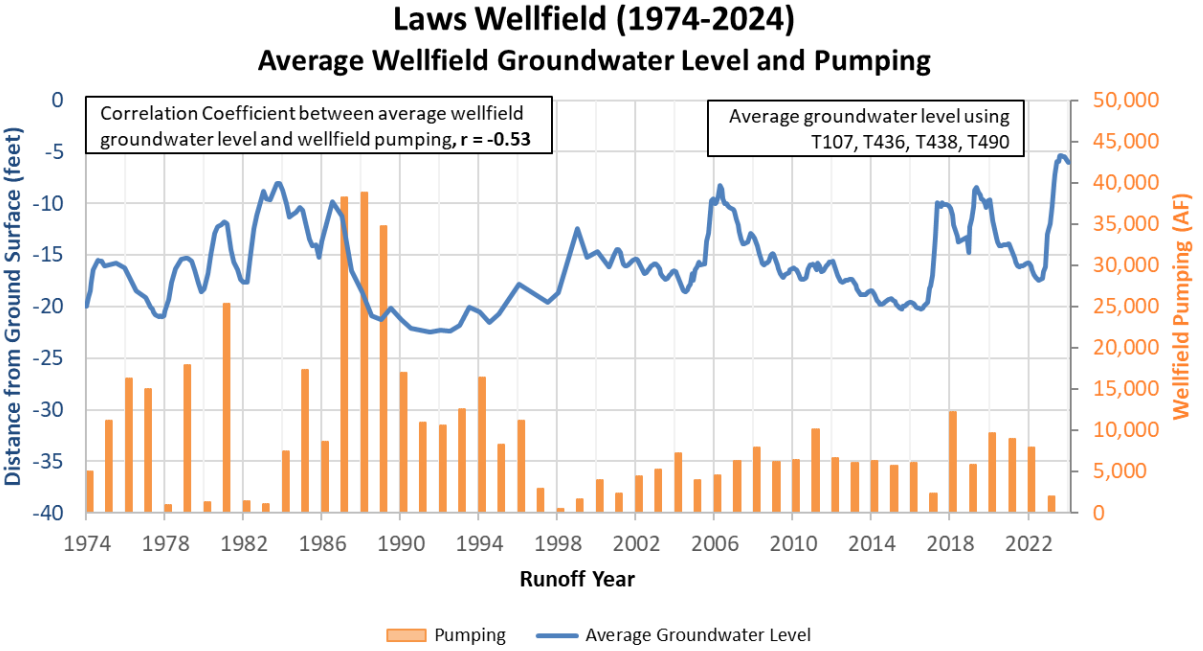


Figure 2.3. Average Laws Wellfield Groundwater Levels and Pumping

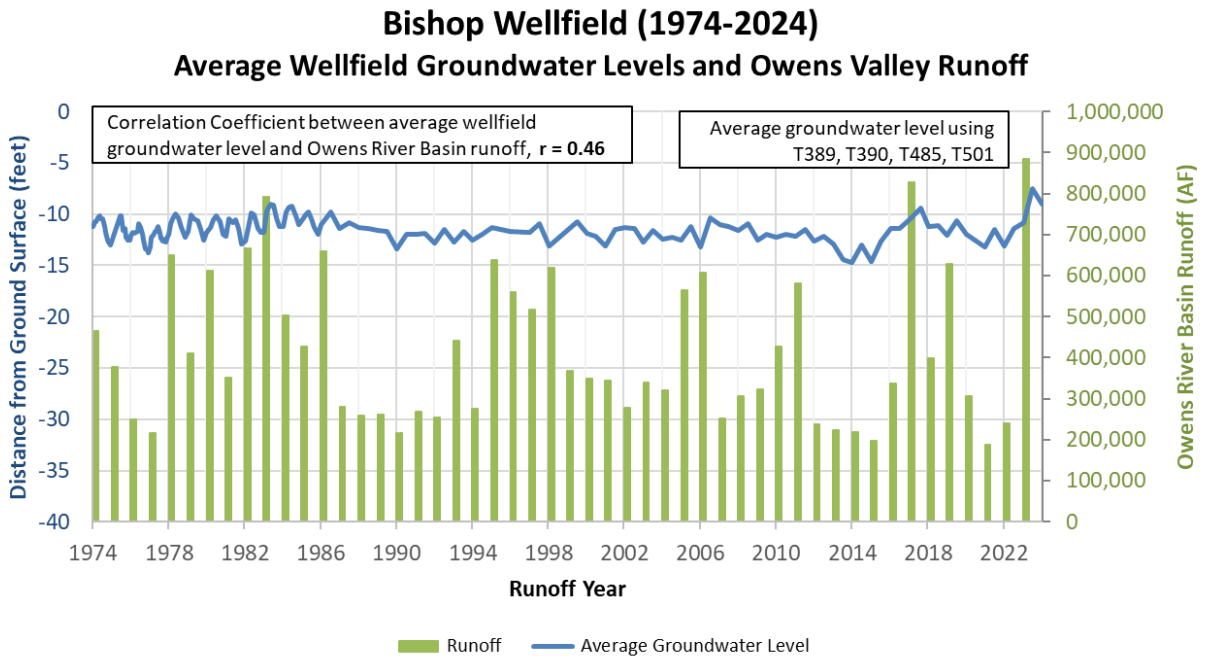


Figure 2.4. Average Bishop Wellfield Groundwater Level and Owens River Basin Runoff

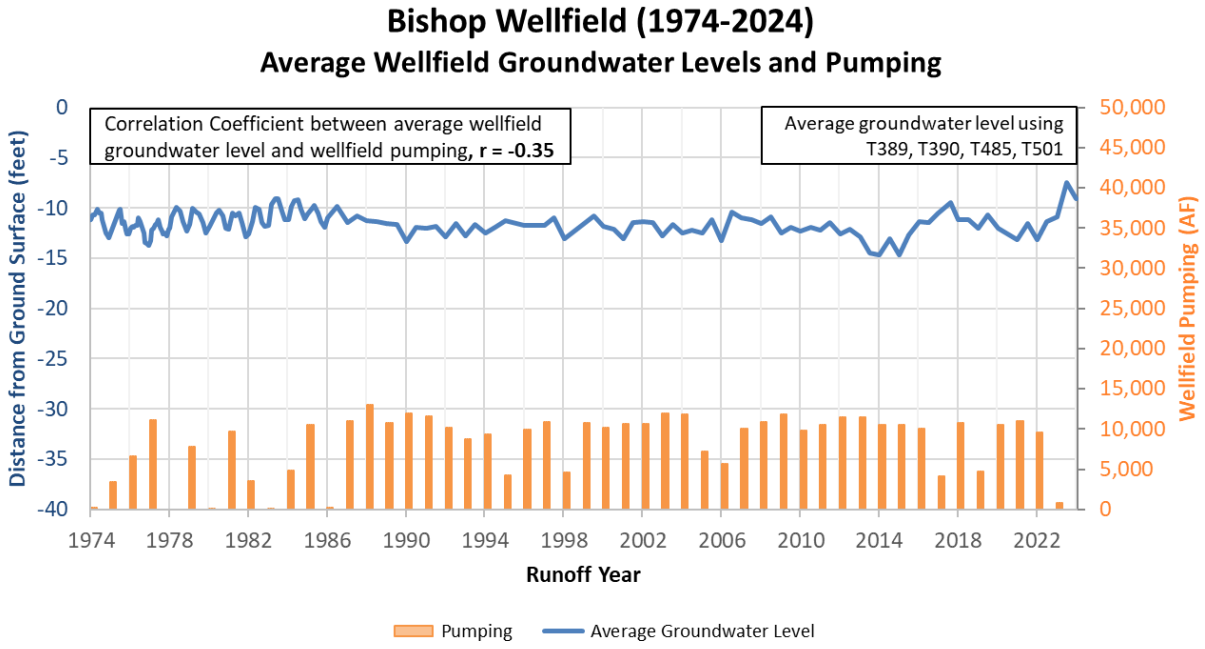


Figure 2.5. Average Bishop Wellfield Groundwater Levels and Pumping

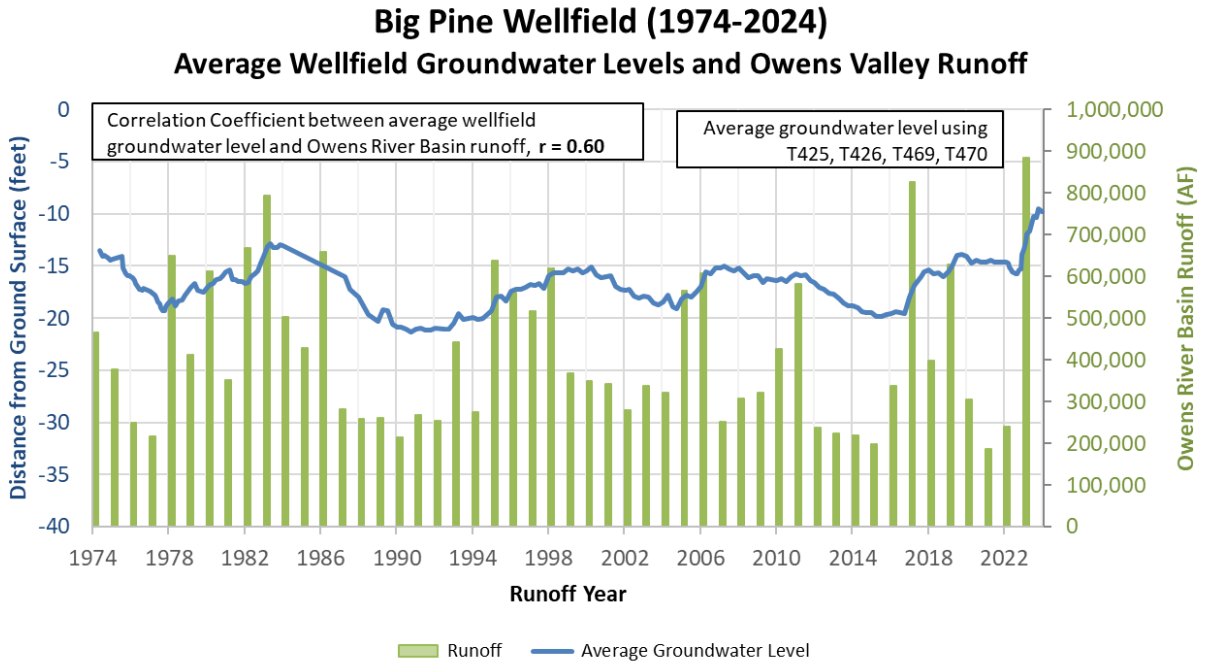


Figure 2.6. Average Big Pine Wellfield Groundwater Level and Owens River Basin Runoff

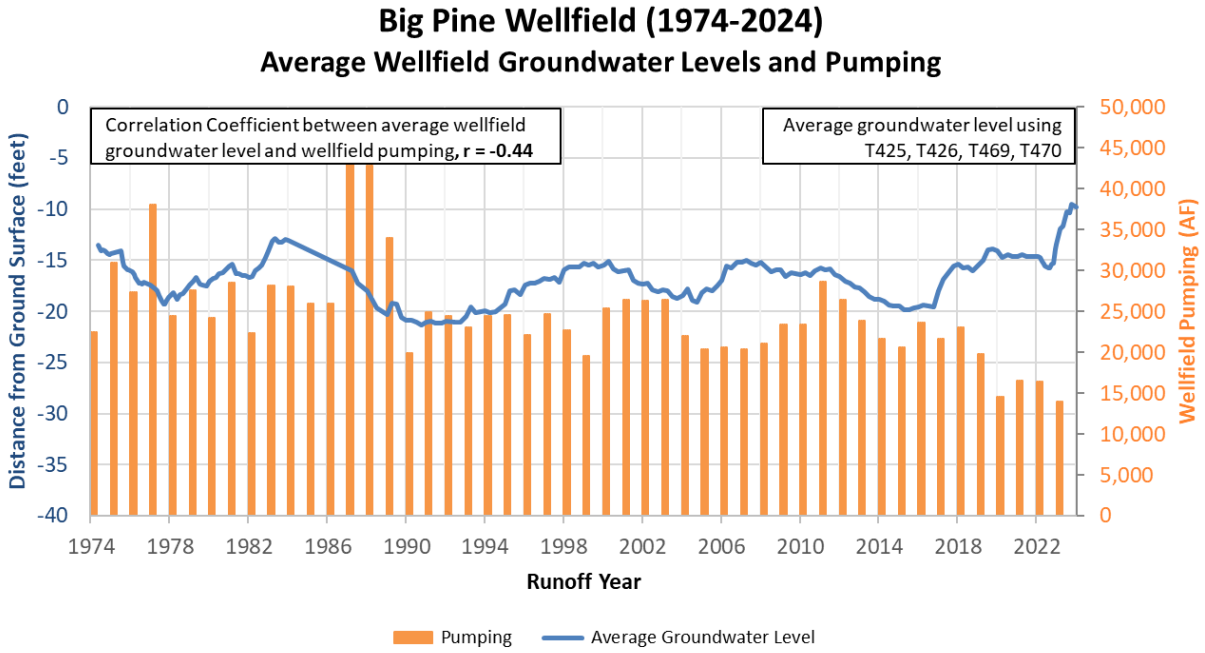


Figure 2.7. Average Big Pine Wellfield Groundwater Levels and Pumping

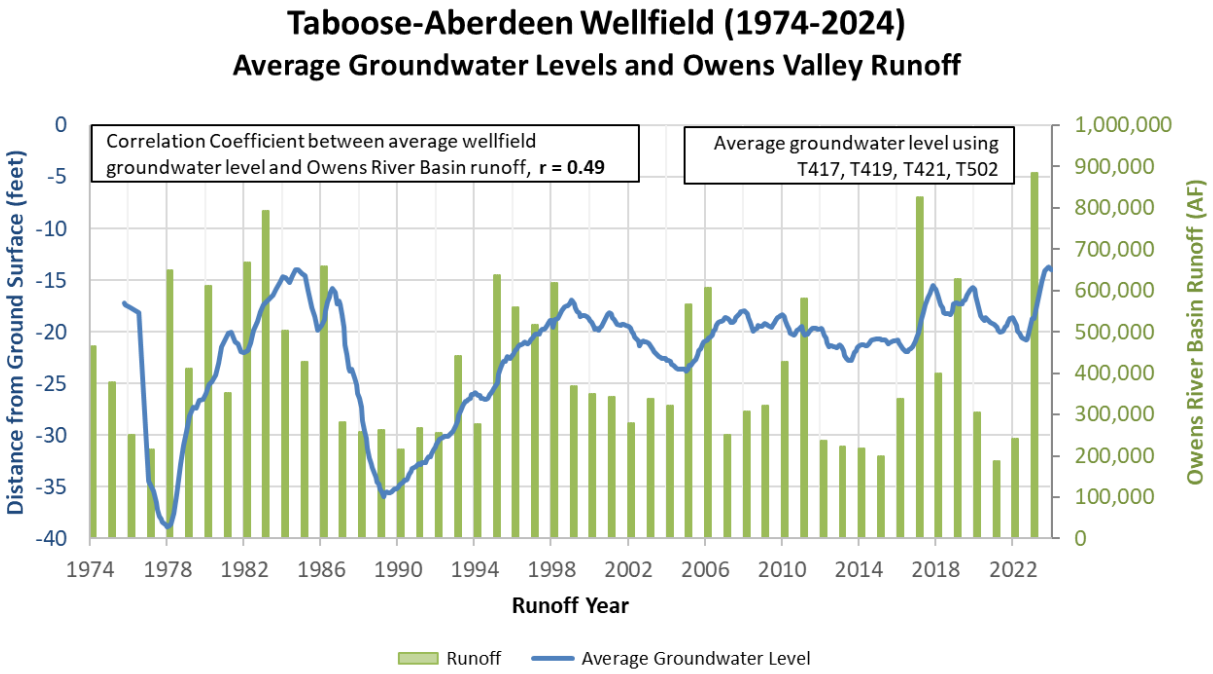


Figure 2.8. Average Taboose-Aberdeen Wellfield Groundwater Level and Owens River Basin Runoff

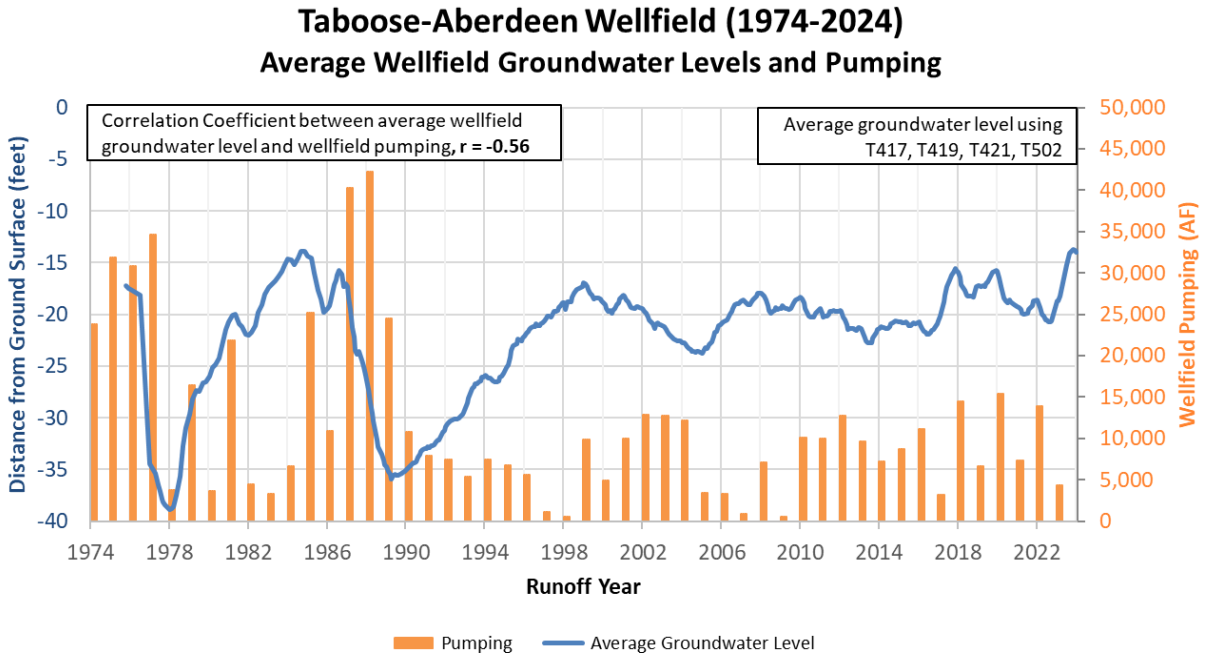


Figure 2.9. Average Taboose-Aberdeen Wellfield Groundwater Levels and Pumping

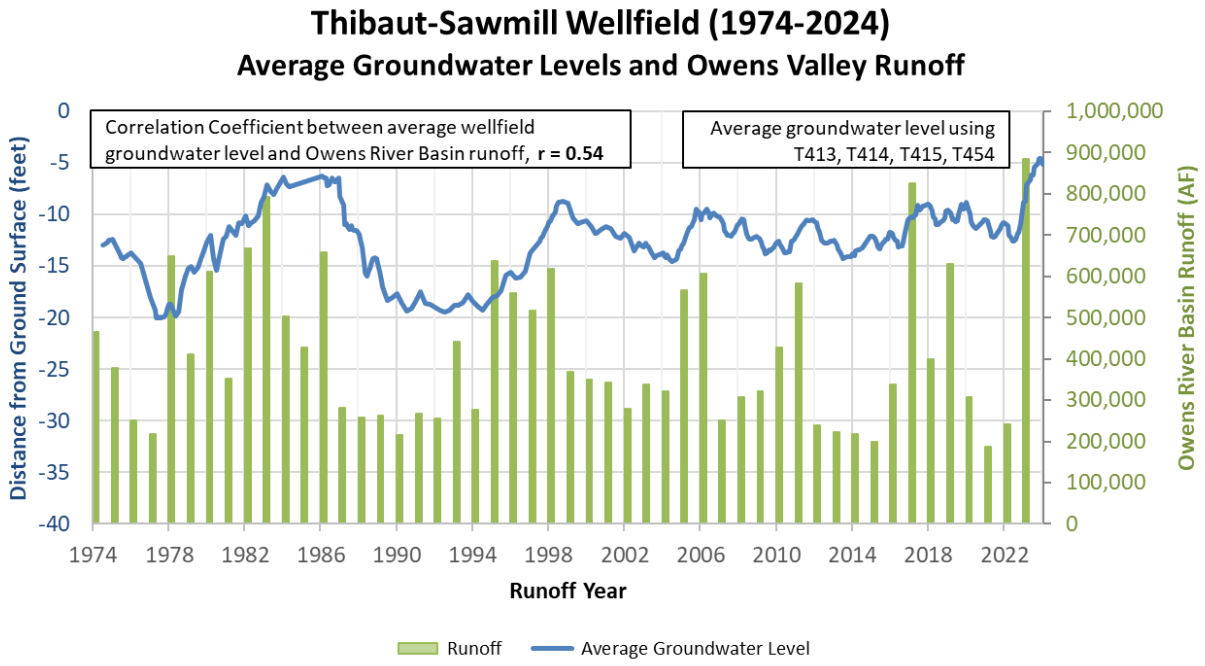


Figure 2.10. Average Thibaut-Sawmill Wellfield Groundwater Level and Owens River Basin Runoff

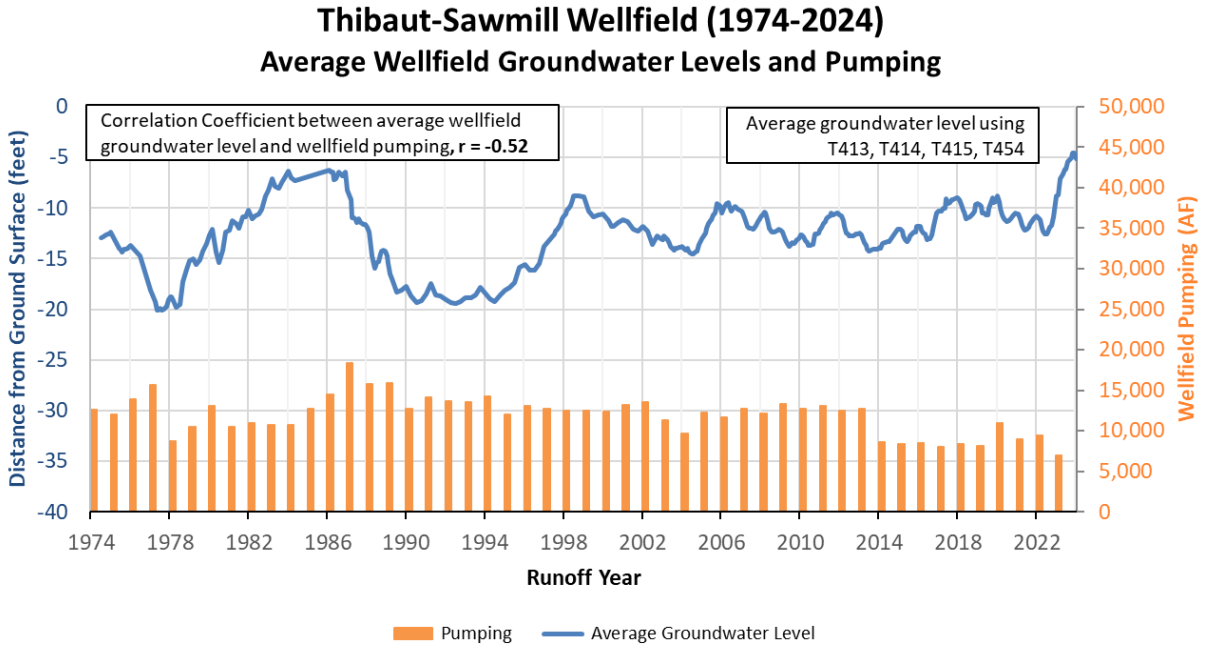


Figure 2.11. Average Thibaut-Sawmill Wellfield Groundwater Levels and Pumping

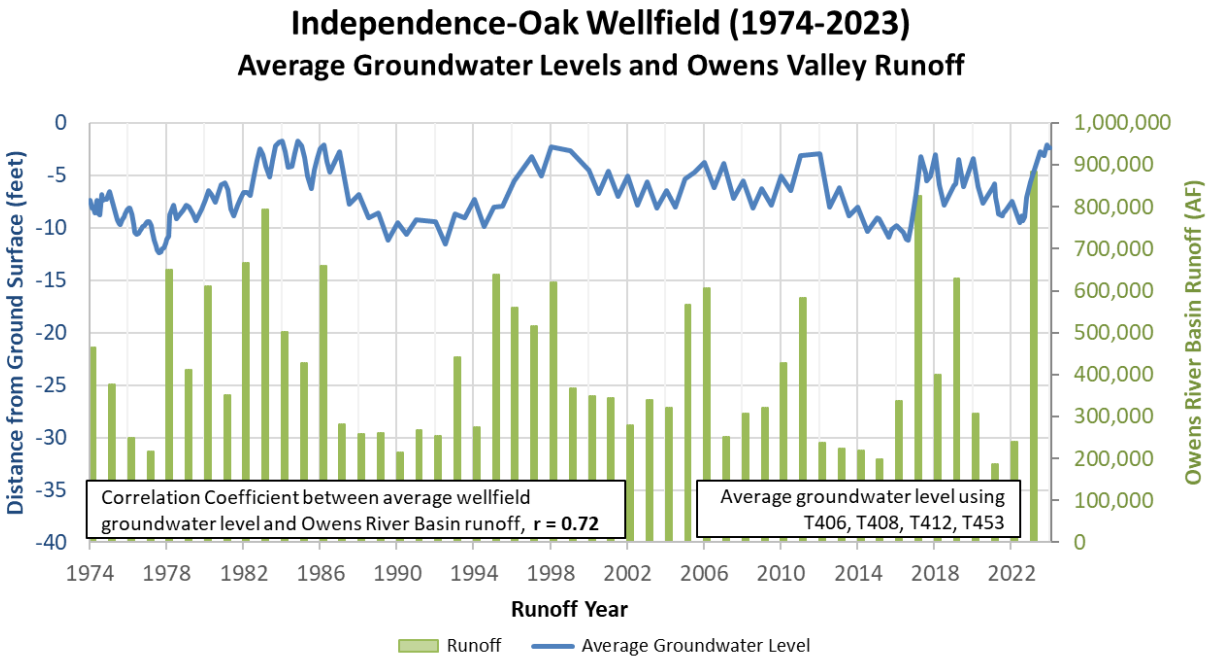


Figure 2.12. Average Independence-Oak Wellfield Groundwater Level and Owens River Basin Runoff

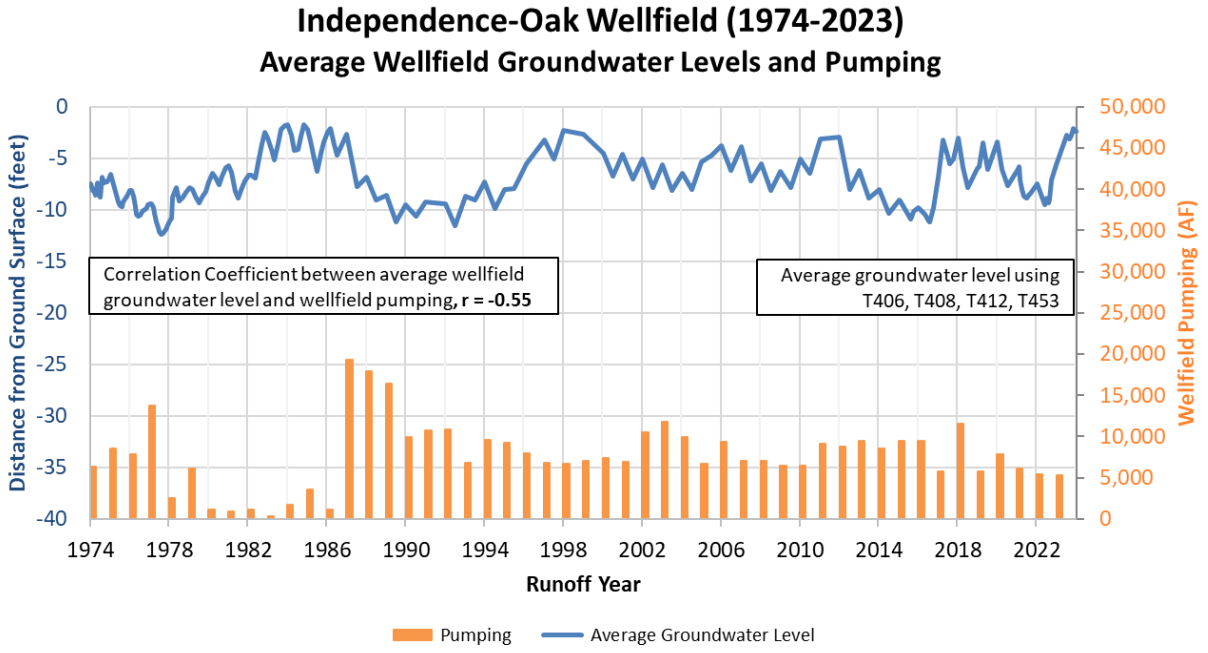


Figure 2.13. Average Independence-Oak Wellfield Groundwater Levels and Pumping

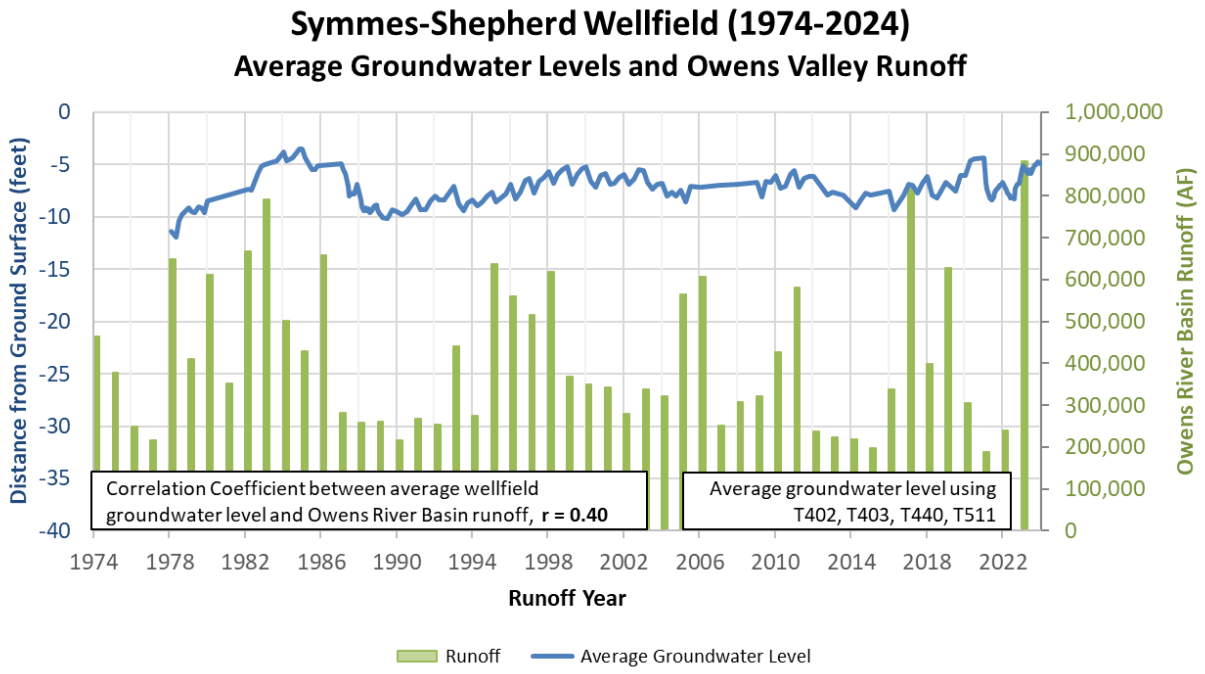


Figure 2.14. Average Symmes-Shepherd Wellfield Groundwater Level and Owens River Basin Runoff

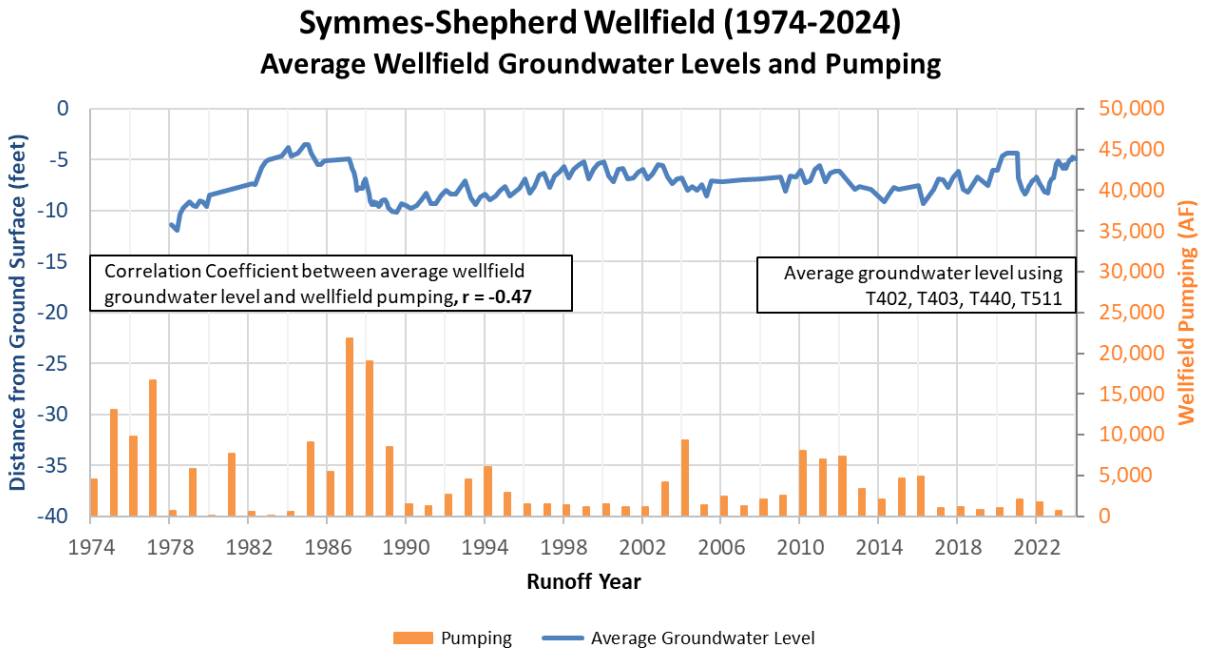


Figure 2.15. Average Symmes-Shepherd Wellfield Groundwater Levels and Pumping

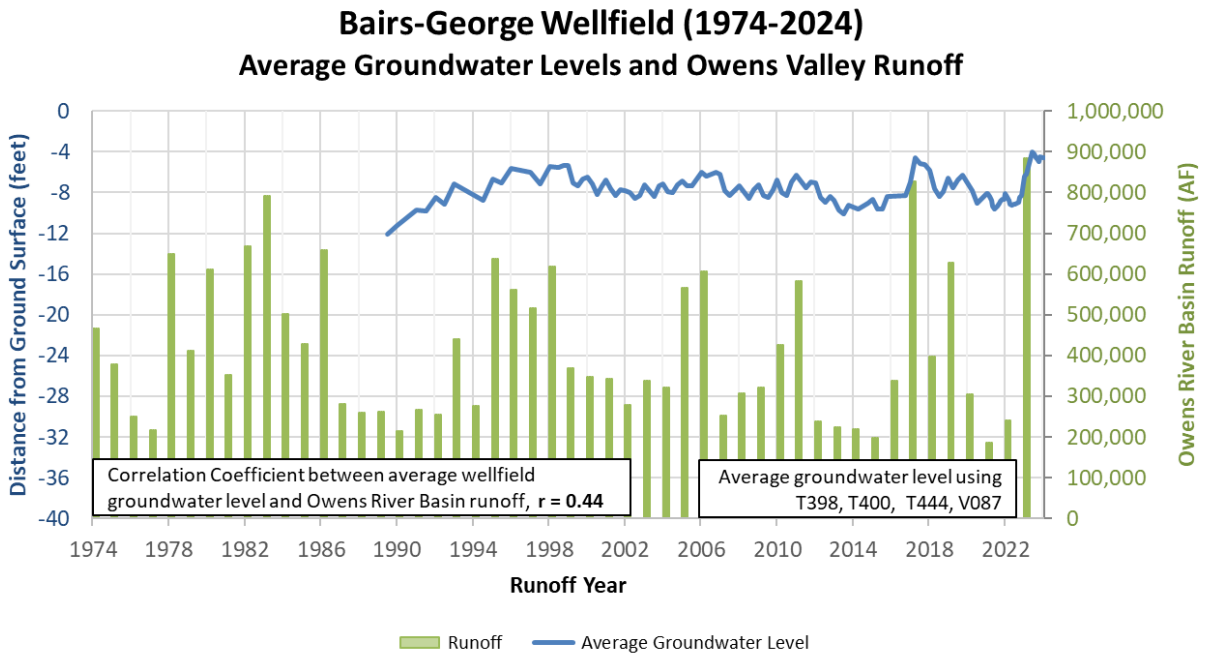


Figure 2.16. Average Bairs-George Wellfield Groundwater Level and Owens River Basin Runoff

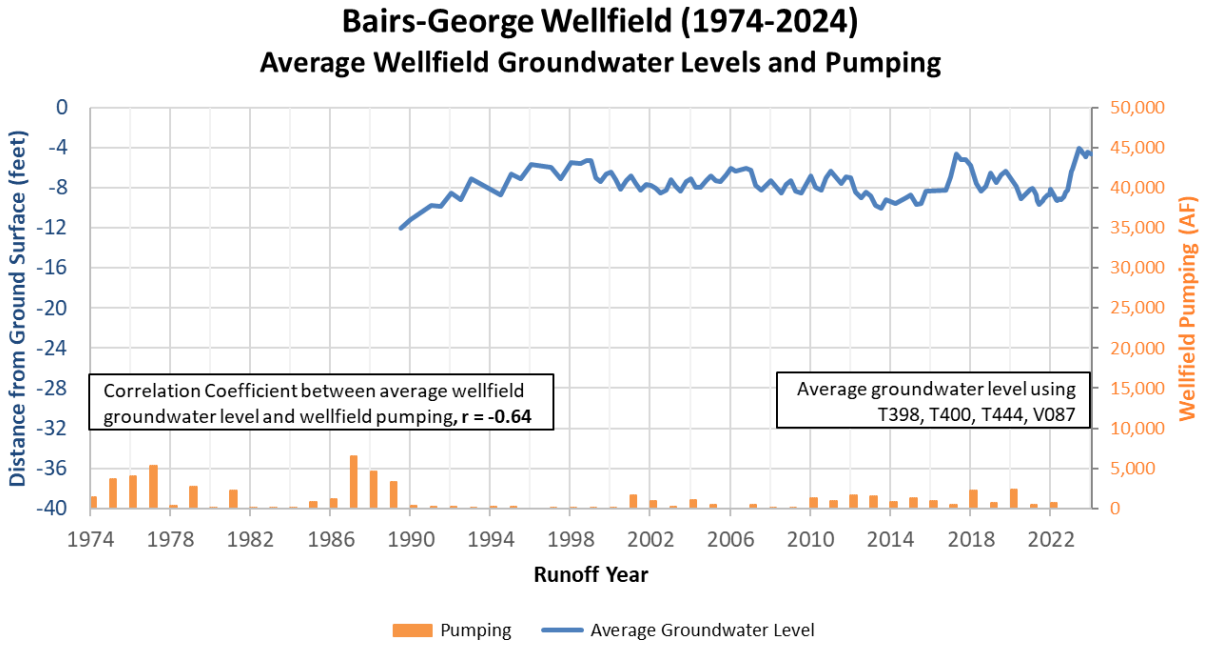


Figure 2.17. Average Bairs-George Wellfield Groundwater Levels and Pumping

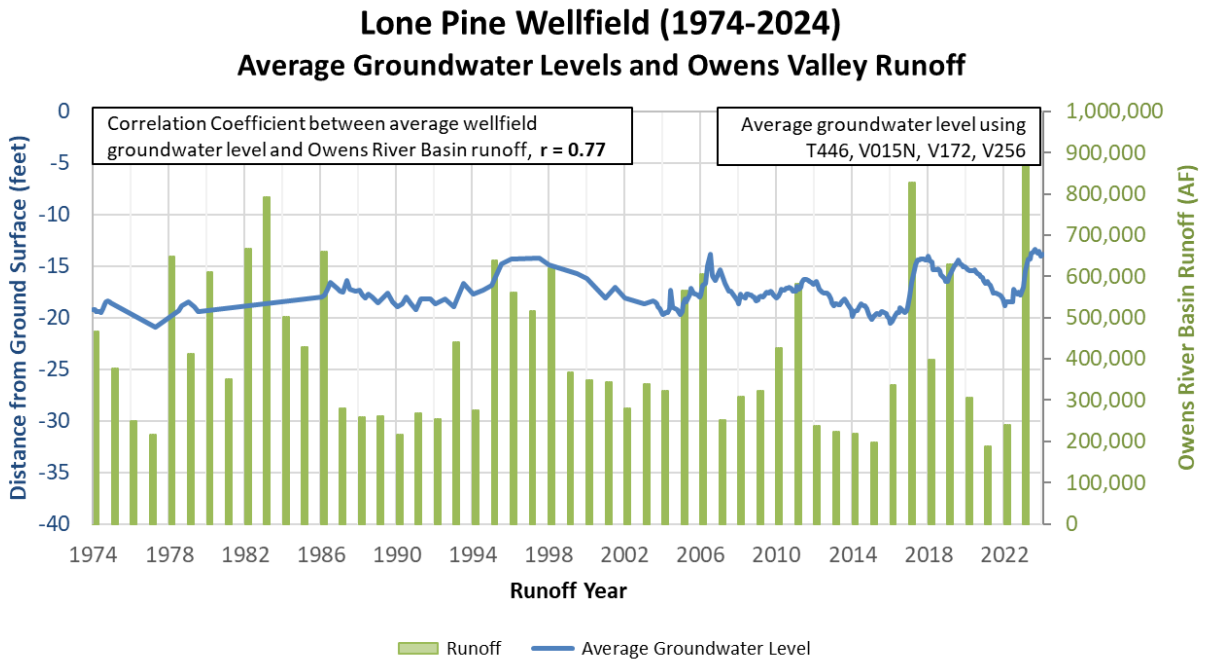


Figure 2.18. Average Lone Pine Wellfield Groundwater Level and Owens River Basin Runoff

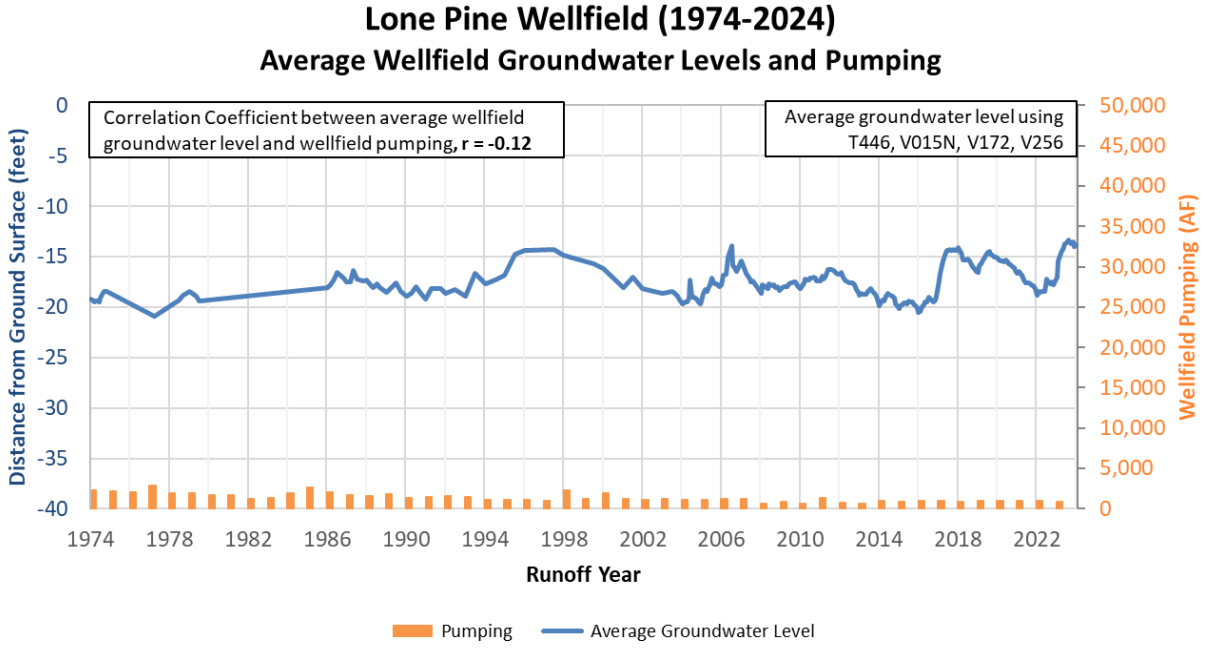


Figure 2.19. Average Lone Pine Wellfield Groundwater Levels and Pumping

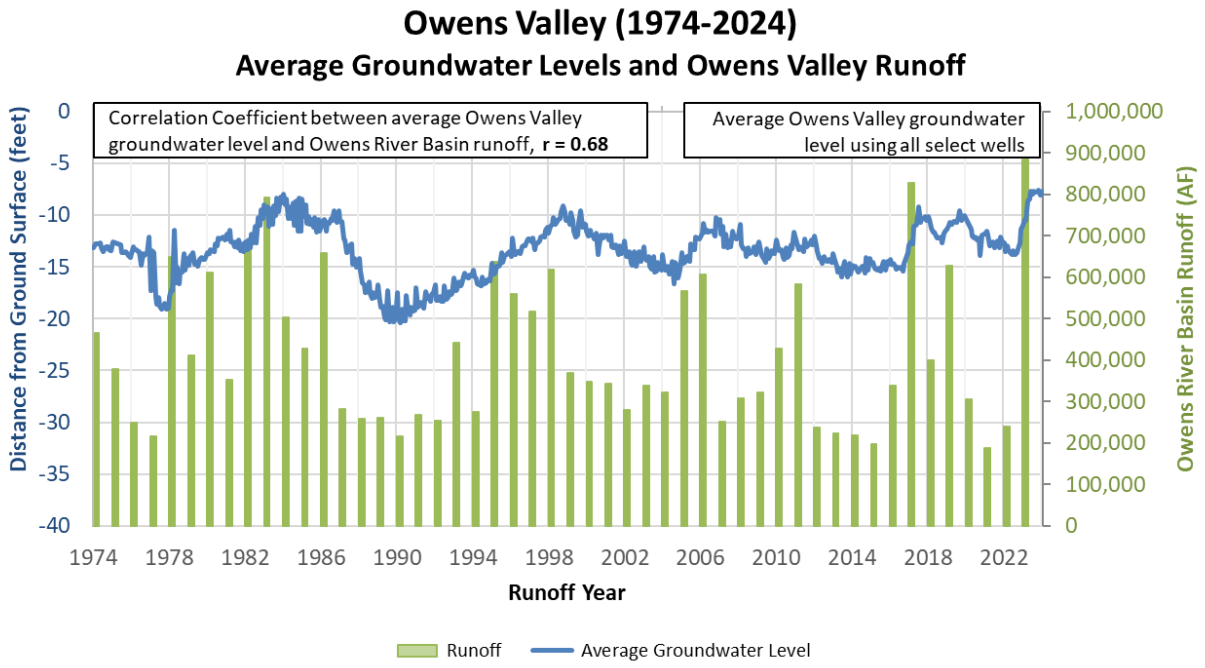


Figure 2.20. Average Owens Valley Groundwater Level and Owens River Basin Runoff

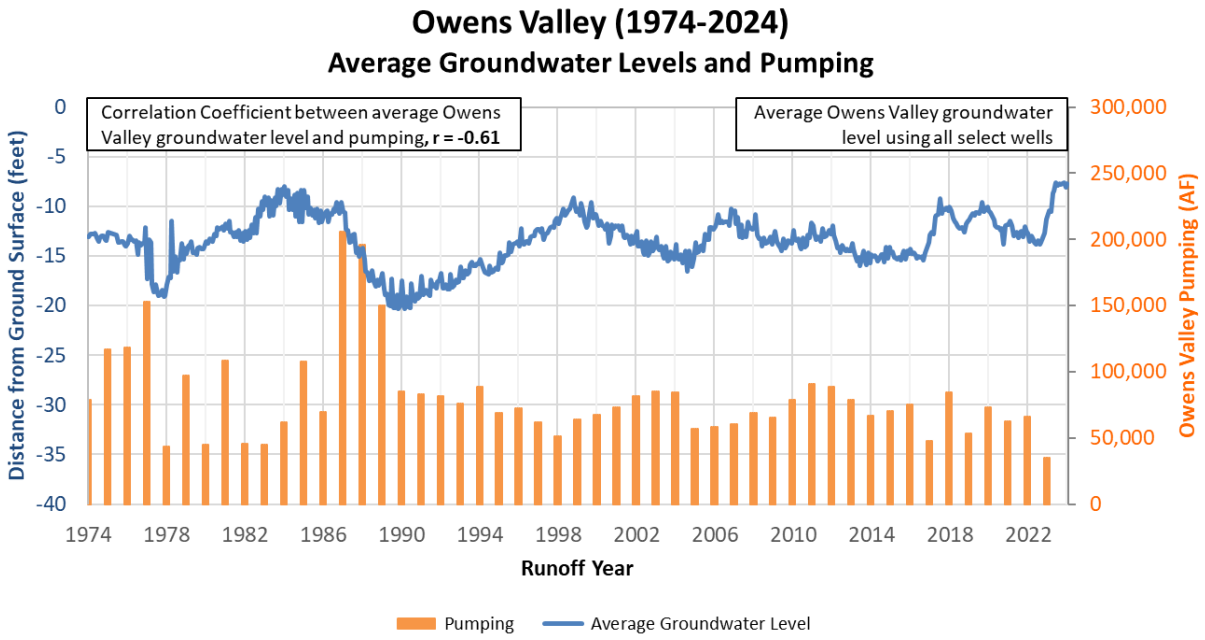


Figure 2.21. Average Owens Valley Groundwater Levels and LADWP Pumping

Table 2.4 Owens Valley Wellfield Pumping in 2023-24 RY and Change Average Groundwater Levels between April 2023 and April 2024

Wellfield	2023-24 RY Pumping (af)	Groundwater Level Change From April 2023 to April 2024 (ft) §
Laws	*1,982*	*+6.7*
Bishop	*776*	*+1.8*
Big Pine	*14,022*	*+3.7*
Taboose-Aberdeen	*4,408*	*+4.7*
Thibaut-Sawmill	*7,568*	*+3.7*
Independence-Oak	*5,295*	*+3.3*
Symmes-Shepherd	*626*	*+0.4*
Bairs-George	*0*	*+1.8*
Lone Pine	*907*	*+3.2*
Owens Valley	***35,584***	***+3.2***

§ Based on data from select monitoring wells in Table 2.2.

* 2023-24 ROY Owens River Basin Runoff was 883,552 acre-feet.

2.3. Precipitation Record and Runoff Forecast

The Eastern Sierra snowpack as of April 1, 2024, was 97% of normal in the Mammoth Lakes area, 89% of normal in the Rock Creek area, 89% of normal in the Bishop Area, 99% of normal in the Big Pine area, and 107% of normal in the Cottonwood Lakes area. The Eastern Sierra overall snowpack, weighted by contribution to Owens River watershed runoff, was calculated to be 97% of the 50-year (1971-2020) average snowpack. (Table 2.5).

The Eastern Sierra runoff forecast for the 2024-25 RY is 419,300 AF or 103% of the 50-year average (Table 1.1). Figure 2.22 compares the forecasted runoff for the 2024-25 year to the actual runoff in previous RYs.

The average precipitation on the valley floor for the 2023-24 year was 8.9 inches, which is 159% of the 50-year average precipitation of 5.6 inches. Table 2.6 details monthly precipitation totals for the 2023-24 RY as well as the long-term averages at representative precipitation gauges throughout the Owens Valley.

Table 2.5. Eastern Sierra April 1, 2024 Snow Survey Results

EASTERN SIERRA SNOW SURVEY RESULTS
April 1, 2024

MAMMOTH LAKES AREA (Contributes 27% of Owens River Basin runoff)

Course	Water Content	April 1 Normal	% of April 1 Normal
Mammoth Pass	42.6	42.7	100%
Mammoth Lakes	20.6	20.1	102%
Minarets 2	26.4	29.3	90%
Average:	29.9	30.7	97%

ROCK CREEK AREA (Contributes 16% of Owens River Basin runoff)

Course	Water Content	April 1 Normal	% of April 1 Normal
Rock Creek 1	6.3	7.1	89%
Rock Creek 2	8.8	10.1	88%
Rock Creek 3	11.8	13.2	89%
Average:	9.0	10.1	89%

BISHOP AREA (Contributes 19% of Owens River Basin runoff)

Course	Water Content	April 1 Normal	% of April 1 Normal
Sawmill	17.0	19.0	89%
Average:	17.0	19.0	89%

BIG PINE AREA (Contributes 13% of Owens River Basin runoff)

Course	Water Content	April 1 Normal	% of April 1 Normal
Big Pine Creek 2	12.3	12.6	97%
Big Pine Creek 3	17.6	17.5	100%
Average:	14.9	15.1	99%

COTTONWOOD AREA (Contributes 25% of Owens Basin River runoff)

Course	Water Content	April 1 Normal	% of April 1 Normal
Cottonwood Lakes 1	13.4	12.3	109%
Trailhead*	13.1	12.5	105%
Average:	13.3	12.4	107%

EASTERN SIERRA OVERALL SNOW PACK (Weighted by contribution to Owens River Basin runoff)

	Water Content	April 1 Normal	% of April 1 Normal
Average of all Snow Courses	18.0	18.7	97%

Table 2.6. Owens Valley Precipitation during RY 2023-24 in Inches

Month	Bishop	Big Pine	Tinemaha Reservoir	LAA Intake	Indep. Yard	Alabama Gates	Lone Pine	Cotton-wood	South Haiwee	Average Owens Valley
April, 2023	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
May	0.00	0.10	0.12	0.03	0.00	0.00	0.00	0.05	0.06	0.04
June	0.31	0.89	0.50	0.66	0.10	0.60	0.27	0.48	0.43	0.47
July	0.47	0.10	0.00	0.02	0.06	0.00	0.00	0.00	0.00	0.07
August	1.93	4.00	2.59	1.14	2.45	4.40	3.71	3.03	6.11	3.26
September	0.27	0.75	0.24	0.12	0.03	0.06	0.00	0.08	0.00	0.17
October	0.33	0.49	0.16	0.11	0.06	0.22	0.22	0.15	0.06	0.20
November	0.09	0.36	0.11	0.08	0.05	0.14	0.00	0.18	0.11	0.12
December	0.34	1.10	0.48	0.19	0.52	0.84	0.75	0.80	1.04	0.67
January, 2024	0.06	0.84	0.08	0.13	0.08	0.08	0.11	0.08	0.21	0.19
February	3.65	6.17	3.61	2.10	1.58	1.53	1.86	3.12	3.76	3.04
March	0.30	2.60	0.41	0.31	0.26	0.75	0.05	0.74	0.77	0.69
2023-24	7.8	17.4	8.3	4.9	5.2	8.6	7.0	8.7	12.6	8.9
Average*	6.0	6.4	6.3	5.3	5.3	4.0	3.8	6.5	7.0	5.6
% of Average	130%	273%	131%	92%	98%	216%	182%	134%	179%	159%

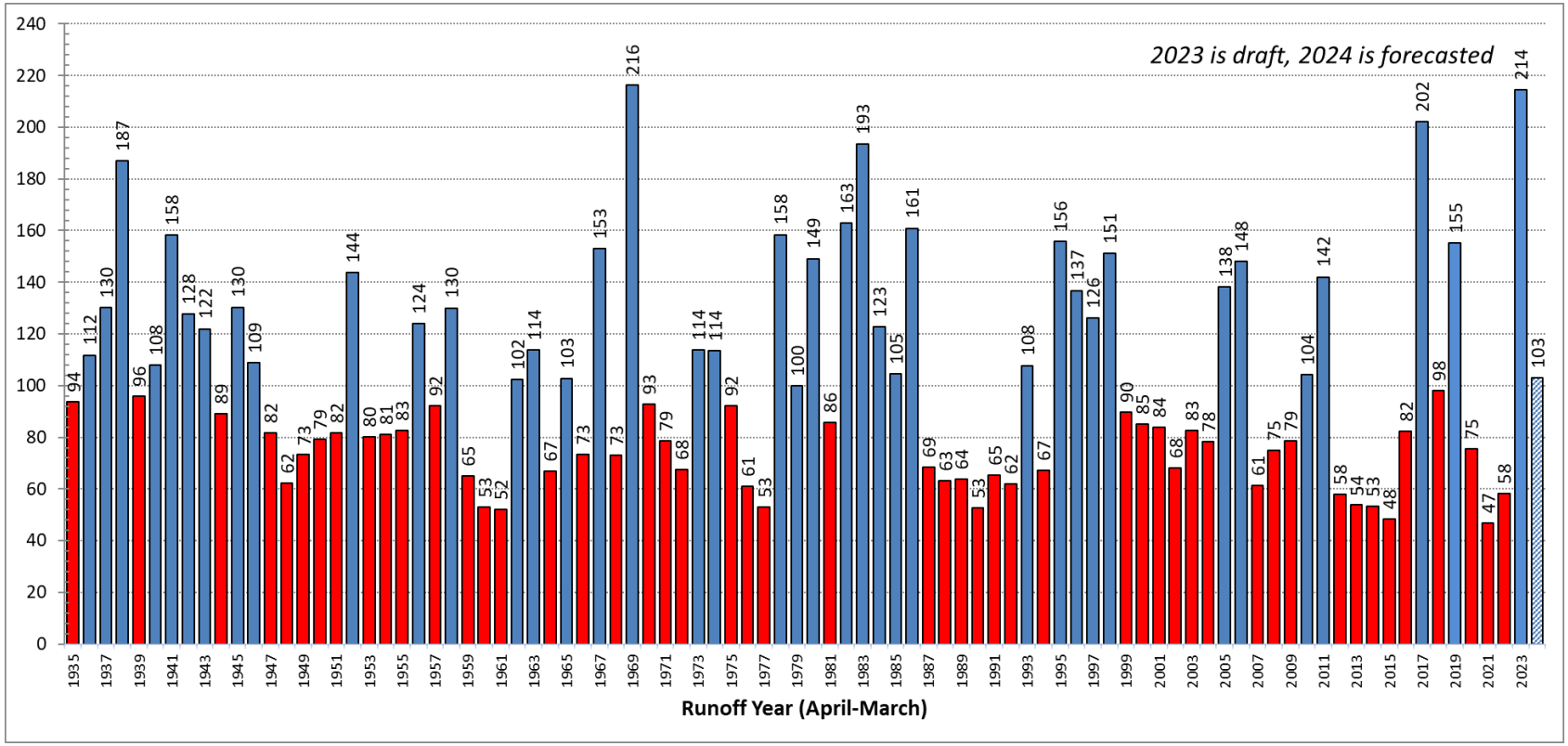


Figure 2.22. Owens River Basin Runoff – Percent of Normal

2.4. Owens Valley Water Supply and Uses

Table 2.7 provides an overview of the Owens Valley water supply, in-valley uses and losses, and LAA exports for the post-Water Agreement period (1992-93 through 2023-24 RYs) as compared to the pre-project average (pre-Second LAA) and projected water supply and uses (based on the Water Agreement, 1991 EIR, and 1997 MOU). Table 2.7 is based on a similar table from the 1991 EIR, Table S-1, that described the actual pre-project as well as projections for post-Water Agreement water supply, in-valley uses and losses, and LAA exports. Actual water uses in the Owens Valley are generally consistent with the projected values under the 1991 EIR and 1997 MOU.

While Owens Valley water supply (runoff, flowing wells, and pumped groundwater) has remained about the same over the long-term average, exports are considerably less than anticipated under the 1991 EIR and 1997 MOU. The fundamental reasons for reducing the exports for the municipal water supply in Los Angeles are increased water uses for dust mitigation on Owens Lake, mandated decreases in water exported from the Mono Basin, and less groundwater pumping than anticipated under the Water Agreement.

Current Owens Valley water uses are compared to pre-project uses, as well as those uses projected under the Water Agreement and 1997 MOU in Figure 2.23. The components of LADWP's water exports from the Eastern Sierra are compared to pre-project exports as well as those projected under the Water Agreement and 1997 MOU in Figure 2.24.

Table 2.8 provides a breakdown of Owens Valley water uses from 1992 to the present and planned water uses for the 2024-25 RY. While much of Table 2.8 is self-explanatory, for clarity, E/M water supply is the water supplied to E/M projects referenced in the 1991 EIR.

Table 2.9 lists a breakdown of water supplied to E/M projects during the 2023-24 RY.

Table 2.7 Owens Valley Water Supply and Uses

(Amounts in Thousands of Acre-Feet/Year)

	Pre-Project (1945-70)	Projected per MOU/ Water Agreement	Actual Data for Runoff Year 2023-24	Actual Post Water Agreement Averages (1992-2023)
Owens Valley Water Supply				
Runoff (Owens Valley & Round Valley)	292	310[1]	*778*	284
Flowing Wells	44	15	*32*	31
Pumped Groundwater	10	110[2]	*36*	72
Total	346	435	*846*	387
In-Valley Uses & Losses				
Water Used on City Lands in O.V.				
Irrigated Lands [3]	62	46	*53*	48
Stockwater, Wildlife, and Rec. Uses [4]	20	23	*25*	22
Post 1985 E/M Projects [5]	0	12	*13*	15[8]
Lower Owens River [6]	0	27[7]	*11*	14[8]
Additional Mitigation (1,600 af from MOU)	0	0	*3*	2[8]
Sub-Total	82	110	*105*	102
Other O.V. Uses and Losses [9]	134	135	*604*	185
Total	216	245	*709*	287
Components of Aqueduct Export				
Owens Valley Contribution to Export	130	190	*137*	100
Long Valley Contribution to Export	134	135	*204*	134
Mono Basin Contribution to Export [10]	58	30	*2*	12
Total	322	355	*343*	246

1. Average runoff for period 1935 to 1988 (Runoff Year)
2. Assumed based on 1991 O.V. Groundwater Pumping EIR
3. Does not include areas receiving water supplies non-tributary to the Owens River/Aqueduct (approx. 7,000 AFY).
4. Includes projects such as the Tule Elk Field, Farmers Ponds implemented after 1970 and before 1985 when E/M projects commenced. Also includes the LORP Off-River Lakes and Ponds uses.
5. Except Lower Owens River Rewatering E/M Project
6. Includes river losses, releases to the Blackrock Waterfowl Habitat Area, and the Delta
7. Assumes: 6,000 AF year-round flow to delta, 1,000 AF to Blackrock, and 19,600 AF for river channel losses.
8. Represents recent history.
9. Includes uses for dust mitigation for Owens Lake, Indian land, private lands, conveyance losses, recharge, evaporation, and operational releases.
10. 1993 Court decision allows approximately 30,000 AFY when lake reaches elevation 6392. Prior to Court decision Mono Basin export averaged 81,000/yr.

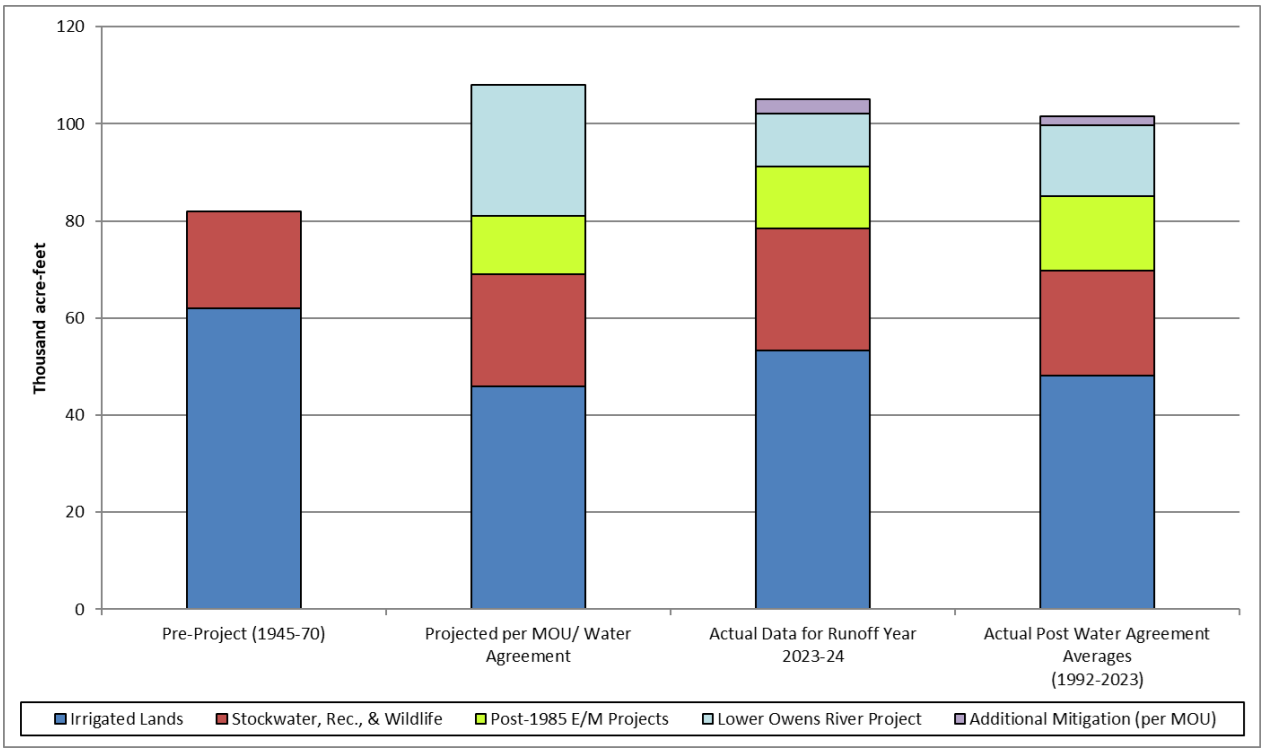


Figure 2.23. Owens Valley Water Uses on City-Owned lands

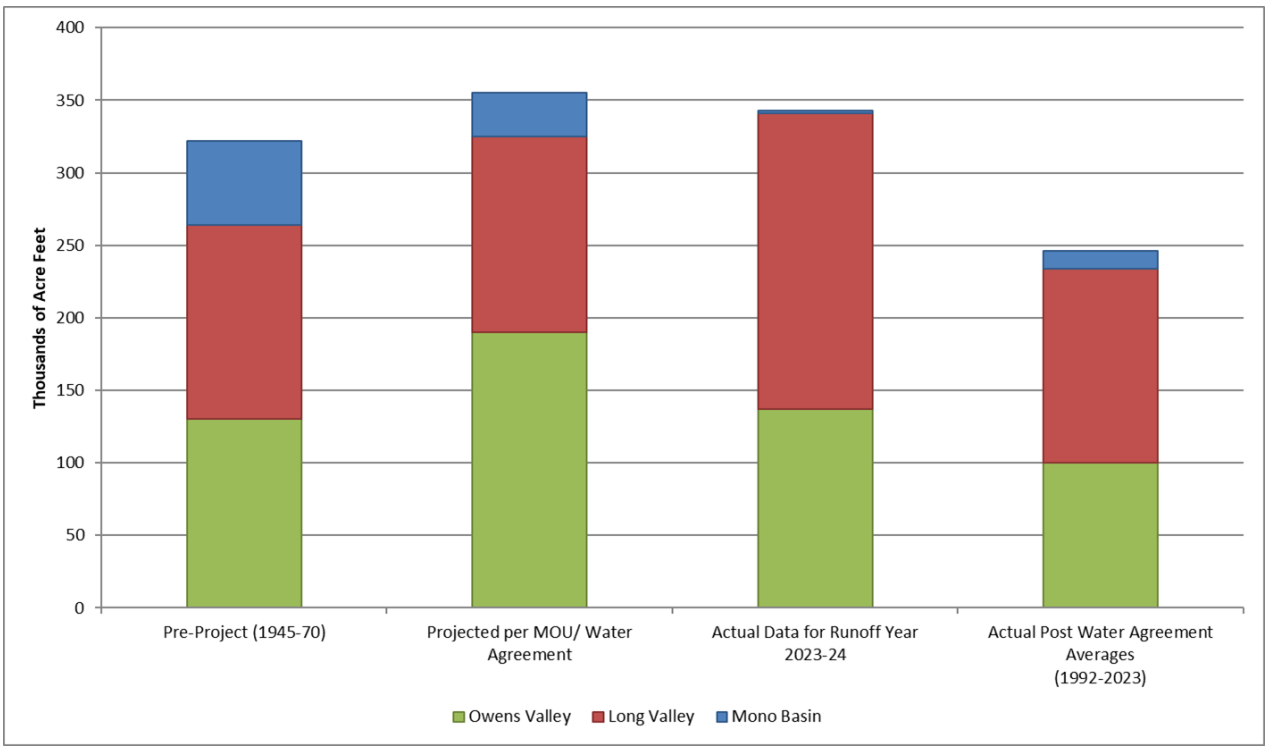


Figure 2.24. Components of the Eastern Sierra Water Exports

Table 2.8. Water Uses for 1992-93 through 2022-23 and Planned Uses for the 2023-24 RY (AF)

(1) Runoff Year	(2) Owens River Basin Runoff %	(3) Owens Valley Pumping (1000 af)	(4) Irrigation	(5) Stock Water	(6) E/M	(7) Rec. & Wildlife	(8) LORP	(9) 1600 AF Projects	(10) In-Valley Uses (sum of 4+5+6+ 7+8+9)	Groundwater Recharge		(13) Operations	(14) All Uses (sum of 10+11+12+13)
										(11) Big Pine & Independence Spreading	(12) Laws Spreading		
1992-93	62%	84	37,131	17,828	18,357	7,725	9,269		90,310	0	0	12,179	102,489
1993-94	108%	76	47,798	17,230	19,310	8,676	5,867		98,881	14,512	10,640	12,433	136,466
1994-95	67%	89	37,790	17,178	20,812	8,116	11,638		95,534	0	56	12,102	107,692
1995-96	156%	70	57,748	20,919	22,943	12,479	11,636		125,725	30,126	21,148	13,561	190,560
1996-97	137%	75	46,171	19,757	23,949	9,438	13,031		112,346	4,606	0	21,125	138,077
1997-98	126%	67	47,114	16,422	21,608	8,022	13,069		106,235	4,113	4,106	13,874	128,328
1998-99	151%	52	45,445	13,654	19,672	8,691	11,192		98,654	24,970	31,077	23,016	177,717
1999-00	90%	64	49,529	14,461	24,452	7,470	15,973		111,885	0	0	11,263	123,148
2000-01	85%	68	49,327	13,442	20,782	7,263	12,090		102,904	0	790	12,517	116,211
2001-02	84%	73	43,296	12,759	21,815	7,487	12,485		97,842	0	230	12,973	111,045
2002-03	68%	82	43,929	12,291	21,394	7,377	9,690		94,681	0	0	8,431	103,112
2003-04	83%	88	45,974	11,620	21,116	6,853	10,243		95,806	0	0	8,787	104,593
2004-05	78%	86	50,311	11,546	18,918	6,866	8,910		96,551	243	695	9,536	107,025
2005-06	138%	57	53,832	11,355	20,032	7,807	7,566		100,592	16,212	24,187	14,814	155,805
2006-07	148%	59	50,968	12,041	17,357	7,849	11,700		99,915	29,457	16,855	38,937	185,164
2007-08	61%	60	47,699	12,161	11,565	10,122	22,501		104,048	0	0	5,631	109,679
2008-09	75%	69	56,130	11,435	10,646	8,479	20,957		107,647	1,342	0	7,651	116,640
2009-10	79%	65	52,933	11,450	10,697	10,398	15,708		101,186	0	0	8,453	109,639
2010-11	104%	80	52,983	12,275	10,407	12,106	17,020		104,791	2,993	1,973	14,280	124,037
2011-12	142%	92	62,391	11,566	11,462	9,702	19,556		114,677	13,231	4,119	8,785	140,812
2012-13	58%	89	48,763	10,961	9,257	9,254	20,927	1,612	100,774	0	0	4,081	104,855

(1) Runoff Year	(2) Owens River Basin Runoff %	(3) Owens Valley Pumping (1000 af)	(4) Irrigation	(5) Stock Water	(6) E/M	(7) Rec. & Wildlife	(8) LORP	(9) 1600 AF Projects	(10) In-Valley Uses (sum of 4+5+6+ 7+8+9)	Groundwater Recharge		(13) Operations	(14) All Uses (sum of 10+11+12+13)
										(11) Big Pine & Independence Spreading	(12) Laws Spreading		
2013-14	54%	79	44,160	11,161	8,222	8,022	17,845	1,625	91,035	0	0	1,926	92,961
2014-15	53%	66	45,491	11,582	9,520	7,615	12,681	1,604	88,493	8,742	0	1,423	98,658
2015-16	48%	70	39,598	11,752	8,265	7,934	16,828	1,614	85,991	434	0	1,255	87,680
2016-17	82%	76	49,219	10,969	10,967	8,199	18,585	1,702	99,641	4,200	7,783	17,770	129,394
2017-18	202%	48	53,864	12,534	11,652	10,313	19,533	1,615	109,511	85,175	38,815	90,407	323,908
2018-19	98%	85	49,836	11,437	9,895	7,742	13,777	1,645	94,332	1,406	2,489	2,640	100,867
2019-20	155%	53	53,981	12,429	11,196	8,336	20,749	1,608	108,299	33,976	26,346	32,002	200,623
2020-21	75%	73	47,249	11,189	9,311	6,600	20,643	1,650	96,642	0	0	1,697	98,339
2021-22	47%	62	38,572	10,605	10,223	6,511	18,355	1,603	85,869	0	0	1,864	87,733
2022-23	58%	66	39,271	11,418	9,812	6,410	19,855	2,200	88,966	0	13,212	28,668	130,846
2023-24	214%	36	53,353	13,585	12,791	11,488	10,983	2,809	105,009	92,451	92,874	262,761	553,095
2024-25	*103%*	*(A)*	*50,400*	*10,840*	*9,920*	*7,460*	*14,910*	*1,600*	*95,130*	*2,000*	*5,000*	*5,000*	*107,130*
AVG.	100%	71	48,183	13,157	15,263	8,480	14,714	1,774	100,462	11,506	9,294	22,401	143,662

NOTES: AVG. REFLECTS RUNOFF YEAR DATA FROM 1992-1993 THROUGH 2023-2024.
2024-25 REFLECTS CURRENT YEAR OPERATIONS FORECAST. E/M EXCLUDES RELEASES TO THE LORP.
LORP IS RECORD OF THE REWATERING E/M (1985-2006) AND THE MITIGATION PROJECTS (STARTED IN DECEMBER 2006).
LORP RECORD INCLUDES RIVERINE LOSS, RELEASES TO BLACKROCK WATERFOWL, AND RELEASES TO DELTA.
(A) SEE SECTION 1.2 FOR OWENS VALLEY PUMPING DISCUSSION.

Table 2.9. Water Supplied to E/M Projects During 2023-24

Project	Water Supplied (acre-feet)
McNally Canals Conveyance Losses	*1,730*
McNally/Laws/Poleta Native Pasture Lands	*1,630*
McNally Ponds	*1,670*
Laws Historical Museum	*100*
Klondike Lake	*2,920*
Big Pine Regreening	*100*
Lower Owens River Rewatering	*-*
Independence Pasture Lands	*1,450*
Independence Springfield	*1,110*
Independence Ditch System	*760*
Independence Woodlot	*80*
Independence Regreening	*70*
Shepherd Creek Alfalfa Lands	*880*
Lone Pine Park/Richards Field	*410*
Lone Pine Woodlot	*80*
Lone Pine Van Norman Field	*400*
Lone Pine Regreening	*40*
Total E/M Uses	13,430

2.5. Owens Valley Vegetation Conditions

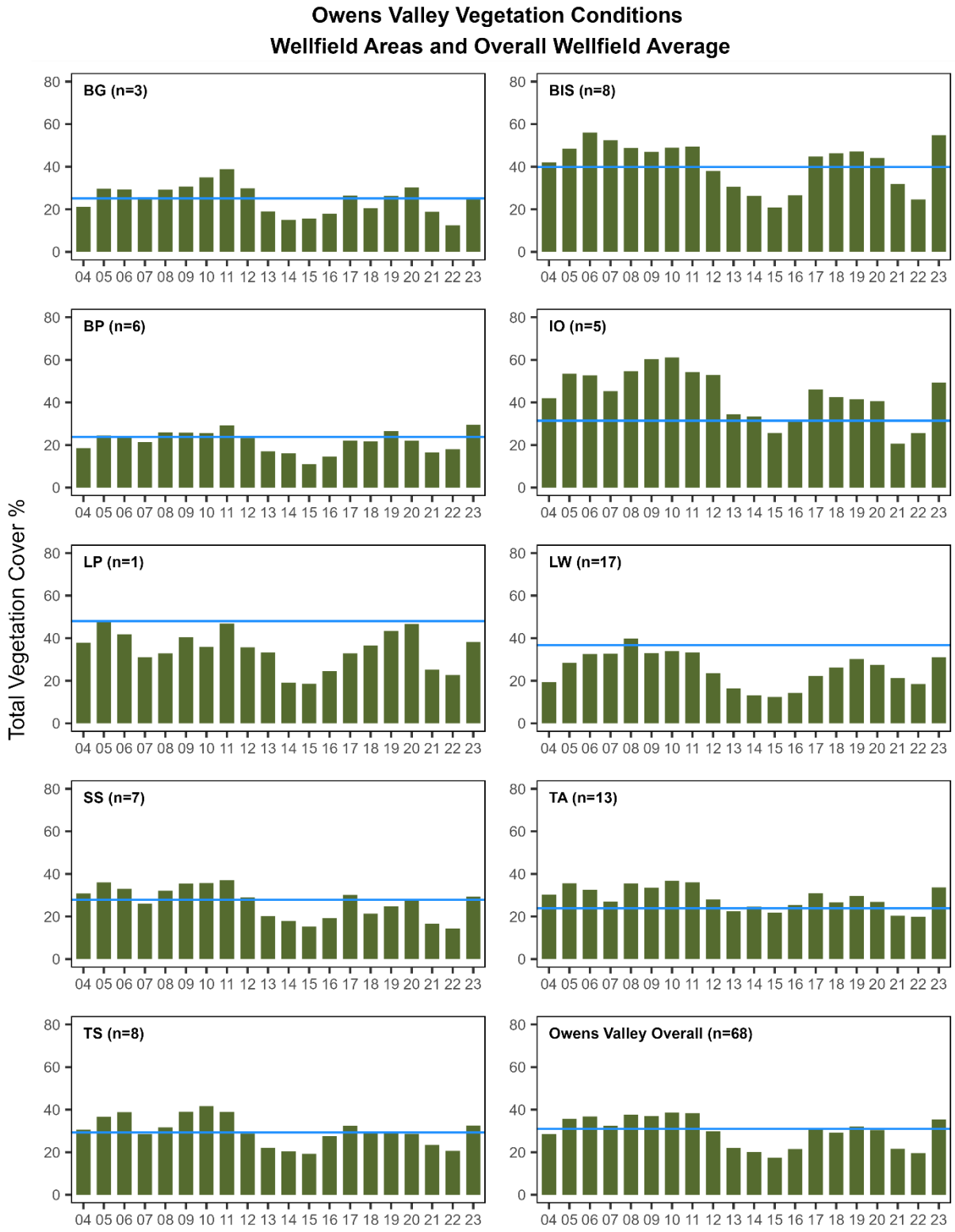
Vegetation conditions within the Owens Valley are monitored using vegetation transects as well as other methods. The Green Book describes the methodology and purposes of vegetation transects. As stated in the Green Book: "Vegetation transects are included within the Green Book to serve two purposes: 1) to estimate transpiration from a monitoring site, and 2) for use in determining whether vegetation has decreased or changed significantly from the previous cover." A reference for comparison of vegetation changes is the 1984-87 vegetation inventory data.

The Green Book requires the 1984-87 vegetation inventory to be used as a baseline when determining whether vegetation cover and/or species composition have changed. The 1984-1987 inventory transects were chosen using aerial photos to aid in determining transect locations. Transects were located visually by choosing lines that appeared to cover the representative units of vegetation within the parcel being measured. Transects were generally run toward the center of the parcels in order to avoid transitional areas at parcel edges. A minimum of five transects were run on each parcel. If the vegetation cover was particularly heterogeneous, a qualitative method was employed in selecting additional transects. The transect data were checked visually and additional transects were run to lessen the degree of variability as necessary.

The Green Book directs that future transects should be performed in a similar manner as the initial inventory to determine whether vegetation has changed but allows the technique to be modified by the Technical Group to permit statistical comparison by randomly selected transects. The procedures for modifying the Green Book procedures are included under Water Agreement Section XXV. In any case, the Green Book requires the Technical Group to perform a statistical analysis in order to determine the statistical significance of any suspected vegetation changes from the 1984-87 inventory maps.

In 2004, LADWP began running transects annually within parcels located both inside and outside wellfields. Some parcels are evaluated annually, while others are not. Percent total cover is calculated and compared to data collected within parcels during the period of baseline inventory.

Figure 2.25 includes vegetation transect data collected by LADWP and presented in a series of graphs documenting Owens Valley vegetation conditions. LADWP monitors vegetation using established vegetation transects that enable the Technical Group to reliably assess annual changes in vegetation cover and composition.



Notes: — represents a mean cover during the initial inventory. Data were collected by LADWP and ICWD.

Figure *2.25. Owens Valley Vegetation Condition for Wellfields*

2.6. Bishop Cone Audit

LADWP's groundwater pumping on the Bishop Cone is governed by provisions of the Hillside Decree) as well as the Water Agreement. Annual groundwater extractions from the Bishop Cone are limited to an amount not greater than the total amount of water used on City lands on the Bishop Cone during that year. Annual groundwater extractions by LADWP on the Bishop Cone are the sum of all groundwater pumped plus the amount of artesian water that has flowed from wells on the Bishop Cone during the year. Water used on City lands on the Bishop Cone are the quantity of water supplied to such lands, including conveyance losses, less any return flow to the aqueduct system.

The ICWD performs an annual audit of LADWP water uses and groundwater extractions by LADWP on the Bishop Cone. Section 2 Appendices contain a copy of ICWD's audit for the 2022-23 RY. As shown in Figure 1.4, LADWP has historically pumped much less than allowed under the terms of the Hillside Decree. Beginning in the 2015-16 RY, the audit water account methods were modified to analyze each areas inflows and outflows to calculate total water use. The Bishop Cone Audit report for 2022-23 is available on the ICWD website and is included in Appendix A of this report.

2.7. Reinhackle Spring Monitoring

As required by the 1991 EIR, Owens Valley groundwater pumping is managed to avoid reductions in spring flows that would cause significant decreases or changes in spring-associated vegetation. Groundwater pumping from wells that may affect flow from Reinhackle Spring are managed so that flows from the spring are not significantly reduced compared to flows under prevailing natural conditions. Table 2.10 shows daily flow values for Reinhackle Spring. Over the 2023-24 RY, Reinhackle Spring had an average daily flow of about 2.3 cfs.

Analysis of Reinhackle Spring was included in a 2004 cooperative study by LADWP and ICWD on the Owens Valley groundwater geochemistry. During the study, water samples from Reinhackle Spring were chemically analyzed and compared to water samples from the LAA, nearby pumping wells, samples from the deep aquifer, and samples from shallow monitoring wells. The 2004 study concluded that the water flowing from Reinhackle Spring is similar in composition to aqueduct water and not similar to the deep aquifer samples or up-gradient shallow aquifer wells. Testing to determine the effects of groundwater pumping and LAA seepage on Reinhackle Spring flow was conducted between May 2010 and April 2011. Data and analysis from the 2004 cooperative study and 2010-11 testing have been included in a draft monitoring and operations plan for the Bairs-Georges Wellfield known as the draft Reinhackle Spring Flow Characterization Report and Operations Plan. The draft Reinhackle Spring Flow Characterization Report and Operations Plan was sent to the ICWD for review in November 2012.

Table 2.10. Reinhackle Spring Flow in cfs during 2023-24 RY

Day of Month	April	May	June	July	August	September	October	November	December	January	February	March	Annual
1	1.48	1.88	2.38	2.57	2.71	2.79	2.53	2.26	2.26	2.17	2.03	1.98	
2	1.51	1.89	2.42	2.58	2.72	2.79	2.51	2.22	2.24	2.17	2.03	1.98	
3	1.52	1.93	2.43	2.58	2.74	2.76	2.48	2.22	2.25	2.17	2.03	1.97	
4	1.52	1.94	2.43	2.59	2.74	2.74	2.48	2.22	2.26	2.14	2.04	1.95	
5	1.52	1.98	2.44	2.59	2.74	2.74	2.48	2.22	2.24	2.13	2.03	1.97	
6	1.52	2.01	2.41	2.60	2.74	2.74	2.48	2.22	2.25	2.12	2.03	1.97	
7	1.52	2.02	2.43	2.60	2.74	2.72	2.46	2.22	2.27	2.12	2.03	1.98	
8	1.55	2.03	2.43	2.60	2.74	2.69	2.43	2.22	2.27	2.12	2.03	1.98	
9	1.56	2.03	2.43	2.59	2.74	2.69	2.43	2.22	2.27	2.12	2.03	1.96	
10	1.56	2.06	2.43	2.58	2.75	2.69	2.43	2.22	2.27	2.11	2.02	1.96	
11	1.56	2.07	2.47	2.58	2.79	2.69	2.42	2.22	2.27	2.08	2.00	1.94	
12	1.56	2.07	2.48	2.58	2.80	2.69	2.37	2.22	2.25	2.08	2.01	1.93	
13	1.62	2.08	2.48	2.62	2.82	2.69	2.37	2.23	2.24	2.09	2.02	1.93	
14	1.65	2.12	2.53	2.62	2.81	2.67	2.37	2.22	2.22	2.07	2.03	1.93	
15	1.65	2.12	2.53	2.62	2.80	2.63	2.37	2.23	2.22	2.07	2.03	1.93	
16	1.69	2.12	2.53	2.63	2.80	2.63	2.37	2.22	2.22	2.07	2.03	1.93	
17	1.68	2.17	2.53	2.63	2.80	2.63	2.34	2.25	2.22	2.07	2.03	1.93	
18	1.70	2.17	2.57	2.63	2.80	2.63	2.32	2.27	2.22	2.07	2.02	1.93	
19	1.70	2.18	2.58	2.64	2.80	2.63	2.32	2.26	2.22	2.07	2.00	1.92	
20	1.73	2.22	2.58	2.64	2.91	2.63	2.32	2.26	2.19	2.07	2.01	1.88	
21	1.73	2.22	2.57	2.63	2.91	2.60	2.32	2.27	2.22	2.07	2.02	1.88	
22	1.74	2.22	2.58	2.63	2.85	2.58	2.32	2.27	2.21	2.07	2.02	1.88	
23	1.76	2.27	2.58	2.64	2.85	2.58	2.32	2.27	2.17	2.04	2.02	1.88	
24	1.79	2.28	2.58	2.66	2.85	2.58	2.28	2.27	2.17	2.03	2.00	1.88	
25	1.79	2.32	2.59	2.69	2.85	2.58	2.27	2.27	2.17	2.03	1.99	1.88	
26	1.82	2.32	2.62	2.69	2.85	2.55	2.27	2.27	2.17	2.03	1.98	1.88	
27	1.84	2.32	2.60	2.69	2.84	2.53	2.27	2.27	2.17	2.02	1.98	1.87	
28	1.84	2.32	2.58	2.69	2.80	2.53	2.27	2.27	2.17	1.99	1.98	1.88	
29	1.84	2.34	2.58	2.69	2.80	2.53	2.27	2.27	2.17	2.03	1.98	1.87	
30	1.84	2.37	2.56	2.69	2.80	2.53	2.27	2.27	2.17	2.03		1.88	
31		2.37		2.70	2.79		2.26		2.17	2.03		1.89	
Average	1.66	2.14	2.51	2.63	2.80	2.65	2.37	2.25	2.22	2.08	2.01	1.92	2.27

LADWP ENVIRONMENTAL MITIGATION PROJECTS AND OTHER LEGAL COMMITMENTS

3.0 LADWP ENVIRONMENTAL MITIGATION PROJECTS AND OTHER LEGAL COMMITMENT

3.1 Introduction

Section 3 provides information on all LADWP's environmental mitigation projects and other commitments required under the Water Agreement, the 1991 EIR, the subsequent 1997 MOU and related documents. Tables 3.1 and 3.2 provide a quick reference to all the commitments. Projects/commitments are listed alphabetically in Tables 3.1 and 3.2 and have a corresponding number in the left column for reporting purposes only and show current status of these projects/commitments.

For reference, status of these projects is classified into the following categories:

Complete: Project has no additional commitments required (no water allotment or other financial or environmental mitigation; no continual monitoring and reporting),

Ongoing as necessary/required: These measures are only applied, when necessary (monitoring and reporting for mitigation measures for new projects, construction, etc.),

Implemented and ongoing: Project is fully implemented and is currently meeting goals; however, there may be ongoing water or financial commitments or monitoring and reporting requirements,

Fully implemented but not meeting goals: Project is fully implemented but has not yet met prescribed goals or success criteria,

Not fully implemented: Project is under development or under construction, but not fully implemented.

Presently, of the 66 required environmental mitigation projects, LADWP reports:

- 9 are complete,
- 51 are implemented and ongoing (with ongoing water or financial commitments or monitoring and reporting requirements),
- 6 are fully implemented but not meeting goals,
- 0 are not fully implemented.

Of the 47 other commitments, LADWP reports:

- 18 are complete,
- 6 are ongoing as necessary or required,
- 21 are implemented and ongoing,
- 0 are fully implemented and not meeting goals, and
- 2 are not fully implemented

More detailed information regarding each of these projects and other commitments is provided in tabular format in Tables 3.3 and 3.9. Also included in this section are reports for: Additional Mitigation Projects Developed by the MOU *Ad Hoc* Group (Section 3.21), Laws Type E revegetation (Section 3.2.2), Owens Valley Land Management Plan (OVLMP) (Section 3.2.3) and the Yellow Billed Cuckoo (YBC) Habitat Enhancement Plans (Section 3.2.4). These reports are followed by updates to the Mitigation Monitoring and Reporting Programs (MMRP) (Section 3.2.5) and the Big Pine Ditch System (Section 3.2.6).

Table 3.1. LADWP Mitigation and Monitoring Summary.

1991 EIR	1991 EIR Enviro. Project	1991 EIR E/M Project	Revegetation Project	1997 MOU	Table 3.1. LADWP MITIGATION PROJECT COMMITMENTS	Complete		Ongoing as necessary	Implemented and Ongoing	Implemented; not met goal	Not Fully Implemented
				X	Aberdeen Ditch Project (Additional Mitigation Projects Developed by the MOU Ad Hoc Group (MOU Section III.A.3))				X		
X	X				Big and Little Seely Springs (1-acre pond near Well W349; EIR Impact 10-14, EIR Table 5-2)				X		
X			X		Big Pine Area Revegetation Project (160 acres; EIR Impact 10-19)					X	
X			X		Big Pine Area Revegetation Project (20 acres; EIR Impact 10-19)					X	
X					Big Pine Ditch System (EIR Impact 10-19)				X		
X		X	X		Big Pine Northeast Regreening (30 acres; EIR Impact 10-11, EIR Table 5-3)				X		
X			X		Bishop Area Revegetation Project (124 acres; EIR Impact 10-16)					X	
X			X		Blackrock 16E Revegetation Project (EIR Impact 10-11)	X					
X	X				Blackrock Hatchery (EIR Impact 10-14)				X		
X	X				Buckley Ponds (EIR Impact 10-5 and 11-1, EIR Table 5-2)				X		
X	X				Calvert Slough (EIR Impact 10-5, EIR Table 5-2)				X		
X	X			X	Diaz Lake (EIR Table 5-2, Additional Mitigation Projects Developed by the MOU *Ad Hoc* Group (MOU Section III.A.3))				X		
X		X			Eastern California Museum (EIR Tables 4-3 and 5-3)				X		
X	X				Farmers Pond (EIR Impact 10-5, 10-18, 11-1, EIR Table 5-2)				X		
X	X				Fish Springs Hatchery (EIR Impact 10-14)				X		
X			X		Five Bridges Area Revegetation Project (300 acres; EIR Impact 10-12)	X					
				X	Freeman Creek Project (Additional Mitigation Projects Developed by the MOU *Ad Hoc* Group (MOU Section III.A.3))				X		
X				X	Hines Spring (1 to 2 acres, EIR Impact 10-14), implemented as the Additional Mitigation Projects Developed by the MOU *Ad Hoc* Group (MOU Section III.A.3)				X		
X			X		Hines Spring South (EIR Impact 10-11)					X	
				X	Hines Spring Well 355 Project (Additional Mitigation Projects Developed by the MOU *Ad Hoc* Group (MOU Section III.A.3))				X		
				X	Homestead Project (Additional Mitigation Projects Developed by the MOU *Ad Hoc* Group (MOU Section III.A.3))				X		
X			X		Independence 105 (EIR Impact 10-13)	X					
X			X		Independence 123 (EIR Impact 10-13)	X					
X			X		Independence 131 (EIR Impact 10-13)					X	
X		X			Independence Ditch System (EIR Table 4-3)				X		
X		X			Independence East Side Regreening Project (23 acres; EIR Impact 10-11, EIR Table 5-3)				X		
X		X			Independence Pasturelands and Native Pasturelands (610 acres; EIR Impact 12-1, EIR Tables 4-3 and 5-3)				X		
X		X			Independence Roadside Rest Area (0.5 acres; EIR Tables 4-3 and 5-3)				X		
X		X			Independence Springfield (includes 40-acres of revegetation) (286 acres; EIR Impact 12-1, EIR Tables 4-3 and 5-3)				X		
X		X			Independence Woodlot (20 acres; EIR Impact 10-11, EIR Table 4-3)				X		
X	X	X			Klondike Lake Aquatic Habitat (160 acres; EIR Impact 10-5 and 11-1, EIR Tables 4-3, 5-2, and 5-3)				X		
					Klondike SSHA (Big Pine Ditch System MND)				X		
			X		LAWS 118 (19-acre portion) and LAWS 129 (Laws Type E Transfer MND)				X[1]		
			X		LAWS 027 (Native Seed Farm) (Laws Type E Transfer MND)				X		
			X		LAWS 090 (Laws Type E Transfer MND)				X[1]		
			X		LAWS 094 (Laws Type E Transfer MND)				X[1]		
			X		LAWS 095 (Laws Type E Transfer MND)				X[1]		
X			X		Laws Area Revegetation Project (140 acres; EIR Impact 10-18)	X[1]					
X		X			Laws Historical Museum Pasturelands (21+15 acres; EIR Impact 10-18, EIR Table 5-3)				X		
X		X			Laws/Poleta Native Pasture (216 acres; EIR Impact 10-16, EIR Tables 4-3 and 5-3)				X		
X	X				Little Blackrock Springs (EIR Impact 10-14, EIR Table 5-2)				X		
X		X			Lone Pine East Side Regreening (11 acres; EIR Impact 10-16, EIR Table 5-3)				X		
X		X			Lone Pine-North Lone Pine Clean Up (EIR Table 4-3)	X					
X		X			Lone Pine Riparian Park (320 acres, EIR Tables 4-3 and 5-3)				X		
X		X			Lone Pine Sports Complex (EIR Table 5-3)	X					
X		X			Lone Pine West Side Regreening (8 acres; EIR Impact 10-16, EIR Tables 4-3 and 5-3)				X		
X		X			Lone Pine Woodlot (12 acres; EIR Impact 10-11, EIR Table 4-3)				X		
X	X	X		X	LORP Project (60 miles, perhaps more than 1,000 acres)/ Lower Owens Rewatering Project)				X		
X		X			McNally Ponds and Native Pasturelands (300 acres pasture, 60 acres ponds; EIR Impact 10-5 and 10-18, EIR Tables 4-3, 5-3)				X		
X	X	X			Millpond Recreation Area (EIR Impact 10-5, EIR Table 5-2 and 5-3)				X		
					North of Mazourka Canyon Road Project (Additional Mitigation Projects Developed by the MOU *Ad Hoc* Group (MOU Section III.A.3))				X		
X	X				Olancha-Cartago Irrigated Fields (EIR Impact 10-16)				X		
				X	Owens Valley Land Management Plan (MOU Section III.B)				X		
X					Reinhackle Spring (EIR Impact 10-14)				X		
X		X			Richards Fields (160 acres; EIR Impact 10-16, EIR Table 4-3)				X		
X	X				Saunders Pond (EIR Impact 10-5, EIR Table 5-2)				X		
X		X			Shepherd Creek Alfalfa Field (198 acres; EIR Impact 10-11, EIR Tables 4-3 and 5-3)				X		
X		X			Shepherd Creek Potential (60 acres; EIR Impact 10-11, EIR Table 5-3)	X					
X					Steward Ranch (EIR Impact 9-14)	X					
X			X		Tinemaha 54 Revegetation Project (EIR Impact 10-11)					X	
X		X			Tree Planting along Roadways (EIR Table 4-3)				X		
X	X				Tule Elk Field (EIR Table 5-2)				X		
X		X			Van Norman Fields (170 acres; EIR Impact 10-16, EIR Table 4-3)				X		
				X	Warren Lake Project (Additional Mitigation Projects Developed by the MOU *Ad Hoc* Group (MOU Section III.A.3))				X		
				X	Well 368 Project (Additional Mitigation Projects Developed by the MOU *Ad Hoc* Group (MOU Section III.A.3))				X		
				X	Yellow-billed Cuckoo Habitat (Baker & Hogback Creeks) (MOU Section III.A.1)				X		
					Subtotals	9		0	51	6	0

[1] *LADWP's data indicates that compliance criteria at LAW090, 094, 095, and 118/129 were met in 2022, and LAW118 (19-acre portion) in 2023. Discussions are underway with Inyo County to confirm these findings. Monitoring will occur in 2024 as required in the 2003 Laws Revegetation Plan.*

Table 3.2. LADWP Other Legal Commitments Summary

Water Agreement	1991 EIR	Other Agreement	1997 MOU	Table 3.2. LADWP OTHER LEGAL COMMITMENTS	Completed	Ongoing as Necessary/Required	Implemented and Ongoing	Fully Implemented; Not Meeting Goals	Not Fully Implemented
			X	Aerial Photo Analysis (MOU Section III.E)	X				
			X	Annual Report on the Owens Valley (MOU Section III.H)			X		
		X		Blackrock 94 Burns (2014 Stipulation)	X				
X				Cooperative Studies (Water Agreement Section IX)			X		
X				Dispute Resolution (Water Agreement Section XXVI)		X			
			X	Dispute Resolution and Litigation (MOU Section VI)		X			
X				Enhancement/ Mitigation Projects (Water Agreement Section X)			X		
X				Exchange of Information and Access (Water Agreement Section XVII)			X		
X				Financial Assistance- Big Pine Ditch System (Agreement Section XIV.E)			X		
X				Financial Assistance- General Financial Assistance to the County (Water Agreement Section XIV.D)			X		
X				Financial Assistance- Park & Environmental Assistance to City of Bishop (Water Agreement Section XIV.F)			X		
X				Financial Assistance- Park Rehabilitation, Development, & Maintenance (Water Agreement Section XIV.B)			X		
X				Financial Assistance- Salt Cedar Control (Water Agreement Section XIV.A)			X		
X				Financial Assistance- Water and Environmental Activities (Water Agreement Section XIV)			X		
			X	Financial Provisions (MOU Section IX)	X				
			X	Fish Slough (MOU Section IV)			X		
X				Groundwater Management (Water Agreement Section II)			X		
X				Groundwater Pumping on the Bishop Cone (Water Agreement Section VII)			X		
X				Groundwater Recharge Facilities (Water Agreement Section VIII)		X			
			X	Habitat Conservation Plan (MOU Section III.B)	X				
X				Haiwee Reservoir (Water Agreement Section XIII)	X				
			X	Inventory of Plants and Animals at Spring and Seeps (outside LORP Planning Area) (MOU Section III.C)	X				
	X			Laws Area Potential Mitigation-Consideration by Standing Committee (640 acres; EIR Impact 10-18)		X			
X				Legislative Coordination (Water Agreement Section XVI)			X		
			X	LORP Agency Consultation and Public Involvement (MOU Section II.D)	X				
			X	LORP EIR (MOU Section II.F)	X				
			X	LORP Implementation (MOU Section II.H)	X				
			X	LORP Monitoring and Adaptive Management Plan (MOU Section II.E)			X		
			X	LORP Permits Approvals and Licenses (MOU Section II.I)	X				
			X	LORP Plan (MOU Section II.A)	X				
			X	LORP Planning Area- Inventory of Plants and Animals at Spring and Seeps (MOU Section III.A.2)	X				
			X	LORP Pumpback System (MOU Section II.G)	X				
			X	Lower Owens Off River Lakes and Ponds (MOU Section II.C.3)			X		
X				Lower Owens River (financial commitment) (Water Agreement Section XII)			X		
			X	Lower Owens River Delta Habitat Area (MOU Section II.C.2)			X		
			X	Lower Owens River Project 1500-Acre Blackrock Waterfowl Habitat Area (MOU II.C.4)			X		
			X	Lower Owens River Riverine- Riparian System (MOU Section II.C.1)			X		
			X	Mitigation Plans for Impacts Identified in the 1991 EIR and the Water Agreement (MOU III.F)			X		
X				New Wells & Production Capacity (Water Agreement Section VI)					X
X				Owens River Recreational Use Plan (Water Agreement XV.B)					X
X				Release of City Owned Lands - Lands for Public Purposes (Water Agreement Section XV.D)		X			
X				Release of City Owned Lands- Bishop (Water Agreement Section XV.B)	X				
X				Release of City Owned Lands- Inyo County (Water Agreement Section XV.A)	X				
X				Release of City-owned lands- Additional Sales (Water Agreement Section XV.C)	X				
			X	Technical Group Meetings (MOU Section III.G)		X			
X				Town Water Systems (Water Agreement Section XI)	X				
			X	Type E Vegetation Inventory (MOU Section III.D)	X				
				Subtotals	18	6	21	0	2