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COUNTY OF INYO
WATER DEPARTMENT

April 29, 2022

Mr. Adam Perez, Aqueduct Manager
Los Angeles Department of Water and Power
300 Mandich Street
Bishop, California 93514

Subject: Inyo County comments on LADWP's proposed Annual Operations Plan for Runoff Year 2022-2023

Dear Mr. Perez,

In accordance with Section V.D. of the Inyo/Los Angeles Long Term Water Agreement, this letter transmits the Inyo County's comments on LADWP's Draft Owens Valley Operations Plan for Runoff Year 2022-2023 (Draft Plan). Based on the analysis and reasons presented below, the County recommends a pumping range from a minimum of 55,900 ac-ft to a maximum of approximately 59,540 ac-ft. The County will make a decision on LADWP's proposed reduction in the amount of water supplied to in-valley irrigation after LADWP and the County have discussed the comments in this letter.

Last year's measured runoff was approximately 45% of normal, and runoff this year is forecast to be 47% of normal. In accordance with the Water Agreement (Section V.D) when consecutive dry years occur, the Draft Plan presents pumping by wellfield for the first six months of the runoff year. The Draft Plan also indicates that the City intends to pump between 67,210 and 86,300 acre-feet (ac-ft) of groundwater during the entire 2022-2023 runoff year. The Draft Plan indicates total planned exports from the Eastern Sierra will be approximately 62,700 ac-ft. Approximately 30,400 ac-ft of the potential high range of pumping is in excess of sole source uses (e.g. in-valley agriculture) presumably for aqueduct supply, including export.

The County recognizes that the expected low runoff this year will present challenges to meeting the Water Agreement goals and LADWP needs. Actual runoff last year was the lowest on record, and forecasted runoff in 2022 would be the second lowest on record. These low runoff conditions stress native vegetation in the Valley and limit water supplies to irrigated lands and environmental projects.

The American Southwest has been unusually dry and hot for the last twenty years, and this may be the driest period in the last several hundred years (Williams et al, 2020). Locally, between 2012 and

2022, the Eastern Sierra has experienced two periods of drought lasting multiple years. Eight of the eleven years had below normal runoff including three years with the lowest runoff on record (including the current year forecast). For a comparison of runoff during recent droughts see Figure 1. The County is concerned that rather than a departure from normal conditions, the pattern of droughts in recent years may signal the onset of an accelerated change in climate that was not understood when the Long Term Water Agreement or its groundwater management planning concepts were developed. Recent global climate model predictions by LADWP suggested that an average 0.165% rate of decline in annual runoff or approximately 300 ac-ft/year, may be expected due to climate change (LADWP, 2020). In addition to the expected decrease in total runoff, it is possible that years of extreme drought in which runoff is insufficient to supply many uses in the Owens Valley may occur more frequently.

Experience during recent droughts suggest that conservative amounts of pumping to limit water table decline can prevent vegetation declines below baseline (e.g. 2007-09, Figure 2) or prevent new permanent impacts to vegetation from occurring (e.g. 2012-2016 and subsequent recovery, Figure 2). The County recommends that pumping be managed conservatively given the severity of the drought, uncertainty concerning the length of the drought, and concerns how the effects of climate change may manifest in future years. In addition, the Inyo County Water Commission recommended that Inyo and Los Angeles begin examining how to manage pumping considering climate change. We suggest staff prepare a report summarizing the reliable information about the effects of climate change on Eastern Sierra runoff to aid decision makers.

The County's analysis suggests water levels are expected to decline in some wellfields even if pumping were to be limited to only the amount necessary to supply uses in the valley. Therefore, the Inyo County Water Commission recommended pumping be limited to approximately 55,900 ac-ft. The predicted changes in water levels for this amount of pumping are analyzed and included in this letter as the County's low recommended pumping amount. If the goal were to supply sole source uses and maintain water levels where possible, ICWD analysis suggests pumping should be limited to approximately 59,540 ac-ft. The County believes that pumping in the range between 55,900 ac-ft and 59,540 ac-ft will be prudent for the upcoming drought year to allow the multiple goals of the Water Agreement to be met and could at least stabilize water level conditions to protect groundwater dependent vegetation protected by the Water Agreement.

The County agrees with the strategy in the Draft Plan to fully supply water to mitigation and environmental projects and lands that have an allocation less than 4ac-ft/ac. We remain concerned, however, over the persistent reduced delivery of stockwater compared with 1981-82, even in years of favorable runoff, and the potential for adverse effects on lease operations and Type E vegetation.

The Draft Plan also includes a request to cap irrigation deliveries at 4 ac-ft/ac. The proposed cap must be approved by the Inyo Board of Supervisors and LADWP acting through the Standing Committee. We concur that current conditions equate to a dry year with localized water shortages, allowing for consideration of a program for reasonable reductions in irrigation for LADWP owned lands. Due to the extremely low runoff last year irrigation was reduced primarily to pastures and fields fed by creeks. Irrigation for 2020-21 was approximately 38,493 ac-ft which was below the Water Agreement baseline amount of 46,680 ac-ft in 1981-82. The Draft Plan suggests 34,750 ac-ft will be delivered in 2022-23 which would be the lowest since the adoption of the Water Agreement.

It is important to note that from the mid-1960s to 1970, the total leased acreage classified by Los Angeles as irrigated was reduced from 21,800 acres to 11,600 acres. The remaining irrigated acres were provided a firm commitment of irrigation water even in dry years, which was a change from the previous period when LADWP could reduce or halt irrigation in dry years depending on needs of the City regardless of the local environmental and economic impacts. The Water Agreement provides that LADWP will continue to supply a firm water supply to the 11,600 acres and to approximately 2,600 additional acres of irrigated lands for environmental projects and lands in the Olancha-Cartago area. Water-related uses on these lands that were in effect during the 1981-82 runoff year must continue. These lands are also to be managed so as to avoid causing significant decreases and changes in vegetation, and significant decreases in recreational uses and wildlife habitats. LADWP's 1960's reduction in irrigated acres was assessed as a potential impact in the 1991 EIR (Impact 14-1). The EIR concluded that additional mitigation was not required in part because the firm allocation of water stabilized the local agricultural economy, and because the Water Agreement contained provisions to maintain uses (unless agreed to by the Inyo County Board of Supervisors) that adequately protected the economy and environment of the Owens Valley.

The Inyo County Board of Supervisors considered the suggested program for irrigation reductions at its April 26, 2022 meeting. During the Board's consideration, significant concerns regarding the plan were raised, including, but not limited to: (1) the Draft Plan includes such a large range of potential pumping (approximately 20,000 acre-feet) that it prevents an accurate review of the Draft Plan by the County as anticipated by the Water Agreement (Section V.D is), (2) the high end of the proposed pumping is higher than in recent years (even dry years with similar runoff) and could lead to new impacts that violate the requirements of the Water Agreement in addition to those areas that are chronically below baseline conditions , (3) the negative economic impact of reducing irrigation to LADWP-owned lands, (4) the necessity to modify hatchery pumping to only the water that is needed for the hatchery operations as required by the Water Agreement, and (5) the inclusion of pumping for potential export. The Board was particularly concerned with LADWP's proposed increase in the maximum amount of pumping coupled with a concurrent irrigation reduction. Consequently, the Board directed staff to continue discussions with LADWP and the Technical Group before the providing direction to the Standing Committee representatives on LADWP's request to reduce irrigation.

General Comments

The Draft Plan includes the possible test pumping of 386W near the Five-Bridges mitigation site. Mitigation measure 10-12 was adopted by LADWP in the 1991 EIR to mitigate the impacts caused by the operation of wells W385 and W386 in the late 1980's (p. 10-58 of the 1990 DEIR, Sept. 1990). The adopted mitigation measure included discontinuation of pumping from the two wells. In 2018 Inyo and Los Angeles settled litigation regarding test pumping W385. That settlement required the Technical Group temporarily amend the 1999 Revegetation Plan to allow pumping from W385 and to adopt a Mitigation and Monitoring plan for the test. The settlement also prescribes several actions that must occur before testing of W386 can proceed including: 1) Technical Group agreement that testing W385 did not cause adverse effects, 2) Technical Group approval of monitoring and mitigation plan for a W386 test, and 3) Technical Group agreement to again temporarily suspend the 1999 Revegetation Plan provision that W385 and W386 remain "permanently shut down" to allow the test to be conducted. The monitoring and mitigation plan for the 385W test included a provision that hydrological conditions should be favorable before commencing pumping and that irrigation would be provided equal to the pumped amount. Favorable hydrologic conditions were present at the beginning of the W385 test, and the County would insist that similar conditions exist before the start of a test of

W386 to protect sensitive resources and to clearly discriminate the effects of pumping from drought. It is apparent that requirement will not be met given the extremely low runoff forecast and current groundwater levels. The County remains concerned that the 1980's vegetation impact at Five-Bridges has not been fully mitigated, demonstrated by diminished perennial cover, conversion of shrub willow areas, and weed infestation. The unrecovered portion of the project would not respond positively to additional water table declines and irrigation reductions in the surrounding area.

The calculation of Owens Valley export in the Draft Plan (Figure 1.12 and Section 1.5) is fiction. The calculation should not arbitrarily divide the Owens River watershed along the Inyo/Mono County boundary and count water that naturally flows from the Mono County portion of the watershed as "imported" water into the Owens Valley to meet water demands. The amount of water provided to environmental projects reflects that most of the impacts of LADWP's water gathering activities occurred in Inyo County, including the diversion and export of waters derived from the entire watershed that would naturally support the Lower Owens River and Owens Lake. The calculation inherently implies that only water derived from creeks within Inyo County must be provided to environmental projects located in the County, but that was not a requirement included in any project.

The Draft Plan presents a table of LADWP's position on the accumulated E/M project imbalance. The County does not agree that the calculated imbalance constitutes a deviation from the Water Agreement. The Water Agreement provides that some wells supplying E/M projects are to be operated in accordance with the well On/Off provisions of the Agreement and the E/M projects included as mitigation measures in the 1991 EIR require compliance with CEQA and/or agreement by the Board of Supervisors to revise management or reduce water allocation. Since the Water Agreement was adopted, some E/M supply wells have not been operated in accordance with On/Off provisions when wells are in off status due to low soil water and/or to prevent violation of the Water Agreement vegetation protection goals. From our understanding, these factors are not reflected in the LADWP accounting.

Although the Water Agreement's process for Annual Operations Plans is based on planning for individual years, the Water Department recommends that the Technical Group consider multi- year planning to manage water table fluctuations within ranges compatible with vegetation baseline conditions. Staff worked cooperatively on such proposals to revise the Green Book for several years, but while progress was made, final methods were never agreed upon.

Neither the Draft Plan nor Table 2.7 in the Draft Annual Report Chapter 2 – Conditions in the Owens Valley specify the amount of water used for Owens Lake dust mitigation separate from other uses. To assist Inyo County's participation in the Owens Lake Groundwater Work Group, please include these data in the Draft Plan or elsewhere in the Annual Report.

Evaluation of 2022 Operations Plan

Background

Relatively low runoff and approximately 62,518 ac-ft of pumping in 2021-2022 caused the water table to decline in most areas of the Owens Valley (Table 1). Groundwater levels in six of the seven wellfields declined with larger decreases observed in Laws and Bairs-George. Smaller declines on average occurred in Thibaut Sawmill and Independence Oak wellfields. Water levels were relatively stable in Symmes Shepherd, Big Pine, and Taboose-Aberdeen wellfields due to the relatively conservative pumping in 2021-22 (62,518 ac-ft). Operations in 2021 were unusual in that pumping in Big Pine was curtailed much of the year due to closure of the Fish Springs hatchery, and water

levels are approximately the same as last spring. As of April 2022, water levels in two thirds of the indicator wells remain below those measured in the mid-1980s when the baseline vegetation mapping was completed, primarily in Laws, Independence-Oak, and Symmes-Shepherd wellfields. Water levels in Independence-Oak and Symmes-Shepherd did not recover from the pumping early in the 2012-2016 drought despite favorable runoff during 2016-2019 (Table 1) and mostly remain below baseline.

The Draft Plan's proposal to pump water for aqueduct supply including export in areas near vegetation that is measurably and chronically below baseline levels is environmentally harmful The lower range of proposed pumping is less than long-term average pumping under the Water Agreement (72,284 ac-ft, 1991-2021) but significantly greater than necessary for sole source uses (approximately 55,900 ac-ft). Adjusting pumping to at least maintain a shallow water table in some areas of groundwater-dependent vegetation in 2022-23 is necessary to stabilize declines at the onset of the present drought and to avoid impacts should the extremely low runoff conditions persist. Shallow groundwater levels are particularly important to maintain perennial grasses which show larger and more persistent declines than total perennial cover and declines in a larger number of parcels.

Methods

ICWD's analysis of the Draft Plan and pumping recommendations are based on the goals and principles of the Water Agreement, the status of individual pumping wells according to Green Book soil water triggers, groundwater dependent vegetation conditions monitored by the Technical Group, water table conditions in each well field, and groundwater uses within each wellfield.

The County uses multiple linear regression models at 46 indicator wells to predict water table elevation in April 2023 as a function of wellfield pumping, 2022 water table elevation, and forecasted Owens Valley runoff. The Laws indicator well models rely on the sum of diversions into the Upper and Lower McNally canals at the Owens River as the variable related to recharge instead of Owens Valley runoff. Water spreading is not planned for Laws in 2022-23 (Table 2.8 of the Draft Plan). The set of indicator well models used by ICWD differs from the set of indicator wells used by LADWP (Table 1.7 of the Draft Plan), but the Inyo and LADWP average predicted water table changes generally agree (Table 2).

The evaluation of four pumping scenarios are presented in this letter; (1) minimum pumping for uses in the valley (the low range of the County's recommended pumping suggested by the Inyo County Water Commission and Board of Supervisors), (2) LADWP's proposed lower limit (minimum), LADWP's upper limit (maximum) for pumping in the Draft Plan, and (4) the amount of pumping that ICWD analysis determined is compatible with the goals of the Water Agreement (Table 3). The upper limit of the pumping proposed in the Draft Plan represents the maximum impact on the water table, and LADWP has commonly pumped near the maximum proposed amount except for unusual circumstances. The analysis of water levels with minimum pumping for specific uses in the Owens Valley is included as a basis for comparison with the higher levels of pumping in the Draft Plan.

In below normal runoff years, ICWD estimates minimum pumping for in-valley uses to be approximately 55,900 AF. We recognize that the actual pumped amount deviates from this estimate depending on differences in forecasted and actual runoff which affects the amount of surface water available to supply irrigation or mitigation projects instead of groundwater. The ICWD periodically updates the estimated pumping to supply in-valley uses based on recent practices. The minimum pumping amount in Laws was increased to recognize that additional lands required to be irrigated at

the Laws Ranch have been supplied groundwater and that the Draft Plan proposes to supply the McNally Ponds this fall. In Big Pine at the Fish Springs Hatchery there are certain months in the fall or winter where pumping capacity of both wells is not necessary to meet present hatchery fish production goals. The minimum pumping required to supply the Fish Springs Hatchery was reduced anticipating that infrastructure to allow the hatchery to vary water delivery to meet needs and potentially reduce the constant pumping will be installed during this runoff year. Smaller adjustments to minimum pumping in Thibaut-Sawmill, Bairs-George, and Lone Pine were based on well capacity or uses evident in recent years.

LADWP's proposed operations plan includes pumping for export from all wellfields except Bishop and Lone Pine at the higher proposed range. The lower range of proposed pumping also does not include export from the Symmes-Shepherd wellfield.

Wellfield-specific conditions

The following sections present a summary of conditions in each wellfield including: the predicted effects of the proposed pumping, and ICWD's comments on LADWP's proposed operations. In the sections below, baseline water levels refer to the average of April water levels for 1985, 1986, and 1987, and baseline vegetation conditions refer to the conditions documented in the baseline maps attached to the Water Agreement as Exhibit A. Observed water level changes since April 2021 and deviations from baseline water levels based on ICWD field measurements are given in Table 1. Wellfield pumping proposed by LADWP in the Draft Plan, minimum pumping, and pumping amounts to stabilize water levels are given in Table 3. Predicted water table changes are presented in Table 4.

Laws. The Draft Plan proposes between 8,900 and 10,710 ac-ft of pumping in the Laws wellfield to supply town water systems, irrigation, enhancement/mitigation (E/M) projects, and export. Last year, the water table declined between 0.2 and 2.7 feet in indicator wells. Water levels currently range from 1.8 feet above to 6.2 feet below baseline. Vegetation parcels LAW035, LAW043, LAW052, LAW062, LAW070, LAW072 and LAW085 are all in the same general vicinity and have chronically below-baseline grass cover, and perennial cover that only infrequently recovers to baseline conditions.

Water levels in Laws respond substantially to irrigation and water spreading that is diverted from the Owens River into the McNally canals. LADWP's Draft Plan suggests no diversion from the river is planned. The proposed upper pumping amount in Laws would cause water levels to decline several feet (Table 4). Water levels are predicted to decline even at pumping for in-valley uses in Laws. Given the chronically poor vegetation conditions in the parcels listed above despite water table recovery in 2019-20, pumping should be limited to uses in Laws and should not include pumping for export. Pumping at this amount will maintain water levels only in 438T; all other indicator wells are predicted to decline.

Despite repeated recovery of water levels to near or above baseline since 2000, the degraded conditions in parcels noted above persist. It is important that the Technical Group evaluate in 2022 whether a significant impact exists (Green Book Sec. I.C.) in these vegetation parcels in Laws.

Bishop. LADWP proposes to pump 12,000 ac-ft from the Bishop wellfield. It appears that the proposed pumping will be within the limits of the Hillside Decree. ICWD recommends pumping not exceed 12,000 ac-ft providing that it complies with the Hillside Decree and that uses/losses downstream of the wells exceed pumping.

Big Pine. LADWP proposes to pump between 20,200 and 23,100 ac-ft from the Big Pine wellfield. The upper amount includes hatchery and town supply as well as several months of operation of exempt well(s) for export. One large vegetation parcel in the wellfield, BGP162, has had vegetation cover chronically below baseline and several others declined below baseline in 2021. Two other parcels, BP154 and FSP006 have suffered a measurable grass decline. The water table changes varied between +1.6 ft to -2.5 ft at indicator wells and monitoring sites in the wellfield. Water levels vary between 3 ft above to 1 ft below baseline at indicator wells but, due to the reduction in hatchery pumping, the average water level in the shallow-aquifer indicator wells remained above baseline (0.8 ft) for the third consecutive year. The County continues to advocate for minimum pumping in this wellfield due to the consistently high level of annual pumping and the hydrologic stress that creates.

It is our understanding that LADWP has decommissioned W341 and replaced its pumping with adjacent W415 for the town water system needs. In 2020 the Inyo/Los Angeles Technical Group approved test procedures for the initial period of operation of W415 pumping above the exemption for town supply (W415 test) consistent with GreenBook Section VI. The Draft Plan states the test will not be completed in 2022. We also recognize that the Water Agreement, as amended in 2002, committed LADWP to provide surface and groundwater for the Big Pine Irrigation and Improvement Association (BPIIA) ditch system from Big Pine Creek. In an exchange of letters in 2020, Inyo and Los Angeles concurred that water exiting the Big Pine Community Service District into Big Pine Creek would be considered pumped make-up water for the BPIIA. That accounting practice should continue.

Taboose-Aberdeen. LADWP proposes to pump between 6,000 and 14,850 ac-ft in the Taboose-Aberdeen wellfield. Alkali meadow parcels TIN050, TIN053, TIN064, and TIN068 all have chronically lower grass cover than baseline despite water level recovery to baseline suggesting a Type C to B conversion may have occurred and the water table regime may be insufficient to recover vegetation to baseline. Last year, water table changed between +1.7 to -0.7 feet. Water levels in most indicator wells were stable or rose. Indicator wells in this wellfield range from 1 ft above to 3.1 ft below baseline. One indicator well is predicted to remain stable in 2022-23 at the LADWP lower limit of pumping; all others decline at either the lower or upper limit. Reducing proposed pumping to 2,500 ac-ft would stabilize water levels during the upcoming year on average. Pumping from W118 and W349 should be limited to avoid lowering water levels under the parcels in the northern portion of the wellfield exhibiting grass declines.

The Technical Group should evaluate in 2022-23 whether a significant change in Type C parcels exists in vegetation parcels with chronically depressed grass cover.

Thibaut-Sawmill. LADWP proposes to pump 10,080 to 10,920 in the Thibaut-Sawmill wellfield. Two parcels, IND026 and IND029 in the southern portion of this wellfield have chronically depressed water levels and grass cover. Pumping should be managed to promote water table recovery under these parcels by not pumping W382. Cover in BLK094 is not fully recovered in terms of perennial or grass cover. Last year, the water table declined 0.6-1.1 ft, but water levels remained at baseline or several feet above baseline in two wells (Table 1), largely due to reductions in pumping at the Blackrock hatchery in 2014. Water levels in two indicator wells will remain above baseline at LADWP's proposed maximum pumping amount; however, ICWD analysis suggests that pumping not exceed 8,800 ac-ft for the hatchery and possible late summer irrigation pumping from W155 if creek flow is insufficient. Pumping should be managed to maintain water levels under the

parcels mentioned above.

The Technical Group should evaluate in 2021-22 whether a significant impact exists in vegetation parcels IND026 and 029.

Independence-Oak. LADWP proposes to pump between 7,000 and 8,800 ac-ft in the wellfield. Last year, water levels changed from +0.3 to -2.4 ft, and were 2.3-6.8 ft below baseline. Water levels in the southern portion remain below baseline and have not recovered since 2018. Pumping should be limited to sole source uses at 6,420 ac- ft. Water levels in some wells decline even at that amount, and restricting pumping to irrigation and E/M projects would result in approximately 0.5 ft. decline in water levels on average (Table 4).

Symmes-Shepherd. LADWP proposes to pump 1,200-2,910 ac-ft from the Symmes-Shepherd wellfield for sole source irrigation supply and export. One parcel, IND139, exhibits chronically depressed grass cover. Last year, the water table changes varied between +0.4 to -0.7 ft; but despite the gradual water table recovery and conservative pumping in recent years, the water table level remains below baseline. The ICWD analysis suggests that pumping be limited to approximately 1,500 ac-ft to stabilize water levels.

Bairs-Georges. LADWP proposes to pump 930 to 2,110 ac-ft in the Bairs-Georges wellfield. Perennial and grass cover in the largest monitored parcel in the wellfield MAN037 is again below baseline and while cover increased in 2019-20, it has yet to attain baseline. The increased vegetation cover has corresponded with water level recovery to baseline. Last year, water levels changed +0.1 to -2.0 ft. in indicator and vegetation monitoring site wells and only one well remains at baseline. Under LADWP's maximum proposed pumping, water levels would decline 0.3 to 1.8 ft and would be below baseline in all wells. The County acknowledges the possible need to supplement irrigation/stockwater flows from Georges Creek with pumped water in this low-runoff year (approximately 460 ac-ft), and 1200 ac-ft of pumping can accomplish this need and maintain water levels in 2022.

Lone Pine. LADWP proposes to pump 900 ac-ft from the Lone Pine wellfield for town and E/M project supply. In most recent years, the actual pumping for in valley uses has been closer to 1,000 ac-ft. Concerning operation of well W416, the Draft Plan notes that LADWP may equip and test this well and has requested that the Technical Group designate a monitoring site to manage this well. The management requirements of this well differ from those of many of LADWP's aqueduct supply wells in that potential adverse effects on non-LADWP wells are a much more substantial concern here than in other wellfields. The Water Department does not think the modifications to the well alleviate concerns that it may affect private wells. Before W416 can be operated, the Technical Group should adopt procedures to test the well under conditions that prevent impacts to vegetation and private wells similar to the test proposals for 415W and 386W. The County recommends pumping not exceed 1000 ac-ft for the uses specified in the Draft Plan.

We look forward to addressing these comments at the Technical Group meeting on May 9, 2022. If you wish to discuss these comments prior to the Technical Group meeting, feel free to contact me.

Sincerely,

Aaron Steinwand, Water Director

cc: Inyo County Board of Supervisors
Inyo County Water Commission
Leslie Chapman, County CAO
John Vallejo, County Counsel
Greg James, Special Counsel

References

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Williams, A. P. et al. (2020). Large contribution from anthropogenic warming to a developing North American megadrought. Science 368, 314–318.

An update of this research article is also available: Williams, A.P., Cook, B.I. & Smerdon, J.E. Rapid intensification of the emerging southwestern North American megadrought in 2020–2021. Nat. Clim. Chang. 12, 232–234 (2022). https://doi.org/10.1038/s41558-022-01290-z

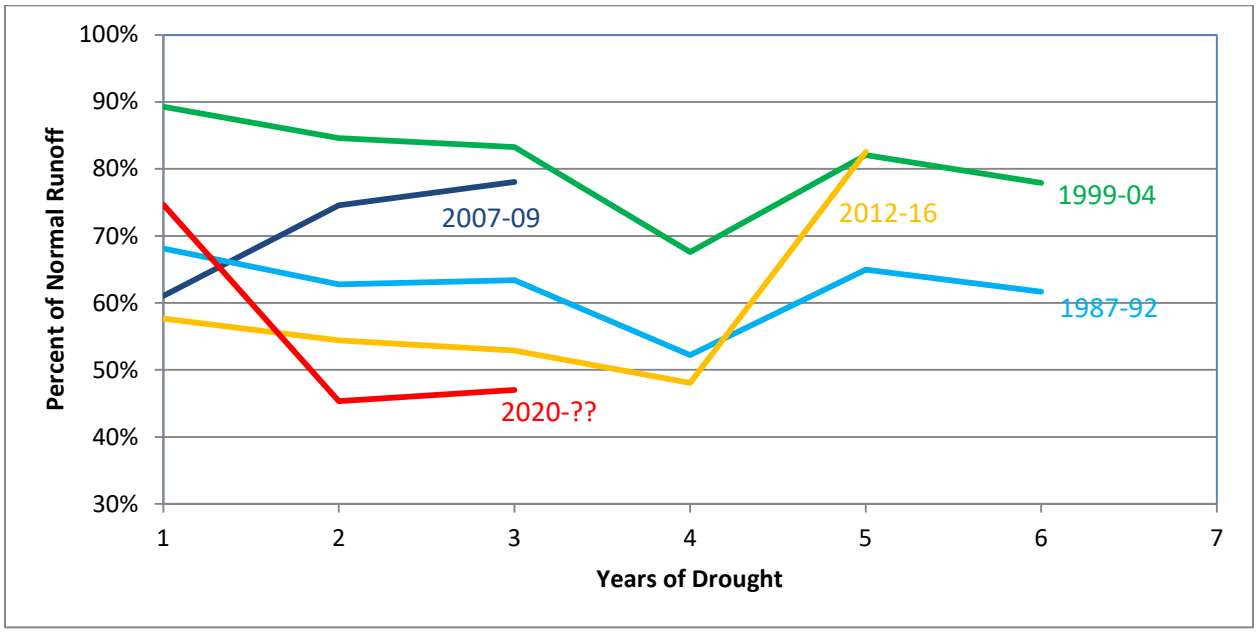

Figure 1. Plots of percent of normal runoff depicting the severity and duration of drought periods that have occurred since the adoption of the Water Agreement.

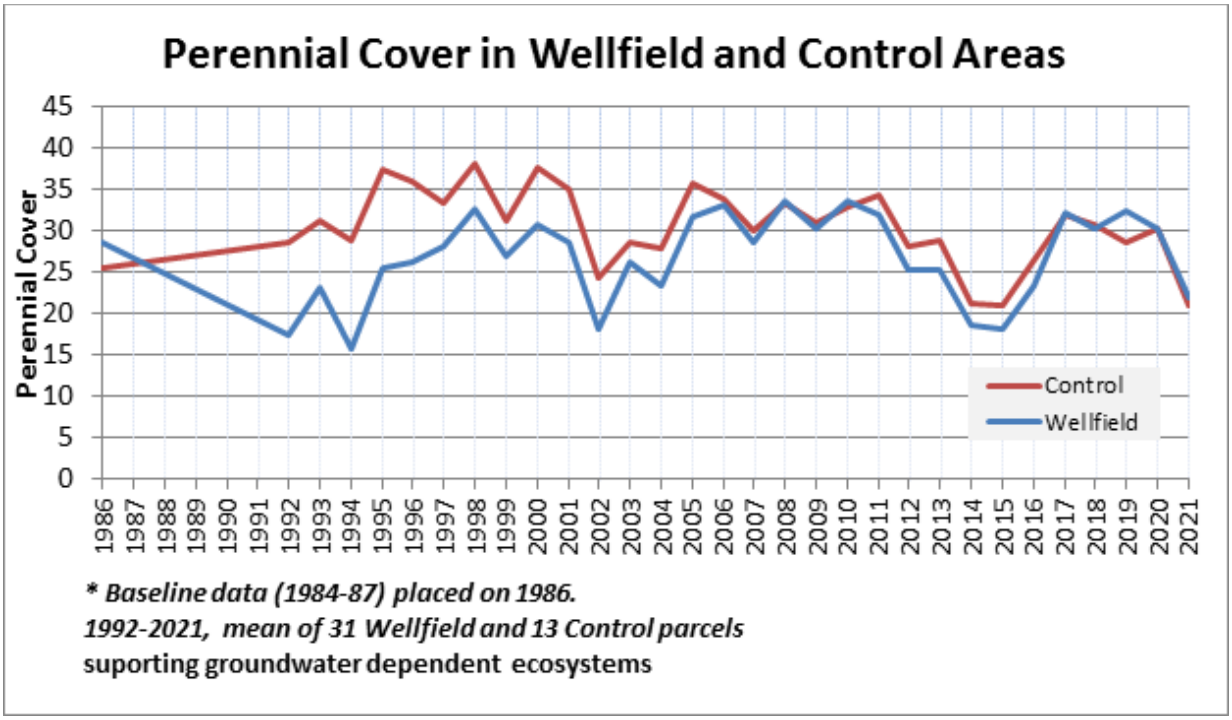

Figure 2. Average perennial cover (%) measured in control and wellfield parcels that have been sampled each year since 1992.

Table 1. Depth to Water (DTW) at indicator wells, April 2022. All data are in feet. Negative values denote a decline in water level. Depths are from reference point on the test well. Baseline elevation at monitoring sites was predicted from monitoring site/indicator wells regression models unless the test well was present 1985-87.

Station ID, Monitoring site	DTW April 2022	Change from April 2021	Deviation from Baseline in 2022
Laws			
107T	30.09	-2.72	-5.82
434T	7.49	-0.51	0.11
436T	8.95	-0.86	-0.85
438T	15.82	-2.19	-6.22
490T	16.02	-2.27	-2.95
492T	31.04	-2.02	1.76
795T, LW1	15.75	-0.19	-2.46
V001G, LW2	20.43	-1.95	-0.81
574T, LW3†	15.64	-1.19	-2.56
Big Pine			
425T	13.49	0.08	1.41
426T	11.81	0.09	-0.24
469T	22.42	-0.33	-0.75
572T	10.30	-2.52	1.60
798T, BP1	13.08	1.56	2.97
799T, BP2	19.57	-0.26	-1.06
567T, BP3	13.40	-0.34	0.56
800T, BP4	11.49	1.00	2.10
Taboose Aberdeen			
417T	29.21	-0.60	-2.24
418T	8.40	0.29	-0.17
419T, TA1	6.29	0.72	0.34
421T	35.11	1.73	-0.76
502T	10.61	0.73	-3.12
504T	9.75	1.27	1.02
505T	20.99	-0.58	-2.39
586T, TA4	7.81	0.58	0.51
801T, TA5	15.60	0.51	-2.08
803T, TA6	10.60	-0.74	-1.90

Station ID, Monitoring site	DTW April 2022	Change from April 2021	Deviation from Baseline in 2022
Thibaut Sawmill			
415T	13.11	-0.76	5.39
507T	5.69	-1.07	-1.02
806T, TS2	10.99	-0.60	2.19
Independence Oak			
406T	4.11	-0.08	-2.54
407T	11.81	0.24	-4.51
408T	5.44	0.16	-2.31
409T	7.07	0.31	-5.47
546T	8.01	-1.74	-4.58
809T, IO1	13.41	-2.42	-6.84
Symmes Shepherd			
402T	11.00	-0.20	-2.97
403T	7.36	-0.25	-2.03
404T	6.37	0.02	-2.80
447T	36.10	-0.68	-14.23
510T	7.67	-0.05	-2.67
511T	7.46	0.43	-2.83
V009G, SS1	17.68	-0.19	-10.85
Bairs George			
398T	7.77	-1.79	-1.42
400T	6.29	0.09	0.01
812T, BG2	18.11	-1.95	-4.65

Table 2. Comparison of the range in average predicted water level changes in 2022-23 for LADWP minimum and maximum proposed pumping using the LADWP set of indicator well models (Table 1.7 of the Draft Plan) and the set of models used by ICWD. Data are in ft of change and negative values denote decline.

Wellfield	**LADWP models**	**ICWD models**
Laws	-3.4 to -3.9	-2.6 to -3.1
Big Pine	-1.6 to -2.3	-1.9 to -2.3
Taboose-Aberdeen	-0.3 to -1.8	-0.8 to -2.7
Thibaut-Sawmill	-0.7 to -1.0	-0.5 to -0.8
Independence-Oak	-0.4 to -1.3	-0.7 to -1.2
Symmes-Shepherd	+0.1 to -1.0	+0.1 to -0.4
Bairs-George	+0.0 to -0.5	+0.2 to -0.9

Table 3. Pumping totals by wellfield evaluated using the regression models. Annual amounts for Bishop and Lone Pine were estimated based on recent pumping history to equal the total for the Owens Valley presented in Table 1.7 of the Draft Plan. Regression modeling is not completed for Bishop because pumping in that wellfield must comply with the Hillside decree and for Lone Pine because the proposed pumping is for mitigation and town supply only.

Wellfield	**LADWP Min (67,210 AF)**	**LADWP Max (86,300AF)**	**In-Valley Min (55,900 AF)**	**ICWD Reduced (59.540)**
	Ac-ft/year	Ac-ft/year	Ac-ft/year	Ac-ft/year
Laws	8,900	10,710	8,000	8,000
Bishop	12,000	12,000	12,000	12,000
Big Pine	20,200	23,100	18,120	18,120
Taboose-Aberdeen	6,000	14,850	300	2,500
Thibaut-Sawmill	10,080	10,920	8,400	8,800
Independence-Oak	7,000	8,800	6,420	6,420
Symmes-Shepherd	1,200	2,910	1,200	1,500
Bairs-George	930	2,110	460	1,200
Lone Pine	900	900	1000	1000

Table 4. Predicted water level changes at indicator wells and monitoring sites for LADWP's proposed annual operations plan for 2022. Negative DTW values denote a decline.

Station ID, Monitoring site	LADWP Low 67,210 ac-ft 2022 vs 2021	LADWP Low 67,210 ac-ft 2022 vs Baseline	In Valley MIN 55,900 ac-ft 2022 vs 2021	In Valley MIN 55,900 ac-ft 2022 vs Baseline
	(DTW change ft)	(DTW change ft)	(DTW change ft)	(DTW change ft)
Laws				
107T	-2.28	-8.10	-1.98	-7.80
434T	-0.94	-0.83	-0.81	-0.70
436T	-1.97	-2.82	-1.84	-2.69
438T	-0.04	-6.26	0.06	-6.16
490T	-0.87	-3.82	-0.81	-3.76
492T	-3.99	-2.23	-3.51	-1.75
795T	-9.08	-11.55	-8.66	-11.12
V001g	-3.35	-4.16	-3.11	-3.92
574T	-0.87	-3.43	-0.74	-3.30
Big Pine				
425T	-1.96	-0.55	-1.61	-0.20
426T	-1.19	-1.44	-0.99	-1.24
469T	-0.86	-1.61	-0.67	-1.42
572T	-2.74	-1.14	-2.36	-0.76
798T, BP1	-3.98	-1.01	-3.64	-0.67
799T, BP2	-0.48	-1.54	-0.30	-1.36
567T, BP3	-2.30	-1.74	-1.99	-1.42
800T, BP4	-1.49	0.61	-1.06	1.04
Taboose Aberdeen				
417T	-0.72	-2.96	0.78	-1.47
418T	-0.36	-0.52	0.29	0.12
419T, TA1	-1.05	-0.71	0.49	0.83
421T	-1.53	-2.29	0.03	-0.73
502T	-0.62	-3.74	0.09	-3.03
504T	-1.38	-0.36	0.53	1.54
505T	-0.65	-3.04	0.88	-1.51
586T, TA4	-0.50	0.01	0.77	1.28
801T, TA5	0.23	-1.84	0.58	-1.49
803T, TA6	-0.90	-2.80	0.51	-1.39
Thibaut Sawmill				
415T	-1.24	4.15	0.06	5.45
507T	0.48	-0.55	0.75	-0.27
806T, TS2	-0.70	1.49	-0.37	1.83
Independence- Oak				
406T	-0.49	-3.03	-0.45	-2.99
407T	0.09	-4.42	0.29	-4.22
408T	0.17	-2.14	0.30	-2.01
409T	-1.57	-7.04	-1.17	-6.64
546T	-1.14	-5.72	-1.06	-5.64
809T, IO1	-0.94	-7.78	-0.74	-7.58
Symmes Shepherd				
402T	0.01	-2.96	0.01	-2.96
403T	0.27	-1.76	0.27	-1.76
404T	0.53	-2.27	0.53	-2.27
447T	-0.74	-14.98	-0.74	-14.98
510T	0.55	-2.12	0.55	-2.12
511T	0.38	-2.45	0.38	-2.45
V009G, SS1	-0.27	-11.12	-0.27	-11.12
Bairs George				
398T	1.19	-0.23	1.82	0.40
400T	-0.03	-0.02	0.09	0.10
812T	-0.44	-5.09	0.12	-4.53

Table 4. [continued]

Station ID, Monitoring site	LADWP High 86,300 ac-ft 2022 vs 2021	LADWP High 86,300 ac-ft 2022 vs Baseline	ICWD stable levels 59,540 ac-ft 2022 vs 2021	ICWD Recommended 59,540 ac-ft 2022 vs Baseline
	(DTW change ft)	(DTW change ft)	(DTW change ft)	(DTW change ft)
Laws				
107T	-8.10	-8.10	-1.98	-7.80
434T	-0.83	-0.83	-0.81	-0.70
436T	-2.82	-2.82	-1.84	-2.69
438T	-6.26	-6.26	0.06	-6.16
490T	-3.82	-3.82	-0.81	-3.76
492T	-2.23	-2.23	-3.51	-1.75
795T	-11.55	-11.55	-8.66	-11.12
V001g	-4.16	-4.16	-3.11	-3.92
574T	-3.43	-3.43	-0.74	-3.30
Big Pine				
425T	-2.46	-1.05	-1.61	-0.20
426T	-1.47	-1.71	-0.99	-1.24
469T	-1.13	-1.88	-0.67	-1.42
572T	-3.28	-1.68	-2.36	-0.76
798T, BP1	-4.45	-1.48	-3.64	-0.67
799T, BP2	-0.74	-1.80	-0.30	-1.36
567T, BP3	-2.75	-2.18	-1.99	-1.42
800T, BP4	-2.08	0.02	-1.06	1.04
Taboose Aberdeen				
417T	-3.03	-5.28	0.20	-2.04
418T	-1.36	-1.52	0.04	-0.13
419T, TA1	-3.44	-3.09	-0.10	0.24
421T	-3.95	-4.70	-0.57	-1.33
502T	-1.73	-4.85	-0.19	-3.30
504T	-4.34	-3.32	-0.21	0.81
505T	-3.01	-5.40	0.29	-2.10
586T, TA4	-2.48	-1.96	0.28	0.79
801T, TA5	-0.31	-2.39	0.45	-1.63
803T, TA6	-3.09	-4.99	-0.03	-1.93
Thibaut Sawmill				
415T	-1.89	3.50	-0.25	5.14
507T	0.34	-0.68	0.69	-0.34
806T, TS2	-0.86	1.33	-0.44	1.75
Independence- Oak				
406T	-0.61	-3.16	-0.45	-2.99
407T	-0.52	-5.03	0.29	-4.22
408T	-0.24	-2.55	0.30	-2.01
409T	-2.82	-8.29	-1.17	-6.64
546T	-1.41	-5.99	-1.06	-5.64
809T, IO1	-1.56	-8.40	-0.74	-7.58
Symmes Shep.				
402T	-0.18	-3.16	-0.02	-3.00
403T	-0.27	-2.30	0.17	-1.86
404T	0.33	-2.47	0.50	-2.31
447T	-1.99	-16.22	-0.96	-15.20
510T	0.36	-2.31	0.52	-2.15
511T	0.18	-2.65	0.34	-2.48
V009G, SS1	-1.38	-12.23	-0.47	-11.32
Bairs George				
398T	-0.42	-1.84	0.82	-0.60
400T	-0.33	-0.32	-0.10	-0.09