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**COUNTY OF INYO  
WATER DEPARTMENT**

April 29, 2019

Mr. Clarence Martin, 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 2019-2020**

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Dear Mr. Martin,

In accordance with Section V.D. of the Inyo/Los Angeles Long Term Water Agreement, the following are the Inyo County Water Department's (ICWD) comments on LADWP's Draft Owens Valley Operations Plan for Runoff Year 2019-2020 (Draft Plan). The Draft Plan indicates that between 50,330 and 73,710 acre-feet (ac-ft) of groundwater will be pumped during the 2019-2020 runoff year and that runoff is forecast to be 137% of normal.

General comments. ICWD's analysis of the Draft Plan and recommendations for pumping 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 extraordinarily high runoff in 2017-2018 promoted a substantial rise in the water table in most areas of the Owens Valley. Operations and conditions in 2018 were unusual in that runoff in the Owens Valley was approximately 80,000 ac-ft greater than expected and pumping was considerably less than planned (12% lower). This combination of factors in many wellfields sustained water levels near those that prevailed during the mid-1980s when the baseline vegetation mapping was done; however, the negative effects of the 2012-16 drought and pumping for local uses and export are still evident in water levels in Independence-Oak,

Symmes-Shepherd, and southern Big Pine wellfields. Water levels in these areas remain below that of the baseline period.

Perennial vegetation cover declined slightly in 2018 in control and wellfield areas, but on average remained above baseline. A particular concern is that despite overall favorable vegetation conditions, perennial grass cover in wellfields remains below baseline on average. In particular, a few vegetation parcels throughout the valley exhibit chronically depressed perennial cover and/or grass cover. ICWD analysis of water levels suggested that conservative pumping amounts and favorable runoff conditions could promote water table recovery where lowered water levels hamper recovery of vegetation in these parcels. Maintaining a shallow water table in areas of groundwater-dependent vegetation in 2019-20 would be beneficial to encourage further recovery to baseline cover values and potentially avoid impacts during future periodic and lengthy droughts like those experienced during the past 30 years. Shallow groundwater levels are particularly important to maintain perennial grasses which have seen larger declines than overall cover and in a larger number of parcels.

The upper range of proposed pumping in the Draft Plan is approximately the same as the average annual pumping since the Water Agreement was signed (1992-2018). However, in some wellfields, the proposed pumping could significantly lower water levels in areas of chronic vegetation declines or where water levels have not recovered from 2012-2016 conditions. ICWD's recommended pumping amount is a more prudent plan which allows the multiple goals of the Water Agreement to be met with a more sustainable approach: a significant amount of groundwater would be pumped for use in Owens Valley and export to Los Angeles, while maintaining hydrologic conditions conducive to water table and vegetation recovery where needed.

Miscellaneous comments. Neither Table 1.7 in the Draft Plan nor Annual Report Chapter 2 – Conditions in the Owens Valley, provide data on the amount of water used for Owens Lake dust mitigation. 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.

In Table 2.5, please correct the value of average pumping since 1992.

Evaluation of 2019 Operations Plan - methods. Multiple linear regression models for indicator wells were used to predict water table elevation in April 2020 as a function of wellfield pumping, 2019 water table elevation, and forecasted Owens Valley runoff. The Laws 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. Approximately 24,000 ac-ft of water spreading is planned for Laws in 2019-20 (Table 2.5 of the Draft Plan). The set of indicator well models used by ICWD differs from the original set of indicator wells used by

LADWP to predict water levels. The Technical Group in 2019 should update and evaluate the models and agree on the best models to use for future pumping plans and analyses.

Three pumping scenarios were evaluated and are presented in this letter; the proposed lower limit (minimum) and upper limit (maximum) for pumping in the Draft Plan, and ICWD's recommended pumping (Tables 2 and 3). The analysis of water level changes if minimum pumping for specific uses in the Owens Valley were implemented is included as a basis for comparison with the higher levels of pumping in LADWP's proposed and ICWD's recommended pumping amounts. The estimated minimum pumping of 50,330 ac-ft is similar but less than the value estimated by Inyo County in previous normal or slightly below normal runoff years (54,195 ac-ft, Table 2) which is not surprising given the 2019-20 projected runoff at 137% of normal. We recognize the actual pumped amount will vary depending on forecasted vs actual runoff differences which affect the amount of surface water available to supply irrigation or mitigation projects instead of groundwater where possible. The upper limit of the pumping proposed in the Draft Plan is used to evaluate LADWP's proposed pumping because (1) it represents the maximum impact on the water table that pumping under the Draft Plan could have, and (2) except in unusual runoff years or years with unplanned operational issues or maintenance, LADWP has historically pumped near the maximum proposed.

LADWP's proposed operations plan does not include pumping for export from Bishop, Symmes-Shepherd, or Lone Pine wellfields. ICWD's recommended pumping corresponds with the Draft Plan in these wellfields. ICWD has expressed concerns about pumping and water levels persisting below baseline in three wellfields following the 2012-16 drought: Independence-Oak, Symmes-Shepherd, and southern Big Pine. Pumping for aqueduct supply during the drought was concentrated from exempt and On-status wells located in these wellfields and water levels have not fully recovered from that period (Table 1). The goal for these areas/wellfields should be to limit pumping to raise water levels.

Wellfield-specific conditions. The following presents a summary of conditions in each wellfield, the predicted effects of the proposed pumping, the ICWD's comments on LADWP's proposed operations for each wellfield, and ICWD's recommended pumping. In the discussion 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 April 2019 water table levels, changes since April 2018 and deviations from baseline water levels are given in Table 1 and are based on ICWD field measurements. Wellfield pumping proposed by LADWP in the Draft Plan and pumping recommended by ICWD are given in Table 2. Predicted water table changes discussed below are based on the pumping amounts given in Table 3.

Laws. The Draft Plan proposes between 4,380 and 8,220 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 0.7 and 5.1 feet in indicator wells. Water levels range from 3.9 feet below to 4.1 feet above baseline. Vegetation parcels LAW035, LAW043, LAW052, LAW062, LAW070, LAW082, and LAW085 are geographically associated and have chronically below-baseline vegetation cover.

LADWP's proposed maximum pumping and anticipated spreading amount in Laws should allow for 2020 water levels in the indicator wells to generally be within 3 inches of baseline or above baseline. Given the relatively poor vegetation conditions in the parcels listed above and infrequent recovery to baseline for DTW and vegetation cover, water levels in this wellfield should be allowed to remain at or near baseline to monitor and assess if vegetation will recover to baseline cover and composition values. ICWD recommends pumping not exceed 8,220 ac-ft. If the amount of planned spreading cannot occur because of operational constraints in the timing and amount of runoff, ICWD requests pumping in the late summer through winter be restricted to sole source uses in the wellfield with no additional pumping for export.

The Proposed Plan discusses operational testing of well W385 to determine the potential effects of pumping the redesigned well on the water table. On June 25, 2018 Inyo County and LADWP settled their disputes regarding the testing of W385. Subsequently, on July 19, 2018 the Technical Group temporarily modified the 1999 Revegetation Plan to allow for this testing according to procedures in an agreed to pumping test plan. On February 21, 2019 the Technical Group adopted a work plan describing the revegetation activities, irrigation, land management, and monitoring of vegetation and hydrologic conditions in the Five Bridges mitigation area. Provisions included in the work plan and pump test procedures describe favorable hydrologic conditions before the pump test, water level triggers to halt pumping during the test, irrigation after the test and revegetation/grazing/weed management that should prevent further impacts to the site and allow planned revegetation efforts to be implemented.

Bishop. LADWP proposes to pump 6,120 to 11,280 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 11,280 ac-ft.

Big Pine. LADWP proposes to pump between 21,000 and 22,910 ac-ft from the Big Pine wellfield contingent on water needs and environmental conditions. This amount apparently includes hatchery and town supply as well as several months of operation of exempt well(s) for export. One large vegetation parcel, BGP162, has chronically had vegetation cover below baseline. Last year the water table declined between 0.1 to 2.8 ft at most indicator wells and monitoring sites in the wellfield. Water levels rose less than 0.4 ft at three sites in the central and southern portion of the wellfield. Water levels remain 0.6 to 2.4 ft below baseline in the central

and southern portion of the wellfield. Two exempt wells, W218 and W219 located in the southern portion of the wellfield were operated during the drought, and water levels in the nearby indicator wells remain below baseline (Table 1; 799T, 800T, 425T, 426T, 567T). These pumping wells should not be operated to allow water levels to be approximately maintained this year. ICWD recommends pumping not exceed: 21,000 ac-ft.

The Draft Plan states that LADWP intends to decommission W341 and replace its pumping with adjacent W415 for the town water system needs and the Big Pine Irrigation Improvement Association. W415 has an additional instantaneous capacity of 1.1 cfs as compared to W341. Five new monitoring wells and one repurposed well will be used to monitor this additional potential pumping, and the Technical Group will need to finalize the vegetation monitoring program for this well.

Taboose-Aberdeen. LADWP proposes to pump between 2,580 and 8,820 ac-ft in the Taboose-Aberdeen wellfield. One parcel near the center of the wellfield, TIN064, is an alkali meadow parcel that has chronically lower grass cover than baseline; perennial cover has been usually below baseline but occasionally attains baseline values. Last year, water table changes at monitoring sites and indicator wells ranged from an increase of 0.6 feet to a decrease of 2.7 feet. Water levels range from 1.8 feet above baseline to 2.5 feet below baseline. Most indicator wells will decline slightly if pumping approaches the maximum proposed amount. All wells except 502T and 801T (indicator-monitoring site pair) could recover to baseline under LADWP's minimum proposed pumping, but these wells will be within 1 foot of baseline. ICWD recommends pumping not exceed 7,750 ac-ft to keep the April 2020 predicted water level at baseline in indicator well T421 located near parcel TIN064.

Thibaut-Sawmill. LADWP proposes to pump 8,000 to 9,160 ac-ft in the Thibaut-Sawmill wellfield. Two parcels, IND026 and IND029 in the southern portion of this wellfield have chronically depressed grass cover. Pumping should be managed to promote water table recovery under these parcels. Last year, water table change at monitoring sites and indicator wells ranged from an increase of 1.2 to a decrease of 1.4 feet. Water levels range from 1.2 to 7.7 feet above baseline and will remain above baseline at LADWP's proposed maximum pumping amount. ICWD recommends pumping not exceed 9,160 ac-ft.

Independence-Oak. LADWP proposes to pump between 6,420 and 8,880 ac-ft in the wellfield. Last year, the water table changes at monitoring sites and indicator wells ranged from an increase of 0.5 to a decrease of 2.7 ft. The water table is from 1.8 to 8.8 feet below baseline water levels. Pumping in Independence-Oak should be limited to sole source uses to promote water table recovery in most indicator and monitoring site wells and to take advantage of the above average runoff in 2019 (Table 3, average DTW rise of 1.1 ft). ICWD recommends pumping not exceed 6,420 ac-ft.

On Feb 21, 2019 the Technical Group agreed to a temporary exemption for W400 to supply Type E irrigated agricultural lands formerly supplied by W061. We encourage LADWP to complete the replacement for W061 in 2019, and the Technical Group should determine the amount of pumping from the replacement well necessary to supply specified Type E vegetation and stockwater uses in the wellfield.

Symmes-Shepherd. LADWP proposes to pump 960 ac-ft from the Symmes-Shepherd wellfield for sole source irrigation supply. One parcel, IND139, exhibits chronically depressed grass cover. Last year, the water table increased between 0.2 and 1.4 ft at monitoring sites and indicator wells. Despite the gradual water table recovery and conservative pumping to supply an E/M project in this wellfield in recent years, the water table level remains 2.1 to 17.4 ft below baseline. ICWD recommends pumping be limited to supply the Symmes-Shepherd E/M project, approximately 960 ac-ft.

Bairs-Georges. LADWP proposes to pump 0 to 2,610 ac-ft in the Bairs-Georges wellfield. Last year, water levels declined 0.9 to 4.5 ft in indicator and monitoring site wells in response to increased pumping. Water table levels range from 1.2 ft below to 1.5 ft above baseline. Under LADWP's maximum proposed pumping, water levels would decline 0.4 to 2.5 ft. The largest monitored parcel in the wellfield, MAN037 has never fully recovered from a fire in 2002 although cover occasionally approaches baseline. All indicator wells will remain just below or above baseline if pumping is limited to the ICWD recommended amount of 500 ac-ft.

Lone Pine. LADWP proposes to pump 870 ac-ft from the Lone Pine well field for town supply and E/M project supply. Concerning operation of well W416, the Draft Plan notes that LADWP 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 effects on non-LADWP wells are a much more substantial concern here than in wellfields where LADWP wells are located farther from potentially affected non-LADWP wells. Before W416 can be operated, the Technical Group needs to identify monitoring sites where groundwater level triggers can be set to manage pumping to avoid impacts to non-LADWP wells. ICWD recommends pumping not exceed 870 ac-ft.

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

Sincerely,

A handwritten signature in blue ink, appearing to read "Aaron S", with a horizontal line drawn underneath the signature.

Aaron Steinwand, Water Director

cc: Inyo County Board of Supervisors  
Inyo County Water Commission  
Clint Quilter, County CAO  
Marshall Rudolph, County Counsel  
Greg James, Special Counsel

Table 1. Depth to Water (DTW) at indicator wells, April 2019. All data are in feet. Negative values denote a decline in water level. Depths are from reference point on the test well. For monitoring sites where wells were installed after 1985-1987, baseline was estimated from correlation with nearby indicator wells.

<b>Station ID, Monitoring site</b>	<b>DTW April 2019</b>	<b>Change from April 2018</b>	<b>Deviation from Baseline in 2019</b>
<b><i>Laws</i></b>			
107T	28.15	-4.70	-3.88
434T	6.81	-0.68	0.79
436T	7.51	-1.29	0.59
438T	10.35	-2.35	-0.75
490T	10.80	-0.64	2.27
492T	28.72	-5.07	4.08
795T, LW1	9.56	-1.39	3.73
V001G, LW2	18.92	-4.82	0.70
574T, LW3†	12.00	-1.85	1.08
<b><i>Big Pine</i></b>			
425T	17.27	-0.12	-2.37
426T	13.43	0.35	-1.86
469T	22.06	-0.31	-0.39
572T	11.39	-2.80	0.51
798T, BP1	14.64	-2.74	1.41
799T, BP2	19.11	0.21	-0.60
567T, BP3	16.10	-1.08	-2.14
800T, BP4	15.61	0.40	-2.02
<b><i>Taboose Aberdeen</i></b>			
417T	25.88	-2.66	1.09
418T	7.68	0.47	0.55
419T, TA1	4.87	-0.20	1.76
421T	35.26	-1.99	-0.91
502T	10.03	-0.92	-2.54
504T	9.02	-0.66	1.75
505T	17.72	-2.69	0.88
586T, TA4	6.62	0.49	1.70
801T, TA5	14.25	0.56	-0.73
803T, TA6	7.40	-2.54	1.30
<b><i>Thibaut Sawmill</i></b>			
415T	10.82	-1.35	7.68
507T	3.48	1.19	1.19
806T, TS2	9.11	0.49	4.07
<b><i>Independence Oak</i></b>			
406T	5.49	-0.05	-3.92
407T	12.58	0.53	-5.28
408T	5.47	-0.37	-2.34



Station ID, Monitoring site	DTW April 2019	Change from April 2018	Deviation from Baseline in 2019
409T	10.43	-2.73	-8.83
546T	5.25	-0.74	-1.82
809T, IO1	12.21	-1.64	-5.64
<b><i>Symmes Shepherd</i></b>			
402T	10.13	0.23	-2.10
403T	7.69	0.50	-2.36
404T	5.78	0.73	-2.21
447T	39.26	0.88	-17.39
510T	6.43	0.77	-1.43
511T	7.11	0.92	-2.48
V009G, SS1	20.93	1.43	-14.10
<b><i>Bairs George</i></b>			
398T	4.82	-1.25	1.53
400T	6.32	-0.92	-0.02
812T, BG2	14.67	-4.50	-1.21

Table 2. Pumping totals by wellfield that were evaluated using the regression models. Regression modeling is not completed for Bishop because pumping in that wellfield is regulated by the Hillside decree and for Lone Pine because the proposed pumping is for mitigation and town supply only.

<b>Wellfield</b>	<b>Minimum Pumping</b>	<b>LADWP proposed (max)</b>	<b>Inyo Recommended</b>
	Ac-ft/year	Ac-ft/year	Ac-ft/year
Laws	4,380	8,220	8,220
Bishop	6,120	11,280	11,280
Big Pine	21,000	22,910	21,000
Taboose-Aberdeen	2,580	8,820	7,750
Thibaut-Sawmill	8,000	9,160	9,160
Independence-Oak	6,420	8,880	6,420
Symmies-Shepherd	960	960	960
Bairs-George	0	2,610	500
Lone Pine	870	870	870
Sum	50,330	73,710	66,160

Table 3. Predicted water level changes at indicator wells and monitoring sites for LADWP's proposed annual operations plan for 2019-20 and for pumping recommended by Inyo County. Negative DTW values denote a decline.

Station ID, Monitoring site	LADWP Proposed 73,710 ac-ft 2020 vs 2019	LADWP Proposed 73,710 ac-ft 2020 vs Baseline	LADWP Minimum 50,330 ac-ft 2020 vs 2019	LADWP Minimum 50,330 ac-ft 2020 vs Baseline	ICWD Recommended 66,160 ac-ft 2020 vs 2019	ICWD Recommended 66,160 ac-ft 2020 vs Baseline
	(DTW change ft)	(DTW change ft)	(DTW change ft)	(DTW change ft)	(DTW change ft)	(DTW change ft)
<b>Laws</b>						
107T	3.69	-0.19	4.97	1.09	3.69	-0.19
434T	0.38	1.17	0.93	1.72	0.38	1.17
436T	0.98	1.57	1.53	2.12	0.98	1.57
438T	1.07	0.32	1.53	0.78	1.07	0.32
490T	0.80	3.07	1.04	3.31	0.80	3.07
492T	1.70	5.78	3.75	7.83	1.70	5.78
795T	-4.00	-0.27	-2.18	1.55	-4.00	-0.27
V001g	3.50	4.20	4.56	5.26	3.50	4.20
574T	0.19	1.27	0.76	1.85	0.19	1.27
<b>Big Pine</b>						
425T	1.17	-1.20	1.50	-0.87	1.50	-0.87
426T	0.79	-1.07	0.98	-0.88	0.98	-0.88
469T	0.28	-0.11	0.46	0.07	0.46	0.07
572T	1.11	1.62	1.47	1.98	1.47	1.98
798T, BP1	0.02	1.43	0.33	1.74	0.34	1.74
799T, BP2	0.49	-0.10	0.66	0.06	0.66	0.06
567T, BP3	1.16	-0.97	1.46	-0.68	1.46	-0.68
800T, BP4	0.70	-1.32	1.09	-0.93	1.09	-0.93
<b>Taboose Aberdeen</b>						
417T	-0.32	0.76	1.31	2.40	-0.04	1.04
418T	0.28	0.84	1.00	1.54	0.40	0.96
419T, TA1	-0.07	1.69	1.61	3.38	0.22	1.98
421T	0.61	-0.30	2.31	1.41	0.90	-0.01
502T	0.82	-1.72	1.60	-0.94	0.95	-1.58
504T	-0.27	1.47	1.82	3.56	0.09	1.83
505T	-0.21	0.67	1.45	2.33	0.07	0.95
586T, TA4	-0.38	1.32	1.01	2.71	-0.14	1.56
801T, TA5	-0.12	-0.85	0.26	-0.46	-0.05	-0.78
803T, TA6	-0.58	0.72	0.97	2.27	-0.31	0.99
<b>Thibaut Sawmill</b>						
415T	1.85	9.53	2.74	10.42	1.85	9.53
507T	0.07	1.26	0.26	1.45	0.07	1.26
806T, TS2	1.29	5.36	1.52	5.59	1.29	5.36
<b>Ind. Oak</b>						
406T	0.53	-3.40	0.70	-3.23	0.70	-3.23
407T	-0.39	-5.67	0.45	-4.83	0.45	-4.83
408T	-0.25	-2.59	0.30	-2.03	0.30	-2.03
409T	0.71	-8.12	2.42	-6.41	2.42	-6.41
546T	-0.34	-2.16	0.02	-1.80	0.02	-1.80
809T, IO1	1.29	-4.35	2.14	-3.50	2.14	-3.50
<b>Symmes Shep.</b>						
402T	0.64	-1.46	0.64	-1.46	0.64	-1.46
403T	1.27	-1.09	1.27	-1.09	1.27	-1.09
404T	0.44	-1.78	0.44	-1.78	0.44	-1.78
447T	4.51	-12.88	4.51	-12.88	4.51	-12.88
510T	0.28	-1.15	0.28	-1.15	0.28	-1.15
511T	0.35	-2.12	0.35	-2.12	0.35	-2.12
V009G, SS1	2.97	-11.13	2.97	-11.13	2.97	-11.13
<b>Bairs George</b>						
398T	-2.88	-1.35	0.67	2.20	-0.01	1.52
400T	-0.44	-0.46	0.22	0.20	0.09	0.07
812T	-1.31	-2.51	1.78	0.57	1.19	-0.02