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**COUNTY OF INYO  
WATER DEPARTMENT**

April 28, 2017

Mr. Jim Yannotta, 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 2017-2018**

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Dear Mr. Yannotta:

In accordance with Section V.D of the Inyo/Los Angeles Long Term Water Agreement, the following are the Inyo County Water Department's comments on LADWP's Draft Owens Valley Operations Plan for Runoff Year 2017-2018 (Draft Plan).

General comments. The Draft Plan indicates that between 47,450 and 56,936 acre-feet (ac-ft) will be pumped during the 2017-2018 runoff year, and that runoff is forecast to be 197% of normal. The extraordinarily high amount of expected runoff presents an opportunity to recover groundwater levels to levels comparable to those that prevailed during the baseline vegetation mapping period of the mid-1980s. Given that LADWP has ample surface water supplies for export to Los Angeles and for use in Owens Valley, groundwater extraction should be minimized to take advantage of this opportunity for water table recovery. The Big Pine, Independence-Oak, and Symmes-Shepherd wellfields are in need of water table recovery, and these unusually high runoff conditions should be used to recover depressed water tables in these wellfields.

We encourage LADWP to work with lessees to use excess runoff to the lessees' benefit. We do not believe that using excess runoff such as is available this year on non-type E land conflicts with the Water Agreement or changes the vegetation classification from an alphabetically preceding type to type E. Further, as contemplated in Water Agreement Section VIII, groundwater banking in Rose Valley would not cause significant effects on the

environment and may be beneficial. We strongly recommend that any excess runoff that cannot be beneficially used or stored in Owens Valley be recharged in Rose Valley.

Groundwater pumping (well field scale). The Draft Plan proposes April, 2017-March, 2018 groundwater extraction in the range of 47,450 to 56,936 ac-ft. However, there are addition errors in Table 1.6 of the Draft Plan: the correct annual sum for Laws is 5,040 and 8,463 ac-ft for Thibaut-Sawmill. The annual low estimate for Thibaut-Sawmill pumping is 8,001. When the arithmetic is corrected the proposed annual Owens Valley pumping range is 47,451-56,453 ac-ft.

Groundwater level changes observed in 2016-2017 are given in Table 1 (attached). Water levels in almost all wells rose small amounts in the last year (<2 ft). Small declines occurred near pumping wells operated in 2016-17 in the Taboose-Aberdeen (349W) and Symmes-Shepherd wellfields (69W, 392W, 393W). Almost all indicator and monitoring site wells remain below baseline as of April 2017. Exceptions where water levels were above baseline include two northern Big Pine indicator wells that responded to spreading in March, all wells in the Thibaut-Sawmill wellfield (due to reduced pumping at the Black Rock Fish Hatchery), and two wells in the Bairs-George wellfield.

Regression models and methods. To evaluate the effects of the Draft Plan on water table levels, multiple linear regression models for indicator wells were used to predict water table elevation on April 1, 2018 as a function of wellfield pumping, 2017 water table elevation, and forecasted Owens Valley runoff.

Three other forms of linear regression models comprise the set of indicator wells. Owens Valley runoff was not a statistically significant variable in test wells 398T, 400T, 404T, 407T, 408T, 510T, and 511T. It is still appropriate to use those models to predict water table changes caused by pumping; however, these models may underpredict water table recovery in an unusually high runoff year such as this. 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. Those models were chosen for this analysis because they were superior to models that rely on Owens Valley runoff in years when Owens River water is expected to be diverted into the McNally canals (ICWD 2016 Annual Report). Approximately 55,000 acre-feet of spreading is planned for Laws in 2017-18 (Table 2.5 of LADWP 2017 annual report). Water table elevations at four monitoring sites, BP1 (798T), BP2 (799T), TA5 (801T), and TA6 (803T) were predicted using simple linear regression models relating water table elevation at the site and a nearby indicator well.

Test wells, 417T, 505T, and 803T in the Taboose-Aberdeen wellfield show water level recovery several feet greater than predicted in recent years due to the reduction in pumping at the Blackrock Hatchery in the Thibaut-Sawmill wellfield. The models rely on Taboose-Aberdeen

wellfield pumping and are unable to accurately predict local effects from the reduced hatchery pumping. In 2017, water levels stabilized after the initial rapid recovery when pumping was reduced in 2014. Model results for these wells were included in the analysis, but these inter-wellfield effects need to be taken into account.

Evaluation of the 2017 Operations Plan. The models ICWD used to analyze the Draft Plan predict water levels one year in the future (e.g. April 2017 to 2018) based on annual pumping for each wellfield. The Draft Plan presents a range of pumping amounts for various wellfields, the annual pumping total that ICWD used to evaluate groundwater changes is just below the proposed upper limit. The distribution of pumping among wellfields is shown in Table 2.

Inyo typically has included an analysis of minimum pumping as a basis for comparison to LADWP's proposed and to Inyo County's recommended pumping amounts. Minimum pumping is not a constant and varies depending on runoff availability to supply irrigation or mitigation projects instead of groundwater where possible. Inyo has used an estimated minimum pumping of 54,435 ac-ft to represent expected pumping needs for uses in the Owens Valley in normal or slightly below normal runoff years. Given the similarity to the proposed pumping, the minimum pumping scenario was not included in this analysis although for Taboose-Aberdeen and Independence-Oak, LADWP proposed pumping exceeds the minimum by 2400-2900 ac-ft. Instead an alternative recommended pumping scenario was developed.

Water levels are expected to rise in nearly all wells in 2017-18 under LADWP's proposed operations plan (Table 3). The average water level rise is 2.76 ft. By April 2018, predicted water levels will be at or above baseline in Laws, northern Big Pine, middle-southern Taboose-Aberdeen, Thibaut-Sawmill, and Bairs-George. Water levels will be <3 ft. below baseline in the remaining wellfields except for portions of Independence-Oak and Symmes-Shepherd.

Inyo Recommended Pumping. In LADWP's 2017 proposed operations plan, wellfield pumping during summer is at approximately minimum levels necessary to supply uses dependent on groundwater; however, the Draft Plan includes pumping for export during the winter from all wellfields except Bishop and Lone Pine. This is surprising given the extremely high snowpack and forecasted runoff. Amounts of pumped groundwater planned for aqueduct supply vary from 250 ac-ft from Bairs-George wellfield to 2400 ac-ft from Taboose-Aberdeen wellfield.

ICWD has expressed concerns about pumping and water level declines in three wellfields during the recent drought: Big Pine, Independence-Oak, and Symmes-Shepherd. Pumping for aqueduct supply has been concentrated from exempt and On-status wells located in these wellfields. Water levels in several wells in Independence-Oak and Symmes-Shepherd wellfields are predicted to remain several feet below baseline. In addition, the mining limit calculation for the Big Pine wellfield shows a relatively small amount of recharge in excess of pumping over the

past 20 year period. ICWD recommends pumping in these wellfields be limited to sole source uses to allow for maximum water level recovery in this exceptional runoff year (Table 2). Given the relatively low amount of proposed pumping, the recommended reduction is modest and thus the incremental increase in water levels is generally only a few inches (Table 4). Notable exceptions are for two wells in Symmes-Shepherd, 447T and V009G, where the water levels are severely depressed. The proposed reductions in pumping will permit approximately an additional foot of water table recovery near 447T and V009G.

Well field specific conditions. The following presents a summary of conditions in each well field, LADWP's proposed pumping, predicted effects of the proposed pumping, and the County's comments on LADWP's proposed operations for each well field. In the discussion below, 'baseline water levels' are 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, 2017 water table levels, changes since April, 2016, and deviations from baseline water levels are given in Table 1. Wellfield groundwater pumping proposed by LADWP in the Draft Plan and recommended by ICWD are given in Table 2. Predicted water table changes discussed below are based on the pumping amounts given in Table 3. Tables 1, 2, and 3 are attached.

Laws. The Draft Plan proposes 4,380 and 5,040 ac-ft of pumping in the Laws well field to supply Owens Valley demands including town water systems, irrigation, and enhancement/mitigation (E/M) projects. Last year water table increases in indicator wells ranged from 0.49 to 4.09 feet. Water levels range from 0.05 ft above to more than 13.1 feet below the baseline water levels of the mid-1980s. Vegetation parcels LAW052 and LAW062 are chronically below baseline vegetation cover.

The proposed pumping appears to accommodate irrigation, town, and mitigation project needs in Laws. Predicted water levels are expected to rise substantially. Average water table change is expected to be an increase of approximately 7.76 feet, contingent on recharge from operation of the McNally Canals and water spreading in the wellfield.

The Proposed Plan discusses operational testing of wells W385 and W386 to determine the potential effects of the wells on nearby resources. Reiterating points raised in our October 29, 2015 letter to LADWP concerning testing of these wells, a mitigation measure 10-12 was adopted by LADWP in the 1991 Final Environmental Impact Report to mitigate the impacts caused by the operation of Wells W385 and W386 in the late 1980s (See page 10-58 of the 1990 DEIR, Sept. 1990). The adopted mitigation measure includes a discontinuation of pumping from the two wells. This is apparent from the last paragraph of page 3-16 of the 1991 FEIR (Aug. 1991) which states: "*Approximately 300 acres in the Five Bridges area are being mitigated through a combination of alternatives one and two; that is, pumping has been discontinued in the area, surface water has been supplied to stimulate natural revegetation and active revegetation*

*has occurred in a portion of the area."* Since the revegetation mitigation goals of the adopted mitigation plan have not been achieved, Mitigation Measure 10-12, including the cessation of pumping from Wells W385 and W386, remains in effect. Under these circumstances, neither well can be operated until the Technical Group agrees upon a modification of the adopted mitigation measure in such a manner that the operation of the wells would be permitted and the LADWP Board adopts the modification. Although staff has agreed upon the components of a potential two-month operational test plan with water level and vegetation monitoring and protective triggers established in the Five Bridges and Fish Slough areas, operation of these wells should not occur until the revegetation goals of the mitigation measure have been met, the Technical Group has agreed on a modification to the mitigation plan and operational testing plan, and the CEQA requirements for modification of an existing mitigation measure have been met.

Bishop. LADWP proposes to pump 6,120 ac-ft from the Bishop wellfield. It appears that the proposed pumping will be within the limits of the Hillside Decree. Concerning the statement in the Draft Plan that *"Under the modified audit protocols, recent total water used on City lands within the Bishop Cone area have been approximately 33,000 acre-feet per year,"* our understanding is that under the modified audit protocols for 2015-16, total water used on City lands within the Bishop Cone area was approximately 30,000 acre-feet with ICWD credit being granted to accounts totaling approximately 28,000 acre-feet.

Big Pine. LADWP proposes to pump between 20,400 and 21,160 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 wells for export. Last year water table increases at monitoring sites and indicator monitoring wells ranged from 0.01 feet to 7.78 feet, and are 1.44 feet above to 6.82 feet below baseline water levels. Average water table change is expected to be an increase of approximately 3.10 feet. Vegetation parcel BGP162 has been chronically below baseline vegetation cover.

Taboose-Aberdeen. LADWP proposes to pump between 840 and 3,270 ac-ft in the Taboose-Aberdeen well field. Last year, water table changes at monitoring sites and indicator wells ranged from an increase of 1.57 feet to a decrease of 0.60 feet. Water levels range from 1.00 to 5.70 feet below baseline water levels. Average water table change is expected to be an increase of approximately 3.26 feet.

Thibaut-Sawmill. LADWP proposes to pump 8,001 to 8,483 ac-ft in the Thibaut-Sawmill well field. Last year water table increases at monitoring sites and indicator wells ranged from 1.39 to 2.44 feet. Well 415T is continuing to rise due to the reduced pumping at the Black Rock Fish Hatchery. Water levels ranged from 1.25 to 6.19 feet above baseline water levels. Average water table change is expected to be an increase of approximately 2.76 feet.

Independence-Oak. LADWP proposes to pump between 5,880 and 8,880 ac-ft in the well field. Last year, water table changes at monitoring sites and indicator wells ranged from a decrease of 0.05 to an increase of 3.93 feet. The water table ranged from 2.74 to 15.27 feet below baseline water levels. Average water table change is expected to be an increase of 2.40 feet. With the anticipated near-record runoff, ICWD staff is hopeful that DWP will manage surface flows to recharge this wellfield and/or use surface water to replace pumped water where possible.

Symmes-Shepherd. LADWP proposes to pump between 960 and 2,400 ac-ft from the Symmes-Shepherd well field. Last year, water table changes at monitoring sites and indicator wells ranged from an increase of 1.89 feet to a decline of 1.79 feet. Water table levels range from 1.30 to 27.62 feet below baseline levels. Average water table change is expected to be a rise of 2.40 feet.

Due to sustained pumping in the northern part of the wellfield, three of the four groundwater monitoring wells at the Independence Landfill were dry in October 2016 and were unable to be sampled for regulatory compliance purposes. As of April 2017, one of the four monitoring wells remains dry and groundwater levels at the other three are only 7, 8, and 12 feet above the wells' bottoms. Groundwater levels in all four wells are approximately 20 feet below their April 2009 levels. If these non-LADWP wells become dry due to pumping, they will be unable to provide access for water quality sampling, and impede Inyo County's ability to comply with the waste discharge requirements for the Independence Landfill. If declining trends continue, these wells will require mitigation, either by deepening or replacing the wells. Therefore, ICWD staff recommends against the apparent pumping-for-export of 240 acre-feet per month in the second half of the year.

Bairs-Georges. LADWP proposes to pump 0 to 250 ac-ft in the Bairs-Georges well field. Last year, water table changes in indicator and monitoring site wells ranged from a decrease of 0.19 feet to an increase of 1.06 feet. Water table levels range from 0.48 feet above to 5.62 feet below baseline levels. Average water table change is predicted to be a rise of 2.09 feet.

Lone Pine. LADWP proposes to pump 870 ac-ft from the Lone Pine well field. Concerning operation of well W416, the Proposed 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 well fields where LADWP wells are located farther from potentially affected non-LADWP wells.

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,



Robert Harrington, Water Director

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

Table 1. Depth to Water (DTW) at indicator wells, April 2017. 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.

<b>Station ID, Monitoring site</b>	<b>DTW April 2017</b>	<b>Change from April 2016</b>	<b>Deviation from Baseline in 2017</b>
<b><i>Laws</i></b>			
107T	Dry	NA	NA
434T	8.32	1.45	-0.72
436T	11.98	1.97	-3.88
438T	12.90	4.09	-3.33
490T	17.59	0.49	-4.52
492T	35.29	1.88	-2.49
795T, LW1	14.51	NA	0.05
V001G, LW2	Dry	NA	NA
574T, LW3†	15.91	1.53	-2.70
<b><i>Big Pine</i></b>			
425T	21.72	0.15	-6.82
426T	16.88	0.40	-5.31
469T	25.91	0.01	-4.24
572T	10.58	7.55	1.32
798T, BP1	14.72	7.78	1.44
799T, BP2	20.95	1.37	-2.53
567T, BP3	19.30	1.83	-5.34
800T, BP4	19.67	0.59	-6.12
<b><i>Taboose Aberdeen</i></b>			
417T	27.97	0.83	-1.00
418T	9.34	0.82	-1.11
419T, TA1	9.36	-0.04	-2.73
421T	40.05	-0.60	-5.70
502T	12.47	0.10	-4.98
504T	13.18	0.18	-2.41
505T	19.92	0.75	-1.32
586T, TA4	10.02	0.66	-1.72
801T, TA5	14.70	1.57	-1.23
803T, TA6	9.55	0.75	-1.08
<b><i>Thibaut Sawmill</i></b>			
415T	12.31	1.39	6.19
507T	3.42	2.27	1.25
806T, TS2	11.41	2.44	1.75
<b><i>Independence Oak</i></b>			
406T	5.67	0.71	-4.10
407T	12.27	3.93	-4.97
408T	5.87	2.30	-2.74



Station ID, Monitoring site	DTW April 2017	Change from April 2016	Deviation from Baseline in 2017
409T	16.87	0.55	-15.27
546T	11.67	-0.05	-8.24
809T, IO1	16.66	0.21	-10.44
<b><i>Symmes Shepherd</i></b>			
402T	10.47	0.53	-2.44
403T	9.59	-0.54	-4.26
404T	5.85	0.32	-2.28
447T	49.49	-1.68	-27.62
510T	6.30	1.11	-1.30
511T	7.10	1.89	-2.47
V009G, SS1	29.84	-1.79	-23.01
646T, SS2	Dry	NA	NA
<b><i>Bairs George</i></b>			
398T	5.87	0.08	0.48
400T	5.69	1.06	0.61
812T, BG2	18.87	-0.19	-5.62

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 must comply with the Hillside decree and for Lone Pine because the proposed pumping is for mitigation and town supply only.

Wellfield	LADWP proposed 2017 Ac-ft/year	Inyo Recommended Ac-ft/year
Laws	5,040	5,040
Bishop	6,120	6,120
Big Pine	21,160	20,550
Taboose-Aberdeen	3,270	3,270
Thibaut-Sawmill	8,463	8,463
Independence-Oak	8,880	7,110
Symmes-Shepherd	2,400	1,090
Bairs-George	250	250
Lone Pine	870	870
Sum	56,453	52,733

Table 3. Predicted water level changes at indicator wells and monitoring sites and deviations from 1984-1987 average April water levels for LADWP's proposed annual operations plan for 2017 and for pumping recommended by Inyo County. Negative DTW values denote a decline from 2017 to 2018 (columns 2 and 4) or water levels below baseline (columns 3 and 5).

Station ID, Monitoring site	Change in water table, LADWP proposed 56,453 ac-ft	Dev. from baseline 2018, LADWP	Change in water table, Inyo recommended 52,733 ac-ft	Dev from baseline 2018, Inyo
	(ft)		(ft)	
<b>Laws</b>				
107T	NA	NA	Same	Same
434T	3.19	2.47		
436T	7.71	3.83		
438T	7.52	4.22		
490T	6.26	1.74		
492T	14.42	11.93		
574T	7.44	4.74		
<b>Big Pine</b>				
425T	4.31	-2.51	4.41	-2.41
426T	2.86	-2.46	2.92	-2.40
469T	2.69	-1.56	2.75	-1.50
572T	3.60	4.92	3.71	5.03
798T, BP1	2.78	4.25	2.87	4.34
799T, BP2	1.00	-1.53	1.06	-1.47
567T, BP3	4.36	-0.97	4.46	-0.88
800T, BP4	3.16	-2.96	3.28	-2.84
<b>Taboose Aberdeen</b>				
417T	3.14	2.13	Same	Same
418T	1.93	0.82		
419T, TA1	4.19	1.46		
421T	5.68	-0.02		
502T	3.86	-1.12		
504T	4.53	2.12		
505T	3.12	1.80		
586T, TA4	2.29	0.57		
801T, TA5	0.67	-0.56		
803T, TA6	3.21	2.12		
<b>Thibaut Sawmill</b>				
415T	4.98	11.17	Same	Same
507T	0.38	1.63		

Station ID, Monitoring site	Change in water table, LADWP proposed 56,453 ac-ft	Dev. from baseline 2018, LADWP	Change in water table, Inyo recommended 52,733 ac-ft	Dev from baseline 2018, Inyo
806T, TS2	2.93	4.69		
<i>Ind. Oak</i>				
406T	1.16	-2.94	1.27	-2.83
407T	-0.43	-5.40	0.14	-4.83
408T	-0.20	-2.93	0.19	-2.54
409T	4.45	-10.82	5.62	-9.65
546T	3.75	-4.48	4.00	-4.24
809T, IO1	4.78	-5.66	5.37	-5.07
<i>Symmes Shep.</i>				
402T	1.25	-1.19	1.39	-1.05
403T	2.03	-2.23	2.43	-1.83
404T	0.28	-2.01	0.42	-1.86
510T	0.05	-1.25	0.18	-1.12
511T	0.14	-2.32	0.29	-2.17
447T	8.26	-19.36	9.22	-18.40
V009G, SS1	4.81	-18.21	5.63	-17.38
<i>Bairs George</i>				
398T	0.96	1.44	Same	Same
400T	-0.19	0.42		
812T	5.51	-0.11		
Average	2.76		2.94	