

Department of Water and Power



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Inyo Co. Water Department

April 18, 2003

Mr. Greg James
Inyo County Water Department
163 May St.
Bishop, CA 93514

Dear Greg:

Subject: 2003-2004 Operations Plan and Pumping Program

In compliance with the provisions of the Inyo/Los Angeles Water Agreement, Section V. D., Annual Operations Plan, please find enclosed Los Angeles' proposed operations plan and pumping program for the 2003-2004 runoff year. The Los Angeles Department of Water and Power believes that based on the on/off provisions of the Agreement, and historic practices for similar runoff years, this year's pumping plan is very conservative. We look forward to receiving your comments within ten days.

Also, Table 4 is an Inyo County Water Department product. We will need an updated electronic version of Table 4 so that we can prepare a clean final program.

If you have any questions, please contact me or Mr. Clarence Martin of my staff at 872-1104.

Sincerely,

Gene L. Coufal
Manager
Aqueduct Business Group

Enclosure

c: Mr. René Mendez
Mr. Gerald A. Gewe
Mr. Clarence E. Martin

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ANNUAL OWENS VALLEY OPERATIONS PLAN 2003-2004 RUNOFF YEAR

DRAFT

INTRODUCTION

This document is LADWP's proposed annual operations plan and pumping program for the Owens Valley for runoff year 2003-2004, pursuant to the Inyo/LA Long Term Agreement.

This year's pumping program is consistent with the management strategy of the Water Agreement between the County of Inyo and the City of Los Angeles dated October 18, 1991. 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.

PROPOSED 2003-2004 OWENS VALLEY PUMPING AND USES

For the period of April 1, 2003 to March 31, 2004, the forecast of Owens Valley runoff is 82 percent of normal (Table 1). According to the provisions of the Agreement, 164,000 acre-feet of water are available for groundwater pumping from Owens Valley wellfields. Given Inyo County's expressed concern regarding vegetation in select areas of Owens Valley, LADWP proposes a pumping program totaling 89,800 acre-feet for the entire valley, not including pumping to the aqueduct during the winter if necessary to prevent the water in the aqueduct from freezing.

The proposed pumping consists of the amount necessary for sole source in-valley uses, groundwater for uses on the Bishop Cone, and the amount available to meet the various off-site uses while maintaining relatively stable water levels. During this year of below normal runoff, the water table can be expected to decline naturally throughout the valley. Although high water tables persist throughout the valley, the limited pumping outlined below will likely lead to temporary decline in parts of most well fields.

Consistent with the goals of the Agreement, pumping in all areas is within the allowable limits and consistent with the ground water mining provisions of the Green Book (Table 2).

Vegetation monitoring sites BP4 in Big Pine Well Field, TS4 in Thibaut-Sawmill Well Field, IO2 in the Independence-Oak Well Field, and SS2 in the Symmes-Shepherd Well Field are now in the ON status. No vegetation monitoring sites have changed from ON status to OFF status.

As with previous operations plans, some wells that could be pumped under the Agreement will not be operated this year. As a practice, LADWP rotates pumping wells whenever feasible.

Proposed Pumping

The attached tables provide detailed information on pumping and uses. Proposed monthly pumping volumes by wellfield are shown on Table 3. Pumping for town domestic use is included in this year's plan. Actual monthly pumping amounts may vary, but total pumping is not expected to exceed 89,800 acre-feet, excluding freeze protection pumping.

In order to develop an appropriate management approach for pumping wells screened exclusively to the deep aquifer, LADWP will operate Wells W380 and W381 in the Thibaut-Sawmill Wellfield. LADWP encourages the County to participate in cooperatively developing a protocol for this deep aquifer pumping that considers the needs of both the County and LADWP.

Table 4 lists the April 2001 soil water status and projected soil water for each monitoring site using the methodology described in the Green Book.

Table 5 lists monitoring sites, production wells associated with each monitoring site, available production capacity according to the ON/OFF status as described in the Agreement, and the proposed pumping from each wellfield in the Owens Valley. The following is justification for the proposed pumping program listed by wellfield.

Laws Wellfield

Monitoring sites L1 and L2 have ON status. Production wells controlled by these monitoring sites have an available production capacity of about 23,500 acre-feet. Exempt wells within Laws wellfield have a capacity of 11,946 acre-feet. Total capacity is 35,404 acre-feet available based on ON/OFF status. LADWP is not planning any pumping at this time from production wells associated with monitoring sites L1 and L2 (except Well W247 for McNally Ponds). Pumping in the Laws Wellfield is for the purpose of irrigation supply, E/M projects supply, and town water supply. Sprinkler irrigation of lands that have not received irrigation water in recent years will commence after approvals are received and the infrastructure installed. No pumping is planned for export from Laws. The planned pumping in the Laws wellfield is 5,800 acre-feet.

Bishop Wellfield

Pumping from Bishop Wellfield is governed by the provisions of the Hillside Decree. The pumping from the Bishop Wellfield is planned to be 12,000 acre-feet.

Big Pine Wellfield

Monitoring site BP3 has switched to ON status. Production wells associated with BP3 have an available production capacity of 5,792 acre-feet. Monitoring site BP4 has ON status. The production well controlled by this monitoring site, W331, has a production capacity of 7,530 acre-feet but will not be pumped. Exempt wells in the Big Pine Wellfield have a capacity of about 27,000 acre-feet. A total capacity of 32,508 acre-feet is available in the Big Pine Wellfield based on ON/OFF status. Pumping from Big Pine Wellfield is to supply Fish Spring Fish Hatchery and the town water system on a year round basis. Wells associated monitoring site BP3 will run throughout the year. The total pumping planned for the Big Pine Wellfield is 27,300 acre-feet.

Taboose-Aberdeen Wellfield

Monitoring site TA5 has ON status. The production well controlled by this monitoring site, W349, has an available production capacity of about 10,500 acre-feet. Exempt Well 118 in the Taboose-Aberdeen Wellfield has a capacity of 2,244 acre-feet. A total capacity of 12,744 acre-feet is available in the Taboose-Aberdeen Wellfield based on the ON/OFF status. Vegetation parcels associated with TA5 are either unchanged or in better condition than baseline conditions. The proposed pumping in the Taboose-Aberdeen Wellfield is 12,100 acre-feet.

Thibaut-Sawmill Wellfield

Monitoring sites TS3 has ON status. Production wells controlled by this monitoring site have an available production capacity of 2,968 acre-feet. Monitoring site TS4 also has ON status and the production wells associated with this site have a capacity of 4778 acre-feet. Exempt Wells 351 and 356 have a capacity of 13,104 acre-feet and 8,109 acre-feet respectively. A total capacity of 20,850 acre-feet is available in Thibaut-Sawmill Wellfield based on the ON/OFF status. The proposed pumping in Thibaut-Sawmill Wellfield is from the Blackrock Fish Hatchery supply wells and production wells associated with monitoring site TS3. This year LADWP will operate wells W380 and W381, which are screened within the deep aquifer, in order to provide data to be used in developing a deep well management plan. The planned pumping from Thibaut-Sawmill wellfield is 15,900 acre-feet.

Independence-Oak Wellfield

Monitoring site IO2 has ON status. Pumping from this wellfield will be from exempt wells, generally for E/M projects and the town water supply. Intended pumping in the Independence-Oak Wellfield is 8,500 arce-feet.

Symmes-Shepherd Wellfield

Sites SS1, SS2, SS3, and SS4 have ON status. Production wells controlled by these monitoring sites have an available production capacity of 24,542 acre-feet. Exempt Well 402 in the Symmes-Shepherd Wellfield has an available capacity of 2,462 acre-feet. A total available capacity of 27,004 acre-feet is available in the Symmes-Shepherd Wellfield based on the ON/OFF status. The proposed pumping includes exempt E/M Well 402 and wells associated with monitoring sites SS3 and SS4, located in the central and southern end of wellfield. The planned pumping from Symmes-Shepherd Wellfield is 4,800 acre-feet.

Bairs-Georges Wellfield

Monitoring site BG2 has ON status. Production wells controlled by this monitoring site have an available production capacity of 2,896 acre-feet. Exempt Well 343 has a capacity of 579 acre-feet. A total capacity of 3,475 acre-feet is available in the Bairs-Georges Wellfield based on the ON/OFF status. The pumping program includes exempt Well 343 for irrigation and wells associated with monitoring site BG2 for the second half or the year. The planned pumping from Bairs-Georges Wellfield is 2000 acre-feet.

Lone Pine Wellfield

Available pumping capacity in the Lone Pine Wellfield is 6,574 acre-feet. Lone Pine Wellfield pumping is planned to be 1400 acre-feet for E/M project supply and town water supply. If agreement is reached on test protocol for the pumping of Well 416 an additional approximately 2,000 acre-feet will be pumped from this well field. If the testing occurs an equal amount of water would be reduced from another well field.

The total proposed Owens Valley groundwater pumping for the 2003-04 runoff year is 89,800 acre-feet.

In Valley Uses and E/M Projects

Similar to runoff years 1996-97 through 2002-03, full allotments will be available for most in-valley uses in 2003-2004. Exceptions are some E/M projects discussed below and a Laws area irrigation lease. LADWP leases will be provided with their normal allotted duty. Alfalfa and improved pasture E/M projects allotted 5 acre-feet duty will receive 5 acre-feet per acre. Native pasture E/M projects allotted 3 acre-feet duty will receive 3 acre-feet per acre. Table 6 shows the proposed monthly in-valley uses for 2002-2003.

The Agreement provides that "... enhancement/mitigation projects shall continue to be supplied by enhancement/mitigation wells as necessary." Due to monitoring sites being in soil water deficit status the amount of water supplied to E/M projects has exceeded the amount of water provided by E/M project supply wells (Table 7). Los Angeles' commitment to pump conservatively, and the imbalance between E/M project use and pumping from E/M wells, will result in a reduction of approximately 5,200 acre-feet in E/M project supply. The scheduled supply reduction for this year to the Lower Owens River Project is 3,000 acre-feet, Laws area ponds and pasturelands supply will be reduced by 1,500 acre-feet, and Klondike Lake supply is expected to be reduced by 700 acre-feet.

To conserve water and to reduce groundwater pumping, releases to the Lower Owens River Project will be as conducted for the past 13 years. Releases will commence east of Independence and be augmented through additional releases at the Georges and Locust spillgates to maintain a continuous flow in the river channel.

Meeting the E/M water use in the program described above will result in a shortfall of E/M pumping of approximately 15,000 acre-feet. This shortfall will be made up by pumping Los Angeles Aqueduct supply wells and/or by providing surface water from the Los Angeles Aqueduct.

Aqueduct Operations

Table 8 shows proposed Los Angeles Aqueduct first-of-month reservoir storage levels and proposed monthly Aqueduct deliveries to Los Angeles.

2003 RUNOFF FORECAST

April 1, 2003

APRIL THROUGH SEPTEMBER RUNOFF

	MOST PROBABLE VALUE		REASONABLE MAXIMUM (% of Avg.)	REASONABLE MINIMUM (% of Avg.)	LONG-TERM MEAN (1951 - 2000) (Acre-feet)
	(Acre-feet)	(% of Avg.)			
Mono Basin:	71,100	68%	80%	56%	104,346
Owens Valley:	240,900	79%	92%	66%	305,155
Total Runoff:	312,000	76%	89%	63%	409,500

APRIL THROUGH MARCH RUNOFF

	MOST PROBABLE VALUE		REASONABLE MAXIMUM (% of Avg.)	REASONABLE MINIMUM (% of Avg.)	LONG-TERM MEAN (1951 - 2000) (Acre-feet)
	(Acre-feet)	(% of Avg.)			
Mono Basin:	88,400	72%	85%	59%	122,508
Owens Valley:	337,900	82%	94%	69%	413,146
Total Runoff:	426,300	80%	92%	67%	535,654

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.

TABLE 2. ESTIMATED APRIL-SEPTEMBER 2003 MINING LIMIT

WATER YR	LAWS		BISHOP		BIG PINE		TABOOSE-		THIBAUT		IND-SYM- BAIRS		LONE PINE		OWENS VALLEY	
	RECHARGE	PUMPING	RECHARGE	PUMPING	RECHARGE	PUMPING	RECHARGE	PUMPING	RECHARGE	PUMPING	RECHARGE	PUMPING	RECHARGE	PUMPING	RECHARGE	PUMPING
1982	23622	14525	54899	6271	39514	24302	49103	26429	53359	8054	19370	1306	239867	80887		
1983	35781	1038	70019	11	54564	25543	66183	14433	69294	318	24609	1250	320450	42593		
1984	11758	6854	54463	3773	34320	27154	48176	13691	49425	367	18137	1772	216279	53611		
1985	10913	10016	43995	9777	26653	26937	34243	27460	37594	8788	14298	2197	167696	85175		
1986	31217	9953	60341	1809	47994	25054	56535	27325	58596	7842	21221	2439	275904	74422		
1987	12405	21220	38443	9558	22816	38946	29544	53314	30067	32542	12193	1660	145468	157240		
1988	12538	22486	36729	10900	20631	33667	25907	55195	27169	40348	11297	1389	134271	163985		
1989	12758	38167	36456	11961	19765	35915	23127	54284	26748	34728	10992	1668	129846	176723		
1990	11580	28019	34199	11416	17604	29591	20785	33476	23407	20114	9989	1661	117564	124277		
1991	11132	13700	34869	11521	18729	21425	22407	29183	25846	10427	10406	1304	123389	87560		
1992	10859	8909	34688	11337	18392	24345	20521	23768	23999	14247	10422	1628	118881	84234		
(a) 1993	15056	7601	45895	8405	30653	22628	37676	19442	40214	11694	15138	1517	184632	71287		
1994	10429	21233	33033	10211	17634	24959	22022	23587	24331	14895	10103	1281	117552	96166		
1995	19053	7040	51585	4800	36383	21879	44601	17163	47240	12596	17366	1040	216228	64518		
1996	17076	3500	48948	2400	33718	11000	41391	8600	43983	6300	16333	520	201449	32320		
1997	16698	8349	48409	9606	33173	24002	40736	21771	43319	9461	16123	1128	198458	74317		
1998	21529	470	54557	7159	39387	23729	48218	16484	50911	7946	18529	1239	233131	57027		
1999	13338	1719	42829	8650	27534	21832	33944	16700	36428	8424	13938	2141	168011	59466		
2000	15970	3974	47333	10804	32086	20212	39425	23143	41989	8497	15701	1036	192504	67666		
2001	10840	2295	36129	10176	20783	26785	25790	16986	28155	8685	11315	1942	133012	66869		
2002	10634	3480	35055	10839	19697	26885	24482	25288	26827	10599	10895	1345	127590	78436		
2003	10771	1236	35802	3312	20452	13534	25392	14050	27750	7022	11187	900	131354	40054		
(b) WY84-03																
TOTALS	286554	220221	853758	168414	538404	500479	664922	520910	713998	275522	275583	29807	3333219	1715353		
ESTIMATED		66333		685344		37925		144012		438476		245776		1617866		
APRIL-SEPT 2002				(c)												
MINING LIMIT																

- (a) Estimated Recharge for the 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003 Water Year; Approximated pumping for the first half of Water Year 2001
- (b) Estimated 20 Year Total for Recharge and Estimated 19.5 Year Total for Pumping
- (c) Bishop Cone Pumping Actually Limited to No Greater Than the Total Amount of Water Used on Los Angeles-Owned Land on the Cone

Table 3: 2003-2004 Projected Monthly Owens Valley Groundwater Pumping [ac-ft]

Month	Laws	Bishop	Big Pine	Taboose- Aberdeen	Thibaut- Sawmill	Indep.- Oak	Symmes- Shepherd	Bairs- Georges	Lone Pine	TOTAL
April	1,000	1,400	2,100	1,000	1,100	600	100	50	110	7,460
May	1,000	1,400	2,200	1,000	1,100	600	100	50	110	7,560
June	1,000	1,400	2,300	1,000	1,100	600	100	50	110	7,660
July	1,000	1,400	2,300	1,000	1,400	700	500	50	110	8,460
August	1,000	1,400	2,300	1,000	1,400	800	500	50	120	8,570
September	450	1,400	2,300	1,000	1,400	800	500	50	120	8,020
October	100	600	2,300	1,000	1,400	800	500	350	120	7,170
November	50	600	2,300	1,000	1,400	800	500	350	120	7,120
December	50	600	2,300	1,000	1,400	700	500	350	120	7,020
January	50	600	2,300	1,000	1,400	700	500	300	120	6,970
February	50	600	2,300	1,050	1,400	700	500	300	120	7,020
March	50	600	2,300	1,050	1,400	700	500	50	120	6,770
TOTAL	5,800	12,000	27,300	12,100	15,900	8,500	4,800	2,000	1,400	89,800

Table 4: Soil Vegetation Water Balance Calculations

TO BE PROVIDED BY INYO

Table 5: Available Pumping Capacity According to Monitoring Sites with ON Status and Proposed Pumping for Runoff Year 2003-2004

Wellfield	Monitoring Site	Associated wells	Available Capacity (AF)	Proposed Pumping (AF)
LAWS	L1	247, 248, 249, 398	12,670	
	L2	236, 239, 243, 244	10,788	
	Exempt	245, 247, 354, 365, 387EM, 388EM	11,946	
	Wellfield Pumpage		35,404	5,800
Bishop	All wells	140, 141, 207, 238, 371, 406, 407, 408	12,000	
	Wellfield Pumpage		12,000	12,000
Big Pine	BP3	222, 223, 231, 232	5,792	
	BP4		0	
	Exempt	218, 219, 330, 332, 341, 352, 415	26,716	
	Wellfield Pumpage		32,508	27,300
Taboose	TA5	349	10,500	
Aberdeen	Exempt	118	2,244	
	Wellfield Pumpage		12,744	12,100
Thibaut Sawmill	TS3	103, 104, 382EM	2,968	
	TS4	380, 381	4,778	
	Exempt	351, 356	13,104	
	Wellfield Pumpage		20,850	15,900
Independence Oak	IO2	63	2,100	
	Exempt	59, 60, 61, 65, 357, 383EM, 384EM, 401	12,634	
	Wellfield Pumpage		14,734	8,500
Symmes	SS1	69, 392, 393	6,588	
Shepherd	SS2	74, 494, 395	6081	
	SS3	92, 396	5,864	
	SS4	75, 345	6,009	
	Exempt	402EM	1,231	
	Wellfield Pumpage		25,773	4,800
Bairs	BG2	348, 401	2,896	
Georges	Exempt	343	579	
	Wellfield Pumpage		3,475	2,000
Lone Pine	Exempt	344, 346, 390, 416 (2002-03 test)	6,574	
	Wellfield Pumpage		6,574	1,400
Owens Valley Total			164,062	89,800

Table 6: Historic (1981-82) and Projected (2003-2004) Water Uses in the Owens Valley [ac-ft]

Use	April		May		June		July		August		September		TOTAL Apr-Sep	
	1981	2003	1981	2003	1981	2003	1981	2003	1981	2003	1981	2003	1981	2003
	Irrigation	3980	6160	7958	7580	10373	9020	9476	8540	8295	6450	6321	5270	46403
Stockwater	1141	1110	1319	1210	1244	1190	1245	1180	1219	1140	1319	1040	7487	6870
Enhancement/Mitigation	0	1850	0	1780	0	3200	0	4520	0	4290	0	2820	0	18460
Recreation & Wildlife	379	610	804	600	1160	930	1455	1190	1381	800	1406	690	6585	4820
Total	5500	9730	10081	11170	12777	14340	12176	15430	10895	12680	9046	9820	60475	73170

Use	October		November		December		January		February		March		TOTAL Oct-Mar		TOTAL Apr-Mar	
	1981	2003	1981	2003	1981	2003	1982	2004	1982	2004	1982	2004	81-82	03-04	81-82	03-04
Irrigation	263	720	0	0	0	0	0	0	0	0	14	0	277	720	46680	43740
Stockwater	1065	1010	1045	930	1050	990	1007	880	1010	750	1098	700	6275	5260	13762	12130
Enhancement/Mitigation	0	1100	0	320	0	360	0	360	0	320	0	300	0	2760	0	21220
Recreation & Wildlife	781	700	713	460	565	370	478	370	342	300	447	330	3326	2530	9911	7350
Total	2109	3530	1758	1710	1615	1720	1485	1610	1352	1370	1559	1330	9878	11270	70353	84440

**Table 7: Owens Valley Groundwater Pumping
for Production and E/M Wells (1984-2004)**

Runoff Year (Apr-Mar)	Owens Valley Runoff (1) (% of normal)	Total Pumping (acre-feet)	Production Wells (acre-feet)	E/M Wells (acre-feet)	E/M Water Uses (acre-feet)	E/M Pumping vs. Use Imbalance (acre-feet)	Cumulative E/M Pumping vs. Use Imbalance (acre-feet)
1984/85	120%	61,981	61,981	0	0		0
1985/86	103%	107,718	107,718	0	109		0
1986/87	158%	69,887	69,887	0	12,696	(3)	0
1987/88	67%	209,393	179,883	29,510	29,360		0
1988/89	62%	200,443	171,012	29,431	30,872		0
1989/90	63%	155,903	133,340	22,563	23,330		0
1990/91	52%	89,061	70,974	18,087	17,949		0
1991/92	64%	87,526	71,736	15,790	20,517	-4,727	-4,727
1992/93	61%	84,135	70,370	13,765	18,357	-4,592	-9,319
1993/94	106%	76,329	67,338	8,991	19,310	-10,319	-19,638
1994/95	66%	89,153	78,143	11,010	20,812	-9,802	-29,440
1995/96	153%	69,740	57,168	12,572	22,914	-10,342	-39,782
1996/97	134%	74,817	57,894	16,923	23,949	-7,026	-46,808
1997/98	124%	66,910	52,756	14,154	21,500	-7,346	-54,154
1998/99	148%	51,575	47,354	4,221	19,672	(3)	-54,154
1999/00	88%	63,699	59,366	4,333	24,450	-20,117	-74,271
2000/01	84%	67,534	61,195	6,339	20,611	-14,272	-88,543
2001/02	82%	72,536	69,242	3,294	21,815	-18,521	-107,064
2002/03	67%	82,281	76,361	5,920	21,600 (2)	-15,680 (2)	-138,544 (2)
2003/04 (2)	82%	89,800	84,000	6,000	21,000	-15,000	-153,544

(1) 1951-2000 average: 417,210 acre-feet

(2) estimated values

(3) surface water was available

**Table 8: Proposed Los Angeles Aqueduct Operations
2003-2004**

Month	Owens Valley Reservoir Storage (1st of Month) Acre-Feet	Aqueduct Deliveries to LA Acre-Feet
Apr	159,400	11,901
May	166,478	24,595
Jun	162,758	17,851
Jul	158,411	24,595
Aug	147,628	27,669
Sep	130,324	26,777
Oct	114,609	16,909
Nov	115,604	22,314
Dec	119,718	23,058
Jan	126,526	9,223
Feb	141,992	13,884
Mar	155,314	15,372
TOTAL		234,148