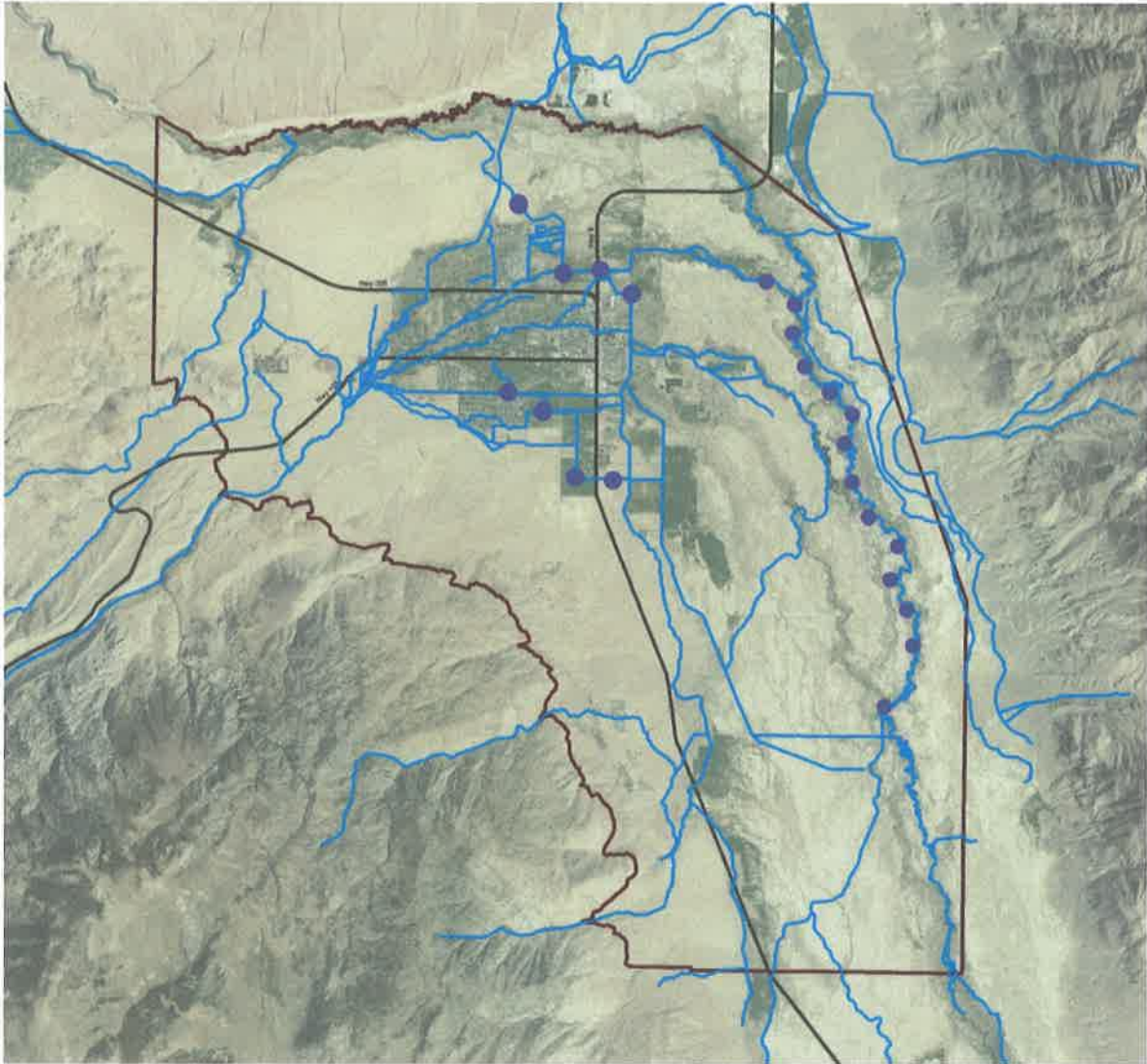


THE BISHOP CONE AUDIT FOR THE 2015-16 RUNOFF YEAR



**Inyo County Water Department
Report 2015-16
August 9, 2017**

THE BISHOP CONE AUDIT FOR THE 2015-16 RUNOFF YEAR

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	BACKGROUND	1
3.0	WATER USES ON LADWP OWNED LAND ON THE BISHOP CONE	3
4.0	TOTAL LADWP GROUNDWATER EXTRACTION ON LADWP-OWNED LAND ON THE BISHOP CONE FOR RUNOFF YEARS 2014-15 AND 2015-16	6
5.0	COMPLIANCE WITH THE INYO COUNTY/LOS ANGELES LONG-TERM GROUNDWATER MANAGEMENT AGREEMENT	7

TABLES

TABLE 1	WATER USES ON LOS ANGELES-OWNED LAND ON THE BISHOP CONE	4
TABLE 2	FLOWING AND PUMPED GROUNDWATER BY WELL ON THE BISHOP CONE IN RUNOFF YEAR 2015-16	7
TABLE 3	LADWP USES IN COMPARISON TO LADWP GROUNDWATER EXTRACTION ON THE BISHOP CONE	8

FIGURES & MAP

FIGURE 1	TYPE OF LADWP GROUNDWATER AND TOTAL GROUNDWATER EXTRACTION ON THE BISHOP CONE FOR RUNOFF YEARS 2014-2015 AND 2015-16	6
FIGURE 2	WATER USES VERSUS EXTRACTIONS ON THE BISHOP CONE FOR RUNOFF YEARS 1996-97 to 2015-16	8
MAP 1	BISHOP CONE AUDIT FEATURES	

APPENDICES

APPENDIX A	Section VII of the Inyo County/Los Angeles Long-Term Groundwater Management Agreement,
APPENDIX B	Section IV.D of the Green Book
APPENDIX C	Data on Bishop Cone Audit Uses and Total Groundwater Extracted on the Bishop Cone (Supplied by LADWP)

THE BISHOP CONE AUDIT FOR THE 2015-16 RUNOFF YEAR

1.0 INTRODUCTION

The Bishop Cone Audit (Audit) is an annual comparison between Los Angeles Department of Water and Power's (LADWP) water usage on Los Angeles-owned lands on the Bishop Cone and its amount of groundwater extraction from wells on the Bishop Cone. The Bishop Cone Audit is required by the Inyo County/Los Angeles Long-term Groundwater Management Agreement (Water Agreement). The "Bishop Cone" is a reference to the legally defined area in the 1940 Hillside Decree which incorporates most of the Bishop Creek alluvial fan along with a portion of the northern Owens Valley from Bishop south towards Big Pine (Map 1). The Water Agreement and the Green Book (the technical appendix to the Water Agreement) define the terms, conditions, and procedures of the Bishop Cone Audit. Inyo County Water Department (ICWD) staff compiles the Bishop Cone Audit from data provided by LADWP. The Audit sums pumping and flowing well amounts and compares those totals to water use on Los Angeles-owned land during a given runoff year (April 1 to March 31) to determine whether LADWP's groundwater extractions exceed its surface water uses on the Bishop Cone.

2.0 BACKGROUND

The City of Los Angeles owns prior appropriative surface water rights in the Bishop area. Los Angeles also owns groundwater rights on the Bishop Cone as a consequence of its ownership of overlying land. A system of ditches and canals exist to convey both surface water from Bishop Creek and the Owens River and also groundwater pumped from LADWP wells to irrigated land throughout the Bishop Cone with some water exiting the Cone. In 1930 and 1931, Los Angeles extracted groundwater from wells on the Bishop Cone for the purpose of export to Los Angeles. This export of groundwater was challenged by local residents, and in the 1940 Hillside Decree, Los Angeles agreed not to pump groundwater for the purpose of export off the Bishop Cone.

Relevant language of the 1940 Hillside Decree is presented below (a link to the entire decree can be found at the ICWD's website at www.inyowater.org/documents/hillside-decree-1940/):

XI

That the defendants [LADWP], their servants agents, employees, and assigns, and each of them, be, and they are hereby, enjoined, prohibited, and restrained from in any manner whatsoever pumping, extracting, taking, or transporting out of the Bishop Cone area any subterranean waters from beneath said area: provided, however, that nothing in this judgment contained shall in any manner enjoin, prohibit, or restrain the defendants, their servants, agents, employees, assigns, or any of them, from maintaining or operating their presently-existing drainage ditches to the full extent of their present normal capacity, or from taking artesian water that may arise to the surface of said area outside the casings of any of defendants' capped wells, or from pumping, extracting, taking, or using any such water as may be reasonably necessary for beneficial use upon any lands belonging to the defendants,

In 1972, Inyo County filed a California Environmental Quality Act suit claiming that increased groundwater pumping by LADWP was harming the environment of the Owens Valley and demanding that an Environmental Impact Report (EIR) be completed to analyze the effects of this increased pumping. After numerous legal challenges and negotiations, in 1991 an EIR was approved for LADWP's groundwater pumping and a long term groundwater management plan was agreed upon by Inyo County and LADWP. Section VII.A of the 1991 Water Agreement addresses the Bishop Cone and Hillside Decree with relevant language quoted below (full text of the 1991 EIR, the Water Agreement and the Greenbook can be found at the ICWD's website at <http://www.inyowater.org/documents/governing-documents/>):

"Before the Department [LADWP] may increase groundwater pumping above present levels, or construct any new wells on the [Bishop] Cone, the Technical Group must agree on a method for determining the exact amount of water annually used on Los Angeles-owned lands on the Cone. The agreed upon method shall be based on a jointly conducted audit of such water uses. The Department's annual groundwater extractions from the Cone shall be limited to an amount not greater than the total amount of water used on Los Angeles-owned lands on the cone during that year." (Water Agreement Section VII.A, Appendix A)

At its October 17, 1995 meeting, the Technical Group agreed to recommend to the Inyo County/Los Angeles Standing Committee the description of a Bishop Cone Audit procedure to be incorporated into the Green Book. The Standing Committee adopted the agreed-upon Bishop Cone Audit procedure on November 7, 1996 as Section IV.D of the Green Book.

Section IV.D.1.a. of the Green Book states: *"For the purposes of the Bishop Cone audit, water usage on Los Angeles-owned land on the Bishop Cone is defined as the quantity of water supplied to such land, including conveyance losses, less any return flow to the aqueduct system. Water usage is documented on a runoff-year basis and is compiled by LADWP each May in the Bishop Area Water Use Report [Bishop Cone Audit Uses Report]."* (Appendix B)

In theory compliance with the Water Agreement and the Green Book is simple: LADWP can only extract groundwater to be used on its lands and leases on the Bishop Cone with no flow leaving the system. In a simplified, hypothetical situation, LADWP would have groundwater extraction wells at the "top" of the cone which would provide surface water to ditches running downhill to its lands and leases. Upon reaching the "lowest" land, no surface water would leave. However, there are many practical factors that dictate and complicate how the Bishop Cone Audit accounts for LADWP extractions and uses. Some of these factors are: the Bishop Cone topography (generally sloping west to east in the Bishop area, and north to south from Bishop towards Big Pine), the location of LADWP-owned lands throughout the Bishop Cone area, the location of LADWP's groundwater extraction wells (in central Bishop), the location of LADWP's flowing wells (east of Bishop adjacent to the Owens River), the location of the various ditch and canal systems used to convey water in the Bishop Cone, and operational necessities for conveying surface water both on and off the Bishop Cone.

To illustrate further, the primary source of water available for use on LADWP lands in the topographically higher west Bishop area of the cone is LADWP-owned surface water from Bishop Creek that is diverted into various ditches for irrigation (use) on LADWP-owned land. Groundwater pumped from LADWP wells in central Bishop supplements the remaining Bishop

Creek surface water. The now combined surface and groundwater flows east and south and is used on LADWP land in the central and southern portions of the Cone. Groundwater extracted from flowing wells provides water to the Owens River. Some mixture of surface and groundwater also leaves the Bishop Cone either in canals or the Owens River.

Prior to the adoption of the Water Agreement, several methods were researched to determine the best procedure for tracking LADWP's uses and extraction on the Bishop Cone. A final method was selected which compares the sum of pumped groundwater from production wells and flowing groundwater from artesian wells (extractions) to surface water applied to LADWP-owned lands on the Cone (uses). To determine the total uses, a lease-wise approach was selected which tracks the difference between water coming onto a given LADWP lease and the water (if any) that exits that lease to return to the conveyance system (ditch, canal, creek or river). LADWP supplies a listing of surface water uses by each individual lease account in its annual Bishop Cone Audit Uses Report (Use Report). Credit for a use is granted on accounts that have been agreed to and inspected by ICWD staff. A combination of monitoring devices are used to track extractions and uses on the Bishop Cone, including flumes, weirs, and propeller meters. Flow measurements are taken either manually or continuously using data-logging devices at these devices.

It is important to note that the Bishop Cone Audit does not attempt to compute a complete surface or groundwater budget. Its purpose is to monitor compliance with the dictates of the Water Agreement, the Green Book, and the legal interpretations of the Hillside Decree. The Audit compares LADWP's total water uses to groundwater extractions during a given runoff year. ICWD staff gave a presentation on the Bishop Cone Audit to the Inyo County Water Commission on December 7, 2016, explaining the principles of the BCA in detail. A copy of the PowerPoint presented at the ICWC meeting can be found on the ICWD website: http://www.inyowater.org/wp-content/uploads/2016/12/Bishop-Cone-Audit-12_7_16.pdf

3.0 WATER USES ON LADWP-OWNED LAND ON THE BISHOP CONE

The location of the Bishop Cone and the pumping and flowing wells on the Bishop Cone are shown in Map 1. Also shown on Map 1 are the general locations of the LADWP-owned lease accounts used in the Bishop Cone Audit Uses Report (Appendix C).

Table 1 (below) is a compilation of water usage by account number in acre-feet (AF) on LADWP-owned land on the Bishop Cone for the runoff years of 2014-15 and 2015-16. These water-usage amounts are a yearly total of the surface water coming onto a given lease minus the surface water leaving the lease. Overall, there was an increase in total water use on the Bishop Cone of 6,369 AF from 2014-15 to 2015-16. A majority of this increase was due to granting LADWP use credit for Stockwater and Ditch Losses that were previously denied credit (see explanation in following paragraphs).

TABLE 1
WATER USES ON LOS ANGELES-OWNED LAND ON THE BISHOP CONE

LADWP ACCOUNT NUMBER ^{*2}	RUNOFF YEAR^{*1} 2014-2015 (AF)	RUNOFF YEAR^{*1} 2015-2016 (AF)
BC502B (BA354B or BA362B)	739	764
BC302A	238	111
BC302B	522	1209
BC311	2566	3192
BC313	373	751
BC324	883	877
BC1478 (BAICR) ^{*2}	227	666
BC387A	480	425
BCRECF	136	233
BC339	197	487
BC393	65	112
BC362D	635	(No Credit) ^{*3}
BC304	54	126
BC500	691	888
BC397 (BA387B) ^{*2}	2648	3067
BC361A	1188	1202
BC361B	1223	2108
BC502A (BA354A or 362A) ^{*2}	59	355
BCRECA	425	475
BCRECC	0	0
BCRECD	3307	3788
BC338	2064	3368
BCOPRA	0	0
BCOPRB	0	0
BCRV361	33	153
BCRVRECA	1112	(No Credit) ^{*3}
BCLAEMH	0	704
BC353	190	271
BC005A	18	36
BC005B	26	31
BC006A	(No Credit) ^{*3}	108
BC1479 (BA342) ^{*2}	4	6
BC392	(No Credit) ^{*3}	771
BC301	263	365
BC335	78	171
TOTAL	20,452	26,821

- *1 - A runoff year is defined as starting April 1st and ending March 31st of the following year.
- *2 – Former account names listed in parenthesis; in 2015/16 “BA” prefix was changed to “BC”
- *3 - Accounts need additional monitoring or diversion infrastructure to establish credit.
- 0 - No use was reported; data was 0 acre-feet.
- NO DATA - No data was reported for the account.

During fall 2016 through winter 2017, joint field visits to the active BCA accounts were conducted by ICWD and LADWP staff. Based on these visits and as a result of observations and discussion of past infrastructure workings, several accounts were either granted or denied credit retroactively for 2015/16 Audit. The accounts not given credit for 2015/16 are: BC362D and BCRVRECA. At both sites, ICWD staff deemed there to be insufficient flow monitoring, potentially allowing unmetered water to leave the account without proper quantification.

The accounts given credit (that had been previously denied) were Stockwater and Ditch Loss (BCCL). LADWP uses Stockwater and Ditch Loss as credits to its lessees to distinguish between surface water used for irrigation and not used for irrigation. However, the Audit's water balance is to determine the total amount of water used on the Bishop Cone between two metering devices. The Audit is not specifically concerned with where or how the water is used. Stockwater is simply water supplied to a parcel during the year for the purpose of providing surface water to stock instead of irrigation to grow plants; it is a distinction made by LADWP for the lessees but is a “Use” for the purpose of the Audit with properly metered water flowing through diversions onto an account and not exiting the account. Ditch Loss is a similar accounting distinction made by LADWP and its lessees; it is an estimation of the water that seeps into the ground from the Account's metering device prior to arriving at the actual surface water diversion point on the lease (these are sometimes large distances apart). The Ditch Losses are credited to the lessee to reflect water that cannot be used for irrigation. This water, however, is a Use for purposes of the BCA. The Stockwater and Ditch Loss estimates from previous BCA's have been replaced with the more rigorous and accurate calculation of subtracting flow onto each account from flow off of that account.

The data reporting format used by LADWP for the BCA has also been updated with approval from ICWD staff. The updated Use Report contained in Appendix C has been simplified by removing many of LADWP's internal, lessee-related notations. The new Use Report now contains totals of water entering and leaving a lease (the pertinent information for conducting the Audit). All flow monitoring stations were inspected during the 2016/17 field campaign.

Finally, ICWD staff continues to receive the previous LADWP version of the Use Report to check for historic consistency. The changes in Stockwater and Ditch Loss credits for BCA reporting are the primary reason 2015/16 Uses are substantially greater at the various accounts than 2014/15 Uses.

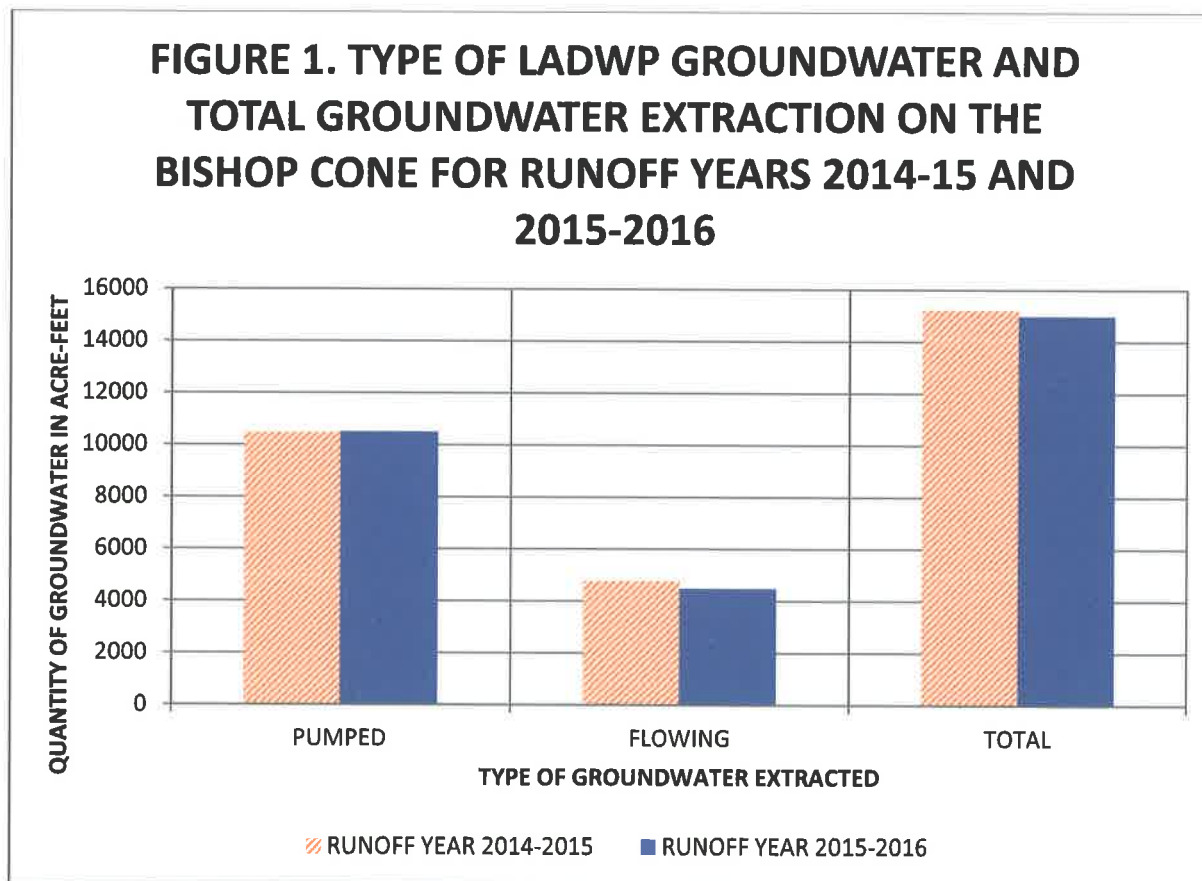
4.0 TOTAL LADWP GROUNDWATER EXTRACTION ON LADWP-OWNED LAND ON THE BISHOP CONE FOR RUNOFF YEARS 2014-15 AND 2015-16

Section IV.D.1.d of the Green Book states: "Total groundwater extraction by LADWP will be compared with corrected water usage on the Bishop Cone for the runoff year. Total groundwater extraction is defined as the sum of all groundwater pumped by LADWP plus the amount of artesian water that flowed out of LADWP uncapped wells on the Bishop Cone during the runoff year." (Appendix B)

Figure 1 (below) presents the total amount LADWP groundwater extraction and the groundwater extraction classified as flowing and pumped groundwater on the Bishop Cone in acre-feet for runoff years of 2014-15 and 2015-16.

For runoff year 2014-15, LADWP extracted 15,299 AF of groundwater (10,468 AF from pumped wells and 4,761 from flowing wells). For runoff year 2015-16, LADWP extracted 14,988 AF of groundwater (10,505 AF from pumped wells and 4,483 AF from flowing wells).

LADWP groundwater extractions on the Bishop Cone for the 2015-16 runoff year decreased by 311 AF compared to the previous year.



Flowing and pumped groundwater on the Bishop Cone are broken into detail by each well in Table 2.

TABLE 2
FLOWING AND PUMPED GROUNDWATER BY WELL ON THE BISHOP CONE
IN RUNOFF YEAR 2015-16

WELL	FLOWING GROUNDWATER (AF)	PUMPED GROUNDWATER (AF)
F121	36	NA
F122	59	NA
F123	124	NA
F124	0	NA
F125	1046	NA
F126	270	NA
F127	387	NA
F128	266	NA
F129	82	NA
F130	366	NA
F131	615	NA
F132	335	NA
F133	316	NA
F134	543	NA
F136	38	NA
W410	NA	2513
W406	NA	1166
W371	NA	936
W411	NA	1329
W407	NA	990
W408	NA	1176
W140	NA	1253
W412	NA	1141
TOTAL	4,483	10,505

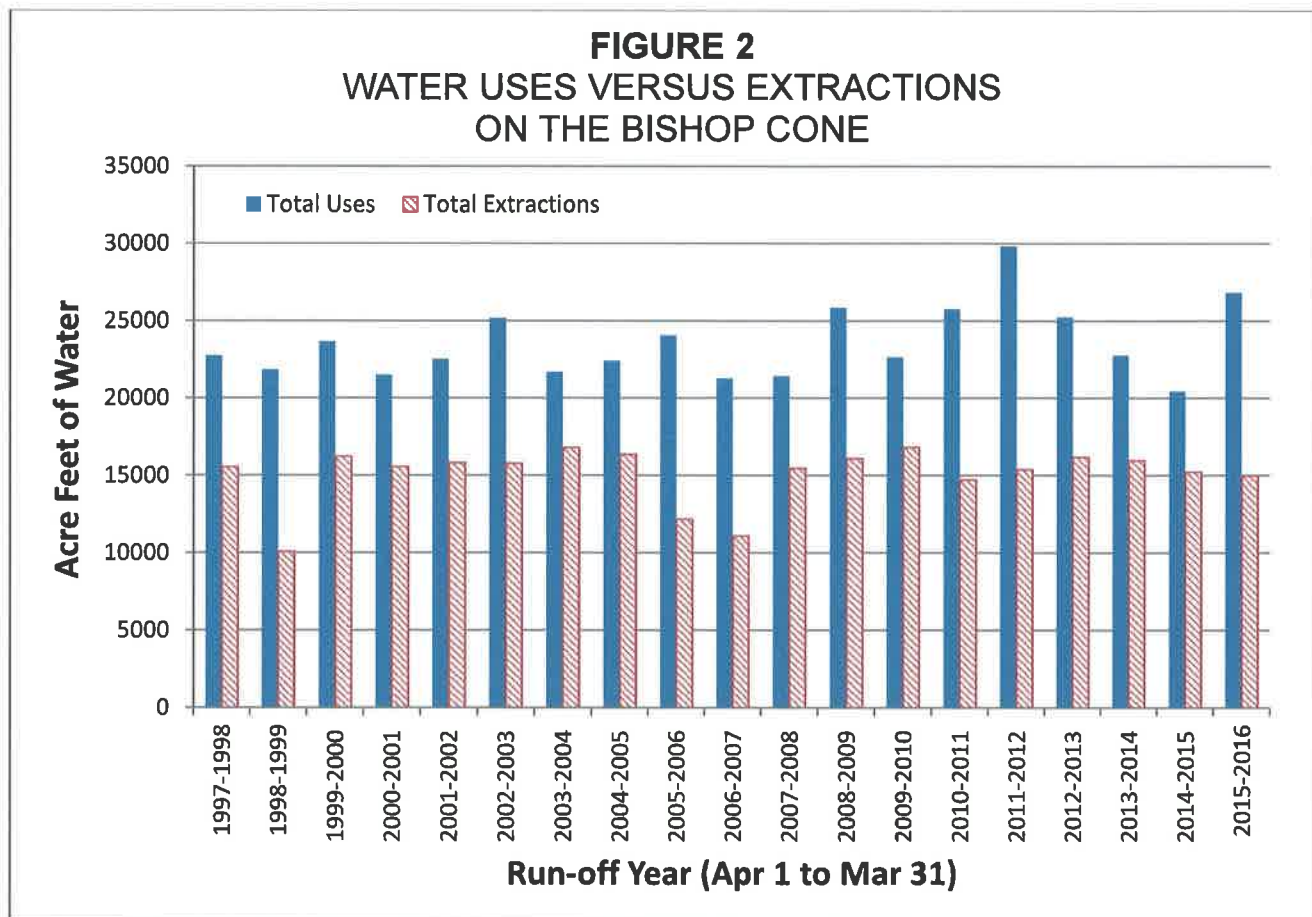
5.0 COMPLIANCE WITH THE INYO COUNTY/LOS ANGELES LONG-TERM GROUNDWATER MANAGEMENT AGREEMENT

The Water Agreement provides that, during any runoff year, total groundwater extraction by LADWP on the Bishop Cone shall not exceed water usage on Los Angeles-owned land on the Cone. Table 3, below, shows that LADWP was in compliance with the above provision for runoff years 2014-15 and 2015-16 as the total uses on the Bishop Cone exceeded the total groundwater extractions for each year.

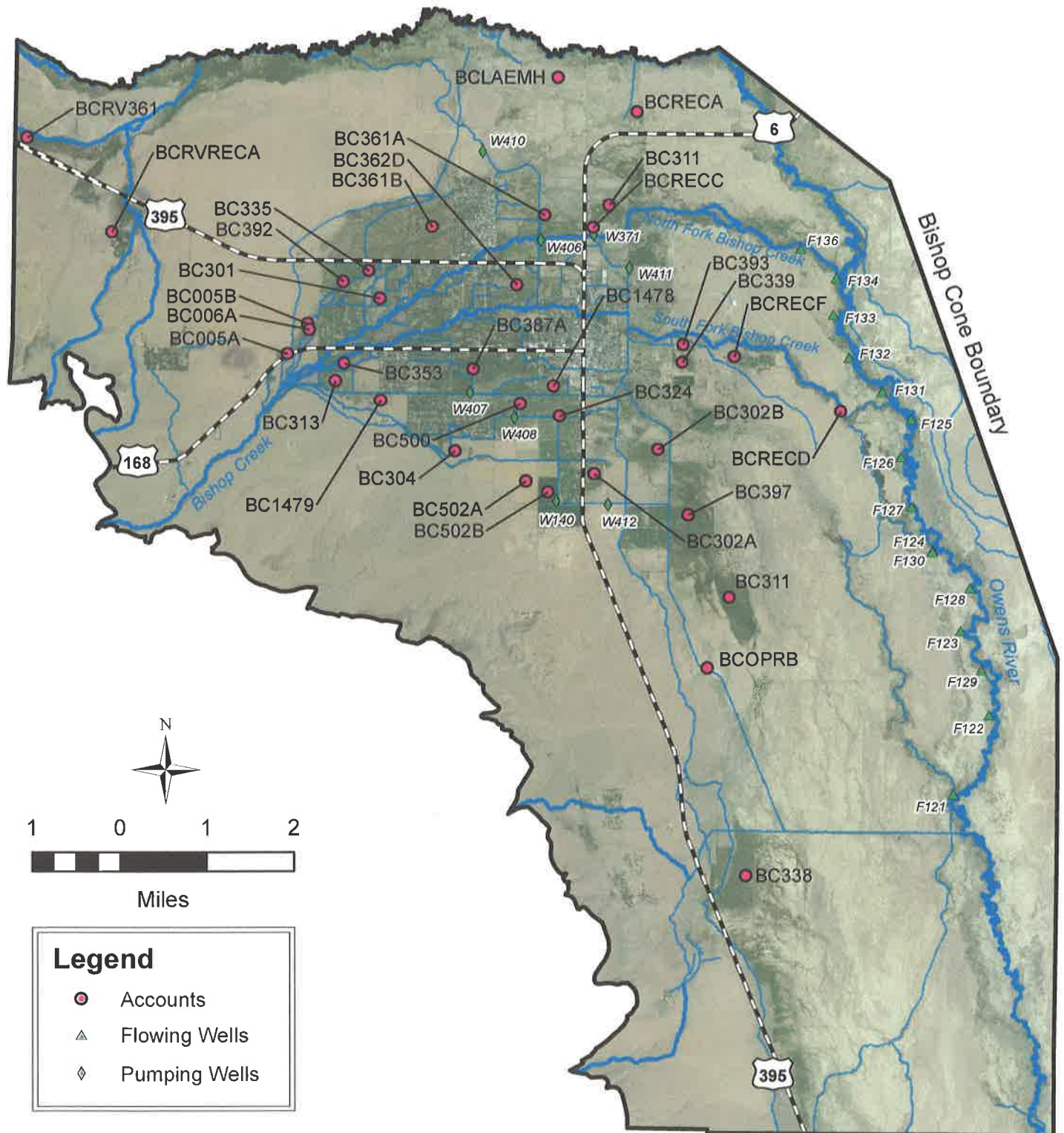
TABLE 3
LADWP USES IN COMPARISON TO LADWP GROUNDWATER
EXTRACTION ON THE BISHOP CONE

	RUNOFF YEAR 2014-15 (AF)	RUNOFF YEAR 2015-16 (AF)
TOTAL USES	20,452	26,821
TOTAL GROUNDWATER EXTRACTION	15,229	14,988
USES MINUS EXTRACTIONS	5,223	11,833
IN COMPLIANCE?	YES	YES

Figure 2 presents LADWP's water uses versus extractions since runoff year 1996-97. Uses have exceeded extractions throughout the data period; therefore, LADWP has been in compliance with Section IV.D.1.a. of the Green Book and the Water Agreement.



Map 1. Bishop Cone Audit Features



APPENDIX A

Section VII.A of the Inyo County/Los Angeles Long-Term
Groundwater Management Agreement

Section VII of the Agreement

VII. GROUNDWATER PUMPING ON THE BISHOP CONE

- A. Any groundwater pumping by the Department on the "Bishop Cone" (Cone) shall be in strict adherence to the provisions of the Stipulation and Order filed on the 26th day of August, 1940, in Inyo County Superior Court in the case of Hillside Water Company, a corporation, et al. vs. The City of Los Angeles, a Municipal Corporation, et al., ("Hillside Decree").

Before the Department may increase groundwater pumping above present levels, or construct any new wells on the Cone, the Technical Group must agree on a method for determining the exact amount of water annually used on Los Angeles-owned lands on the Cone. The agreed upon method shall be based on a jointly conducted audit of such water uses.

The Department's annual groundwater extractions from the Cone shall be limited to an amount not greater than the total amount of water used on Los Angeles-owned lands on the Cone during that year. Annual groundwater extractions by the Department shall be the total of all groundwater pumped by the Department on the Cone, plus the amount of artesian water that flowed out of the casing of uncapped wells on the Cone during the year. Water used on Los Angeles-owned lands on the Cone, shall be the quantity of water supplied to such lands, including conveyance losses, less any return flow to the aqueduct system.

- B. The overall management goals and principles and the specific goals and principles for each vegetation classification of this Stipulation and Order apply to vegetation on the Cone.

APPENDIX B

Section IV.D of the Green Book

MEMORANDUM

7 November 1996

TO: Inyo County/Los Angeles Standing Committee
FROM: Inyo County/Los Angeles Technical Group

**CONSIDERATION OF GREEN BOOK SECTION
DESCRIBING THE BISHOP CONE AUDIT**

Background

Section VII.A of the Inyo County/Los Angeles long-term water management agreement provides that "before the Department may increase groundwater pumping above present levels, or construct any new wells on the [Bishop] Cone, the Technical Group must agree on a method for determining the exact amount of water annually used on Los Angeles-owned lands on the Cone. The agreed upon method shall be based on a jointly conducted audit of such water uses."

At its 17 October 1995 meeting, the Technical Group agreed to recommend to the Inyo County/Los Angeles Standing Committee the attached description of a Bishop Cone audit to be incorporated into the Green Book (the technical appendix to the long-term agreement).

Request

The Technical Group requests that the Standing Committee adopt the attached description as section IV.D of the Green Book.

D. Bishop Cone Audit

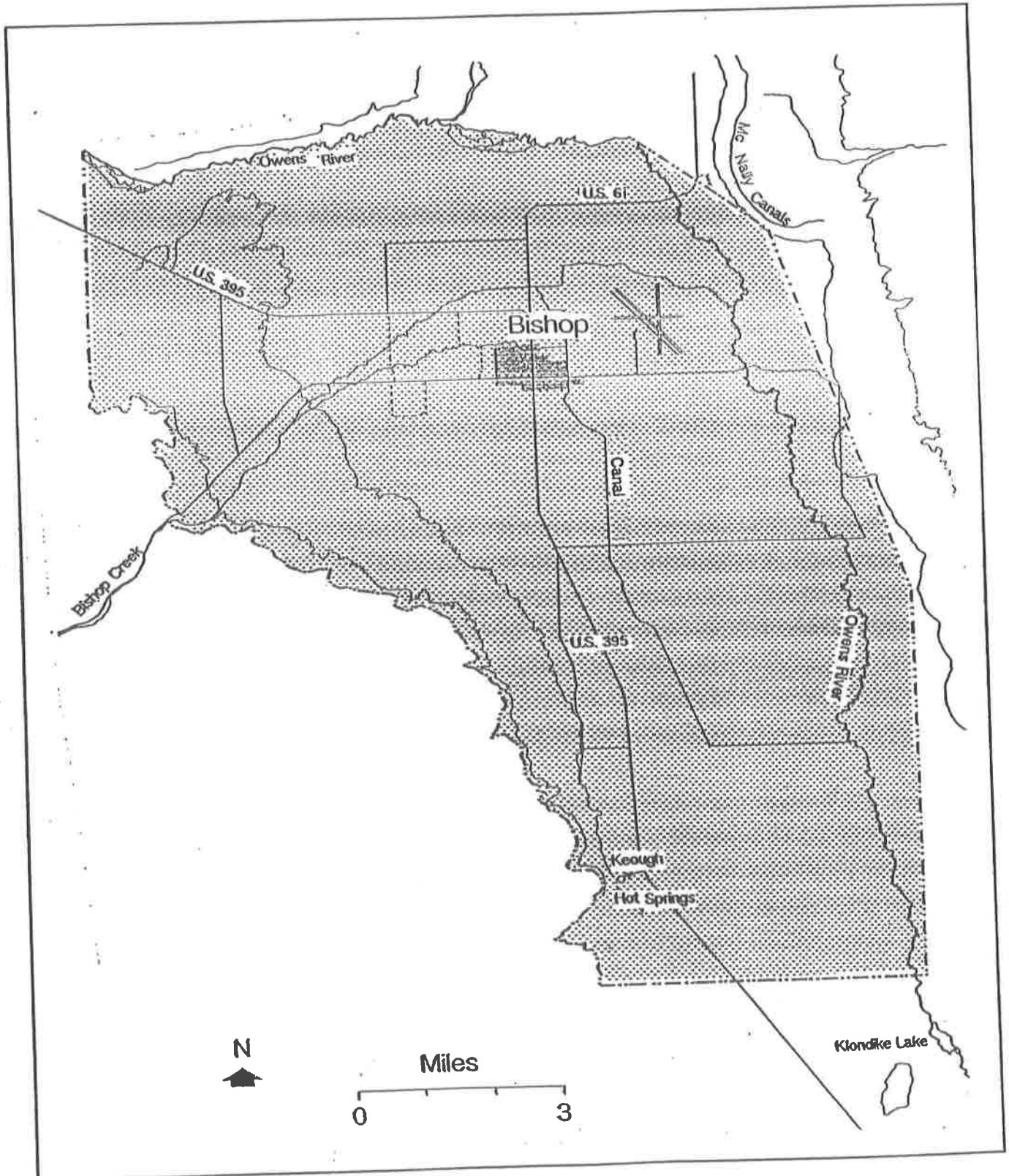
This sub-section describes the procedures for conducting the Bishop Cone audit in accordance with Section VII.A of the Agreement. The Bishop Cone audit is an annual accounting of LADWP groundwater extraction and water usage on Los Angeles-owned land on the Bishop Cone. The Agreement provides that, during any runoff year, total groundwater extraction by LADWP on the Bishop Cone shall not exceed water usage on Los Angeles-owned land on the Cone. The area defined as the Bishop Cone is shown as Figure IV.D.1.

1. Procedures for Conducting the Bishop Cone Audit

- a. For the purposes of the Bishop Cone audit, water usage on Los Angeles-owned land on the Bishop Cone is defined as the quantity of water supplied to such land, including conveyance losses, less any return flow to the aqueduct system. Water usage is documented on a runoff-year basis and is compiled by LADWP each May in the Bishop Area Water Use Report. At the conclusion of each runoff year, LADWP will forward the final water use report for the runoff year to Inyo County.
- b. The final water use report will be compared for consistency with the previous year's report. If measuring stations have been added or removed from the water-use report during the year, or if a significant change in the pattern of water usage occurs (for example, an account that has not received water for one year receives a

FIGURE IV.D.1

Bishop Cone Boundary



considerable amount the next year), the location will be field-checked. The field-check will evaluate whether changes in water usage warrant the changes noted in the report. If a change is made in the method of delivery to or return from an account that results in an overestimation of uses on the Bishop Cone, water usage for that account will not be credited to the total uses for the audit.

- c. Water usage for accounts BAIND (Bishop Indian Reservation), BA391 (outside of Bishop Cone boundary), and BAWEST (West Bishop private uses) will be subtracted from the total reported water usage.
- d. Total groundwater extraction by LADWP will be compared with the corrected water usage on the Bishop Cone for the runoff year. Total groundwater extraction is defined as the sum of all groundwater pumped by LADWP plus the amount of artesian water that flowed out of uncapped wells on the Bishop Cone during the runoff year. During any runoff year, total groundwater extraction by LADWP on the Bishop Cone shall not exceed water usage on Los Angeles-owned land on the Cone.
- e. A draft report summarizing the results of the Bishop Cone audit will be prepared annually as an Inyo County Water Department report and will be submitted to the Technical Group in June for a 30-day review.
- f. A final Bishop Cone audit report will be submitted in July to the Technical Group, the Standing

Committee, the Inyo County Board of Supervisors,
and the Inyo County Water Commission.

LADWP will notify Inyo County of any changes in the status, location, or operation of any measuring station used to conduct the Bishop Cone audit at the time the final Bishop Area Water Use Report is submitted to the County. LADWP will also notify the County of any changes in the boundaries of the accounts included in the audit.

Upon request by Inyo County, LADWP will provide measuring station data for accounts included in the audit to assist the County in verifying water usage for individual accounts.

APPENDIX C

**Data on Uses and Total Groundwater Extracted on the Bishop Cone
(Supplied by LADWP)**

2015/16 RUNOFF YEAR BISHOP CONE PUMPING WELL TOTALS
(ACRE-FEET)

	2015										2016							
<u>WELL</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>		<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>TOTAL</u>				
W140	200	205	146	175	201	193	88	0	0		0	0	46	1253				
W371	78	78	76	78	78	75	81	78	80		80	75	80	936				
W406	200	205	198	201	197	166	0	0	0		0	0	0	1166				
W407	159	165	162	167	164	160	14	0	0		0	0	0	990				
W408	198	202	195	174	192	191	23	0	0		0	0	0	1176				
W410	211	215	209	193	214	207	214	207	214		214	200	214	2513				
W411	91	251	243	251	250	241	3	0	0		0	0	0	1329				
W412	185	190	184	188	187	180	2	0	0		0	0	26	1141				
<u>TOTAL</u>	<u>1321</u>	<u>1511</u>	<u>1413</u>	<u>1426</u>	<u>1482</u>	<u>1412</u>	<u>424</u>	<u>285</u>	<u>295</u>		<u>294</u>	<u>275</u>	<u>365</u>	<u>10505</u>				

1/26/2017

2015/16 RUNOFF YEAR BISHOP CONE FLOWING WELL TOTALS
(ACRE-FEET)

	2015									2016				
WELL	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	TOTAL	
F121	3	3	3	3	3	3	3	3	3	3	3	3	36	
F122	5	5	5	6	5	5	5	5	5	4	4	5	59	
F123	12	11	10	10	10	9	10	10	11	10	9	11	124	
F124	0	0	0	0	0	0	0	0	0	0	0	0	0	
F125	87	89	87	89	86	83	86	83	85	88	89	94	1046	
F126	23	24	22	24	23	21	22	23	23	22	21	23	270	
F127	33	34	33	32	32	30	32	32	32	32	31	34	387	
F128	22	24	25	25	23	21	21	20	20	22	21	22	266	
F129	6	7	6	7	7	6	8	7	7	7	6	7	82	
F130	31	30	29	31	30	29	34	33	32	29	27	31	366	
F131	52	52	50	50	49	49	52	53	51	51	51	54	615	
F132	27	29	27	27	28	28	29	28	29	28	27	29	335	
F133	28	27	25	26	25	24	26	29	28	27	25	27	316	
F134	48	46	43	41	40	41	45	47	48	48	46	50	543	
F136	5	3	1	0	1	1	3	4	5	5	5	5	38	
TOTAL	383	384	366	371	361	350	376	378	379	376	366	394	4483	

7/6/2017

LOS ANGELES DEPARTMENT OF WATER AND POWER
NORTHERN AQUEDUCT OPERATIONS

BISHOP CONE AUDIT RUNOFF SUMMARY 2015-16
FLOWS ON AND OFF LEASES IN ACRE-FEET

STAID	STATION NAME	+/-	2015										2016				TOTAL
			APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR		
BC005A																	
	3049 #161 OTEY		48	73	89	85	82	65	42	43	67	68	62	73		797	
	3377 OTEY DITCH RETURN AT MATLICK DITCH	(-)	47	69	83	82	70	58	41	43	69	66	61	72		761	
			1	4	6	2	12	7	2	0	-2	2	1	1		36	
BC005B																	
	3378 OTEY DITCH DIV. ABOVE MATLICK DITCH		4	4	6	6	7	4	0	0	0	0	0	0		31	
			4	4	6	6	7	4	0	0	0	0	0	0		31	
BC006A																	
	3048 #61-A FRANK ROUFF		10	22	21	18	20	15	2	0	0	0	0	0		108	
	3063 DUGGAN DITCH FLOW THROUGH	(-)	0	0	0	0	0	0	0	0	0	0	0	0		0	
			10	22	21	18	20	15	2	0	0	0	0	0		108	
BC1478																	
	3002 GEORGE DITCH W. OF SUNLAND AVENUE		29	30	40	36	34	42	1	0	0	0	0	0		212	
	3264 NORTH INDIAN DITCH BELOW A-1 DRAIN B3A		121	186	115	128	98	79	86	75	111	79	71	66		1215	
	3068 GEORGE DITCH C-3	(-)	12	16	15	19	9	11	1	0	0	0	0	0		83	
	3370 NORTH INDIAN DIVERSION W/O SUNLAND	(-)	3	9	1	14	16	24	1	0	0	0	0	0		68	
	3364 NORTH INDIAN DITCH W/O HWY 395	(-)	51	74	68	49	34	22	59	34	68	52	45	55		611	
			84	117	71	82	74	63	27	41	43	27	26	11		666	
BC1479																	
	3025 SOUTH INDIAN DITCH DIVERSION #3		1	1	1	1	1	1	0	0	0	0	0	0		6	
			1	1	1	1	1	1	0	0	0	0	0	0		6	
BC301																	
	3396 NELLIGAN DIV. #1		11	2	81	182	201	41	41	56	49	76	59	82		881	
	3397 NELLIGAN BELOW DIV. #1		13	34	50	56	44	25	32	23	10	14	15	26		342	
	3401 YOUNG DITCH #2		23	54	48	54	63	55	30	33	51	60	66	84		621	
	3421 TOM KEY DITCH ABOVE DIVERSION		30	44	56	48	42	34	23	18	24	16	31	25		391	
	3050 HOLLAND #63-B	(-)	7	10	12	32	30	16	17	15	10	18	17	21		205	
	3404 NELLIGAN DITCH #2	(-)	10	21	72	141	143	40	57	60	42	71	61	86		804	
	3402 YOUNG DITCH #3	(-)	11	26	25	35	37	38	34	38	54	64	77	85		524	
	3407 YOUNG DITCH #4	(-)	0	0	0	0	0	0	0	0	0	0	0	0		0	
	3422 TOM KEY DITCH BELOW DIVERSION	(-)	26	39	47	41	36	26	20	15	23	13	29	23		338	
			24	40	79	91	104	35	-2	0	5	0	-13	2		365	
BC302A																	
	3006 HALL DITCH @ GOLF COURSE RETURN		17	21	24	17	14	17	1	0	0	0	0	0		111	
			17	21	24	17	14	17	1	0	0	0	0	0		111	
BC302B																	
	3161 BISHOP CK DITCH #16		59	47	40	51	67	69	26	26	29	24	34	35		507	
	3162 BISHOP CK DITCH #17		94	44	36	48	50	68	0	0	0	0	0	0		340	
	3164 BISHOP CK DITCH #20		17	41	42	40	53	36	37	29	15	21	21	12		364	
	3165 BISHOP CK DITCH #21		0	0	0	0	0	0	0	0	0	0	0	0		0	
			169	132	118	139	169	173	63	55	44	45	55	47		1209	
BC304																	
	3026 NEWLON DITCH BOYD PUMP PLANT		39	36	21	11	10	8	1	0	0	0	0	0		126	
			39	36	21	11	10	8	1	0	0	0	0	0		126	
BC311																	
	3166 BISHOP CK DITCH #5		71	59	45	40	63	74	0	0	0	0	0	0		352	
	3022 BISHOP CK DITCH #5-A		73	68	65	57	65	60	0	0	0	0	0	0		388	
	3167 BISHOP CK DITCH #9		47	41	82	82	50	60	0	0	0	0	0	0		362	
	3168 BISHOP CK DITCH #30		342	291	213	270	299	271	63	60	66	72	68	58		2073	
	3392 FORD RAWSON-DIV 1A		6	1	0	8	2	2	0	0	0	0	0	0		19	
			538	461	405	456	478	467	63	60	66	72	68	58		3192	
BC313																	
	3016 NORTH INDIAN DITCH ABOVE MUMY LANE #58-E		215	526	475	476	424	275	174	126	158	135	123	130		3237	
	3017 WONACOTT A-2		21	24	40	103	47	22	30	22	31	22	19	22		403	
	3015 WONACOTT A-1	(-)	37	50	77	96	80	41	41	29	38	32	25	31		577	
	3054 WONACOTT A-3 RETURN	(-)	1	5	1	16	9	0	0	2	12	3	0	0		49	
	3051 WONACOTT #58-F	(-)	28	28	27	40	38	22	28	15	18	24	15	21		304	
	3018 NORTH INDIAN B-2	(-)	143	341	299	238	220	175	107	72	116	97	71	75		1954	
			26	125	110	189	124	58	27	30	5	2	30	25		751	

STAIID	STATION NAME	+/-	2015								2016				TOTAL
			APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR
BC324															
	3370 NORTH INDIAN DIVERSION W/O SUNLAND		3	9	1	14	16	24	1	0	0	0	0	0	68
	3270 SOUTH INDIAN D-3		158	185	172	159	180	179	63	74	60	28	16	42	1316
	3005 SOUTH INDIAN DITCH D-4	(-)	85	58	36	39	43	38	50	55	48	22	14	21	509
			76	135	137	135	153	165	15	19	12	6	3	21	877
BC335															
	3402 YOUNG DITCH #3		11	26	25	35	37	38	34	38	54	64	77	85	524
	3407 YOUNG DITCH #4		0	0	0	0	0	0	0	0	0	0	0	0	0
	3403 YOUNG DITCH RETURN TO NELLIGAN	(-)	2	6	5	9	8	14	29	26	54	59	70	69	351
			8	20	20	26	29	24	5	12	0	4	7	16	171
BC338															
	2026 FORD RAWSON CANAL BELOW BISHOP CK CANAL		550	542	561	758	877	579	0	0	0	0	0	0	3867
	3368 RAWSON & KEOUGH DITCH E/O HWY 395		62	46	33	24	15	15	26	29	33	33	30	40	386
	2004 FORD RAWSON CANAL DIV. #7	(-)	133	126	99	171	151	72	0	0	0	0	0	0	752
	2043 YRIBARREN RETURN #2	(-)	--	--	--	--	--	--	--	--	--	--	--	--	--
	3369 RAWSON & KEOUGH DITCH RETURN AT A-DRA	(-)	29	18	13	10	4	1	6	9	9	11	9	11	130
			451	443	482	600	737	520	20	20	23	22	21	29	3368
BC339															
	3170 KINGSLEY C-1		56	67	48	50	50	53	30	29	32	21	23	28	487
			56	67	48	50	50	53	30	29	32	21	23	28	487
BC353															
	3015 WONACOTT A-1		37	50	77	96	80	41	41	29	38	32	25	31	577
	3053 TOMMY SMITH DITCH #162-A		12	21	16	13	15	17	0	0	0	0	0	0	94
	3017 WONACOTT A-2	(-)	21	24	40	103	47	22	30	22	31	22	19	22	403
			28	47	54	6	49	36	11	7	7	9	7	10	271
BC361A															
	3036 NORTH FORK BISHOP CREEK I-1(#155 STANLEY MA		28	89	74	88	80	60	35	41	18	8	15	16	552
	3004 BISHOP CK N. FORK I-2		0	0	0	0	0	0	0	0	0	0	0	0	0
	3316 IRRIGATION FROM WELL #406		131	189	113	47	169	72	0	0	0	0	0	39	760
	3042 TATUM RETURN AT HIGHWAY 6	(-)	6	8	7	14	8	13	1	0	0	0	0	0	57
	3039 TATUM RETURN AT BISHOP CK CANAL	(-)	14	13	8	8	7	5	0	0	0	0	0	0	55
			139	258	172	114	234	113	35	41	18	8	15	55	1202
BC361B															
	3009 MATLICK DITCH F-10		71	94	64	121	181	177	66	70	79	100	90	84	1197
	3040 MATLICK DITCH F-13 N		16	31	43	40	84	33	59	73	87	134	126	138	864
	3008 MATLICK DITCH F-13 E		0	1	5	37	26	12	1	2	0	0	0	6	90
	3007 MATLICK DITCH F-14		4	0	2	2	6	5	5	4	1	3	2	12	46
	3035 MATLICK DITCH #154		14	161	146	138	122	91	21	36	31	38	38	33	869
	3154 SCHILDER RETURN G-2	(-)	1	0	0	0	2	3	0	0	0	0	0	7	13
	3037 MATLICK DITCH #63-A	(-)	7	4	7	10	12	23	16	14	8	7	10	33	151
	3038 TATUM RETURN H-1	(-)	1	0	6	14	26	3	0	0	0	0	0	0	50
	3003 MATLICK DITCH RETURN @ B-1 DRAIN	(-)	0	1	1	1	1	1	4	11	6	7	5	10	48
	3010 MATLICK RETURN TO "C" DRAIN	(-)	7	0	2	1	0	5	67	88	92	136	148	148	694
			87	283	244	314	377	284	64	72	91	125	93	74	2108
BC362D															
	3388 INDIAN S. RETURN ON SEE-VEE LANE		46	136	114	132	88	67	28	20	42	28	43	41	785
	3389 INDIAN MIDDLE RETURN ON SEE-VEE LANE		0	0	1	0	2	1	0	0	0	0	0	0	4
	3390 INDIAN N. RETURN ON SEE-VEE LANE		31	58	52	43	8	8	12	2	0	0	0	0	214
			78	195	166	176	98	75	39	22	42	28	43	41	1003
BC387A															
	3043 NORTH INDIAN DITCH B-3		27	80	124	101	40	25	0	0	0	0	0	0	397
	3011 WEST LINE L-2		0	12	5	0	9	2	0	0	0	0	0	0	28
			27	92	129	101	49	27	0	0	0	0	0	0	425
BC392															
	3387 MATLICK DITCH TO THE N.		93	130	139	141	137	74	41	30	30	32	23	54	924
	3398 MATLICK DITCH #1		116	138	105	149	209	171	85	92	99	100	84	57	1405
	3399 REINHACKLE #1		12	7	22	12	26	12	7	2	1	1	0	6	108
	3400 YOUNG DITCH #1		34	91	91	97	100	76	37	43	63	64	80	86	862
	3424 MCLAREN TAILWATER		0	0	0	0	0	0	0	0	0	0	0	0	0
	3401 YOUNG DITCH #2	(-)	23	54	48	54	63	55	30	33	51	60	66	84	621
	3406 C-DRAIN AT INTAKE	(-)	58	63	72	78	83	77	64	57	48	47	27	35	709
	3009 MATLICK DITCH F-10	(-)	71	94	64	121	181	177	66	70	79	100	90	84	1197
			104	154	173	145	144	23	10	8	16	-10	3	1	771

STAID	STATION NAME	+/-	2015												2016				TOTAL
			APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR				
BC393																			
	3061 KINGSLEY DITCH PUMP DIV. AT DIV. #2		8	6	8	8	7	5	0	0	0	0	0	0			42		
	3171 BISHOP CK DITCH #11		30	0	0	0	0	39	0	0	0	0	0	0			69		
			39	6	8	8	7	44	0	0	0	0	0	0			112		
BC397																			
	3163 BISHOP CK DITCH #19		123	55	53	53	72	33	0	0	0	0	0	0			389		
	3174 BISHOP CK DITCH #22		54	123	55	71	71	0	0	0	0	0	0	0			374		
	3019 BISHOP CK CANAL DIV. #24		85	204	121	101	90	0	63	39	46	6	0	0			755		
	3020 BISHOP CK CANAL DIV. #25		0	45	76	44	43	0	0	0	0	0	0	0			208		
	3391 BISHOP CK CANAL DIV. 26A		133	118	202	148	128	0	0	0	0	0	0	0			729		
	3024 BISHOP CK CANAL DIV. #29		78	57	47	90	41	0	25	56	68	60	47	43			612		
			473	603	553	507	446	33	88	95	113	66	47	43			3067		
BC500																			
	3012 GEORGE DITCH C-1		106	42	74	63	71	77	1	0	0	0	0	0			434		
	3365 PARK W. RETURN S/O A-DRAIN		1	5	8	6	1	0	0	5	1	3	0	2			32		
	3047 4 X - 58D		6	43	71	66	62	32	53	87	77	40	24	49			610		
	3366 SOUTH INDIAN DITCH DIVERSION #1 N/O SCHOBBER		0	0	2	2	1	0	0	0	0	0	0	0			5		
	3367 SOUTH INDIAN DITCH DIVERSION #2 N/O SCHOBBER		0	0	84	86	11	0	0	0	0	0	0	0			181		
W408	WELL 408		198	202	195	174	192	191	23	0	0	0	0	0			1175		
	3002 GEORGE DITCH W. OF SUNLAND AVENUE	(-)	29	30	40	36	34	42	1	0	0	0	0	0			212		
	3046 SOUTH INDIAN RETURN AT A-1 DRAIN	(-)	0	0	0	0	0	0	0	0	9	8	0	0			17		
	3270 SOUTH INDIAN D-3	(-)	158	185	172	159	180	179	63	74	60	28	16	42			1316		
			124	77	221	200	124	80	12	18	8	7	8	9			888		
BC502A																			
	3027 HALL DITCH PUMP PLANT #2@DON TATUM LEASE(0	0	0	0	0	0	0	0	0	0	0	0			0		
	3028 HALL DITCH PUMP PLANT #4 AT DON TATUM LEASE		79	76	47	75	59	17	2	0	0	0	0	0			355		
			79	76	47	75	59	17	2	0	0	0	0	0			355		
BC502B																			
	3031 A-1 DRAIN PUMP PLANT #1 S/O HALL DITCH		0	0	0	0	0	0	0	0	0	0	0	0			0		
	3032 A-1 DRAIN PUMP PLANT #3 AT WELL #140		110	151	86	100	108	127	62	20	0	0	0	0			764		
			110	151	86	100	108	127	62	20	0	0	0	0			764		
BCOPRB																			
	2086 A-DRAIN DIV. TO ARKANSAS FLATS		0	0	0	0	0	0	0	0	0	0	0	0			0		
			0	0	0	0	0	0	0	0	0	0	0	0			0		
BCRECA																			
	3155 BISHOP CK DITCH #5-B		0	0	0	0	0	0	199	153	123	0	0	0			475		
			0	0	0	0	0	0	199	153	123	0	0	0			475		
BCRECC																			
	3021 BISHOP CK CANAL DIV. #67		0	0	0	0	0	0	0	0	0	0	0	0			0		
			0	0	0	0	0	0	0	0	0	0	0	0			0		
BCRECD																			
	3194 SOUTH FORK BISHOP CREEK BELOW BISHOP CREEK		491	571	711	681	702	699	517	508	470	383	264	271			6268		
	3193 SANDERS POND RETURN AT OWENS RIVER	(-)	31	29	25	30	38	108	50	86	144	97	13	1			652		
	3066 RAWSON POND #3 RETURN TO OWENS RIVER	(-)	84	115	125	154	275	212	212	197	112	146	111	85			1828		
			376	427	562	497	389	378	256	225	214	139	140	185			3788		
BCRECF																			
	3023 KINGSLEY DITCH DIV. C-4		67	87	91	95	98	85	65	31	12	11	8	31			681		
	3183 CEMETERY DITCH AT E. LINE ST.	(-)	27	55	41	52	66	53	50	38	31	12	7	15			447		
			40	32	50	43	32	32	15	-7	-20	-1	1	16			233		
BCLAEMH																			
	3242 BISHOP CK CANAL DIV. TO 5 BRIDGES #2		0	0	0	0	0	0	146	237	0	0	12	0			395		
	3317 BISHOP CK CANAL DIV. TO 5 BRIDGES #6		18	37	25	41	33	41	32	28	24	28	2	0			309		
			18	37	25	41	33	41	178	265	24	28	14	0			704		
BCRV361B																			
	3102 HORTON CK E-7		0	0	72	60	21	0	0	0	0	0	0	0			153		
			0	0	72	60	21	0	0	0	0	0	0	0			153		
BCRVRECA																			
	3185 MCGEE CK AT ABERLOUR RANCH		154	193	175	172	152	149	189	204	208	190	188	223			2197		
	3235 MILL POND RETURN	(-)	106	104	86	78	75	65	96	150	142	132	82	148			1264		
			49	89	89	94	77	84	94	54	66	58	107	74			935		

STAIID	STATION NAME	2015										2016				TOTAL
		+/-	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR-MAR	
Bishop Cone Account Total Uses																
BC005A		1	4	6	2	12	7	2	0	-2	2	1	1		36	
BC005B		4	4	6	6	7	4	0	0	0	0	0	0		31	
BC006A		10	22	21	18	20	15	2	0	0	0	0	0		108	
BC1478		84	117	71	82	74	63	27	41	43	27	26	11		666	
BC1479		1	1	1	1	1	1	0	0	0	0	0	0		6	
BC301		24	40	79	91	104	35	-2	0	5	0	-13	2		365	
BC302A		17	21	24	17	14	17	1	0	0	0	0	0		111	
BC302B		169	132	118	139	169	173	63	55	44	45	55	47		1209	
BC304		39	36	21	11	10	8	1	0	0	0	0	0		126	
BC311		538	461	405	456	478	467	63	60	66	72	68	58		3192	
BC313		26	125	110	189	124	58	27	30	5	2	30	25		751	
BC324		76	135	137	135	153	165	15	19	12	6	3	21		877	
BC335		8	20	20	26	29	24	5	12	0	4	7	16		171	
BC338		451	443	482	600	737	520	20	20	23	22	21	29		3368	
BC339		56	67	48	50	50	53	30	29	32	21	23	28		487	
BC353		28	47	54	6	49	36	11	7	7	9	7	10		271	
BC361A		139	258	172	114	234	113	35	41	18	8	15	55		1202	
BC361B		87	283	244	314	377	284	64	72	91	125	93	74		2108	
BC362D		78	195	166	176	98	75	39	22	42	28	43	41		1003	
BC387A		27	92	129	101	49	27	0	0	0	0	0	0		425	
BC392		104	154	173	145	144	23	10	8	16	-10	3	1		771	
BC393		39	6	8	8	7	44	0	0	0	0	0	0		112	
BC397		473	603	553	507	446	33	88	95	113	66	47	43		3067	
BC500		124	77	221	200	124	80	12	18	8	7	8	9		888	
BC502A		79	76	47	75	59	17	2	0	0	0	0	0		355	
BC502B		110	151	86	100	108	127	62	20	0	0	0	0		764	
BCOPRB		0	0	0	0	0	0	0	0	0	0	0	0		0	
BCRECA		0	0	0	0	0	0	199	153	123	0	0	0		475	
BCRECC		0	0	0	0	0	0	0	0	0	0	0	0		0	
BCRECD		376	427	562	497	389	378	256	225	214	139	140	185		3788	
BCRECF		40	32	50	43	32	32	15	-7	-20	-1	1	16		233	
BCLAEMH		18	37	25	41	33	41	178	265	24	28	14	0		704	
BCRV361B		0	0	72	60	21	0	0	0	0	0	0	0		153	
BCRVRECA		49	89	89	94	77	84	94	54	66	58	107	74		935	
BCAUDIT		3275	4153	4201	4304	4228	3008	1318	1239	931	659	699	744		28759	