Big Bear Watermaster

Thirty-Second Annual Report

For Calendar Year 2008

Big Bear Municipal Water District vs. North Fork Water District, et al
Case No. 165493 - County of San Bernardino

BEAR VALLEY MUTUAL WATER COMPANY

BIG BEAR MUNICIPAL WATER DISTRICT EST. 1964

SBV WATER CONSERVATION DISTRICT 70 YEARS OUR NAME IS OUR MISSION

Watermaster Members:
Donald E. Evenson
Michael L. Huffstutler
R. Robert Neufeld

Mailing Address:
P.O. Box 1839
Redlands, CA 92373
909-793-2503

BIG BEAR WATERMASTER

FOR
BIG BEAR MUNICIPAL WATER DISTRICT VS. NORTH FORK WATER CO. ET AL
CASE NO. 165493--COUNTY OF SAN BERNARDINO

WATERMASTER MEMBERS:
DONALD E. EVENSON
R. ROBERT NEUFELD
MICHAEL L. HUFFSTUTLER

MAILING ADDRESS
P. O. BOX 1839
REDLANDS, CA 92373-0581
(909) 793-2503

May 26, 2009

To: Clerk of the Superior Court of San Bernardino County and All Parties

Subject: Watermaster Report for Calendar Year 2008

Gentlemen:

We have the honor of submitting the Thirty-Second Annual Report of the Big Bear Watermaster for Calendar Year 2008.

Paragraph Twenty (20) of the Judgment requires that the Watermaster Report be submitted to the Court and the Parties before April 1 of each year on all significant Watermaster activities and provide an accounting of water deliveries for the preceding calendar year as set forth in Section VI, Physical Solution, of the Judgment.

However, this year the Watermaster Committee requested an extension of time to June 1, 2009 to report to the Court and parties (see Appendix C). Accordingly, this report is submitted herewith under the date of May 26, 2009, and summarizes the findings of the Watermaster Committee as required by the Judgment.

We and each of us hereby certify that this is a true and correct report of the Watermaster work performed by us and under our supervision during 2008 pursuant to the requirements of the Judgment.

Respectfully submitted,

By: Donald E. Evenson
Donald E. Evenson

By: R. Robert Neufeld
R. Robert Neufeld

By: Michael L. Huffstutler
Michael L. Huffstutler

THIRTY-SECOND ANNUAL REPORT
BIG BEAR WATERMASTER
CALENDAR YEAR 2008

TABLE OF CONTENTS

THIRTY-SECOND ANNUAL REPORT
BIG BEAR WATERMASTER
CALENDAR YEAR 2008

LIST OF TABLES

THIRTY-SECOND ANNUAL REPORT
BIG BEAR WATERMASTER
CALENDAR YEAR 2008

LIST OF FIGURES

I. INTRODUCTION

The Big Bear Watermaster presents the Thirty-Second Annual Report of its activities for Calendar Year 2008. The Watermaster's activities ensure that the rights of all parties subject to the Judgment rendered in Case No. 165493 are protected. The Watermaster generally oversees watershed conditions that may affect the Judgment and attempts to improve the conditions to the benefit of all parties.

This report describes the 2008 activities of the Watermaster including the status of accounts and various tabulations as required by the Judgment.

In 2008, the Big Bear Watermaster Committee was composed of Donald E. Evenson, President, representing Big Bear Municipal Water District; Michael L. Huffstutler, representing Bear Valley Mutual Water Company; and Marvin Shaw, Secretary, representing San Bernardino Valley Water Conservation District. On October 28, 2008 the Court approved the appointment of R. Robert Neufeld to replace Mr. Shaw as the San Bernardino Valley Water Conservation District's representative and as the Secretary of the Watermaster Committee (see Appendix D).

The Watermaster Committee met four times during 2008. These meetings were held on the following dates:

January 15, 2008
March 18, 2008
June 03, 2008
October 21, 2008

Appendix A contains the minutes of these meetings. Minutes of the meetings are also on file at the office of each of the representatives.

II. SUMMARY

2008 WATERMASTER ACCOUNTS

2008 was an average hydrologic year. Annual precipitation at the three gages in the Big Bear Lake watershed averaged 23.26 inches, which is nearly identical to the 23.24 inches of average annual rainfall since 1977. Precipitation at Bear Valley Dam was 37.87 inches, which is 107 percent of the 99-year (1910-2008) average of 35.51 inches. Consequently, inflow to Big Bear Lake in 2008 was nearly average. The 2008 calculated lake inflow was 14,182 acre-feet, which is 86 percent of the average inflow since 1977. The average inflow for the 32 years since the Judgment was rendered is 16,423 acre-feet per year.

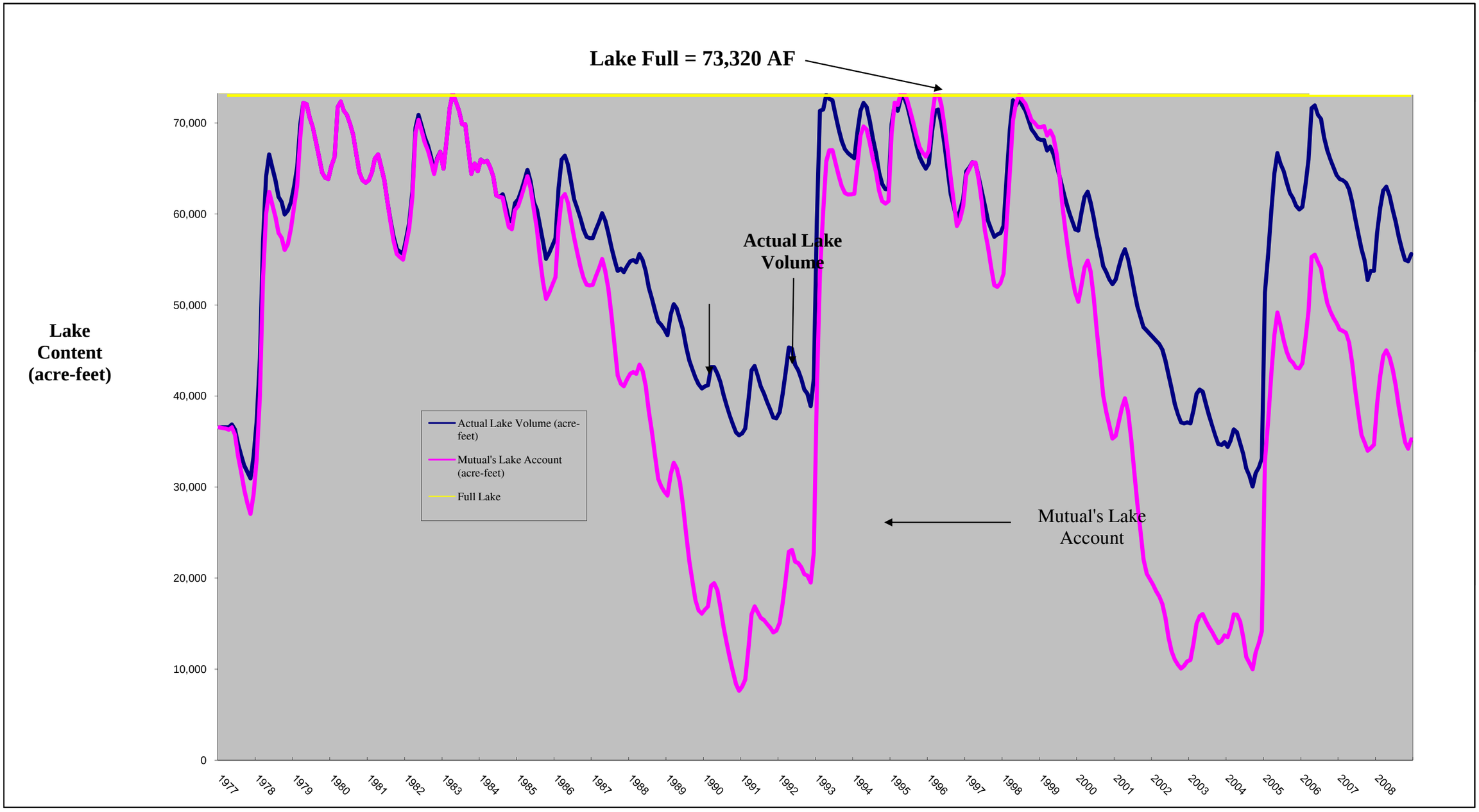
Actual lake levels rose 0.66 feet in 2008 and ended the year 6.30 feet below the top of the dam. Accordingly, lake contents increased by 1,857 acre-feet during the year. On December 31, 2008, the lake contained 55,605 acre-feet of water. The lake level is 72.33 feet and the lake holds 73.32 acre-feet when it is full. **Figure 1** shows the history of the actual lake contents since the Judgment was rendered in 1977.

Mutual's lake account held 35,251 acre-feet at the end of 2008. Their lake account increased by 596 acre-feet during the year. Figure 1 also shows the history of Mutual's lake account since 1977. Under a "Mutual Operation", lake releases would be made to meet Mutual's water demands and their lake account is credited with the net wastewater exported from the Big Bear Lake watershed. Under these conditions, the lake level would have ended the year 14.73 feet below the top of the dam or 8.43 feet lower than the actual year-end lake level. If Mutual had not been credited with the net wastewater exports, their lake account balance would have been 28,855 acre-feet and the lake would have been 17.88 feet below the top of dam, or 11.58 feet lower than it actually was.

In 2008, Mutual received 5,108 acre-feet of water from Big Bear MWD. Big Bear MWD has the option to provide in-lieu supplies or to release water from the lake. In 2008, Mutual received 4,634 acre-feet of in-lieu water. Also, Mutual was able to use 474 acre-feet of water from Big Bear Lake for fish protection purposes as required under SWRCB Order No. 95-4.

At the beginning of the year, Big Bear MWD had 19,093 acre-feet in their lake account. By the end of the year, their lake account had increased by 1,261 acre-feet to 20,354 acre-feet. Big Bear MWD's lake account is the difference between the actual lake contents and Mutual's lake account as shown on Figure 1.

FIGURE 1
Actual Lake Contents and Mutual's Lake Account 1977 - 2008



The Basin Compensation Account balance increased by 19 acre-feet in 2008. The Basin Compensation Account began the year with a balance of 24,138 acre-feet and ended the year with a balance of 24,157 acre-feet. The increase resulted from higher basin additions from lake releases made to meet the requirements of SWRCB Order 95-4 under a Big Bear MWD lake operation as compared to a Mutual Operation.

OTHER WATERMASTER ACTIVITIES

The Watermaster has the responsibility to undertake studies and investigations, collect and maintain data and records, and monitor related activities necessary to implement the physical solution contained in the Judgment. In 2008, the Watermaster was involved in monitoring and discussing three issues. These issues are:

- Impacts of Seven Oaks Dam,
- Issues related to Wild and Scenic Rivers System.
- Protecting Big Bear Lake from Quagga Mussels

These issues are discussed in Chapter V.

III. BASIC DATA

BIG BEAR LAKE

Summary

The Watermaster conducts a water balance of Big Bear Lake for each month. This water balance is based on measurements of lake levels, releases, leakages and air temperature, as well as calculated values of spills, evaporation and inflows. For 2008, the overall water balance for the lake was:

Initial Storage (1-01-08)	53,748 acre-feet
Inflows	14,182 acre-feet
Evaporation	11,460 acre-feet
Releases for Mutual	-0- acre-feet
Releases & Leakage for SWRCB Order 95-4	576 acre-feet
Spills & Flood Control Releases	-0- acre-feet
Net Snowmaking Withdrawal	289 acre-feet
Ending Storage (12-31-07)	55,605 acre-feet
Change-in-Storage	1,857 acre-feet

In 2008, the volume of water in Big Bear Lake increased by 1,857 acre-feet. The following subsections of this chapter describe each of the components in this water balance.

Lake Levels and Storage

Water levels in Big Bear Lake are measured continuously based on a reference mark located on the upstream side of the dam. In July 1998, Big Bear MWD completed installation of a continuous lake level recorder. The lake level recorder is a Global Water Model WL300 and is enclosed in a stilling well, which is attached to the upstream face of the dam. Lake level data is continuously transmitted by a remote telemetry unit (RTU) in the control building at the dam. From there, data are transmitted via radio to a central computer in the administrative offices of Big Bear MWD. The automatically recorded values have been used since July 1998. The recorder can only record lake levels when the lake is within 15 feet of the top of the dam (i.e. above a gage height of 57.33 feet). In 2008, the lake was within the top 15 feet for the entire year.

The lake began the year at a gage height of 65.37 feet and ended the year at a gage height of 66.03 feet. Over the year, the lake level rose 0.66 feet. The lowest recorded lake level was 65.22 feet or 7.11 below the top of the dam, and it occurred on January 04, 2008. The highest recorded lake level was 68.81 feet, which occurred on April 27, 2008. The lake is full at a gage height reading of 72.33 feet (6,743.20 feet above msl) and is empty at a gage height of zero.

The Watermaster uses an established gage height-lake capacity table to estimate the volume of water in the lake from the measured gage heights. At the beginning of the year, the lake contained 53,748 acre-feet of water. At the end of the year, there were 55,605 acre-feet of water in the lake. The lake content increased by 1,857 acre-feet during 2008. When full, the lake contains 73.32 acre-feet of water.

Lake Evaporation

The Watermaster calculates evaporation from the lake surface using the Blaney Criddle formula to estimate monthly evaporation rates. The 1977 Annual Watermaster report describes the formula as follows:

> "The Blaney Criddle empirical formula, utilizing average temperatures and daylight hours, has been used. The constant K for each month was calculated based on float pan empirical data at Long Valley Reservoir in Mono County, California, which is at elevation 6,796 feet, compared to the elevation of Big Bear Lake which is 6,743 feet."

Monthly lake evaporation is calculated using the estimated evaporation rate and the average surface area of the lake during the month. If a negative value for lake inflow is calculated, the monthly evaporation rate is increased to achieve a zero lake inflow. A negative lake inflow was calculated for one month in 2008. This month was October. Total evaporation from the lake for 2008 was calculated to be 11,460 acre-feet. This amount is equivalent to an annual evaporation rate of 50.3 inches.

Precipitation

Precipitation in the Big Bear Lake watershed varies significantly from Bear Valley Dam to Big Bear City at the east end of the watershed. **Table III-1** shows the monthly precipitation at Bear Valley Dam, Big Bear Lake Fire Department, and the Big Bear City Community Services District for 2008. 2008 precipitation at the three stations was 37.87, 23.27, and 8.58 inches, respectively. June, September and October were the driest months with very little precipitation. January was the wettest month with approximately 50 percent of the annual precipitation.

Table III-1 also compares the 2008 precipitation at the three stations with their corresponding averages for the thirty-two years since the Judgment was rendered. At the Bear Valley Dam station, precipitation was 106 percent of its thirty-two year average, while at the Big Bear Lake Fire Department station, precipitation was 117 percent of its thirty-two year average. At the Big Bear Community Services District station, precipitation was 61 percent of its thirty-two year average. For all three stations, 2008 precipitation averaged the same as their thirty-two year combined average.

Table III-2 shows the annual precipitation for all three stations for the thirty-two years since the Judgment was rendered. As shown in Table III-2, 2008 was an average year for precipitation. For the Bear Valley Dam station, precipitation was 107 percent of the 99-year (1910–2008) average of 35.51 inches.

Lake Inflow

Inflows to Big Bear Lake are not measured. Consequently, inflows naturally tributary to Big Bear Lake above Bear Valley Dam are calculated for each month using a water balance on the actual operation of the lake. This calculation, which utilizes observed basic data along with the calculated evaporation losses described previously, creates a water balance for each month to determine the amount of natural flow into the lake. The formula used is:

Inflow = Evaporation + Releases + Spills + Leakage +
Net Withdrawals - Change in Storage

If the calculated monthly inflow is a negative value, it is reset to zero, and the monthly evaporation rate is recalculated to achieve a lake water balance. Negative lake inflows occurred one time in 2008, in October. Inflow in this month was set to zero.

TABLE III-1
MONTHLY PRECIPITATION FOR THREE STATIONS
IN BIG BEAR AREA
(inches)
Calendar Year 2008
Big Bear Watermaster

Month	Bear Valley Dam	Big Bear Lake Fire Department	Big Bear Community Services District
January	17.98	13.80	4.24
February	7.64	1.76	1.30
March	0.49	0.30	0.19
April	0.00	0.00	0.00
May	0.13	0.10	0.07
June	0.00	0.00	0.00
July	0.31	0.70	0.00
August	0.13	0.30	0.00
September	0.00	0.05	0.00
October	0.02	0.10	0.05
November	2.50	1.43	1.08
December	8.67	4.73	1.65
2008 Totals	**37.87**	**23.27**	**8.58**
1977-2008 -32-yr average	**35.87**	**19.96**	**13.96**
2008 % of 32-yr average	**106%**	**117%**	**61%**

Average of the 32-year average for all three stations = 23.26 inches

Average of the 2008 totals for all three stations =23.24 inches

2008 average as a percentage of 32-year average = 99.9%

TABLE III-2
THIRTY-TWO YEARS OF PRECIPITATION FOR THREE STATIONS
IN THE BIG BEAR AREA
(inches)
Calendar Year 2008 – Big Bear Watermaster

Year	Bear Valley Dam	Big Bear Lake Fire Department*	Big Bear Community Services District
1977	31.95	18.46	13.35
1978	68.43	42.43	26.09
1979	34.87	21.00	15.84
1980	63.00	38.50	29.86
1981	16.67	8.60	8.42
1982	49.17	34.09	26.53
1983	56.97	31.20	24.29
1984	20.19	16.85	16.66
1985	22.40	13.78	14.11
1986	35.16	17.61	15.26
1987	27.49	19.79	12.52
1988	24.18	13.14	8.15
1989	17.32	7.76	6.85
1990	22.20	15.92	11.02
1991	38.47	29.31	19.81
1992	44.03	24.36	16.64
1993	73.81	29.62	19.45
1994	31.78	19.76	12.24
1995	49.00	27.65	15.89
1996	41.04	18.36	15.47
1997	27.00	15.30	12.92
1998	50.40	15.20	12.07
1999	13.22	4.53	6.06
2000	24.82	13.32	5.21
2001	30.62	12.26	9.10
2002	15.02	7.17	3.82
2003	32.44	18.43	12.70
2004	39.50	18.36	13.51
2005	54.74	35.76	19.56
2006	37.96	18.28	9.98
2007	16.11	8.57	4.89
2008	37.87	23.27	8.58
32-Year Average	**35.87**	**19.96**	**13.96**

99-Year Average	**35.51**	**N/A**	**N/A**

* Big Bear Lake Fire Department began keeping records in June 2001, information provided to National Weather Service. Prior to the Big Bear Lake Fire Department keeping records, the Bear Valley Community Hospital performed this function.

Total annual inflow for 2008 into the lake was calculated to be 14,182 acre-feet. The largest monthly inflow was 4,519 acre-feet, and it occurred in January. The long-term (1939-88) average annual inflow is 14,492 acre-feet. The average annual lake inflow for the years since the Judgment was rendered (1977–2008) is 16,423 acre-feet. The median annual inflow for this same period is 10,792 acre-feet.

Table III-3 lists the annual lake inflows for the period 1977–2008. This table also ranks the inflows from the lowest (1,717 acre-feet in 2002) to the highest (48,613 acre-feet in 1993). Inflow to the lake for 2008 was a little below average but above the median inflow for the years since the judgment was rendered in 1977.

SWRCB Order No. 95-4

On February 16, 1995, the State Water Resources Control Board (SWRCB) issued Order No. 95-4. This order directed the Big Bear MWD and Bear Valley Mutual Water Company to release enough water from the lake to maintain a minimum seven-day average flow of 1.2 cfs and a minimum average daily flow of 1.0 cfs in Bear Creek no more than 500 feet downstream of its confluence with West Cub Creek. This location is referred to as Station A. In 1998, Big Bear MWD completed construction of a continuous flow recording device at Station A to measure compliance with SWRCB Order No 95-4.

SWRCB Order No. 95-4 also required sufficient releases to maintain a minimum flow of 0.3 cfs at a location approximately 300 feet downstream from the toe of the dam. This location is referred to as Station B. In 1998, Big Bear MWD also completed construction of a continuous recording device at this location to measure compliance with SWRCB Order No. 95-4.

On December 29, 2004, data transmission from Station A ceased. In January of 2005, major storms hit the Bear Creek watershed with significant snowfall. Consequently, Big Bear MWD staff could not access Station A until May. On their first visit to the site, they found the data transmission facilities destroyed, the stilling basin filled with sediment and the weir plate damaged. The staff estimated the flow in Bear Creek at this time to be in the range of 10 to 15 cfs, well above the 1.20 cfs requirement.

Table III - 3
Big Bear Lake Inflows
1977 - 2008
(acre-feet / year)

Year	Lake Inflows (AF/year)	Rank	Plotting Position	Year	Lake Inflow (AF/year)
1977	7,103	1	**3.0%**	**2002**	**1,717**
1978	40,743	2	6.1%	2007	2,841
1979	25,318	3	9.1%	1999	3,774
1980	42,336	4	12.1%	1988	4,551
1981	6,529	5	15.2%	1990	4,856
1982	25,310	6	18.2%	1989	4,967
1983	35,072	7	21.2%	1981	6,529
1984	10,569	8	24.2%	2001	6,915
1985	9,497	9	27.3%	2000	6,930
1986	13,812	10	30.3%	1977	7,103
1987	8,005	11	33.3%	1987	8,005
1988	4,551	12	36.4%	2003	8,295
1989	4,967	13	39.4%	2004	8,404
1990	4,856	14	42.4%	1997	8,757
1991	11,658	15	45.5%	1985	9,497
1992	15,543	16	**48.5%**	**1984**	**10,569**
1993	**48,613**	17	**51.5%**	**1994**	**11,015**
1994	11,015	18	54.5%	1991	11,658
1995	33,340	19	57.6%	1996	13,119
1996	13,119	20	60.6%	1986	13,812
1997	8,757	21	63.6%	2008	**14,182**
1998	34,600	22	66.7%	1992	15,543
1999	3,774	23	69.7%	2006	17,564
2000	6,930	24	72.7%	1982	25,310
2001	6,915	25	75.8%	1979	25,318
2002	**1,717**	26	78.8%	1995	33,340
2003	8,295	27	81.8%	1998	34,600
2004	8,404	28	84.8%	1983	35,072
2005	39,600	29	87.9%	2005	39,600
2006	17,564	30	90.9%	1978	40,743
2007	**2,841**	31	93.9%	1980	42,336
2008	**14,182**	32	**97.0%**	**1993**	**48,613**

1977 - 2008		**32**
Maximum	**48,613**	
Average	**16,423**	
Median	**10,792**	
Minimum	**1,717**	

Beginning in June, the staff visited the site every two weeks and made velocity and water depth measurements. From these measurements, they used two methods to estimate the flow at Station A. Flow estimates ranged between 11.8 cfs and 2.3 cfs. Consequently, in 2005 Station A was well in compliance with the 1.20 cfs, seven-day flow requirement.

During the summer and fall of 2005, Big Bear MWD repaired the weir plate, cleaned out the stilling basin, and installed a battery operated, pressure transducer to record flow information during the winter and early spring months. In the spring of 2006, when weather conditions permitted, Big Bear MWD retrieved the information and calculated the 2005-06 winter flows at Station A. From May through September 2006, Big Bear MWD retrieved the data and calculated the flows monthly. Flows at Station A ranged from a low of 2.75 cfs to a high of 10 cfs, all well above the 1.2 cfs requirement.

To measure the flow at Station B, Big Bear MWD installed a permanent weir structure. The weir plate is a compound weir with a v-notch section and a rectangular section. It is attached to a reinforced concrete structure in the riverbed. The v-notch section has a flow range of 0 to 0.44 cfs and the rectangular section has a flow range of 0.44 to 5.03 cfs. A water level transmitter is located in a stilling well just upstream of the weir structure. The water level data are transmitted to a remote telemetry unit (RTU) located in the control building at the dam. From there, data are transmitted to a central computer at the administrative offices of Big Bear MWD where average daily flow rates at Station B are calculated based on the rating curve of the weir plate. In 2006, Station B was out of service or not functioning properly for two extended periods. The first period was from December 21, 2005 through January 13, 2006. The second period was from April 15 to September 20. On September 20, 2006, a new measurement probe was installed and calibrated, and flow measurements at Station B resumed.

During 2005, Big Bear MWD, working with State Water Resources Control Board (SWRCB) and the State Department of Fish and Game, developed a proposed plan to keep Station A in compliance with both the 1.0 cfs average daily flow requirement and the 1.2 cfs seven-day average flow requirement. This proposed plan involves increasing the Station B flow requirements to insure the Station A requirements are met. The new Station B requirements vary by month and hydrologic year type. The hydrologic year type is based on year-to-date precipitation at Bear Valley Dam. Water years (October 1 to September 30) are used to determine the hydrologic year type. The plan is presented in the following table. The plan was approved by the SWRCB on January 08, 2008.

Table to Determine Minimum Average Daily Flows at Station B
Based Upon Year-to-Date Precipitation at Bear Valley Dam

Date	Enter Year-to-date Precipitation at Bear Valley Dam (inches)	Dry Year		Below Normal Year		Above Normal Year		Wet Year	
		If year-to-date precipitation is less than (inches)	Station B Minimum Flow is (cfs)	If year-to-date precipitation is between (inches)	Station B Minimum Flow is (cfs)	If year-to-date precipitation is between (inches)	Station B Minimum Flow is (cfs)	If year-to-date precipitation is more than (inches)	Station B Minimum Flow is (cfs)
October 1	0.00	n.a.	0.95	n.a.	0.95	n.a.	0.95	n.a.	0.95
November 1		0.03	0.90	0.03 and 0.56	0.90	0.57 and 1.93	0.70	1.93	0.70
December 1		1.59	0.85	1.59 and 3.04	0.85	3.05 and 5.60	0.80	5.60	0.60
January 1		3.73	0.90	3.73 and 8.14	0.75	8.15 and 12.84	0.75	12.84	0.30
February 1		8.94	1.00	8.94 and 13.84	0.85	13.85 and 20.79	0.50	20.79	0.30
March 1		14.42	0.80	14.42 and 20.05	0.40	20.06 and 31.47	0.40	31.47	0.30
April 1		19.29	0.75	19.29 and 25.84	0.50	25.85 and 40.30	0.40	40.30	0.30
May 1		21.61	0.95	21.61 and 28.65	0.70	28.66 and 41.16	0.55	41.16	0.30
June 1		22.18	1.15	22.18 and 30.01	0.80	30.02 and 41.86	0.75	41.86	0.30
July 1		22.42	1.20	22.42 and 30.01	0.95	30.02 and 41.86	0.95	41.86	0.30
August 1		22.93	1.25	22.93 and 30.69	1.05	30.70 and 42.48	0.95	42.48	0.30
September 1		23.30	1.00	23.30 and 30.86	0.95	30.87 and 43.69	0.95	43.69	0.30

Starting in December of 2005, Big Bear MWD has been following the proposed flow requirements for Station B. Based on the above table and the actual year-to-date precipitation at Bear Valley Dam, the proposed minimum flow requirements at Station B in 2008 were as follows.

Month 2008	Hydrologic Condition	Minimum Flow (cfs)
January	Below Normal	0.75
February	Wet	0.30
March	Wet	0.30
April	Above Normal	0.40
May	Above Normal	0.55
June	Above Normal	0.75
July	Above Normal	0.95
August	Above Normal	0.95
September	Above Normal	0.95
October	Below Normal	0.95
November	Below Normal	0.90
December	Normal	0.85

Flows at Station B normally consist of leakage from the dam and spillway gates, releases and leakage from the outlet works, spills from the lake, and inflows and consumptive losses between the dam and Station B.

To handle the SWRCB Order No 95-4 lake release and in-lieu delivery conditions, the Watermaster Committee, in 2002, clarified the accounting procedures. In 2003, the Watermaster made further improvements to these procedures. In 2005, they made a further change to better reflect actual lake management. This change was to include leakage with the flows from the outlet works in the accounting for flows to meet SWRCB Order 95-4. For the lake accounts, the accounting procedures are:

1. The outlet works flows and dam leakage will be deducted from both Mutual's and BBMWD's lake accounts in proportion to the amount of water in their respective lake accounts on days when Mutual is not fully utilizing all the flow in the Santa Ana River at the point of diversion to the forebay of SCE Power Plant No. 1.

2. The outlet works flows and dam leakage releases will be deducted entirely from Mutual's lake account on days when:
    a) Mutual is fully utilizing all the flow in the Santa Ana River,
    b) Mutual is requesting releases from the lake and BBMWD is releasing water from the lake or providing in-lieu supplies, and
    c) Mutual is purchasing SWP.

The term "fully utilized" is defined as days when the "net amount" of water the SBVWCD diverted from the forebay of SCE Power Plant No. 3 is less than the amount of the fish release. The "net amount" of water diverted from the forebay is defined as the actual amount diverted by SBVWCD for groundwater recharge less the amount of water delivered to the forebay by the Bear Valley Pick-up on the Santa Ana River below Seven Oaks Dam.

The input data and allocation of releases under SWRCB Order No. 95-4 in Table 2.C of Appendix B reflect the above procedures.

For the Basin Compensation Account, the accounting procedures are:

1. Under a Big Bear MWD operation, the actual fish releases used by Mutual under Item 2 above will be considered a "release actually made under District Operation (R_d)" and the actual releases under Item 1 above will be treated as "spills which actually occurred under District Operation (S_d)".

2. Under a Mutual operation, the fish releases used by Mutual under Item 2 above will be considered a "release which would have been made under a Mutual Operation (R_m)", and the releases allocated to Mutual under Item 1 above will be considered a "spill which would have occurred under a Mutual Operation (S_m)."

Tables 4.A and 4.B of Appendix B reflect these accounting procedures.

The Watermaster Committee will continue to work on these accounting procedures to make sure they will be accurate for all possible river flow and diversion conditions that could occur in future years.

Dam and Spillway Gate Leakage

Minor leakage through the dam and spillway gates occurs in Bay 1 and Bay 10. The structural reinforcement project completed in 2008 eliminated the leakage from cracks in the upper arches

of Bays 5, 6 and 8. For 2008, the lake level was above the spillway crest (Elevation 6731.00 feet) for the entire year so some minor leakage occurred. In addition, on December 3, 2008 the spillway gate was opened a small amount to allow the 6-inch release line to be closed while divers were inspecting the dam. The estimated monthly leakages are shown in **Table III-4**. The total leakage for 2008 was estimated to be only 11.4 acre-feet.

Outlet Works Releases and Leakage

Water is released from the lake through an outlet works. These releases can be for flood control purposes, for Mutual, or for fishery protection in accordance with SWRCB Order No. 95-4. Releases are made either through a 36-inch outlet works or a 6-inch bypass pipeline that is connected to the 36-inch outlet works. A 36-inch butterfly valve is the primary control mechanism on the outlet works. Flows in the outlet works are measured by an in-line 36-inch flow meter that was installed on the outlet piping downstream of the butterfly valve in December 1993 to replace an older meter. The new meter is an Electromatic Flow Meter Model 655 manufactured by Sparling Instruments, Inc. Downstream of the flow meter the outlet works split into a 24-inch pipeline and a 14-inch pipeline. Flow through these two pipelines is controlled by two motorized sluice gates. The two sluice gates are 24-inch by 24-inch and 14-inch by 14-inch. The 36-inch meter was calibrated with an accuracy of ± 0.5 percent between 7.07 and 212 cfs. When the sluice gates were fully opened and the lake was full, the meter measured a flow of 256 cfs, which is the maximum that can be discharged through the outlet works. The rate of flow and totalized flow are recorded at the flow meter and also at the control building. There is usually a small amount of leakage through the two sluice gates.

There is also a 2-inch relief line and valve on the 36-inch outlet pipeline. During the winter months this valve is usually opened to allow a small amount of flow to pass through the 36-inch pipeline and prevent the water in it from freezing.

TABLE III-4
ESTIMATES OF
MONTHLY DAM LEAKAGE
(acre-feet)
Calendar Year 2008
Big Bear Watermaster

Month	Dam Leakage Estimates (AF)
January	0.7
February	0.6
March	0.7
April	0.7
May	0.8
June	0.9
July	1.0
August	1.0
September	1.1
October	1.1
November	1.1
December	1.7
Annual Total	**11.4**

Flow through the 6-inch bypass pipeline was metered beginning April 12, 2008 when Big Bear MWD installed a flow meter on this bypass pipeline.

In 2008, Big Bear MWD did not release any water from the lake for flood control purposes or to meet Mutual's request for lake water. All releases were made to comply with SWRCB Order No. 95-4.

Table III-5 summarizes the monthly amounts of water discharged (both leakage and releases) from the outlet works (the 6-inch bypass pipeline, the 2-inch relief line, and the two sluice gates) in 2008. The total from the outlet works in 2008 was estimated to be 565.0 acre feet.

Spills

Spills are flows that leave the lake over the spillway of the dam. They are calculated from lake gage height readings and spillway gate settings at the dam during the time of the spill. In 2008, there were no flows over the spillway of the dam, except for a small release on December 3.

Station B Flows

Leakage estimates and outlet works flows were confirmed by comparing the sum of leakage plus the amount released from the lake through the outlet works with the flow measured at Station B, which is 300 feet downstream of the dam. The differences can be either gains or losses. Although small, these differences illustrate the impacts of rainfall/snowfall and plant evapotranspiration between the dam and Station B. **Table III-6** shows this comparison. In 2008, the measured flow at Station B was 39.7 acre-feet more than the estimated amount leaving Big Bear Lake from releases, leakage and spills. In January, February, March and April, flows from rainfall and snowmelt between the Dam and Station B increased the flows at Station B above the amount leaving the Lake. In May, June, July and August, evapotranspiration losses between the Dam and Station B decreased the amount of water reaching Station B to less than the amount leaving the Lake. In September, October, November and December, there were problems with the measurements at Station B. These problems included vandals placing rocks in front of the weir, excessive weed growth in the stilling basin, and calibration issues with the water level probe in the stilling basin. Normally, there are very little gains or losses between the dam and Station B during these months. Consequently, the estimates of the flows from the dam are a better estimate of the flow at Station B than the measured values.

TABLE III-5
MONTHLY DISCHARGES FROM
THE OUTLET WORKS OF BEAR VALLEY DAM
(acre-feet)
Calendar Year 2008
Big Bear Watermaster

Month	Flood Control Releases (AF)	Mutual Releases (AF)	SWRCB Discharges (AF)	Total Discharges (AF)
January	-0-	-0-	48.4*	48.4
February	-0-	-0-	8.7*	8.7
March	-0-	-0-	7.6*	7.6
April	-0-	-0-	14.9*	14.9
May	-0-	-0-	36.3*	36.3
June	-0-	-0-	58.3*	58.3
July	-0-	-0-	61.5*	61.5
August	-0-	-0-	66.7*	66.7
September	-0-	-0-	64.2*	64.2
October	-0-	-0-	70.6*	70.6
November	-0-	-0-	61.7*	61.7
December	-0-	-0-	66.1*	66.1
Total	**-0-**	**-0-**	**565.0**	**565.0**

* These releases were also used to partially or wholly meet Mutual's needs for lake water.

TABLE III-6
COMPARISON OF FLOWS AT STATION B
WITH ESTIMATED LEAKAGE,
FLOWS FROM OUTLET WORKS AND SPILLWAY FLOWS
(acre-feet)
Calendar Year 2008
Big Bear Watermaster

Month	Dam Leakage Estimates (AF)	Outlet Works Estimated Discharges (AF)	Spillway Gate Releases (AF)	Total Outflow From Lake (AF)	Station B Estimates (AF)	Gain or (Loss) (AF)
January	0.7	48.4	-	49.1	57.7	8.5
February	0.6	8.7	-	9.3	26.7	17.3
March	0.7	7.6	-	8.2	29.8	21.6
April	0.7	14.9	-	15.7	27.8	12.2
May	0.8	36.3	-	37.1	36.1	(1.0)
June	0.9	58.3	-	59.2	52.9	(6.3)
July	1.0	61.5	-	62.5	56.3	(6.3)
August	1.0	66.7	-	67.7	63.5	(4.2)
September	1.1	64.2	-	65.3	74.4	9.1
October	1.1	70.6		71.7	64.5	(7.2)
November	1.1	61.7	-	62.7	64.1	1.4
December	1.7	66.1	-	67.8	62.5	(5.3)
Annual Total	**11.4**	**565.0**	**-**	**576.4**	**616.2**	**39.7**

Lake Withdrawals for Snowmaking

Big Bear MWD sells water from Big Bear Lake for use in snowmaking, fire protection and revegetation for ski areas within the watershed. In 2008, 541 acre-feet of water was withdrawn from the lake for these purposes. The withdrawals for snowmaking occurred in six winter months (January, February, March, April, November and December). The withdrawals for fire protection and revegetation occurred in six summer and fall months (May, June, July, August, September and October). The Watermaster estimates that half of the monthly amount pumped from the lake for snowmaking in the winter months returns to the lake in the form of snowmelt during the same month. In the summer and fall months, 37 acre-feet of water was used and none was returned to the lake. In 2008, the withdrawal from the lake for snowmaking was 504 acre-feet and 252 acre-feet returned to the lake. The "net withdrawal" for all purposes was 289 acre-feet.

Net Wastewater Exports

The Watermaster Committee calculates "net" wastewater exports as the difference between the wastewater that leaves the Big Bear Lake watershed and the water supply that is imported into the Big Bear Lake watershed from the Baldwin Lake watershed. The methodology used to make these calculations is documented in a report entitled "Development of a Methodology for Estimating Gross Sewage Export from Upper Bear Creek Watershed", prepared by James M. Montgomery, Consulting Engineers, Inc., in September 1989 for Big Bear Municipal Water District.

Wastewater is exported from the Big Bear Lake watershed to the Baldwin Lake watershed from the following three areas:

- City of Big Bear Lake
- San Bernardino County Service Area 53B
- Airport area served by Big Bear City CSD

Wastewater flows from the first two areas are measured by the Big Bear Area Regional Wastewater Authority (BBARWA). Wastewater flows from the airport area within the Big Bear Lake watershed are estimated based upon the number of connections in the area.

Water is imported into the Big Bear Lake watershed from the Baldwin Lake watershed by the following three activities:

- City of Big Bear Lake imports groundwater from the Baldwin Lake watershed.
- Big Bear City CSD provides water to the airport area from the Baldwin Lake watershed
- Big Bear City CSD occasionally provides emergency water to the City of Big Bear Lake

The City of Big Bear Lake imported supplies and emergency supplies are both metered, while the airport area supplies are estimated based on the number of service connections.

In 2008, the "net" wastewater exported from the Big Bear Lake watershed was 1,207 acre-feet. **Table III-7** contains the 2008 monthly net exports. The 2008 net exports were more than the 2007 net exports. The reason for the increase was higher estimated inflow and infiltration (I&I) into the sewer system in 2008, which reflects the higher lake levels and near average runoff in 2008.

SANTA ANA RIVER

Bear Valley Mutual Water Company Water Needs

Mutual meets the water needs of its shareholders primarily by diverting water from the Santa Ana River. When river flow is inadequate to meet their needs, Mutual can call upon water stored in Big Bear Lake, pump ground water from the San Bernardino ground water basin, buy State Water Project (SWP) water from San Bernardino Valley MWD, or reduce the delivery rate to its shareholders.

In 2008, Mutual reported they would need about 4,800 acre-feet of water from Big Bear MWD in addition to the portion of the SWRCB releases they could beneficially use. Their intent was to reach their limit of 65,000 acre-feet of deliveries from BBMWD for the ten-year period ending in 2008. Mutual met their overall 2008 water needs by in-lieu supplies from Big Bear MWD, diversions from the Santa Ana River, purchases of SWP water, and local groundwater. Mutual also got some water from lake releases and dam leakage for fish protection in Bear Creek.

TABLE III-7

NET WASTEWATER EXPORTS
(acre-feet**)**
Calendar Year 2008
Big Bear Watermaster

Month	**Net Wastewater Exports (acre-feet)**
January	154.7
February	208.0
March	197.5
April	99.0
May	80.0
June	63.3
July	70.8
August	76.5
September	47.7
October	52.9
November	66.0
December	91.3
Total	**1,207.1**

Summary of Flows and Diversions at Mouth of the Santa Ana River Canyon

Exhibit D, Section 1(f) of the Judgment calls for data to be included in each Watermaster annual report summarizing the river flows at the mouth of the Santa Ana River Canyon and diversions at the mouth of the Santa Ana River Canyon. Specifically, it requests quantities of water diverted into the following facilities:

1. Bear Valley High Line
2. Redlands Canal
3. North Fork Canal
4. Edwards Canal
5. San Bernardino Valley Water Conservation District Spreading Grounds

Exhibit D also requires the annual report to estimate the amount of Santa Ana River flow not diverted for beneficial use. **Table III-8** contains this information for 2008.

Flow of Santa Ana River at Mouth of Canyon

The United States Geological Survey (USGS) reports flow in the Santa Ana River at the mouth of the Santa Ana Canyon under Station No. 11051501. This station is the combination of flow records from three gages (USGS Station No. 11049500, 11051499, and 11051502). Flow in the flume between the afterbay of SCE Power House No. 1 (SCE Power House No. 2 was removed due to the construction of Seven Oaks Dam) and the forebay of SCE Power House No. 3 is estimated by USGS using the Daily Flow Report provided by the San Bernardino Valley Water Conservation District and verified by a new meter installed by SCE and reported as Station No.11049500. Note that this derived estimate does include the overflow from the old SCE Powerhouse No.3 forebay as reported on the Daily Flow Report. In addition, the USGS maintains two gauging stations near the mouth of the Santa Ana River Canyon below Seven Oaks Dam. Station No. 11051499 measures the flow in the main river channel while Station No. 11051502 measures river flow diverted into the afterbay of SCE Power House No. 3 through the Bear Valley River Pick-up. The records from these three sources are summarized and reported as the total flow in the Santa Ana River, USGS Station No. 11051501.

During 2008, the total river flow reported by the USGS, currently provisional, was 32,680 acre-feet. However, measurements at Station No. 11049500 include the amount of groundwater pumped by Mutual and discharged into the flume above the gage. Thus, to get the actual Santa Ana River Flow, the canyon well production must be deducted from the reported flows. In 2008, canyon well production was 182 acre-feet. The resulting river flow below Seven Oaks Dam was 32,498 acre-feet in 2008. However, this figure reflects storage change in the reservoir behind

TABLE III-8

SUMMARY OF DIVERTED FLOW AT MOUTH OF SANTA ANA RIVER CANYON
(ACRE-FEET)
Calendar Year 2008
Big Bear Watermaster

Flow Component		Amount (AF)
FLOW OF SANTA ANA RIVER AT MOUTH OF CANYON		
Flow Reported for U.S.G.S. Gage 11051501-provisional		32,680
BVMWC Canyon Well No. 1 Production		-182
Santa Ana River Flow Below Seven Oaks Dam		**32,498**
Annual Storage Change in Seven Oaks Dam		300
Santa Ana River Flow at Mouth of Canyon		**32,198**
DIVERSIONS BY BEAR VALLEY MUTUAL WATER COMPANY		
Diversions:	Greenspot Metering Station	-0-
	Edwards Line	1,214
	North Fork Canal	1,488
	Bear Valley Highline	1,197
	Redlands Aqueduct (includes Redlands Tunnel)	-0-
	SBVMWD Morton Canyon Connector Deliveries	-0-
	Redlands Sandbox Spreading (observed)	330
		14,326
Adjustments:	Water pumped from BVMWC Canyon Well No. 1	-182
	Redlands Tunnel Diversion	-625
	Total MUTUAL Diversions	**13,519**
DIVERSIONS BY SBVWCD		
	Diversion by San Bernardino Valley Water Conservation District	17,024
	SBVMWD Morton Canyon Connector Deliveries to SBVWCD	-0-
	Total SBVWCD Diversions	**17,024**
TOTAL DIVERSIONS FROM THE SANTA ANA RIVER		
Total Diversions by Mutual and SBVWCD		**30,543**
AMOUNT NOT DIVERTED		
Santa Ana River Flow at Mouth of Canyon		**32,198**
Mutual and SBVWCD Diversions		**- 30,543**
Amount Diverted to Storage Behind Seven Oaks Dam		**-300**
Estimated Not Diverted		**1,955**
Estimated Flow Downstream of Diversion*		**-0-**
Estimated Losses and Measurement Errors **		**1,955 or 6.1%**

* This value equals the amount observed at the Greenspot Road Bridge.
** See written text for explanation

Seven Oaks Dam. In 2008, an estimated 300 acre-feet of river flow was taken from storage behind the dam. This water had been stored in 2007. Thus, the estimated flow of the Santa Ana River at the mouth of the canyon was 32,198 acre-feet in 2008.

Diversions by Bear Valley Mutual Water Company

Amounts diverted by Mutual and associated prior right companies are reported to the State Water Resources Control Board under Recordation Numbers 36-00021, 36-00022 and 36-00028. In 2008, Mutual's measured diversions were 14,326 acre-feet. The vast majority, 13,519 acre-feet, was water diverted from the Santa Ana River. They also pumped 182 acre-feet of groundwater from their well located in the Santa Ana Canyon above the major points of diversion. In addition, 625 acre-feet of water was produced from the Redlands Tunnel. These diversions were used for agricultural and domestic purposes. In 2008, domestic deliveries were made to the City of Redlands for their Horace P. Hinckley Water Treatment Plant and to East Valley Water District's water treatment plant.

Diversions by San Bernardino Valley Water Conservation District

Water diverted by the San Bernardino Valley Water Conservation District for groundwater recharge is by virtue of licenses and pre-1914 rights; all diversions are reported to the State Water Resources Control Board. In 2008, they diverted 17,024 acre-feet of Santa Ana River water for ground water recharge.

Amount Not Diverted

In years prior to 1996, the sum of the diversions mentioned above was subtracted from the total river flow, as reported by USGS Gage 11051501, to determine the "Amount Not Diverted". Since 1977, this difference has been reported as the "Amount Not Diverted", which is supposed to be the amount of water that flowed past the mouth of the Santa Ana River Canyon without being diverted for beneficial use.

Losses and Measurement Errors

During preparation of the 1996 report, the Watermaster Committee discovered significant discrepancies between the value for "Amount Not Diverted", as calculated by the method contained in previous Watermaster Reports, and observed flows in the Santa Ana River just downstream from the last diversion point. Since 1994, San Bernardino Valley Water Conservation District staff have been estimating the amount of water flowing past the Greenspot

Road Bridge at the Cuttle Weir, which is just downstream from the mouth of the Santa Ana River Canyon, on a daily basis. In past years the difference between the estimated flows at the Greenspot Road Bridge and the "Amount Not Diverted" were significantly different. The Watermaster has conducted extensive research with regards to the discrepancy and provided the following five explanations:

1. Leakage Losses between Inflows and Outflows. The first explanation was unmeasured losses between the points where inflows and outflows are measured. These include:

    1. Leakage in the tailrace from SCE Power House No. 3 afterbay,
    2. Leakage in the Redlands Aqueduct between SCE Power House No. 3 afterbay and the Redlands Sandbox, and
    3. Leakage around the Redlands Sandbox weir.

2. Unmeasured Diversions. The second explanation was that Mutual can divert water for spreading at the Redlands Sandbox without it being measured. San Bernardino Valley Water Conservation District staff now observes and reports this diversion on a daily basis. These estimates are based on known flows delivered to the Redlands Sandbox and are fairly accurate. This possible source of error has been corrected and the amount diverted for spreading is included in Table III-8.

3. USGS Gage Accuracy. The third possible explanation for the disparity is the accuracy of the USGS flow records. The USGS reports that this combined flow measurement of three gage stations is considered to have an accuracy rating of "fair". A "fair" rating means that 95 percent of the daily discharge measurements are within 15 percent of the true value. According to Jeffrey Agajanian of the USGS, this means the error band for the entire year should be within approximately 15 percent of the total measured flow. This value is a conservative estimate of the possible measurement errors and the flow is likely to be well within this error band, especially during the summer months when flows are generally constant and lower.

4. Water Delivery Flow Measuring Device Accuracy. A fourth reason for the difference could be inaccuracies in the diversion measuring devices, which should be less than +/- 10 percent at any given time. Most of these measurements are obtained through the use of stable, long-term weirs and parshall flumes, but small, though not insignificant, errors are possible. Some of the measurement devices provide daily readings and are equipped with totalizer equipment providing monthly data. The San Bernardino Valley Water Conservation District (SBVWCD) will continue to update totalizer equipment on any of the measurement devices that are not equipped with totalizer equipment. The SBVWCD is developing a program to maintain

and verify the accuracy of the existing measuring devices. These activities will help minimize errors in diversion measurements.

5. Observed Flow at the Cuttle Weir. A fifth possible explanation was the accuracy of the flow estimates at the Cuttle Weir. These estimates are based on daily flow observations. Total flow quantities are difficult to determine because of the high degree of short-term variability in the river flows during storm events.

The construction of the Seven Oaks Dam required the reconstruction of the SCE flume between the old Power House No. 2 and No. 3. This eliminated any losses in the flume from the old Power House No. 2 and No. 3 and required the USGS to move Station No. 11049500 to the old forebay of Power House No. 3. Flow at this station is estimated by using the Daily Flow Report provided by the San Bernardino Valley Water Conservation District and is reported as Station No. 11049500. As of August 2001, SCE has installed a new meter in the forebay of Power House No. 3. In addition, improved efforts were taken to monitor diverted water at the Redlands Sand Box for ground water recharge and observed flows at the Cuttle Weir. The Watermaster has concluded that these efforts have reduced the losses and measurement inaccuracies such that the large errors that occurred in the past should no longer occur.

6. Storage Behind Seven Oaks Dam. There is, however, an additional factor that must be considered when the Watermaster Committee estimates the "amount not diverted". This factor is the amount of water that has been stored behind Seven Oaks Dam (SOD) and not released by year-end. This stored water is Santa Ana River flow that has not yet been measured by the two USGS stream gages below the dam. In addition, water stored behind the dam from inflow in the previous year and released in the current year must also be taken into account. The amount stored behind SOD at the end of 2007 was 1,219 acre-feet (water surface elevation of 2,171.69 feet). The amount stored behind SOD at the end of 2008 was 919 acre-feet (water surface elevation of 2,167.94 feet). The water stored behind the dam from inflow in the previous year and released in the current year was 300 acre-feet. This amount was included in the USGS provisional value of 32,680 acre-feet.

2008 Estimate of Amount Not Diverted

In 2008, San Bernardino Valley Water Conservation District did not observe any river flow past the Cuttle Weir at the Greenspot Road Bridge. Therefore, their estimate of the amount not diverted was zero acre-feet. In other words, all of the flow in the Santa Ana River was diverted in 2008. The Santa Ana River flow is estimated as the total flow reported by the USGS less the canyon well production less Santa Ana River flow taken from storage behind Seven Oaks Dam.

In 2008, the estimated Santa Ana River flow was 32,198 acre-feet. The total diversion of Santa Ana River flow by Mutual and San Bernardino Valley Water Conservation District was 30,543 acre-feet. In addition, 300 acre-feet was taken from storage behind Seven Oaks Dam. The difference between estimated inflow and total diversions is 1,995 acre-feet.. Comparing this difference with the observed flow at Greenspot Road bridge (zero), results in leakage losses and measurement errors of 1,955 acre-feet. These losses and errors represent 6.1 percent of the estimated Santa Ana River flow and are within the probable error range of the flow measurements. The most probable sources of error are the flow measurements of the Santa Ana River.

Lake Releases/In-Lieu Water Deliveries

Santa Ana River flows are often insufficient to meet Mutual's water needs; as a result, they frequently request lake releases from Big Bear MWD to meet their needs. Big Bear MWD has the choice of releasing water from the lake or providing an in-lieu supply. At their meeting on May 1, 1987, the Board of Directors of the Big Bear Municipal Water District voted unanimously to approve the following policy for providing in-lieu supplies.

"1. Adopt the following 1987 in-lieu policy:

A. When the lake is in the top 4 feet, the irrigation demands from the lake will be met by releasing water from Big Bear Lake.

B. When the lake is between 4 feet and 6 feet down, the District intends to purchase in-lieu water between the months of May 1st and October 31st from either wells or the State Water Project; between November 1st and April 30, water required would be released from Big Bear Lake.

C. When the lake is between 6 and 7 feet down, the Board shall determine whether to release from the lake.

D. In the unlikely event that the lake is more than 7 feet down, the District intends to buy in-lieu water throughout the year.

E. The General Manager shall inform the Board each time water is released.

On November 16, 2006, the Board of Directors of BBMWD modified their Lake Release Policy to eliminate items C, D and E and to use in-lieu water whenever the lake is more than 6 feet below full. The revised Lake Release Policy is:

1. *When the Lake is within the top 4 feet, the water demands from Bear Valley Mutual will be met with Lake releases;*

2. *When the Lake is between 4 and 6 feet below full, the District intends to obtain in-lieu water between the months of May 1 and October 31. Between November 1 and April 30, water required would be released from Big Bear Lake;*

3. *When the Lake is more than 6 feet below full, the District intends to obtain in-lieu water throughout the year.*

In 2008, the lake level was below 6 feet down until January 7. It was between 6 feet and 4 feet down between January 7 and March 17. From March 17 through June 5 it was in the top four feet. From June 5 through September 24, it was between 4 feet and 6 feet down. From September 26 through the end of the year, the lake level was more than 6 feet down.

Mutual received 5,108 acre-feet of water from Big Bear MWD in 2008. This year Mutual's needs were met by in-lieu deliveries of SWP water and water discharged from the lake for fishery protection under SWRCB Order No. 95-4. Mutual also purchased 263 acre-feet of SWP water. **Table III-9** shows Big Bear MWD monthly water deliveries to Mutual during 2008 under the assumption that the SWP in-lieu deliveries were made before Mutual purchased SWP water. In total, Big Bear MWD provided 5,108 acre-feet of water to Mutual. This amount consists of 4,634 acre-feet of in-lieu supplies and 474 acre-feet of water they were able to use from the fish outflows.

The amount of water Big Bear MWD is obligated to deliver to Mutual is limited by the Judgment. According to the Physical Solution Agreement, Article III.A.1.(b), Mutual has the right to:

> *"divert water, or cause water to be diverted, at such rate as may be reasonably necessary to meet the requirements of Mutual's stockholders, not exceeding 65,000 acre-feet in any ten (10) year period, as determined by the Board of Directors of Mutual in its sole discretion."*

TABLE III-9
WATER DELIVERIES TO MUTUAL BY
BIG BEAR MUNICIPAL WATER DISTRICT
(acre-feet)
Calendar Year 2008
Big Bear Watermaster

Month	Outflows from Big Bear Lake to Mutual	"In Lieu" State Water Project	Total Deliveries to Mutual
January	4.2*	-0-	4.2
February	-0-	-0-	-0-
March	4.9*-	-0-	4.9
April	15.7*	-0-	15.7
May	37.1*	41.9	79.0
June	59.2*	37.2	96.4
July	62.5*	746.6	809.1
August	67.7*	1,060.1	1,127.8
September	65.3*	930.8	996.1
October	71.7*	994.2	1,065.9
November	54.4*	822.8	877.2
December	31.9*	-0-	31.9
Total	**474.6**	**4,633.6**	**5,108.2**

* Also required to comply with SWRCB Order No. 95-4

Table III-10 summarizes the deliveries to Mutual since the agreement went into effect. For the ten-year period ending with calendar year 2008, the amount of water delivered to Mutual by Big Bear MWD was 65,000 acre-feet. For the 32-year period the Judgment has been in effect, the average annual deliveries by Big Bear MWD to Mutual has been 4,238 acre-feet. In 2009 Mutual can request up to 10,706 acre-feet of water from Big Bear MWD. This value is the amount that they are below the 65,000 limitation at the end of 2008 (which was zero), plus the deliveries made in 1999 (which was 10,706 acre-feet). The 10,706 acre-feet total includes in-lieu deliveries, lake releases and fishery releases that Mutual is able to divert.

Mutual's Equivalent Water Diversions

Table III-11 shows the amount of water that Mutual would have diverted from the Santa Ana River if the Judgment had not been rendered. This figure is determined by adding the in- lieu water deliveries as reported in Table III-8 to the river diversions by Mutual and Mutual's groundwater production from their Canyon Wells No. 1 and 2, as shown in Table III-6. The value for river diversions includes the supply from the Redlands Tunnel. This equivalent diversion is the amount of Santa Ana River water Mutual would have diverted if their demands for water from Big Bear MWD had been met by lake releases. In 2008, Mutual's equivalent diversions were 18,960 acre-feet, which is about what it was when the Judgment was rendered in 1977.

TABLE III-10
SUMMARY OF WATER DELIVERIES TO MUTUAL
1977–2008
(acre-feet)
Calendar Year 2008
Big Bear Watermaster

Calendar Year	Releases From Big Bear Lake	SWRCB Releases to Mutual	"In Lieu" from Wells	"In Lieu SWP Purchases & Exchanges	"In Lieu" EVWD Exchange Water	"In Lieu" Delivery on BBMWD Owned Stock*	Total Deliveries to Mutual	Ten Year Totals
1977	868		4,412	0	0	0	5,280	N/A
1978	0		0	0	0	0	0	N/A
1979	0		0	0	0	0	0	N/A
1980	0		0	0	0	0	0	N/A
1981	2,250		0	672	0	0	2,922	N/A
1982	657		0	56	0	0	713	N/A
1983	0		0	0	0	0	0	N/A
1984	1,700		0	993	0	0	2,693	N/A
1985	2,466		842	2,994	0	0	6,302	N/A
1986	1,358		1,139	190	0	0	2,687	20,597
1987	0		3,301	4,762	0	84	8,147	23,464
1988	0		1,864	5,4	0	63	7,359	30,823
1989	0		1,593	8,555	0	0	10,148	40,971
1990	0		561	7,722	0	0	8,283	49,254
1991	79		0	0	151	0	230	46,562
1992	0		0	0	0	0	0	45,849
1993	0		0	0	0	0	0	45,849
1994	1,141		0	0	0	0	1,141	44,297
1995	88		0	0	0	0	88	38,083
1996	3,461		0	4,027	0	0	7,488	42,884
1997	364		0	6,780	0	0	7,144	41,881
1998	0		0	0	0	0	0	34,522
1999	124	147	0	10,436	0	0	**10,706**	35,080
2000	-0-	510	0	12,878	0	0	**13,388**	40,185
2001	46	493	48	14,212	0	0	**14,799**	54,754
2002	0	614	0	5,000	0	0	**5,614**	60,368
2003	0	484	0	0	0	0	**484**	60,853
2004	0	512	0	2,500	0	0	**3,012**	62,724
2005	0	146	0	2,218	0	0	**2,364**	65,000
2006	0	467	0	2,070	0	0	**2,537**	60,050
2007	0	486	0	6,500	0	0	**6,986**	59,892
2008	0	474	0	4,634	0	0	**5,108**	65,000

N/A = Not Applicable
* Not Authorized After 1988

TABLE III-11
EQUIVALENT WATER DIVERSIONS BY MUTUAL
1977–2008
(acre-feet)
Calendar Year 2008
Big Bear Watermaster

Calendar Year	Net Santa Ana River Diversion by BVMWC*	Groundwater Production From Wells No. 1 & 2	Big Bear MWD In-Lieu Deliveries	Equivalent Total Water Diversions
1977	14,420	1,546	4,412	20,378
1978	16,809	282	-	17,373
1979	19,470	114	-	19,584
1980	20,479	188	-	20,667
1981	20,449	1,130	672	22,251
1982	18,565	246	56	18,867
1983	19,209	53	-	19,262
1984	23,392	739	993	25,124
1985	19,837	872	3,836	24,545
1986	23,160	894	1,9	25,383
1987	16,373	947	8,147	25,467
1988	14,170	612	7,359	21,141
1989	11,449	672	10,148	22,269
1990	11,242	1,576	8,283	21,101
1991	13,715	368	151	14,234
1992	16,840	97	-	16,937
1993	26,591	-	-	26,591
1994	23,819	594	-	24,413
1995	30,794	60	-	30,853
1996	19,529	1,131	4,027	24,687
1997	19,490	1,559	6,780	27,829
1998	26,625	105	-	26,730
1999	21,336	484	10,436	32,256
2000	17,171	2	12,878	30,371
2001	12,355	140	14,260	26,755
2002	8,007	58	5,000	13,065
2003	13,301	114	-	13,415
2004	11,815	67	2,500	14,382
2005	13,615	-	2,218	15,833
2006	18,733	-	2,070	20,803
2007	12,445	182	6,500	19,127
2008	14,144	182	4,634	18,960

* Includes Redlands Tunnel Diversions

IV. DETERMINATIONS AND ACCOUNTS

ACCOUNTING REQUIREMENTS

In accordance with Article 29 of the Judgment, "Watermaster shall maintain three basic accounts, in accordance with Watermaster Operating Criteria, as follows:

(a) District's Lake Water Operation. A detailed account to reflect actual operation of the Lake by District shall be maintained.

(b) Mutual's Lake Water Operations. In addition, a corollary account shall be maintained to simulate the effect of Mutual's operations with regard to Lake water under the In-Lieu Water operations.

(c) Basin Compensation Account. An account of District's annual and cumulative obligation for Basin Make-up Water shall also be maintained."

In 1986, the Watermaster Committee developed a computer program for keeping these accounts. This program was designed to operate on an IBM (or IBM compatible) personal computer using Lotus 1-2-3. To standardize all years of operations under the Judgment, all past accounts were re-calculated using the program and were included in the 1986 Annual Report.

In 1990, the Watermaster Committee decided how to account for wastewater exports from the Big Bear Lake watershed and delivery of water on Mutual stock owned by Big Bear MWD. Only the Basin Compensation Account was affected by these decisions. Consequently, the 1990 Watermaster Report contained revised tables for the Basin Compensation Accounts for calendar years 1986, 1987, 1988 and 1989, as well as the status of all the 1990 accounts.

For the 1994 report, the Watermaster Committee updated the accounting procedures to reflect 1994 Watermaster decisions and to clarify the reports.

In 1995, the Watermaster made several additional revisions to the accounting procedures. However, in preparing the 1996 accounts, the Watermaster Committee discovered some errors in the changes made in 1995. These errors were corrected and, as a result, the 1995 accounts were recomputed and were included in the 1996 Annual Watermaster Report.

2008 ACCOUNT BALANCES

Appendix B contains the 2008 accounts. The first four pages of the appendix present the input data used to calculate the various accounts. The fifth page summarizes the status of the various accounts. The remaining pages of Appendix B are the detailed monthly tables of the accounts.

Actual Lake Account

Figure 2 illustrates the water balance for the actual operation of Big Bear Lake in 2008. **Table 1** of Appendix B provides additional detail. This information shows that:

1) the lake level rose 0.66 feet, from a gage height of 65.37 feet to 66.03 feet; 72.33 feet is full;

2) lake storage increased by 1,857 acre-feet, it began the year with 53,748 acre-feet and ended the year with 55,605 acre-feet; when the lake is full, it contains 73.320 acre-feet of water;

3) lake surface area varied between 2,642 and 2,803 acres;

4) evaporation was 11,460 acre-feet;

5) lake inflow was 14,182 acre-feet,

6) the total of spills, releases, leakage and net lake withdrawals was 865 acre-feet.

Tables 1A through 1D provide additional details to support Table 1.

Mutual's Lake Account

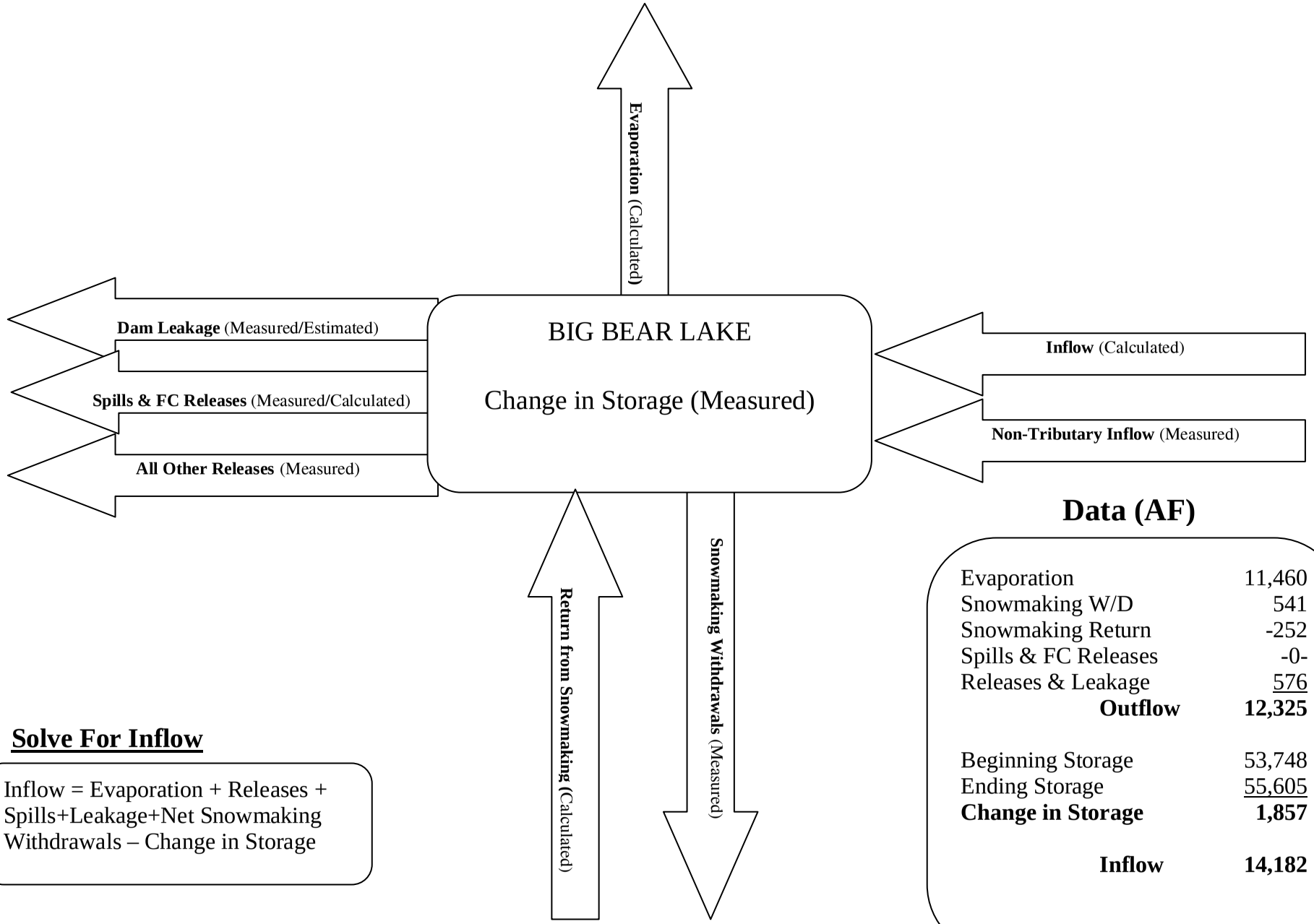
Figure 3 illustrates the water balance for Mutual's synthesized operation of Big Bear Lake in 2008. Mutual's operation shows what would have happened if:

1) Mutual had owned the lake,

2) the in-lieu program was not in place, and

3) the net wastewater exported from Big Bear Lake watershed entered the lake as supplemental inflow.

Figure 2
Water Balance for 2008 Actual Lake Operations



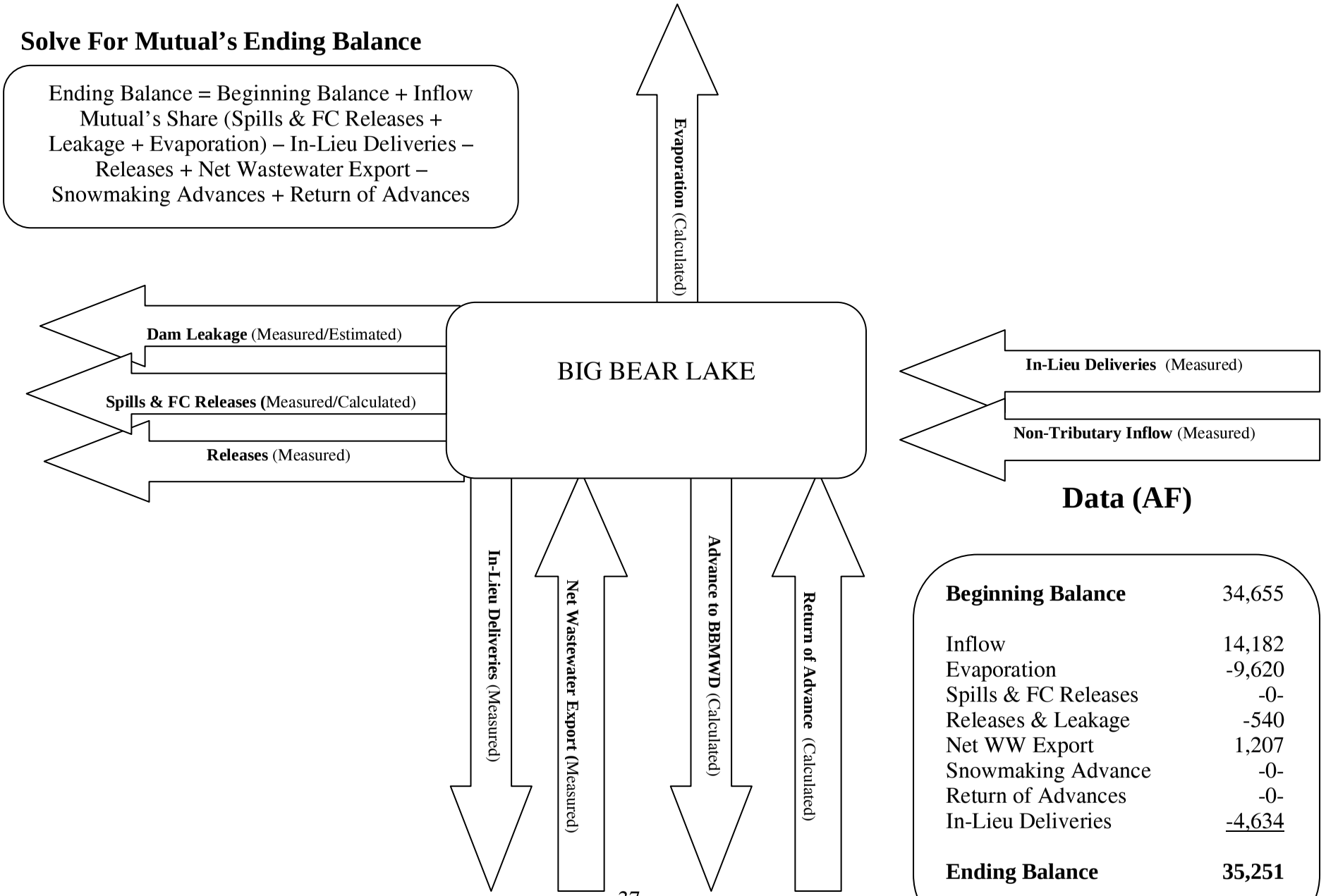
Data (AF)

Evaporation	11,460
Snowmaking W/D	541
Snowmaking Return	-252
Spills & FC Releases	-0-
Releases & Leakage	576
Outflow	**12,325**
Beginning Storage	53,748
Ending Storage	55,605
Change in Storage	**1,857**
Inflow	**14,182**

Solve For Inflow

Inflow = Evaporation + Releases + Spills+Leakage+Net Snowmaking Withdrawals – Change in Storage

Figure 3
Water Balance for 2008 Mutual's Lake Operation
(Synthesized Conditions)



In this synthesized case, Mutual's demands for lake water would have been met entirely from lake releases.

Figure 3 and Table 2 of Appendix B show that Mutual had 35,251 acre-feet in its lake account at the end of 2008. This account balance is 596 acre-feet more than was in their lake account at the end of 2007. Table 2 also shows that in 2008 Mutual's lake account was credited with all the lake inflow (14,182 acre-feet), and the total of their releases, spills, leakage and in-lieu deliveries was 5,173 acre-feet. Supplemental inflow added to Mutual's Lake Account for net wastewater exported from the basin was 1,207 acre-feet. In 2008, there were no advances to Big Bear MWD for snowmaking within the watershed. Evaporation that would have taken place under a Mutual operation was 9,620 acre-feet. The cumulative effect of changes in lake releases and supplemental inflows that would have taken place since 1977 under a "Mutual Operation" would be a lake level that would have been 57.60 feet at the end of 2008 or 14.73 feet below the top of the dam. This synthesized lake level is 8.43 feet lower than it actually was. This lower lake level reflects the impact of what Mutual's lake withdrawals would have been without the in-lieu program and with the credits they receive from the net wastewater exports. Tables 2A through 2C provide additional details to support Table 2.

Article 4.(b) of the Watermaster Operating Criteria (Exhibit "D" of the Judgment discusses how to handle the export of wastewater from and the import of water to the Upper Bear Creek Watershed. Specifically, it says:

> *In the event gross export from Upper Bear Creek Watershed to any area not tributary to the Santa Ana River Watershed within Upper Bear Creek Watershed, calculated inflow to the Lake shall be increased each year, beginning with the calendar year 1986 by the amount by which such gross export exceeds imports. If gross import exceeds gross export, said excess shall be credited against District's Basin Make-up Water obligation.*

In 1986, the Watermaster Committee decided to handle the net wastewater exports (gross exports-gross imports) entirely in the District's Basin Make-up water obligations. This decision was contingent upon implementation of a wastewater reclamation project in the Upper Bear Creek Watershed by December 31, 1994. A reclamation project was not implemented by that date so the Watermaster Committee, in 1994, decided to add the net wastewater credits to the calculated lake inflows effective January 1990. This decision adds the net wastewater credits to Mutuals lake account. Essentially, it transfers the amount of the credit from Big Bear MWD's lake account to Mutual's lake account.

Table IV-1 shows the impacts of crediting Mutual's lake account (and debiting Big Bear MWD's lake account) with the net wastewater exports. Since 1990, Mutual has been credited with 25,912 acre-feet of net wastewater exports. After 19 years of getting these credits, Mutual's lake account has 6,396 acre-feet more water than it would have had if it hadn't received the credits. This additional increase raised their simulated lake level by 3.15 feet. In other words, without the credits, Mutual's lake account would have been 28,855 acre-feet and their lake level would have ended the year 17.88 feet down, which would have been 11.58 feet below the actual lake level. This value is 3.15 feet lower than reported in Mutual's lake account tables.

There are two primary reasons why the increase in their lake account (6,396 acre-feet) is less than the cumulative credits they have received (25,912 acre-feet). The first reason is spills. When the lake fills, Big Bear MWD's water spills first, and then Mutual's water spills. The credits they receive will spill during very wet years, like 1998. The second reason is evaporation. Mutual's lake level increases with the credits. With higher lake levels, their share of the evaporation losses increases. The end result is that at the end of 2008 Mutual's lake account had 6,396 acre-feet more and Big Bear MWD's lake account had 6,396 acre-feet less as a consequence of the net wastewater export credits.

Big Bear MWD's Lake Account

Section 3(b), District's Water in Storage, of the Watermaster Operating Criteria of the Judgment describes the procedure to determine Big Bear MWD's storage account as follows:

> *" Any water actually in storage in excess of Mutual's water in Storage, as calculated above, shall be for the account of District. So long as District has water in storage, all spills from the Lake shall be deemed District Water."*

Figure 4 illustrates the water balance for Big Bear MWD's lake account in 2008. Table 3 of Appendix B summarizes the results. This information shows the water actually in storage (from Table 1 of Appendix B), Mutual's water in storage (from Table 2 of Appendix B), and the difference between the two, which is the amount in Big Bear MWD's account. In 2008, Big Bear MWD's account balance began with 19,093 acre-feet and ended the year with 20,354 acre-feet. The increase in their account was 1,261 acre-feet. This increase was because the evaporation losses, net snowmaking withdrawals and net wastewater exports was less than the in-lieu deliveries made to Mutual during the year.

TABLE IV-1
EFFECT OF WASTEWATER EXPORT CREDITS
ON MUTUAL'S LAKE ACCOUNT
Calendar Year 2008
Big Bear Watermaster

End Of Calendar Year	Net Wastewater Export Credit (AF)	w/Wastewater Credits		w/o Wastewater Credits		Differences	
		Storage Account (AF)	Lake Level (Feet)	Storage Account (AF)	Lake Level (Feet)	Storage Account (AF)	Lake Level (Feet)
1989	-	16,905	47.00	16,905	47.00	-	-
1990	857	7,627	40.30	6,864	39.50	763	
1991	940	14,226	45.75	12,772	44.65	1,454	1.10
1992	723	22,787	51.15	20,886	50.05	1,901	1.10
1993	2,223	62,165	68.40	58,271	67.00	3,894	1.40
1994	1,397	61,407	68.15	56,451	66.35	4,956	1.80
1995	2,012	66,308	69.90	65,019	69.45	1,289	0.45
1996	1,540	60,875	67.95	58,229	67.00	2,646	0.95
1997	1,427	52,407	64.80	48,663	63.35	3,744	1.45
1998	2,427	69,566	71.00	68,282	70.60	1,284	0.40
1999	1,339	51,390	64.40	48,922	63.45	2,468	0.95
2000	1,337	35,335	57.65	31,900	56.00	3,435	1.65
2001	1,317	19,898	49.45	15,732	46.75	4,166	2.70
2002	889	10,856	43.15	6,897	39.55	3,959	3.60
2003	1,044	13,718	45.35	9,695	42.20	4,023	3.15
2004	1,024	14,200	45.70	10,233	42.65	3,967	3.05
2005	1,750	43,041	61.05	37,900	58.85	5,141	2.20
2006	1,462	48,034	63.10	42,067	60.65	5,967	2.46
2007	997	34,655	57.35	28,588	54.30	6,067	3.05
2008	1,207	35,251	57.60	28,855	54.45	6,396	3.15
Total	**25,912**						

Figure 4
Water Balance for 2008 BBMWD's Lake Operation
(Synthesized Conditions)

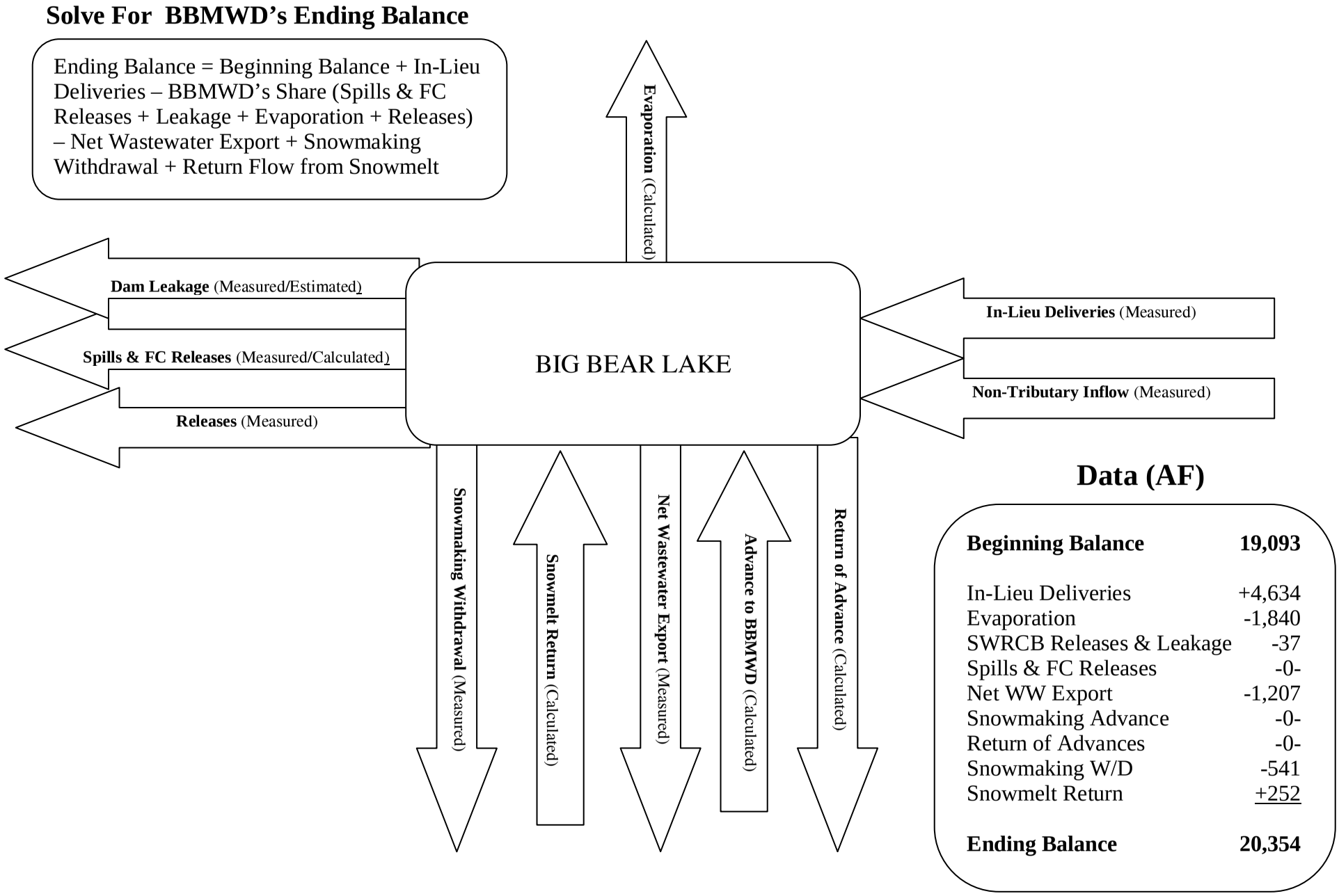


Table 3 of Appendix B also shows the status of Big Bear MWD's "Advance Account". This account represents the net amount of water Big Bear MWD has "borrowed" from Mutual for snowmaking in the Big Bear Lake watershed. In 2008, Big Bear MWD's advance account was zero throughout the year.

Tables 3.A and 3.B of Appendix B provide supporting information to Table 3.

Basin Compensation Account

Exhibit D of the Judgment contains a formula to be used for determination of the amount of Basin Make-up Water, if any, that is needed to offset deficiencies in the recharge supply to the San Bernardino Groundwater Basin. Tables 4, 4A, 4B and 4C in Appendix B follow the formula presented in the Judgment for calculating the credit or deficiency in the Basin Compensation Account. The formula contained in the Judgment is:

Deficiency or Credit =

$$[(.50)\,(R_d) + (.51)\,(S_d) + (.50)\,(P_d)] - [(.50)\,(R_m) + (.51)\,(S_m)]$$

wherein:

R_d = Releases actually made under District Operation.

S_d = Spills which actually occurred under District Operation.

P_d = In lieu water purchased by District from San Bernardino Valley MWD or the Management Committee of the Mill Creek Exchange and delivered under District Operation to Mutual for service area requirements.

R_m = Releases which would have been made under a Mutual Operation.

S_m = Spills which would have occurred under a Mutual Operation.

The first three terms in the equation represent the recharge that occurs under Big Bear MWD's lake operation. These are referred to as the "Big Bear's Basin Additions" in Table 4. Table 4.A shows the details of the calculations for these three terms.

The last two terms in the equation represent the recharge that would have occurred if Mutual had owned and operated the lake and met its supplemental water needs from lake releases. Collectively these terms are referred to as "Mutual's Basin Additions" in Table 4. Table 4.B shows the detailed calculations for these two terms.

The fish releases that Mutual used in 2008 (474.6 acre-feet) were included in both the releases made under District Operation (R_d) and the releases made under a Mutual Operation (R_m). The amount of fish releases that Mutual was not able to use (101.8 acre-feet) was treated as a spill under a District Operation (S_d) and 51.9 acre-feet was credited as a Big Bear Basin Addition. The portion that was allocated to Mutual (65.3 acre-feet) was treated as a spill under a Mutual Operation (S_m) and 33.3 acre-feet was credited as a Mutual Addition. The differences in these basin additions resulted in an increase in the Basin Compensation Account of 18.6 acre-feet.

The monthly net credit or deficiency in recharge to the San Bernardino Basin is shown in Column 5 of Table 4. These calculations are in accordance with the formula in the Judgment.

The Judgment also requires Big Bear MWD to make-up for deficiencies in recharge that would occur as a result of their lake operations. Column 7 of Table 4 shows the amount of water recharged by Big Bear MWD in the San Bernardino Basin to correct (or prevent) deficiencies in recharge. Table 4.C presents details of the sources of water used to replenish the Basin Compensation Account.

Table 4 of Appendix B presents the status of the Basin Compensation Account for 2008. The account balance began the year with a balance of 24,138 acre-feet and ended the year with 24,157 acre-feet. There was a 19 acre-feet increase in the Basin Compensation Account in 2008.

V. OTHER WATERMASTER ACTIVITIES

IMPACTS OF SEVEN OAKS DAM

Previous Activities

Construction of Seven Oaks Dam by the U.S. Army Corps of Engineers (Corps) has been underway since 1990. The construction contract for the 550-foot high dam embankment was issued in 1994 and was completed in December 1998. Various clean up and other miscellaneous contracts were completed in late 1999.

The plunge pool by-pass pipeline, which routes low flows through the dam, around the plunge pool and back to the river channel was completed in 2001. The low flows will be diverted for beneficial use by either Mutual through its "River Pick-up" or by SBVWCD at its main river diversion.

Subsequent to authorizing the project and beginning construction, the U.S. Fish and Wildlife Service (Service) listed the Slender Horned Spine Flower and the San Bernardino Merriam's kangaroo rat as endangered species. This action generated new official biological mitigation consultations with the Service, as required by Section 7 of the Federal Endangered Species Act. A biological assessment by the Corps was expected to be presented to the Service in April 2000 and a biological opinion by the Service was to be returned by the end of the year 2000.

There are two features of Seven Oaks Dam that could affect future Watermaster activities. The first is that Seven Oaks Dam will prevent natural, subsurface flow of groundwater from leaving the Santa Ana River Canyon and will cause all groundwater coming from upstream of the dam to rise to the surface. This subsurface flow will then pass through the dam outlet structure. The plunge pool by-pass line will help to overcome the loss of these subsurface flows.

The second feature is related to impounding storm flows behind the dam. The San Bernardino Valley MWD and Western Municipal Water District of Riverside County provided funding to the Corps for a water conservation study, which began in November 1993, and, if approved, will authorize Seven Oaks Dam to be a dual use structure for flood control and water conservation (see discussion below). The Corps issued a Draft Environmental Impact Statement (DEIS) and responded to comments; however, the Corps has yet to publish a Final EIS and Record of Decision. The Corps and Service will not initiate Section 7 consultations on mitigation requirements for the water conservation aspect of Seven Oaks Dam until after the biological

mitigation issues related to operating the dam as a flood control project are resolved. Then, the Corps will publish the Final EIS and Record of Decision.

In 1995, the San Bernardino Valley MWD and Western Municipal Water District of Riverside County filed a petition to revise the Declaration that the Santa Ana River Stream System is Fully Appropriated and an application to Appropriate Water By Permit with the State Water Resources Control Board. The petition and application, if approved, would give the two local agencies the right to impound water behind Seven Oaks Dam, subject to the operational directions of the dam for flood control.

The possible impoundment of waters of the Santa Ana River for other than flood control raises a number of water rights issues that are yet to be resolved. Several diversion points for SBVWCD, North Fork Water Company, Mutual, and Redlands Water Company ("Below the Dam Diverters") are downstream of Seven Oaks Dam, and the operation of these historical diversion points will be altered by the dam. During 1998 and 1999, discussions between the water rights holders and the San Bernardino Valley MWD began with an attempt to understand what and how much water would be impounded at various times of the year, along with the manner in which releases of storm flows from Seven Oaks Dam would be made.

It was the intent of the "below the dam diverters" to have releases from Seven Oaks Dam approximate average annual natural flows, recognizing that flood control release flows are expected to have less silt than previous flows and may be more evenly distributed. Their request is to have the amount of water to be impounded behind Seven Oaks Dam for other than flood control determined after the combined needs have been met for (1) the water supply agencies to provide direct delivery water and (2) the integrity of the groundwater basin is stabilized by assuring groundwater levels are maintained within an appropriate operating range. These are the primary elements of discussion between the agencies. These discussions did not result in any agreement prior to the State Water Resources Control Board public hearing on the petition on December 7 and 8, 1999.

A Biological Assessment (BA) by the Corps was submitted to the Service in June 2000; however, in a November 2000 letter, the Service rejected the BA, and requested additional information, with particular emphasis on the Corps' position related to the future water conservation element that had not been addressed by the Service. It is the apparent position of the Service that the biological mitigation requirements for operating the dam as a flood control facility must be negotiated before any attempt to address the biological impacts of the water conservation element of Seven Oaks Dam.

On September 21, 2000, the State Water Resources Control Board (SWRCB) adopted Order WR2000-12 to allow for processing the application filed by the San Bernardino Valley MWD and Western Municipal Water District of Riverside County. SWRCB Order WR2000-12 also allowed for processing a water right application filed by Orange County Water District. The Chino Basin Water Conservation District filed a petition requesting the SWRCB to reconsider its decision, but in November 2000 the State Board denied the petition and upheld its September order. This decision meant that the applications for appropriation of the right to use water that will be impounded behind Seven Oaks Dam could be processed.

2001 Activities

The U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service continued meeting during 2001, but most of their discussions were focused on flood control issues at Prado Dam. Neither the flood control nor biological issues related to Seven Oaks Dam had been resolved.

On March 21, 2001, the water rights application (AO31165) filed by San Bernardino Valley MWD and Western Municipal Water District of Riverside County was accepted for processing by the State Water Resources Control Board. On April 20, 2001, the water rights application (31174) filed by Orange County Water District was accepted.

In May and June 2001, respectively, the San Bernardino Valley MWD filed a second application, and the San Bernardino Valley Water Conservation District (SBVWCD) filed an application for the right to use Santa Ana River water that would initially be impounded behind Seven Oaks Dam, then released for downstream use. As with the prior applications, accompanying each of the new applications was a petition requesting the fully appropriated steam designation for the Santa Ana River be overturned. Combined with the petition and application received in September 2000 from the Chino Basin Watermaster, there were three additional petitions pending. The State Board indicated a preference to hold hearings on all of the water rights applications together.

2002 Activities

On January 11, 2002, the SWRCB noticed the water rights applications filed by San Bernardino Valley MWD - Western Municipal Water District of Riverside County and Orange County Water District (Applications 31165 and 31174, respectively), which triggered a 60-day protest period. However, on March 4 the SWRCB extended the protest period until a hearing was conducted on additional filings for water rights and accompanying petitions to revise the fully appropriated stream designation for the Santa Ana River.

On March 19, 2002, a Pre-Hearing Conference and Public Hearing was noticed for the water rights applications filed by the Chino Basin Watermaster, San Bernardino Valley MWD - Western Municipal Water District of Riverside County (second application), San Bernardino Valley Water Conservation District, and the City of Riverside. During the Pre-Hearing Conference on April 16, 2002, all parties agreed to accept the evidence, which resulted in Order WR 2000-12 revising the fully appropriated stream designation for the Santa Ana River, as evidence that they would have presented again in their petitions. Consequently, the SWRCB adopted WR 2002-6 during its Public Hearing on July 2, 2002. Following the hearing on July 2, the protest period for Applications 31165 and 31174 was closed on July 17. Several protests were submitted and responses provided, but no further action occurred.

Also on July 2, 2002, the SWRCB staff notified all parties (all 6 applications) by letter that it was the SWRCB's intent to process all the applications in a similar time frame and requested each party to provide a schedule for completing its environmental documents for its respective application. A hearing on all the applications will be scheduled when the environmental analyses are completed.

The Corps and Service continued meeting during 2002. On December 19, 2002, a Biological Opinion outlining the mitigation requirements for Seven Oaks Dam was finalized and accepted. Various agencies in the San Bernardino Valley were given an opportunity to review the final draft and submit comments before it was finalized. With the Biological Opinion finalized, the Corps could complete any required environmental analyses for operating Seven Oaks Dam as a flood control facility. When that work is completed, the issue of a conservation pool of water detained behind Seven Oaks Dam can be reviewed, and any needed biological consultations can be initiated. The impacts that a conservation pool may have on water rights remain unknown.

2003 Activities

In 2003 the Corps and the Local Sponsors, (San Bernardino and Orange County Flood Control Districts) continued to operate the dam under the Interim Water Control Plan. When a storm event occurred, the gates were closed until the water behind the dam stabilized. at which time large volumes of water were released until the water level behind the dam reached the dead pool elevation. There were four events when large amounts of water were accumulated and released from the dam, one in February, two in March and one in April. All but 616 acre-feet of Santa Ana River water was diverted for beneficial use by Bear Valley Mutual Water Company and SBVWCD in 2003. The Corp and the Local Sponsors continued to operate the dam under the Interim Water Control Plan until December 30th, at which time they adopted the final plan and began to develop a debris pool. The dam will be operated in 2004 under the Water Control Manual for the Seven Oaks Dam & Reservoir.

The dam has been in operation for several years, and the Watermaster has identified an issue with regards to the river flow data collection. All of the USGS gages are located downstream of the dam. The dam prevents the gages from recording the actual stream flow during a storm event. The Watermaster Committee has found it important enough to investigate the location of a stream flow gage upstream of the dam. This location will allow the Watermaster to correlate precipitation data with stream flow data and to estimate inflow to the reservoir. The gages downstream of the dam will provide the amount of water released from the dam. Watermaster Committee members have conducted a field trip to locate a gage upstream of the inundation pool and have initiated discussion with the USGS and the Corps for assistance.

The review of the water rights applications proceeded in 2003. As of the end of 2003, a hearing date had not been set and no environmental documents had been distributed for review. Parties continue to negotiate to find common ground and interest.

2004 Activities

2004 started with the Army Corp of Engineers (ACOE) and the Local Sponsors releasing a base flow of approximately 3 cfs. The Water Control Manual required that during the storm season (October to May) a debris pool (water surface elevation of 2,200 feet) be formed for the purposes of protecting the intake tower from sediment intrusion. As of the beginning of May, the debris pool elevation had reached 2,180 feet and contained approximately 1,700 acre-feet of water. At this time, the ACOE began releasing water from the debris pool so they could begin their maintenance activities. As raw water was released, two water treatment plants, one owned by East Valley Water District (EVWD) and the other owned by the City of Redlands (COR), began to receive water from the debris pool. It was quickly noted that the raw water discharged from Seven Oaks Dam (SOD) was of poor quality and adversely impacted the ability of EVWD and the COR to successfully treat this water at their respective plants. This poor quality water is related to releases of water from the debris pool. If the upstream flow is diverted around the debris pool, such as when the Edison Facility is operational, there are no adverse impacts at their respective plants.

Because of this difficulty to treat water from SOD, EVWD hired a consultant, Camp Dresser & McKee, to perform a study on the treatability of the SOD discharges at their Plant 134. The report looked at two periods when water was released from SOD, May and November of 2004. The report concluded that local source water quality in November of 2004 showed significant degradation when it passed through the debris pool as compared to historical water quality. The results showed turbidity increasing from 2 NTU to between 5 to 80 NTU. Similar affects were noted with an increase in color units, iron, manganese, and TOC. All of these are indicative of poorer quality water than historical Santa Ana River water quality conditions. Limited source water quality sampling by the COR confirmed some of these adverse water quality trends during a period in May 2004 when discharges were also made from the debris pool. The water agencies impacted by the degradation of the water quality of the debris pool are meeting and working closely with the ACOE and the Local Sponsors to find a solution to the problem.

At the end of November 2004, the ACOE and the Local Sponsors completed their maintenance activities and began building the debris pool for the upcoming storm season. By the end of December 2004, the debris pool was at a water surface elevation of 2,165 and contained approximately 900 acre-feet.

2005 Activities

The 2005 year began with abnormal rainfall. Late rains in 2004 had begun to fill the debris pool behind the dam. By the first of the year, the debris pool had reached elevation 2,165. Heavy rains in January and February more than filled the debris pool and by the end of March there was approximately 40,000 acre-feet of water stored behind the dam. The flood pool was at an elevation of approximately 2,390. In accord with operational guidelines, the Corps and local sponsors began to make releases at a rate of approximately 500 cfs. As happened in 2004, the water quality was unsuitable for surface diversion to the two local water treatment facilities. The NTU's were in excess of 400 and the water had the look of liquid milk chocolate. The Edison facilities were off line due to the storms. Surface water diverters were again faced with unusable water for domestic treatment purposes. The Conservation District initially diverted some of the degraded water for groundwater percolation but ultimately had to greatly reduce diversions due to the excessive turbidity and poor water quality.

A group was formed by the Upper Santa Ana River Water Resources Association to take another look at the water quality situation. East Valley Water District engaged the services of Camp Dresser & McKee (CDM) to prepare a detailed report addressing the problem as well as identifying potential solutions. Representatives from the Basin met with Congressman Jerry Lewis to describe the situation and seek Federal assistance to solve the problem. Congress has appropriated $1,000,000 to study the issue. By the end of 2005, CDM and the working committee from the Upper Santa Ana River Basin had completed their study. The study has been distributed to the Corps, Local Sponsors and to Congressman Lewis' office.

Because of the large body of water contained behind the SOD, the Corps decided to test the operating valves for flood releases in mid-spring. During the test period when high velocity releases were taking place, a portion of the outlet tunnel failed and the tests were terminated. For the balance of the spring, summer and fall seasons the releases from the SOD were minimal and averaged between 3 and 80 cfs, until the debris pool was emptied. The repairs to the tunnel were completed in November and it was anticipated that in early 2006, testing would again be resumed. However, mother nature has not been very cooperative and, since March of 2005, there has been no measurable rainfall in the watershed above the SOD.

Water quality remains a priority concern. While 2005 was one of the wettest years on record, local diverters, who normally rely on the flows from the Santa Ana River for their source of

treatable water for domestic purposes, had to purchase State Water Project water. The saving grace for the local water users is that Edison was able to repair all their upstream facilities by early fall. Their diversions by-pass SOD and they were able to deliver good quality water to the two local water treatment facilities. However, by the end of 2004 the debris pool was non-existent and slowly beginning to rise. Water quality again became poor.

2006 Activities

At their January 17, 2006 meeting, the Watermaster Committee received a copy of the "Seven Oaks Dam Water Impact Study" report prepared by Camp, Dresser & McKee, Inc. (CDM). This report identified the water quality and water supply impacts of Seven Oaks Dam on downstream water users, and recommended comprehensive alternatives to mitigate these impacts. Water quality impacts included longer durations and elevated levels of turbidity, total organic carbon, color, iron, manganese, algae, and taste and odor causing compounds. Water supply impacts included less supply in dry hydrologic years, reduced supplies in Fall through Winter as the Debris Pool behind the Dam is filled, and extended periods of time the SCE facilities are out of service after flood events. During these extended periods, the SCE facilities cannot be used to divert high quality Santa Ana River (and Bear Creek) water around Seven Oaks Dam.

The CDM report recommended long-term comprehensive alternatives and an interim solution. The long-term comprehensive alternatives included pretreatment of the water delivered from Seven Oaks Dam to achieve the water quality levels that existed before the Dam was constructed, and hardening of the SCE facilities so they would be more reliable and remain in-service for longer periods of time. The recommended interim solution is to purchase imported SWP water from San Bernardino Valley MWD to replace the water that could not be used because of water quality problems or that was not available due to dam operations and unavailability of SCE facilities.

At the May 16, 2006 meeting, the Watermaster Committee was advised that the ACOE was going to undertake a two-year $3.5 million study of these issues. At the October 10, 2006 meeting, the Watermaster Committee was further notified that the ACOE staff had initiated their study, and they were in the data gathering phase.

The Watermaster Committee is concerned that the current operations of Seven Oaks Dam could restrict the operations of Big Bear Dam and the in-lieu program as described in the 1977 Judgment. These restrictions could include, at a minimum, reduced releases and increased in-lieu requirements when:

- SCE facilities are out of service and the quality of water behind Seven Oaks Dam is unacceptable to Mutual.
- SCE facilities are operating at capacity and the quality of water behind Seven Oaks Dam is unacceptable to Mutual.
- SCE facilities are out of service or operating at capacity in the fall and winter months when the Debris Pool is being filled and there are no releases from Seven Oaks Dam.

In addition, any reduction in releases from the Lake would increase lake evaporation and decrease the long-term average deliveries to Mutual. These restrictions could also constrain Big Bear MWD's opportunities to beneficially use the flood control releases they would make from Big Bear Lake in the late fall and winter months.

2007 Activities

2007 began with a release of approximately 3 cfs from Seven Oaks Dam. USACOE slowly raised the reservoir elevation. As of January 9, 2007 the elevation was 2,157.25 feet. The debris pool's desired elevation is 2,200.00 feet. Due to the abnormally dry weather conditions in January and February, SBVWCD began spreading State Project Water in the Santa Ana River spreading basins. By the end of February, the debris pool elevation was 2,175.20 feet and rising.

During the last two weeks in April, USACOE and local sponsors had hoped to accumulate enough water to test the Seven Oaks Dam tunnel repairs which were completed in early 2006, but never subjected to test flows. Unfortunately there was insufficient water behind the Dam and the "high flow" testing lasted only approximately six (6) hours.

Very little to no water was released from Seven Oaks Dam from summer through November 2007. Southern California Edison was offline due to repairs on their facilities and on the intake.

In Spring of 2007, the capacity of the Foothill Feeder was tested. San Bernardino Valley Municipal Water District (Valley) is building a pump station on the Foothill Pipeline at the interconnect between Valley's and Metropolitan Water District's (MWD) pipeline to help improve the water pressure towards the east end of the valley when making large deliveries to MWD. It would also be used by MWD until their Inland Feeder Project tunnels are completed. In the future, the pumping station will help increase the flow capacity to the east end of the valley and the San Gorgonio Pass Water Agency. The results of the capacity testing are unknown.

In late November and early December 2007, the Upper Santa Ana Integrated Regional Water Management Plan (IRWMP) was approved. A press release in October 2007 by San Bernardino Valley Municipal Water District (Valley) summarized the main goal of the IRWMP is to improve water supply reliability in the region. To improve water supply reliability, the region must reduce demands as much as possible and capture and store wet year supplies for use during drought periods and other emergencies. The Plan is designed to meet this objective, and it addresses the following topics: water conservation and recycling, surface water management, groundwater management, diversification of water supplies, disaster preparedness, protection of water quality, ecosystem restoration and environmental improvement, and climate change.

2008 Activities

In 2008, the San Bernardino Valley Water Conservation District partnered with the San Bernardino Valley Municipal Water District in conducting a study of the capacity of the water spreading facilities downstream of the Seven Oaks Dam. The field work was conducted during March through December, 2008 and consisted of:

- Field flow testing of the diversion and conveyance facilities
- Survey of diversion works and conveyance (measurements of dimensions and slopes)
- Soil investigation consisting of:
- Excavation of 15 trenches
- Collection of 72 surface soil samples
- Drilling, sampling, and lithologic logging of 7 borings to a maximum depth of 157 feet
- Laboratory analysis of 75 samples for grain size analysis, and 16 of these samples for analysis of hydraulic conductivity
- Construction of 6 monitoring wells and installation of automated monitoring equipment
- Several types of percolation tests at existing recharge ponds
- Physical surveys of existing well locations and elevations

Major conclusions of the study are:

- The sedimentary materials underlying the recharge facilities form an unconfined aquifer consisting of permeable, coarse, sandy gravel and/or gravelly sand. No significant, laterally-continuous strata of low permeability are present that would prevent the downward percolation of recharge water.
- Some existing ponds have a thin layer of silt and/or clay derived from the introduction of turbid recharge water which limits percolation capacity.
- Faulting associated with the San Andreas Fault Zone has created a groundwater barrier which limits recharge capacity on the eastern portion of the site due to shallow groundwater that surfaces or "daylights" east (upgradient) of this barrier.
- During high runoff periods such as those that occurred in 1980, 1993, 1998 and 2005, the regional area in the vicinity of the recharge facilities may become saturated with shallow groundwater, limiting recharge in all of the facilities. However, these events have been very temporary , and may occur at a different frequency depending on the operation of the Seven Oaks Dam.
- The current intake capacity of the Intake Structure without modification is approximately 150 cfs. Ultimately the desired conveyance capacity is 500 cfs for the entire conveyance system.
- Downstream of the Intake Structure and Cuttle Weir, earthen canals limit the capacity of the conveyance facilities to approximately 300 cfs.
- The recharge capacity of the existing percolation ponds at the SAR recharge facility west of the groundwater barrier is approximately 145 cfs.

The missing upstream gaging station has not been replaced yet by the USACE. This is having a negative effect on the water flow monitoring capabilities of the Seven Oaks Dam as well as the downstream watershed.

The U.S. Army Corps of Engineers (USACE) has completed its draft study of the steps taken to address the degradation of the Santa Ana River water quality resulting from the construction of Seven Oaks Dam. That study has been reviewed by CDM, a consultant engineering firm hired by Bear Valley Mutual Water Company, Lugonia Water Company, Redlands Water Company, North Fork Water Company, San Bernardino Valley Conservation District, and the San Bernardino Valley Mutual Water District, and other interested water purveyors. The USACE report verifies original methodology used in calculating the effects of placing a dam interrupting the natural flow of the Santa Ana River for purposes of flood control and water retention to maintain a predictable daily controlled water flow for downstream users. The USACE report notes through modeling techniques based on field records data, that there appears to be no

negative effect on the Santa Ana River water quality. The downstream uses contend otherwise, that the very nature of the water being retained behind the dam for lengthy periods of time causes algae and bacterial growth, causes water to become stale and stagnant, and tends to plug up the pervious rock and soil layers of the downstream spreading basins. Several of the downstream water purveyors with water treatment facilities have difficulty, or cannot treat the stagnant water at all since the treatment facilities were not designed to treat water of this poor quality. The debate continues.

WILD AND SCENIC RIVERS ISSUE

2004 Activities

In mid-2004, the Watermaster Committee became aware of the U.S. Forest Service's Draft Land Management Plan for Southern California National Forests ("Forest Plan"). The Forest Plan proposes to designate Bear Creek from below Bear Valley Dam to its confluence with the Santa Ana River and three stretches of the Santa Ana River as "eligible" for addition to the Wild & Scenic Rivers System. Comments on the Forest Plan were due on August 11, 2004.

The Watermaster responded on August 9, 2004. The response outlined the responsibilities of the Watermaster Committee and requested a 180-day extension of the comment period to obtain, review and comment on the "Forest Plan." The Forest Plan is a large, complex document and the additional time was needed to determine what impacts the proposed action would have on the administration of the Rights and Physical Solution stipulated in the Judgment of the Superior Court.

By the end of 2004, the U.S. Forest Service had not responded to the Watermaster Committee's request.

2005 Activities

On September 20, 2005, the U.S. Forest Service issued the Revised Land and Resource Management Plans (Forest Plans) and accompanying Final Environmental Impact Statement (FEIS) and Records of Decision for the Angeles, Cleveland, Los Padres, and San Bernardino National Forests. The U.S. Forest Service selected Alternative 4a for implementation. This alternative recommends for designation a few wild and scenic rivers but none are in the San Bernardino National Forest.

The FEIS includes Appendix E, Wild and Scenic Rivers, that describes the efforts completed related to suitability for a river to be designated as a "wild and scenic river (WSR)." These efforts require determinations to be made regarding a river's eligibility, classification and suitability.

In the Santa Ana River watershed, two rivers were found "eligible" to be classified as a WSR. They are 1) 8.9 miles of Bear Creek below Bear Valley Dam, and 2) 19.8 miles of the Santa Ana River above the confluence with Bear Creek. According to Appendix E "*Eligibility is an evaluation of whether a river is free-flowing and possesses one or more outstandingly remarkable values (ORVs) including scenery, recreation, geology, fish and wildlife, history, cultural (prehistoric), or similar values.*"

If a river is found "eligible," it is to be placed into one or more of three classes: wild, scenic or recreational. In the case of the rivers in the Santa Ana Watershed, the classifications are as follows.

River	Length (miles)	Description	Classification
Bear Creek	8.9	Big Bear Dam to private land near Santa Santa Ana River	Wild
Santa Ana River	2.4	South Fork Meadows to Wilderness Boundary	Wild
	13.9	Big Meadows to Filaree Flat	Recreational
	3.5	Filaree Flat to Confluence w/Bear Creek	Scenic
	19.8		

The final step is to determine if the "eligible" rivers are "suitable" to be recommended to be part of the National Wild and Scenic River System. This determination is made through completion

of “suitability studies.” The FEIS stated that the suitability study phase for the eligible rivers will be initiated at a later date.

In summary, the U.S. Forest Service has found major portions of both Bear Creek and the Santa Ana River “eligible” to become designated as a “wild and scenic river” and a suitability study will be initiated at a future time.

2006 Activities

The Watermaster Committee has not received any additional information from the U.S. Forest Service related to this issue.

2007 Activities

The Watermaster Committee has not received any additional information from the U.S. Forest Service related to this issue.

2008 Activities

The Watermaster Committee has not received any additional information from the U.S. Forest Service related to this issue.

QUAGGA MUSSEL PROTECTION PROGRAM

The invasive Quagga Mussel became a significant threat to Big Bear Lake in 2008. Big Bear Municipal Water District launched a major program at the beginning of the boating season to prevent the mussel from getting into the lake. While once only a problem east of the 100th meridian, the mussel reached western lakes, and most significantly Lake Mead in January 2007. By the fall of 2008 the mussel was pervasive in Lake Mojave, Lake Havasu, and boaters traveling to and from the lake were transporting the microscopic larvae in bilges and out drives creating a threat to Big Bear Lake. The California mussel population expanded via the Colorado River aqueduct turnout at Parker Dam into receiving reservoirs in San Diego County. Other southern California lakes became infested when infected boats transported the microscopic mussel larvae.

The Quagga mussel is a prolific reproducer and colonizes on every solid object it encounters, Fouled boat hulls, sinking buoys, clogged water pipes and screens are just some of the problems

caused by the Quagga mussel. Also, because each mature mussel can filter feed about one liter of water daily, huge mussel masses significantly reduce concentrations of plankton that are an essential food supply for fisheries.

In our situation the potential impact of an infestation is great because Big Bear Lake is at the top of the Santa Ana River watershed. Every water body and stream below the lake could become infected, and the resulting impacts to Bear Creek fisheries, the pool behind Seven Oaks Dam, the Edison generating station, and the Santa Ana River could be disastrous.

In response to the threat the District imposed new rules on launching, installed traffic control structures to prevent unauthorized launching, and strictly regulated the launch ramp hours to provide constant staffing at the start of the boating season in 2008. All boats entering the lake at public launch ramps were required to complete a questionnaire to determine if and when they might have been in an infected lake. They were also checked for standing water in bilges, lockers, bait live wells, etc. All vessels that the District inspectors were suspicious about were decontaminated at no charge to the boat owner with pressurized hot (140 degree) water. Some limited training was also provided to commercial ramp operators who were responsible for sending suspicious vessels to a District facility for decontamination.

Both the City of Big Bear Lake and Snow Summit Resort contributed funds to help defray the costs associated with unexpected burden on the financial resources of the District. Nearly $100,000 was spent during the summer of 2008 for educational materials, signs, additional summer staffing and capital improvements to fund the Quagga Prevention Program.

Sampling at the end of the 2008 boating season revealed that Big Bear Lake was free of visible mussels. Beginning in 2009 sampling for the microscopic mussel larvae will begin as soon as the lake warms to 45 degrees, the minimum temperature at which the mussels can reproduce.

In 2009 a Quagga Prevention Program surcharge will be added to boat permits to defray the costs associated with the program. The surcharge will remain in place as long as a threat exists. With the number of Quagga Mussel infested lakes in southern California increasing, and the proximity of recreational boating opportunities at the Colorado River, the threat of infestation becomes greater. New, more stringent protective measures will be instituted at the start of the 2009 boating season. These will include training the entire public and private marina work force operating on the lake, requirements for commercial marinas to staff launch ramps with certified Quagga mussel inspectors, significant limitations on the use of private launch ramps and an expanded program of boat decontamination with pressurized hot water at both public launch ramps and the District office.

APPENDIX A

MINUTES OF WATERMASTER MEETINGS

Dates

January 15, 2008
March 18, 2008
June 03, 2008
October 21, 2008

BIG BEAR WATERMASTER
MINUTES OF THE MEETING OF JANUARY 15, 2008

PLACE: Redlands Country
1749 Garden Street
Redlands, CA 92373

PRESENT:	Watermaster Committee	Representing
	Don Evenson	Big Bear MWD, Chair
	Michael L. Huffstutler	Bear Valley Mutual Water Company
	Marvin Shaw	SBV Water Conservation District
	Others	
	Scott Heule	Big Bear MWD
	Vince Smith	Municipal Water District BBL
	Todd Murphy	Municipal Water District BBL
	Jackie Silber	SBV Water Conservation District
	Shanae Smith	SBV Water Conservation District

1. WELCOME AND CALL TO ORDER

The Big Bear Watermaster meeting was called to order by Don Evenson at 1:30 p.m.

2. APPROVAL OF MINUTES

The minutes from the January 14, 2007, April 16, 2007 and October 16, 2007 meetings were reviewed. It was moved by Don Evenson and seconded by Mike Huffstutler to accept the minutes as presented. The motion carried unanimously.

3. LAKE AND BEAR CREEK STATUS

Scott Heule reported that the Lake was 5 feet 11 inches below full and had 56,550 acre-feet of water in storage. He said that during the weekend of January 4 -7, 2008, there was 10.16 inches of precipitation. He reported that for January the requirement for fish flow at Station B was 0.75 cfs, and that the District was currently measuring 0.93 cfs at Station B. At the October 16, 2007 meeting, Mr. Heule mentioned the spillway gate testing would be done in November; he reported that 0.5 acre-feet of water was released during the testing.

Mr. Heule reported that the petition to modify SWRCB Order, No. WR95-4 had been approved by the State Water Resources Control Board (SWRCB); the modification would allow the District to monitor releases at Station B below the dam, contingent upon the 10 year minimum data collection requirements being met at both Station A and Station B.

Mr. Huele reported that due to the rejection of unsatisfactory bids for the security upgrades at the dam, new bids were being submitted with a projected completion date of April 2008.

4. SANTA ANA RIVER STATUS

The Daily Flow Report for January 15, 2008 was distributed. Marv Shaw said that the SAR inflow was 32 cfs, the SBVWCD had diverted 1,500 acre-feet to-date for recharge, and that no State Project Water (SWP) was being delivered. Mr. Evenson stated that the 32 cfs indicated on the report was low for the year, as the numbers historically have been between 60 to 70 cfs. He said that Southern California Edison (SCE) was diverting the water, and that their capacity could not surpass 90 cfs, above 90 cfs the run-off would continue down the river into Seven Oaks Dam.

5. MUTUAL'S PROJECTION OF NEEDS

Mr. Huffstutler stated that Mutual's needs would be up to 6,500 acre-feet, which would be met by in-lieu deliveries. A discussion ensued regarding Mutual's peak demands.

6. OTHER TOPICS

a. Seven Oaks Dam Operations

Mr. Huffstutler reported that the USACOE was releasing the minimum requirement of 3 cfs from Seven Oaks Dam and may still be building the debris pool.

b. Seven Oaks Dam Water Quality

d. Status of SAR Stream Gauge

Mr. Shaw reported that a representative of the United States Army Corps of Engineers (USACE) would attend the next meeting regarding the Seven Oaks Dam, and potential impacts on the operations of the Dam and issues regarding water quality. Mr. Shaw explained that the USACE representative expressed an interest in making a presentation to the BBWM committee on its current studies on Seven Oaks Dam to evaluate water quality impacts, and the feasibility for installing a stream gauge on the Santa Ana River to measure inflow and water quality data upstream of the dam. The committee voted unanimously to invite the representative to the upcoming March 18 meeting. A discussion ensued regarding the Seven Oaks Dam Water Conservation study and the need for year-round conservation storage.

e. LAFCO Consolidation Application Process

Mr. Shaw reported that RBF Consultants was appointed by LAFCO to prepare an Environmental Impact Report (EIR). He said that the preparation of a draft EIR for public review and comment was scheduled for completion in the summer of 2008. A discussion ensued regarding LAFCO's EIR as it relates to the consolidation effort of the Conservation District and Muni.

f. 2007 Annual Report

Don Evenson reviewed the proposed schedule for the 2007 Annual Report. Data from all accounts are required for submission by February 15, including data from the Conservation District, fish release data from Mutual, City of Big Bear Lake and various sanitation districts. The schedule for completion of the report is:

- Watermaster Accounts completed by March 1, 2008
- Draft Annual Report distributed to Committee by April 1
- Committee comments to D. Evenson by April 18
- Annual report submitted to Court by April 30.

9. DATE FOR NEXT MEETING

The next meeting will be on Tuesday, March 18, 2008 at 1:30 p.m., at the Conservation District offices.

10. ADJOURN

There being no further business, the meeting was adjourned at 2:30p.m.

Donald E. Evenson | Michael L. Huffstutler | Marvin Shaw

BIG BEAR WATERMASTER
MINUTES OF THE MEETING OF MARCH 18, 2008

PLACE: San Bernardino Valley Water Conservation District
1630 W. Redlands Blvd., Suite A
Redlands, CA 92373

PRESENT:	Watermaster Committee	Representing
	Don Evenson	Big Bear MWD, Chair
	Michael L. Huffstutler	Bear Valley Mutual Water Company
	Marvin Shaw	SBV Water Conservation District
	Others	
	Scott Heule	Big Bear MWD
	Vince Smith	Municipal Water District BBL
	Todd Murphy	Municipal Water District BBL
	Ed Demesa	Army Corp of Engineers
	Kim Gavigan	Army Corp of Engineers
	Girish Desai	Army Corp of Engineers
	Jackie Silber	SBV Water Conservation District
	Shanae Smith	SBV Water Conservation District

1. WELCOME AND CALL TO ORDER

The Big Bear Watermaster meeting was called to order by Don Evenson at 1:30 p.m.

2. APPROVAL OF MINUTES

The minutes from the January 15, 2008 were reviewed. It was moved by Don Evenson and seconded by Marvin Shaw to accept the minutes as presented. The motion carried unanimously.

3. LAKE AND BEAR CREEK STATUS

Scott Heule reported that the Lake level was 68.34 feet, 3.99 feet below full. He said that .38 cfs, measurement at Station B was .35 cfs, and their obligations lake releases of .30 cfs for fisheries was being met. Year to date was 33.60 inches of precipitation, which means water year 2007-08 will be an "above normal" year.

Mr. Heule reported on the discovery of the Zebra and Quagga Mussel in Lake Mead, Lake Havasu and many other southern California lakes. Mr. Heule led a discussion regarding the necessary steps that will be taken to prevent their spread to Big Bear Lake. He said that it was critical that the public's help was enlisted, and if the

Zebra/Quagga Mussel were to become established in Big Bear Lake, they would have devastating environmental, recreational and economic impacts.

4. SANTA ANA RIVER STATUS

The Daily Flow Report was distributed and discussed. Marvin Shaw stated that the Orange County Flood Control District (OCFCD) had reported that the United States Army Corp of Engineers (ACOE) had abandoned their plan to conduct a high flow test of the outlet works making 9,500 acre-feet of water available for release. Both the Conservation District and the San Bernardino Municipal Water District (Muni), would be working with the ACOE and OCFCD) for an immediate release of approximately 2,500 acre-feet of water from behind the SOD so Edison can access their power facilities. Mr. Shaw also reported that the Conservation District would be conducting a joint-undertaking with the San Bernardino Valley Municipal Water District (Muni) to prepare a feasibility study and conceptual design to optimize existing, and possibly develop additional groundwater recharge facilities. A discussion ensued.

5. MUTUAL'S PROJECTION OF NEEDS

Mr. Huffstutler stated that Mutual's needs would be up to 6,500 acre-feet, which would be met by in-lieu deliveries. Don Evenson stated that the accounting in the annual reporting indicated that Mutual would be approaching their 65,000 acre-feet mark next year and they would have to reduce the in-lieu deliveries below 6,500 acre-feet in 2008.

6. OTHER TOPICS

a. Seven Oaks Dam Operations
Covered under Item 4.

b. Seven Oaks Dam Water Quality
United States Army Corp of Engineer Presentation

Mr. Kim Gavin of the ACOE presented the Seven Oaks Dam Water Quality Study, and the Water Conservation Study presentation. He started the presentation with a brief overview of the history of the Seven Oaks Dam. Mr. Gavin said that the study objective was to determine the water quality within the reservoir and immediately downstream of the dam, and to evaluate potential solutions.

c. Status of SAR Stream Gauge

Don Evenson led a discussion regarding the background of the Watermaster Committee as it related to the 1977 Western

Judgment and Big Bear Municipal's obligation to provide water to Mutual. He said that in 2004-2005, Southern California Edison (SCE) was inoperable and water quality was affected, causing problems for Mutual's yield. In addition, Mr. Evenson said that it was the committee's responsibility to report on the upstream gauge, and that currently, there was no working upstream gauge in place, making it impossible to measure flows of the Santa Ana River. A discussion ensued as committee members questioned the ACOE regarding installation of the upstream gauge, and the financial impacts associated. The ACOE stated they will investigate the need and cost of the upstream gauge.

d. LAFCO Consolidation Application Process

No new report.

e. 2007 Annual Report

Don Evenson indicated that there were issues related to the methodologies used to calculate the amount of water out of Bear Valley Dam and the allocations of the fish releases between Mutual and Big Bear. He indicated that 2007 was the second driest year since the inception of the Western Judgment in 1977. A discussion ensued regarding Station B flows and possible modifications to the calculation of evaporation rates, and the current methodology for measuring for the report accounting.

Mr. Evenson said that the 2007 report would be available for review by April 18, 2008. A discussion ensued about ideas for the report cover.

7. DATE FOR NEXT MEETING

The next meeting will be on Tuesday, June 3, 2008, at 1:30 p.m., at the Big Bear Municipal Water District office.

8. ADJOURN

There being no further business, the meeting was adjourned at 2:30p.m.

Donald E. Evenson | Michael L. Huffstutler | Marvin Shaw

BIG BEAR WATERMASTER
MINUTES OF THE MEETING OF JUNE 3, 2008

PLACE: Big Bear Municipal Water District
40524 Lakeview Drive
Big Bear Lake, CA 92315

PRESENT:	Watermaster Committee	Representing
	Don Evenson	Big Bear MWD, Chair
	Michael L. Huffstutler	Bear Valley Mutual Water Company
	R. Robert Neufeld	SBV Water Conservation District
	Others	
	Scott Heule	Big Bear MWD
	Vince Smith	Big Bear MWD
	Todd Murphy	Big Bear MWD

1. WELCOME AND CALL TO ORDER

The Big Bear Watermaster meeting was called to order by Don Evenson at 1:00 p.m. Don introduced Robert Neufeld, who will be the new Committee Member representing San Bernardino Valley Water Conservation District (SBVWCD).

2. APPROVAL OF MINUTES

The review and approval of the minutes of the March 18, 2008 meeting was deferred until the October meeting.

3. LAKE AND BEAR CREEK STATUS

Scott Heule reported that the Lake level was at 68.38 feet, which is 3.95 feet below full. He said the lake releases have been increased to 1.0 cfs to stay in compliance with the State Water Resources Control Board (SWRCB) fish flow requirement at Station B. Scott also reported that they had retrieved the flow data from Station A and the flows there are also in compliance with the SWRCB requirements.

Mr. Heule reported on their efforts to control the Zebra/Quagga Mussel and there have been no occurrences found in Big Bear Lake.

He also reported the County Sherriff saw a small crack in Bear Valley Dam during their practice dives in the lake, and BBMWD will be getting additional information on the location and extent of the cracks.

4. SANTA ANA RIVER STATUS

Bob Neufeld distributed the Daily Flow Report and reported that the Santa Ana River flow was at 58.2 cfs and Mutual's needs were being met by diversions from the Santa Ana River. Mr. Neufeld also reported that the Conservation District was recharging Santa Ana River water, and they had recharged 15,750 AF so far this year.

5. MUTUAL'S PROJECTION OF NEEDS

Mr. Huffstutler stated that Mutual's in-lieu water needs will use up the balance that is available from their 65,000 AF/10 year limitation, and it will probably be around 4,800 AF. He also reported that Mutual's stock delivery will probably be 0.27 MID/day for the next few years.

6. OTHER TOPICS

a. **Seven Oaks Dam Operations.** Current operation is outflow equals inflow plus storage releases.

b. **Seven Oaks Dam Water Quality**
Nr. Neufeld reported that there is $4.6 million in the WRDA budget for the study, which is an on-going study.

c. **Status of SAR Stream Gauge.** No new information to report.

d. **LAFCO Consolidation Application Process.** Mr. Neufeld reported that SBVWCD lost the court decision on the jurisdictional issue and that LAFCO has the jurisdiction to make a decision on the issue. The appeal period is 45 days, and a decision is likely by the end of the year.

e. **SBVWCD Appointment of Robert Neufeld.** SBVWCD will file a motion with the San Bernardino State Superior Court requesting the Court appoint Robert Neufeld as the Watermaster Representative for SBVWCD.

7. DATE FOR NEXT MEETING

The next meeting will be on Tuesday, October 21, 2008, at 1:30 p.m., at the San Bernardino Valley Water Conservation District office.

10. ADJOURN

There being no further business, the meeting was adjourned at 1:48p.m.

Donald E. Evenson | Michael L. Huffstutler | R. Robert ~~Neufeld~~

BIG BEAR WATERMASTER
MINUTES OF THE MEETING OF OCTOBER 21, 2008

PLACE: San Bernardino Valley Water Conservation District
1630 W. Redlands Blvd., Suite A
Redlands, CA 92373

PRESENT:	Watermaster Committee	Representing
	Don Evenson	Big Bear MWD, Chair
	Michael L. Huffstutler	Bear Valley Mutual Water Company
	R. Robert Neufeld	SBV Water Conservation District
	Others	
	Scott Heule	Big Bear MWD
	Vince Smith	Big Bear MWD
	Todd Murphy	Big Bear MWD
	Monty Dill	Big Bear MWD
	Randy Van Gelder	SBV Municipal Water District
	Shanae Smith	SBV Water Conservation District

1. WELCOME AND CALL TO ORDER

The Big Bear Watermaster meeting was called to order by Don Evenson at 1:30 p.m.

2. APPROVAL OF MINUTES

The minutes from the March 18, 2008 meeting, and the June 3, 2008 meeting were reviewed. It was moved by Michael Huffstutler and seconded by Don Evenson to accept the minutes as presented.

3. LAKE AND BEAR CREEK STATUS

Scott Heule reported that the lake level was 65.92 acre-feet, which is 6.41 acre-feet below full and BBMWD is releasing 1.03 cfs from the Lake through the six-inch bypass line and is measuring 1.04 cfs at Station B, which has been fluctuating between 1.04 and 1.06 cfs. Mr. Heule reported problems with weed growth behind the weir at Station B in recent weeks that has contributed to the fluctuations in the readings. He said that the meter on the six-inch bypass line indicated a decrease in releases until District staff recalibrated the meter to correct the problem.

Mr. Heule also gave a status update on the Zebra/Quagga Mussel prevention program he reported on in June. He said that there had been no indication of their presence in the lake, as five stations and all buoys were clear at the close of the season.

Mr. Heule reported that MWH was under contract to inspect a crack in the dam that was recently discovered.

4. SANTA ANA RIVER STATUS

Robert Neufeld distributed the Daily Flow Report. He said that the Conservation District was recharging SWP water in Mill Creek on behalf of the San Bernardino Valley Municipal Water District (Valley District). Mr. Neufeld said that the Basin Technical Advisory Committee (BTAC) would be setting the spreading targets for the basin prior to the wet season and that an estimated total of 395 acre-feet of water had been spread so far this year.

Don Evenson pointed out that the Daily Flow Report indicated a total of 20.2 cfs for the SAR inflow. A discussion ensued regarding historical flows.

5. MUTUAL'S PROJECTION OF NEEDS.

Mr. Huffstutler stated that Mutual's in-lieu water needs would be up to 6,500 acre-feet depending on Valley District's ability to deliver the amount of in-lieu water needed given the condition of the State Water Project.

Mr. Randy Van Gelder said that State Water Project (SWP) conditions were the ultimate reason for his attendance at the meeting and Valley District's abilities to deliver SWP water for the upcoming water year. He said that Valley District anticipated 6,500 acre-feet for Mutual, and 6,500 acre-feet for East Valley Water District (EVWD), with an approximate total of 18,500 acre feet of water for direct deliveries. Mr. Van Gelder reported 18-20% of the Table A contract amount would be allocated to all state contractors. He also said that under normal situations throughout the year, the water allocation would increase from its initial allocation of available water. He stated that water labeled in 2008 could be used in 2009.

Mr. Van Gelder reported that an agreement made between Valley District and Metropolitan Water District (MWD) consisted of delivering 4,000 acre-feet of water by the end of the year, and returned to the Valley District next spring to help meet the 6,500 acre-feet of water for Mutual. Mr. Van Gelder also reported that most state water contractors were storing water for the current water year to carry over to the first portion of the upcoming year, and that Valley District would also identify specific wells for back-up water supply. He said that Valley District's Board of Directors would be conducting a workshop to address the concerns of the local producers in November. A discussion ensued.

6. OTHER TOPICS

a. **Seven Oaks Dam Operations.** Mr. Van Gelder reported that the Sevens Oaks Dam (SOD) Operational Plan consisted of building the debris pool up to 3,000 acre-feet of water behind the dam. No water was available to meet those obligations due to low water flows out of Mill Creek.

b. **Seven Oaks Dam Water Quality.** Mr. Huffstutler reported that the study was currently in progress to review alternatives for continued problems behind the dam. Mr. Neufeld reported that the Conservation District, in a joint effort with EVWD to coordinate meetings with the United States Army Corp of Engineers (ACOE) staff, were at a standstill due to the untimely death of their Chief Engineer, Girish Desai. He also reported that (2) additional key personnel resigned from the ACOE, further impeding their efforts. Mr. Neufeld further reported that $4 million was appropriated by Congressman Lewis for water conveyance and water quality studies, in addition to $1 million recently added to the original amount to conduct the studies.

c. **Status of SAR Stream Gauge.** Don Evenson reported that five years had passed since the original request for the installation of a stream gauge was submitted to the ACOE. Mr. Evenson stated that the USGS had recommended a sight for the stream gauge, and were waiting for a contracting vehicle, as they recognized the need for the gauge. Mike Huffstutler said that the ACOE had also selected several potential sights for the gauge, one being downstream of the bridge, a high water mark. A discussion ensued.

d. **Groundwater Production and Development in Big Bear Valley.**

Mr. Huffstutler reported that the US Forestry service had placed several calls regarding groundwater production usage in Big Bear. He listed their main concern as re-permitting, and whether the Moonridge Animal Park Relocation project had somehow violated Bear Valley Water rights. Mr. Huffstutler reported that Bob Taylor, a hydro geologist of the US Forestry Service, called to discuss the project's purpose to relocate the animal park to US Forestry Service land, utilizing water from a small well near a local boat ramp. Scott Heule said that there had been uncertainty as to how much water was being used, as there are no meters currently in place. He said that the City of Big Bear Lake Department of Water and Power (DWP) had the option of setting a pipeline that would connect to the storage reservoir at the animal park to expand or increase pumping in the existing well. Mr. Heule said that there was no estimate of the quantity of water being used and that the

DWP was making an effort to track the existing source of water supply to the well located on the camp ground. Mr. Huffstutler expressed concerns regarding the potential impacts to the lake's future purposes and the committee's responsibility to the 1977 Western Judgment. He suggested that the BBWM committee implement a policy outlining a unified approach to address issues and oppose any new construction, or new expansion of facilities. A discussion ensued regarding the potential impacts of the project, including challenging the project's environmental basis, costs, and impacts to neighboring wells, estimated closeness in proximity to the stream, and pumping of water that would not be recharged.

Mr. Heule addressed the DWP's report entitled "The Reconnaissance Flow Analysis of Alternative Water Sources for the DWP." A discussion ensued.

A motion was made by Mike Huffstutler to comment on the Moonridge Animal Park Relocation project Final Environmental Impact Report (FEIR), including an evaluation of whether the project would have impacts to Big Bear Lake inflows and on the amount of water in storage in the lake. Robert Neufeld seconded the motion, as the end of the comment period was November 24, 2008. The vote carried unanimously.

The committee agreed to add the Groundwater Production and Development in Big Bear Valley issue as a standard agenda item for upcoming meetings.

e. **LAFCO Consolidation Application Process.** Robert Neufeld reported that the United States Appellate Court denied the Conservation District's request for a stay in the matter of LAFCO 3076 - Consolidation of the Conservation District/Valley District. Mr. Neufeld stated that LAFCO would more than likely certify the EIR at its November meeting. Mr. Neufeld also reported that the final proceedings before LAFCO could be as early as April 2009, based on communications with the Executive Officer of LAFCO.

f. **SBVWCD Appointment of Robert Neufeld.** Mr. Neufeld reported that October 28 was the date set for his appointment to the BBWM committee.

g. **2008 Annual Report.** Don Evenson stated that the timeline for the annual report would mirror that of the previous year. He also said that assignments would be reviewed and discussed at the upcoming January meeting.

that assignments would be reviewed and discussed at the upcoming January meeting.

7. DATE FOR NEXT MEETING

The next meeting will be on Tuesday, January 13, 2009, at 12:00 p.m., at the Redlands Country Club, in Redlands.

8. ADJOURN

There being no further business, the meeting was adjourned at 3:05 p.m.

Donald E. Evenson | Michael L. Huffstutler | R. Robert Neufeld

APPENDIX B

TABLE OF
ACCOUNTS OF OPERATION OF BIG BEAR LAKE

ACCOUNTS FOR
CALENDAR YEAR 2008

INPUT DATA
BIG BEAR WATERMASTER REPORT
CALENDAR YEAR
2008

Calandar Year		**2008**	
Mutual's Lake Account Balance on Jan.1	=	**34,655**	acre-feet
Basin Compensation Account Balance on Jan. 1	=	**24,138**	acre-feet
Account Balance for Mutual's Advances to BBMWD	=	-	acre-feet
Repayment Premium for Mutual's Advances to BBMWD	=	**0%**	
Recharge Factor for Lake Deliveries to Mutual	=	0.500	
Recharge Factor for Imported Water Deliveries to Mutual	=	0.500	
Recharge Factor for Lake Spills	=	0.510	
Snowmelt Return Factor	=	0.500	Jan,Feb, Mar,Apr,Nov,Dec
Snowmelt Return Factor	=	0.000	May, June,July,Aug,Sept,Oct

Monthly Evaporation Rate Calculation Factors	C1	C2	C3
January	7.09	0.42	1,200
February	6.90	0.50	1,200
March	8.36	0.74	1,200
April	8.82	0.87	1,200
May	9.73	1.02	1,200
June	9.72	1.10	1,200
July	9.90	1.13	1,200
August	9.34	1.22	1,200
September	8.36	1.25	1,200
October	7.89	1.22	1,200
November	7.01	1.07	1,200
December	6.91	0.50	1,200

Evaporation rate (feet/month) = Average air temperature x C1 x C2 / C3

INPUT DATA
BIG BEAR WATERMASTER REPORT
CALENDAR YEAR
2008
(continued)

Month	**Gage* Height 1st of Month (feet)**	Actual Mutual Shareholder Releases (acre-feet)	Mutual Other Releases (acre-feet)	Actual Flood Control Releases (acre-feet)	Actual Flood Spills (acre-feet)	Big Bear's Spreading Releases (acre-feet)	**Big Bear's Other Releases (acre-feet)**	Leakage (Not used, included in Fish Releases) (acre-feet)
	65.37							
January		-	-	-	-	-	-	-
	66.88							
February		-	-	-	-	-	-	-
	67.92							
March		-	-	-	-	-	-	-
	68.62							
April		-	-	-	-	-	-	-
	68.77							
May		-	-	-	-	-	-	-
	68.41							
June		-	-	-	-	-	-	-
	67.86							
July		-	-	-	-	-	-	-
	67.36							
August		-	-	-	-	-	-	-
	66.77							
September		-	-	-	-	-	-	-
	66.25							
October		-	-	-	-	-	-	-
	65.82							
November		-	-	-	-	-	-	-
	65.75							
December		-	-	-	-	-	-	-
	66.03							

* Gage at Bear Valley Dam

INPUT DATA
BIG BEAR WATERMASTER REPORT
CALENDAR YEAR
2008
(continued)

Month	**Big Bear's Withdrawals for Snowmaking (acre-feet)**	**Summer Withdrawals Used for Snowmaking (acre-feet)** (not used)	Big Bear's Withdrawals for Recharge (acre-feet)	Mutual Spills of Wastewater Exports (acre-feet)	**In-Lieu Imported Supplies (SBVMWD) (acre-feet)** final	In Lieu Supplies from SBVMWD's Wells (acre-feet)	In Lieu Supplies from Mutual's Wells (acre-feet)	Other In Lieu Supplies (acre-feet)
January	**219.75**	-	-	-	-	-	-	-
February	**57.61**	-	-	-	-	-	-	-
March	**32.43**	-	-	-	-	-	-	-
April	**1.74**	-	-	-	-	-	-	-
May	**6.85**	-	-	-	**41.90**	-	-	-
June	**3.84**	-	-	-	**37.20**	-	-	-
July	**6.70**	-	-	-	**746.60**	-	-	-
August	**8.46**	-	-	-	**1,060.10**	-	-	-
September	**4.30**	-	-	-	**930.80**	-	-	-
October	**6.47**	-	-	-	**994.20**	-	-	-
November	**49.23**	-	-	-	**822.80**	-	-	-
December	**143.57**	-	-	-	-	-	-	-

INPUT DATA
BIG BEAR WATERMASTER REPORT
CALENDAR YEAR
2008
(continued)

Month	SWRCB Order 95-4 Releases & Leakage (acre-feet)	Mutual's Direct Use of Order 95-4 Releases (acre-feet)	Basin Replenishment from SBVMWD (acre-feet)	Basin Replenishment from Others (acre-feet)	2008 Net Wastewater Exports (acre-feet)	**Average Air Temperature (degrees F)**
January	49.12	4.23	-	-	**154.68**	**31.4**
February	9.33	-	-	-	**208.02**	**34.0**
March	8.23	4.86	-	-	**197.55**	**40.8**
April	15.67	15.67	-	-	**98.96**	**45.7**
May	37.08	37.08	-	-	**79.97**	**49.7**
June	59.21	59.21	-	-	**63.32**	**62.3**
July	62.53	62.53	-	-	**70.77**	**66.4**
August	67.72	67.72	-	-	**76.55**	**66.1**
September	65.30	65.30	-	-	**47.06**	**58.5**
October	71.69	71.69	-	-	**52.86**	**49.2**
November	62.72	54.36	-	-	**66.05**	**43.4**
December	67.82	31.95	-	-	**91.33**	**33.1**
					1,207.12	

SUMMARY RESULTS
CALENDAR YEAR
2008

LAKE ACCOUNTS (acre-feet)	Big Bear	Mutual	Actual
Initial Storage	**19,093**	**34,655**	**53,748**
Lake Inflows	0	14,182	14,182
In-Lieu Supplies to Mutual	4,634	(4,634)	0
Lake Releases (Mutual & BBMWD)	0	0	0
Releases & Leakage (SWRCB 95-4)	(37)	(540)	(576)
Net Snowmaking Withdrawals from Lake	(289)	0	(289)
Lake Spills & Flood Control Releases	0	0	0
Leakage from Dam	0	0	0
Evaporation from Lake	(1,840)	(9,620)	(11,460)
Net Wastewater Exports	(1,207)	1,207	0
Advances & Repayment of Advances	0	0	0
Ending Storage	**20,354**	**35,251**	**55,605**
BASIN MAKE UP ACCOUNT (acre-feet)			
Beginning Balance	n.a.	n.a.	**24,138**
Recharge From Deliveries of Lake Water	237	2,554	(2,317)
Recharge From Deliveries of Imported Water	2,317	n.a.	2,317
Recharge from Spills & Releases	52	33	19
Account Credit (Debit)	**2,606**	**2,587**	**19**
Amount Replenished	0	n.a.	0
Ending Balance			**24,157**

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 1
ACTUAL OPERATION OF BIG BEAR LAKE

Month	1 Gage Height 1st of Month (Input Data) (feet)	2 Volume in Storage (ac-ft)	3 Change in Storage (ac-ft)	4 Lake Surface Area (acres)	5 Spills Releases Leakage Withdrawals (see Table 1.A) (feet)	6 Estimated Lake Evaporation (see Table 1.D) (ac-ft)	7 Calc. Total Inflow (ac-ft)	8 Adjusted Lake Inflow * (ac-ft)	9 Adjusted Lake Evap * (ac-ft)	10 Adjusted Evap Rate * (feet/month)
	65.37	**53,748**		2,642						
January			4,151		159	209	4,519	4,519	209	0.078
	66.88	57,899		2,717						
February			2,741		38	268	3,047	3,047	268	0.098
	67.92	60,640		2,765						
March			1,950		24	585	2,559	2,559	585	0.210
	68.62	62,590		2,797						
April			419		17	818	1,254	1,254	818	0.292
	68.77	63,009		2,803						
May			(977)		44	1,149	216	216	1,149	0.411
	68.41	62,032		2,788						
June			(1,529)		63	1,541	75	75	1,541	0.555
	67.86	60,503		2,763						
July			(1,373)		69	1,703	399	399	1,703	0.619
	67.36	59,130		2,739						
August			(1,636)		76	1,710	150	150	1,710	0.628
	66.77	57,494		2,710						
September			(1,349)		70	1,374	95	95	1,374	0.509
	66.25	56,145		2,686						
October			(1,204)		78	1,056	(70)	0	1,126	0.421
	65.82	54,941		2,664						
November			(133)		87	722	677	677	722	0.271
	65.75	54,808		2,662						
December			797		140	254	1,191	1,191	254	0.095
	66.03	**55,605**		2,676						
TOTALS			**1,857**		**865**	**11,390**	**14,112**	**14,182**	**11,460**	**4.188**

* NOTE: Evaporation adjusted to eliminate negative inflow

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 1.A
ACTUAL OPERATION OF BIG BEAR LAKE
Summary Details

Month	1	2 Actual Lake Spills (Input Data) (ac-ft)	3 Actual Flood Control Releases (Input Data) (ac-ft)	4 Actual Lake Releases (see Table 1.B) (ac-ft)	5 Actual Estimated Leakage (Input Data) (ac-ft)	6 Estimated Net Lake Withdrawal (see Table 1.C) (ac-ft)	7	8	9 Total Spills Releases Leakage Withdrawals (ac-ft)
January		-	-	49.1	-	109.9			159.0
February		-	-	9.3	-	28.8			38.1
March		-	-	8.2	-	16.2			24.4
April		-	-	15.7	-	0.9			16.5
May		-	-	37.1	-	6.9			43.9
June		-	-	59.2	-	3.8			63.1
July		-	-	62.5	-	6.7			69.2
August		-	-	67.7	-	8.5			76.2
September		-	-	65.3	-	4.3			69.6
October		-	-	71.7	-	6.5			78.2
November		-	-	62.7	-	24.6			87.3
December		-	-	67.8	-	71.8			139.6
TOTALS		**-**	**-**	**576.4**	**-**	**288.8**			**865.2**

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 1.B
ACTUAL OPERATION OF BIG BEAR LAKE
Release Details

Month	1 Mutual's Shareholder Releases (Input Data) (ac-ft)	2 Mutual's Other Releases (Input Data) (ac-ft)	3 Mutual's Total Releases (Col.1 + Col.2) (ac-ft)	4	5 Big Bear's Spreading Releases (Input Data) (ac-ft)	6 Big Bear's Other Releases (Input Data) (ac-ft)	7 Big Bear's Total Releases (Col.5 + Col.6) (ac-ft)	8 SWRCB Order NO. 95-4 Releases (Input Data) (ac-ft)	9 Total Actual Releases (Cols.5+ 7+ 8) (ac-ft)
January	-	-	-		-	-	-	49.1	49.1
February	-	-	-		-	-	-	9.3	9.3
March	-	-	-		-	-	-	8.2	8.2
April	-	-	-		-	-	-	15.7	15.7
May	-	-	-		-	-	-	37.1	37.1
June	-	-	-		-	-	-	59.2	59.2
July	-	-	-		-	-	-	62.5	62.5
August	-	-	-		-	-	-	67.7	67.7
September	-	-	-		-	-	-	65.3	65.3
October	-	-	-		-	-	-	71.7	71.7
November	-	-	-		-	-	-	62.7	62.7
December	-	-	-		-	-	-	67.8	67.8
TOTALS	**-**	**-**	**-**		**-**	**-**	**-**	**576.4**	**576.4**

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 1.C
ACTUAL OPERATION OF BIG BEAR LAKE
Lake Withdrawal Details

Month	1	2 Snowmaking Withdrawals (Input Data) (ac-ft)	3 Recharge Withdrawals (Input Data) (ac-ft)	4	5 Total Lake Withdrawals (ac-ft)	6	7 Return from Snow melt @ 50.0% (ac-ft)	8	9 Estimated Net Lake Withdrawals (ac-ft)
January		219.75	-		219.8		109.88		109.9
February		57.61	-		57.6		28.81		28.8
March		32.43	-		32.4		16.22		16.2
April		1.74	-		1.7		0.87		0.9
May		6.85	-		6.9		-		6.9
June		3.84	-		3.8		-		3.8
July		6.70	-		6.7		-		6.7
August		8.46	-		8.5		-		8.5
September		4.30	-		4.3		-		4.3
October		6.47	-		6.5		-		6.5
November		49.23	-		49.2		24.62		24.6
December		143.57	-		143.6		71.79		71.8
TOTALS		**540.95**	**-**		**541.0**		**252.19**		**288.76**

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 1.D
ACTUAL OPERATION OF BIG BEAR LAKE
Evaporation Details

Month	1	2	3 Lake Surface Area (acres)	4 Average Lake Area (acres)	5 Average Air Temperature (Input Data) (deg F)	6 Calculated Evaporation Rate (feet/month)	7	8	9 Estimated Lake Evaporation (ac-ft)
January			2,642						
				2,680	31.40	0.078			208.8
February			2,717						
				2,741	34.00	0.098			267.9
March			2,765						
				2,781	40.80	0.210			584.9
April			2,797						
				2,800	45.70	0.292			818.2
May			2,803						
				2,796	49.70	0.411			1,149.1
June			2,788						
				2,776	62.30	0.555			1,540.7
July			2,763						
				2,751	66.40	0.619			1,702.9
August			2,739						
				2,725	66.10	0.628			1,710.1
September			2,710						
				2,698	58.50	0.509			1,374.5
October			2,686						
				2,675	49.20	0.395			1,055.7
November			2,664						
				2,663	43.40	0.271			722.4
December			2,662						
				2,669	33.10	0.095			254.4
			2,676						
TOTALS						**4.162**			**11,389.6**

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 2
SYNTHESIZED MUTUAL OPERATION OF BIG BEAR LAKE

Month	1 Gauge Height 1st of Month (feet)	2 Mutual's Lake Account (ac-ft)	3 Change in Storage (*) (ac-ft)	4 Lake Surface Area (acres)	5 Mutual's Lake Inflow (see Table 1) (feet)	6 Mutual's Net Wastewater Export Credit (see Table 2.A) (ac-ft)	7 Mutual's Lake Evap. (see Table 2.B) (ac-ft)	8 Mutual's Snowmaking Advances to Big Bear (see Table 3) (ac-ft)	9 Mutual's Credit for Return of Advances (see Table 3) (ac-ft)	10 Mutual's Releases Leakage Spills & In-lieu Del. (see Table 2.A) (ac-ft)
January	57.35	**34,655**		2,109						
			4,470		4,518.8	154.7	170.5	-	-	33.2
February	59.40	39,125		2,267						
			3,023		3,047.1	208.0	225.8	-	-	6.3
March	60.70	42,148		2,352						
			2,249		2,559.4	197.6	500.4	-	-	7.2
April	61.65	44,397		2,406						
			632		1,253.8	99.0	705.1	-	-	15.7
May	61.90	45,029		2,420						
			(774)		216.0	80.0	990.6	-	-	79.0
June	61.55	44,255		2,400						
			(1,283)		74.7	63.3	1,324.5	-	-	96.4
July	61.05	42,973		2,372						
			(1,793)		399.1	70.8	1,454.1	-	-	809.1
August	60.25	41,179		2,326						
			(2,339)		150.2	76.6	1,438.0	-	-	1,127.8
September	59.25	38,840		2,256						
			(1,986)		95.1	47.1	1,132.0	-	-	996.1
October	58.35	36,854		2,188						
			(1,919)		-	52.9	906.1	-	-	1,065.9
November	57.45	34,935		2,118						
			(711)		676.7	66.1	571.3	-	-	882.5
December	57.15	34,224		2,094						
			1,027		1,191.0	91.3	201.2	-	-	54.3
	57.60	**35,251**		2,129						
TOTALS			**596**		**14,181.9**	**1,207.1**	**9,619.6**	**-**	**-**	**5,173.5**

(*) Col. 3 = Col. 5 + Col. 6 - Col. 7 - Col. 8 + Col. 9 - Col. 10

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 2.A
SYNTHESIZED MUTUAL OPERATION OF BIG BEAR LAKE
Lake Outflow Details

Month	1 Mutual's Spills & FC Releases from Table 2.C (ac-ft)	2 Mutual's Lake Releases from Table 1.B (ac-ft)	3 Mutual's Leakage from Table 2.C (ac-ft)	4 Mutual's Order No. 95-4 Releases from Table 2.C (ac-ft)	5 Big Bear's In-lieu Supply Delveries (see Table 3.B) (ac-ft)	6 Mutual's Releases Leakage Spills & In-lieu Del. (to Table 2) (ac-ft)	7	8 Net Credit for Wastewater Exports (Input Data)	9 Spilled from Mutual's Lake Acct. (Input Data) (ac-ft)	10 Net Wastewater Export Credit (to Table 2) (ac-ft)
January	-	-	-	33.2	-	33.2		154.7	-	154.7
February	-	-	-	6.3	-	6.3		208.0	-	208.0
March	-	-	-	7.2	-	7.2		197.6	-	197.6
April	-	-	-	15.7	-	15.7		99.0	-	99.0
May	-	-	-	37.1	41.9	79.0		80.0	-	80.0
June	-	-	-	59.2	37.2	96.4		63.3	-	63.3
July	-	-	-	62.5	746.6	809.1		70.8	-	70.8
August	-	-	-	67.7	1,060.1	1,127.8		76.6	-	76.6
September	-	-	-	65.3	930.8	996.1		47.1	-	47.1
October	-	-	-	71.7	994.2	1,065.9		52.9	-	52.9
November	-	-	-	59.7	822.8	882.5		66.1	-	66.1
December	-	-	-	54.3	-	54.3		91.3	-	91.3
TOTALS	**-**	**-**	**-**	**539.9**	**4,633.60**	**5,173.5**		**1,207.1**	**-**	**1,207.1**

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 2.B
SYNTHESIZED MUTUAL OPERATION OF BIG BEAR LAKE
Synthesized Evaporation Calculation

Month	1 Starting Volume (ac-ft)	2 Starting Area (acres)	3 Assumed Evap (ac-ft)	4 Estimated Ending Volume (ac-ft)	5 Estimated Ending Area (acres)	6 Average Area (acres)	7 Mutuals Lake Evap. (to Table 2) (ac-ft)	8 Big Bear's Lake Evap. (to Table 3.A) (ac-ft)	9 Revised Ending Volume Estimate (ac-ft)	10
January	34,655.0	2,109.0	164.3	39,130.9	2,267.0	2,188.0	170.5	38.3	39,124.8	
February	39,124.8	2,267.0	221.6	42,152.0	2,352.0	2,309.5	225.8	42.1	42,147.8	
March	42,147.8	2,352.0	494.7	44,402.8	2,406.0	2,379.0	500.4	84.5	44,397.1	
April	44,397.1	2,406.0	703.1	45,031.1	2,420.0	2,413.0	705.1	113.1	45,029.1	
May	45,029.1	2,420.0	994.7	44,251.3	2,400.0	2,410.0	990.6	158.5	44,255.5	
June	44,255.5	2,400.0	1,332.2	42,964.9	2,372.0	2,386.0	1,324.5	216.2	42,972.6	
July	42,972.6	2,372.0	1,468.3	41,165.1	2,326.0	2,349.0	1,454.1	248.8	41,179.3	
August	41,179.3	2,326.0	1,459.9	38,818.3	2,256.0	2,291.0	1,438.0	272.1	38,840.2	
September	38,840.2	2,256.0	1,149.3	36,837.0	2,188.0	2,222.0	1,132.0	242.5	36,854.3	
October	36,854.3	2,188.0	920.9	34,920.4	2,118.0	2,153.0	906.1	219.7	34,935.1	
November	34,935.1	2,118.0	574.6	34,220.9	2,094.0	2,106.0	571.3	151.1	34,224.1	
December	34,224.1	2,094.0	199.6	35,252.5	2,129.0	2,111.5	201.2	53.2	35,250.9	
TOTALS							**9,619.6**	**1,840.1**		

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 2.C
SYNTHESIZED MUTUAL OPERATION OF BIG BEAR LAKE
Mutual's Leakage, Spills & FC Releases, and SWRCB Releases

Month	1 Total Leakage from Input Data (ac-ft)	2 Mutual's Leakage to Table 2.A (ac-ft)	3 Big Bear's Leakage to Table 3.B (ac-ft)	4 Actual Spills & FC Releases from Input Data (ac-ft)	5 Big Bear's Spills & FC Releases to Table 3.B (ac-ft)	6 Mutual's Spills & FC Releases to Table 2.A (ac-ft)	7 SWRCB Order 95-4 Releases from Input Data (ac-ft)	8 Mutual's Order 95-4 Releases from Input Data (ac-ft)	9 Mutual's Order 95-4 Releases to Table 2.A (ac-ft)	10 Big Bear's Order 95-4 Releases to Table 3.B (ac-ft)
January	-	-	-	-	-	-	49.1	4.23	33.2	15.9
February	-	-	-	-	-	-	9.3	0.00	6.3	3.0
March	-	-	-	-	-	-	8.2	4.86	7.2	1.0
April	-	-	-	-	-	-	15.7	15.67	15.7	-
May	-	-	-	-	-	-	37.1	37.08	37.1	-
June	-	-	-	-	-	-	59.2	59.21	59.2	-
July	-	-	-	-	-	-	62.5	62.53	62.5	-
August	-	-	-	-	-	-	67.7	67.72	67.7	-
September	-	-	-	-	-	-	65.3	65.30	65.3	-
October	-	-	-	-	-	-	71.7	71.69	71.7	-
November	-	-	-	-	-	-	62.7	54.36	59.7	3.0
December	-	-	-	-	-	-	67.8	31.95	54.3	13.5
TOTALS	**-**	**-**	**-**	**-**	**-**	**-**	**576.42**	**474.60**	**539.9**	**36.5**

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 3
DETERMINATION OF BIG BEAR'S LAKE ACCOUNT STATUS
Lake Account and Advance Account

Month	1 Actual Lake Account (see Table 1) (ac-ft)	2 Mutual's Lake Account (see Table 2) (ac-ft)	3 Big Bear's Lake Account (calc.) (ac-ft)	4 Change in Big Bear's Lake Account (calc.) (ac-ft)	5	6 Big Bear's Advances From Mutual (calc.) (ac-ft)	7 Big Bear's Payments Against Advances (calc.) (ac-ft)	8 Big Bear's Advance Account Balance (calc.) (ac-ft)	9 Big Bear's 0% Repayment Premium (calc.) (ac-ft)	10 Mutual's Credit for Return of Advances (to Table 2) (ac-ft)
January	53,748	34,655	**19,093**	(318.8)		-	-	-	-	-
February	57,899	39,125	**18,774**	(282.0)		-	-	-	-	-
March	60,640	42,148	**18,492**	(299.3)		-	-	-	-	-
April	62,590	44,397	**18,193**	(213.0)		-	-	-	-	-
May	63,009	45,029	**17,980**	(203.4)		-	-	-	-	-
June	62,032	44,255	**17,777**	(246.1)		-	-	-	-	-
July	60,503	42,973	**17,530**	420.3		-	-	-	-	-
August	59,130	41,179	**17,951**	703.0		-	-	-	-	-
September	57,494	38,840	**18,654**	637.0		-	-	-	-	-
October	56,145	36,854	**19,291**	715.1		-	-	-	-	-
November	54,941	34,935	**20,006**	578.0		-	-	-	-	-
December	54,808	34,224	**20,584**	(229.7)		-	-	-	-	-
	55,605	35,251	**20,354**					-		
TOTALS				**1,261.1**		-	-		-	-

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 3.A
DETERMINATION OF BIG BEAR'S LAKE ACCOUNT STATUS
Lake Inflow Details

Month	1 In-lieu Water from SBVMWD (Input Data) (ac-ft)	2 In-lieu Water from Other's Wells (Input Data) (ac-ft)	3 In-lieu Supplies from Mutual's Wells (Input Data) (ac-ft)	4	5 Other Sources of In-lieu Supplies (Input Data) (ac-ft)	6 Big Bear's In-lieu Deliveries to Mutual (calc.) (ac-ft)	7	8 Big Bear's Advances From Mutual (from Table 3) (ac-ft)	9	10 Big Bear's Total Lake Inflows (calc.) (ac-ft)
January	-	-	-		-	-		-		-
February	-	-	-		-	-		-		-
March	-	-	-		-	-		-		-
April	-	-	-		-	-		-		-
May	41.9	-	-		-	**41.9**		-		**41.9**
June	37.2	-	-		-	**37.2**		-		**37.2**
July	746.6	-	-		-	**746.6**		-		**746.6**
August	1,060.1	-	-		-	**1,060.1**		-		**1,060.1**
September	930.8	-	-		-	**930.8**		-		**930.8**
October	994.2	-	-		-	**994.2**		-		**994.2**
November	822.8	-	-		-	**822.8**		-		**822.8**
December	-	-	-		-	-		-		-
TOTALS	**4,633.6**	**-**	**-**		**-**	**4,633.6**		**-**		**4,633.6**

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 3.B
DETERMINATION OF BIG BEAR'S LAKE ACCOUNT STATUS
Lake Outflow Details

Month	1 Big Bear's Snowmaking Withdrawals (Input Data) (ac-ft)	2 Big Bear's Recharge Withdrawals (Input Data) (ac-ft)	3 Return Flow from Snowmelt 50.0% (Table 1.C) (ac-ft)	4 Big Bear's Net Lake Withdrawal (calc.) (ac-ft)	5 Big Bear's Payments Against Advances (see Table 3) (ac-ft)	6 Big Bear's Spills & FC Releases from Table 2.C (ac-ft)	7 Big Bear's Leakage + SWRCB Rel. from Table 2.C (ac-ft)	8 Big Bear's Lake Evaporation from Table 2.B (ac-ft)	9 Net Wastewater Export Credit (from Table 2.A) (ac-ft)	10 Big Bear's Total Lake Outflows (calc.) (ac-ft)
January	219.8	-	109.9	109.9	-	-	15.9	38.3	154.7	**318.8**
February	57.6	-	28.8	28.8	-	-	3.0	42.1	208.0	**282.0**
March	32.4	-	16.2	16.2	-	-	1.0	84.5	197.6	**299.3**
April	1.7	-	0.9	0.9	-	-	-	113.1	99.0	**213.0**
May	6.9	-	-	6.9	-	-	-	158.5	80.0	**245.3**
June	3.8	-	-	3.8	-	-	-	216.2	63.3	**283.3**
July	6.7	-	-	6.7	-	-	-	248.8	70.8	**326.3**
August	8.5	-	-	8.5	-	-	-	272.1	76.6	**357.1**
September	4.3	-	-	4.3	-	-	-	242.5	47.1	**293.8**
October	6.5	-	-	6.5	-	-	-	219.7	52.9	**279.1**
November	49.2	-	24.6	24.6	-	-	3.0	151.1	66.1	**244.8**
December	143.6	-	71.8	71.8	-	-	13.5	53.2	91.3	**229.7**
TOTALS	**541.0**	**-**	**252.2**	**288.8**	**-**	**-**	**36.5**	**1,840.1**	**1,207.1**	**3,372.5**

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 4
BASIN COMPENSATION ACCOUNT

Month	1 Big Bear's Basin Additions (see Table 4.A) (ac-ft)	2	3 Mutual's Basin Additions (see Table 4.B) (ac-ft)	4	**5 Net Credit (Debit) (ac-ft)**	6	7 Total Basin Replenishment (see Table 4.C) (ac-ft)	8	9 Basin Comp. Account Balance (ac-ft)
January	25.0		16.9		**8.1**		-		**24,138**
February	4.8		3.2		**1.5**		-		24,146
March	4.1		3.6		**0.5**		-		24,148
April	7.8		7.8		**-**		-		24,148
May	39.5		39.5		**-**		-		24,148
June	48.2		48.2		**-**		-		24,148
July	404.6		404.6		**-**		-		24,148
August	563.9		563.9		**-**		-		24,148
September	498.1		498.1		**-**		-		24,148
October	532.9		532.9		**-**		-		24,148
November	442.8		441.3		**1.6**		-		24,148
December	34.3		27.4		**6.9**		-		24,150
TOTALS	**2,606.0**		**2,587.4**		**18.6**		**0.0**		**24,157**

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 4.A
BIG BEAR'S BASIN ADDITIONS

	SPILLS			LAKE RELEASES			IN LIEU SUPPLIES		
Month	1 Actual Spills & FC Releases (ac-ft)	2 Actual SWRCB 95-4 Releases (ac-ft)	3 Basin Addition @ 51.0% (ac-ft)	4 Lake Release for Mutual (ac-ft)	5 SWRCB 95-4 Releases for Mutual (ac-ft)	6 Basin Addition @ 50.0% (ac-ft)	7 Imported In Lieu Deliveries (ac-ft)	8 Basin Addition @ 50.0% (ac-ft)	9 Big Bear's Basin Additions (ac-ft)
January	-	44.9	22.9	-	4.2	2.1	-	-	25.0
February	-	9.3	4.8	-	-	-	-	-	4.8
March	-	3.4	1.7	-	4.9	2.4	-	-	4.1
April	-	-	-	-	15.7	7.8	-	-	7.8
May	-	-	-	-	37.1	18.5	41.9	21.0	39.5
June	-	-	-	-	59.2	29.6	37.2	18.6	48.2
July	-	-	-	-	62.5	31.3	746.6	373.3	404.6
August	-	-	-	-	67.7	33.9	1,060.1	530.1	563.9
September	-	-	-	-	65.3	32.7	930.8	465.4	498.1
October	-	-	-	-	71.7	35.8	994.2	497.1	532.9
November	-	8.4	4.3	-	54.4	27.2	822.8	411.4	442.8
December	-	35.9	18.3	-	32.0	16.0	-	-	34.3
TOTALS	**0.0**	**101.8**	**51.9**	**0.0**	**474.6**	**237.3**	**4,633.6**	**2,316.8**	**2,606.0**

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 4.B
MUTUAL'S BASIN ADDITIONS

Month	SPILLS & FISH RELEASES 1 Mutual's Spills (ac-ft)	2 Mutual's SWRCB 95-4 Releases (ac-ft)	3 Basin Addition @ 51.0% (ac-ft)	LAKE RELEASES 4 Mutual's Lake Demands (ac-ft)	5 SWRCB 95-4 Releases for Mutual (ac-ft)	6 Basin Addition @ 50.0% (ac-ft)	7 Total Basin Additions (ac-ft)
January	-	28.9	14.8	-	4.2	2.1	16.9
February	-	6.3	3.2	-	0.0	-	3.2
March	-	2.3	1.2	-	4.9	2.4	3.6
April	-	-	-	-	15.7	7.8	7.8
May	-	-	-	41.9	37.1	39.5	39.5
June	-	-	-	37.2	59.2	48.2	48.2
July	-	-	-	746.6	62.5	404.6	404.6
August	-	-	-	1,060.1	67.7	563.9	563.9
September	-	-	-	930.8	65.3	498.1	498.1
October	-	-	-	994.2	71.7	532.9	532.9
November	-	5.3	2.7	822.8	54.4	438.6	441.3
December	-	22.4	11.4	-	32.0	16.0	27.4
TOTALS	**0.0**	**65.3**	**33.3**	**4,633.6**	**474.6**	**2,554.1**	**2,587.4**

CALENDAR YEAR
2008
BIG BEAR WATERMASTER

TABLE 4.C
BASIN REPLENISHMENTS

Month	1	2 Amount Replenished From SBVMWD (ac-ft)	3	4	5 Amount Replenished From Releases (ac-ft)	6 Amount Replenished From Others (ac-ft)	7	8 Total Amount Replenished (ac-ft)	9
January		-			-	-		-	
February		-			-	-		-	
March		-			-	-		-	
April		-			-	-		-	
May		-			-	-		-	
June		-			-	-		-	
July		-			-	-		-	
August		-			-	-		-	
September		-			-	-		-	
October		-			-	-		-	
November		-			-	-		-	
December		-			-	-		-	
		0.0			0.0	0.0		0.0	

APPENDIX C

REQUEST TO EXTEND TIME TO FILE WATERMASTER REPORT FOR WATER YEAR 2008

WAYNE K. LEMIEUX (SBN 43501)
LEMIEUX & O'NEILL
2393 Townsgate Road, Suite 201
Westlake Village, California 91361
Telephone: 805/ 495-4770
Facsimile: 805/ 495-2787

Attorneys for Plaintiff
BIG BEAR MUNICIPAL WATER DISTRICT

SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF SAN BERNARDINO

BIG BEAR MUNICIPAL WATER DISTRICT, Plaintiff, vs. NORTH FORK WATER COMPANY, et al. Defendants.	**CASE NO.: SCV 165493** **REQUEST TO EXTEND TIME TO FILE WATERMASTER REPORT FOR WATER YEAR 2008; ORDER**

A Watermaster was established in this case pursuant to Judgment filed herein on February 7, 1977. Among other things, the Watermaster must serve on all parties and file with the Court an annual report on or before April 1st of each year. The report includes accounting for water under the physical solution and a report of all significant activity during the preceding calendar year.

The Watermaster members have not yet agreed on the contents of the report. As a result, preparation of a report by April 1, 2009, for the preceding year is not presently feasible and delay until June 1, 2009, is reasonable. The interest of the parties will not be adversely affected by such a delay.

///

///

Accordingly, Watermaster requests the Court order the filing and serving of the report of Watermaster Committee for the water year 2008 may be delayed until June 1, 2009.

DATED: March 16, 2009

LEMIEUX & O'NEILL

By: _____
Wayne K. Lemieux,
Attorneys for Plaintiff
BIG BEAR MUNICIPAL WATER DISTRICT
(Watermaster member, Donald E. Evenson)

IT IS ORDERED that,

The filing and serving of the report of Watermaster Committee for the water year 2008 may be delayed until June 1, 2009.

DATED: _____, 2009.

_____
JUDGE OF THE SUPERIOR COURT

PROOF OF SERVICE

STATE OF CALIFORNIA,)
) ss.
COUNTY OF VENTURA)

I am employed in the County of Ventura, State of California. I am over the age of 18 and not a party to the within action. My business address is 2393 Townsgate Road, Suite 201, Westlake Village, California 91361.

On **March 16, 2009**, I served the foregoing document described as **REQUEST TO EXTEND TIME TO FILE WATERMASTER REPORT FOR WATER YEAR 2008; ORDER** on interested parties in this action be placing a true copy thereof enclosed in a sealed envelope addressed as follows:

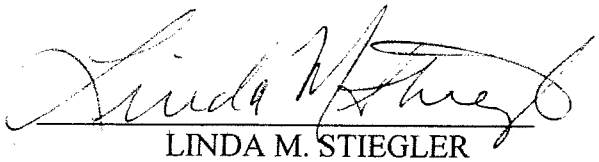
Please see attached list.

[X] **(BY MAIL) I am "readily familiar" with the firm's practice of collection and processing correspondence for mailing. Under that practice it would be deposited with U.S. postal service on that same day with postage thereon fully prepaid at Westlake Village, California in the ordinary course of business.**

[ ] (BY FACSIMILE) from (805) 495-2787 to (661) 327-4755

I declare under penalty of perjury under the laws of the State of California the above is true and correct.

Executed on March 16, 2009, in Westlake Village, California.



LINDA M. STIEGLER

SERVICE MAILING LIST

Big Bear Municipal Water District
P. O. Box 2863
Big Bear Lake, CA 92315

Bear Valley Mutual Water Company
101 East Olive Avenue
Redlands, CA 92373

City of Redlands
Attn: City Attorney
P. O. Box 3005
Redlands, CA 92373

David B. Cosgrove, Esq.
RUTAN & TUCKER
611 Anton Blvd., Suite 1400
Costa Mesa, CA 92626-1998

David G. Moore, Esq.
REID & HELLYER
P. O. Box 1300
Riverside, CA 92502-1300

Donald E. Evenson, Watermaster Member
MWH Americas
2121 N. California, Suite 600
Walnut Creek, CA 94596

Brownstein Hyatt Farber Schreck, LLP
[formerly Hatch & Parent]
P. O. Drawer 720
Santa Barbara, CA 93102-0720

Lugonia Water Company
101 East Olive Avenue
Redlands, CA 92373

Burnie Davendar
San Bernardino Water Conservation Dist.
P. O. Box 1839
Redlands, CA 92373

North Fork Water Company
P. O. Box 3427
San Bernardino, CA 92413

Redlands Water Company
101 East Olive Avenue
Redlands, CA 92373

Steven M. Kennedy, Esq.
BRUNICK, ALVAREZ & BATTERSBY
1839 Commercenter West
San Bernardino, CA 92412

APPENDIX D

COURT ORDER APPROVING APPOINTMENT OF R. ROBERT NEUFELD AS WATERMASTER COMMITTEE MEMBER

RUTAN & TUCKER, LLP
David B. Cosgrove (State Bar No. 115564)
611 Anton Boulevard, Fourteenth Floor
Costa Mesa, California 92626-1931
Telephone: 714-641-5100
Facsimile: 714-546-9035

Attorneys for Defendant
SAN BERNARDINO VALLEY WATER
CONSERVATION DISTRICT

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO

BIG BEAR MUNICIPAL WATER DISTRICT, Plaintiff, vs. NORTH FORK WATER COMPANY, ET AL., Defendants.	Case No. SCV SS 165493 Judge Paul M. Bryant, Jr. Department S-36 Submitted on the Pleadings – No Appearance ~~[PROPOSED]~~ ORDER RE RULING ON DEFENDANT'S MOTION FOR APPOINTMENT OF WATERMASTER REPRESENTATIVE Date: 10/28/08 Time: 8:30 a.m. Dept: S-36 Date Action Filed: Trial Date: None

TO ALL PARTIES AND TO THEIR ATTORNEYS OF RECORD:

PLEASE TAKE NOTICE that on October 28, 2008, at 8:30 a.m., in Department S-36 of the above-entitled Court, located at 351 N. Arrowhead, San Bernardino, California, SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT's Motion for Appointment of Watermaster was heard before the Hon. Paul M. Bryant, Jr. The Motion was submitted on the papers and no appearances were made.

Upon review of the moving papers, the Court ruled as follows:

1. Defendant's Motion is granted and an order naming Mr. R. Robert Neufeld to the Big Bear Watermaster, pursuant to the Judgment entered in this case in 1977.

2. The Court furthers order that Defendant give notice of this ruling.

DATED: 10/20/08

HON.
Judge of the Superior Court

PROOF OF SERVICE BY MAIL

STATE OF CALIFORNIA)
) ss.:
COUNTY OF ORANGE)

I am employed in the County of Orange, State of California. I am over the age of 18 and not a party to the within action. My business address is 611 Anton Boulevard, Fourteenth Floor, Costa Mesa, California 92626-1998.

On September 24, 2008, I served on interested parties in said action the within document at the address below:

NOTICE OF MOTION AND MOTION FOR APPOINTMENT OF WATERMASTER; (PROPOSED) ORDER

David G. Moore, esq.
Reid & Hellyer
3880 Lemon Street, 5th Floor
P. O. Box 1300
Riverside, CA 92502-1300

Attorneys for Defendant Bear Valley Mutual Water Company

Stephan G. Saleson, Esq.
Varner, Saleson & Dobler
3750 University Avenue, Suite 610
Riverside, CA 92501

Attorneys for Intervenor San Bernardino Valley Municipal Water District

James Dilworth, Esq.
1520 Country Club Drive
Riverside, CA 92506

Attorneys for Intervenor San Bernardino Valley Municipal Water District

Steven M. Kennedy, Esq.
Brunick, Alvarez & Battersby
1839 Commercenter West
P. O. Box 6425
San Bernardino, CA 92412-6425

Attorneys for North Fork Water Company

Wayne K. Lemieux, Esq.
Lemieux & O'Neill
2393 Townsgate Road, Suite 201
Westlake Village, C A 91361

Attorneys for Big Bear Municipal Water District

Big Bear Municipal Water District
Attn: Scott Heule, General Manager
P. O. Box 2863
Big Bear Lake, CA 92315

Bear Valley Mutual Water Company
Attn: Michael Huffstutler
101 E. Olive Avenue
Redlands, CA 92373

q

San Bernardino Valley Municipal Water District
Attn: Randy Van Gelder
P. O. Box 5906
San Bernardino. CA 92412-5906

Lugonia Water Company
101 E. Olive Avenue
Redlands, CA 92373

Robert Neufeld
San Bernardino Valley Water Conservation District
1630 W. Redlands Blvd., Ste. A
Redlands, CA 92373-8032
Donald E. Evenson
Watermaster Member
Montgomery Watson
1340 Treat Blvd., #300
Walnut Creek, CA 94598
City of Redlands
Attn: Dan McHugh, City Attorney
P. O. Box 3005
Redlands, CA 92373
North Fork Water Company
P. O. Box 3427
San Bernardino, CA 92413

[x] (BY MAIL) I caused such envelope(s) with postage thereon fully prepared to be placed in the United States mail at Costa Mesa, California.

[ ] (BY PERSONAL SERVICE) I caused such envelope(s) to be delivered by hand this date to the offices of the addressee(s).

[ ] (BY OVERNIGHT DELIVERY) I caused such envelope(s) to be delivered to an overnight delivery carrier with delivery fees provided for, addressed to the person(s) on whom it is served.

[ ] (BY FACSIMILE) I served the parties listed on the service list by facsimile on the fax numbers listed below each of the parties.

[X] (STATE) I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

Executed on September 24, 2008, at Costa Mesa, California.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

T. Rhea
(Type or print name)

(Signature)

PROOF OF SERVICE BY MAIL

STATE OF CALIFORNIA)
) ss.:
COUNTY OF ORANGE)

I am employed in the County of Orange, State of California. I am over the age of 18 and not a party to the within action. My business address is 611 Anton Boulevard, Fourteenth Floor, Costa Mesa, California 92626-1998.

On October 31, 2008, I served on interested parties in said action the within document at the address below:

ORDER RE RULING ON DEFENDANT'S MOTION FOR APPOINTMENT OF WATERMASTER

David G. Moore, esq.
Reid & Hellyer
3880 Lemon Street, 5th Floor
P. O. Box 1300
Riverside, CA 92502-1300

Attorneys for Defendant Bear Valley Mutual Water Company

Stephan G. Saleson, Esq.
Varner, Saleson & Dobler
3750 University Avenue, Suite 610
Riverside, CA 92501

Attorneys for Intervenor San Bernardino Valley Municipal Water District

James Dilworth, Esq.
1520 Country Club Drive
Riverside, CA 92506

Attorneys for Intervenor San Bernardino Valley Municipal Water District

Steven M. Kennedy, Esq.
Brunick, Alvarez & Battersby
1839 Commercenter West
P. O. Box 6425
San Bernardino, CA 92412-6425

Attorneys for North Fork Water Company

Wayne K. Lemieux, Esq.
Lemieux & O'Neill
2393 Townsgate Road, Suite 201
Westlake Village, C A 91361

Attorneys for Big Bear Municipal Water District

Big Bear Municipal Water District
Attn: Scott Heule, General Manager
P. O. Box 2863
Big Bear Lake, CA 92315

Bear Valley Mutual Water Company
Attn: Michael Huffstutler
101 E. Olive Avenue
Redlands, CA 92373

q

San Bernardino Valley Municipal Water District
Attn: Randy Van Gelder
P. O. Box 5906
San Bernardino. CA 92412-5906

Lugonia Water Company
101 E. Olive Avenue
Redlands, CA 92373

Robert Neufeld
San Bernardino Valley Water Conservation District
1630 W. Redlands Blvd., Ste. A
Redlands, CA 92373-8032
Donald E. Evenson
Watermaster Member
Montgomery Watson
2121 N. California Boulevard, Suite 600
Walnut Creek, CA 94596
City of Redlands
Attn: Dan McHugh, City Attorney
P. O. Box 3005
Redlands, CA 92373
North Fork Water Company
P. O. Box 3427
San Bernardino, CA 92413

[x] (BY MAIL) I caused such envelope(s) with postage thereon fully prepared to be placed in the United States mail at Costa Mesa, California.

[ ] (BY PERSONAL SERVICE) I caused such envelope(s) to be delivered by hand this date to the offices of the addressee(s).

[ ] (BY OVERNIGHT DELIVERY) I caused such envelope(s) to be delivered to an overnight delivery carrier with delivery fees provided for, addressed to the person(s) on whom it is served.

[ ] (BY FACSIMILE) I served the parties listed on the service list by facsimile on the fax numbers listed below each of the parties.

[X] (STATE) I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

Executed on October 31, 2008, at Costa Mesa, California.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

T. Rhea
(Type or print name)

(Signature)