STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

In the Matter of the Diversion and Use of Water from Big Bear Lake and Bear Creek in San Bernardino County by **BIG BEAR MUNICIPAL WATER DISTRICT** and **BEAR VALLEY MUTUAL WATER COMPANY.**	)	ORDER: WR 95-4 SOURCE: Bear Creek COUNTY: San Bernardino

ORDER REQUIRING MINIMUM RELEASES OF WATER FROM BEAR VALLEY DAM FOR FISHERY PROTECTION

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1.0 INTRODUCTION

On October 24, 1990 California Trout, Inc. (Cal-Trout) filed a complaint against Big Bear Municipal Water District's (District) operation of Bear Valley Dam and Big Bear Lake in San Bernardino County. The complaint alleged that the District's operation of Bear Valley Dam and Big Bear Lake provides insufficient releases of water into Bear Creek to keep the fishery in good condition. The State Water Resources Control Board (SWRCB) staff conducted an investigation and recommended that either a water right hearing be held to receive evidence that would assist the SWRCB in resolving the complaint, or the parties negotiate a settlement of the issues in the complaint. Attempts at negotiation failed, and on July 28, 1993 the SWRCB gave notice of a public hearing. A pre-hearing orientation tour was held on September 29, 1993 and a hearing to receive non-evidentiary policy statements was conducted on September 29 and 30, 1993 in the City of Big Bear Lake. The evidentiary hearing was held on October 12 and 13, 1993, November 18 and 19, 1993, and December 13, 1993. The SWRCB has considered all the evidence in the hearing record and has considered the policy statements and the written closing arguments of the parties. The SWRCB finds and concludes as follows:

2.0 COMPLAINT

Cal-Trout in its complaint alleges that since 1977 the District, which operates Bear Valley Dam and Big Bear Lake, has cut back releases of water from Bear Valley Dam for downstream prior rights and has substituted purchased water from a source other than Big Bear Lake for use by the prior right holders. The complaint alleges that this is causing inadequate instream flows in Bear Creek. Cal-Trout alleges that the District refuses to release from the dam more than 0.106 cubic feet per second (cfs).

Cal-Trout alleges that the District is failing to keep the downstream fishery in good condition. The complaint alleges that the small releases violate the public trust interest in maintaining trout in Bear Creek in good condition. The complaint further alleges that continuing the small releases violates Fish and Game Code section 5937 and is an unreasonable use of water within the meaning of Water Code sections 100 and 275.

Cal-Trout requests that the SWRCB order the District to conduct an Instream Flow Incremental Methodology (IFIM) study to determine the needed flows. In the interim, Cal-Trout requests that the district be ordered to conduct a Tennant Method study to determine interim flow requirements and release the Tennant Method flows. Cal-Trout requests that after completion of an IFIM study, the SWRCB convene a further proceeding to establish permanent flow releases.

3.0 BACKGROUND

3.1 History and Physical Setting

Big Bear Lake is a 73,320 acre-foot (af) reservoir located in the San Bernardino Mountains in San Bernardino County. The lake occupies part of Bear Valley. Its maximum surface area is 2,973 acres, and its maximum surface elevation is 6,743 feet above sea level. Bear Valley Dam impounds the water in the lake.

Baldwin Lake also is located in Bear Valley, to the east of Big Bear Lake. Baldwin Lake is smaller and shallower than Big Bear

Lake. It is generally considered a dry lake although it occasionally retains water through a summer. Baldwin Lake is a natural sink. Baldwin Lake has no surface hydrological connection to Big Bear Lake.

A dam was first constructed at the site of Bear Valley Dam in 1884. The reservoir was enlarged in 1911 to its current size by construction of a new dam downstream of the original dam. The new dam was reinforced in 1988. The original purpose of the reservoir was to impound water for irrigation use in the San Bernardino Valley. Irrigation uses from the reservoir continued into the late 1970's, but recreational uses on and around the lake had increased in importance over time. The residents of Bear Valley voted in 1964 to create the District, with the purpose of changing the Lake's primary use to recreation. Litigation ensued, with the District seeking to acquire Big Bear Lake by condemnation. In 1977 the parties stipulated to a judgment in which the District acquired the dam, the land under the lake, and the surface recreational rights to the lake. The parties also stipulated to a judgment in which the District was allowed to provide a substitute, or "in lieu", water supply for the water right holders in the San Bernardino Valley instead of releasing water from Big Bear Lake.

Tourism is the principal economic base for the City of Big Bear Lake and nearby unincorporated communities in Bear Valley. Big Bear Lake is easily accessible from the urban areas in southern California. Bear Valley and Big Bear Lake offer boating, fishing, water contact recreation, winter skiing, sightseeing, hiking, and other outdoor recreation.

Releases from Bear Valley Dam flow into Bear Creek and then into the Santa Ana River. From the dam, Bear Creek flows through a steep canyon in a southwesterly direction approximately 8.75 miles to its confluence with the Santa Ana River. It receives flow from several tributaries along the way. In 1988, the California Department of Fish and Game (DFG) designated Bear

Creek as a "wild trout stream" in recognition of its excellent wild trout fishery resource.

Most access trails to Bear Creek[1] are steep and difficult, and the creek is difficult to walk along, with large boulders and heavy tangled vegetation along the creek. Only physically fit individuals are able to use the creek for fishing, due to the terrain.

3.2 Water Rights

According to the judgment of the San Bernardino County Superior Court filed February 7, 1977, Bear Valley Mutual Water Company (Mutual) holds water rights to divert water at Bear Valley Dam and to store in Big Bear Lake all of the flow of Bear Creek. Mutual can take up to 65,000 af from the lake in any ten-year period for the use of its stockholders. Mutual's water rights are based on pre-1914 appropriations commenced in 1883 and 1909.

The judgment authorizes the District to deliver a substitute water supply to Mutual in lieu of releasing water from Big Bear Lake. The District and Mutual have an accounting system to keep track of the water each can retain or take for use. Each has an "account". When the District provides substitute water to Mutual, it gets credit in its account for storing water in Big Bear Lake. Inflow is credited to Mutual's account. If the lake spills, the spills are deducted from the District's account unless there is no water in the District's account. If water is released from the lake for Mutual's use, the release is deducted from Mutual's account. If the District's water account is zero, then any spilled water is accounted to Mutual, and the District must either release water from the lake to meet Mutual's demands or supply to Mutual in-lieu water.

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[1] *In the lowest part of Bear Creek, there is vehicular access to the Slide Creek area.*

In 1987 the District adopted its current policy for complying with the 1977 judgment. Under the policy, the District maintains the lake level as high as possible for recreational purposes, using the following operational rules:

1. When the lake is less than 4 feet below its maximum elevation, the District meets Mutual's irrigation demands by releasing water from Big Bear Lake.

2. When the lake is between 4 and 6 feet below its maximum elevation, the District purchases in-lieu water between May 1 and October 31, and releases water from Big Bear Lake between November 1 and April 30.

3. When the lake is between 6 and 7 feet below its maximum elevation, the District's board decides whether to release water from the lake.

4. If the lake is more than 7 feet below its maximum elevation, the District buys in-lieu water all year.

The District's policy regarding instream fishery releases is to allow only "leakage" from the dam and seepage. The District agreed in 1989, under a Stream Alteration Permit (Fish and Game Code section 1601) from the Department of Fish and Game for repairs to the dam, that instream flow will be maintained at no less than 0.106 cfs. The agreement has expired, but the District's policy is still to maintain this flow.

3.3 The Bear Creek Wild Trout Fishery

In 1988 the Department of Fish and Game (DFG) designated Bear Creek a wild trout stream because it has an excellent wild trout fishery resource and because its proximity to the urban areas of southern California provides exceptional value. This designation was made under Fish and Game Code section 1725 et seq. The designation was based on the fishery that exists downstream of

the confluence of West Cub Creek with Bear Creek, but the DFG designated the entire stream.

3.4 Accessibility and Use of Bear Creek

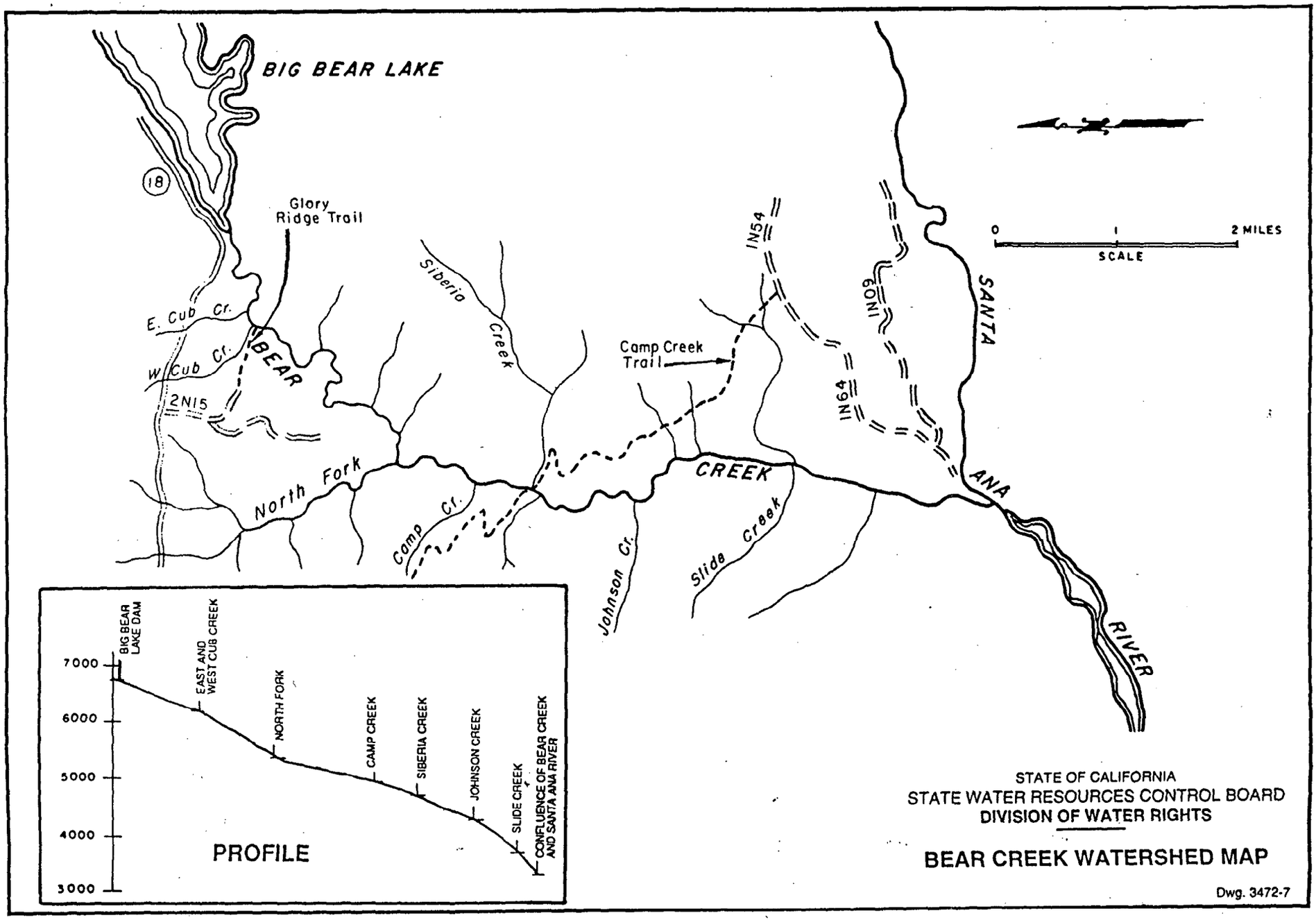
Four trails provide access to Bear Creek. Figure 1 is a general location map showing Big Bear Lake, Bear Creek, the trails into Bear Creek, and the Santa Ana River. The access to Bear Creek via each of the trails is steep and difficult. Nevertheless, 700 visitor days, or two percent of the total hiking within the Forest Service district's boundaries, is associated with Bear Creek. Likewise, ten percent of the total fishing use within the Forest Service district is within the upper reaches of Bear Creek.

Bear Creek contains brown trout, rainbow trout, sculpin, and other fish life. It also provides habitat for three pairs of California spotted owls, the San Bernardino flying squirrel, the southern rubber boa, the two-striped garter snake, bats, and numerous other terrestrial wildlife species.

3.5 Recreational and Fish and Wildlife Uses of Big Bear Lake

The four major categories of recreational use on Big Bear Lake are general boating, 48 percent; fishing, 37 percent; sailing, 9 percent; and water skiing, 6 percent. Shore uses include fishing, swimming, and sunbathing. The District operates a handicapped-access fishing pier on the north shore of Big Bear Lake. Two ski resorts occupy U.S. Forest Service land overlooking Big Bear Lake: Snow Summit and Bear Mountain. The ski resorts have contracts with the District to divert water from Big Bear Lake for snow making. The lake also provides visual benefits, and is aesthetically more attractive when it is full or nearly full of water.

Big Bear Lake also provides wildlife habitat. It is on the Pacific flyway and provides habitat for migrating waterfowl. Approximately 30 bald eagles inhabit Bear Valley during the



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BEAR CREEK WATERSHED MAP

Dwg. 3472-7

FIGURE 1

winter. The bald eagles are on the endangered lists under the state and federal[2] Endangered Species Acts. Also, up to 150 white pelicans live at the shallow east end of Big Bear Lake. The District and a private organization are working to develop 145 acres in the Stanfield Marsh at the shallow east end of Big Bear Lake into waterfowl habitat. Perches for the bald eagles have been provided in the vicinity of Stanfield Marsh. Finally, Big Bear Lake has a year-round stocked lake fishery.

Big Bear Lake and Bear Valley are heavily used for recreation, and attract numerous visitors to the area. During the summer recreational season of May through September, non-residents comprise 40 percent of all lake users on weekdays and 60 percent of all lake users on weekends. Boat use on Big Bear Lake and shoreline use including fishing ordinarily peak in July and August. Several physically handicapped individuals testified that the lake provided recreational opportunities for them while the creek was inaccessible to them. In 1992, there were 87,000 visitors, totalling over 123,000 visitor days, using the facilities operated by the Forest Service around Big Bear Lake. Over 917,000 visitors use the downhill ski resorts each winter.

3.6 Water Supply in Bear Valley

Most of the water used in Bear Valley for domestic or municipal uses is ground water. The City of Big Bear Lake and the Big Bear Community Services District operate a total of 77 ground water wells within Bear Valley. Twenty-one of the wells, accounting for 25 percent of the total annual pumpage, have been constructed since 1977.

Approximately 700 af of water is taken from Big Bear Lake each winter for snow making. Some of this water returns to the lake as runoff. Additionally, the City of Big Bear Lake has identified the lake as a potential source of water for future

[2] *The United States Fish and Wildlife Service has proposed to upgrade the bald eagle to threatened status.*

municipal use, and also may in the future use 585 to 980 acre-feet per annum (afa) of lake water for ground water recharge.

The total combined average annual municipal and domestic water production from the wells is 4650.3 afa. The sustained yield of Bear Valley's ground water basin subareas is 3,050 afa. (BBMWD/City Exhibit No. 5-10, p. 2-4.) Current water production exceeds the sustained yield, and by the year 2000 may exceed the sustained yield by up to 6,000 afa. A state of overdraft exists in the Division and Rathbone subareas, which are southeast of Big Bear Lake. Pumping levels are below the lake level at several wells in the Division and Grout Creek subareas. These wells, particularly in the Division subarea, appear to be less productive when the east end of Big Bear Lake, at Stanfield Marsh, dries up. Therefore, it appears that the lake and its tributary streams may contribute to the recharge of ground water.

Both the City of Big Bear Lake and the Big Bear Community Services District have water rationing programs which were in effect in 1993. However, they have not prepared and adopted a Water Shortage Contingency Plan, which is required under Water Code section 10620 et seq. for water suppliers who serve more than 3,000 customers or supply more than 3,000 afa. They also have not signed the Memorandum of Understanding regarding Urban Water Conservation in California, which the California Department of Water Resources completed June 11, 1991. The memorandum includes urban water conservation practices intended to reduce long-term urban water demands.

3.7 Waste Water Outfall

Treated waste water from Bear Valley is discharged to Lucerne Valley, outside the Bear Valley watershed. Currently about 2,273 afa is discharged to Lucerne Valley. This will increase to 3,397 afa at buildout. Under the 1977 judgment, the quantity of waste water discharged to Lucerne Valley is added to Mutual's lake storage account. If the water were treated to advanced levels (it currently receives secondary treatment), it could be reused

within Bear Valley for irrigation, dust control, and ground water recharge. Reclaiming the treated wastewater could benefit the District, since it would reduce the share of the lake water that is accounted to Mutual, and would lessen the overdraft of Bear Valley's ground water.

4.0 PARTIES

On July 28, 1993, the SWRCB sent a Notice of Public Hearing and Notice of Pre-Hearing Field Orientation Tour to all parties who had indicated an interest in this matter. The SWRCB sent the following persons or entities notices by certified mail with a return receipt required: Bear Valley Mutual Water Company; Big Bear Watermaster; Mr. Jim Edmondson, Regional Manager of California Trout, Inc.; Mr. Steve Parmenter, Department of Fish and Game; Mr. Wayne Lemieux, Law Offices of Wayne Lemieux; Mr. Scott Smith, Best, Best & Krieger; Honorable Paul Woodruff, Member of the Assembly; California Trout, Inc.; Mr. Kevin O'Brien, Downey, Brand, Seymour & Rohwer, representing Big Bear Municipal Utility District; Ms. Rose Robinson, San Bernardino National Forest; Ms. Sheila Hamilton, General Manager, Big Bear Municipal Water District; Mr. Fred A. Worthley, Regional Manager, Region 5, Department of Fish and Game; Mr. Stuart L. Somach, DeCuir & Somach, representing City of Big Bear Lake; Mr. Stuart M. Richter, Katten, Muchin, Zavis & Weitzman, representing California Trout, Inc.; Honorable Bill Leonard, Member of the Senate; Mr. Steve L. Feldman, Attorney. The SWRCB sent notices by regular mail to six hundred and twenty-one others who indicated an interest in this proceeding.

The Notice of Public Hearing provided that any person who wanted to participate in the hearing must file with the SWRCB a Notice of Intent to Appear, which must be received by the SWRCB no later than August 16, 1993.

The following parties filed Notices of Intent to Appear: Papoose Bay Homeowners Association, California Trout, Inc., California Department of Fish and Game, U.S. Department of Agriculture

(Forest Service), Big Bear Municipal Water District and City of Big Bear Lake (joint filing), and the Santa Ana River-Mill Creek Cooperative Water Project.

Of these parties, the Papoose Bay Homeowners Association and the Santa Ana River-Mill Creek Cooperative Water Project did not file their pre-hearing submittals. The pre-hearing submittals required by September 27, 1993 were the written testimony of each witness, the proposed exhibits, the statements of witness qualifications for expert witnesses, and lists of the proposed exhibits.

Of the parties who filed their pre-hearing submittals, the positions of the parties can be divided into three groups. Cal-Trout and DFG recommended increased flow releases from Bear Valley Dam. The U.S. Forest Service provided extensive information regarding Bear Creek, Bear Valley, and Big Bear Lake, but did not make a recommendation. The District and the City of Big Bear Lake opposed increases in releases from the dam.

At the policy statement session of the hearing on September 29 and 30, 1993, Mr. George Grover, special counsel to San Bernardino Valley Municipal Water District appeared and advised the SWRCB that his client has water rights that are affected by releases from Big Bear Lake and is opposed to increasing releases from Bear Valley Dam for fishery protection. He said that Western Municipal Water District of Riverside County joined in his statement. In response to a question, Mr. Grover said that his client would not be presenting evidence in the evidentiary hearing.

The Notice of Intent to Appear filed by Santa Ana River-Mill Creek Cooperative Water Project's Management Committee stated that it is made up of the water right holders on the Santa Ana River. Mutual is a member of this Committee. John Shone, Managing Director of Mutual, was listed as a witness in the Notice of Intent to Appear. Based on the Notice of Intent to

Appear, it appeared that the Committee intended to represent Mutual's and others' water right interests in the hearing.

The Notice of Public Hearing listed nine key issues that the SWRCB would consider. Issue No. 7 asks in pertinent part:

> "What are the water rights of the District and of Bear Valley Mutual Water Company? How would these water rights be affected if additional measures are necessary to protect fish and public trust resources in Bear Creek and Big Bear Lake?"

On October 7, 1993, having noted that the Santa Ana River-Mill Creek Cooperative Water Project's Management Committee had not filed its pre-hearing submittals, the SWRCB's staff contacted Mr. Shone by telephone and advised him that the SWRCB was considering joining Mutual as a party in the hearing and strongly urged that he or another representative of Mutual attend the hearing. The staff also advised Mr. Shone by letter dated October 7, 1993, that Mutual might be joined as a party.

On October 20, 1993, the SWRCB issued a Supplement to Notice of Public Hearing in which it gave notice that Mutual was a party and that as a result of this proceeding the SWRCB may modify Mutual's water rights.

Mutual admits to having received the July 28, 1993 Notice of Public Hearing, but nevertheless argues that it had not been properly notified that its water rights might be affected until it received the October 20, 1993 Supplement to Notice of Public Hearing. Mutual makes this argument even though the July 28, 1993 notice included Issue No. 7 addressing Mutual's water rights. Also, Mutual's interests apparently initially were going to be represented by the Santa Ana River-Mill Creek Cooperative Water Project's Management Committee. Consequently, Mutual was adequately notified of the potential effect of this proceeding on its water rights but elected not to appear until the SWRCB again explicitly and officially notified Mutual of the potential effect on its water rights in the October 20, 1993 notice. The

October 20, 1993 notice eliminated any argument that Mutual would not be affected by this proceeding.

Mutual now claims that on November 18 and 19, 1993 it had to respond to written testimony and exhibits that were all produced on that same day by the other parties. It is true that none of the parties had to submit their rebuttal evidence until November 18 and 19 when they testified, but the other parties were required by the October 20, 1993 notice to provide Mutual copies of all of their previously submitted exhibits, which include written testimony, by November 4, 1993, two weeks before the November 18-19 hearing. This is the same period of time that all the other parties were given to review exhibits in the others' cases in chief before the October 12 and 13 hearing dates. Absent evidence to the contrary, it can be assumed that the parties supplied their exhibits to Mutual on time. With respect to the rebuttal testimony, Mutual was treated exactly the same as all other parties, none of whom was entitled to see the others' rebuttal evidence before it was presented.

Although Mutual objected to its late joinder by the SWRCB in this proceeding, it had ample notice and opportunity to participate earlier. The SWRCB's hearings are open to entities that may have an interest. Any interested person may file a Notice of Intent to Appear and participate. For example, the City of Big Bear Lake participated as a full party, notwithstanding that it has no water rights or other property interests in Big Bear Lake and was not named in Cal-Trout's complaint. Mutual is one of the selected entities that received the hearing notice dated July 28, 1993 by certified mail. As noted above, the notice included Issue No. 7, which explicitly pointed to the potential effects on Mutual's water rights.

At the November 18 hearing, having appeared after having been notified of its joinder, Mutual asked for more time to cross-examine witnesses who had previously testified. In his opening statement, Mutual's attorney stated inter alia that

> "we are objecting to the late joinder in the sense that it will deprive my client of various rights of due process unless the Board exercises its discretion to allow us to cross-examine witnesses at a later date that may have previously presented direct testimony." (Nov. 18, 1993, T,14:8-14:13.)

The SWRCB scheduled a further hearing date on December 13, 1993 to give Mutual a further opportunity to cross-examine any witnesses of the other parties and/or to present additional evidence. With the further hearing and because of the other factors discussed above, Mutual has had ample due process in this proceeding.

5.0 PUBLIC TRUST RESOURCES AND REASONABLE USE

5.1 SWRCB Authority

Cal-Trout filed its complaint with the SWRCB against the District under three theories: that the current flow release practices of the District violate the public trust doctrine, that these release practices constitute an unreasonable use of water, and that these release practices violate Fish and Game Code section 5937. Cal-Trout asked the SWRCB to require the District to release additional water from Bear Valley Dam for fishery protection.

Water is stored in Big Bear Lake under pre-1914 appropriative water rights held by the Bear Valley Mutual Water Company. The District retains the water Mutual appropriates from Bear Creek in Big Bear Lake, and in lieu of releasing water provides Mutual a substitute water supply.

Although the SWRCB does not issue a permit or license for a pre-1914 appropriation of water such as the Big Bear Lake appropriation, the SWRCB has authority to supervise the exercise of pre-1914 water rights under the public trust doctrine and under Water Code section 275, which implements California Constitution Article X, section 2. (See In re Water of Hallett Creek Stream System (1988) 44 Cal.3d 448, 243 Cal.Rptr. 887, 901, note 16, cert. den. 488 U.S. 824 and cases cited therein.) Based

on these authorities, the SWRCB has continuing authority under both the reasonableness doctrine and the public trust doctrine over all appropriations or other diversions of water for use. In applying these doctrines, the requirements of section 5937 should be taken into consideration.

Neither the February 1977 judgment[3] of the San Bernardino Superior Court in Big Bear Municipal Water District v. North Fork Water Company, et al., No. 165493, nor the decision in Big Bear Municipal Water District v. Bear Valley Mutual Water Company (1989) 207 Cal.App.3d 363, 254 Cal.Rptr. 757 deprives the SWRCB of jurisdiction in this matter. A judgment in private water right litigation does not bind claimants who were not parties to the litigation. (In re Waters of Long Valley Creek System (1979) 25 Cal.3d 339, 158 Cal.Rptr. 350, 354.) Therefore, neither case limits the authority of the SWRCB or a court to adjudicate the issues raised by Cal-Trout's complaint under the public trust doctrine[4], and neither case conclusively determines the reasonableness of the diversion and uses reviewed in this Order. The previous litigation, and its effects on all water users, are considered in this Order.

This Order is an exercise of the SWRCB's continuing authority under the public trust doctrine and the reasonableness doctrine. Under the public trust doctrine the State retains supervisory control over navigable waters and the lands beneath those waters,

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[3] *The judgment provides for a "physical solution" allowing the District to provide downstream water right holders who were parties to the litigation with a substitute water supply as an alternative to releasing water into Bear Creek from Big Bear Lake. Using a physical solution is intended to further the policy of Article X, section 2 of the California Constitution that waters be put to beneficial use to the fullest extent that they are capable. (City of Lodi v. East Bay Municipal Utility District (1963) 7 Cal.2d 316, 60 P.2d 439, 450.)*

[4] *The court in Big Bear Municipal Water District v. Bear Valley Mutual Water Co. did not hold it had no authority to modify the water rights under the public trust doctrine, but instead held that it had no obligation to reconsider the 1977 judgment under the circumstances of that case. The court noted that unlike the facts in National Audubon Society, there had been previous consideration of the public trust uses of Big Bear Lake in the 1977 judgment. See 254 Cal.Rptr. 757, at 767. The court did not decide whether the public trust doctrine applies to Big Bear Lake and Bear Creek.*

as well as non-navigable waters that support a fishery. The purpose of the public trust is to protect navigation, fishing, recreation, fish and wildlife habitat and aesthetics. (National Audubon Society v. Superior Court (1983) 33 Cal.3d 419, 189 Cal.Rptr. 346, 357, cert. denied, 464 U.S. 977.)

No person can acquire a vested right to appropriate water in a manner harmful to interests protected by the public trust. But if the public interest in the diversion outweighs the harm to public trust values, water may be appropriated despite harm to public trust values. When it applies the public trust doctrine, the SWRCB has the power to reconsider past water allocations, and it has a duty of continuing supervision over the taking and use of appropriated water. (National Audubon Society, 189 Cal.Rptr. at 363-366.)

The SWRCB and the courts have concurrent jurisdiction to conduct proceedings applying the public trust doctrine. In recognizing the SWRCB's jurisdiction over diversion and use of all waters, the California Supreme Court in National Audubon Society emphasized the SWRCB's broad authority over allocation of water, including the power to adjudicate all competing claims, even riparian claims.

Measures required under the public trust doctrine must, in accordance with the decision in National Audubon Society at 189 Cal.Rptr. 362, meet the test of reasonableness under California Constitution Article X, section 2. Since this Order establishes requirements for protection of the public trust uses of Bear Creek, the SWRCB has applied the reasonableness doctrine to the flow requirements in this Order.

The reasonableness doctrine, which is set forth at California Constitution Article X, section 2, applies to the use of all waters of the state. It limits every water right. (Peabody v. Vallejo (1935) 2 Cal.2d 351, 40 P.2d 486.) The SWRCB and the courts have concurrent jurisdiction to conduct proceedings to

adjudicate issues under the reasonableness doctrine. (Environmental Defense Fund, Inc. v. East Bay Municipal Utility District (1980) 26 Cal.3d 183, 605 P.2d 1, 161 Cal.Rptr. 466) The SWRCB has jurisdiction to conduct administrative proceedings applying the reasonableness doctrine to all water rights, including pre-1914 water rights that are not subject to the permit and license system administered by the SWRCB. (Imperial Irrigation District v. State Water Resources Control Board (1986) 186 Cal.App.3d 1160, 231 Cal.Rptr. 283.)

To determine what constitutes a reasonable use or diversion the SWRCB must consider the totality of the circumstances. The reasonableness of a use or diversion varies as conditions change, and is dependent on the facts of the case. (Environmental Defense Fund, Inc., supra.) To determine the reasonableness of a particular use, it is necessary to consider the effect of that use on other uses. (In re Waters of Long Valley Creek Stream System (1979) 25 Cal.3d 339, 599 P.2d 656, 158 Cal.Rptr. 350.) In this case, both the stream fishery uses and the numerous uses of the lake are beneficial uses.

5.2 Applicability of Public Trust Doctrine to Bear Creek

The public trust doctrine applies to all tidal and navigable waters of the state, including waters that are navigable only to recreational craft. (People ex rel. Baker v. Mack (1971) 19 Cal.App.3d 1040, 97 Cal.Rptr. 448.) The public trust doctrine applies where diversions from non-navigable tributaries of navigable waters harm public trust uses of the navigable waters. (National Audubon Society, at 189 Cal.Rptr. 346, 357.) The public trust doctrine also applies to activities which harm the fishery in a non-navigable water. (People v. Truckee Lumber Co. (1897) 116 Cal. 397, 40 P. 374, 375; see California Trout, Inc. v. State Water Resources Control Board (1989) 207 Cal.App.3d 585, 255 Cal.Rptr. 184, 211-212.)

Some parties argued that Bear Creek is non-navigable, and therefore not protected by the public trust doctrine. It is not

necessary in this case to determine whether Bear Creek is navigable, because as noted above, the public trust doctrine protects fish in non-navigable waters.

5.3 Effect of Other Laws on the Establishment of Protections under the Public Trust Doctrine

5.3.1 *Fish and Game Code Section 5937*

Section 5937 of the Fish and Game Code is a legislative expression of the public trust doctrine. (See California Trout, Inc. v. State Water Resources Control Board (1989) 207 Cal.App.3d 585, 255 Cal.Rptr. 184, 209, 212.) Section 5937 is derived from an 1870 statute. The statute has been amended from time to time. It provides:

> "The owner of any dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around, or through the dam, to keep in good condition any fish that may be planted or exist below the dam. During the minimum flow of water in any river or stream, permission may be granted by the department [DFG] to the owner of any dam to allow sufficient water to pass through a culvert, waste gate, or over or around the dam, to keep in good condition any fish that may be planted or exist below the dam, when, in the judgment of the department, it is impracticable or detrimental to the owner to pass the water through the fishway."

This section requires the owner of any dam upstream of waters that support fish to release enough water to keep the fish in good condition. Although this statute did not originally specify that water be released or bypassed for fish protection in the absence of a fishway, it does not exempt dam owners with dams that were constructed before this statute was amended. The rule requiring that fish be kept in good condition below the dam states the current obligation of the dam owner to bypass or release water from dams. (California Trout, Inc. v. State Water Resources Control Board (1989) 207 Cal.App.3d 585, 255 Cal.Rptr. 184, 195.) Even the original requirement for construction of a fishway was intended to be applied to dams built before the

requirement was first enacted. (See Stats. 1870, c. 457, section 3, pp. 663-664.)

It is the SWRCB's policy to enforce section 5937.[5] In Fish and Game District 4½ (Mono and Inyo Counties), Fish and Game Code Section 5946 requires the SWRCB to require compliance with Section 5937 whenever it issues either a permit or license. Bear Creek is not in District 4½.

Section 5946 and section 5937 of the Fish and Game Code have been construed together as a legislative determination of reasonableness which imposes mandatory enforcement obligations on the SWRCB. (California Trout, Inc. v. State Water Resources Control Board (1989) 207 Cal.App.3d 585, 255 Cal.Rptr. 184, 208.) No appellate law exists construing Section 5937 alone, but California Trout, Inc., can be read as indicating that section 5937 legislatively establishes that it is reasonable to release enough water below any dam to keep fish that exist below the dam in good condition. A release of water that is much in excess of the amount needed to keep the fish in good condition, however, could be unreasonable within the meaning of California Constitution Article X, section 2 if there would be adverse effects on other beneficial uses of the water.

5.3.2 *The Davis-Grunsky Contract*

On August 29, 1988, the District and the Department of Water Resources executed a contract under the Davis-Grunsky Act. Under the contract, the Department of Water Resources agreed to grant to the District a maximum of $4,583,206 for repairs to Bear Valley Dam. The contract is subject to various terms and conditions, including conditions requiring that the reservoir be operated for recreational purposes. The SWRCB construes the contract as an independent expression of public policy favoring the maintenance of recreational uses in Big Bear Lake.

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[5] *Pursuant to its regulation at 23 CCR Section 782 the SWRCB includes in every new permit a provision requiring compliance with Section 5937.*

5.4 The Bear Creek Fishery

The fundamental issue in this proceeding is whether all of Bear Creek or only the reach downstream of West Cub Creek should be assured instream flows adequate to maintain a trout fishery in good condition. Above the confluences with the Cub creeks (upper Bear Creek), Bear Creek normally receives flow only from Bear Valley Dam and possibly from small streambed accretion flows. Approximately 0.6 miles below the dam is a ledge which apparently is a barrier to upstream migration of trout; this barrier is located in a narrow rocky gorge known as "Fish Canyon". No trout were observed upstream of the barrier in 1993, although sculpin and crayfish were observed in pools between the dam and Fish Canyon. Only a few adult trout were observed in 1993 in the reach of upper Bear Creek below Fish Canyon.

Although section 5937 requires that enough water be released to keep the fish in "good condition", this term is not defined. The trout fishery downstream of the Cub creeks usually is in good condition. During drought periods, however, tributary inflows and accretions to Bear Creek as far as the confluence with North Fork Bear Creek are too small to maintain the trout fishery in good condition. The critical period is summer, because both young of the year and adult fish are present, ambient temperatures are highest, and flows are lowest except shortly after thunderstorms. The current release is insufficient by itself to maintain trout populations and varied riparian habitat anywhere in Bear Creek, leaving the fishery dependent on inflows from tributaries to Bear Creek.

The DFG's fisheries biologist testified that he determines whether fish are in good condition by looking at the fish in their habitat. If the fish are abundant considering the stream size or its potential productivity, have enough food, have a low disease frequency, are in equilibrium with their environment, and have all life stages represented, he considers them to be in good condition. Based on these criteria, the DFG witness considered the trout fishery in Bear Creek to be in good condition below the

Cub creeks, but not in good condition above their confluence with Bear Creek. Additionally, the USFS hypothesized that the trout fishery above East Cub Creek could be self-sustaining if higher flows were maintained in that reach. No evidence exists, however, to confirm this hypothesis.

The District's biologist used measures of (1) standing crop; i.e., pounds of trout per acre or number per mile; (2) evidence of reproduction indicating a self-sustaining population; (3) growth rates of the fish; (4) health, or absence of disease; (5) angler catch rates; (6) number and diversity of aquatic invertebrates; (7) water quality; and (8) habitat quality to assess the condition of the fishery. Based on these measures and based on the Fish and Game Code definition of "fish"[6], the District's biologist considered all of Bear Creek's fishery to be in good condition, even though the upper reach was not supporting a self-sustaining trout population. The District argued that the reach of Bear Creek upstream of the Cub creeks should not be managed for trout. The District argued that the fishery in this reach should be considered to be in good condition because it supports other "fish" in good condition, such as crayfish and prickly sculpin.

Below the Cub creeks, the majority of flows come from sources other than dam releases. The data suggest that in late summer of 1993, more than seventy percent of the flow in Bear Creek below the Cub creeks was from accretions and tributary inflows. During drought periods, flows from the dam become more important to the trout fishery below the Cub creeks as the tributary flows and accretions decrease.

While the upper 1.2 miles (upper reach) of Bear Creek above West Cub Creek adequately supports species requiring less flow than

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[6] *"Fish" is defined at Fish and Game Code section 45 as meaning "wild fish, mollusks, crustaceans, invertebrates, or amphibians, including any part, spawn, or ova thereof."*

trout need, it apparently does not currently support a self-sustaining trout fishery, and it is speculative whether the upper reach would be suitable for a trout fishery if more flow were provided in that reach. Although a few adult trout have been found in the lower part of the upper reach, between Fish Canyon and West Cub Creek, there is no evidence that trout reproduced in that reach during 1992 and 1993. Above Fish Canyon, planted trout have not survived. Additionally, several rock structures and boulder fields in the upper reach apparently act as barriers to upstream migration of trout.

The parties recommend several different instream flows to be maintained at the weir below Bear Valley Dam. Actual flows have varied. Between 1977 and 1986, the average flow varied from 1.21 cfs to 42.80 cfs. Between September 1986 and December 1988 the average flow was 0.088 cfs. In 1990, the average flow was 0.094 cfs, although the District intended to release 0.106 cfs. In 1989, DFG required a release of 0.106 cfs under a stream alteration agreement (Fish and Game Code section 1601) in connection with repairs to the dam, but that agreement has since expired. The District recommends maintaining 0.106 cfs, and argues that it is adequate.

Cal-Trout's final recommendation is to maintain 2 cfs on an interim basis until additional studies are done. According to Cal-Trout, the 2 cfs is ten percent of the long-term median inflow from the watershed above the dam. Cal-Trout said there could be a higher flow in wetter years and a lower flow in drier years. DFG recommends a minimum flow of 1.2 cfs, which is equal to the flow below West Cub Creek in 1991 and 1992. The fishery below West Cub Creek was in good condition in 1991 and 1992.

Cal-Trout requested that the SWRCB additionally require flushing flows during the spring. Flushing flows apparently are beneficial to habitat maintenance in Bear Creek because they can reduce the density of riparian vegetation and move fine sediments which could interfere with trout spawning and rearing habitat.

The amount, duration, and velocity of flows needed to produce these benefits is unclear. Since the District's operational policy will result in a fuller reservoir, there will be spills or high releases from time to time for flood control. These spills or high releases will produce the benefit of flushing flows. Therefore, no flushing flows are specified in this Order.

The SWRCB recommends, however, that the District consult with DFG and USFS whenever the District determines that a spill or a high volume release will occur, and cooperate to the maximum extent to manage the spill or high volume release to the greatest benefit for downstream habitat management and to minimize extreme, short duration changes in flow rates below Bear Valley Dam.

5.5 Effects of Alternative Flow Releases

The SWRCB's staff analyzed three proposals for flow releases based on the parties' recommendations: (1) Cal-Trout's recommendation to release 2.0 cfs in all seasons of all years; (2) DFG's recommendation that the minimum release be 1.2 cfs; (3) The District's recommendation that the release be 0.1 cfs in all seasons of all years.

Additionally, SWRCB's staff analyzed a release rate requiring maintenance of 1.2 cfs in Bear Creek measured immediately downstream of the confluence with West Cub Creek in all years, with a minimum release of 0.3 cfs. The 0.3 cfs minimum release was the approximate flow at the weir downstream of Bear Valley Dam in the summer of 1993, when the sculpin and crayfish in the upper reach of Bear Creek were in good condition.

As explained above, the District's proposed release rate apparently does not maintain a trout fishery in the reach above the Cub creeks in good condition, and during dry years does not maintain the Bear Creek fishery above the confluence with North Fork Bear Creek in good condition. DFG's proposed release rate would supply the minimum flow recommended by DFG to all of Bear Creek. The staff-generated instream flow alternative would

supply the DFG recommended flow downstream of West Cub Creek. Cal-Trout's proposal would protect riparian habitat and fish populations better than DFG's proposal.

5.5.1 *Method of Analysis of Effects on Lake Levels*

The District and the City produced the results of a computerized hydrological reservoir operation model in which it was assumed that the releases for instream flows would be (1) 6.0 cfs and 8.0 cfs plus flushing flows of 40 cfs (attributed to Cal-Trout proposal) or (2) 3.5 cfs plus flushing flows of 40 cfs (attributed to DFG proposal). Their results indicated that the assumed releases would require more water than historical inflow to the lake, substantially shrink the size of the lake, sometimes empty the lake, and release water under the rights of Mutual. The District and the City did not provide either their formulae or an electronic copy of the computer model; nor did they explain all of their assumptions in formulating and running the model. They declined to produce model results with releases for instream flows of 1.0 cfs and 2.0 cfs. In the absence of having the model in the record including its mathematical formulae, a full verification of its results, and an explanation of the assumptions used, the hydrological evidence produced by the District and the City are of little value in analyzing the lower releases considered in this Order.

Cal-Trout produced a model on rebuttal, and provided results with releases for instream flows of 1.0 cfs and 2.0 cfs, as requested by the SWRCB. According to Cal-Trout's model, the 1.0 and 2.0 cfs releases would never empty the lake; the average surface elevation would stay above 64.0 feet, and mean monthly drawdown would be 0.12 feet per month; there would be increased operational flexibility to minimize evaporation and spillage; and there would be no significant impact on recreational or fish and wildlife uses, water levels, or the economy.

Because the District produced neither the results of flow releases in the range the SWRCB was interested in analyzing nor

the documentation for its hydrological model, and because the Cal-Trout model needed verification, the SWRCB staff performed their own analysis to evaluate the effects of alternative releases.[7] The method of calculation is as follows:

(1) The staff divided the 79-year historical precipitation record for the period October 1 to April 30[8] into three year types: wet (25 percent), normal (50 percent), and dry (25 percent). The staff reviewed both three year-type and five year-type hydrology classification systems and used the three year-type classification because this method requires fewer computations and produces results during the dry years which are very similar to the dry year results using five year types.[9]

(2) The model calculates the end-of-month storage in Big Bear Lake using a hydrologic formula as follows:

> Adjusted end-of-month storage = previous end-of-month storage + calculated unimpaired flow - instream flow release rate - District demands - releases to Mutual evaporation losses

The staff used the data produced by District's simulated model runs for calculated unimpaired flow, District demands, releases to Mutual, and calculated evaporation loss rates. (BBMWD/CITY 7-2, 7-3, 7-4, 7-5, 7-6, and 7-7) The staff used historical precipitation data and end of month storage data from the Big Bear Watermaster reports. Additionally, the staff used the following formulae:

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[7] *The method used for these calculations, since the calculations were performed on a computer, is called a model, but it is essentially like a conventional, manual calculation method.*

[8] *Approximately 90 percent of the total annual precipitation at Big Bear Lake occurs during this period.*

[9] *If five water year types were used, they would be divided equally, with dry years occurring 20 percent of the time. A dry year using three year types averages 21.39 inches of precipitation while a dry year using five year types averages 20.55 inches of precipitation.*

Estimated evaporation losses = evaporation loss rate x lake surface area;

Derived surface area = 26.0139 x adjusted end-of-month storage $^{0.423}$;

Adjusted staff gage elevation = 2.1702 x adjusted end-of-month storage $^{0.313}$.

(3) The staff assumed:

- that the District's current operation policy would continue; i.e., no release of water for Mutual when the lake is at or below 4 feet below full (i.e., at staff gage elevation 68.33);
- for the staff-generated alternative that 1.2 cfs would be released during a dry year; 0.5 cfs would be released during a normal year; 0.3 cfs would be released during a wet year.[10]

Using this method, the SWRCB staff calculated the effects of each of the four alternative release rates on the water levels in Big Bear Lake. The following table summarizes the results.

SUMMARY OF MODEL RUN RESULTS

ALTERNATIVE RELEASE RATES	AVERAGE END-OF-MONTH STORAGE (acre-feet)	AVERAGE END-OF-MONTH SURFACE AREA (acres)	AVERAGE STAFF GAGE ELEVATION (feet)
Cal-Trout - (2.0 cfs)	52,386	2,548.1	64.41
DFG - (1.2 cfs)	54,326	2,595.9	65.34
District - (0.1 cfs)	56,930	2,656.0	66.48
Staff - (1.2 cfs below West Cub Creek)	55,470	2,623.2	65.85

When the lake is full, the staff gage elevation is 72.33 feet. This table shows that all four of the alternative release rates would keep the average level of Big Bear Lake above 62.33 feet on

[10] *The staff-generated alternative was evaluated using information in the hearing record pertaining to flow readings below Bear Valley Dam. This information was used to estimate the releases needed to maintain 1.2 cfs below West Cub Creek. The assumed releases are the best estimate for maintaining 1.2 cfs.*

the staff gage.[11] The Board's staff also calculated the number and frequency of months in the 624-month historical record during which the lake would have been below different staff gage elevations under each of the four alternative release rates. The following table shows the results of this calculation, expressed in percent of months below the specified lake level on the staff gage.

SUMMARY OF FREQUENCY BELOW SELECTED LAKE LEVELS, IN PERCENTAGES OF MONTHS

ALTERNATIVE RELEASE RATES	ELEVATION 72.33 FT. (FULL)	ELEVATION 67.33 FT. (-5')	ELEVATION 62.33 FT. (- 10')	ELEVATION 57.33 FT. (- 15')	ELEVATION 52.33 FT. (-20')
Cal-Trout - (2.0 cfs)	39.10%	29.65%	17.15%	7.37%	6.73%
DFG - (1.2 cfs)	40.71%	34.94%	14.10%	6.41%	3.85%
District - (0.1 cfs)	46.96%	34.62%	13.78%	4.65%	0.00%
Staff Alternative - (1.2 cfs below West Cub Creek)	41.67%	37.82%	12.34%	6.25%	1.92%

This table shows that, compared with the District's proposal, Cal-Trout's proposal would reduce the frequency of the lake being full to 5 feet below full by 7.86 percent, and 5 to 10 feet below full by 4.97 percent, with corresponding increases in frequency of lower lake levels. DFG's proposal would reduce the frequency of the lake being full to 5 feet below full by 6.25 percent, and would increase the frequencies of the lake being (1) 5 to 10 feet below full by 0.32 percent, (2) 10 to 15 feet below full by 0.32 percent, (3) 15 to 20 feet below full by 1.76 percent, and (4) more than 20 feet below full by 3.85 percent of the time. Stated another way, the lake level would be above 62.33 feet, or 10 feet below full, 68.75 percent of the time under Cal-Trout's proposal and 75.65 percent of the time under DFG's proposal.

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[11] *The critical level for maintaining recreational opportunities on the lake is approximately ten feet below full. The reservoir is ten feet below full when it is at 62.33 feet on the staff gage.*

Under the District's proposal, the lake level would be above 62.33 feet 81.58 percent of the time. Under the staff-generated alternative, the lake level would be above 62.33 feet 79.5 percent of the time.

5.5.2 *Effect of Alternatives on Lake Recreation*

The District provided an analysis of the economic effect of different lake levels. The analysis shows, with reference to pre-1977 operations, that the lake levels have affected the uses of the lake, and that in turn the available lake uses affect the local economy. In general, a high lake level in summer means that more tourists will spend money in the area, supporting the local economy. The area also attracts numerous visitors in the winter, for skiing in the ski areas adjacent to the lake. The population of Bear Valley in 1990 was 14,127, an increase of 28 percent since 1980. Almost all employed people in the local area are supported by tourism. The businesses include recreational businesses, lodging, and retail. Lodging includes 1,290 rooms with a 39 percent average occupancy rate. Annually, visitors spend approximately $6.7 million in the area. According to Cal-Trout, approximately 94 percent of the spending is during the skiing season.

The lake level can affect recreation on the shoreline. There is a lack of usable beach and shoreline when the lake is full. Shoreline use increases as the lake level falls, until the lake is six feet below full. At six feet below full, the distance between access points and the lake shore increases, particularly on the shallower east end of the lake. The south shore marinas have to relocate when the lake level is more than five feet below full. When the lake level is more than ten feet below full, both the south and north shore marinas move their facilities to deeper water. Additionally, on the south shore some private docks are beached and some are moved to deeper water. Except on the east end of the lake, public boat ramps remain operable at 10 feet below full. At 20 feet below full, some north and south marinas are still able to move to deeper water, but 60 percent of

the private docks are out of operation and only the west boat ramps remain in operation.

In the winter, the ski areas obtain water from the lake to manufacture snow unless the lake level drops more than 18 feet below full. Under Cal-Trout's proposal, they could manufacture snow in approximately 93.27 percent of the years, and under DFG's proposal they could manufacture snow in approximately 96.15 percent of the years. Under the District's proposal, they can manufacture snow in approximately 100 percent of the years. Under the staff-generated alternative, they will be able to manufacture snow in approximately 98.08 percent of the years. During the winter, lake levels apparently do not affect recreation unless the ski resorts are unable to manufacture snow, since the lake is covered by snow and the recreational activities center around skiing.

The lake loses surface area as the lake level falls. This reduces boating space. At five feet below full, the lake surface is reduced by 240 acres (8 percent), and the surface area for higher speed boating is reduced by 300 acres (12 percent). At ten feet below full, the surface area is reduced by 520 acres (17 percent) and the area for higher speed boating is reduced by 670 acres (25 percent). Lower lake levels result in further acreage reductions.[12]

5.5.3 *Effect of Alternatives on Fish and Wildlife Uses of the Lake*

The District and the City expressed concern that changes in lake level because of instream releases to Bear Creek could have adverse effects on bald eagles, which live in the Big Bear Lake area during the winter. The hearing record contains no evidence of any significant relationship between lake level and the number of bald eagles that overwinter in the area. Nor is there

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[12] *On the other hand, evaporation losses from the lake are reduced at lower lake levels.*

evidence that changes in the lake level will have significant effects on the lake's fish populations, which are a food source for the eagles. Over the eight years of available data, no obvious pattern of eagle use was apparent; the eight years included several years in which the lake was drawn down at least fourteen feet below full. The Forest Service witness testified that there is no correlation between lake level and eagle abundance or ability to feed. The eagle abundance depends on numerous factors that include lake levels, winter temperatures, number of sunny days, and winds. The Forest Service witness testified that while draining the lake for extended periods would have an adverse impact by removing waterfowl habitat, it was uncertain whether intermediate levels would have an adverse effect. Since bald eagles eat primarily fish, ducks, and other waterfowl, the Stanfield Marsh area is not critically important to eagle feeding. The waterfowl and the eagles move to adjacent shallow water of the lake when the marsh is dry or nearly dry.

The Stanfield Marsh is an area covering about 145 acres at the east end of Big Bear Lake. The marsh starts to dry when the lake is eight feet below full. The marsh is used by white pelicans and wintering eagles. A drop in lake level could subject the marsh to more frequent freezing, limiting the use by waterfowl. Further, lake fluctuations could expose species of special concern, such as the two-stripe garter snake, to predators for short periods.

Apparently fluctuations in the lake levels do not have substantial adverse effects on fish, waterfowl, and other wildlife. Therefore, the SWRCB finds that there will be no significant impact on these uses as a result of implementation of any of the analyzed alternatives.

5.5.4 *Considerations in Setting an Instream Flow*

The recommendation of the Department of Fish and Game was helpful in determining the needs of the Bear Creek fishery. The Department of Fish and Game is a trustee agency for fish and

wildlife, and has both the primary expertise of the State in dealing with fish and wildlife issues and the primary responsibility for interpreting the Fish and Game Code. The SWRCB is required to give great weight to Fish and Game's judgment with respect to fish and wildlife needs. (Bank of America v. State Water Resources Control Board (1974) 42 Cal.App.3d 198, 212, 116 Cal.Rptr. 770; see Water Code Sections 1243 and 1257.5.) This does not mean that the SWRCB must accept Fish and Game's judgment, but the weight of the evidence must overcome the weight of Fish and Game's evidence before the SWRCB will reject it.

The current releases are not adequate to maintain the trout in Bear Creek in good condition, particularly in drier years. In drier years, releases become important downstream of West Cub Creek. A higher rate of release than the current rate is necessary to maintain the existing fish in good condition. Maintaining the fish in good condition is critical to protecting the public trust uses downstream of the dam and it is a legal obligation of the District under Fish and Game Code section 5937.

Although the SWRCB is not obliged to strictly enforce section 5937 in this case, it is responsible to ensure reasonable protection for public trust uses. As discussed above, California Trout, Inc., 255 Cal.Rptr. 184, 208 suggests that maintaining fish in good condition as required by section 5937 is reasonable as a matter of law. A release that is too high, however, could be unreasonable because of adverse effects on other beneficial uses, including other recreational, environmental, or fish and wildlife uses.[13] Under extreme conditions, a too-high release could have adverse effects on the Bear Creek fishery by depleting the lake's supply of water to a level at which there was not

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[13] *The SWRCB does not need to decide whether section 5937 is a legislative determination of reasonableness in this case; nor does the SWRCB need to decide whether the reasonableness doctrine would allow the SWRCB to authorize flows under the public trust doctrine that do not fully satisfy section 5937. The flows ordered in this case are reasonable and they also fully satisfy section 5937.*

enough water to maintain the instream flow. The issue is what release rate will both achieve enough protection to maintain the fishery in Bear Creek and at the same time avoid impairing the beneficial uses of Big Bear Lake. There is a scarcity of data and studies to determine the benefits of different flow releases on the creek during different year types. The 2.0 cfs release Cal-Trout recommended likely would maintain the Bear Creek fishery. The DFG recommended that the absolute minimum release[14] should be 1.2 cfs.

While more flow might produce more stream fishery benefits, it is uncertain how much benefit will occur; further studies and actual experience with this flow level are needed before the relative fishery benefits can be determined more accurately.

The recreational benefits of the lake are highly important to the local economy and reductions in recreational lake use should be minimized. Nevertheless, the lake can be drawn down some distance before summer recreation is significantly impacted. Further, more than 90 percent of recreational dollars are spent in the winter, when lake levels are less important. Snow-making can continue so long as the lake stays above 18 feet below full.

As proposed by the staff generated alternative, this Order requires releases from Bear Valley Dam adequate to maintain an instream flow in Bear Creek below West Cub Creek of 1.2 cfs all year, with a minimum instream flow of 0.3 cfs measured at the weir below Bear Valley Dam. This is the minimum flow which the evidence indicates is likely to maintain the fish in Bear Creek below West Cub Creek in good condition. The 0.3 cfs minimum flow required just below Bear Valley Dam should be sufficient in many months, when combined with accretion and tributary flows from the

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[14] *The SWRCB interprets DFG's reference to "release" as meaning the instream flow.*

Cub creeks, to meet the 1.2 cfs requirement at a measuring point in Bear Creek immediately below West Cub Creek.

The 0.3 cfs minimum flow also should provide more stabilized conditions for the fish living in Bear Creek above the Cub creeks. The SWRCB finds that this Order will provide enough flow in upper Bear Creek to keep in good condition the fish that are present there, such as sculpin and crayfish. The flows required by this Order are not intended to support trout above Fish Canyon, because trout apparently (1) are absent from this area and (2) cannot migrate past a barrier at Fish Canyon.

The reach between Fish Canyon and the Cub creeks contains a few adult trout which will be supported by the required flows. The flows occurring in this reach will be substantially increased, especially during summer months in drier years, compared with current conditions. This area, however, may not be appropriate for all life stages of trout. The habitat is limited, with narrow, rocky terrain. Further, the evidence in the hearing record is extremely limited with respect to the trout populations and available habitat in this reach, and substantial evidence does not support the establishment of flow requirements that might or might not support trout reproduction in this reach.

Based on the evidence and the above analyses of the effects of meeting these instream flows on Big Bear Lake and on the recreational uses in Bear Valley, these instream flows will provide both reasonable protection for the public trust uses in Bear Creek and reasonable protection of the recreational, environmental and fish and wildlife uses and other uses of Big Bear Lake and Bear Valley, within the meaning of California Constitution, Article X, section 2. These flows also are low enough so that they will not interfere with Mutual's ability to divert this water downstream for its consumptive uses.

To determine whether these instream flows are adequate and effective, this Order requires that the District conduct a study

in consultation with the DFG and the Forest Service to determine the effect of the required releases and the effects of higher and lower releases. The monitoring required in this Order is the minimum necessary, and may be supplemented. The results of the study shall be reported to the SWRCB.

The SWRCB will retain continuing authority over the instream flow requirements, and any party may in the future petition the SWRCB for a temporary or permanent change in the streamflow required by this Order. The SWRCB will have discretion whether to accept or reject any petition after reviewing its contents. The instream flow requirements in this Order will remain in effect unless evidence received in a future proceeding establishes that a different streamflow is necessary either to protect public trust uses or to ensure that water is diverted and used in accordance with California Constitution, Article X, section 2.

5.5.5 *Potential Effects of Unrelated Actions on Lake Level*
As noted in Sections 3.6 and 3.7, above, ground water wells are used to supply domestic water in Bear Valley. These wells are extracting water in excess of the sustained yield of the ground water basin subareas. After it is used, the water obtained from ground water is treated and discharged to Lucerne Valley, outside the Bear Valley watershed.

The ground water extractions have the potential to reduce the level of water in Big Bear Lake. The streams tributary to Big Bear Lake and the lake itself may contribute to recharge of the ground water. If recharge occurs from either the tributaries or the lake itself, water either will not reach the lake or will be extracted from the lake to the ground water basin subareas. This could reduce the lake level significantly if the communities in Bear Valley do not minimize losses because of consumptive uses. The loss of water to consumptive uses could affect lake levels substantially more than this Order. The Bear Valley communities may in the future have to implement measures to minimize water

losses; the available measures could include conservation and treating and reusing the wastewater within Bear Valley.

6.0 ENVIRONMENTAL CONSIDERATIONS

6.1 Categorical Exemption from California Environmental Quality Act

This Order is adopted for the purpose of enforcing public trust protections of the fishery in Bear Creek. Under Fish and Game Code section 5937 and the public trust doctrine, the District and Mutual already are obligated to release enough water to maintain the fishery in good condition. Thus, the function of this Order is to define the amount of water that is necessary for this purpose. The above discussion explains how the SWRCB arrived at the instream flow releases required by this Order. Determination of the required releases was tempered by the reasonableness doctrine in California Constitution, Article X, Section 2 and was balanced against protection of other recreational environmental, and fish and wildlife uses which exist in Bear Valley and Big Bear Lake.

Where a regulatory agency such as the SWRCB takes an action to enforce a law, general rule, standard, or objective, that action is categorically exempt under Title 14, California Code of Regulations, Section 15321(a)[15] from the requirement for preparation of environmental documents unless the action falls within an exception. The exceptions are listed in section 15300.2. The only exception which could apply in a case such as this is the one in subdivision (c). It provides:

> "A categorical exemption shall not be used for an activity where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances."

It is unclear what constitutes a "reasonable possibility" that compliance with this Order will have a significant adverse effect

[15] *This action also qualifies for an exemption under sections 15307 (protection of natural resources) and 15308 (protection of the environment).*

on the environment. Public Resources Code section 21082.2 requires preparation of an EIR if there is substantial evidence, in light of the whole record before the agency, that a project may have a significant adverse effect on the environment. The existence of public controversy in itself does not require the preparation of an EIR. Substantial evidence "shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts." (Pub. Res. Code § 21082.2 subd. (c).) Substantial evidence, according to this subdivision, does not include argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly inaccurate or erroneous, or evidence of social or economic impacts which do not contribute to, or are not caused by, physical impacts on the environment.[16].

The record does not contain substantial evidence that the releases required by this Order will have a significant adverse effect on the environment. As explained in more detail in Section 5 of this Order, the District and the City provided evidence regarding the effects of higher release rates and argued against any change in release rates, but did not supply requested analysis regarding the release rates considered in this Order. During the hearing, the hearing officer made all parties aware of the SWRCB's interest in reviewing the effects of 1.0 cfs and 2.0 cfs release rates, and requested model runs analyzing these release rates. No substantial evidence was provided showing that the 1.0 cfs or 2.0 cfs release rates would have a significant adverse effect. Cal-Trout provided evidence which upon analysis shows that there will not be a significant adverse effect.

The evidence shows that the changes in lake elevation because of this Order will not be significantly greater than the changes in

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[16] *It should be noted that the "fair argument" test using the substantial evidence standard in section 21082.2 has been applied only in deciding whether to prepare an EIR or a negative declaration. (Laurel Heights Imp. Assn. v. Regents, 94 Daily Journal D.A.R. 70, 76 (1994) (Laurel Heights II).) Where an exemption is involved, a less stringent test may be appropriate; the "reasonable possibility" language implies that an agency should weigh the evidence to decide whether an EIR must be prepared instead of relying on the exemption.*

lake elevation under the current regime during the three year types. In turn, the effects on both the local economy and the recreational, environmental, and fish and wildlife uses of Big Bear Lake and Bear Valley will be insignificant. Additionally, the great weight of the evidence favors using the exemption. Therefore, there is no reasonable possibility that this Order will have a significant adverse effect on the environment.

6.2 Endangered Species Act Considerations

The District argued that a reduction in the surface area or volume of Big Bear Lake could have possible adverse effects on bald eagles. A number of bald eagles overwinter at Big Bear Lake. Their principal food sources are fish that they can obtain from the lake and migratory waterfowl. The bald eagle is listed as endangered under both the California Endangered Species Act (Fish and Game Code §§ 2050 to 2098) and the federal Endangered Species Act (16 USCA §§ 1531 to 1544).

Under Fish and Game Code section 2090, each state lead agency shall consult with the DFG to ensure that any action by the state lead agency is not likely to jeopardize the continued existence of any endangered or threatened species. A "state lead agency" is defined as the state agency, board, or commission which is a lead agency under CEQA. Because this Order is categorically exempt from compliance with CEQA, the SWRCB is not a state lead agency, and is not required to consult with the DFG under section 2090. With respect to the federal Endangered Species Act, no consultation is required because no federal action is necessary in this case. The federal act only requires consultation where a federal agency is taking an action. (See 16 USCA § 1536.)

Further, as discussed above, implementation of this Order is very unlikely to have any adverse effect on the bald eagles, and certainly would not have a discernible effect. The evidence shows that the experts cannot correlate bald eagle populations with lake levels. A combination of factors apparently determines whether the eagles will spend the winter at Big Bear Lake. While

this Order will cause minor changes in lake level, it will not cause the lake to go dry. At the more likely intermediate lake levels, there is no indication that the eagles would avoid Big Bear Lake or be adversely impacted. Consequently, this Order will not have adverse effects on bald eagles. Since there will be no adverse effects on the bald eagles, this Order does not involve a taking of the eagles, and does not require additional measures to obtain authorization from either DFG or the United States Fish and Wildlife Service.

7.0 CONCLUSIONS

Based on the foregoing, the SWRCB concludes that:

1. Both the District and Mutual are properly respondents in this proceeding, and this Order may properly modify the water rights of either or both of these parties.

2. This Order places a joint obligation on both the District, as the owner of Bear Valley Dam and as a holder of an interest in the water rights in Big Bear Lake, and on Mutual, as the water right holder. The SWRCB expects that releases of water for the fishery will be accounted first to water in the District's lake account and then to Mutual, in accordance with the 1977 stipulated judgment.

3. In most years the fishery is in good condition downstream of West Cub Creek, but could benefit from additional flows, particularly in dry years.

4. The appropriate minimum instream flow to provide reasonable protection for the trout fishery in Bear Creek below West Cub Creek is 1.2 cfs.

5. This Order does not have an expiration date, but this Order retains continuing authority to review the instream flow requirements. The District shall consult with the DFG and the Forest Service to develop a workplan and conduct studies

to determine whether the required flows will keep the trout fishery in good condition. The District shall report to the SWRCB regarding its studies.

ORDER

IT IS HEREBY ORDERED that:

1. a. The Big Bear Municipal Water District and the Bear Valley Mutual Water Company shall jointly or severally release enough water from Bear Valley Dam and Big Bear Lake to maintain a minimum flow of 1.2 cubic feet per second as measured at a measuring device to be located in Bear Creek no more than 500 feet downstream of the confluence with West Cub Creek. The flow rate shall be calculated as a seven-day running average; however, the Big Bear Municipal Water District shall ensure that flow shall not be less than 1.0 cubic feet per second, calculated on a daily (24-hour) average.

   b. The release from Bear Valley Dam and Big Bear Lake shall not be less than 0.3 cubic feet per second as measured by a measuring device located approximately 300 feet downstream of the toe of Bear Valley Dam.

   c. Reductions in releases, as measured 300 feet downstream of the toe of Bear Valley Dam, for fishery protections that are required by this Order shall be made gradually, at no more than 0.2 cubic feet per second per day, to minimize stranding of fish.

2. Pursuant to California Water Code sections 100 and 275 and the common law public trust doctrine, the State Water Resources Control Board retains continuing authority over the rights to water impounded by Bear Valley Dam in Big Bear Lake to modify the instream flow requirements in Paragraph 1 of this Order. No action will be taken pursuant to this paragraph unless the State Water Resources Control Board

determines, after notice to affected parties and opportunity for hearing, that such action is consistent with California Constitution Article X, section 2; is consistent with the public interest; is consistent with the public trust doctrine.

3. a. Within six months of the adoption of this Order, the Big Bear Municipal Water District shall submit for approval of the Chief of the Division of Water Rights a plan showing the types, locations and construction schedule for installation of gages which are capable of continuously measuring flows required by this Order. The Big Bear Municipal Water District shall obtain all necessary authorizations for installation and operation of the gages. The Big Bear Municipal Water District shall monitor instream flows at (1) a measuring device located approximately 300 feet below the Bear Valley Dam and (2) a measuring device in Bear Creek to be installed within 500 feet downstream of the confluence with West Cub Creek. Said measuring devices shall be properly maintained.

b. The Big Bear Municipal Water District shall maintain a continuous record of the required flows sufficient to document compliance with the terms of this Order and shall make such record available to the State Water Resources Control Board and to other interested parties upon request of the State Water Resources Control Board.

c. The Big Bear Municipal Water District shall submit a report by December 31 of each year that verifies compliance with the terms of this Order for the previous water year ending September 30. Documentation for the report shall be submitted to the Division of Water Rights on personal computer disc format. The computer system compatibility shall be designated by the Chief of the Division of Water Rights.

d. The Big Bear Municipal Water District shall conduct studies to determine whether the measures required by this Order maintain the trout fishery in Bear Creek in good condition. The Big Bear Municipal Water District shall, before commencing studies, consult with the Department of Fish and Game and the U.S. Forest Service, and prepare a workplan that defines the scope, responsible parties, and time schedule for the studies. The workplan shall be submitted to the Chief of the Division of Water Rights for approval no later than six months after the effective date of this Order.

4. The Chief, Division of Water Rights, is delegated authority to authorize variances in the instream flows for the purpose of either (1) conducting studies to determine whether the minimum instream flows or some other instream flows will provide reasonable protection for the trout fishery in Bear Creek or (2) to avoid unreasonable impacts to the lake level or instream flows. The Big Bear Municipal Water District or the Bear Valley Mutual Water Company may request a variance by filing a written request and sending copies of the request to the Department of Fish and Game, the United States Forest Service, and California Trout, Inc. Any variance may be subjected to terms and conditions, and shall remain in effect for a period not to exceed one year. A variance may be authorized only if it will have no unreasonable effect on the environment. If environmental documentation is necessary, the party requesting the variance shall prepare such documentation.

5. The Big Bear Municipal Water District shall consult with the Department of Fish and Game and the U.S. Forest Service whenever the Big Bear Municipal Water District determines that a spill or a high-volume release will occur. Consistent with time and operational constraints, the district shall manage the spill or high volume release to the greatest benefit for downstream habitat management and to minimize

extreme, short duration changes in flow rates below Bear Valley Dam.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on February 16, 1995.

AYE: John P. Caffrey
James M. Stubchaer
Marc Del Piero
Mary Jane Forster
John W. Brown

NO: None

ABSENT: None

ABSTAIN: None

Maureen Marché

Maureen Marché
Administrative Assistant to the Board

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

STAFF REPORT

BIG BEAR LAKE AND BEAR CREEK

SAN BERNARDINO COUNTY

DECEMBER 1994

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I. BACKGROUND

A. Introduction: The purpose of this staff analysis is to provide a summary and evaluation of the testimony and evidence presented during the water rights hearing held by the State Water Resources Control Board (SWRCB) regarding the diversion and use of water from Big Bear Lake and Bear Creek in San Bernardino County. The hearing was held in response to a complaint filed by California Trout, Inc. (Cal-Trout), against Big Bear Municipal Water District (District). Figure 1 shows the location of Big Bear Lake, Bear Creek and the District.

Big Bear Lake is operated by the District. The lake is a man-made, 73,320 acre-feet (AF) reservoir located in the San Bernardino Mountains within Bear Valley. When full, the lake has a maximum surface area of 2,973 acres. Big Bear Lake is a major alpine lake that provides easy public access from urban areas in southern California.[1] The lake and surrounding mountains provide an attractive, year-round, recreational setting for the City of Big Bear Lake's (City) principal economic base of tourism, which supports the permanent population of the City as well as other unincorporated communities located within Bear Valley (i.e., Big Bear City, Fawnskin, Moonridge, Sugarloaf).

Bear Creek and its tributaries drain a watershed containing approximately 9,000 acres located downstream of Bear Valley Dam in the San Bernardino Mountains. Downstream of Big Bear Lake's Bear Valley Dam, Bear Creek meanders in a southwesterly direction for a distance of approximately 8.75 miles to its confluence with the Santa Ana River. The creek's flow is supplemented by natural tributary flow from its main tributaries: East Cub Creek, West Cub Creek, North Fork Bear Creek, Camp Creek, Siberia Creek, Johnson Creek, and Slide Creek.[2] Figure 2 shows the location of Bear Creek and its major tributaries.

In 1988, the California Department of Fish and Game (DFG) designated Bear Creek as a "Wild Trout Stream" because of its excellent wild trout fishery resource which provides exceptional value due to its proximity to urban areas in southern California.[3]

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[1] BBMWD/CITY EXHIBIT NO. 11-1 - Thomas C. Wegge, Analysis of Recreation and Economic Impacts of Alternative Water Release Scenarios from Big Bear Lake, September 1993, p.2-1.

[2] DFG EXHIBIT NO. 4 - Testimony of Michael Giusti, p.1.

[3] Ibid., p.2.

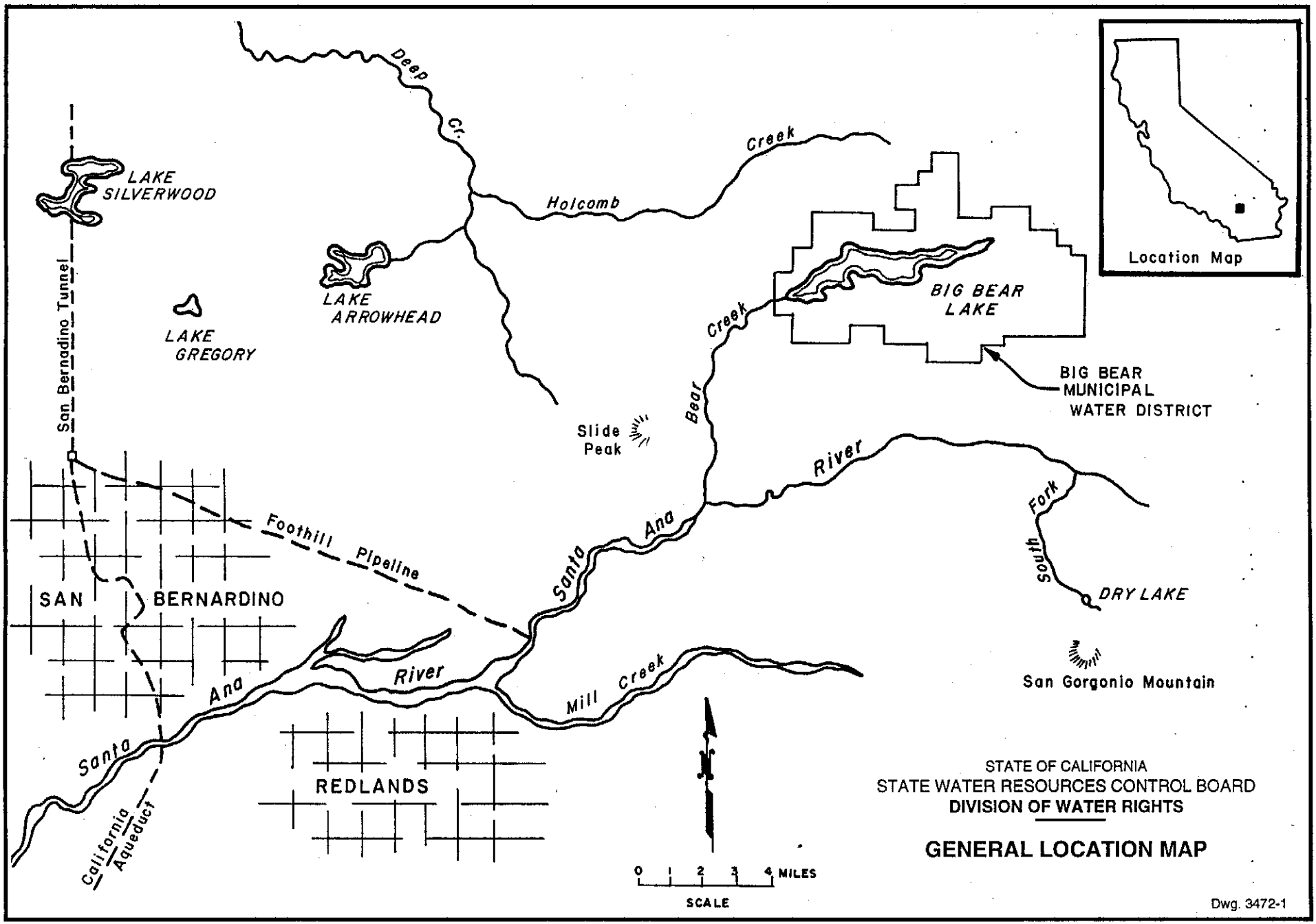
Deep Cr.
Creek
Holcomb
LAKE SILVERWOOD
San Bernadino Tunnel
LAKE ARROWHEAD
LAKE GREGORY
BIG BEAR LAKE
Creek
Bear
BIG BEAR MUNICIPAL WATER DISTRICT
Location Map
Slide Peak
River
Santa Ana
Fork
South
DRY LAKE
Foothill Pipeline
SAN BERNARDINO
San Gorgonio Mountain
River
Ana
Santa
Mill Creek
REDLANDS
California Aqueduct
0 1 2 3 4 MILES
SCALE
STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS
GENERAL LOCATION MAP
Dwg. 3472-1

FIGURE 1

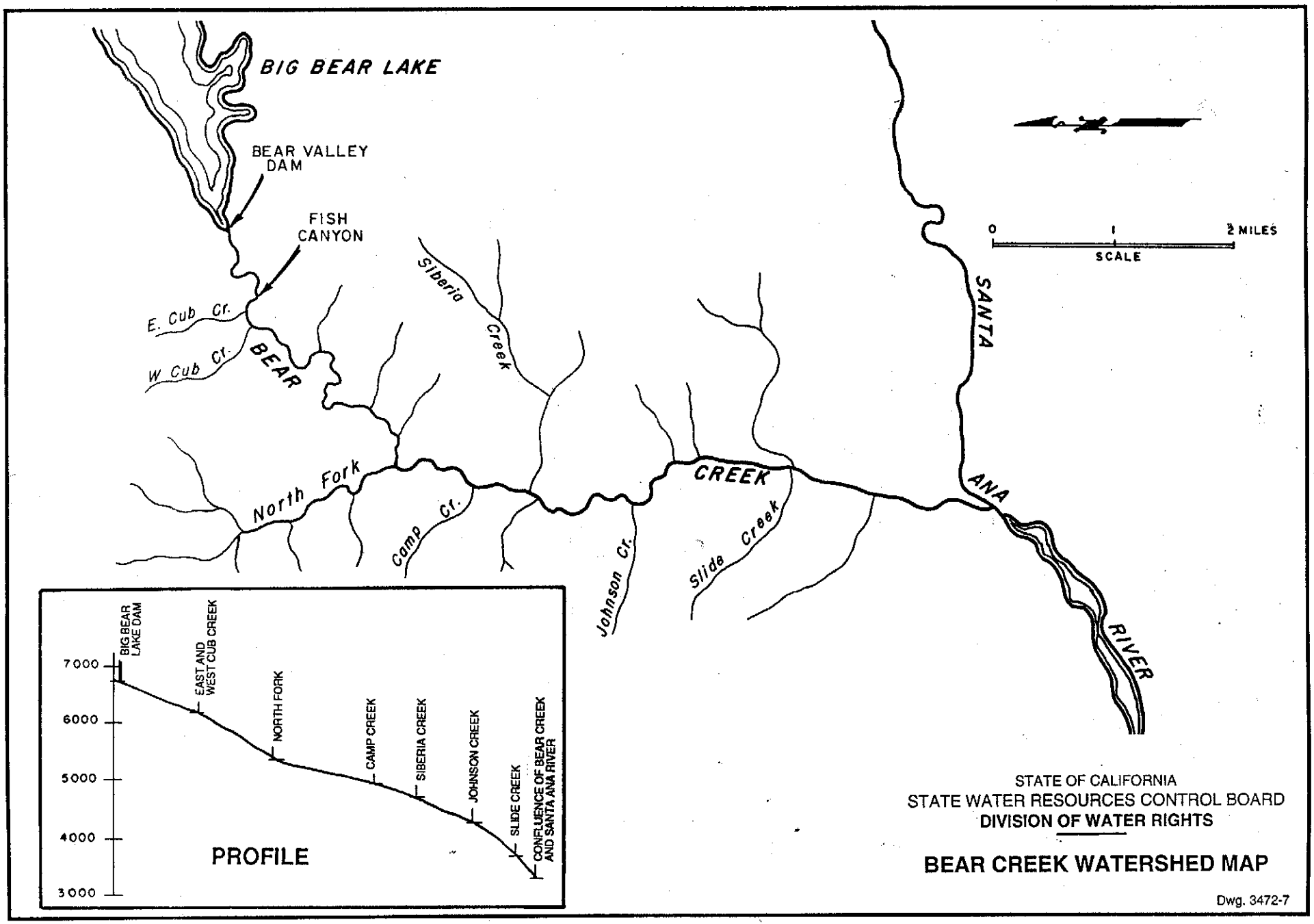
BIG BEAR LAKE
BEAR VALLEY DAM
FISH CANYON
E. Cub Cr.
W Cub Cr.
BEAR
Siberia Creek
North Fork
Camp Cr.
Johnson Cr.
CREEK
Slide Creek
SANTA ANA RIVER
0 1 2 MILES
SCALE
PROFILE
7000
6000
5000
4000
3000
BIG BEAR LAKE DAM
EAST AND WEST CUB CREEK
NORTH FORK
CAMP CREEK
SIBERIA CREEK
JOHNSON CREEK
SLIDE CREEK
CONFLUENCE OF BEAR CREEK AND SANTA ANA RIVER
STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS
BEAR CREEK WATERSHED MAP
Dwg. 3472-7

FIGURE 2

B. Cal-Trout's Complaint: On October 24, 1990, Cal-Trout filed a complaint with the SWRCB's Division of Water Rights (Division) against the District's operation of Big Bear Lake's Bear Valley Dam. The complaint alleged that the District's operation of Big Bear Lake and Bear Valley Dam provided insufficient release of water into Bear Creek from Big Bear Lake. Cal-Trout contended that the District's operation violated the "public trust" requirement to maintain Bear Creek's trout habitat in good condition as required by Section 5937 of the Fish and Game Code.[4] Cal-Trout requested that the SWRCB require the District to release water from Big Bear Lake to provide minimum fish flows determined to be necessary to maintain Bear Creek's trout habitat in good condition.

C. Staff Investigation: On September 24, 1992, the Division issued a staff Report of Investigation based on an evaluation of the complaint issues, including comments by DFG, the District and Cal-Trout. The Division concluded that there existed a difference in expert opinion regarding the condition of Bear Creek's fish resources and flow requirements needed to maintain Bear Creek's fishery resources in good condition, and that insufficient information was available for Division staff to reach a conclusion regarding the condition of fish resources or the flow requirements.[5] Division staff recommended that the parties enter into negotiations to reach a mutually acceptable settlement of the issues in the complaint, or that a water right hearing be held to receive evidence that would assist the SWRCB in determining whether additional measures are needed to protect fish and other public trust resources in Bear Creek and Big Bear Lake. On November 4, 1992, all parties to the complaint including Cal-Trout, DFG, the District and Division staff met in an initial attempt to discuss a negotiated settlement of the complaint. Representatives of Cal-Trout and the District also held a series of meetings in April and May 1993, in an effort to reach a negotiated settlement; however, Cal-Trout informed the Division on June 17, 1993, that the parties were unable to settle their dispute and requested that a hearing be set for this matter.

D. SWRCB Water Right Hearing: The parties were advised on January 7, 1993, that the Division would recommend to the SWRCB that a hearing be held during the summer of 1993 to address the outstanding issue raised by the complaint. By letters dated February 25, 1993 and March 22, 1993, the District and the City jointly requested that the hearing be held no sooner than October 1993. Cal-Trout requested by letter dated June 17, 1993, that a hearing be held after the Mono Lake water right hearing, which was originally scheduled to be held during October, November, and December 1993. On July 28, 1993, the SWRCB issued a Notice of Public Hearing notifying all parties that a hearing would be held regarding the diversion and use of water from Big Bear Lake and Bear Creek. A pre-hearing orientation tour and policy statement session were scheduled for September 29 and 30, 1993 in the City of Big Bear Lake, and an evidentiary session was scheduled for October 12 and 13, 1993 in San

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[4] SWRCB EXHIBIT NO. 1 - File 262.0 (36-01-02), Ernest Mona, Report of Investigation, September 24, 1992, Attachment A.

[5] Ibid., pp. 18-19.

Bernardino. The following parties notified the SWRCB of their intent to appear at the water right hearing:

- Big Bear Municipal Water District
- City of Big Bear Lake
- California Department of Fish and Game
- California Trout, Inc.
- United States Forest Service
- Santa Ana/Mill Creek Cooperative Water Project Management Committee
- Papoose Bay Homeowners Association

On August 13, 1993, the District and the City submitted a joint request for a time extension in the scheduled date of September 12, 1993 for the submittal of all written testimony and exhibits, because more time was needed to prepare and submit exhibits. This request was followed by Cal-Trout's August 18, 1993 objection to the time extension requested by the District and City. On August 24, 1993, the SWRCB notified all parties that the date to submit all written testimony and exhibits was extended to September 27, 1993. Following the issuance of the SWRCB's notification, DFG submitted a letter dated September 3, 1993 requesting a continuance of the hearing, based on its belief that the period between the submission date for testimony and exhibits and the actual hearing was too short for the review of new studies prepared by the District and City and for the preparation of expert responses to the information presented. DFG's request was followed by a September 14, 1993 Cal-Trout request for a continuance of the hearing. No other party objected to DFG's request for a continuance. On September 16, 1993, the SWRCB notified all parties that the hearing would be held on the scheduled dates of October 12 and 13, 1993. This notification was followed by DFG's September 22, 1993 request for a continuance of the hearing scheduled for October 12 and 13, 1993; however, on September 24, 1993, the SWRCB notified all parties of its decision to proceed with the hearing as scheduled.

On October 1, 1993 and October 5, 1993, the SWRCB received written objections from Cal-Trout and DFG, respectively, to written testimony submitted jointly by the District and City. Specifically, Cal-Trout and DFG objected to the District/City Exhibit 1-1, consisting of the "Annotated Outline of the Testimony of Roy Leidy" with supporting Exhibits 1-2 through 1-126. Both parties requested that the SWRCB move to strike the testimony from the record because the "outline" was not written testimony, but an outline of proposed testimony which, they argued, would provide an unfair advantage to the District and City. On October 4, 1993, the SWRCB notified all parties that the District and City did not submit the written testimony of Roy Leidy in accordance with SWRCB regulations (Title 23, California Code of Regulations, Section 761); therefore, the oral testimony of Roy Leidy would be continued until November 18 and 19, 1993. In addition, all parties were notified that the full written testimony of Roy Leidy must be received by the SWRCB by November 4, 1993. On October 5, 1993, Cal-Trout and DFG responded to the SWRCB's response to the earlier objection's to the written testimony of Roy Leidy by arguing that each party would be prejudiced. Cal-Trout and DFG requested that Roy Leidy's testimony be submitted on September 12, 1993, and that all other fishery experts testify on November 18 and 19, 1993. On October 7, 1993, the SWRCB denied Cal-Trout's and DFG's request.

1. Tour and Policy Session: On September 29, 1993, a pre-hearing orientation tour of Big Bear Lake and Bear Valley was conducted by Members of the SWRCB and staff. Representatives of all participating parties and local legislators were present during the tour. The tour included an inspection of the Bear Valley Dam, an overview of Bear Creek Canyon, and a drive around the entire perimeter of Big Bear Lake and Bear Valley with frequent stops.

   Following the tour, the SWRCB heard non-evidentiary policy statements on September 29 and 30, 1993 at the City's Performing Arts Auditorium. Speakers presenting policy statements included 12 elected officials, 14 representatives of public agencies, 13 representatives of special interest groups, and 60 individuals. A total of 205 additional people attended but did not speak. Virtually all statements heard by the SWRCB during the two day session were made in support of the District and City and recommended that the SWRCB reject Cal-Trout's complaint. The SWRCB also received over 750 written comments from part-time and full-time residents of Bear Valley, which also requested that the SWRCB reject Cal-Trout's complaint.

2. Evidentiary Sessions: On October 12 and 13, 1993, the SWRCB received evidence from the following parties: Cal-Trout, DFG, U.S. Forest Service, District, and the City. Papoose Bay Homeowners Association submitted a Notice of Intent to Appear and submitted written testimony. Since the Association did not participate in the hearing, their testimony was not accepted into evidence. The Santa Ana/Mill Creek Water Project Cooperative Management Committee (Committee) also submitted a Notice of Intent to Appear; however the Committee did not submit written testimony or exhibits and did not participate in the hearing.

   On October 7, 1993, staff contacted Mr. John Shone, Managing Director of Bear Valley Mutual Water Company (Mutual Water Company). Mr. Shone was initially identified as one of the witnesses to testify for the Committee in its original submitted Notice of Intent to Appear. By telephone contact and letter dated October 7, 1993, staff advised Mr. Shone that the SWRCB was considering joining the Mutual Water Company as a party in the hearing, and strongly urged that he or a representative of the Mutual Water Company attend the hearing.

   On October 20, 1993, the SWRCB issued a Supplement to Notice of Public Hearing notifying all parties that the hearing would be continued on November 18 and 19, 1993 in San Bernardino, to hear the direct testimony of Roy Leidy, the direct testimony of the Mutual Water Company (which was joined as a party to the proceedings), and the rebuttal testimony of each party wishing to present rebuttal. The District and City were also requested to submit, by November 4, 1993, additional information pertaining to: a 1977 Final Baseline Environmental Impact Report for Lake Restoration Activities, the City's Urban Water Management Plan prepared under Water Code Section 10620 et seq., the District's hydrologic model for determining the

effects of water releases on Big Bear Lake, stream flow readings below Bear Valley Dam, and information pertaining to bald eagles at Big Bear Lake. The District and City responded on October 26, 1993 to the SWRCB's request, by requesting that the SWRCB defer the submission of information pertaining the District's/City's hydrologic model until the SWRCB resolves the threshold issue of the condition of the fish in Bear Creek. On November 1, 1993, the SWRCB denied the District's and City's requests; however, by letter dated November 10, 1993, the District and City "... declined to provide the requested hydrological model ...".

At the end of the November 19, 1993 hearing session, the SWRCB announced that the hearing would be continued until December 13, 1993, to provide the Mutual Water Company a further opportunity to present additional evidence and/or cross-examine the witnesses of the other parties. On November 29, 1993, the Mutual Water Company's attorney advised the SWRCB that he wished to cross-examine only one witness, and requested that the SWRCB authorize the Mutual Water Company to take the one witness' deposition and enter the deposition into evidence in lieu of convening a formal hearing. DFG objected to using a deposition procedure. On December 2, 1993, the SWRCB issued a Notice of Continuance and Change of Location and Time, notifying all parties that the hearing would be continued on December 13, 1993 in Sacramento. The hearing was adjourned on December 13, 1993 and all parties were provided 30 days to submit their closing arguments.

II. DESCRIPTION OF WATER RIGHTS

A. General: In 1884, construction was completed of the original "Old Bear Valley Dam" at the western end of Bear Valley. The "Old Bear Valley Dam" was an arched dam 300-feet wide and 52-feet high; producing a storage capacity of 25,280 AF at the dam's spillway elevation of 6,723 feet above sea level.[6] The "Old Bear Valley Dam" created a lake over five miles long which was stocked with thousands of fish from Lake Tahoe in 1887.[7] In 1911, as a result of increasing demands for irrigation water in the San Bernardino Valley, the Mutual Water Company completed the construction of a larger Bear Valley Dam. This new 72-feet high, reinforced concrete, multiple arched dam is located approximately 300 feet downstream of the "Old Bear Valley Dam". The new dam's overflow elevation is 6,743 feet above sea level, producing a designed reservoir capacity of 72,167 AF.[8] In 1977, a resurvey of the reservoir

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[6] SWRCB EXHIBIT No. 1 - File 262.0 (36-01-02), Ernest Mona, Staff Report of Investigation, September 24, 1992, pp. 4-5.

[7] SWRCB EXHIBIT No. 1 - File 262.0 (36-01-02), Tourist pamphlet, 1993, p. 38.

[8] SWRCB EXHIBIT NO. 1 - Ernest Mona, Report of Investigation, September 24, 1992, pp. 4-5.

resulted in a revision of the 1911 designed capacity. The reservoir's surveyed capacity is 73,320 acre-feet.[9] The reservoir is now known as Big Bear Lake.

In 1964, the residents of Bear Valley voted to create the District for the purpose of controlling and stabilizing the water level within Big Bear Lake. On November 3, 1965, the District filed a complaint in San Bernardino Superior Court (Action No. 12905) against the Mutual Water Company. In January 1977, the lawsuit resulted in an "agreement of sale". The District acquired title to Bear Valley Dam, to the reservoir's land lying beneath the surface elevation of 6743.2 feet above sea level, and to the surface recreational rights on Big Bear Lake. Concurrently, action to adjudicate water rights in Bear Creek was filed in 1974 by the District (Big Bear Municipal Water District v. North Fork Water Company, et al, SB No. 165493), in an effort to develop a "physical solution agreement" to provide the necessary companion water supply which would make the District's lake acquisition meaningful. Under the "physical solution", the District could provide "in-lieu" water (i.e., water from wells in the San Bernardino Basin and/or State Water Project water) within the service area of the Mutual Water Company, and compensate the Mutual Water Company for the costs of production of San Bernardino Basin Water.

In 1977, a "physical solution agreement" was executed among the District, the Mutual Water Company, and the San Bernardino Valley Water Conservation District, in order to bind all interests and affected parties within the San Bernardino Valley. Because the physical solution contemplated the incorporation of its provisions in a Stipulated Judgment in the adjudication case, concurrence was also required of the "prior rights companies": North Fork Water Company, Lugonia Water Company, and Redlands Water Company. Figure 3 shows the Santa Ana River-Bear Creek system that delivers water to the Mutual Water Company and other water rights holders in the Santa Ana River System. On February 4, 1977, a Stipulation and Judgment was entered in the San Bernardino Superior Court.[10] Under Section V of the Judgment, a Watermaster Committee was created to account for the water.

B. Bear Valley Mutual Water Company's Water Rights: After the construction of the "Old Bear Valley Dam" in 1884, it became apparent to the growers in the San Bernardino Valley, during the dry summer months of 1898, 1899, and 1900, that a higher dam providing more holdover storage was necessary at Big Bear. The growers in the San Bernardino Valley felt that it was necessary to organize a company which would control the water distribution facilities in the San Bernardino Valley ("Bear Valley System"). The company's control of the "Bear Valley System" would provide the growers with an assured water

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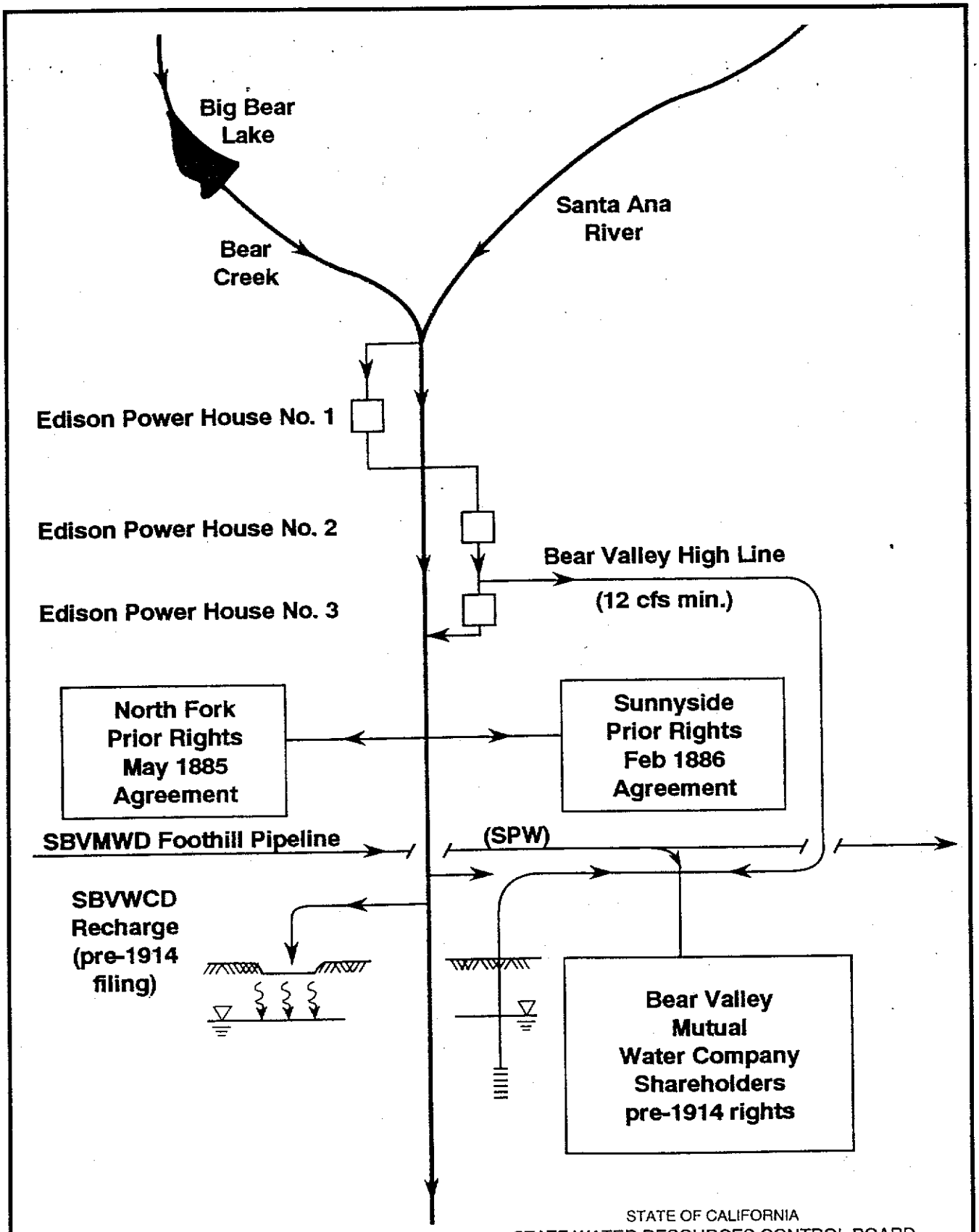
[9] Ibid.

[10] Ibid., pp. 5-6

FIGURE 3



STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

SANTA ANA RIVER - BEAR CREEK SCHEMATIC

Dwg. 3472-3

supply and would allow them to build a higher dam at Big Bear.[11] At the time, the "Bear Valley System" included: 6,871 acres of land, the right to impound water at Big Bear lake, the Redlands Canal from the mouth of the Santa Ana Canyon, the Greenspot Pipeline, 50% interest in the North Fork Canal, the Highland Ditch, the North San Bernardino Pipeline, and other public and private properties.[12]

In 1903, the Mutual Water Company was organized and succeeded its predecessor companies, which included the Bear Valley Land and Water Company, the Bear Valley Irrigation Company, the New Bear Valley Irrigation Company, and the Bear Valley and Alessandro Development Company.[13] Originally, a total of 70,559 shares of Mutual Water Company stock had been subscribed by growers in San Bernardino Valley; however, by 1909 a total of 83,527 shares were subscribed by 100% of all users who had been using water from the "Bear Valley System".[14] The Mutual Water Company currently consists of 250,137 total shares of stock, which are owned by various agencies, water companies, private organizations and individuals.[15] For example, the City of Redlands and the East Valley Water District own approximately 84,532 shares of the Mutual Water Company's stock, either directly as shareholders of company stock, or indirectly as shareholders in other water companies (e.g., Crafton Water Company and Redlands Height Water Company), who also own shares of Mutual Water Company stock. The District also owns 21,026 shares of Mutual Water Company stock.[16]

The Mutual Water Company claims to be the holder of the pre-1914 water rights for the water diverted from Bear Creek and impounded in Big Bear Lake, as well as the holder of pre-1914 water rights to divert the water in excess of prior rights agreements.[17] These prior rights agreements (i.e., 1885 North Fork Agreement and 1886 Sunnyside Agreement) require the Mutual Water Company to provide specific amounts of Santa Ana River water to the North Fork Water Company and Sunnyside Division of the South Fork Ditch.

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[11] BBMWD/CITY EXHIBIT NO. 1-48, "History of Bear Valley Mutual Water Company - 1903 Through 1983", p. 1.

[12] Ibid., p. 6.

[13] Ibid.

[14] Ibid., p. 3, 5, and 9.

[15] SWRCB EXHIBIT No. 1 - File 262.0 (36-01-02), Ernest Mona, Staff Report of Investigation, September 24, 1992, p.4.

[16] Ibid.

[17] BBMWD/CITY EXHIBIT NO. 7-1 - Testimony of Donald Evenson, p. 1.

C. District's Water Rights:[18] Pursuant to the February 4, 1977 Stipulation and Judgment among the District, the Mutual Water Company, and the San Bernardino Valley Water Conservation District, the District's five-member Board of Directors' mission is to manage Big Bear Lake to maximize its potential for public recreational uses. Accordingly, the District has acquired certain rights to the waters impounded in Big Bear Lake. Under the terms of the 1977 Judgment, the District may retain water in their lake account by providing the Mutual Water Company with alternative water supplies, or "in lieu" water. If the District provides the Mutual Water Company with "in lieu" water, the District can keep an equal amount of water in Big Bear Lake, which is credited to the District's lake account. Whenever Big Bear Lake fills, water that spills is considered as the District's water and is deducted from the District's lake account, until the lake account is zero. Once the District's lake account is zero, any water that spills is considered as Mutual Water Company's water. Consequently, at times, the District will have no water or acquired rights in Big Bear Lake. Figure 4 shows a schematic of the District's and the Mutual Water Company's accountable rights to the water in Big Bear Lake.

III. OPERATION OF BIG BEAR LAKE

A. General: Since 1964, when the citizens of Bear Valley voted to create the District, the citizens of Bear Valley have been committed to maintaining the water surface level of Big Bear Lake as high as possible for recreation and wildlife purposes:[19] Since 1977, more than six million dollars has been pledged and spent to maintain and enhance recreation uses in Big Bear Lake, for example:[20]

- $3,000,000 for the purchase of 44,000 acre-feet of "in-lieu" water;
- $2,000,000 to acquire facilities and stock to supplement the purchase of State Water Project water;
- Assessments have been imposed to repair the Bear Valley Dam to meet seismic requirements (i.e., $3,000,000 of grant funding provided by the State of California under the Davis-Grunsky Act);
- $425,000 of grant funding under Proposition 70 was used to purchase land currently used as a recreational vehicle park located adjacent to the lake;
- $470,000 of grant funding from the California Department of Boating and Waterways was used to construct public boat launch facilities;
- $40,000 has been spent to construct a unique handicap-access fishing pier facility on the lake.

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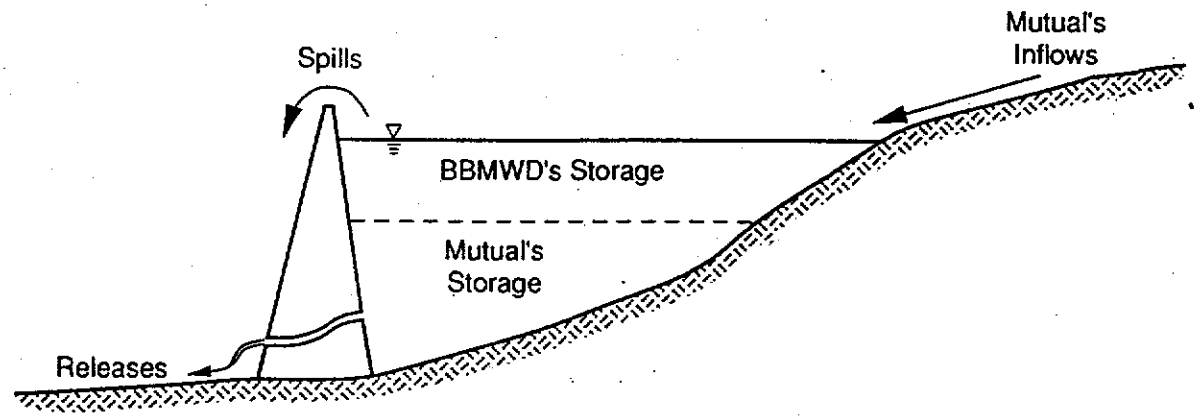
[18] Ibid.

[19] BBMWD/CITY EXHIBIT NO. 6-1 - Testimony of Robert Ludecke, p. 4.

[20] Ibid., pp. 4-6.

FIGURE 4



STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

SCHEMATIC OF WATER MASTER ACCOUNTS IN BIG BEAR LAKE

Dwg. 3472-4

B. District's Dam Operational Criteria: Since 1987, the District has operated Big Bear Lake under the following operational policy to maintain the lake level as high as possible to accommodate recreational uses while meeting the requirements of the February 4, 1977 Stipulation and Judgment:[21]

- "... 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 ...";
- "... 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 30th, water required would be released from Big Bear Lake ...";
- "... When the lake is between 6 and 7 feet down, the Board shall determine whether to release from the lake ...";
- "... In the unlikely event that the lake is more than 7 feet down, the District intends to buy in-lieu water throughout the year ...".

C. Instream Flow Requirements: The District currently operates Bear Valley Dam to comply with a stream or lake alteration agreement entered into with DFG in 1988, in connection with seismic repair work on the dam. The DFG agreement required the District to release water from Big Bear Lake at a bypass rate of at least 0.106 cubic feet per second.[22] The requirement is no longer in effect.

D. Consumptive Use: Big Bear Lake is currently used as a source of supply for snow making purposes at Snow Summit Ski Resort and Bear Mountain Ski Resort. Combined use of water from by both ski resorts amounts to approximately 700 acre-feet per year.[23] In addition, the City has identified Big Bear Lake as a potential source of water for future municipal use.[24] The City's Department of Water and Power's Water Resources Master Plan has identified the future use of 585 to 980 acre-feet per year of Big Bear Lake water for groundwater recharge.[25]

IV. HYDROLOGY

A. Bear Valley's Surface Hydrology: Bear Valley is approximately 13 miles long and about 8 miles wide with Bear Valley Dam located in the western

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[21] SWRCB EXHIBIT NO. 1 - File 262.0 (36-01-02), Ernest Mona, Report of Investigation, September 24, 1992, p. 10.

[22] BBMWD/CITY EXHIBIT NO. 6-1 - Testimony of Robert Ludecke, p. 7.

[23] BBMWD/CITY EXHIBIT NOS. 13 AND 14 - Testimony of Richard Kun and Rich MacGarry.

[24] Ibid., p. 8.

[25] BBMWD/CITY EXHIBIT NO. 5-1 - Testimony of Michael Perry, p. 2.

portion of the valley. Baldwin Lake, which the local residents consider to be a dry lake, is a natural sink located to the east end of the Bear Valley. Figure 5 shows the topographic features of Big Bear Lake's and Baldwin Lake's watersheds and the major tributaries of both lakes.

As Figure 5 shows, Big Bear Lake's major tributaries include Rathbone Creek and Grout Creek, and minor tributaries include Kidd Creek, North Creek, Metcalf Creek, and other unnamed, intermittent streams. These tributaries are located within Big Bear Lake's watershed, which covers an area of approximately 34,000 acres. Baldwin Lake's tributaries include Caribou Creek, which flows through Van Dusen Canyon, and other minor, intermittent streams originating within May Van Canyon and Green Canyon.

B. Bear Valley's Sub-Surface Hydrology: There are 11 major groundwater basins or hydrologic subareas within the Big Bear Lake drainage area: Grays Landing, Grout Creek, Northshore, Van Dusen, West Baldwin, East Baldwin, Erwin Lake, Division, Rathbone, Village, and Mill Creek.[26] Figure 6 shows the hydrologic boundaries of each subarea. Big Bear Lake and Baldwin Lake are separated by alluvial deposits which originate from the surrounding mountain ranges.[27] As shown by Figure 7, these deposits have caused a separation between the two basins.[28]

The water bearing layers, which overlay non-water bearing formations, are quaternary unconsolidated deposits of both recent alluvium period (composed of sand and gravel of high permeability) and older alluvium period (composed of a greater proportion of clay, which reduces permeability).[29] The non-water bearing formations provide minimal storage for percolating water within cracks and fissures; however, the recent and older alluvium deposits provide greater storage capacity for percolating groundwater.[30]

C. Precipitation: Precipitation data at the Bear Valley Dam have been collected since the turn of the century. Table 1 of Attachment A indicates that total annual precipitation by water-year (i.e., October 1 through September 30) for the period 1911 to 1990 ranged from a minimum of 14.95 inches during water year 1986-1987, to a maximum of 86.55 inches during water year 1968-1969. The average annual precipitation for the 79-year period is 35.33 inches. Table 2 provides a summary of monthly maximum, minimum, and

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[26] CAL-TROUT EXHIBIT NO. 2C - 1977 EIR, Big Bear Lake Restoration Report, p. III-13.; and

BBMWD/CITY EXHIBIT NO. 23 - Bear Valley Groundwater Basin Map.

[27] Ibid., p. III-32.

[28] Ibid., p. III-36.

[29] Ibid., p. III-36.

[30] Ibid.

FIGURE 5

FIGURE 5

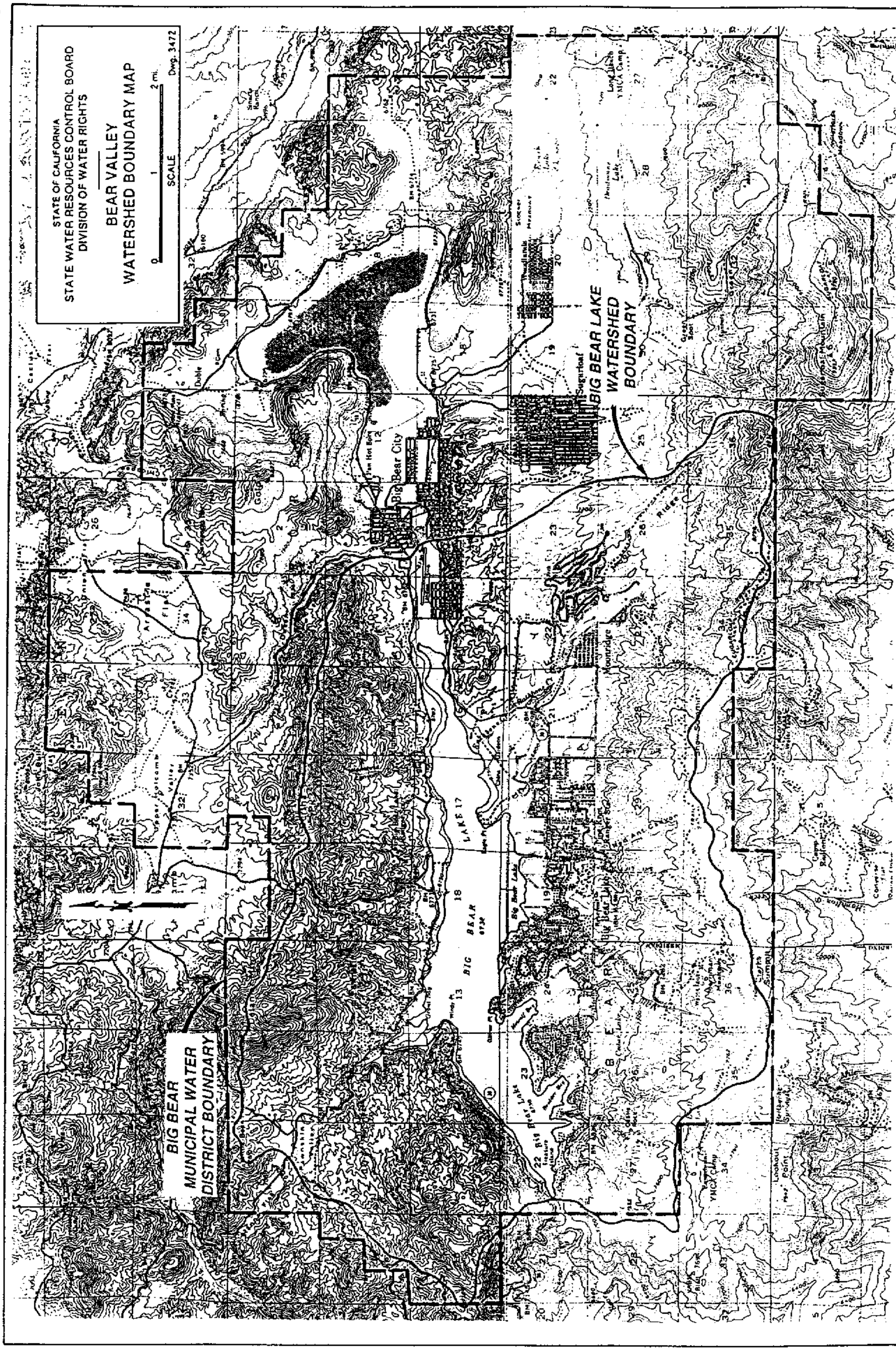


FIGURE 6

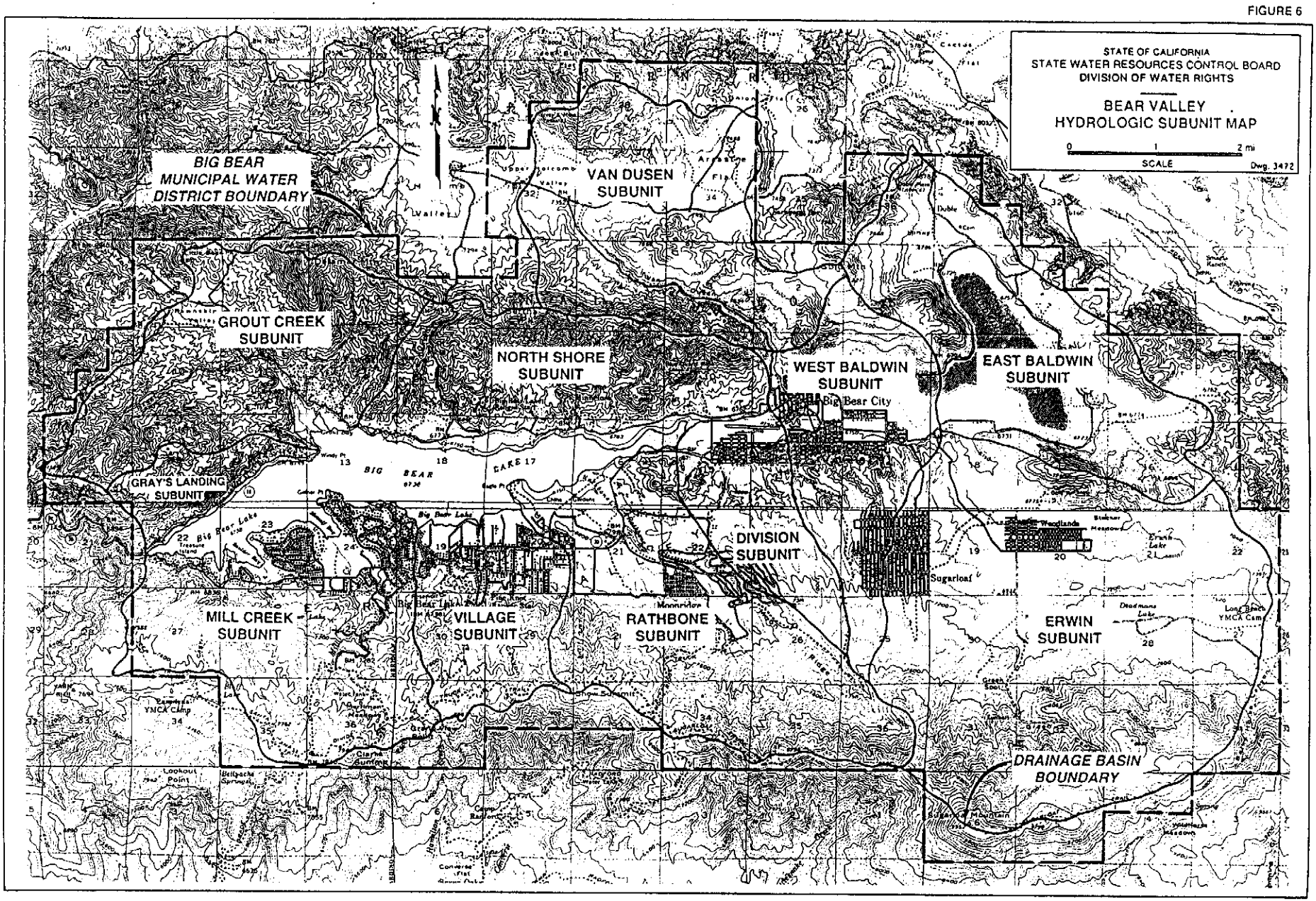
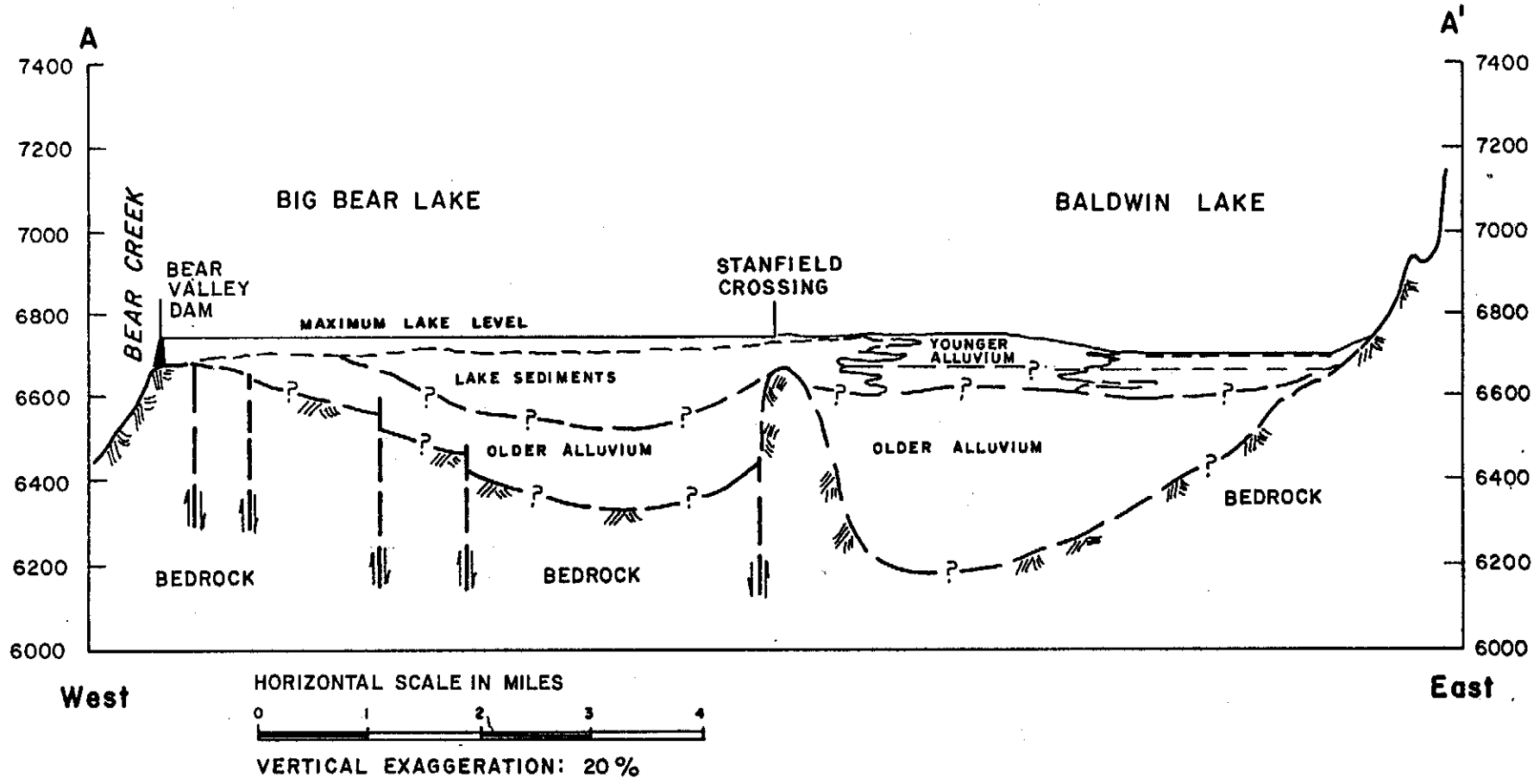


FIGURE 6



STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

BEAR VALLEY GEOLOGIC CROSS - SECTION MAP

Source: Don Owen & Associates Inc.

Dwg. 3472-7

FIGURE 7

average values of recorded precipitation at Bear Valley Dam for the time period 1911 to 1990.[31]

TABLE 2 - Summary of Precipitation
1911 - 1990

MONTH	MAXIMUM (Inches)	MINIMUM (Inches)	AVERAGE (Inches)
JANUARY	40.80	0	6.49
FEBRUARY	29.65	0	6.92
MARCH	25.75	0	5.99
APRIL	17.23	0	2.98
MAY	7.39	0	0.86
JUNE	3.50	0	0.17
JULY	3.26	0	0.53
AUGUST	4.45	0	0.74
SEPTEMBER	8.76	0	0.83
OCTOBER	6.68	0	1.33
NOVEMBER	26.87	0	3.33
DECEMBER	22.40	0	5.17

D. Unimpaired Runoff: Table 3 of Attachment A shows monthly unimpaired flow of Bear Creek at the dam site for the period January 1911 to December 1990. The flow data are expressed in total acre-feet per month, and were calculated by District consultants by using lake release data, lake spill data, lake stage measurement data, elevation-capacity-area data, and calculated evaporation rates.[32] The calculated unimpaired flows at Big Bear Lake ranged from a yearly minimum of 1,437 AF (or an annual flow rate of 1.98 cfs) in 1961 to a yearly maximum of 61,672 AF (or an annual flow rate of 85.18 cfs) in 1969. The average annual unimpaired flow at Big Bear Lake for the 80-year

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[31] SWRCB EXHIBIT No. 1 - File 262.0 (36-01-02), Ernest Mona, Report of Investigation, September 24, 1992, p. 7.

[32] BBMWD/CITY EXHIBIT 1-75, Rebuttal Testimony of George R. Leidy, p. 3.

period of 1911 to 1990 is 16,335.20 acre-feet (22.56 cfs). Monthly maximum, minimum, and average values are summarized in Table 4.[33]

TABLE 4 - Summary of Unimpaired Flow
1910 - 1990

MONTH	MAXIMUM (AF)	MAXIMUM (CFS)	MINIMUM (AF)	MINIMUM (CFS)	AVERAGE (AF)	AVERAGE (CFS)
JANUARY	20,701	337.20	0	0	1,620	26.39
FEBRUARY	13,898	250.68	0	0	2,328	41.99
MARCH	24,969	406.79	0	0	3,244	52.85
APRIL	12,687	213.58	0	0	3,574	60.16
MAY	7,532	122.71	0	0	1,676	27.30
JUNE	1,969	33.14	0	0	357	6.01
JULY	2,321	37.81	0	0	412	6.71
AUGUST	1,975	32.17	0	0	432	7.03
SEPTEMBER	2,002	33.70	0	0	326	5.48
OCTOBER	1,436	23.39	0	0	336	5.47
NOVEMBER	8,418	141.71	0	0	663	11.16
DECEMBER	16,642	271.13	0	0	1,362	22.18

E. Reservoir Storage Levels: Table 5 of Attachment A provides a summary of the end-of-month storage volumes at Big Bear Lake during the period 1910 to 1990. Table 6 of Attachment A shows elevation/capacity/surface area values for the lake with accompanying elevation/capacity/surface area curves. As the tables indicate, Big Bear Lake's current maximum capacity is 73,320 acre-feet at a staff gage elevation reading of 72.33 feet, as established by the 1977 reservoir survey. Figure 8 of Attachment A shows a hydrograph of end-of-month storage volumes for Big Bear Lake for the period 1910 through 1990 and relates those volumes to staff gage elevations. Table 7 summarizes the lake's recorded monthly minimum and maximum storage volumes during 1910 to 1990.[34]

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[33] SWRCB EXHIBIT NO. 1 - File 262.0 (36-01-02), Ernest Mona, Report of Investigation, September 24, 1992, p. 7.

[34] Ibid. p. 8.

TABLE 7 - Summary of End-of-Month Storage
1910 - 1990

MONTH	MAXIMUM (AF)	MINIMUM (AF)
JANUARY	69,630	900
FEBRUARY	70,138	3,049
MARCH	72,167	3,410
APRIL	73,231	5,193
MAY	72,358	4,683
JUNE	71,913	3,258
JULY	71,660	2,333
AUGUST	70,138	1,617
SEPTEMBER	68,109	1,000
OCTOBER	66,080	693
NOVEMBER	65,827	540
DECEMBER	68,616	592

F. Flow Release into Bear Creek: Since the construction of the dams, the surface flow of water entering Bear Creek at the Bear Valley Dam site has been comprised of the following components: [35]

- Leakage and seepage through and around the dam;
- Periodic releases of water from Big Bear Lake for downstream uses;
- Spills from Big Bear Lake;
- Minimum releases for instream flows.

Since 1977, Big Bear Watermaster records have been maintained and show the flow of water into Bear Creek from the Bear Valley Dam. These recorded flows are summarized in Table 8 of Attachment A.[36] These data indicate that during the period 1977 to 1986, the District's releases of water into Bear Creek were comprised of leakage, actual releases, and spill water. Steven Foulkes, District Manager, testified that during the period 1975 - 1985, the District maintained an interim release policy during this period which was slightly

[35] SWRCB EXHIBIT No. 1 - File 262.0 (36-01-02), Ernest Mona, Report of Investigation, September 24, 1992, p. 9.

[36] Ibid., p. 9.

different from the District's current release policy.[37] As Table 8 indicates, however, since 1986 the District's current release policy limited releases of water into Bear Creek from Bear Valley Dam to only minimum releases rates comprised of seepage and leakage. Table 9 provides a summary of the monthly flow releases into Bear Creek during the period 1977 through 1990.

TABLE 9 - Summary of Bear Valley Dam Flow Release
1977 - 1990

YEAR	MAXIMUM		MINIMUM		YEAR TOTAL	
	(AF)	(CFS)	(AF)	(CFS)	(AF)	(CFS)
1977	254	4.31	1	0.016	880	1.21
1978	830	13.52	1	0.016	1,045	1.44
1979	4,301	72.40	4	0.065	11,123	15.39
1980	12,616	227.56	6	0.101	30,933	42.80
1981	630	10.60	1	0.016	2,280	3.15
1982	1,729	28.16	2	0.032	2,845	3.93
1983	8,581	139.80	5	0.081	27,203	37.64
1984	687	11.19	2	0.032	2,380	3.29
1985	1,143	18.62	2	0.032	2,496	3.45
1986	433	7.05	2	0.032	1,386	1.91
1987	9	0.14	4	0.065	67	0.09
1988	13	0.21	0	0.0	65	0.09
1989	10	0.16	1	0.016	53	0.07
1990	9	0.14	4	0.065	68	0.09

G. Groundwater: The City and other communities within Bear Valley rely almost entirely on local groundwater sources to meet municipal and domestic demands. To service these demands, the City and Big Bear Community Services District (CSD) own and operate a total of 77 groundwater wells within the Bear Valley.[38] Figure 9 shows the locations of these wells relative to Big Bear Lake. Table 10 of Attachment A provides summary data pertaining to the groundwater wells' depths and production. As indicated by Table 10, the total

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[37] TRANSCRIPT, November 19, 1993, Testimony of Steven Foulkes, pp. 15-16.

[38] BBMWD/CITY EXHIBIT 23 - Summary of Groundwater Production Wells/Bear Valley Ground Water Basin Map.

FIGURE 9

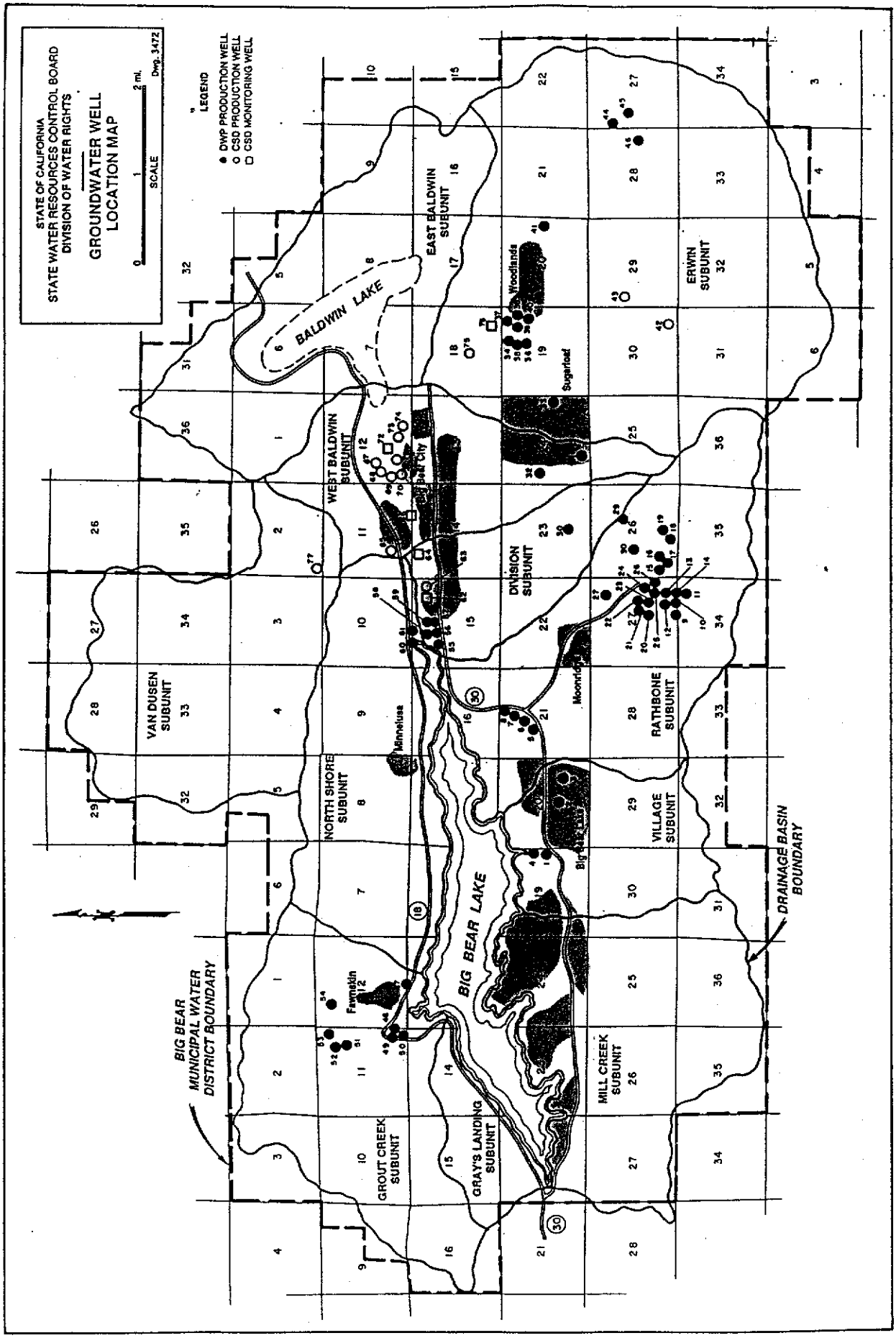
FIGURE 9
STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS
GROUNDWATER WELL
LOCATION MAP
SCALE
2 mi.
Dwg. 3472
LEGEND
DWP PRODUCTION WELL
CSD PRODUCTION WELL
CSD MONITORING WELL
BALDWIN LAKE
EAST BALDWIN SUBUNIT
WEST BALDWIN SUBUNIT
VAN DUSEN SUBUNIT
NORTH SHORE SUBUNIT
DIVISION SUBUNIT
ERWIN SUBUNIT
RATHBONE SUBUNIT
VILLAGE SUBUNIT
MILL CREEK SUBUNIT
GROUT CREEK SUBUNIT
GRAY'S LANDING SUBUNIT
BIG BEAR LAKE
BIG BEAR MUNICIPAL WATER DISTRICT BOUNDARY
DRAINAGE BASIN BOUNDARY
Woodlands
Sugarloaf
Bear City
Moonridge
Big Bear City
Fawnskin
Minnelusa

combined average annual municipal and domestic water production is 4650.3 acre-feet. Since 1977, 21 new wells have been constructed by the City's Department of Water and Power (DWP) and CSD, which account for approximately twenty-five percent of the total annual pumpage.

Only limited data are available in the hearing record regarding the effects of groundwater pumping on the groundwater basins within Bear Valley, or the correlation between groundwater pumping and lake level. However, the available information does indicate that the sustained yield of Bear Valley's groundwater basin subareas was determined to be 3,050 acre-feet per year.[39] Of the total storage capacity of 241,600 acre-feet in all subareas, 28,100 acre-feet is considered as usable water.[40] Subareas with the greatest sustained yield are the West Baldwin, Erwin Lake, Division, and Rathbone basins.[41]

Evaluations pertaining to the sustained groundwater yield within the Big Bear Lake watershed have indicated that current production exceeds sustained yield, and projected production may exceed sustained yield by as much as 6,000 acre-feet by the year 2000.[42] Consequently, available studies indicate that an overdraft condition currently exists in the Division and Rathbone Subareas.[43] Evidently, the overdraft conditions have existed since the mid-. 1970's.[44] Additionally, these studies have indicated that pumping levels in the Division and Grout Creek Subareas are known to be below Big Bear Lake's level at several locations, suggesting that the surface waters stored in Big Bear Lake may be contributing to the recharge of the groundwater.[45]

As an example of Big Bear Lake's influence on adjacent groundwater basins, Michael Perry[46] testified that "... Division wells especially and somewhat the Grout wells appear to have been affected by lake levels ...".[47] When asked how it is affected, Mr. Perry testified that "... as the lake lowers, the

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[39] BBMWD/CITY EXHIBIT NO. 5-10 - Bear Valley Water Resource Report and Management Plan, p. 2-4.

[40] Ibid.

[41] Ibid.

[42] Ibid.

[43] BBMWD/CITY EXHIBIT NO. 5-3 - Reevaluation of Sustained Groundwater Yields/Big Bear Lake Watershed, Cover letter dated July 28, 1987.

[44] Ibid.

[45] Ibid., p.1.

[46] TRANSCRIPT, October 13, 1993, Testimony of Michael Perry, pp. 41-42.

[47] Ibid., p. 143, lines 1-9.

water recedes from the eastern end of the lake, Stanfield Marsh...it appears that as the area dries up...the Division groundwater basin...is not capable of producing the same amount of water ...".[48] Therefore, it appears that lake levels can be affected, in part, due to the recharge of adjacent groundwater subareas. Furthermore, the loss of natural inflow from tributary sources as a result of increased groundwater pumping from adjacent wells may also affect lake levels.

H. Water Conservation: During field investigations, Division staff noticed posted signs indicating that a "Stage One" water rationing program had been activated within Bear Valley. According to Michael Perry, the "Stage One" rationing program was implemented by the CSD to achieve a 10 to 12 percent reduction in water consumption within the CSD.[49] The implementation of a "Stage One" program was triggered because of a drop in static water levels in CSD's wells.[50] The City also advised the SWRCB that the City was operating within a "Stage Two" water rationing program which seeks to achieve a 15 percent reduction in overall water usage within the City.[51] The CSD and the City's DWP rely on water conservation regulations adopted by the City on October 13, 1987.[52]

Pursuant to the SWRCB's October 20, 1993 Supplement to Notice of Public Hearing, the District and the City were requested to provide a copy of the City's Urban Water Management Plan prepared in accordance with Water Code Section 10620 et seq. (Assembly Bill No. 11 approved October 13, 1991). Water Code Section 10620 requires each California urban water supplier providing municipal water directly or indirectly to more than 3,000 customers, or supplying more than 3,000 acre-feet of water annually, to prepare and adopt a Water Shortage Contingency Plan by January 31, 1992. The City has not prepared a Water Shortage Contingency Plan in compliance with Water Code Section 10620.[53]

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[48] Ibid., p. 143, lines 14-22.

[49] Ibid., pp. 199-200.

[50] Ibid., p. 199.

[51] SWRCB EXHIBIT No. 1 - File 262.0 (36-01-02), City's November 8, 1993 letter to SWRCB responding to the SWRCB's October 20, 1993 request for information.

[52] SWRCB EXHIBIT No. 1 - File 262.0 (36-01-02), Water Conservation Regulations for CSD and the City's DWP, March 11, 1991, included as an attachment to City's November 8, 1993 letter to SWRCB.

[53] SWRCB EXHIBIT No. 1 - File 262.0 (36-01-02), City's November 8, 1993 letter to SWRCB responding to SWRCB's October 20, 1993 request for information.

Additionally, the City has not signed the State Department of Water Resources, June 11, 1991, Memorandum of Understanding regarding Urban Water Conservation in California (MOU).[54] The urban water conservation practices included in the MOU (referred to as "Best Management Practices") are intended to reduce long-term urban demands from what they would have been without implementation of these practices and are in addition to programs which may be instituted during occasional water supply shortages.[55] A major benefit of the MOU is to conserve water which could be used for the protection of streams, wetlands, and estuaries and/or urban supply reliability.[56]

I. **Reclamation**: The City's wastewater discharge for the last three years has averaged 2,273 acre-feet per year, with the projected buildout discharge estimated to be 3,397 acre-feet per year.[57] All wastewater is treated at the existing Big Bear Area Regional Wastewater Agency (BBARWA) treatment plant using secondary treatment and is exported to the Lucerne Valley.[58]

The California State Health Department has indicated that the direct discharge of any advanced treated wastewater to Big Bear Lake or Bear Creek would not be allowed because Big Bear Lake and Bear Creek are designated as sources for domestic water supplies.[59] Michael Perry testified that the City's DWP and the BBARWA have conducted studies to identify opportunities to reuse treated wastewater in Bear Valley.[60] These studies have indicated that opportunities do exist for the reuse of advanced treated wastewater (tertiary or more advanced levels) for indirect uses such as aquatic and wildlife habitat maintenance, dust suppression on dry lakebed, irrigation, and groundwater recharge.[61] The benefits that would occur from the use of reclaimed wastewater would be a reduction in the quantity of wastewater exported to the Lucerne Valley which could be reused in Bear Valley, a reduction in the District's obligations to the Mutual Water Company under the 1977 Judgement, and the improvement of the overdraft condition which exists in Bear Valley's groundwater basins. These benefits could lead to higher production from

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[54] TRANSCRIPT, October 13, 1993, Testimony of Michael Perry, p. 149. line 22.

[55] SWRCB EXHIBIT No.1 - File 262.0(36-01-02), MOU, June 11, 1993, p. 1.

[56] Ibid., p. 5.

[57] SWRCB EXHIBIT No. 1 - File 262.0 (36-01-02), City's November 8, 1993 letter to SWRCB responding to the SWRCB's October 20, 1993 request for information.

[58] BBMWD/CITY EXHIBIT No. 5-7, p. 21.

[59] BBMWD/CITY EXHIBIT No. 5-1, p. 2.

[60] BBMWD/CITY EXHIBIT No. 5-1, p. 2.

[61] BBMWD/CITY Exhibit No. 5-7, p. 21.

existing municipal wells[62] and possibly reduce losses from Big Bear Lake as a result of the lake's recharge of adjacent overdrafted groundwater basins.

V. HYDROLOGIC MODELS

A. General: The results of hydrologic reservoir operation models were introduced into evidence by the District and City, and Cal-Trout to illustrate the impact of proposed release rates on Big Bear Lake's water levels. The results of the District's and City's model, which was not provided to the SWRCB upon request, were used to illustrate impacts on lake water levels attributed to existing operations, existing operations with allegedly proposed Cal-Trout releases of 6.0 cfs and 8.0 cfs plus flushing flows of 40 cfs, and existing operations with an initially proposed DFG releases of 3.5 cfs plus flushing flows of 40 cfs.[63] Cal-Trout's model results were used to illustrate impacts on lake water levels attributed to existing operations with releases of 1.0 cfs and 2.0 cfs.[64]

The District's and City's model results were presented to the SWRCB to indicate the following:[65]

- Releases of 6.0 cfs and 8.0 cfs were higher than the historical inflow to Big Bear Lake;
- Proposed releases by Cal-Trout and DFG would substantial lower the levels of Big Bear Lake, shrink the size of the lake, and on occasion would empty the lake;
- Proposed releases of 6.0 cfs and 8.0 cfs could not be beneficially used by the Mutual Water Company 50% of the time such releases were made;
- There would be times when the District would not have enough water in its lake account to satisfy proposed fishery release schedules. The District argued that it does not have authority to release water from the Mutual Water Company's account to meet fishery releases.

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[62] BBMWD/CITY EXHIBIT No. 5-5, p. 1.

[63] DISTRICT/CITY EXHIBIT NOS. 7-1 TO 7-7.

[64] CAL-TROUT EXHIBIT NO. 15C.

[65] BBMWD/CITY EXHIBIT NOS. 7-1 TO 7-7, P. 7.

Cal-Trout's model results were presented to the SWRCB to indicate the following:[66]

- Releases of 1.0 cfs and 2.0 cfs would never empty Big Bear Lake;
- Releases of 1.0 cfs and 2.0 cfs would result in an average surface elevation above 64.00 feet, and mean monthly drawdown would be 0.12 feet per month;
- Releases of 1.0 cfs and 2.0 cfs would result in increased operational flexibility to minimize evaporation losses and spillage;
- Releases of 1.0 cfs and 2.0 cfs would not significantly impact Big Bear Lake's environment, water levels or ecomomy.

B. Division's Hydrologic Model: The Division developed a hydrologic model to evaluate the impact on Big Bear Lake's water levels attributed to proposed release rates for downstream fisheries. The model and model run results are described, in detail, in the Appendix to this staff analysis.

Three proposed release rates were evaluated based on recommendations by the parties made during the hearing:

- Cal-Trout: 2.0 cfs in all years;
- DFG: 1.2 cfs in all years;
- District/City: 0.1 cfs in all years.

In addition, a Division generated alternative rate release was evaluated based on information contained in the hearing record pertaining to flow readings below Bear Valley Dam.[67] This information was reviewed for the purpose of evaluating dam release requirements needed to maintain a 1.2 cfs flow rate below West Cub Creek (See Appendix). Based on that evaluation, the following release scenario was determined to be the best estimate for evaluation of lake level impacts.

- Division Alternative: 0.3 cfs during a "wet" water-year
  0.5 cfs during a "normal" water-year
  1.2 cfs during a "dry" water-year

  Water-year type is based on accumulated precipitation during the season of October 1 to May 1, with releases of water from Bear Valley Dam beginning May 1 and continuing to the following May 1 of each year.

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[66] CAL-TROUT EXHIBIT NO. 15C, section titled Reservoir Simulation Summary.

[67] BBMWD/CITY EXHIBIT No. 24 - FLOW READINGS BELOW BEAR VALLEY DAM.

The primary purpose of the hydrologic evaluations is to define the impact of different instream flow standards in Big Bear Lake and the resulting impacts to public trust uses, recreational uses, and to the local economy. Table 11 shows the results of the hydrologic studies and compares average end-of-month (E.O.M.) storage capacity, lake surface area, and lake elevation which would have occurred if the evaluated release rates had been applied to the operation of Big Bear Lake during the 624 month period from 1939 through 1990.

TABLE 11 - Summary of Alternative Impact

PROPOSED RELEASE RATES	AVERAGE E.O.M. STORAGE (acre-feet)	AVERAGE E.O.M. SURFACE AREA (acres)	AVERAGE E.O.M. STAFF GAGE ELEVATION (feet)
CAL-TROUT	52,386	2,548.1	64.41
DF&G	54,326	2,595.9	65.34
DISTRICT/CITY	56,930	2,656.0	66.48
DIVISION ALTERNATIVE	55,470	2,623.2	65.85

Table 12 shows a comparison of the minimum surface areas and lake levels which could have been attributed to each release scenario during the period of evaluation.

TABLE 12 - Summary of Alternative Impact
(Minimum lake levels and surface areas)

PROPOSED RELEASE RATES	MINIMUM SURFACE AREA (acres)	MINIMUM LAKE LEVEL (feet)
CAL-TROUT	1531.3	44.27
DF&G	1716.2	48.17
DISTRICT/CITY	1938.3	52.70
DIVISION ALTERNATIVE	1821.4	50.33

Table 13 shows a comparison of the maximum surface area impacts and lake level impacts attributed to Cal-Trout's, DFG's and the Division's release scenarios, when compared to the District's/City's proposed release rate results, which represents the District's current operation.

TABLE 13 - Summary of Alternative Impact
(Maximum lake level and surface area impacts)

PROPOSED RELEASE RATES	MAXIMUM SURFACE AREA IMPACT (acres)	MAXIMUM LAKE LEVEL IMPACT (feet)
CAL-TROUT	-407 (21.0%)	-8.44 (16%)
DF&G	-222 (11.5%)	-4.54 (8.6%)
DIVISION ALTERNATIVE	-116 (6.0%)	-2.37 (4.5%)

Table 14 summarizes the frequency that Big Bear Lake would have been below different lake elevations under the four release scenarios. As described in the Appendix, the following results indicate the percentage of time that the lake levels would have been between specified levels during the 624 month period from 1939 through 1990 (i.e., between full and -5 feet below full).

TABLE 14 - Summary of Frequency Evaluation

PROPOSED RELEASE RATES	ELEVATION 72.33 FT. (FULL) (%)	ELEVATION 67.33 FT. (-5 ft) (%)	ELEVATION 62.33 FT. (-10 ft) (%)	ELEVATION 57.33 FT. (-15 ft) (%)	ELEVATION 52.33 FT. (-20 ft) (%)
CAL-TROUT	39.10	29.65	17.15	7.37	6.73
DF&G	40.71	34.94	14.10	6.41	3.85
DISTRICT/CITY	46.96	34.62	13.78	4.65	0
DIVISION ALTERNATIVE	41.67	37.82	12.34	6.25	1.92

VI. RECREATIONAL AND PUBLIC TRUST USES OF BIG BEAR LAKE AND BEAR CREEK

A. General: Big Bear Lake and Bear Creek provide a wide range of recreational opportunities to southern California's regional population of more than 12 million people.[68] The U.S. Forest Service oversees the management responsibility for all recreation and wildlife throughout the San Bernardino National Forest, which include Bear Creek, Bear Valley Dam and much

[68] BBMWD/CITY EXHIBIT NO. 11-1 - Testimony of Thomas C. Wegge., pp. 2-3 to 2-4, 2-5.

of the north shore of Big Bear Lake.[69] According to the testimony of Thomas Wegge, the District's and City's economic consultant, Big Bear Lake and Bear Creek provide a natural outdoor recreational environment which creates "... a public trust value and good recognized as serving basic human biological and psychological needs..."[70]

B. Big Bear Lake Recreational Values: Recreational uses of Big Bear Lake are primarily limited to activities during the summer recreational season of May through September.[71] These recreational uses can be divided into four categories: general boating (48%), fishing (37%), sailing (9%), and water skiing (6%).[72] Shore uses includes fishing, swimming and sunbathing.[73] According to user counts conducted by the District, most visits to the lake are made during weekends and holidays.[74] Approximately 70% of all lake visitors are weekend visitors.[75] Non-residents comprise 40% of all lake users during the weekdays and 60% of all lake users during weekends.[76]

Figure 10 shows the various recreational facilities on Big Bear Lake. These facilities include nine private marinas on the lake's south shore and two boat launching facilities owned and operated by the District located on the north shore. Boat use, which includes activities such as fishing, waterskiing, sailing and jet-propelled skiing, typically peaks in July and August during the summer recreational season.[77] Shoreline use along Big Bear Lake also peaks in July and August, with weekend fishing being the most popular shoreline activity.[78] The District also operates a unique handicap-access fishing pier facility on the lake's north shore.

The U.S. Forest Service, which manages recreation and resources values on forest service lands, oversees the following day use facilities and campground on Big Bear Lake's shores: Grout Bay Picnic Area, Serrano Campground, Meadow

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[69] U.S. FOREST SERVICE EXHIBIT NO. 5 - Testimony of Gary A. Earney, p.1.

[70] BBMWD/CITY EXHIBIT NO. 11-1 - Testimony of Thomas Wegge, p.2-5.

[71] Ibid. p. 2-2.

[72] SWRCB EXHIBIT NO. 1 - File 262.0 (36-01-02), Ernest Mona, Report of Investigation, September 24,1992, p. 9.

[73] BBMWD/CITY EXHIBIT NO. 11-1 - Testimony of Thomas Wegge, p.2-2.

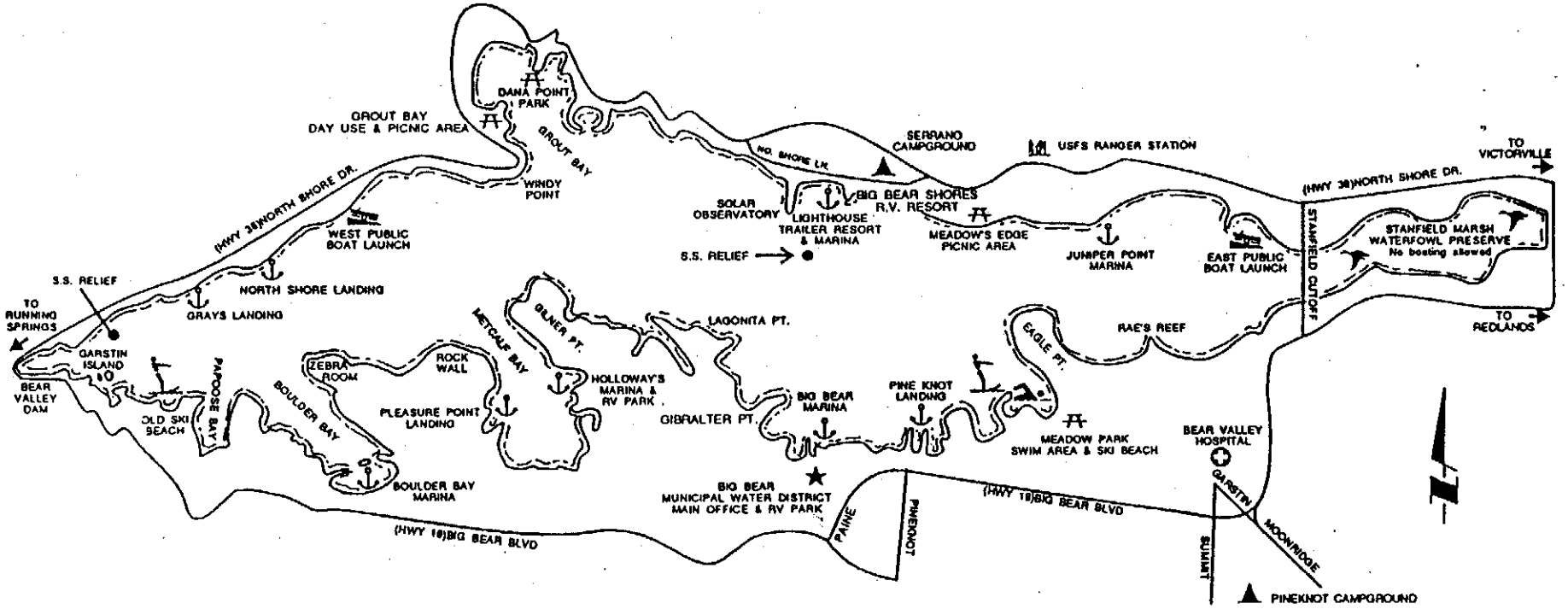
[74] Ibid., p. 2-4.

[75] Ibid.

[76] Ibid.

[77] Ibid., p. 2-5.

[78] Ibid., p. 2-4.



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BIG BEAR LAKE
RECREATION FACILITIES MAP

Source: BBMWD

Dwg. 3472-11

FIGURE 10

Edge Picnic Area, Alpine Pedal Path, East Launch Boat Ramps and Juniper Landing.[79] According to data submitted by the Forest Service for 1992, these recreational facilities were utilized by over 87,000 visitors, totalling over 123,000 visitor-days (A visitor day represents use over a 12 hour period).[80] The Forest Service also oversees the operation of Snow Summit and Bear Mountain ski resorts under Special Use Permits. During the season 1992-1993, 917,000 visitors used both ski resorts, which translates to 391,000 visitor-days.[81] Both ski resorts have contracts with the District to allow diversion of water from Big Bear Lake for snow making purposes.

C. Bear Creek Recreational Values: Recreational values associated with Bear Creek have been categorized by the USFS as hiking and backpacking, fishing and swimming, camping at the Siberia Creek Campground, and sightseeing/dam observation.[82] Access into the Bear Creek Canyon is provided by four trails: Glory Ridge, Siberia Creek, Camp Creek, and Clark's Ranch trails.[83] Figure 11 shows the access routes to the upper and middle reaches of Bear Creek provided by Glory Ridge and Camp Creek trails. Although access is difficult and the trails are steep, 700 visitor-days, or two percent of the total hiking use within the District, are associated with Bear Creek.[84] Fishing along the reaches of Bear Creek above Siberia Creek (see Figure 2) has been estimated to total 410 visitor-days, or 10% of the total fishing use within the District. This includes 118 visitors, or 372 visitor-days, for the Siberia Creek Campground.[85]

D. Big Bear Lake's Wildlife Values: Big Bear Lake and Baldwin Lake are on the Pacific flyway and provide habitat for migrating waterfowl. In addition, Big Bear Lake provides both habitat and food to approximately 30 wintering southern bald eagles, and up to 150 white pelicans, which utilize the shallow end of the lake.[86] The District is currently working with the Natural

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[79] U.S. FOREST SERVICE EXHIBIT NO. 5 - Testimony of Gary A. Earney, pp. 4-5.

[80] U.S. FOREST SERVICE EXHIBIT NO. 6 - Summary of Forest Service Recreational Activities Table.

[81] U.S. FOREST SERVICE EXHIBIT NO. 5, p. 3, and

U.S. FOREST SERVICE EXHIBIT NO. 6 - Summary of Forest Service Recreational Activities Table.

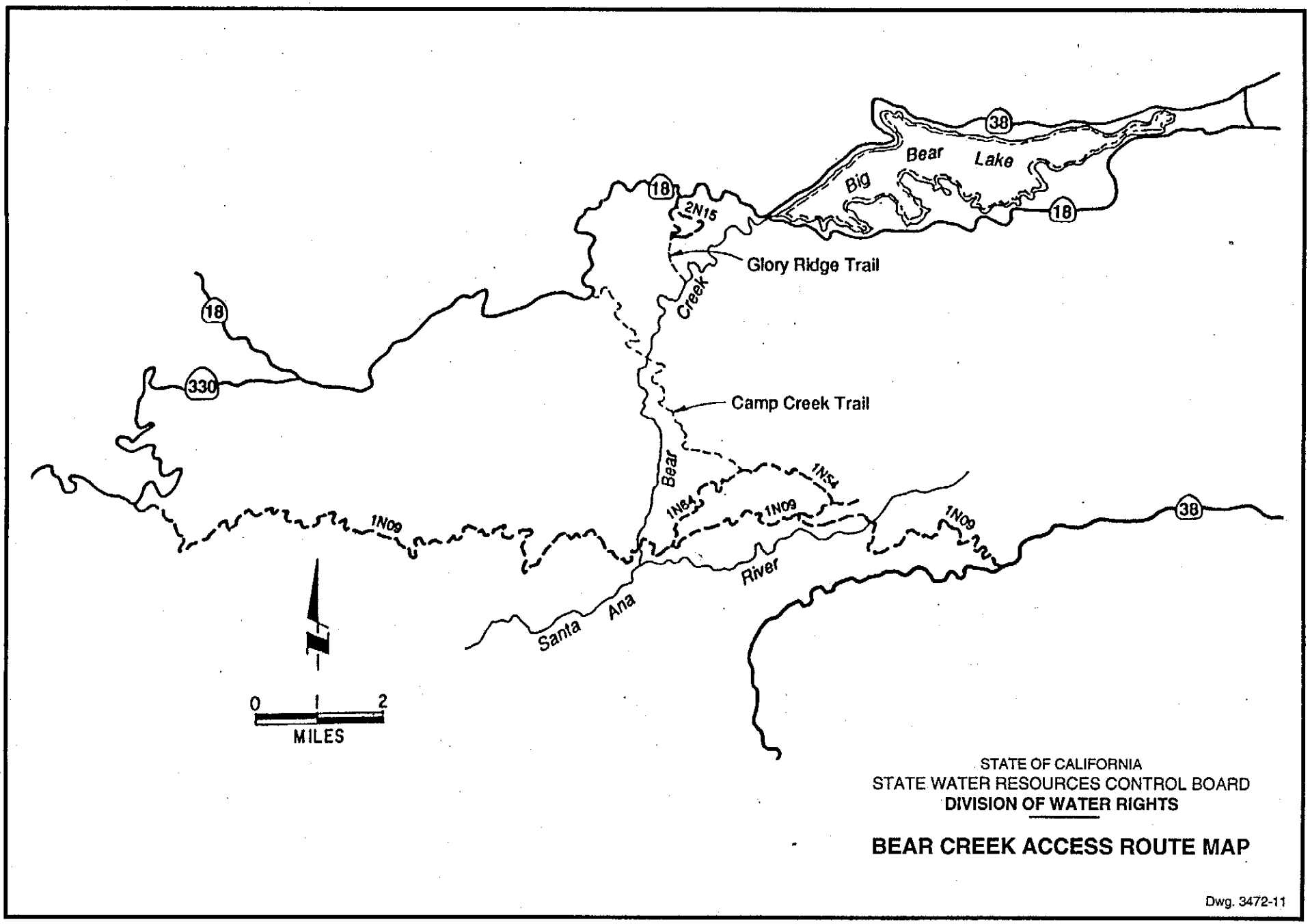
[82] Ibid., p. 2.

[83] Ibid.

[84] Ibid.

[85] Ibid.

[86] Ibid., pp. 5-6.



STATE OF CALIFORNIA
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DIVISION OF WATER RIGHTS

BEAR CREEK ACCESS ROUTE MAP

Dwg. 3472-11

FIGURE 11

Heritage Foundation, Inc. to develop the Stanfield Marsh Waterfowl Habitat (145 acres) located at the shallow east end of Big Bear Lake. Other wildlife species supported by Big Bear Lake include the two-striped garter snake and a year-round, heavily stocked lake fishery.[87]

E. Bear Creek's Wildlife Value: Bear Creek provides a fishery for both brown trout and rainbow trout, as well as valuable riparian habitat for three pairs of California spotted owls and for the San Bernardino flying squirrel.[88] Bear Creek's riparian habitat also provides valuable habitat for the southern rubber boa, the two-striped garter snake, various species of bats, and other numerous terrestrial wildlife species.[89]

VII. RELATIONSHIP BETWEEN LAKE LEVEL AND LAKE USE

A. General: The District's testimony included an Economic Analysis that quantified the recreational and economic impacts which could occur within different lake level ranges. That testimony concluded that the storage levels in Big Bear Lake affect the uses of the lake which, in turn, affect the local economy. The following provide a summary of the District's analysis.

Between the period 1980 to 1990, the Bear Valley area's permanent population has increased by 28% from a population of 11,015 to 14,127, with 5,402 citizens living in the City.[90] The local economy of the Bear Valley area, which includes the City and the unincorporated areas of Fawnskin, Big Bear City, Erwin Lake, and Baldwin Lake, is supported by tourists visiting Bear Valley for recreational use of the lake and ski resorts. Approximately 59% of the area's employed residents work sales and service jobs or are employed in professional, technical, managerial and proprietary positions related to the area's tourist industry.[91] Approximately 19% of all full time jobs and 83% of all part time jobs are generated by major employers in the lodging and recreation industries.[92]

Bear Valley's lodging industry includes over 60 overnight lodging facilities providing 1,290 rooms (39% average year-round occupancy rate).[93] The recreation industry includes both private commercial boat facilities on the

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[87] U.S. FOREST SERVICE EXHIBIT NO. 5 - Testimony of Gary A Earney, p. 6.

[88] Ibid., p. 2.

[89] Ibid., p. 3.

[90] BBMWD/CITY EXHIBIT NO. 11-1 - Testimony of Thomas Wegge, p. 2-12.

[91] Ibid., p. 2-13.

[92] Ibid.

[93] Ibid.

lake's south shores and public boat facilities on the lake north shores which support summer recreational uses of Big Bear Lake (i.e., general boating, fishing, sailing, and skiing) from mid-April through October.[94] Between May 1 and November 31, shore campground facilities support uses of fishing, swimming and sunbathing. In addition, both the Snow Summit and Bear Mountain ski areas operate resorts from November 15 through April 15, and rely on Big Bear Lake water to make snow during the winter season.

The District's economic analysis provides an estimated baseline of lake related spending and employment.[95] As Figure 12 indicates, direct spending by visitors to Big Bear Lake averages approximately $6.7 million, with about 58% attributed to spending related to lodging, food and drink, and the remainder attributed to spending related to automobile (i.e., gasoline, repairs, etc.), boat (i.e., rentals, fares, fees, repairs, etc.), fishing (i.e., licenses, equipment, bait), other recreation (i.e., equipment rentals, fees, etc), and other retail spending.[96] According to Cal-Trout, recreational spending is dominated by the skiing industry, which comprises approximately 94% of the total area's recreational spending.[97]

B. <u>Recreational Use Impact</u>: The District's economic analysis describes the recreational impacts that may occur as a result of reduced lake levels. For example, the District's east boat launch ramps cannot operate when the lake drops below staff gage elevation 59.33 feet (13 feet below full), with ramp impairment occurring at about staff gage elevation 62.33 feet (10 feet below full). Private marinas are apparently much more sensitive to lake level fluctuation than the District's public ramps.[98] Shore uses are affected by lake levels because of the availability of usable beach and shoreline. When the lake is full, there is a lack of usable beach and shoreline.[99] As the lake level falls, shoreline activity increases because more beach areas are exposed.[100] When the lake drops below staff gage elevation 66.33 feet (6 feet below full) shoreline use decreases because the distance between access points and the lake shore increases, especially in the shallower east end of the

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[94] Ibid.

[95] Ibid., Table 6. Estimated Baseline Lake Related Spending and Employment.

[96] Ibid., p. 2-15.

[97] CAL-TROUT EXHIBIT NO. 15D, Rebuttal Testimony - <u>Measured Economic Factors of Big Bear Lake</u>, p.1.

[98] BBMWD/CITY EXHIBIT NO. 11-1 - Testimony of Thomas C. Wegge, p.2-3.

[99] Ibid., p. 2-4.

[100] Ibid., p. 2-5.

Table 6. Estimated Baseline Lake-Related Spending and Employment

Spending Sector	Spending per Party Trip		Estimated Annual Spending				Estimated Full-Time Employment Generated by Recreation Spending		Estimated Number of Jobs Generated by Recreation Spending[c]	
	Shore Users	Boaters	Shore Users	Boaters	Direct Spending[a]	Total Spending[b]	Direct	Total	Direct	Total
Lodging	$45.85	$54.87	$857,400	$1,392,500	$2,249,900	$8,077,100	78.3	174.7	133	297
Food	30.53	41.51	570,900	1,053,500	1,624,400	5,848,800	63.9	134.6	109	229
Automobile	16.70	17.53	312,300	444,900	757,200	1,865,800	13.0	31.5	22	54
Boating	0.00	39.94	0	1,013,600	1,013,600	3,296,200	25.4	64.1	43	109
Fishing	1.72	3.73	32,200	94,700	126,800	412,400	3.2	8.0	5	14
Recreation	5.55	4.79	103,800	121,600	225,400	732,800	5.6	14.3	10	24
Other	13.49	17.49	252,300	443,900	696,100	2,361,000	24.8	52.7	42	90
Total	$113.84	$179.86	$2,128,900	$4,564,700	$6,693,400	$22,594,100	214.3	479.8	364	817

Notes: Estimated number of party trips related to shore use = 18,700
Estimated number of party trips related to boating = 25,379

[a] Direct spending totals represent estimated trip-related spending (in 1990 dollars) within 30 miles of Big Bear Lake.

[b] Total spending represents the estimated direct and secondary spending in San Bernardino County associated with recreation at Big Bear Lake.

[c] Direct and total jobs represent part-time and full-time jobs generated by recreation spending. Jobs were estimated assuming that 70% of full-time equivalent (FTE) jobs are part-time jobs and that one FTE job equals two part-time jobs.

FIGURE 12

lake.[101] In addition, both ski resorts usually begin making snow in early to mid-November to prepare slopes for the Thanksgiving weekend.[102] The pumps that supply the water to both ski resorts are located at the shallow east end of Big Bear Lake, and become inoperable below staff gage elevation 54.33 feet (18 feet below full).[103]

C. Impact on Facilities and Activities: Thomas Wegge's testimony, which is based on a 20-year analysis period corresponding to the hydrologic period 1939 to 1958,[104] describes how recreation opportunities, visitation, and local economy could be affected by implementation of proposed water release scenarios.[105] As indicated by Mr. Wegge's testimony,[106] impacts to recreation facilities, boating activities, and shoreline activities of proposed releases were related to the following specific lake level ranges: full to -5 feet below full, -5 feet to - 10 feet below full, -10 feet to -15 feet below full, -15 feet to -20 feet below full, and less than -20 feet below full.[107] Mr. Wegge's testimony indicates that -10 feet below full is "... the critical lake level for maintaining recreation opportunities at Big Bear Lake ...".[108]

1. Recreation Facilities: At staff gage elevation less than 67.33 feet (5 feet below full), south shore marinas and private boat docks are moved out, while north shore marinas, public boat ramps, and shore facilities are unaffected. At staff gage elevation less than 62.33 feet (10 feet below full), south and north shore marinas move their facilities to deeper water, requiring the extension of access roads. In addition, south shore effects include beaching of some private docks, the movement of some private docks to deeper water, and diminished use of shore facilities; however, public boat ramps are still operable, but the use of ramps located on the east part of the lake becomes impaired. At staff gage elevation less than 52.33 feet (20 feet below full), some north and south shore marinas are still able to move to deeper water; however, some marinas must reduce their operations because of increased cost and decreased use, and less than 60% of private docks are in operation. Additionally, shore facilities east of Windy Point and Gilner

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[101] Ibid.

[102] Ibid., p. 2-16.

[103] Ibid., p. 2-17.

[104] Ibid, p. 3-1.

[105] BBMWD/CITY EXHIBIT No. 11-1, Written Testimony of Thomas Wegge, Chapter 3. Alternative Analysis, pp. 3-1 through 3-9.

[106] Ibid, p. 3-4.

[107] Ibid., Table 7, Frequency of recreation effects at different lake levels.

[108] Ibid., p. 4-1.

Point are severely affected, and east boat ramps cease all operations. Only west boat ramps remain in operation.

2. **Boating**: At staff gage elevation less than 67.33 feet (5 feet below full), the surface area of the lake is reduced by 240 acres (8%) and the surface area available for higher speed activities is reduced by 300 acres (12%). There is some loss of lake surface area in coves, bays, and in the eastern portion of the lake; however, views from the lake are not diminished. At staff gage elevation less than 62.33 feet (10 feet below full), the lake's surface area is reduced by 520 acres (17%) and the surface area available for higher speed activities is reduced by 670 acres (25%). The loss of lake surface area in the eastern portion of the lake decrease boating opportunities. The District stated that boating congestion in the middle and western portions of the lake could create additional public safety problems, but provided no evidence to support this contention. Views from the eastern portion of the lake, bays, and coves begin to diminish. At staff gage elevation less than 52.33 feet (20 feet below full), the lake's surface area is reduced by 1,170 acres (39%) and the surface area available for high speed boat activities is reduced by 1,240 acres (46%). Boating activities are severely restricted east of Gilner Point and Windy Point, which, as the District contends, could result in increased public safety problems in the western portion of the lake because of increased congestion.

3. **Shore Use**: At staff gage elevation less than 67.33 feet (5 feet below full), 240 acres of lake bed are exposed, which results in more beach areas and enhances access to the lake's shoreline while not diminishing views of the lake from the shore. At staff gage elevation less than 62.33 feet (10 feet below full), 520 acres of lakebed are exposed, which reduces recreational opportunities in bays and coves. In the eastern portion of the lake, Stanfield Marsh becomes dry, shore use is less desirable, and views of the lake are diminished. At staff gage elevation less than 52.33 feet (20 feet below full), 1,170 acres of lakebed are exposed, resulting in the drying up of most areas east of Eagle Point, reduction of shore use activities in the eastern portion of the lake, and in the concentration of all recreational activities in the western portion of the lake. Additionally, the views of the lake from the shore are dominated by exposed lakebed.

According to the above summarized testimony, within the above described lake level ranges certain recreational activities can be maintained depending on the impact that occurs to lake facilities which support recreational uses of the lake. Those lake facilities described in Mr. Wegge's testimony are: north shore marinas, south shore marinas, the east ramp boat launch, private docks, Stanfield Marsh, and winter ski resorts.

Based on the criteria used by Mr. Wegge to describe potential recreational impacts to Big Bear Lake, as well as the model run results previously described in this report and detailed in the Appendix, the following Table 15 summarizes the impacts which could have occurred under the four fish release scenarios during the evaluation period of 1939 to 1991.

TABLE 15 - Recreational Effects Summary
(percentage of time that effects could have occurred)

RECREATIONAL EFFECTS	CAL-TROUT RELEASE PROPOSAL	DF&G RELEASE PROPOSAL	DISTRICT CURRENT OPERATION	DIVISION RELEASE ALTERNATIVE
ALL FACILITIES OPERATION BY NORTH SHORE MARINAS COULD REMAIN OPEN	100%	100%	100%	100%
ALL SOUTH SHORE MARINAS ARE UNAFFECTED	68.75%	75.65%	81.58%	79.49%
THE EAST RAMP BOAT LAUNCH COULD CONTINUE OPERATIONS	85.87%	89.75%	95.36%	91.83%
60% OF PRIVATE DOCKS ARE UNAFFECTED	93.27%	96.15%	100%	98.08%
STANFIELD MARSH IS UNAFFECTED	68.75%	75.65%	81.58%	79.49%
THE OVERALL ABILITY OF SKI AREAS TO MANUFACTURE SNOW	93.27%	96.15%	100%	98.08%

VIII. RELATIONSHIP BETWEEN LAKE LEVEL AND LAKE ENVIRONMENTAL IMPACTS

A. Effects on Bald Eagles: Bald eagles, Haliaeetus leucocephalus, are winter residents of the Big Bear Lake area, and are listed on state and federal endangered species lists. The City and District expressed concerns about possible deleterious effects to bald eagles should required releases reduce the surface area or volume of Big Bear Lake.

Although the hearing record includes information that describes the effects upon Big Bear Lake's wildlife environment as a result of lake level fluctuations, no evidence was presented indicating that changes in lake level and volume resulting from releases of water would have significant effects on the resident fish populations of Big Bear Lake, which is one source of food for bald eagles. Likewise, no evidence was presented of any significant relationship between lake level and the number of bald eagles overwintering in the Big Bear Lake area.

The expert witness for the City and District testified that no obvious pattern was apparent for the eight years of available data, including several years of drought during which the lake was drawn down at least fourteen feet from its maximum level.[109] In addition, the USFS expert witness testified that there was no relationship between lake level and eagle abundance or ability to feed. Testimony presented by Robin Butler, USFS's eagle expert witness, indicated that the number of bald eagles which roost within Bear Valley is dependent upon a number of factors, including lake levels, winter temperatures, number of sunny days, and winds.[110] Ms. Robin also stated that "... it is impossible to draw conclusions correlating numbers of bald eagles to lake levels ..." because of numerous variables.[111] Ms. Butler further stated that "... it is unclear whether lowering Big Bear lake levels would significantly impact Big Bear's wintering Bald Eagle population ...Thus, while draining Big Bear Lake completely for extended periods would certainly adversely impact wintering bald eagle populations by removing waterfowl habitat, it is difficult to state with certainty that lowered lake levels would adversely impact bald eagles ...".[112]

Additional USFS expert testimony indicates that because bald eagles feed primarily on fish, ducks and other waterfowl, the Stanfield Marsh area was not found to be critically important to eagle feeding. Evidently, during the past drought when the marsh was nearly or completely dry, all waterfowl, including the bald eagles, simply moved out into adjacent shallow waters of the lake. The bald eagles move to those areas which are adjacent to underwater springs, which remain ice-free during much or all of the winter.[113]

B. Effects on Stanfield Marsh: Stanfield Marsh covers an area of approximately 145 acres located at the east end of Big Bear Lake (see Figure 10). According to testimony presented by USFS, the marsh may be affected when Big Bear Lake's surface elevation drops below 6,735 feet (8 feet below full).[114] Ms. Butler of the USFS testified that "... the Stanfield Marsh is important to waterfowl (i.e. white pelicans) and wintering eagles...complete loss of the marsh habitat, however, is not desirable since it supports one of the better waterfowl nesting and foraging areas in the valley ..."[115] In addition, Mr. Gary Earney, USFS Forest Ranger, testified that a drop in lake

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[109] TRANSCRIPT, November 18, 1993; p. 173, line 9 - p. 175, line 20.

[110] U.S. FOREST SERVICE EXHIBIT No. 1, Rebuttal Testimony of Robin Butler, p. 2.

[111] Ibid.

[112] Ibid.

[113] TRANSCRIPT, November 18, 1993; p. 272, line 25 - p. 277, line 10.

[114] U.S. FOREST SERVICE, EXHIBIT No. 5, Testimony of Gary Earney, p. 9.

[115] U.S.F.S. EXHIBIT No. 1, Rebuttal Testimony of Robin Butler, p. 2.

elevation may subject the marsh to more frequent freezing, thus limiting the marsh's use by waterfowl.[116] Furthermore, Mr. Earney testified that state species of special concern (e.g., the two-stripe garter snake) could be affected by lake fluctuations due to increased exposure of the snake to predators; however, this effect would be short termed.[117]

IX. BEAR CREEK FISHERY RESOURCES

A. General: Bear Creek supports primarily a brown trout fishery throughout most of its length, with some rainbow trout also found in the lower reaches of Bear Creek, below the junction with North Fork Bear Creek.

The substance of the complaint before the SWRCB concerns that portion of Bear Creek between North Fork Bear Creek and Bear Valley Dam, in particular the 1.2 mile reach (often referred to as "Upper Bear Creek") between Bear Valley Dam and West Cub Creek, although the more general issue of support of the fishery in the entire watershed is also relevant. The main issues may be summarized as follows:

1. Is the section of Bear Creek below West Cub Creek in good condition? Do releases from Bear Valley Dam contribute to whatever condition is found there?

2. Is Upper Bear Creek in good condition? To what extent do releases from Bear Valley Dam contribute to whatever condition is found there?

3. If Upper Bear Creek is not in good condition, what minimum flows are required to improve conditions in that reach? Are additional flows also needed in the reach of Bear Creek between West Cub Creek and North Fork Bear Creek?

4. In addition to minimum flows, are flushing flows required for habitat maintenance in Bear Creek? If so, what size, frequency and duration of flushing flows are required?

B. Bear Creek Below West Cub Creek: Based on substantial evidence presented by the City, the District, and DFG, most of Bear Creek appears to support a self-sustaining wild trout fishery, and generally this fishery appears to be in good condition. The available data are not sufficiently detailed to determine unequivocally whether the populations have been substantially affected by the recent drought. However, periodic flow measurements during the recent drought suggest that flows in this reach have been minimal in some periods. USFS measurements in August 1991 indicate that flows in Bear Creek were extremely low in several locations, including an estimated flow of only

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[116] U.S. FOREST SERVICE EXHIBIT NO. 5 - Testimony of Gary A. Earney, p.5.

[117] Ibid.

0.009 cfs in the area near East and West Cub creeks.[109] USFS testified that reduced flows contributed directly and indirectly to the reduced numbers of trout in the reaches of the main stem of Bear Creek above the confluence with the North Fork Bear Creek, compared to the reaches below the confluence.[110] Measurements taken by DFG in 1988 and 1989 measured flows in the Glory Ridge Trail area at 0.19 cfs and 0.05 cfs, respectively, as compared to 3.55 cfs and 3.0 cfs, respectively, farther down Bear Creek in the Slide Creek area below the junction with the North Fork.[111] These low flow measurements appear to support the hypothesis that, in the absence of releases from the reservoir, there are periods in which tributary flow into Bear Creek is minimal, especially in drought periods. As noted, despite these low flows, the trout populations have apparently been able to survive in some locations in Bear Creek below West Cub Creek, though at significantly lower abundance levels than farther down Bear Creek, especially below the confluence with North Fork Bear Creek. Both USFS and DFG concluded that additional flows in this reach would result in improved habitat, better flushing of fine sediments, and higher numbers of fish. No party provided information on winter flow measurements in the Glory Ridge area.

The second question is whether releases from Bear Valley Dam contribute significantly to whatever conditions are found in Bear Creek below West Cub Creek. Under cross examination, fish expert witnesses for both the District/City and DFG were asked to evaluate two scenarios concerning the reach of Bear Creek below the Cub creeks. One scenario continued current dam release rates but eliminated any contributions from the Cub creeks. The second scenario eliminated all releases from the dam but maintained present flow rates in the Cub creeks.

The District's/City's fish expert witness indicated that the present flow release regime from Bear Valley Dam (averaging about 0.1 cfs) does make an important contribution to maintenance of the trout populations below West Cub Creek. He indicated that if Cub Creek flows were absent, there would be only a small reduction in numbers or biomass of fish, perhaps only twenty percent.[112] The witness also testified that zero releases from the dam, compared to the current releases, but with the Cub creeks flow continuing,

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[109] USFS EXHIBIT No. 3 - Initial Analysis of Bear Creek, San Bernardino National Forest, p. 3.

[110] USFS EXHIBIT No. 1 - Testimony of Rosamond A. Robinson, p. 4.

[111] DFG EXHIBIT No. 17 - Memorandum to Ed Dito, SWRCB, from Fred Worthly, DFG Region 5, March 30, 1992, p. 1.

[112] TRANSCRIPT, November 18,1993, Testimony of Roy Leidy, p. 176, line 16 - p. 177, line 19.

would result in no change in fish numbers or biomass downstream of the Cub creeks.[113]

The fish expert witness for DFG came to substantially different conclusions concerning these two hypothetical scenarios. He testified that he would expect the reduction in fish biomass or numbers would be almost 100 percent in Bear Creek in the absence of flows from the Cub creeks, and he would expect Bear Creek below the Cub creeks to be quite similar to the condition seen at present above the Cub creeks. Under the second scenario, he would expect to see some change in the absence of releases from the dam, but he could not quantify those changes. He did indicate that the releases from the dam made a small, but not a significant, contribution to the condition of Bear Creek below the Cub creeks.[114]

C. **Bear Creek Above The Cub Creeks**: Between the dam and West Cub Creek is a reach of approximately 1.2 miles which receives flow from the dam (seepage, leakage, releases, and spills) and from accretion from the streambed; this reach is often referred to as "Upper Bear Creek". Accretion may result from surcharging of the groundwater from the water stored behind the dam. Flow data from Summer 1993, measured at the Parshall flume below the dam, and from a weir located about midway between the dam and the Cub creeks ("Fish Canyon", weir #2) suggest that accretion may account for about one/third of the total flow in this reach. Testimony from the District/City and from DFG indicates that trout are absent from above Fish Canyon to the dam, though sculpins and crayfish are present. The District/City and the USFS also testified to the presence of several rock structures and boulder fields which could, and in some cases probably do, act as barriers to upstream migration of trout; a particularly large barrier is present in Fish Canyon. Upper Bear Creek has been planted with trout at various times in the past, but those above Fish Canyon have not survived.[115] USFS hypothesized that with increased flow, planted trout could again establish self-sustaining populations even with the barriers present in the Upper Bear Creek.[116] In addition, the reach between Fish Canyon and the Cub creeks, while it has some trout present, currently

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[113] TRANSCRIPT, November 18, 1993, Testimony of Roy Leidy, p. 178, line 23 - p. 179, line 11.

[114] TRANSCRIPT, November 18, 1993, Testimony of Steven Parmenter, p. 247, line 20 - p. 249, line 12.

[115] TRANSCRIPT, November 18, 1993, Testimony of Roy Liedy, p. 119, lines 2-7.

[116] USFS EXHIBIT No. 6, Rebuttal Testimony of Rosamond Robinson, p. 2.

does not meet the angler effort catch rate goal of the DFG Management Plan.[117] Based on data from 1993, there is no evidence of recent successful trout reproduction above the Cub creeks; no young-of-the-year trout were found.[118]

The District/City argued that Upper Bear Creek should not be expected to support a trout population because this reach is a "transition zone" between the warm-water fishery of Big Bear Lake and the cold-water fishery of Bear Creek. The water being released from the lake has, in theory, higher temperatures, higher nutrient levels, and has reduced or no dissolved oxygen. Therefore, according to this argument, changes in these water quality parameters must occur during the released water's passage through the first portion of Bear Creek in order to make conditions suitable for trout farther downstream. In support of this hypothesis, the City/District presented evidence to indicate that water temperature and nutrient levels decrease, and oxygen levels increase, downstream from the dam. However, an analysis of the submitted data, as well as the District/City's own testimony, indicates that the temperature and nutrient parameters measured at the dam are not out of the normal range for trout,[119] and that the released water is sprayed out at the base of the dam, and so becomes rapidly oxygenated. In addition, the water released from the dam is taken from very deep in the lake,[120] and so would likely be the coldest water in the lake. Under cross examination by USFS, the District's/City's expert witness also acknowledged that all of the factors discussed in the transition zone are a function of flow, and that changes in flow rates could affect the size or characteristics of the transition zone.[121] The District's/City's witness also suggested that, over time, high flows, high sediment loads, or unsuitable water quality could have eradicated the trout in the first 0.6 miles of Bear Creek.[122] However, this witness also indicated

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[117] TRANSCRIPT, November 18, 1993, Testimony of Roy Liedy, p. 131, lines 11-16.

[118] TRANSCRIPT, November 19, 1993, Testimony of Roy Liedy, p. 69, line 23 - p. 70, line 3; p. 86, lines 10-24.

[119] TRANSCRIPT, November 18, 1993, Testimony of Roy Liedy, p. 145, line 22 - p. 149, line 21.

[120] TRANSCRIPT, November 18, 1993, Testimony of Roy Leidy, p. 175, line 22 - p. 176, line 5.

[121] TRANSCRIPT, November 18, 1993, Testimony of Roy Liedy, p. 149, line 22 - p. 150, line 14.

[122] TRANSCRIPT, November 18, 1993, Testimony of Roy Leidy, p. 119, line 13 - p. 120, line 15.

that if flows were absent and long-lasting pools were not available, the trout would also die.[123]

D. Minimum Flow Rates: The third question concerns the issue of what constitutes adequate minimum flows in Bear Creek, both above and below the Cub creeks. Nearly all of the data collected and presented on Bear Creek may be considered as more or less "anecdotal". There has been a lack of regular, long-term, repeated observations carried out at consistent locations, using similar or compatible measuring techniques, in this watershed. Even the descriptions of some of the sampling stations are rather vague as to specific location. Likewise, water flow and quality data are often generally lacking, and the accuracy of some flow measurements is highly debatable. Despite repeated requests, no evidence was presented of any attempt to undertake an Instream Flow Incremental Methodology (IFIM) study of the relationship of varying flows to potential habitat. There have also been no quantitative measurements, and only minimal casual observations, of the effects of large flushing flows (releases, spills, etc.) on sediment transport, riparian vegetation, and fish in Bear Creek.

A wide range of flows has been proposed by the participants. The City/District indicated that the average flow releases from the dam have been 1.41 cfs since the 1977 Judgement.[124] They also testified that between September 1986 and December 1988, the average flow was 0.088 cfs, based on 101 measurements below the dam.[125] Since the grouting of the dam in 1989, the District claims it has maintained an average minimum flow of approximately 0.106 cfs, in conjunction with a Section 1601 permit condition associated with the dam grouting, even though that agreement has terminated.[126] Their data indicate that in 1990, however, the average flow was 0.094 cfs (Table 8 of Attachment A). The District argued that this flow is adequate to maintain the habitat below the dam, and that no change is warranted.

Cal-Trout testified that a minimum flow of 2 cfs should be released from the dam, based on a formula of ten percent of the long-term median inflow from the watershed above the dam. In wetter years, more could be released, and in very

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[123] TRANSCRIPT, November 18, 1993, Testimony of Roy Leidy, p. 144, line 23 - p. 145, line 17.

[124] TRANSCRIPT, October 13, 1993, Testimony of Mr. Ludecke, p. 139, line 5-11.

[125] TRANSCRIPT, October 13, 1993, Testimony of Mr. Evenson, p. 157, line 22 - p. 158, line 16.

[126] TRANSCRIPT, October 13, 1993, Testimony of Mr. Ludecke, p. 133, line 16 - p. 134, line 22.

dry periods less could be released, but the fish populations might not be kept in good condition.[127]

DFG recommended a base flow, especially in late summer, of 1.2 cfs, which was the flow measured below West Cub Creek during 1991 and 1992. This number was developed from a very limited set of observations and was considered by the DFG witness as the minimum ("rock-bottom") amount needed to maintain the trout populations above the Cub creeks.[128] DFG also testified that the Cal-Trout recommendation of 2.0 cfs would probably provide substantial benefits above those obtained by the DFG recommended level of 1.2 cfs.[129]

E. Flushing Flows: The last question to be considered is whether increased flow releases should be required for flushing flows or for stream habitat maintenance, and, if so, of what flow rate, frequency and duration. Little evidence was presented on this issue. USFS testified that the large releases in 1993 reduced the density of riparian vegetation in the Upper Bear Creek area, compared to densities observed several years earlier. This was viewed as a beneficial action in terms of providing a healthier, more varied, riparian habitat.[130] There were also disagreements in the evidence presented concerning what volumes of water would be required to move a certain amount of fine sediment in order to improve spawning and rearing habitat, and also just how much of the various pool areas in Upper Bear Creek would have to be scoured with these flows in order to provide significant habitat improvement.[131]

F. Discussion: The limited testimony and data available on the relative contributions of releases from the dam and the Cub creeks, plus accretion to Bear Creek between the dam and the Cub creeks, indicate that the majority of the flows in Bear Creek come from sources other than the dam releases. The District's/City's data from late summer 1993 suggest that more than seventy percent of the total flow in Bear Creek below the Cub Creeks comes from accretion in the stream bed and flows from the Cub creeks. The testimony from the District/City appears to be contradictory, therefore. If the 20-30 percent (or less) of the flow in Bear Creek comes from the dam releases, yet an absence of Cub Creek flows would reduce fish biomass by only 20 percent,

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[127] TRANSCRIPT, October 12, 1993, Testimony of Mr. Trihey, p. 120, line 11 - p. 123, line 17.

[128] TRANSCRIPT, October 12, 1993, Testimony of Mr. Parmenter, p. 212, line 10 - p. 214, line 4.

[129] TRANSCRIPT, October 12, 1993, Testimony of Mr. Parmenter, p. 214, line 12 - p. 215, line 18.

[130] TRANSCRIPT, November 18, 1993, Testimony of Ms. Butler, p. 278, line 2 - p. 279, line 10; p. 299, line 12 - p. 300, line 9.

[131] TRANSCRIPT, November 18,1993, Testimony of Ms. Robinson, p. 289, line 1 - p. 292, line 7; p. 294, line 19 - p. 296, line 20.

then presumably the small releases from the dam are the main supporter of the downstream fish community. Yet the witness also testified that the absence of flows from the dam would have no effect on the downstream community. An example of seepage rates (Table 8 of Attachment A) shows that in late 1988 and early 1989 measured releases (seepage) rates were extremely low; in December 1988 the rate was zero. If these values are correct, there can be little doubt that the dam releases were contributing little or nothing to the maintenance of habitat conditions in any portion of Bear Creek. In addition, if the dam releases were the primary support for the downstream fish community, then one could anticipate that there would be little difference between the areas upstream and downstream of the Cub creeks. As was discussed above, this is not the case; the two reaches are distinctly different in character.

The Division's staff believes that releases from the reservoir must be the "safety net" both for Upper Bear Creek and for the reach of Bear Creek between West Cub Creek and the confluence with North Fork Bear Creek, especially in drier years when flows from tributary streams are reduced or absent. Arguments can be made for a variety of flow regimes, based on water-year type, season, lake level, and other factors. The critical period appears to be summer carryover, for several reasons: both young-of-the-year and adult fish are present; ambient temperatures are highest, and flows are lowest (except possibly for short periods after occasional thunderstorms). Flows in the spring and summer are even more reduced in recent years with the change in operating policy for the District, which results in fewer releases to meet downstream demands. These conditions all dictate higher stress levels and physiological demands on the fish, and reduced suitable habitat. Big Bear Lake is by far the largest source of water in the watershed; projected future demands on the system will probably result in fewer opportunities for releases, lower seepage rates, etc. Therefore, some minimal management of the stream system is appropriate to assure continued maintenance of adequate habitat, both above and below the Cub creeks.

As discussed above, a variety of flow regimes was proposed by various participants. Each of these proposals will be summarized and discussed as alternative proposed flows.

- Cal-Trout - 2.0 cfs in all years: This flow rate is the basic rate proposed by Cal-Trout, based on a percentage of the calculated (not measured) estimated median unimpaired inflow into Bear Valley above the dam. As proposed here, this rate would apply in all seasons of all years, regardless of the lake level or water year type. Cal-Trout and DFG both acknowledge that this flow would provide a substantial increase in protection for riparian habitat and fish populations through the reaches of Bear Creek from the dam to the junction with North Fork Bear Creek. Cal-Trout also acknowledged that during drought somewhat reduced flows would be appropriate, but the levels were not specified. Cal-Trout also proposed unspecified higher flows during wet periods. It is probable that, with the change in the District's policy for purchase of in-lieu water, there is a higher probability of dam spills or releases which could to provide somewhat higher flows during wet periods.

- DFG - 1.2 cfs in all years: This alternative incorporates the minimum flow rate recommended by DFG for summer flows, but does not increase the flow rate in winter. This flow rate would be maintained regardless of precipitation or lake level. It would provide substantially increased habitat continuity and stability, especially in the Upper Bear Creek reach, compared to the conditions provided by the present release rate. It would also provide some additional protection and flow stability below the Cub Creeks, especially in drought periods, when flows from tributary streams, especially the Cub creeks, are reduced or absent. DFG and USFS flow rate measurements during the summers of drought years indicate that Bear Creek has minimal flow in the absence of dam releases above 0.1 cfs. The impacts on lake levels would be somewhat less than Alternative 2, and also allow quicker lake recovery after droughts are over.

- District/City - 0.1 cfs in all years: This alternative would simply continue the present release rate policy of the District, which was tied to a temporary permit condition which is no longer in effect. Maintenance of this release rate would continue the minimal habitat condition which the historical releases from the dam have generated in Upper Bear Creek, and which provide little or no contribution to protection below the Cub creeks. This alternative would provide maximum lake level protection.

- Division Proposed - 0.3 cfs minimum dam release; maintain 1.2 cfs below West Cub Creek: The evidence submitted by the parties indicates that by far the largest portion of the trout fishery in Bear Creek exists below the Cub creeks. Limited flow measurements presented in the record indicate that the reach between the Cub Creeks and North Fork Bear Creek is substantially impacted during drought periods. The reach between the Cub Creeks and Fish Canyon is marginal trout habitat because of low flows and a narrow stream channel, and a barrier at Fish Canyon appears to prevent upstream migration of trout beyond this point. The Division proposed alternative requires the District to maintain a minimum average flow below West Cub Creek of 1.2 cfs at all times (seven-day running daily average with an instantaneous minimum flow of 1.0 cfs). This flow will assure that adequate flows are always maintained in the majority of the stream's trout habitat. This required release will also assure that the reach between the Cub Creeks and Fish Canyon is provided with substantially increased flows in drier periods (compared to the present release rate), as a result of the required releases for the downstream reach. In addition, the 0.3 cfs constant minimum release rate should provide improved habitat and stream surface flow continuity throughout the reach between the dam and the Cub Creeks. The District will also be required to reduce releases by no more than 0.2 cfs per day to reduce stranding of fish. Because of the extremely limited data available on the Upper Bear Creek reach, and because the actual flow regime in this reach cannot readily be modeled, it is impossible to determine the extent of habitat improvement which will occur in this reach. However, staff believes that the proposed flow requirements will provide important additional protection for trout habitat and the trout fishery throughout

Bear Creek. This alternative will have minimal, if any, measurable effects on the resources and economy of Big Bear Lake and Bear Valley.

X. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

On October 24, 1990, Cal-Trout submitted a complaint to the SWRCB contending that the District was not releasing sufficient water from Big Bear Lake to maintain Bear Creek's fishery resources in good condition. In response to the complaint, the Division's staff conducted an investigation and distributed to interested parties a staff report of investigation, dated September 24, 1992. As described in the staff report, Division staff concluded that there was difference in expert opinion and insufficient information to determine the appropriate flow required for Bear Creek's fishery resources. Following the release of the staff report, the parties conducted extensive, but unsuccessful, negotiations to resolve the issues raised in the complaint and requested that the SWRCB hold a hearing. The SWRCB held a water right hearing extending over 7 days with testimony by 17 expert witnesses and comments and/or policy statements by 99 agencies or individuals.

The parties continue to have a significant difference in opinion regarding the flows needed in Bear Creek to maintain fish in good condition. Essentially, Cal-Trout contended that 2.0 cfs is required, the DFG recommended a minimum flow rate of 1.2 cfs, and the District and City argued that the existing 0.1 cfs minimum bypass flow provides adequate protection. The District and the City also argued that Big Bear Lake provides substantial public trust uses, recreational opportunities, and economic benefits to the local communities within Bear Valley; and that any increase in release of water from Big Bear Lake into Bear Creek for instream purposes would lower the lake with adverse impacts to the lake's uses. Consequently, the primary issue of this complaint involves the allocation of water between competing uses -- additional flow for the benefit of the fishery resources in Bear Creek compared to the benefits resulting from storage in Big Bear Lake.

Staff recognizes that below certain lake levels, recreational and economic impacts begin to occur even if biological impacts are minimal, and that a reduced minimum flow under extreme lake conditions may be appropriate; however, flows must be sufficient to maintain fish in at least minimal condition. The record strongly supports the conclusion that the District's/City's current operational release rate of only 0.1 cfs is not sufficient by itself to maintain trout populations and varied riparian habitat anywhere in Bear Creek. Therefore, it is the opinion of Division staff that a bypass flow of 0.1 cfs does not provide sufficient flow to maintain fish in good condition in the stream reach below West Cub Creek and that a higher flow will be required.

As discussed in Sections V, VI, VII and the Appendix to this staff analysis, Division staff evaluated the impacts that four release rates would have on Big Bear Lake's water levels, public trust uses, recreational uses and economy. Based on staff's evaluation and the testimony submitted at the hearing, the affects on Big Bear Lake's boating and shore activities, use and social benefits, local economy spending and jobs, property values, and agency

revenues which are attributed to current operations, will not be significantly increased as a result of the implementation of the Division's proposed release scenario (i.e., 0.3 cfs minimum release from Bear Valley Dam and the maintenance of 1.2 cfs below West Cub Creek). In addition, there is no correlation between lake level and bald eagle activity; nor will small changes in lake level have significant effects on lake fisheries and productivity, the Stanfield Marsh, or the bald eagles' food supply or habitat.

In contrast, the evaluated proposed release rates from Big Bear Lake to Bear Creek will affect streamflows rates in Bear Creek. Such increased streamflows could positively affect recreational opportunities associated with the creek, improve the overall riparian habitat, increase fish populations from current levels, and increase annual use of the creek.

Unfortunately, despite extensive studies and expert testimony at the hearing, there is still insufficient information available to Division staff to accurately determine the appropriate instream flow regime for Bear Creek. Existing law requires that the SWRCB shall give deference to DFG's expert opinion; therefore, Division staff recommends that the SWRCB adopt the Division's proposed flow standard as a minimum level of protection. Based on the information in the hearing record, the recommended minimum flow rate of 0.3 cfs from Bear Valley Dam with a flow maintenance requirement of 1.2 cfs below West Cub Creek will maintain fish in good condition and, at the same time, cause insignificant impacts to Big Bear Lake's public trust uses, recreational uses or the local economy. Division staff recommends that the SWRCB direct the District to prepare a workplan detailing the measures and recording equipment to be used in implementing the proposed release rates, including gage locations and completion schedules. The Workplan should be submitted for review and approval of the Chief of the Division of Water Rights within three months of the effective date of the Order.

Cal-Trout also recommended that the District be required to provide a springtime "flushing flow" of 30 to 35 cfs for 3 consecutive days.[132] Based on information submitted during the hearing, Division staff concludes that flushing flows are important for maintaining suitable habitat in Bear Creek; however, the hearing record does not contain sufficient information to define the flow rate, frequency, or duration of flushing flows. Accordingly, Division staff does not propose that the District be required to provide flushing flows. Review of hydrologic data and the District's operational criteria indicate that with the current stabilization of lake levels, the District will be required to spill or bypass substantial quantities of water during wet years. Therefore, as an alternative to required flushing flows, Division staff recommends that the District consult with DFG and USFS and cooperate to the maximum extent to manage future spills/releases to the greatest benefit for downstream habitat management, and to minimize extreme, short duration changes in flow rates.

In this particular case, there is a difference in expert opinion regarding the instream flow standard. In the opinion of Division staff, the District should

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[132] CAL-TROUT EXHIBIT NO. 2B, p. 13.

have the primary responsibility to monitor release rates below the dam and to ensure that the proposed flow rate will maintain the fish in good condition. Accordingly, Division staff recommends that the District be required to conduct additional studies to determine whether the proposed instream flow standard does, in fact, maintain the fish in good condition.

Division staff recommends that the SWRCB direct the District to prepare a Workplan that will define the scope, responsible parties, and time schedule for completion of those additional studies. During the development of the Workplan, the District should consult with DFG and USFS to assist in the development of the Workplan and to determine their level of participation. The Workplan should be submitted for review and approval of the Chief of the Division of Water Rights within six months of the effective date of the order.

The District should submit a final report summarizing the result of the additional studies. The SWRCB can review the results of those additional studies and, if appropriate, can modify the instream flow standard adopted pursuant to this matter.

Division staff also recommends that the SWRCB authorize the Chief of the Division of Water Rights to approve appropriate changes in the instream flow standard that may be necessary to conduct fishery studies that are defined in the Workplan.

ATTACHMENT A

TABLE 1

BEAR VALLEY PRECIPITATION DATA
(AT BEAR VALLEY DAM)

WATER YEAR	MONTHLY PRECIPITATION (INCHES) OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	TOTAL
11–12	1.10	0.36	1.90	0.58	0.00	14.95	2.50	0.07	0.00	0.36	0.00	0.00	21.82
12–13	2.34	0.00	0.00	4.87	9.93	3.01	0.06	0.04	1.63	0.58	2.79	0.00	25.24
13–14	0.00	7.05	2.43	23.58	10.83	1.47	4.67	0.21	0.00	0.25	0.20	0.45	51.14
14–15	0.45	0.35	8.28	9.84	21.06	5.59	4.06	3.27	0.00	0.38	0.47	0.22	53.97
15–16	0.00	0.98	8.29	37.59	3.88	7.55	0.73	0.58	0.00	0.23	0.55	1.66	62.04
16–17	5.07	0.42	7.38	4.69	5.86	2.60	3.74	0.00	0.00	0.93	0.16	0.00	30.85
17–18	0.00	1.01	0.00	1.96	6.25	23.22	0.43	0.64	1.50	0.53	1.23	0.49	37.26
18–19	0.19	2.41	4.13	0.14	5.98	5.88	1.32	0.21	0.00	1.62	0.32	3.55	25.75
19–20	2.05	4.48	2.00	0.70	14.92	12.50	0.82	0.00	0.00	0.15	0.05	3.00	40.67
20–21	1.83	1.62	1.55	10.70	2.50	3.60	1.50	3.55	0.00	0.08	0.22	0.63	27.78
21–22	0.80	0.70	13.60	9.56	7.48	4.60	1.55	0.00	0.00	0.00	0.90	0.00	39.19
22–23	1.20	1.70	1.10	7.20	7.00	0.93	3.08	0.00	0.00	0.40	0.55	1.14	24.30
23–24	0.93	1.60	3.15	0.00	0.00	10.08	3.55	0.00	0.00	0.32	0.00	0.60	20.23
24–25	1.90	1.30	4.60	0.40	2.74	4.90	4.00	1.10	3.50	0.00	0.30	0.40	25.14
25–26	4.70	2.54	1.50	2.68	8.47	1.55	17.23	1.40	0.00	0.00	0.00	0.00	40.07
26–27	0.02	4.26	8.30	1.80	16.56	3.85	1.98	0.28	0.09	0.12	0.00	0.00	37.26
27–28	2.80	0.91	2.87	1.75	6.06	2.21	0.53	1.52	0.00	0.00	0.00	0.00	18.65
28–29	2.20	1.00	4.27	3.51	4.19	4.10	4.00	0.00	0.00	0.00	1.18	0.70	25.15
29–30	0.19	0.00	0.00	9.60	5.05	9.02	1.00	7.39	0.00	0.00	0.00	0.00	32.25
30–31	2.00	5.26	0.00	3.04	4.15	0.00	7.10	1.60	0.00	0.00	4.45	1.22	28.82
31–32	1.20	5.50	14.29	9.10	20.01	0.45	1.93	0.20	0.35	0.00	0.00	0.00	53.03
32–33	0.15	0.15	6.27	11.53	0.15	0.10	0.87	1.62	0.41	0.40	0.00	0.00	21.65
33–34	0.52	1.35	16.25	1.40	3.21	0.54	0.00	0.00	1.28	0.42	0.55	0.10	25.62
34–35	5.83	2.02	6.71	0.00	4.80	4.73	6.05	0.25	0.00	0.45	0.86	1.13	32.83
35–36	0.00	0.85	1.08	0.27	17.00	4.14	2.85	0.08	0.00	0.61	0.58	0.06	27.52
36–37	4.24	1.11	15.49	6.91	16.38	11.42	1.06	0.30	0.51	0.00	0.29	1.05	58.76
37–38	0.00	0.00	4.52	6.70	19.01	25.75	2.61	0.43	0.00	0.40	0.38	0.45	60.25
38–39	0.98	0.46	6.87	4.95	4.11	2.72	3.21	0.00	0.00	0.37	0.77	7.71	32.15
39–40	0.75	1.56	1.02	7.69	6.99	3.79	1.63	0.00	0.00	0.00	0.00	0.55	23.98
40–41	1.99	2.24	14.64	3.84	13.67	11.26	7.01	0.61	0.00	0.00	1.03	0.00	56.29
41–42	3.49	1.48	8.79	0.29	2.71	2.73	3.25	0.00	0.00	0.87	0.12	0.00	23.73
42–43	0.47	0.67	1.87	19.71	9.42	4.83	2.65	0.00	0.00	0.00	0.00	0.25	39.87
43–44	1.85	0.20	9.08	2.48	12.05	2.38	3.00	0.20	0.00	0.00	0.00	0.00	31.24
44–45	0.00	13.70	2.08	2.51	8.95	12.54	1.17	0.11	0.00	0.14	2.21	0.66	44.07
45–46	1.78	0.82	15.37	0.73	4.23	11.31	1.73	0.31	0.00	3.26	0.07	1.76	41.37
46–47	6.68	13.79	5.19	2.72	1.52	1.36	0.70	0.03	0.04	0.00	1.19	0.12	33.34
47–48	0.59	0.26	7.52	0.12	7.84	7.48	4.25	0.15	0.13	0.04	0.00	0.00	28.38
48–49	1.67	0.00	7.79	11.96	4.13	4.79	0.02	1.38	0.00	0.22	0.01	0.09	32.06
49–50	1.07	4.28	7.29	5.19	4.14	2.84	3.10	0.64	0.00	1.18	0.01	0.79	30.53
50–51	0.13	2.39	0.00	4.93	3.64	2.29	4.45	1.04	0.00	3.06	0.12	1.30	23.35
51–52	2.03	3.87	13.35	13.27	1.91	16.14	3.12	0.00	0.00	2.08	0.42	2.78	58.97
52–53	0.00	6.47	5.17	1.80	1.79	3.47	1.85	1.94	0.00	0.03	0.07	0.03	22.62
53–54	0.31	1.56	0.45	16.52	5.89	14.35	0.23	0.23	0.54	0.92	0.41	0.60	42.01
54–55	0.00	4.32	3.38	9.64	1.45	0.61	1.47	4.01	0.00	1.95	2.77	0.00	29.60
55–56	0.00	3.21	2.58	12.19	2.07	0.00	4.09	1.67	0.00	1.21	0.00	0.00	27.02
56–57	0.25	0.00	0.59	18.88	3.99	2.38	2.91	3.60	0.28	0.43	0.27	0.00	33.58
57–58	4.51	3.12	9.11	3.10	12.62	12.92	11.73	1.00	0.00	0.04	0.78	1.81	60.74
58–59	0.16	1.85	0.00	3.82	17.55	0.00	0.59	0.17	0.00	0.20	0.55	1.15	26.04
59–60	0.46	1.70	0.74	6.17	5.50	2.12	5.14	0.32	0.00	0.05	0.03	0.28	22.51
60–61	1.86	6.30	0.66	2.63	0.04	2.97	0.00	0.23	0.00	0.12	1.88	0.00	16.69
61–62	0.00	5.14	5.27	6.92	16.36	5.32	0.00	2.03	0.17	0.53	0.40	0.27	42.41
62–63	0.56	0.19	0.21	0.77	0.00	6.16	4.88	0.00	0.00	0.00	1.48	5.15	19.40
63–64	1.41	5.08	1.06	4.80	0.51	5.40	3.36	2.52	0.00	1.45	0.26	0.23	26.08
64–65	0.62	4.58	0.00	1.88	1.46	2.06	15.73	0.00	0.04	1.37	1.83	0.64	30.21
65–66	0.13	26.87	12.03	1.89	3.67	1.70	0.14	0.08	0.00	0.00	0.33	0.44	47.28
66–67	0.50	3.13	22.40	9.24	0.00	7.30	13.64	0.67	0.06	0.05	1.49	1.70	60.18
67–68	0.00	7.88	2.92	3.04	2.46	3.14	2.18	0.18	0.00	0.56	0.41	0.00	22.77
68–69	0.28	0.00	3.62	40.80	29.65	3.85	2.26	1.64	1.00	2.67	0.03	0.75	86.55
69–70	0.11	2.93	0.24	2.79	0.94	8.38	2.77	0.10	0.05	0.19	1.65	0.00	20.15
70–71	0.02	16.26	0.00	1.52	1.48	0.85	1.92	2.43	0.00	0.52	0.55	0.00	25.55
71–72	3.85	1.29	22.32	0.00	0.18	0.00	1.01	0.73	0.46	0.00	0.35	0.00	30.19
72–73	1.29	6.56	0.00	6.43	12.10	11.14	0.00	0.53	0.00	0.00	0.59	0.00	38.64
73–74	0.00	4.42	0.93	12.55	0.05	7.53	1.15	0.39	0.00	0.29	1.25	0.70	29.26
74–75	3.12	0.72	5.88	1.74	3.13	8.03	4.99	0.40	0.00	0.00	0.00	0.43	28.44
75–76	0.79	3.10	0.55	0.00	12.04	5.26	2.60	0.25	0.19	0.77	0.00	8.76	34.31
76–77	0.60	0.15	1.30	6.80	0.53	3.08	0.00	5.67	0.00	0.00	2.87	0.00	21.00
77–78	0.00	0.39	12.61	12.30	13.49	20.10	8.06	0.61	0.00	0.06	0.00	2.05	69.67
78–79	0.31	7.61	3.83	9.98	9.23	10.30	0.00	0.50	0.00	1.23	0.15	0.23	43.37
79–80	2.31	0.00	0.94	20.97	26.31	7.99	2.77	1.40	0.00	1.43	0.00	0.00	64.12
80–81	1.13	0.00	1.01	3.50	3.46	4.08	0.88	0.71	0.00	0.17	0.50	0.09	15.53
81–82	0.57	2.61	0.10	3.98	4.65	18.16	2.40	0.59	0.20	0.78	2.26	0.10	36.40
82–83	1.75	8.78	5.52	8.21	8.71	13.50	4.70	0.00	0.00	0.00	3.65	1.15	55.97
83–84	3.35	6.04	7.66	0.06	0.25	0.18	0.02	0.00	0.00	1.84	2.23	0.02	21.65
84–85	0.00	2.83	12.77	2.02	0.51	1.86	1.62	0.07	0.38	0.91	0.00	0.90	23.87
85–86	0.37	10.00	3.76	4.94	12.13	7.21	0.00	0.00	0.00	0.88	3.26	2.74	45.29
86–87	0.00	2.40	1.60	1.59	2.66	3.90	1.58	0.28	0.00	0.49	0.17	0.28	14.95
87–88	5.12	4.54	4.45	3.79	1.35	1.00	5.50	0.48	0.01	0.00	2.65	0.00	28.89
88–89	0.00	2.97	6.43	1.88	6.39	2.76	0.39	1.11	0.00	0.00	0.38	1.60	23.91
89–90	2.61	0.20	0.00	6.70	6.18	2.67	1.33	0.96	0.20	0.73	0.55	0.00	22.13
90–91	0.00	1.77	1.11										
AVERAGE	1.33	3.33	5.17	6.49	6.92	5.99	2.98	0.86	0.17	0.53	0.74	0.83	35.33

SOURCES: Camp Dresser & McKee Inc., April 1985 Analysis of Water Supply Yield
Big Bear Watermaster Annual Reports

TABLE 3

BIG BEAR LAKE
CALCULATED UNIMPAIRED FLOW

YEAR	MONTHLY CALCULATED UNIMPAIRED FLOW (ACRE–FEET)												TOTAL
	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
1910	2118	1765	3447	1826	493	0	463	272	379	0	654	348	11765
1911	7562	2707	2098	10693	897	355	724	273	226	373	343	243	26494
1912	115	131	2862	2029	2201	194	0	0	260	535	170	0	8497
1913	501	1270	1119	3755	719	144	234	929	353	101	595	304	10024
1914	4326	6238	5279	4294	2694	511	544	75	195	94	423	1142	25815
1915	1589	5320	5583	10306	7308	1291	1294	740	353	316	494	1968	36562
1916	20701	8997	6645	7637	1937	844	1064	0	1432	797	385	1009	51448
1917	953	1591	2937	4326	2650	709	1092	1975	782	108	751	0	17874
1918	112	1059	11222	1357	0	1634	1080	739	564	506	529	997	19799
1919	177	1023	2938	1943	357	0	1110	612	0	164	753	1221	10298
1920	2247	5963	5372	4889	2814	396	190	869	0	1155	294	0	24189
1921	532	590	5237	2023	2217	0	2321	0	1481	1436	0	16642	32479
1922	3950	5274	7598	4177	7532	1587	1572	1120	494	779	405	3105	37593
1923	1307	862	2068	6052	814	1290	0	396	1264	267	1316	0	15636
1924	280	1121	1384	4421	1109	0	806	153	558	177	578	583	11170
1925	1262	783	1552	1909	95	386	51	725	0	0	1088	1359	9210
1926	658	458	956	9841	1031	584	0	369	0	0	989	1355	16241
1927	1766	13275	4254	3731	904	1001	46	285	542	416	697	1035	27952
1928	689	1256	1310	3	239	48	0	253	0	333	278	647	5056
1929	637	654	3141	3110	542	205	0	489	208	103	0	39	9128
1930	477	942	3365	2524	3270	0	32	442	0	193	807	215	12267
1931	305	1366	303	1124	417	0	153	435	426	373	438	783	6123
1932	633	5476	8263	7468	4161	837	0	153	221	266	258	1094	28830
1933	1441	277	1962	1749	803	171	425	275	0	205	439	3403	11150
1934	767	944	888	152	0	116	196	26	413	696	504	274	4976
1935	1147	2481	2988	6391	1898	87	22	228	163	39	393	217	16054
1936	528	2165	2182	4061	735	0	90	369	0	429	466	2574	13599
1937	774	11381	8424	12127	5973	1210	400	635	560	162	215	1030	42891
1938	785	3976	24968	7684	3504	724	971	707	559	378	198	1373	45827
1939	1367	1496	3567	3516	1300	0	210	971	1791	436	562	496	15712
1940	1898	1928	1626	1374	311	596	90	0	26	660	198	4068	12775
1941	1392	4105	5948	6107	6164	873	107	849	0	1021	594	1848	29008
1942	224	884	1524	2972	956	0	665	432	116	399	496	486	9154
1943	3783	2945	6428	5223	969	212	491	557	273	854	66	1635	23436
1944	475	1754	2758	4429	1496	140	532	374	197	250	2889	616	15910
1945	568	3807	3471	5501	1530	392	697	1149	461	916	142	5173	23807
1946	574	997	2304	3063	364	154	1057	142	338	488	3528	1829	14838
1947	565	838	1106	474	116	0	0	336	52	139	106	865	4597
1948	161	1209	1181	2615	493	192	0	0	0	524	59	656	7090
1949	1012	992	1593	4025	697	172	108	110	244	95	564	812	10424
1950	610	1973	1234	851	134	0	231	124	386	235	378	30	6186
1951	602	421	123	105	198	0	243	0	135	427	293	1216	3763
1952	614	654	3079	12887	4687	243	404	113	523	241	752	1055	25252
1953	554	442	1332	823	204	173	429	84	235	320	133	130	4859
1954	1538	1047	2730	6286	1089	233	395	438	389	0	477	782	15404
1955	349	395	2110	743	1801	235	37	806	0	307	335	123	7241
1956	1353	1254	0	437	482	74	62	176	0	265	340	10	4453
1957	2868	2897	546	615	403	118	40	0	411	203	84	1302	9487
1958	620	3059	5314	8765	4736	263	0	595	99	0	872	0	24323
1959	263	1857	1253	84	0	86	609	80	0	488	597	141	5458
1960	597	729	1882	734	1123	0	610	0	0	1012	469	0	7156
1961	400	0	71	193	0	0	75	146	77	215	87	173	1437
1962	214	2790	2845	4291	1099	13	0	0	249	61	178	135	11875
1963	188	308	306	630	327	0	0	0	390	85	265	98	2597
1964	297	7	950	2465	955	295	0	0	0	143	195	277	5584
1965	330	221	229	4359	1279	0	122	470	246	98	8418	4288	20060
1966	1410	1429	3153	828	353	0	431	86	0	267	568	13071	21596
1967	881	1273	2533	4319	4496	1187	709	899	546	242	1106	1378	19569
1968	682	1551	1617	1240	377	215	640	396	0	171	558	375	7822
1969	20533	8441	6910	12646	7390	1969	1910	0	0	375	951	547	61672
1970	585	561	2232	675	361	412	629	1676	48	0	1332	1509	10020
1971	640	485	788	533	621	337	569	347	0	514	628	6112	11574
1972	220	91	420	0	480	320	0	529	212	106	1150	1457	4985
1973	1443	1496	3344	6185	4327	17	152	544	262	0	925	85	18780
1974	2322	905	2658	1413	537	150	356	410	678	855	138	1139	11561
1975	627	653	860	2019	1257	0	465	469	649	544	613	358	8514
1976	0	953	2811	814	179	51	442	583	2002	113	581	141	8670
1977	724	316	371	632	1131	654	0	305	81	303	0	2595	7112
1978	4107	7160	13358	7827	3529	726	336	0	809	0	1264	1998	41114
1979	2527	2652	5752	7409	4092	92	745	640	974	257	115	192	25447
1980	6196	13898	6090	6882	5758	1160	813	541	571	389	0	161	42459
1981	507	1286	1967	1304	0	441	0	261	229	0	489	84	6568
1982	1820	2096	3951	7618	2658	272	411	871	459	102	1379	3583	25220
1983	1013	4769	9623	6097	6908	1407	279	1715	595	725	2012	0	35143
1984	1980	314	758	50	357	0	2068	1927	168	177	422	2348	10569
1985	639	1283	1636	1997	0	0	863	0	0	301	1667	1111	9497
1986	1177	5838	3721	1231	236	0	0	769	141	183	264	252	13812
1987	276	1249	1341	1797	281	82	0	254	133	1328	283	981	8005
1988	805	439	288	1669	436	191	0	359	0	0	364	0	4551
1989	0	2511	1732	307	0	180	0	0	217	0	20	0	4967
1990	517	352	2475	689	262	333	0	189	0	0	0	39	4856
AVERAGE (AF)	1620.59	2328.27	3244.41	3574.37	1676.05	357.83	412.95	432.02	326.74	336.23	663.11	1362.62	16335.20
AVERAGE (CFS)	26.39	41.99	52.85	60.16	27.3	6.01	6.71	7.03	5.48	5.47	11.16	22.18	22.56

SOURCES: Camp Dresser & McKee Inc., April 1985 Analysis of Water Supply Yield
Big Bear Watermaster Annual Reports

TABLE 5

BIG BEAR LAKE END--OF--MONTH STORAGE

YEAR	MONTHLY RECORDED STORAGE VOLUME (ACRE--FEET)											
	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1910	21879	23209	24243	24539	24243	23209	22174	20102	17767	16016	16275	16470
1911	23800	23504	25279	24688	24391	23800	23430	21879	20361	19583	19583	19712
1912	19712	19712	22322	23948	25427	24243	20879	17767	15432	14395	14135	13746
1913	14135	15302	16210	19583	18674	16470	13746	11603	8920	6657	7039	7269
1914	11500	17637	22618	26462	28383	27941	27350	25871	24391	23356	23356	24391
1915	25871	31057	36290	46054	52428	52428	52229	51433	50636	49839	49839	51632
1916	72167	67094	69123	68616	69123	68362	67602	65319	64223	63170	62748	63591
1917	64433	65827	68362	71660	71405	69883	66840	63591	59168	55377	53692	52850
1918	52229	53060	63802	64433	62959	62748	60643	57483	54114	51831	51234	52030
1919	52030	52850	55377	56641	54745	51035	47848	48864	39954	37860	37337	38384
1920	40476	46253	51234	55587	57483	56641	54824	51831	48445	47050	46452	46054
1921	46253	46652	51433	52850	53902	51433	50636	46452	44462	43465	40302	56220
1922	60011	65065	72167	72167	71405	71405	71152	70138	68109	66080	65827	68616
1923	69630	70138	70898	72167	71152	69630	64433	60221	57693	54324	53902	53165
1924	53165	53902	54745	58536	57272	53271	49441	44262	39954	36465	35941	36290
1925	37337	37860	38908	40302	38734	36465	32278	28531	24391	22914	22914	24096
1926	24539	24835	25427	34720	34895	33849	30360	27202	23800	20879	20361	21581
1927	23209	36290	40128	43266	43266	43066	40476	37162	34198	31755	31929	32802
1928	33325	34372	35244	34024	31755	27941	22914	18545	14264	11913	11294	11809
1929	12325	12841	15692	18415	18027	15951	12635	10159	8095	6530	6338	6275
1930	6657	7475	10571	12738	15432	14785	13254	11809	10055	9539	10055	10159
1931	10365	11603	11603	12325	12119	10881	8817	7269	6148	5639	5893	6594
1932	7166	12532	20491	27497	30883	30709	29419	27645	25723	24243	23356	24243
1933	25575	25723	27350	28531	28383	26019	22765	19193	15692	12944	11809	14914
1934	15562	16340	16860	16340	14395	12738	10159	7372	5574	5257	5574	5766
1935	6848	9230	12016	18027	18804	18027	16080	14005	12119	10675	10571	10675
1936	11038	13151	15044	18674	18415	16600	14005	11706	9126	8301	8507	10984
1937	11706	22914	31057	42668	47649	47649	46652	45855	44859	43664	43266	40636
1938	44661	48445	67602	71405	72167	71405	70645	68616	66080	64433	63591	64438
1939	65573	66840	69883	72167	71405	68616	65319	62117	60853	58958	57483	57483
1940	59168	60853	61906	62538	60853	58536	54956	51035	47649	45656	45059	48644
1941	49839	53692	59168	64644	69630	69123	67602	66334	63802	63170	62959	64433
1942	64433	65065	66080	68362	67347	64223	60643	56641	53060	50437	48843	48445
1943	52030	54745	60643	65065	64854	63381	60432	57062	53902	52428	50835	52130
1944	52428	53902	56220	60011	60432	58958	55798	51632	47649	44661	46851	47250
1945	47649	51234	54324	59168	59590	58115	55377	53271	50038	47449	46253	50835
1946	51234	52030	53902	56220	55166	52638	49640	46054	42867	41473	44462	46054
1947	46452	47050	47649	47449	45656	43066	39431	36639	33849	32104	31232	31929
1948	31929	32976	33849	35941	35244	33151	29863	26462	23209	21581	20361	20620
1949	21581	22470	23800	27350	27350	25279	22322	19583	17248	16080	15951	16600
1950	17118	18933	19842	20231	19453	17767	15692	13048	11500	10055	9849	9746
1951	10262	10571	10468	10262	9746	7579	5511	2930	1400	950	950	2125
1952	2721	3347	6338	18933	22914	22322	21730	20361	19583	18674	19064	19972
1953	20361	20620	21581	21879	21286	19842	17767	15302	13151	11809	11397	11397
1954	12841	13746	16210	22026	22322	21484	19842	18156	16470	14914	14914	15562
1955	15821	16080	17896	18156	18804	17507	15562	14135	11706	10365	10055	10055
1956	11294	12428	11809	11913	11603	9849	7682	5511	2840	1300	1000	592
1957	2930	5766	6148	6530	6594	6084	4875	2452	1946	1789	1809	3079
1958	3664	6657	11809	20231	24243	23652	22618	22174	21434	20620	21139	20620
1959	20749	22470	23356	22914	21730	19842	17377	15044	13151	12222	12016	11809
1960	12325	12944	14525	14655	15173	13358	11706	9023	6721	6402	6338	6084
1961	6084	5447	5257	5193	4683	3258	2333	1617	1000	693	540	700
1962	900	3664	6402	10365	10984	10365	9436	7888	7102	6594	6338	6338
1963	6465	6657	6784	7166	7039	6338	4557	3109	2870	2572	2751	2812
1964	3079	3049	3920	6212	6784	6594	5447	4302	2930	2423	2542	2781
1965	3079	3258	3410	7579	8404	7785	7269	6784	6402	6020	14135	18286
1966	19583	20879	23652	23948	23504	22470	21730	20749	19842	19455	19583	32453
1967	33151	34198	36290	40128	43664	43664	42867	42270	41672	40875	41274	42469
1968	42967	44262	45408	46054	45457	44262	43266	42270	40476	39606	39606	39780
1969	60011	62959	66080	72167	72167	71913	71660	69123	65065	63381	63381	63381
1970	63381	63381	65065	65065	64223	63170	62117	62117	60853	59590	60221	61485
1971	61906	62117	62327	62117	61696	60643	59590	58115	56641	56220	56220	62117
1972	62117	61906	61696	60853	60221	59168	57062	54535	52428	51234	51831	53060
1973	54324	55587	58536	64012	67094	65573	64012	62538	60853	59168	59168	58958
1974	61064	61696	63802	64433	63591	61485	59168	56851	54956	53692	52850	53692
1975	54114	54535	54956	56220	56430	54324	51632	48843	46452	44661	43664	43664
1976	42270	42867	45258	45457	44262	41872	39606	37162	37686	36813	36639	36290
1977	36559	36559	36559	36559	36925	36421	34771	33547	32357	31682	31024	33377
1978	37292	44222	57044	64180	66544	65126	63766	61962	61380	60000	60457	61380
1979	63009	62244	69915	72236	72113	70648	69671	67986	66308	64653	64062	63944
1980	65362	66308	71869	72358	71381	70892	69915	68706	66544	64653	63707	63475
1981	63707	64653	66071	66544	65126	63707	61380	59313	57494	56145	55920	55695
1982	57269	59084	62544	69427	70892	69725	68413	67558	66256	64565	65275	66837
1983	64979	68137	71625	73231	72358	71327	69861	69861	67116	64416	65629	64705
1984	65977	65693	65835	65126	64133	62032	61892	62171	60915	59405	59130	61194
1985	61613	62590	63707	64842	63568	61334	60503	58718	56954	55073	55740	56550
1986	57359	62869	65977	66402	65409	63568	61613	60640	59542	58306	57494	57359
1987	57359	58306	59130	60091	59267	57899	56280	54941	53748	54013	53616	54279
1988	54808	54941	54675	55605	54941	53748	51912	50741	49334	48191	47811	47314
1989	46699	48953	50094	49587	48445	47314	45344	43903	42943	42004	41302	40834
1990	41068	41185	43183	43183	42473	41536	40142	39005	37879	36888	36009	35690

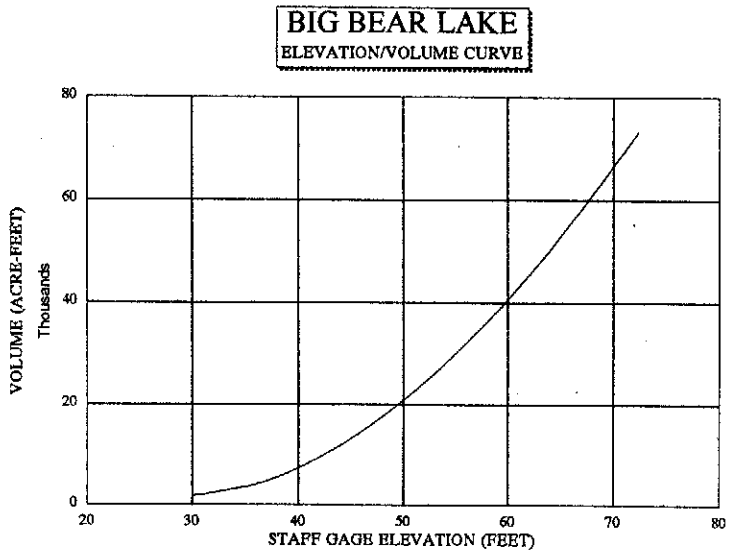
SOURCES: Camp Dresser & McKee Inc., April 1985 Analysis of Water Supply Yield
Big Bear Watermaster Annual Reports

TABLE 6

BIG BEAR LAKE
ELEVATION/VOLUME/SURFACE AREA DATA

STAFF GAGE ELEVATION (FEET)	RESERVOIR VOLUME (ACRE-FEET)	RESERVOIR SURFACE AREA (ACRES)
30.00	1744	303
31.00	2059	327
32.00	2397	350
33.00	2758	371
34.00	3140	393
35.00	3574	475
36.00	4090	557
37.00	4714	692
38.00	5474	827
39.00	6344	914
40.00	7301	1000
41.00	8335	1069
42.00	9438	1137
43.00	10612	1210
44.00	11859	1283
45.00	13177	1354
46.00	14567	1425
47.00	16027	1494
48.00	17554	1562
49.00	19146	1623
50.00	20800	1684
51.00	22510	1736
52.00	24273	1789
53.00	26087	1841
54.00	27954	1893
55.00	29873	1946
56.00	31847	2000
57.00	33887	2081
58.00	36009	2162
59.00	38208	2237
60.00	40483	2312
61.00	42824	2369
62.00	45221	2426
63.00	47684	2500
64.00	50221	2575
65.00	52821	2625
66.00	55471	2674
67.00	58169	2722
68.00	60915	2770
69.00	63707	2815
70.00	66544	2863
71.00	69427	2907
72.00	72358	2954
72.33	73320	2973

SOURCE: Camp Dresser & McKee Inc., April 1985 Analysis of Water Supply Yield



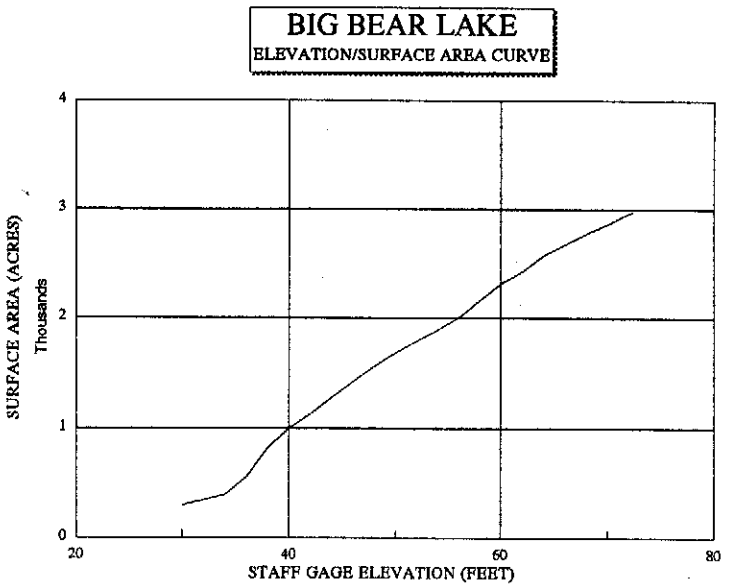
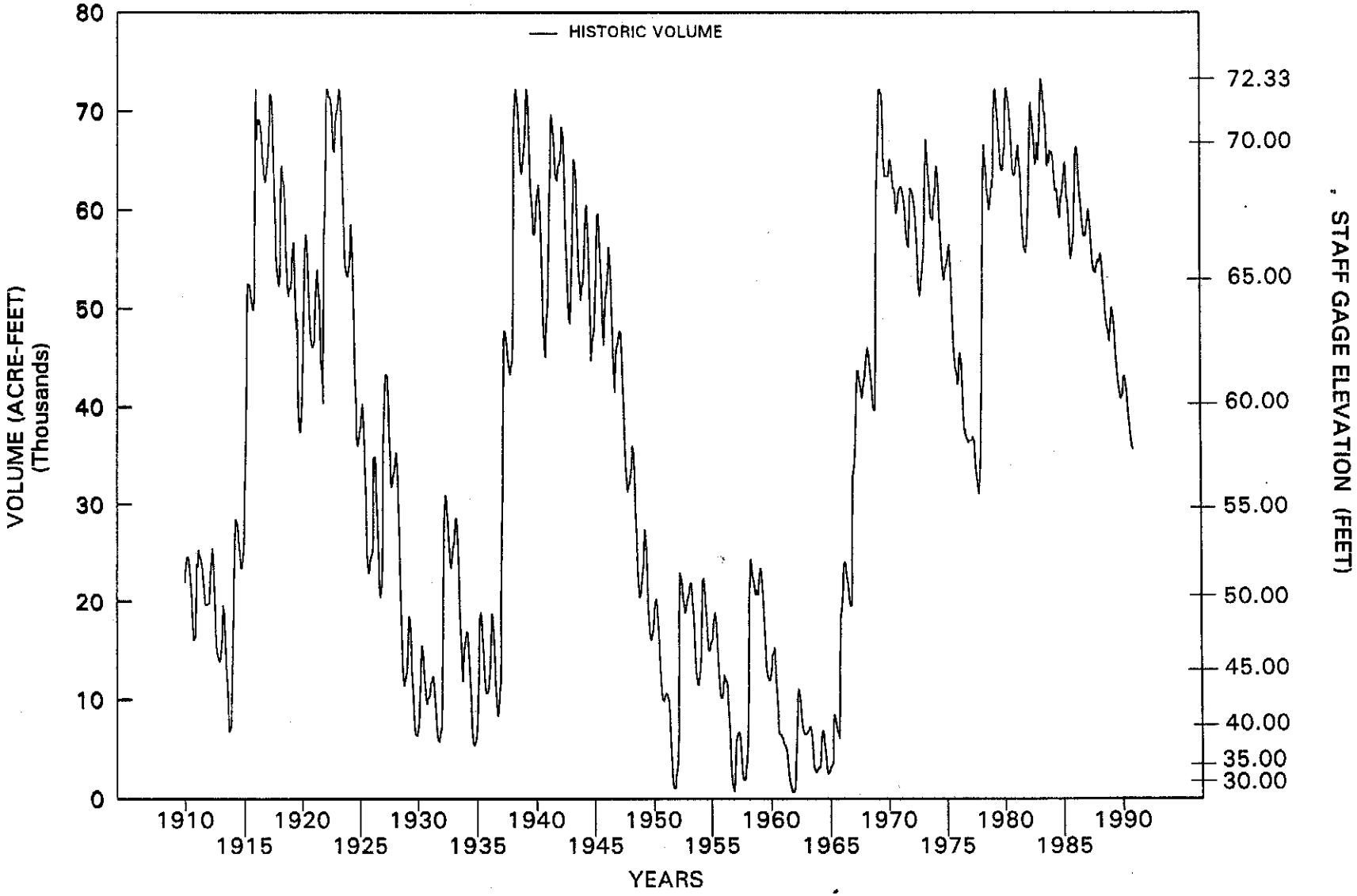


FIGURE 8

BIG BEAR LAKE: HISTORIC VOLUME - STAFF GAGE ELEVATION COMPARISON



SOURCE: Camp Dresser & Mackee, Inc. - Data Tables 3-4 of staff's 9/24/92 report

TABLE 8

RECORDED FLOWS FROM BEAR VALLEY DAM
1977 – 1990

OPERATING PERIOD	LEAKAGE (AF)	RELEASES (AF)	DAM SPILLS (AF)	TOTAL FLOW (AF)
JAN. 77	1	76	0	77
FEB	1	0	0	1
MAR	1	0	0	1
APR	1	0	0	1
MAY	1	0	0	1
JUN	1	135	0	136
JUL	1	253	0	254
AUG	1	249	0	250
SEP	1	155	0	156
OCT	1	0	0	1
NOV	1	0	0	1
DEC	1	0	0	1
JAN. 78	1	0	0	1
FEB	2	0	0	2
MAR	5	0	0	5
APR	4	0	0	4
MAY	4	0	0	4
JUN	4	0	0	4
JUL	5	0	0	5
AUG	5	0	0	5
SEP	4	0	0	4
OCT	4	0	0	4
NOV	4	173	0	177
DEC	4	826	0	830
JAN. 79	2	703	0	705
FEB	2	163	0	165
MAR	4	0	563	567
APR	5	0	4296	4301
MAY	5	0	2796	2801
JUN	5	0	0	5
JUL	4	0	0	4
AUG	4	659	0	663
SEP	4	1160	0	1164
OCT	4	733	0	737
NOV	5	0	0	5
DEC	6	0	0	6
JAN. 80	8	0	4475	4483
FEB	7	12609	0	12616
MAR	7	0	0	7
APR	7	5560	0	5567
MAY	7	5638	0	5645
JUN	7	145	0	152
JUL	7	0	0	7
AUG	7	0	0	7
SEP	7	1259	0	1266
OCT	7	1164	0	1171
NOV	6	0	0	6
DEC	6	0	0	6
JAN. 81	5	0	0	5
FEB	2	0	0	2
MAR	3	0	0	3
APR	3	0	0	3
MAY	3	0	0	3
JUN	4	245	0	249
JUL	3	537	0	540
AUG	2	587	0	589
SEP	1	629	0	630
OCT	1	252	0	253
NOV	1	0	0	1
DEC	2	0	0	2
JAN. 82	2	0	0	2
FEB	2	0	0	2
MAR	2	0	0	2
APR	2	0	0	2
MAY	2	0	0	2
JUN	2	0	0	2
JUL	3	0	0	3
AUG	3	0	0	3
SEP	3	343	0	346
OCT	4	732	0	736
NOV	4	0	12	16
DEC	4	0	1725	1729
JAN. 83	5	0	2602	2607
FEB	6	0	1322	1328
MAR	4	0	5612	5616
APR	4	0	3810	3814
MAY	7	0	6574	6581
JUN	7	0	938	945
JUL	7	0	0	7
AUG	5	0	0	5
SEP	3	1813	0	1816
OCT	4	2320	0	2324
NOV	3	0	9	12
DEC	3	0	145	148

OPERATING PERIOD	LEAKAGE (AF)	RELEASES (AF)	DAM SPILLS (AF)	TOTAL FLOW (AF)
JAN. 84	3	0	397	400
FEB	2	0	259	261
MAR	2	0	0	2
APR	2	0	0	2
MAY	2	0	0	2
JUN	2	441	0	443
JUL	2	566	0	568
AUG	2	0	0	2
SEP	2	0	0	2
OCT	2	685	0	687
NOV	1	8	0	9
DEC	2	0	0	2
JAN. 85	2	0	0	2
FEB	2	0	0	2
MAR	2	0	0	2
APR	3	0	0	3
MAY	3	0	0	3
JUN	3	684	0	687
JUL	3	0	0	3
AUG	3	0	0	3
SEP	3	327	0	330
OCT	3	1140	0	1143
NOV	3	312	0	315
DEC	3	0	0	3
JAN. 86	3	79	0	82
FEB	3	0	0	3
MAR	3	0	0	3
APR	3	0	0	3
MAY	2	0	0	2
JUN	2	105	0	107
JUL	2	316	0	318
AUG	2	0	0	2
SEP	2	7	0	9
OCT	2	431	0	433
NOV	2	349	0	351
DEC	2	71	0	73
JAN. 87	6	0	0	6
FEB	6	0	0	6
MAR	9	0	0	9
APR	8	0	0	8
MAY	5	0	0	5
JUN	5	0	0	5
JUL	5	0	0	5
AUG	4	0	0	4
SEP	4	0	0	4
OCT	4	0	0	4
NOV	6	0	0	6
DEC	5	0	0	5
JAN. 88	7	0	0	7
FEB	10	0	0	10
MAR	11	0	0	11
APR	13	0	0	13
MAY	7	0	0	7
JUN	6	0	0	6
JUL	2	0	0	2
AUG	2	0	0	2
SEP	1	0	0	1
OCT	4	0	0	4
NOV	2	0	0	2
DEC	0	0	0	0
JAN. 89	4	0	0	4
FEB	4	0	0	4
MAR	10	0	0	10
APR	3	0	0	3
MAY	6	0	0	6
JUN	1	0	0	1
JUL	3	0	0	3
AUG	4	0	0	4
SEP	5	0	0	5
OCT	6	0	0	6
NOV	3	0	0	3
DEC	4	0	0	4
JAN. 90	4	0	0	4
FEB	4	0	0	4
MAR	4	0	0	4
APR	8	0	0	8
MAY	9	0	0	9
JUN	5	0	0	5
JUL	5	0	0	5
AUG	5	0	0	5
SEP	6	0	0	6
OCT	7	0	0	7
NOV	6	0	0	6
DEC	5	0	0	5

SOURCE: Big Bear Watermaster Annual Reports (1977 – 1990)

TABLE 10

SUMMARY OF GROUNDWATER PRODUCTION WELLS
BEAR VALLEY GROUNDWATER BASIN

WELL NUMBER	WELL NAME	OWNER	YEAR DRILLED	DEPTH (FT)	AVERAGE ANNUAL PRODUCTION (AF)	PRODUCTION PERIOD
1	PENNSYLVANIA	DWP	1988	678	143.3	89–92
2	MIDDLE SCHOOL	DWP	1990	585	33.5	91–92
3	OAK	DWP	1989	NA	102	90–92
4	KNICKERBOCKER	DWP	1989	775	104	89–92
5	LAKEPLANT #1	DWP	1924	326	25	47–92
6	LAKEPLANT #3	DWP	1938	380	136.9	47–92
7	LAKEPLANT #2	DWP	1924	340	49.8	47–92
8	LAKEPLANT #4	DWP	1945	420	87.1	47–92
9	DOGWOOD SPRINGS #1,2,3	DWP	NA	NA	290.3	71–92
10	DOGWOOD SLANT #1	DWP	1955	400*	1.6	72–92
11	DOGWOOD SLANT #4	DWP	1955	400*	16.7	80–92
12	DOGWOOD SLANT #8	DWP	1963	582*	59.7	80–92
13	DOGWOOD SLANT #2	DWP	1955	400*	16.7	80–92
14	DOGWOOD SLANT # 3	DWP	1955	400*	16.7	80–92
15	LASEN SLANT #1	DWP	1959	400*	1.8	72–92
16	LASEN SLANT #7	DWP	1959	400*	66.2	72–92
17	LASEN SLANT #5	DWP	1964	400*	37.4	72–92
18	LASEN SLANT #10	DWP	1964	323*	21.6	72–92
19	LASEN PLANT #11	DWP	1964	391*	21.6	72–92
20	GOLDMINE SLANT #1	DWP	1957	400*	8.3	71–92
21	GLODMINE #14	DWP	1965	742*	8.3	71–92
22	GOLDMINE SLANT #13	DWP	1965	526*	8.3	71–92
23	GOLDMINE SLANT # 12	DWP	1965	652	8.3	71–92
24	LASSEN #4	DWP	1990	168	47.3	90–92
25	LASSEN #1	DWP	1956	70	17	71–92
26	LASSEN #3	DWP	1961	115	29.8	62–92
27	SAND CANYON	DWP	1972	330	130.1	72–92
28	BOW CANYON	DWP	1989	660	58	90–92
29	CADY	DWP	NA	735	0	90–92
30	LA CRESCENTA	DWP	1989	586	33.3	90–92
31	OWEN	DWP	1990	1012	0	90–92
32	SAWMILL	DWP	1956	305	29.3	57–91
33	MAPLE	DWP	1989	760	220.7	90–92
34	LAKEWOOD #5	DWP	1973	400	139.8	76–92
35	LAKEWOOD #6	DWP	1982	402	52.6	83–92
36	LAKEWOOD #7	DWP	1987	400	98.3	90–92
37	11TH LANE #1	DWP	1946	140	25.8	57–92
38	10TH LANE N. #3	DWP	1972	300	95.3	72–92
39	LAKEWOOD #27	DWP	1958	288	33	58–92
40	LAKEWOOD #26	DWP	1949	100	18.1	57–85
41	FLANE	DWP	NA	NA	NA	NA
42	FISH HATCHERY SPRING	CSD	NA	NA	151.2	47–91
43	GREEN SPOT SPRING	CSD	NA	NA	151.2	47–91
44	MONTE VISTA	DWP	1979	106	9.8	80–92
45	ONYX	DWP	1968	230	5	82–92
46	SKYVIEW	DWP	1979	268	1.3	80–92
47	BARBAR LEE	DWP	1986	172	4.2	86–91
48	NORTHSHORE #1	DWP	1940	50	61.1	47–92
49	NORTHSHORE #2	DWP	1968	305	4.7	72–92
50	NORTHSHORE #3	DWP	1970	184	12.9	77–92
51	CEDAR DELL SLANT B	DWP	1959	122*	13.8	72–92
52	CEDAR DELL SLANT D	DWP	1964	204*	13.8	72–92
53	CEDAR DELL SLANT C	DWP	1959	149*	13.8	72–92
54	CEDAR SPRING	DWP	1966	385*	22.8	72–92
55	DIVISION #5	DWP	1975	471	59	76–92
56	DIVISION #1	DWP	1947	423	138.3	48–92
57	DIVISION #2	DWP	1964	497	239.4	64–92
58	DIVISION #4	DWP	1975	475	86.1	75–92
59	DIVISION #3	DWP	1973	505	55.8	73–92
60	DIVISION #7	DWP	1986	400	170.8	87–92
61	DIVISION #6	DWP	1973	400	223	76–92
62	HILLDALE	CSD	NA	NA	NA	NA
63	CSD #7A	CSD	1987	142	10.8	88–91
64	AIRPORT	CSD	NA	NA	NA	NA
65	CSD #5	CSD	1980	155	8.2	81–91
66	GREENWAY	CSD	NA	NA	NA	NA
67	CSD #4A	CSD	1987	116	68	88–91
68	CSD #4	CSD	1980	110	142.2	91–91
69	CSD #1	CSD	NA	NA	114.4	47–91
70	CSD #1B	CSD	1958	332	158.4	73–91
71	CSD #6	CSD	1981	150	74.8	83–91
72	MALTBY	CSD	NA	NA	NA	NA
73	CSD #3	CSD	1958	324	98.3	59–91
74	CSD #3A	CSD	1987	174	97.8	88–91
75	CSD #2	CSD	1958	236	43.4	76–91
76	VAQUEROS	CSD	NA	NA	NA	NA
77	VAN DUSEN SLANT	CSD	NA	NA	245.1	47–91

SOURCE: BBMWD/CITY EXHIBIT 23
* – HORIZONTAL LENGTH
DWP – CITY'S DEPARTMENT OF WATER AN POWER
CSD – BIG BEAR COMMUNITY SERVICES DISTRICT
N/A – NO INFORMATION AVAILABLE

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

APPENDIX A

STAFF ANALYSIS OF LAKE LEVEL IMPACTS

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LIST OF FIGURES

ENGINEERING ANALYSIS
EVALUATION OF LAKE LEVEL IMPACTS

I. GENERAL

The following analysis of the impacts on Big Bear Lake's levels and recreational opportunities takes into consideration the wide range of instream flow release rates proposed by the participants of the hearing. The analysis evaluates the operating period of 1939 through 1990 and is structured to:

- Initially define annual water-year types based on precipitation;
- Evaluate lake level impacts of proposed release rates; and
- Evaluate the impacts to recreational opportunities.

II. WATER-YEAR TYPE DEFINITION

The definition of water-year type is based on an evaluation of historic precipitation data contained in the hearing record (See Table 1 of Attachment A). For the purpose of this analysis, a water-year period is defined as the accumulated rainfall for the period October 1 to April 30 of each year, because approximately 90% of recorded total annual precipitation at Big Bear Lake occurs during this period of time.

To define the water-year type during the water-year period, a simple percentile of time is used for the 79-year period (1911-1991) of recorded data. For comparison purposes, two categories of water-year type definitions were examined: a 5 water-year type definition and a 3 water-year type definition. For example, a 5 water-year type definition includes a straight 20% frequency distribution for the 79-year period of record [i.e., 20% (wet)-20% (above normal)-20% (normal)-20% (below normal)-20% (dry)], and a 3 water-year type definition includes a 25%-50%-25% frequency distribution of the 79-year period of record [i.e., 25% (wet)-50% (normal)-25% (dry)]. Table 1 ranks in ascending order the accumulated precipitation recorded at Big Bear Lake during the period October 1 to April 30.

TABLE 1 - Accumulated Precipitation
(October 1 to April 30)

RANK	WATER YEAR	ACCUM PRECIP (IN)	RANK	WATER YEAR	ACCUM PRECIP (IN)	RANK	WATER YEAR	ACCUM PRECIP (IN)	RANK	WATER YEAR	ACCUM PRECIP (IN)
1	76-77	12.46	21	84-85	21.61	41	74-75	27.61	61	53-54	39.31
2	62-63	12.77	22	63-64	21.62	42	49-50	27.91	62	42-43	39.62
3	86-87	13.73	23	67-68	21.62	43	47-48	28.06	63	44-45	40.95
4	80-81	14.06	24	59-60	21.83	44	71-72	28.65	64	78-79	41.26
5	60-61	14.46	25	70-71	22.05	45	56-57	29.00	65	65-66	46.43
6	27-28	17.13	26	22-23	22.21	46	16-17	29.76	66	14-15	49.63
7	83-84	17.56	27	41-42	22.74	47	34-35	30.14	67	13-14	50.03
8	50-51	17.83	28	28-29	23.27	48	48-49	30.36	68	82-83	51.17
9	69-70	18.16	29	33-34	23.27	49	43-44	31.04	69	31-32	52.48
10	32-33	19.22	30	20-21	23.30	50	46-47	31.96	70	51-52	53.69
11	23-24	19.31	31	38-39	23.30	51	81-82	32.47	71	40-41	54.65
12	89-90	19.69	32	39-40	23.43	52	17-18	32.87	72	66-67	56.21
13	24-25	19.84	33	58-59	23.97	53	45-46	35.97	73	36-37	56.61
14	18-19	20.05	34	55-56	24.14	54	26-27	36.77	74	57-58	57.11
15	12-13	20.21	35	75-76	24.34	55	19-20	37.47	75	37-38	58.59
16	52-53	20.55	36	29-30	24.86	56	72-73	37.52	76	15-16	59.02
17	88-89	20.82	37	87-88	25.75	57	21-22	38.29	77	79-80	61.29
18	54-55	20.87	38	35-36	26.19	58	85-86	38.41	78	77-78	66.95
19	11-12	21.39	39	64-65	26.33	59	25-26	38.67	79	68-69	80.46
20	30-31	21.55	40	73-74	26.63	60	61-62	39.01			

Based on the above ranking, Table 2 shows the 5 water-year type and 3 water-year type definitions based on accumulated rainfall during the period October 1 to April 30.

TABLE 2 - Water-Year Type Definition

WATER-YEAR DEFINITION 5 - WATER-YEAR TYPE	ACCUMULATED PRECIPITATION (October 1 to Aripl 30)
WET	> 41.26"
ABOVE NORMAL	> 30.36" BUT <= 41.26"
NORMAL	> 23.43" BUT <= 30.36"
BELOW NORMAL	> 20.55" BUT <= 23.43"
DRY	<= 20.55"
WATER-YEAR DEFINITION 3 - WATER-YEAR TYPE	ACCUMULATED PRECIPITATION (October 1 to April 30)
WET	> 38.67"
NORMAL	> 21.39" BUT <= 38.67"
DRY	<= 21.39"

Figure 1 and Figure 2 graphically illustrate the above water-year type definitions based on accumulated rainfall for the period 1911 through 1990. Because there is little difference in water-year type ranges, and for the sake of keeping this evaluation simple, any analysis of lake level impact which requires the use of water-year type definitions will be based on a 3 water-year definition, based on Octiber 1 to April 30 accumulated precipitation.

FIGURE 1

BIG BEAR LAKE PRECIPITATION

5 WATER-YEAR TYPE DEFINITION (20%/20%/20%/20%/20%)

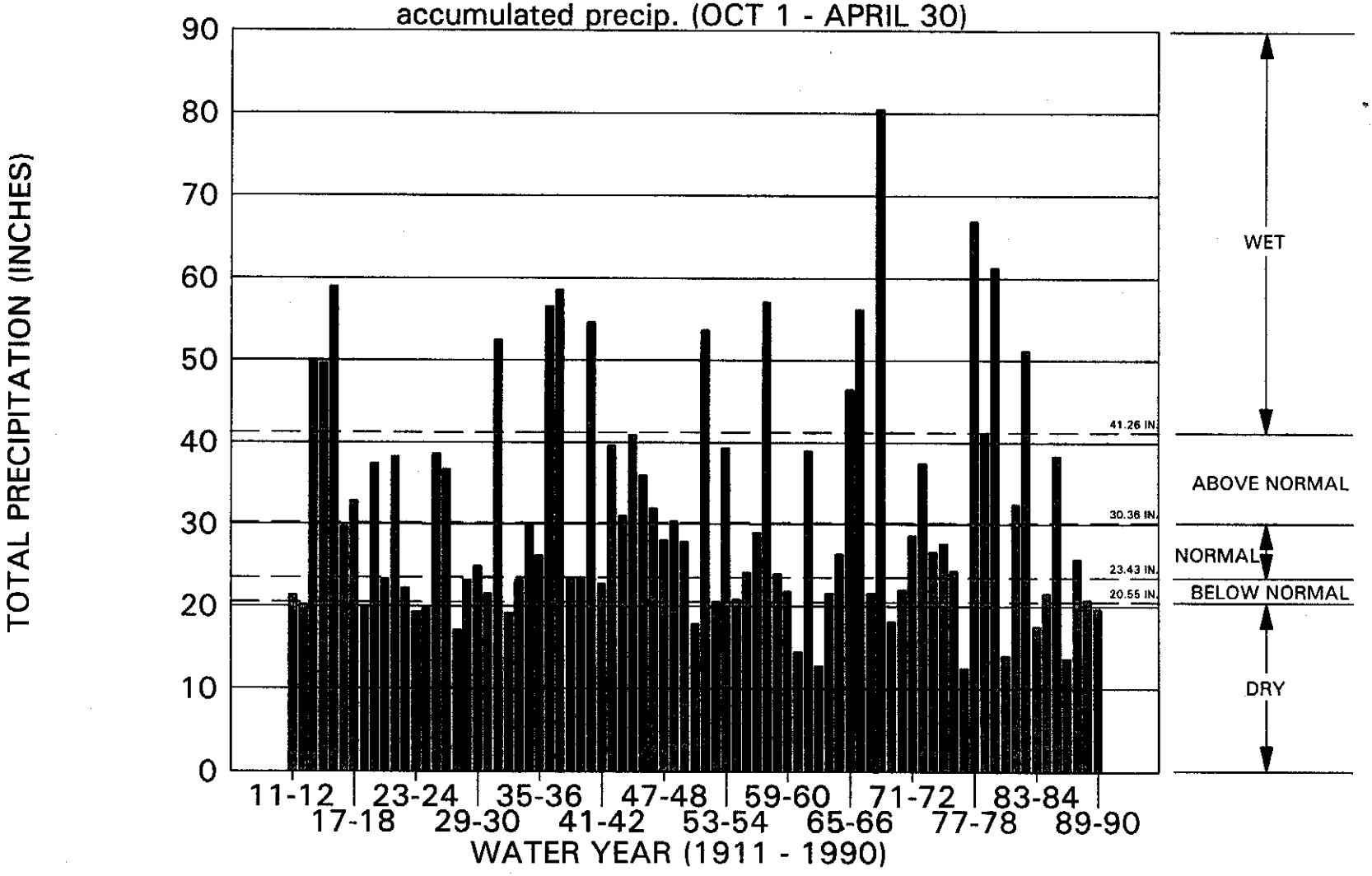
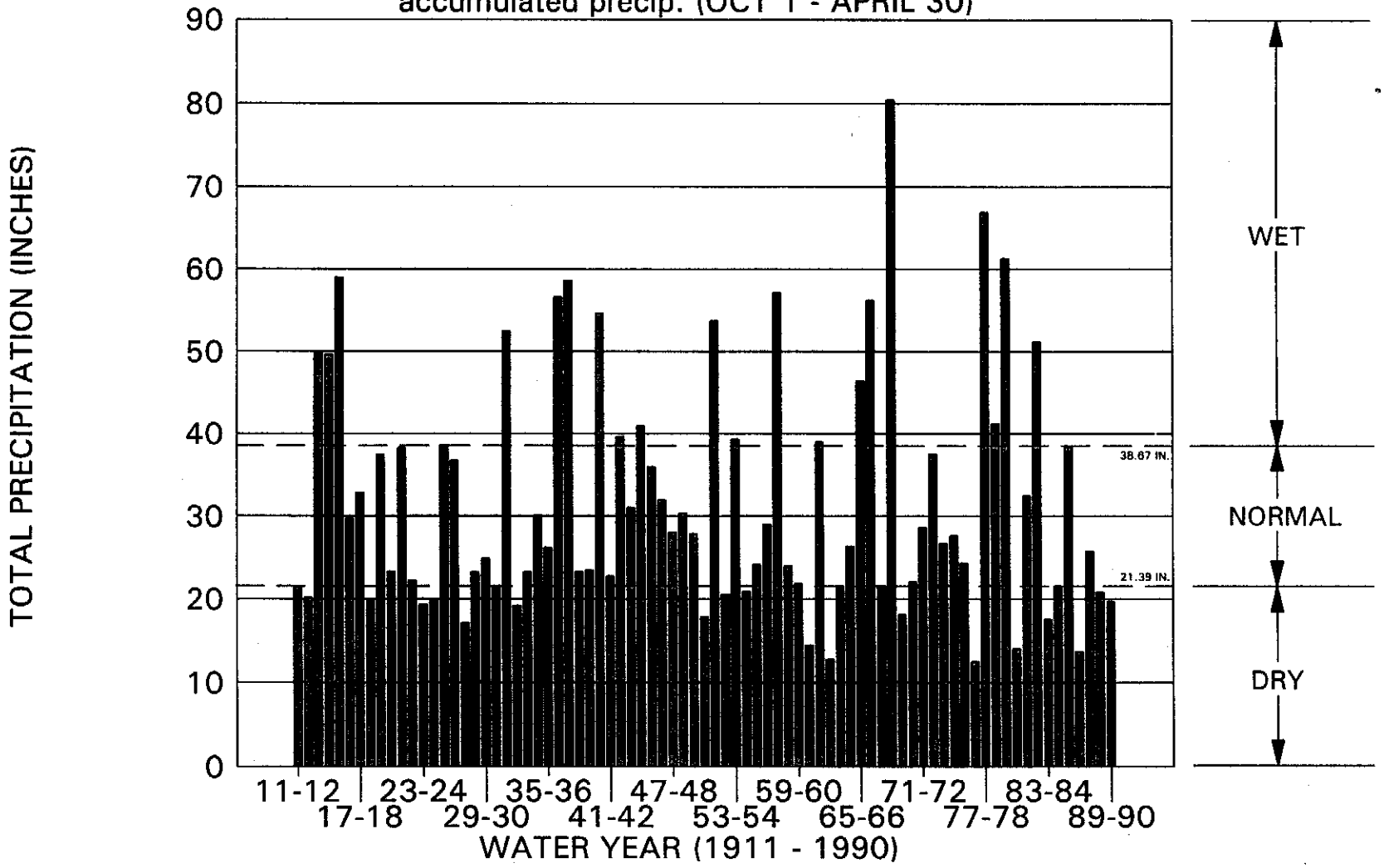


FIGURE 2

BIG BEAR LAKE PRECIPITATION

3 WATER-YEAR TYPE DEFINITION (25%/50%/25%)

accumulated precip. (OCT 1 - APRIL 30)



III. EVALUATION OF BEAR CREEK FLOW CONDITIONS

A. Measured Flow Evaluation: By October 20, 1993 Supplement to Notice of Public Hearing, the SWRCB requested that Big Bear Municipal Water District (BBMWD) and the City of Big Bear Lake (City) provide additional information pertaining to stream flow readings below Bear Valley Dam. In response to the request, BBMWD/City introduced into evidence during the SWRCB's November 18 and 19, 1993 hearing, BBMWD/City Exhibit #24. BBMWD/City Exhibit #24 contains stream flow data collected by BBMWD during the summer of 1993. BBMWD measured flows downstream of Bear Valley Dam at three locations: (1) at a Parshall flume (installed 1986) located 350 feet downstream of Bear Valley Dam, (2) at a rectangular weir (i.e.,crest length 3.33 ft., max. head 0.416 ft.) located upstream of East Cub Creek in the area known as Fish Canyon, and (3) at a 90-degree v-notch weir (i.e., max head 1.00 ft.) located a short distance downstream of West Cub Creek.

Bear Creek stream flows measured by the BBMWD/City during periods in June, July, August, and September of 1993 have been compiled in the following Table 3. The data are graphically illustrated in Figure 3 (measured flow) and Figure 4 (measured average monthly flow).

The data indicates the following:

- Bear Valley Dam average releases into the upper portion of Bear Creek was 0.43 cfs during the period of June through September, and ranged from a June maximum release rate of 0.99 cfs to a September minimum release rate of 0.19 cfs.

- Upstream of East Cub Creek, Bear Creek's average measured flow was 0.35 cfs during the period of August through September.

- Downstream of West Cub Creek, Bear Creek's average measured flow was 1.13 cfs during the months of June through September, and ranged from a July maximum flow rate of 1.67 cfs to a September minimum flow rate of 0.82 cfs .

Based on the flow data collected by the District/City, it appears that the following conclusion can be reached:

- The flow of Bear Creek upstream of East Cub Creek is dependent on seepage/releases of water from Bear Valley Dam.

- The flow of Bear Creek downstream of West Cub Creek is comprised of water released from Bear Valley Dam, and seasonal and natural contributory flow from East and West Cub Creeks. Based on the collected data, it appears that such contributory natural flow from the Cub Creeks only supplemented Bear Valley Dam releases/seepage to the extent of 0.78 cfs, on an average basis. This flow relationship occurred after one of the wettest precipitation years on record, which was recorded as being 81.82 inches according to Watermaster reports.

TABLE 3 - 1993 BEAR CREEK FLOW MEASUREMENTS

PERIOD OF MEASUREMENT MONTH	DAY	BEAR CREEK BELOW CUB CREEKS AVERAGE FLOW (CFS)	BEAR CREEK ABOVE CUB CREEKS AVERAGE FLOW (CFS)	DAM RELEASES (CFS)
JUNE 1993	1 - 2			0.51
	2 - 3			
	3 - 4			
	4 - 5			
	5 - 6			
	6 - 7			0.99
	7 - 8			
	8 - 9			
	9 - 10			
	10 - 11			
	11 - 12			
	12 - 13			
	13 - 14			0.99
	14 - 15			
	15 - 16			
	16 - 17			
	17 - 18			
	18 - 19			
	19 - 20			
	20 - 21			
	21 - 22			
	22 - 23	0.441		
	23 - 24	0.441		
	24 - 25	0.441		
	25 - 26	0.441		
	26 - 27	0.441		
	27 - 28	0.441		0.45
	28 - 29			
	29 - 30			
JULY 1993	1 - 2			
	2 - 3			
	3 - 4			
	4 - 5			
	5 - 6			0.57
	6 - 7			
	7 - 8			
	8 - 9			
	9 - 10	1.429		
	10 - 11	1.429		
	11 - 12	1.429		0.39
	12 - 13	1.429		
	13 - 14	1.429		
	14 - 15	1.429		
	15 - 16	1.429		
	16 - 17	1.67		
	17 - 18	1.67		
	18 - 19	1.67		0.39
	19 - 20	1.67		
	20 - 21	1.67		
	21 - 22	1.67		
	22 - 23	1.67		
	23 - 24			
	24 - 25			
	25 - 26			0.45
	26 - 27			
	27 - 28			
	28 - 29			
	29 - 30			
	30 - 31			
AUGUST 1993	1 - 2			0.29
	2 - 3			
	3 - 4	1.368	0.282	
	4 - 5	1.366	0.347	
	5 - 6	1.368	0.337	
	6 - 7	1.305	0.341	
	7 - 8	1.305	0.316	
	8 - 9	1.305	0.296	
	9 - 10	1.305	0.325	
	10 - 11	1.305	0.338	
	11 - 12	1.305	0.307	
	12 - 13	1.305	0.308	
	13 - 14		0.307	
	14 - 15		0.317	
	15 - 16		0.344	
	16 - 17		0.292	
	17 - 18		0.337	
	18 - 19		0.346	
	19 - 20		0.348	
	20 - 21		0.356	
	21 - 22		0.355	
	22 - 23		0.331	0.34
	23 - 24		0.323	
	24 - 25		0.327	
	25 - 26		0.359	
	26 - 27		0.807	
	27 - 28		0.361	
	28 - 29		0.35	
	29 - 30		0.299	0.24
	30 - 31		0.27	
SEPTEMBER 199	1 - 2		1.398	
	2 - 3	1.079	1.066	
	3 - 4	1.079	0.266	
	4 - 5	1.079	0.233	
	5 - 6	1.079	0.225	
	6 - 7	1.079	0.23	0.21
	7 - 8	1.079	0.266	
	8 - 9	1.079	0.222	
	9 - 10	0.845	0.214	
	10 - 11	0.824	0.21	
	11 - 12	0.824	0.213	
	12 - 13	0.824	0.226	
	13 - 14	0.824	0.252	0.21
	14 - 15	0.824	0.234	
	15 - 16	0.824	0.238	
	16 - 17	0.844		
	17 - 18	0.844		
	18 - 19	0.844		
	19 - 20	0.844		0.19
	20 - 21	0.844		
	21 - 22			
	22 - 23			
	23 - 24			
	24 - 25			
	25 - 26			
	26 - 27			0.19
	27 - 28			
	28 - 29			
	29 - 30			
	30 - 31			
AVERAGE		1.19	0.35	0.43

SOURCE: BBMWD/CITY EXHIBIT #24 - FLOW READINGS BELOW BEAR VALLEY DAM

FIGURE 3 - 1993 BEAR CREEK FLOW MEASUREMENTS

FLOW BELOW BEAR VALLEY DAM

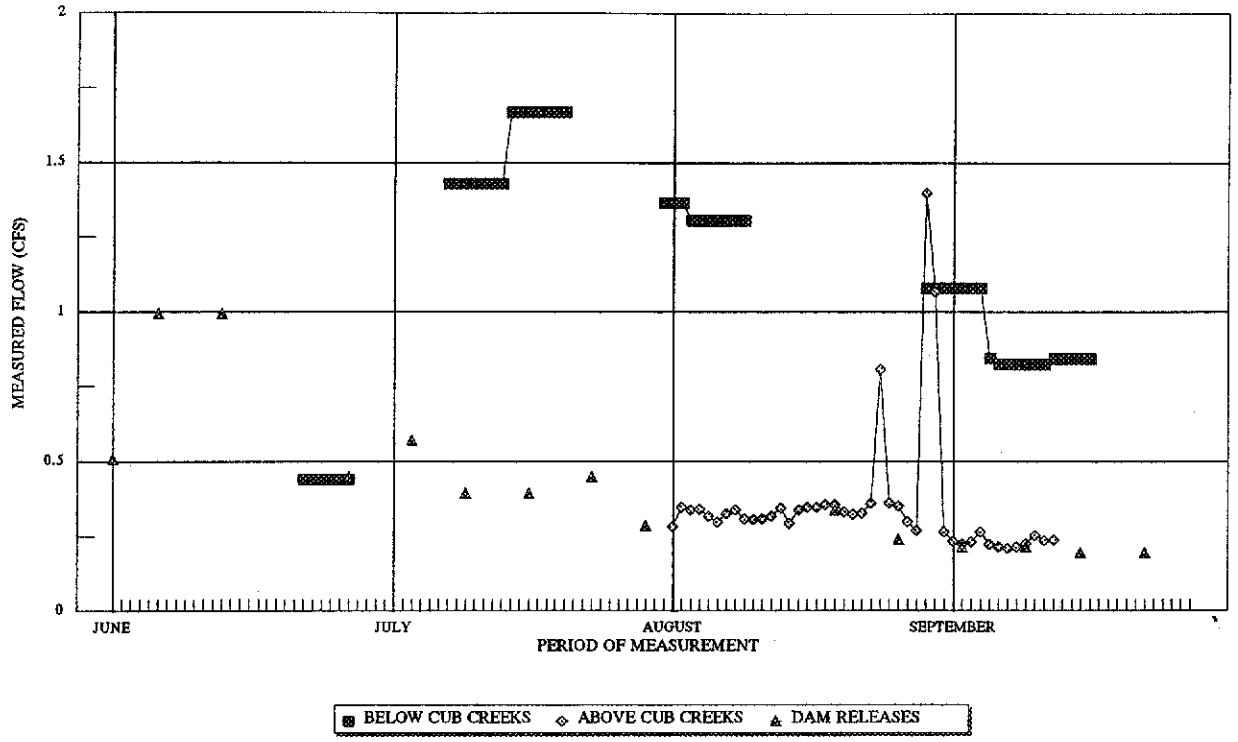
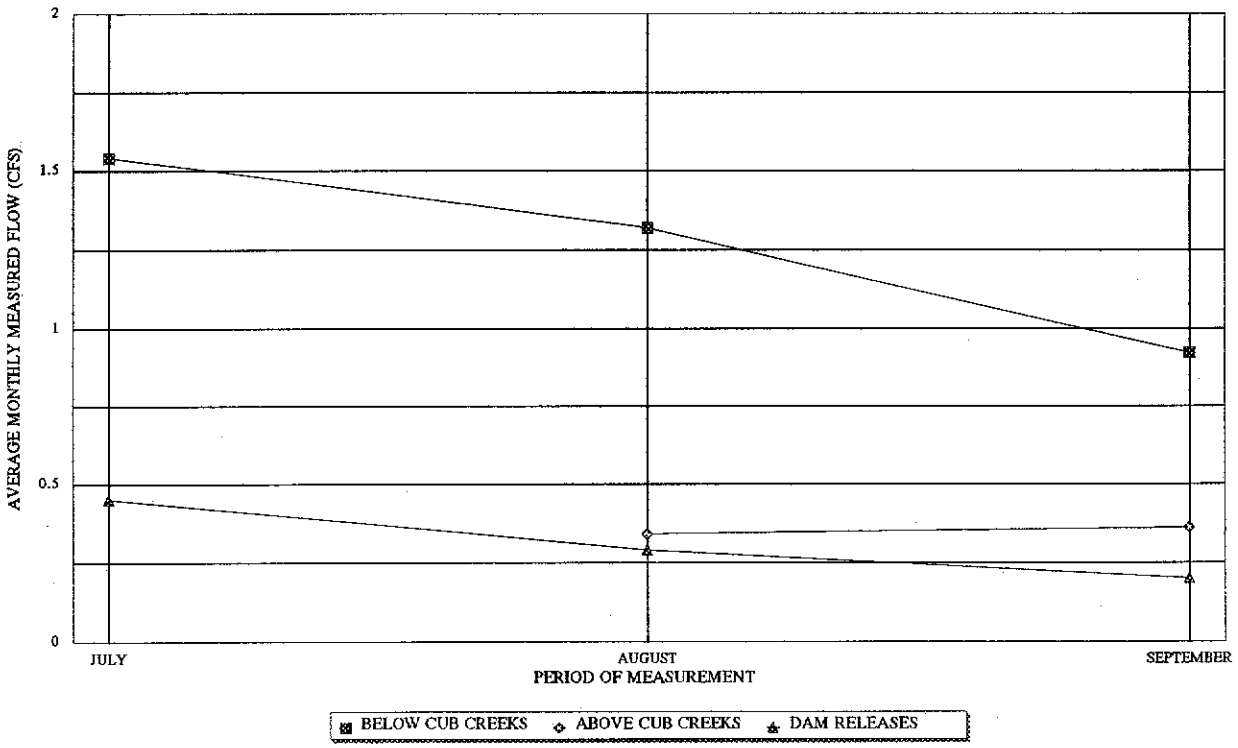


FIGURE 4 - 1993 BEAR CREEK FLOW MEASUREMENTS

FLOW BELOW BEAR VALLEY DAM



- It is evident that even after one of the wettest years on record, the contributory and natural flows of the East and West Cub Creeks are not sufficient to maintain a flow rate of 1.2 cfs in Bear Creek below West Cub Creek and during the dry period of the year of June through September. Supplemental dam releases from Bear Valley Dam must be made to maintain a flow rate of 1.2 cfs below West Cub Creek.

B. Dam Release/Bear Creek Flow Relationship: The data collected by the District/City during 1993 pertaining to releases/seepage from the dam, and to flow below the Cub creeks, were examined to determine whether the data could be used to provide a basis for estimating required releases from the dam. These releases would maintain a flow of 1.2 cfs below the Cub Creeks during "wet", "normal" and "dry" water-years, as defined above. These estimates are needed to evaluate the impacts of the Division-evaluated alternative on lake levels, recreation, etc.

The sets of daily flow rates collected in 1993 are presented in Table 3 and shown graphically in Figure 3. The average dam release and average flow below the Cub Creeks were calculated for the months of July, August and September (see Table 4 and Figure 4).

TABLE 4 - Bear Creek - Average Monthly Measured Flows

PERIOD OF MEASUREMENT (MONTH)	BEAR CREEK AVERAGE MONTHLY FLOW BELOW CUB CREEK (CFS)	BEAR CREEK AVERAGE MONTHLY FLOW ABOVE CUB CREEKS (CFS)	AVERAGE MONTHLY DAM RELEASES/SEEPAGE (CFS)
JULY	1.54	-	0.45
AUGUST	1.32	0.34	0.29
SEPTEMBER	0.92	0.36	0.20

Because almost no data are available for flows in "normal" and "dry" water-years, estimates of such flows were developed using the following assumptions:

- The averages flow and release values calculated from the 1993 data were assumed to represent typical "wet" water-year conditions.

- The average flow below the Cub Creeks in summer in "wet" year-types is assumed to be 1.2 cfs (about the actual average observed in 1993), of which 0.3 cfs is dam releases (the actual average release in 1993), and 0.9 cfs is Cub Creeks contribution.

- In "normal" water-year types, average summer contribution from the Cub creeks is assumed to be only 75% of the "wet" average summer contribution, while dam releases remain unchanged.

- In "dry" water-year types, average summer contribution from the Cub creeks is assumed to be only 25% of the "wet" average summer contribution, while dam releases remain unchanged.

- In all years and particularly during the dry period of the year, the flows seen below the Cub Creeks are, to a considerable degree, the result of releases from the dam (that is, a regression analysis can be used to generate release/flow relationship equations.

- In all years, no more than 1.2 cfs would be required to be released from the dam to maintain the flow below the Cub Creeks; in all years there would be a minimum of 0.3 cfs released from the dam at all times.

The next step is to generate the average flow values which would be needed in "normal" and "dry" water-year types to maintain an average 1.2 cfs below the Cub Creeks, based on the "wet" water-year data and the above assumptions. The "wet" monthly average flows below the Cub Creeks were each reduced by 25% and 75%, respectively. Each of the data sets was then subjected to a regression analysis, regressing the flow below the Cub Creeks against the average monthly dam release values (which were held constant). The resulting regression equations were used to generate a series of release/flow relationships, based on the three regression equations. The equations generated in this step in the analysis are shown in Table 5, and the release/flow values for each water-year type are shown in Tables 6, 7, and 8.

TABLE 5 - REGRESSION EVALUATION (DAM RELEASES v. FLOW BELOW WEST CUB CREEK)

wet-year
Regression Output:

Constant	0.523243
Std Err of Y Est	0.142507
R Squared	0.897226
No. of Observations	3
Degrees of Freedom	1
X Coefficient(s)	2.351351
Std Err of Coef.	0.795807

Y = AX + B WHERE : A= SLOPE = (X COEFFICIENT)
B= INTERCEPT = CONSTANT

Y = 2.351351(X) + 0.523243

BELOW CUB CREEK	DAM RELEASES
0.640811	0.05
0.758378	0.1
0.875946	0.15
0.993513	0.2
1.111081	0.25
1.228648	0.3
1.346216	0.35
1.463783	0.4
1.581351	0.45
1.698919	0.5
1.816486	0.55
1.934054	0.6
2.051621	0.65
2.169189	0.7
2.286756	0.75
2.404324	0.8
2.521891	0.85
2.639459	0.9
2.757026	0.95
2.874594	1
2.992162	1.05
3.109729	1.1
3.227297	1.15
3.344864	1.2

normal-year
Regression Output:

Constant	0.397443
Std Err of Y Est	0.108331
R Squared	0.8924
No. of Observations	3
Degrees of Freedom	1
X Coefficient(s)	1.742204
Std Err of Coef.	0.604957

Y = AX + B WHERE : A= SLOPE = (X COEFFICIENT)
B= INTERCEPT = CONSTANT

Y = 1.742204(X) + 0.397443

BELOW CUB CREEK	DAM RELEASES
0.484553	0.05
0.571663	0.1
0.658774	0.15
0.745884	0.2
0.832994	0.25
0.920104	0.3
1.007214	0.35
1.094325	0.4
1.181435	0.45
1.268545	0.5
1.355655	0.55
1.442765	0.6
1.529876	0.65
1.616986	0.7
1.704096	0.75
1.791206	0.8
1.878316	0.85
1.965427	0.9
2.052537	0.95
2.139647	1
2.226757	1.05
2.313867	1.1
2.400978	1.15
2.488088	1.2

dry-year
Regression Output:

Constant	-0.00114
Std Err of Y Est	0.004514
R Squared	0.999109
No. of Observations	3
Degrees of Freedom	1
X Coefficient(s)	0.844075
Std Err of Coef.	0.025207

Y = AX + B WHERE : A= SLOPE = (X COEFFICIENT)
B= INTERCEPT = CONSTANT

Y = 0.844075(X) - 0.00114

BELOW CUB CREEK	DAM RELEASES
0.041064	0.05
0.083268	0.1
0.125471	0.15
0.167675	0.2
0.209879	0.25
0.252083	0.3
0.294286	0.35
0.33649	0.4
0.378694	0.45
0.420898	0.5
0.463101	0.55
0.505305	0.6
0.547509	0.65
0.589713	0.7
0.631916	0.75
0.67412	0.8
0.716324	0.85
0.758528	0.9
0.800731	0.95
0.842935	1
0.885139	1.05
0.927343	1.1
0.969546	1.15
1.01175	1.2
1.053954	1.25
1.096158	1.3
1.138361	1.35
1.180565	1.4
1.222769	1.45

DIVISION PROPOSED ALTERNATIVE

TABLE 6 - Bear Creek Estimated Flows
("wet" water-year conditions)

ESTIMATED FLOW BELOW WEST CUB CREEK (CFS)	BEAR VALLEY DAM RELEASES/SEEPAGE (CFS)
0.64	0.05
0.75	0.1
0.87	0.15
0.99	0.2
1.11	0.25
1.22	0.3
1.34	0.35
1.46	0.4
1.58	0.45
1.69	0.5
1.81	0.55
1.93	0.6
2.05	0.65
2.16	0.7
2.22	0.75
2.40	0.8
2.52	0.85
2.63	0.9
2.75	0.95
2.87	1.0
2.99	1.05
3.10	1.1
3.22	1.15
3.34	1.2

TABLE 7 - Bear Creek Estimated Flows
("normal" water-year conditions)

ESTIMATED FLOW BELOW WEST CUB CREEK (CFS)	BEAR VALLEY DAM RELEASES/SEEPAGE (CFS)
0.48	0.05
0.57	0.1
0.65	0.15
0.74	0.2
0.83	0.25
0.92	0.3
1.00	0.35
1.09	0.4
1.18	0.45
1.26	0.5
1.35	0.55
1.44	0.6
1.52	0.65
1.61	0.7
1.70	0.75
1.79	0.8
1.87	0.85
1.96	0.9
2.05	0.95
2.13	1.0
2.22	1.05
2.31	1.1
2.40	1.15
2.40	1.2

TABLE 8 - Bear Creek Estimated Flows
("dry" water-year conditions)

ESTIMATED FLOW BELOW WEST CUB CREEK (CFS)	BEAR VALLEY DAM RELEASES/SEEPAGE (CFS)
0.04	0.05
0.08	.1
0.12	0.15
0.16	0.2
0.20	0.25
0.25	.3
0.29	0.35
0.33	0.4
0.37	0.45
0.42	0.5
0.46	0.55
0.50	0.6
0.54	0.65
0.58	0.7
0.63	0.75
0.67	0.8
0.71	0.85
0.75	0.9
0.80	0.95
0.84	1.0
0.88	1.05
0.92	1.1
0.96	1.15
1.01	1.2

As expected (since the analysis is based on actual data), the results show that a release of 0.3 cfs from the dam is sufficient to maintain a flow of 1.2 cfs below the Cub Creeks in "wet" water-year types. In "normal" water-years, a release of 0.5 cfs is required to maintain 1.2 cfs below the Cub Creeks. In "dry" water-years, the regression shows that a release of 1.45 cfs is required to maintain 1.2 cfs below the Cub Creeks. However, since under the above assumptions no more than 1.2 cfs would be required to be released from the dam, the value used for impact analyses is 1.2 cfs, not 1.45 cfs.

Staff recognizes that this method incorporates various assumptions, and the statistical process is limited, particularly since only three values are regressed to develop each release/flow equation. However, this analysis is for the purpose of developing values for general impact analysis, not for determining what the impacts will be in any particular year. Various factors may cause the actual impacts to be greater or lesser in any particular year. Some of these factors include:

- The flow releases are assumed to be maintained throughout the year, but it is likely that releases will be reduced during some parts of the year. The change in the contribution of the Cub Creeks during the Summer of 1993 reflect the seasonal changes which may be expected. Thus, the impact analyses may represent a "worst-case" scenario.

- The data sets are limited, and the assumptions on percent reduction of Cub Creeks' contributions may not be accurate.

- The small data sets in the regression tend to induce error.

C. Summary: The method described above represents one way to generally quantify possible releases from Bear Valley Dam in order to evaluate lake level and economic impacts. The assumed required releases for evaluation of this alternative are 0.3 cfs all year in "wet" water-year types, 0.5 cfs in "normal" water-year types, and 1.2 cfs in "dry" water-year types.

IV. LAKE LEVEL IMPACTS

A. MODEL DESCRIPTION: A reservoir operation model was developed to analyze lake level impacts attributed to the following three proposed fish release rates:

- Cal-Trout: 2.0 cfs in all years;

- DFG: 1.2 cfs in all years;

- District/City: 0.1 cfs in all years.

In addition, a Division alternative rate release was evaluated based on information contained in the hearing record pertaining to flow readings below

Bear Valley Dam.[133] As previously discussed, this information was reviewed for the purpose of evaluating the necessary minimum release requirements needed to maintain a 1.2 cfs flow rate below West Cub Creek. Based on the above evaluation, the following release scenario was determined to be the best estimate for evaluation.

- Division Alternative: 0.3 cfs during a "wet" water-year
  0.5 cfs during a "normal" water-year
  1.2 cfs during a "dry" water-year

Water-year type is based on accumulated precipitation during the season of October 1 to April 30 as previously discussed, with releases of water from Bear Valley Dam beginning May 1 and continuing to the following May 1 of each year.

The developed reservoir operation model is based on the following hydrologic formula:

Adjusted E.O.M. Storage = INF - FREL - DD - MREL - EVAP

where: INF = calculated unimpaired flow
FREL = instream flow release rate
DD = District demands
MREL = Mutual Water Company releases
EVAP = evaporation losses

Calculated unimpaired flow data, District demand data, Mutual Water Company demand data, and evaporation rate data included in the developed model were extracted from data included in the District's/City's simulated model runs.[134] Historic precipitation data and end-of-month (E.O.M.) storage data included in the model were taken from Table 1 and Table 5 of Attachment A. In addition, data included in the model pertaining to estimated evaporation losses, adjusted E.O.M. storage, adjusted surface area, and adjusted staff gage elevation were derived based on the following formulas:

- Estimated evaporation losses = (evaporation rate x lake surface area);
- Adjusted E.O.M. storage = (previous E.O.M storage + unimpaired flow - instream flow release - BBMWD demand - Mutual demand - evaporation losses);
- Adjusted surface area = (26.0139 x adjusted E.O.M. storage^0.423);
- Adjusted staff gage elevation = (2.1702 x adjusted E.O.M. storage^0.313).

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[133] BBMWD/CITY EXHIBIT No. 24 - FLOW READINGS BELOW BEAR VALLEY DAM.

[134] BBMWD/CITY EXHIBIT Nos. 7-2 to 7-7, Simulated Model Runs.

Basic assumptions used in the model for all evaluated release proposals, include the District"s current operational policy (i.e., no release of water to meet Mutual Water Company's demand when the lake is 4 feet below full or at staff gage elevation 68.33).

B. MODEL RUN RESULTS: The reservoir operation model was developed to derive adjusted end-of-month (E.O.M.) surface areas and lake levels for each of the four release rates identified above. Copies of the model run results are attached.

Figures 3 - 10 graphically illustrate the impacts to Big Bear Lake's surface area and level which could have been attributed to the proposed release scenarios. Figure 3, 5, 7, and 9 shows a comparisons of historic lake levels and lake levels under each release scenario for the period 1939 to 1991. Figures 4, 6, 8, and 10 graphically illustrate the distribution and frequency of resulting lake levels which would have occurred under each release scenario during the 624 month period of evaluation.

The distribution and frequency results are summarized in the following Table 9. The data indicate the number of months that Big Bear Lake's levels would have been between specified lake level ranges (i.e., full to -5 feet below full.

TABLE 9 - Summary of Distribution/Frequency Evaluation

PROPOSED RELEASE RATES	ELEVATION 72.33 FT. (FULL) (months)	ELEVATION 67.33 FT. (-5 ft) (months)	ELEVATION 62.33 FT. (-10 ft) (months)	ELEVATION 57.33 FT. (-15 ft) (months)	ELEVATION 52.33 FT. (-20 ft) (months)
CAL-TROUT	244 (39.10%)	185 (29.65%)	107 (17.15%)	46 (7.37%)	42 (6.73%)
DF&G	254 (40.71%)	218 (34.94%)	88 (14.10%)	40 (6.41%)	24 (3.85%)
DISTRICT/CITY	293 (46.96%)	216 (34.62%)	86 (13.78%)	29 (4.65%)	0 (0%)
DIVISION ALTERNATIVE	260 (41.67%	236 (37.82%	77 (12.34%)	39 (6.25%)	12 (1.92%)

Figures 11, 12, 13, and 14 graphically compare the maximum impacts to Big Bear Lake's levels and surface areas that could have been attributed to the four release scenarios.

FIGURE 3

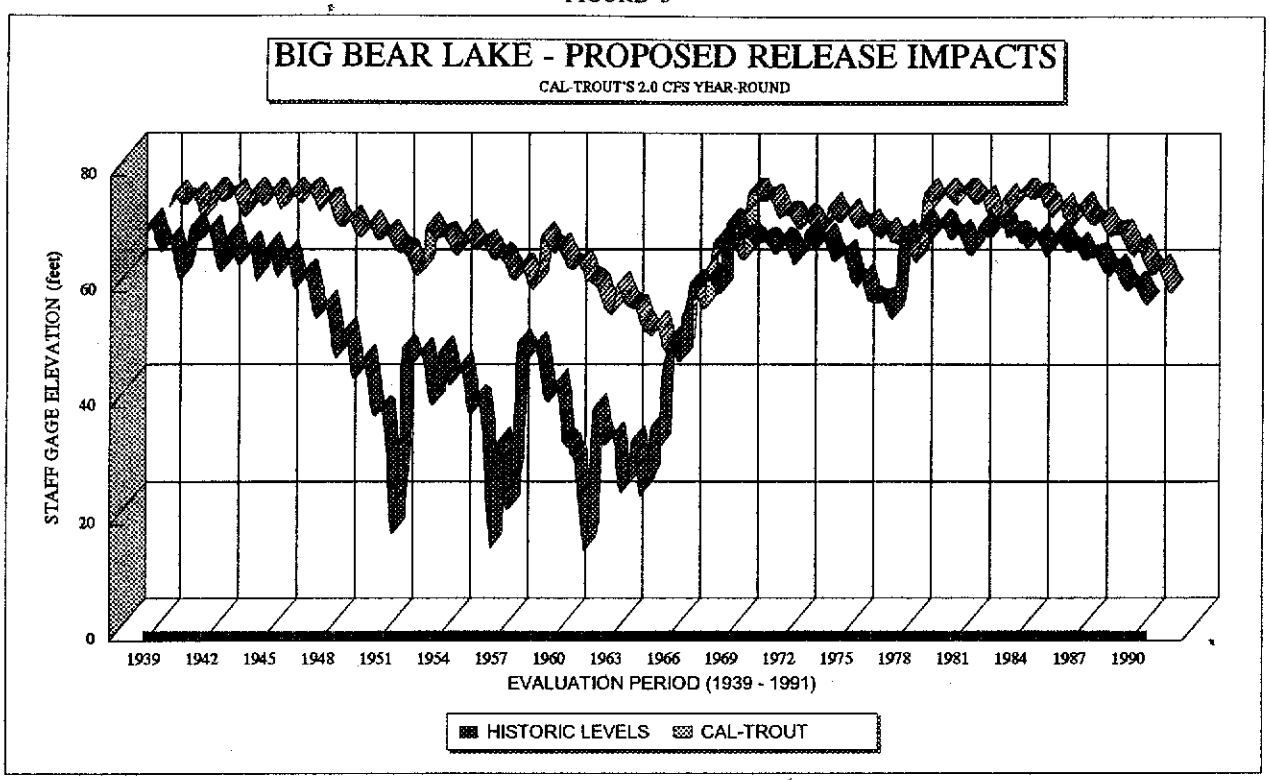


FIGURE 4

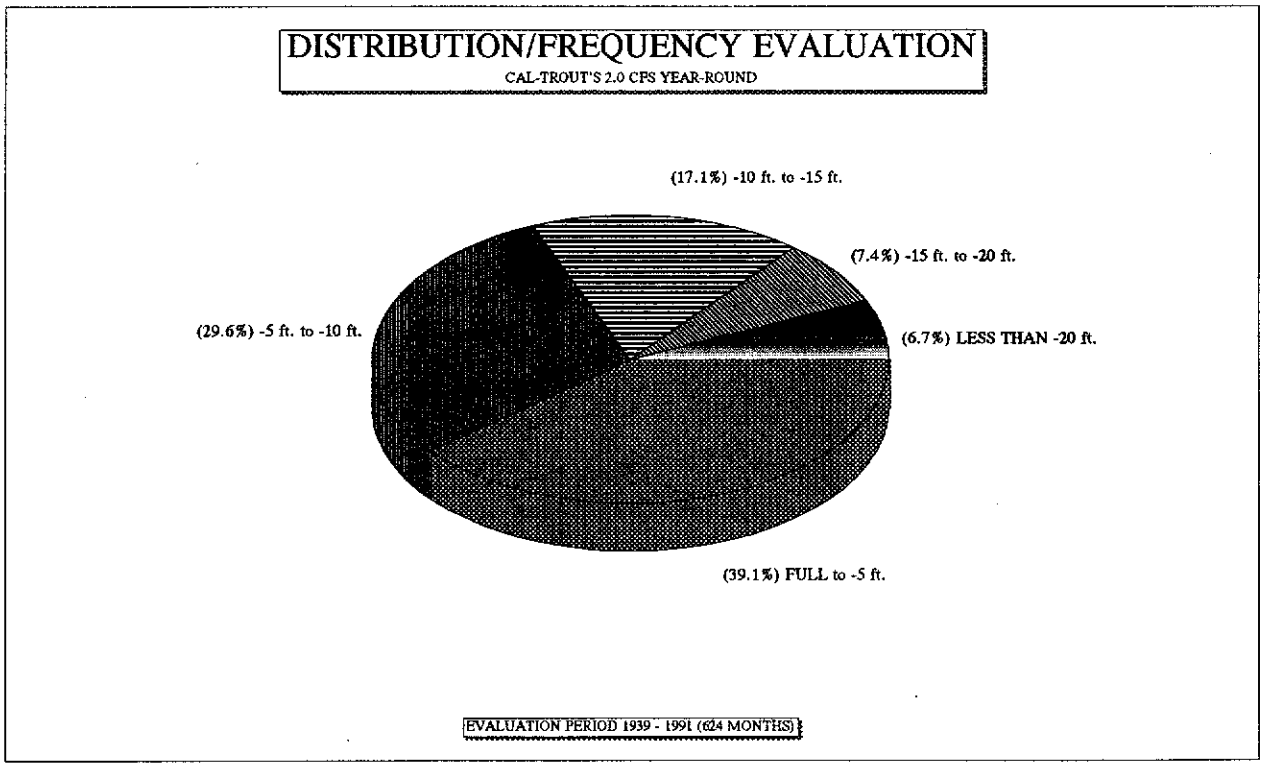


FIGURE 5

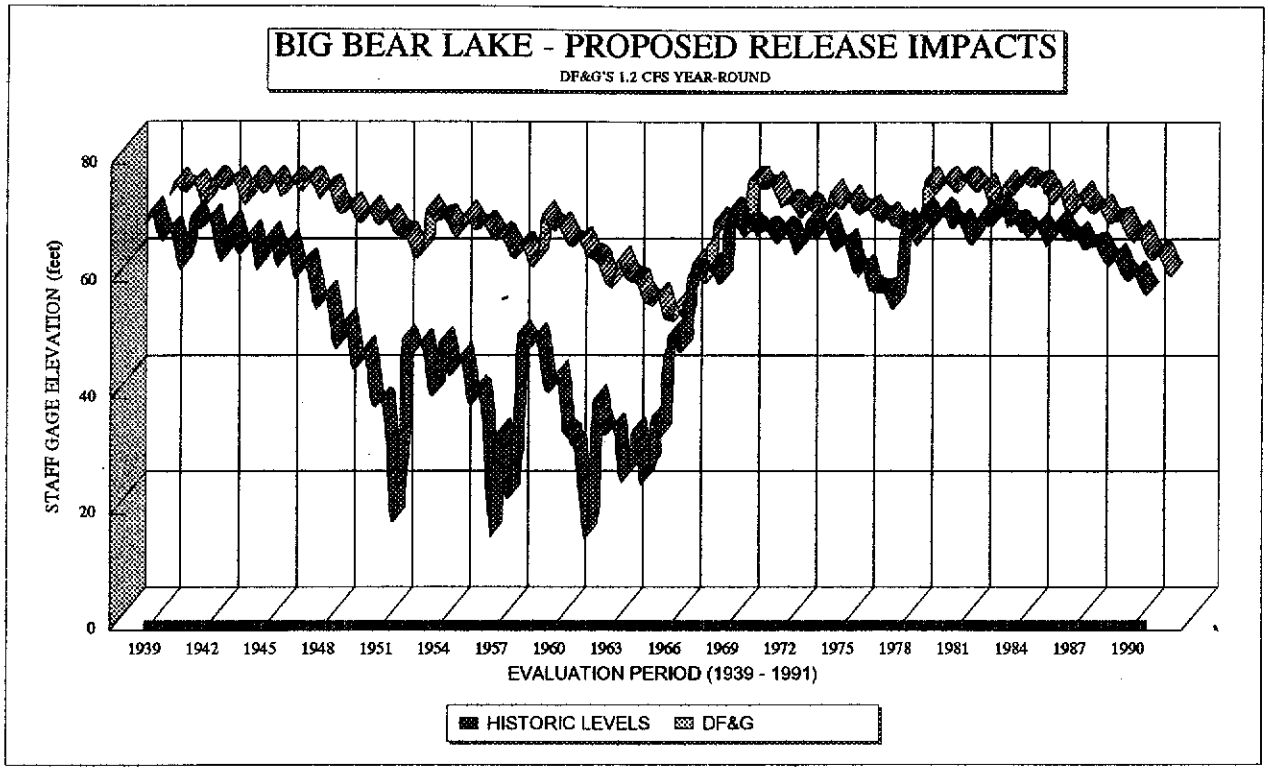


FIGURE 6

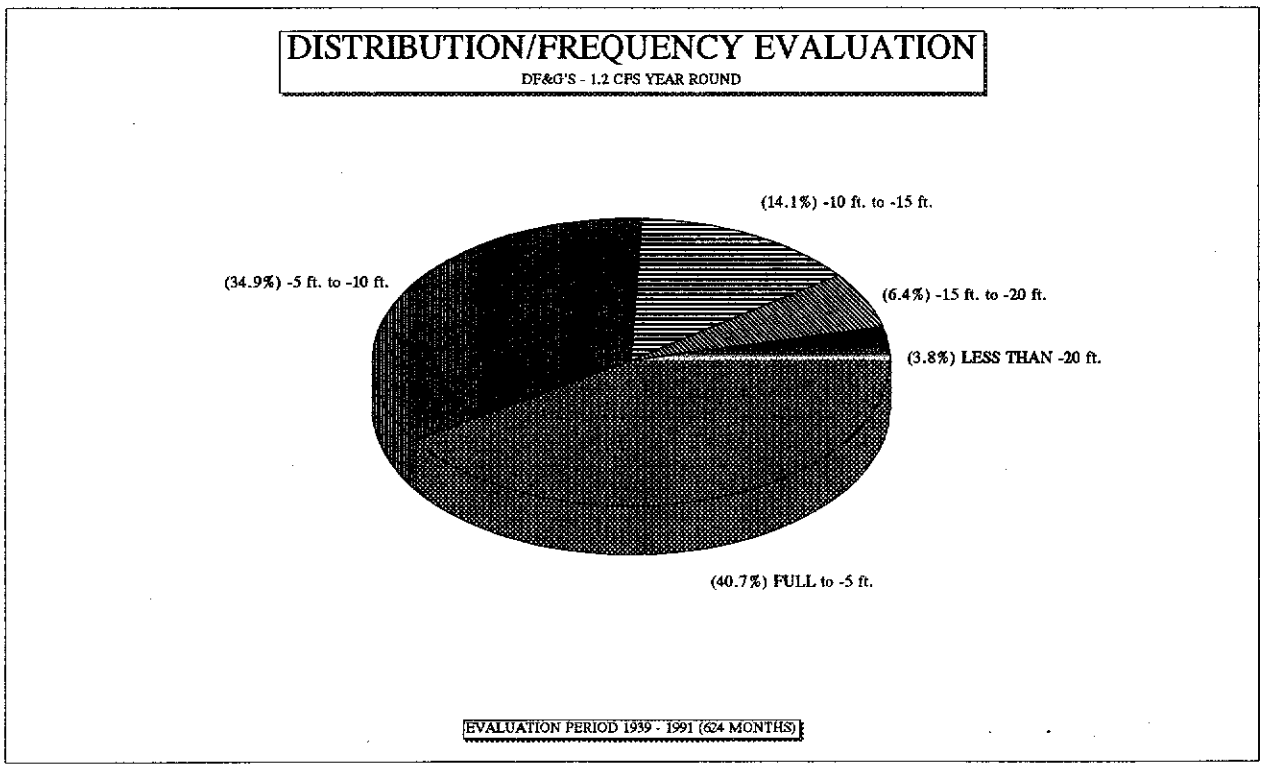


FIGURE 7

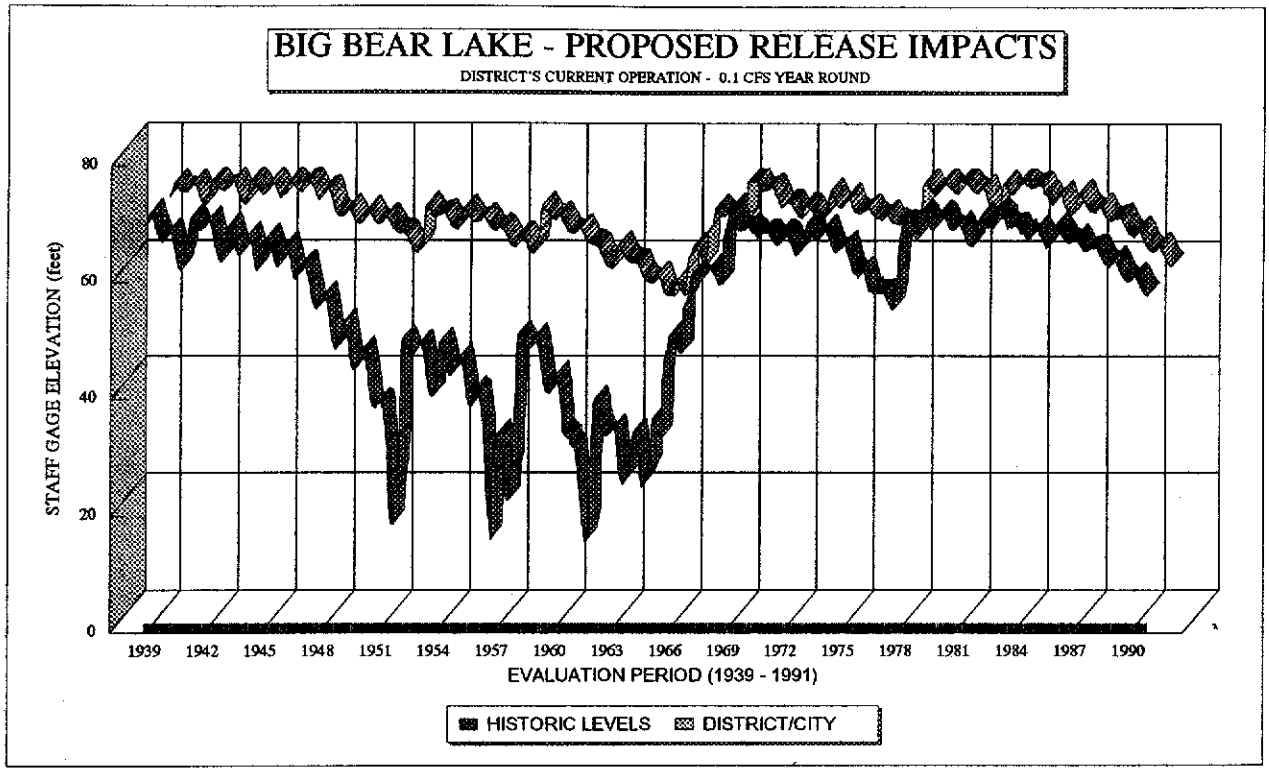


FIGURE 8

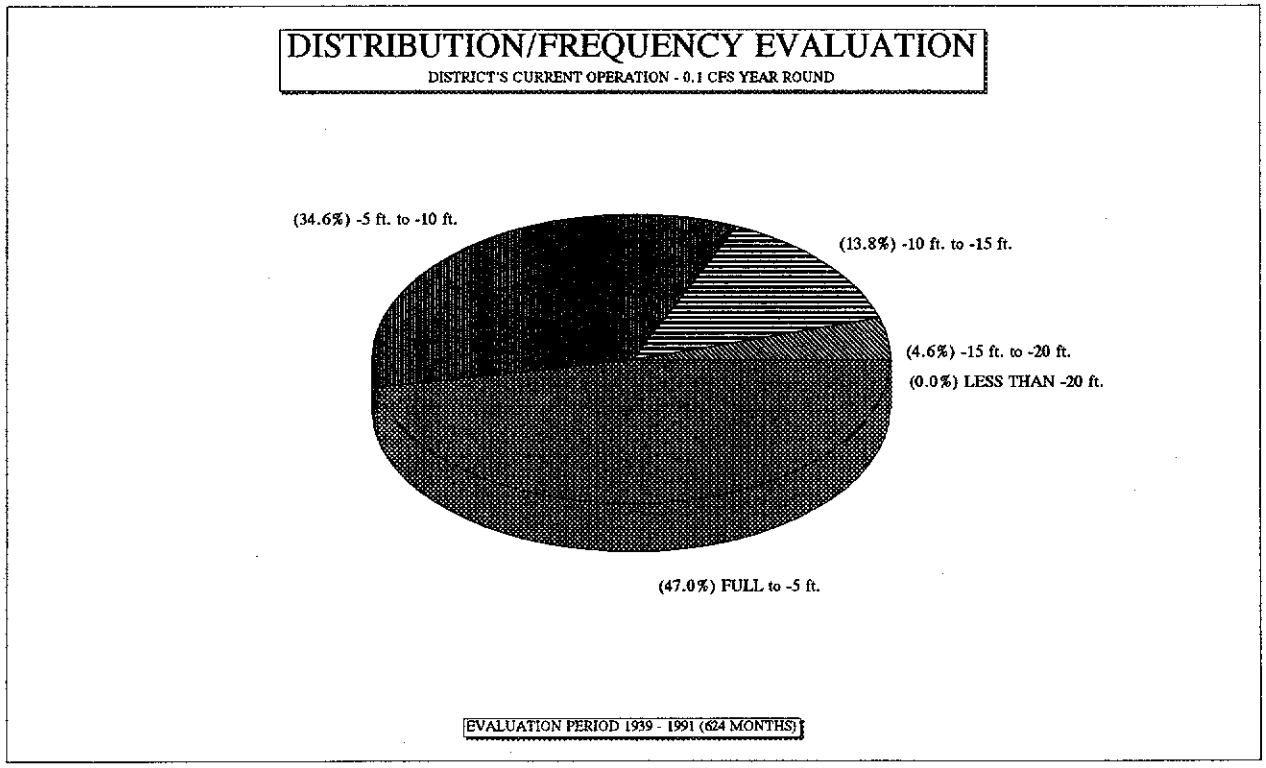


FIGURE 9

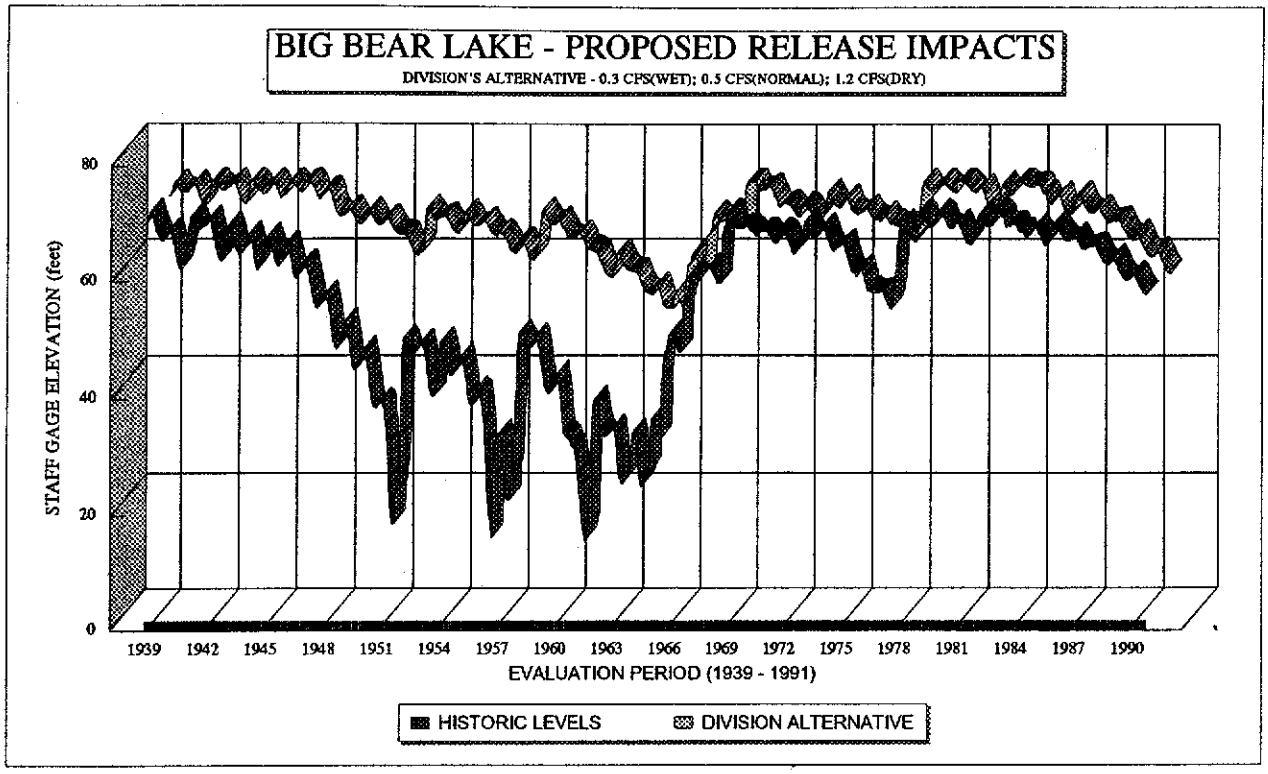


FIGURE 10

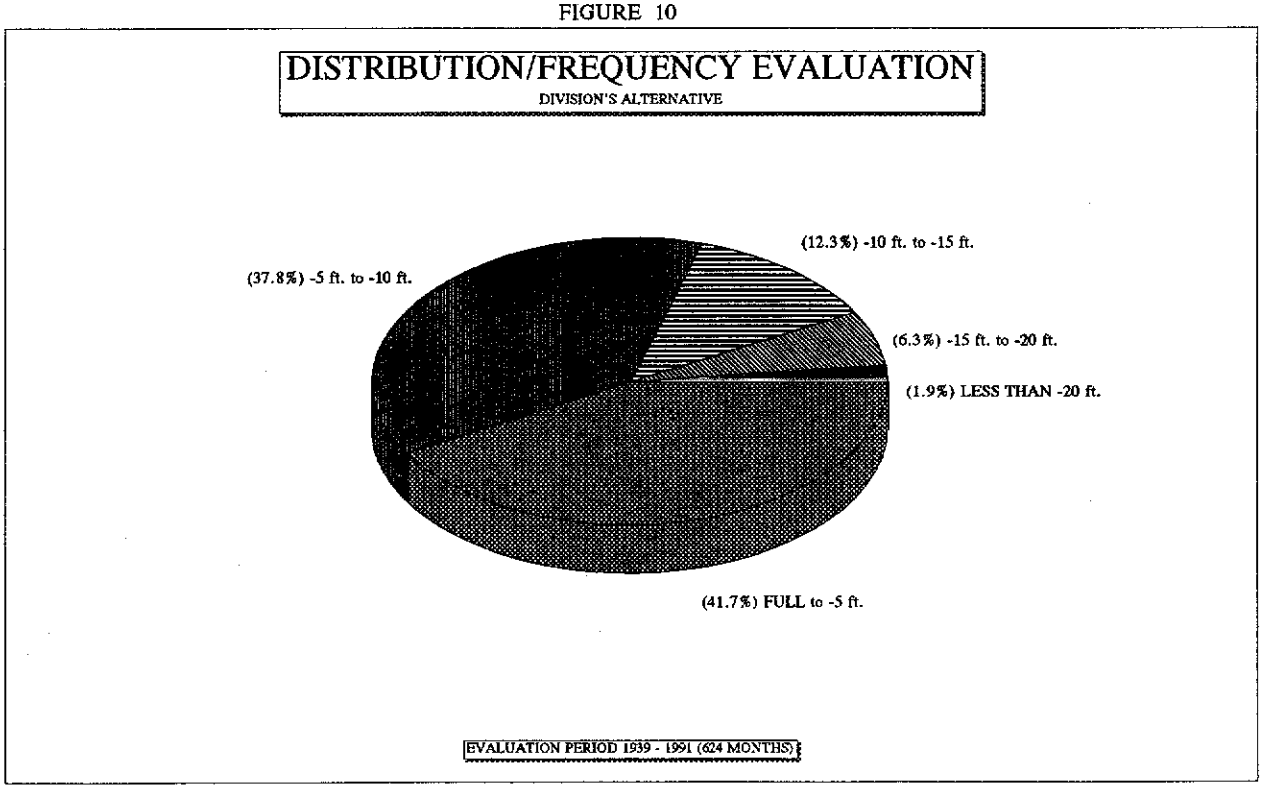


FIGURE 11

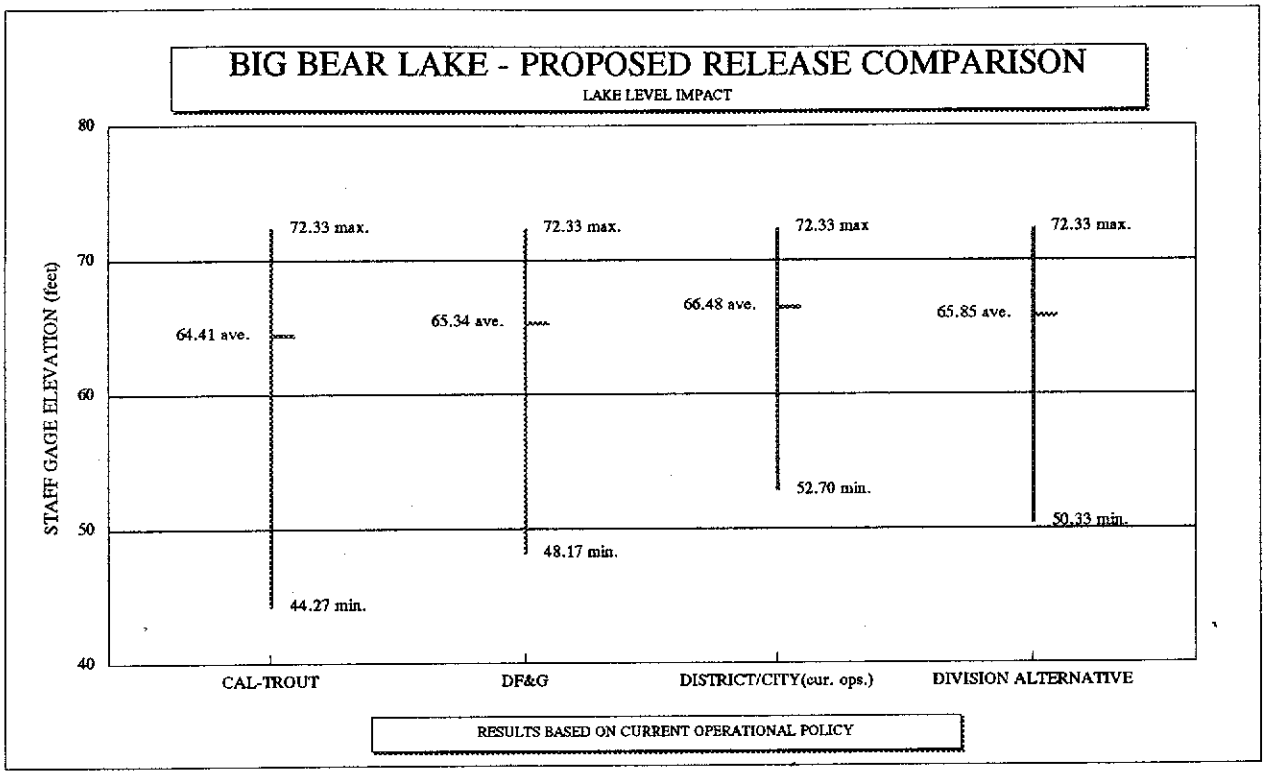


FIGURE 12

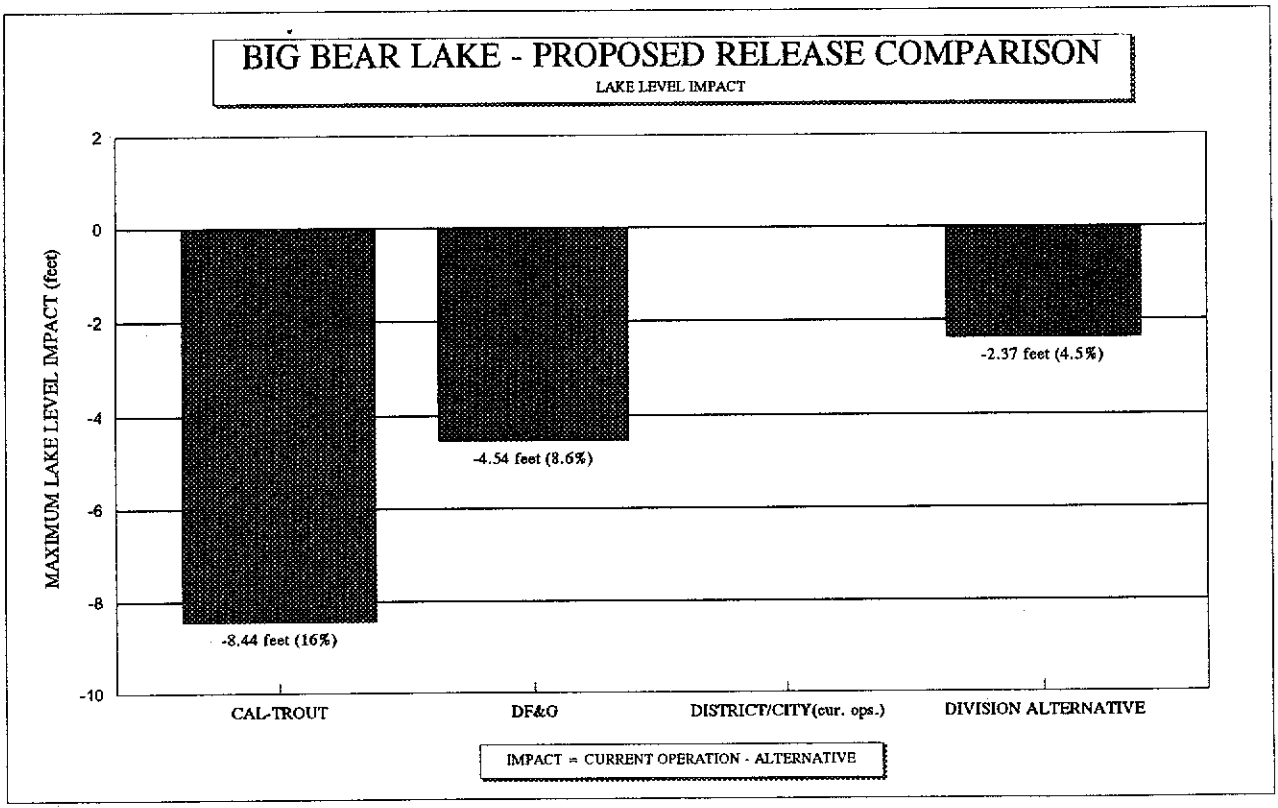


FIGURE 13

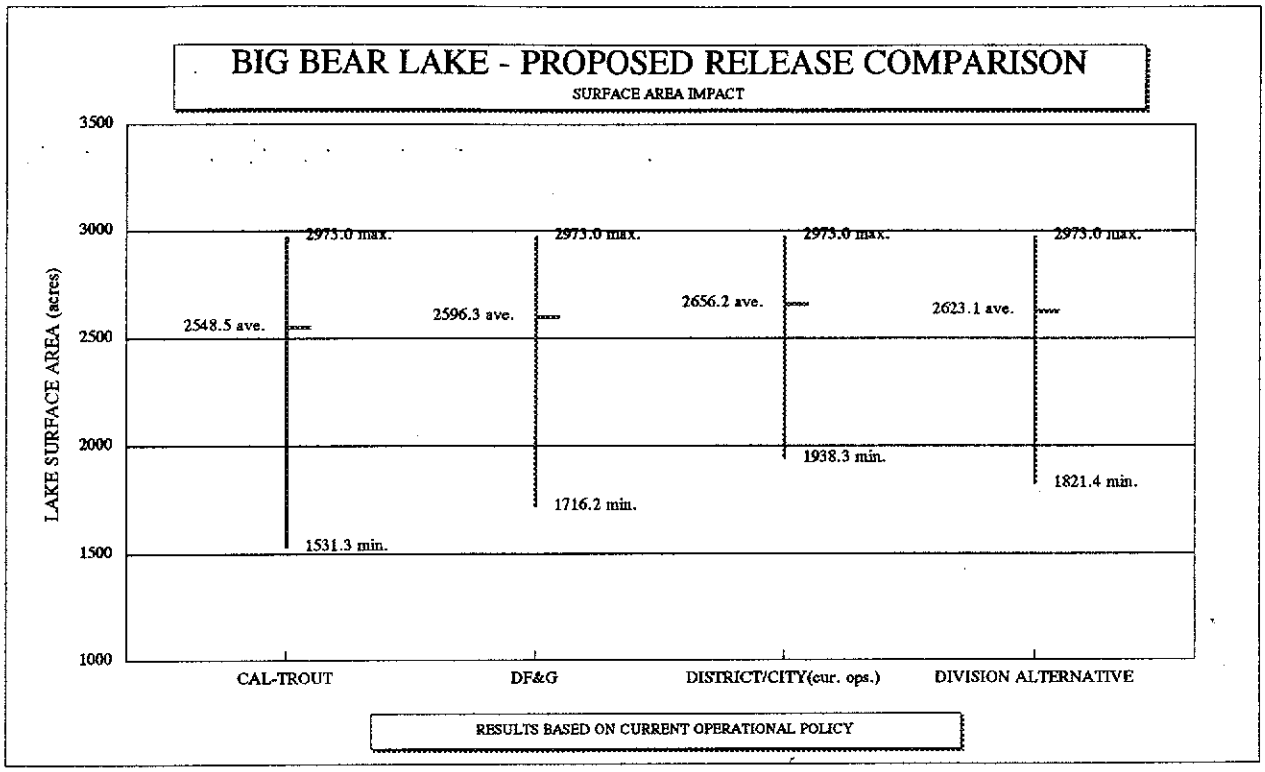
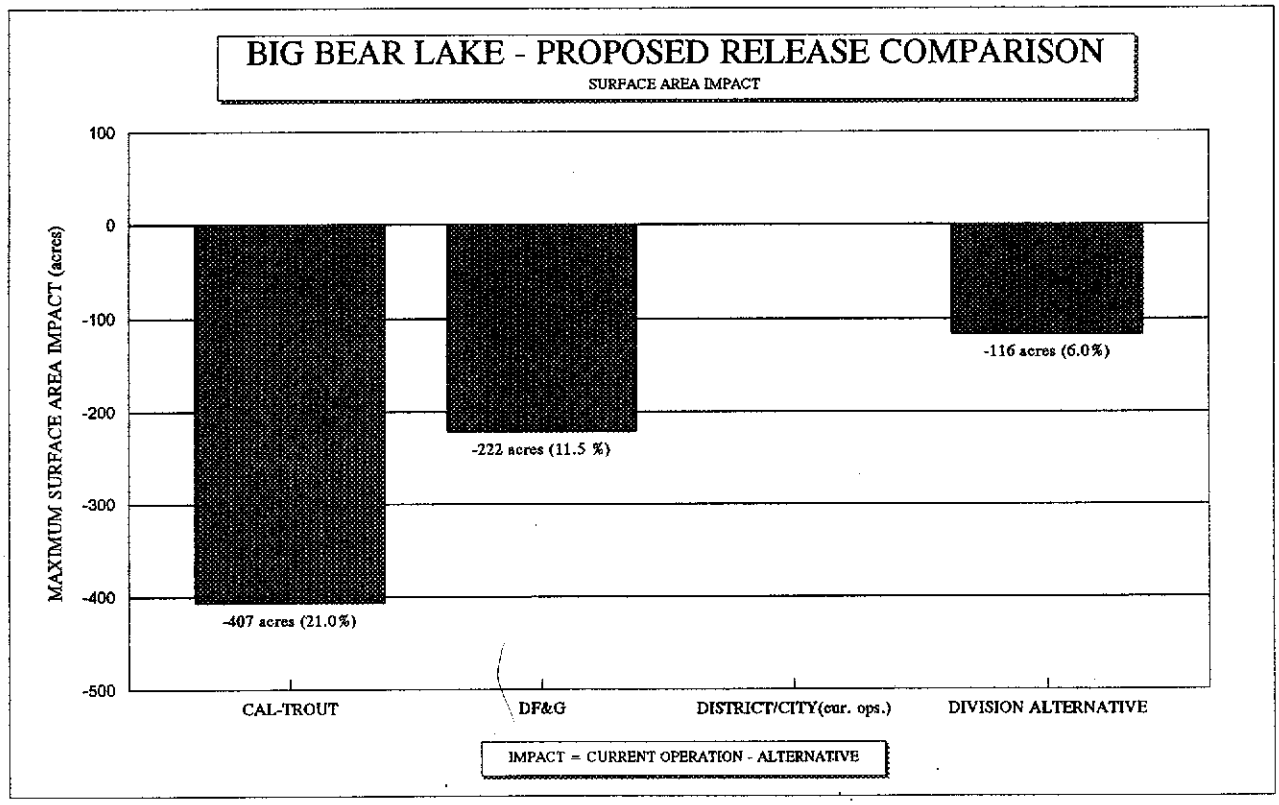


FIGURE 14



V. RECREATIONAL IMPACTS

Thomas Wegge's testimony, which is based on a 20-year analysis period corresponding to the hydrologic period 1939 to 1958,[135] describes how recreation opportunities, visitation, and the local economy could be affected by implementation of alternative water release scenarios.[136] As indicated by Mr. Wegge's testimony,[137] recreational impacts of proposed releases were related to the following specific lake level ranges: Full to -5 feet below full, -5 feet to - 10 feet below full, -10 feet to -15 feet below full, -15 feet to -20 feet below full, and more than -20 feet below full.

Within the above described lake level ranges, certain recreational activities can be maintained depending on the impact that occurs to lake facilities which support recreational uses of the lake. Those lake facilities described in Mr. Wegge's testimony are: north shore marinas, south shore marinas, the east ramp boat launch, private docks, Stanfield Marsh, and winter ski resorts.

Based on the same criteria used by Mr. Wegge to describe potential recreational impacts to Big Bear Lake, Table 10 summarizes the impacts to described facilities that could have occurred under the four release scenarios during the evaluation period of 1939 to 1991.

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[135] Ibid, p. 3-1.

[136] BBMWD/CITY EXHIBIT No. 11-1, Written Testimony of Thomas Wegge, Chapter 3. Alternative Analysis, pp. 3-1 through 3-9.

[137] Ibid, p. 3-4.

TABLE 10 - Recreational Effects Summary
(percentage of time that Effects could have occurred)

RECREATIONAL EFFECTS	CAL-TROUT RELEASE PROPOSAL	DF&G RELEASE PROPOSAL	DISTRICT CURRENT OPERATION	DIVISION RELEASE ALTERNATIVE
ALL FACILITIES OPERATION BY NORTH SHORE MARINAS COULD REMAIN OPEN	100%	100%	100%	100%
ALL SOUTH SHORE MARINAS ARE UNAFFECTED	68.75%	75.65%	81.58%	79.49%
THE EAST RAMP BOAT LAUNCH COULD CONTINUE OPERATIONS	85.87%	89.75%	95.36%	91.83%
60% OF PRIVATE DOCKS ARE UNAFFECTED	93.27%	96.15%	100%	98.08%
STANFIELD MARSH IS UNAFFECTED	68.75%	75.65%	81.58%	79.49%
THE OVERALL ABILITY OF SKI AREAS TO MANUFACTURE SNOW	93.27%	96.15%	100%	98.08%

Figures 15 - 20 graphically compare the above identified impacts and illustrate the net impact increase that could have occurred under Cal-Trout's, DF&G's and the Division's alternative release scenarios when compared to the District's current operations.

Based on the above summarized results, the affects on Big Bear Lake's boating and shore activities, use and social benefits, local economy spending and jobs, property values, and agency revenues which are attributed to current operations, will not be significantly increased as a result of the implementation under the Division's evaluated release scenario. In contrast, the any proposed release rates from Big Bear Lake to Bear Creek will affect streamflows rates in Bear Creek. Such increased streamflows could positively affect recreational opportunities associated with the creek, improve the overall riparian habitat, increase fish populations from current levels, and increase annual use of the creek.

FIGURE 15

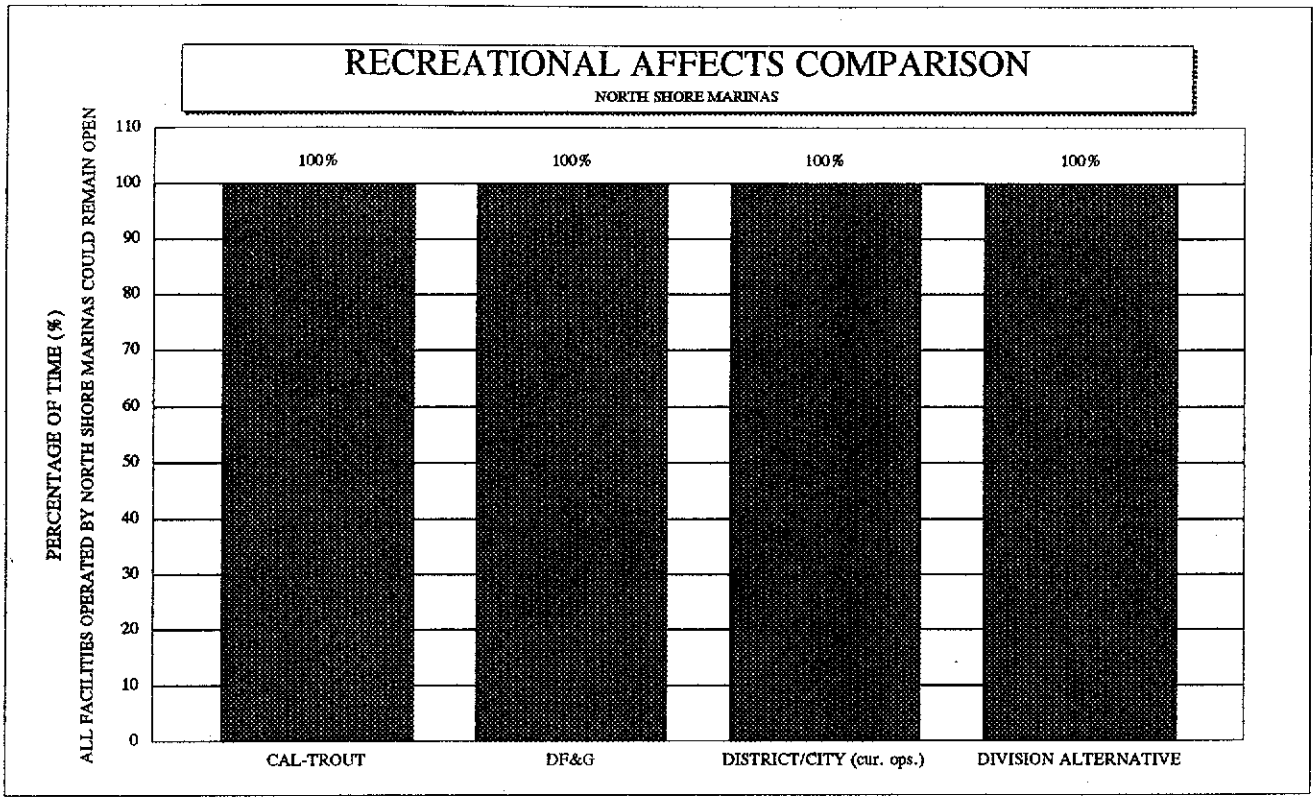
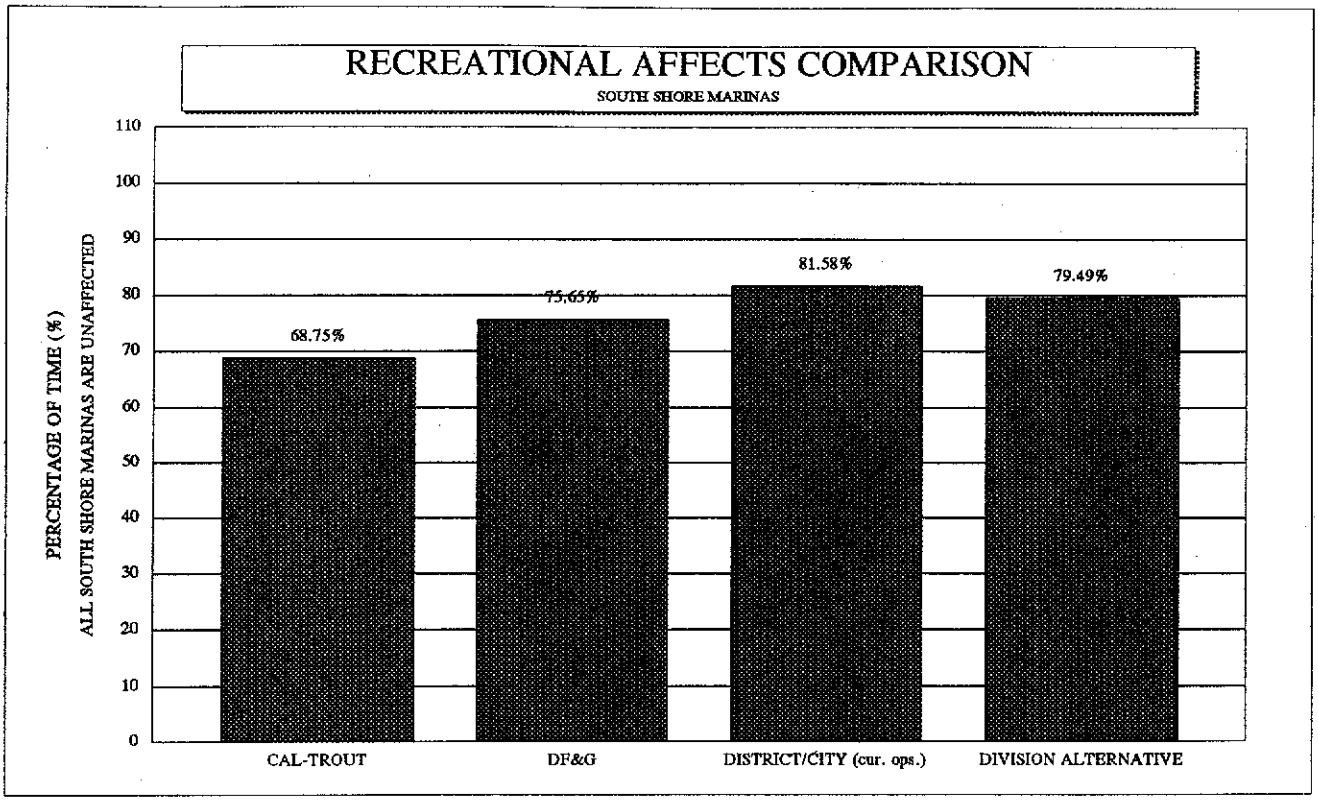

RECREATIONAL AFFECTS COMPARISON
NORTH SHORE MARINAS
PERCENTAGE OF TIME (%)
ALL FACILITIES OPERATED BY NORTH SHORE MARINAS COULD REMAIN OPEN
110
100
90
80
70
60
50
40
30
20
10
0
100%
100%
100%
100%
CAL-TROUT
DF&G
DISTRICT/CITY (cur. ops.)
DIVISION ALTERNATIVE

FIGURE 16


RECREATIONAL AFFECTS COMPARISON
SOUTH SHORE MARINAS
PERCENTAGE OF TIME (%)
ALL SOUTH SHORE MARINAS ARE UNAFFECTED
110
100
90
80
70
60
50
40
30
20
10
0
68.75%
75.65%
81.58%
79.49%
CAL-TROUT
DF&G
DISTRICT/CITY (cur. ops.)
DIVISION ALTERNATIVE

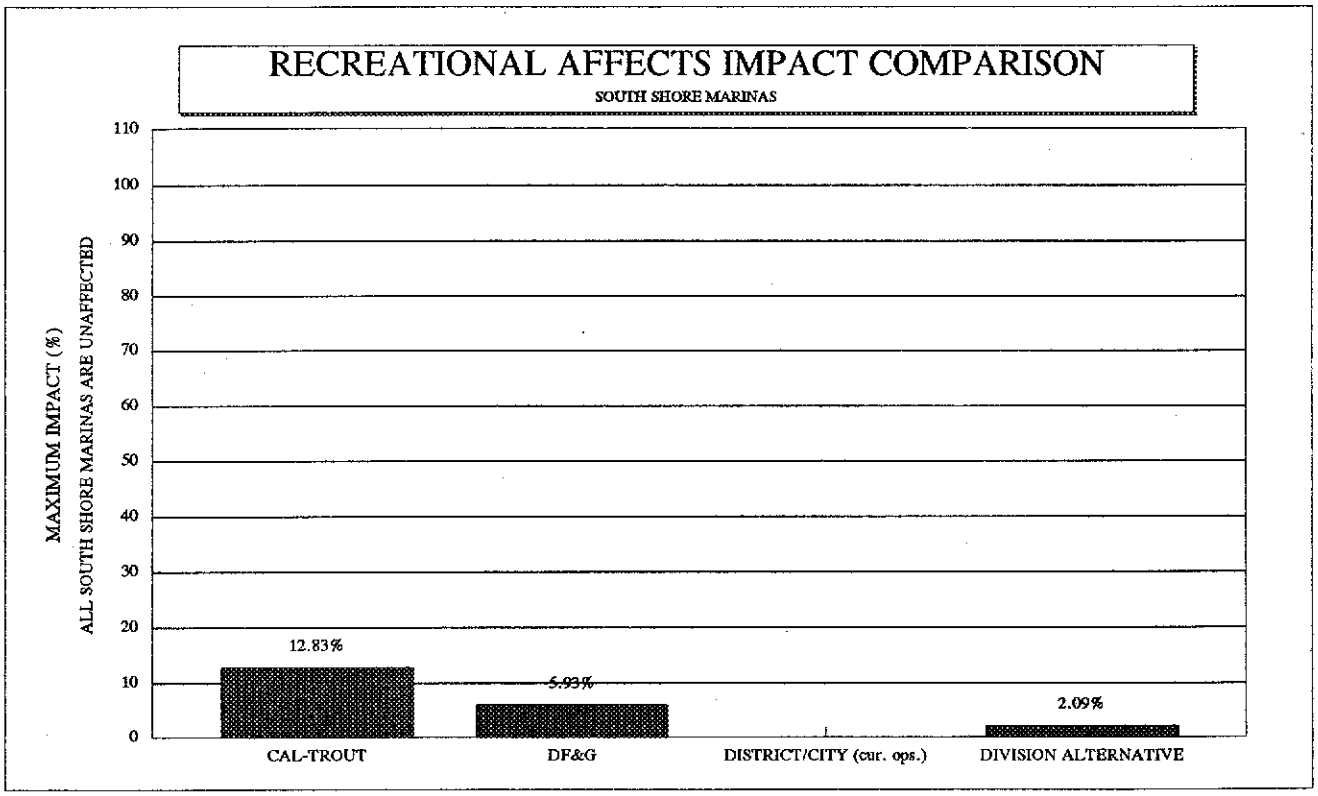
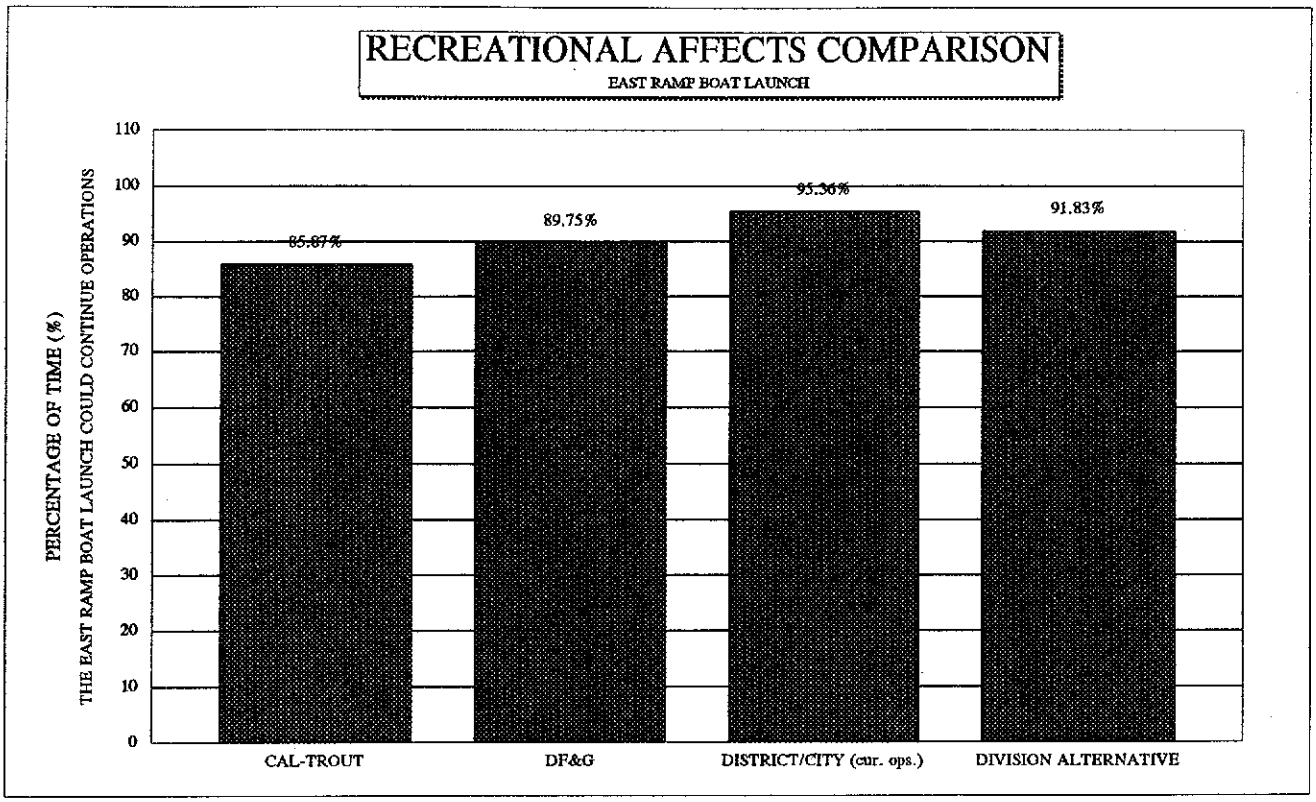

RECREATIONAL AFFECTS IMPACT COMPARISON
SOUTH SHORE MARINAS
MAXIMUM IMPACT (%)
ALL SOUTH SHORE MARINAS ARE UNAFFECTED
110
100
90
80
70
60
50
40
30
20
10
0
12.83%
5.93%
2.09%
CAL-TROUT
DF&G
DISTRICT/CITY (cur. ops.)
DIVISION ALTERNATIVE

FIGURE 17


RECREATIONAL AFFECTS COMPARISON
EAST RAMP BOAT LAUNCH
PERCENTAGE OF TIME (%)
THE EAST RAMP BOAT LAUNCH COULD CONTINUE OPERATIONS
110
100
90
80
70
60
50
40
30
20
10
0
85.87%
89.75%
95.36%
91.83%
CAL-TROUT
DF&G
DISTRICT/CITY (cur. ops.)
DIVISION ALTERNATIVE

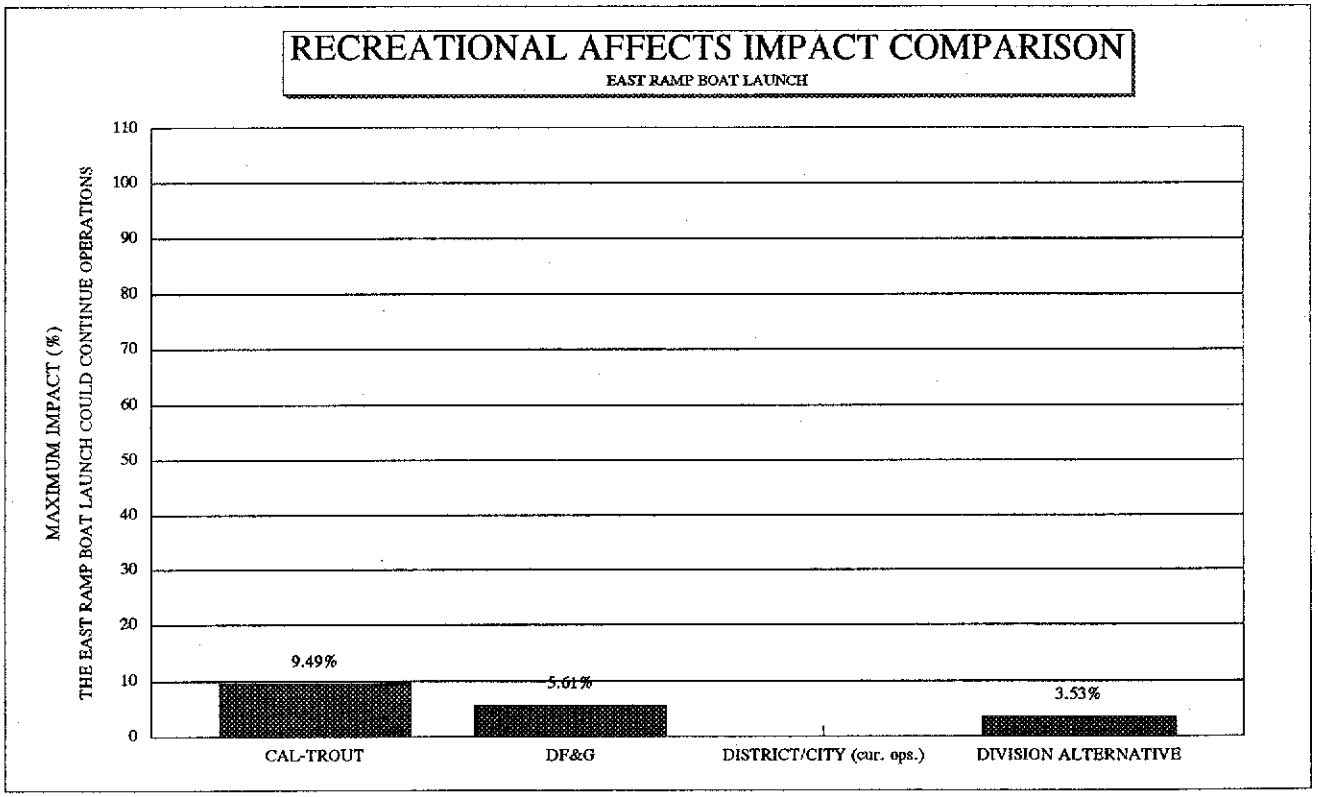
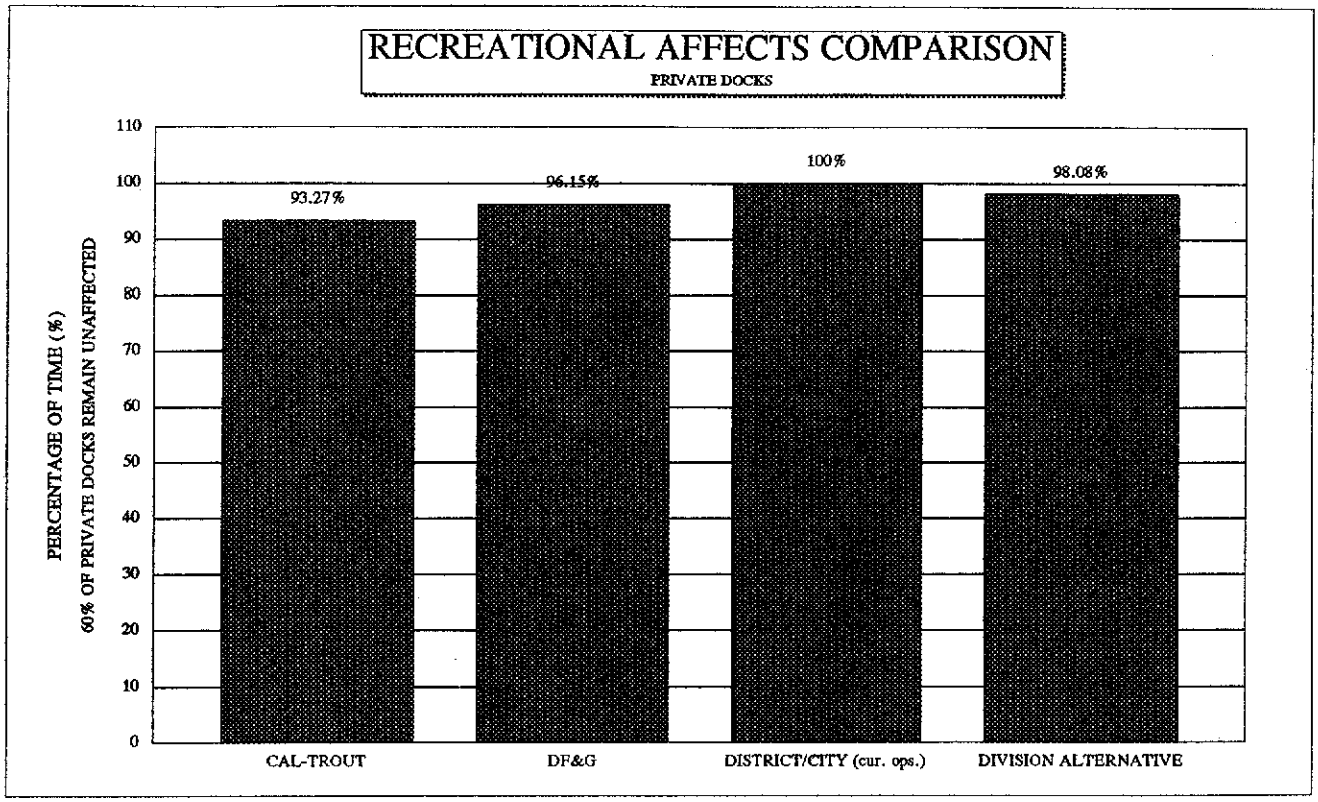

RECREATIONAL AFFECTS IMPACT COMPARISON
EAST RAMP BOAT LAUNCH
MAXIMUM IMPACT (%)
THE EAST RAMP BOAT LAUNCH COULD CONTINUE OPERATIONS
110
100
90
80
70
60
50
40
30
20
10
0
9.49%
5.61%
3.53%
CAL-TROUT
DF&G
DISTRICT/CITY (cur. ops.)
DIVISION ALTERNATIVE

FIGURE 18


RECREATIONAL AFFECTS COMPARISON
PRIVATE DOCKS
PERCENTAGE OF TIME (%)
60% OF PRIVATE DOCKS REMAIN UNAFFECTED
110
100
90
80
70
60
50
40
30
20
10
0
93.27%
96.15%
100%
98.08%
CAL-TROUT
DF&G
DISTRICT/CITY (cur. ops.)
DIVISION ALTERNATIVE

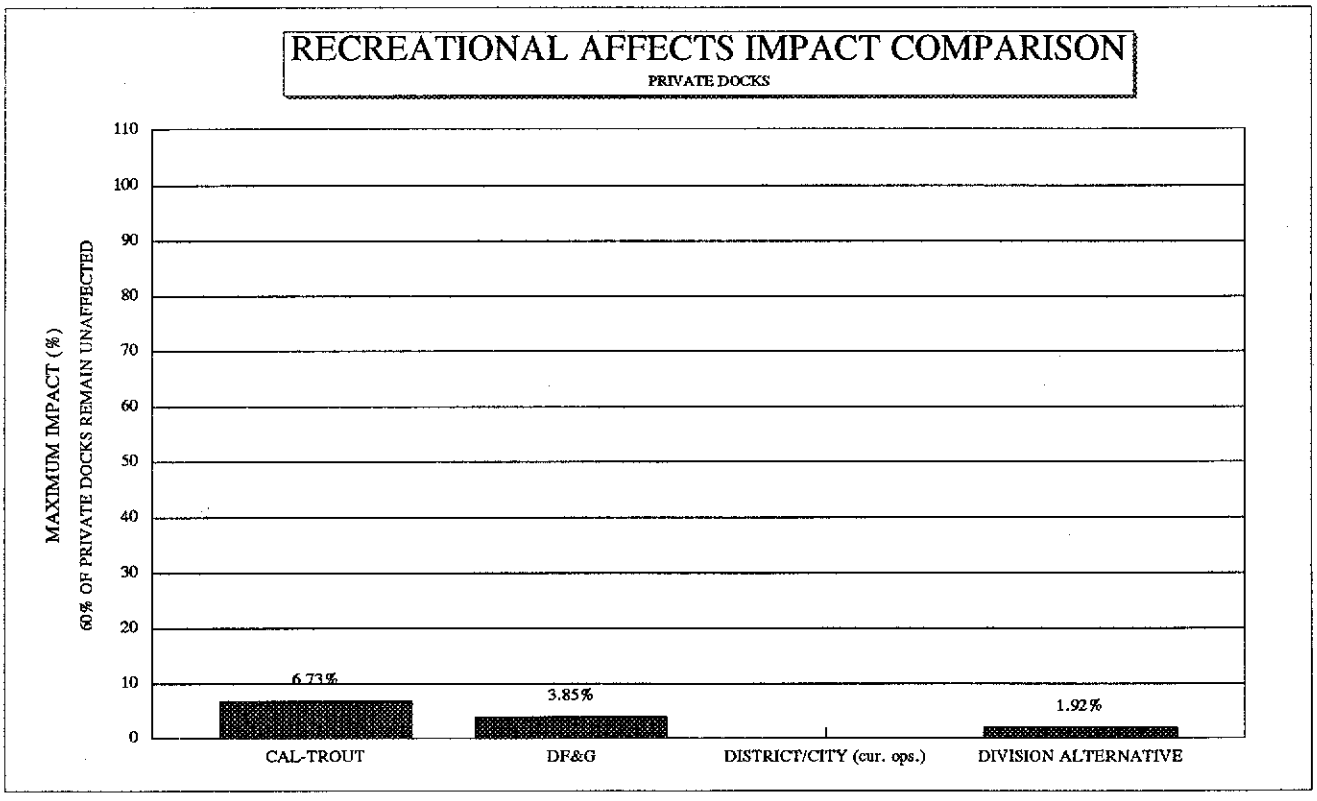
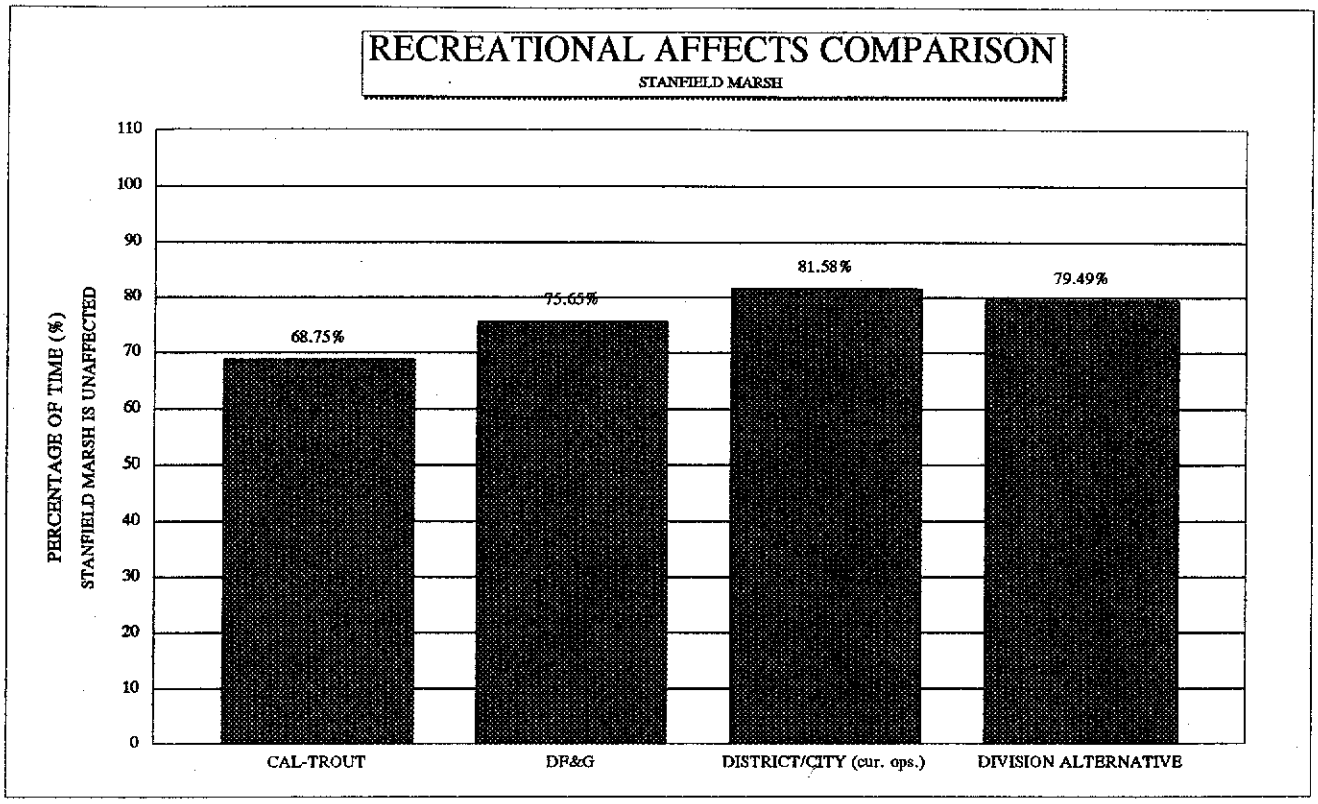

RECREATIONAL AFFECTS IMPACT COMPARISON
PRIVATE DOCKS
MAXIMUM IMPACT (%)
60% OF PRIVATE DOCKS REMAIN UNAFFECTED
110
100
90
80
70
60
50
40
30
20
10
0
6.73%
3.85%
1.92%
CAL-TROUT
DF&G
DISTRICT/CITY (cur. ops.)
DIVISION ALTERNATIVE

FIGURE 19


RECREATIONAL AFFECTS COMPARISON
STANFIELD MARSH
PERCENTAGE OF TIME (%)
STANFIELD MARSH IS UNAFFECTED
110
100
90
80
70
60
50
40
30
20
10
0
68.75%
75.65%
81.58%
79.49%
CAL-TROUT
DF&G
DISTRICT/CITY (cur. ops.)
DIVISION ALTERNATIVE

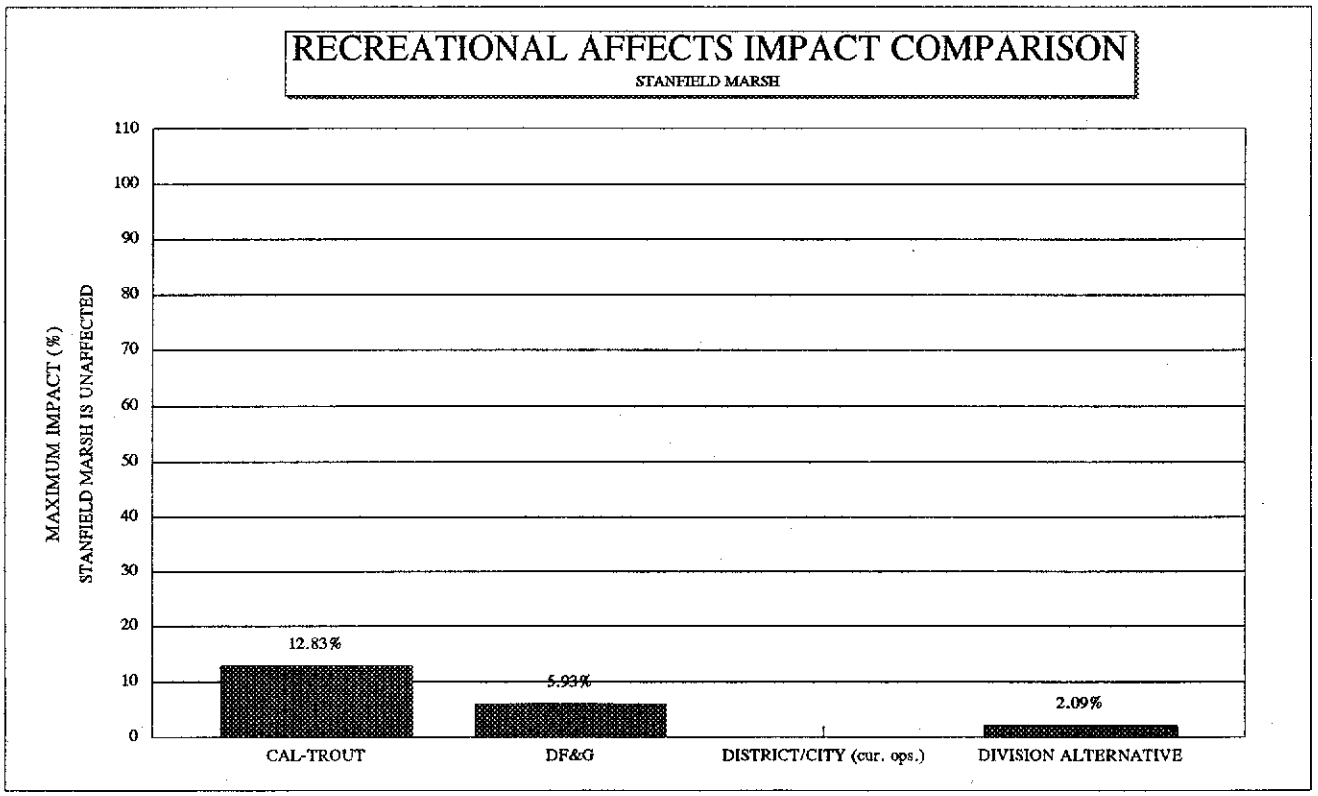
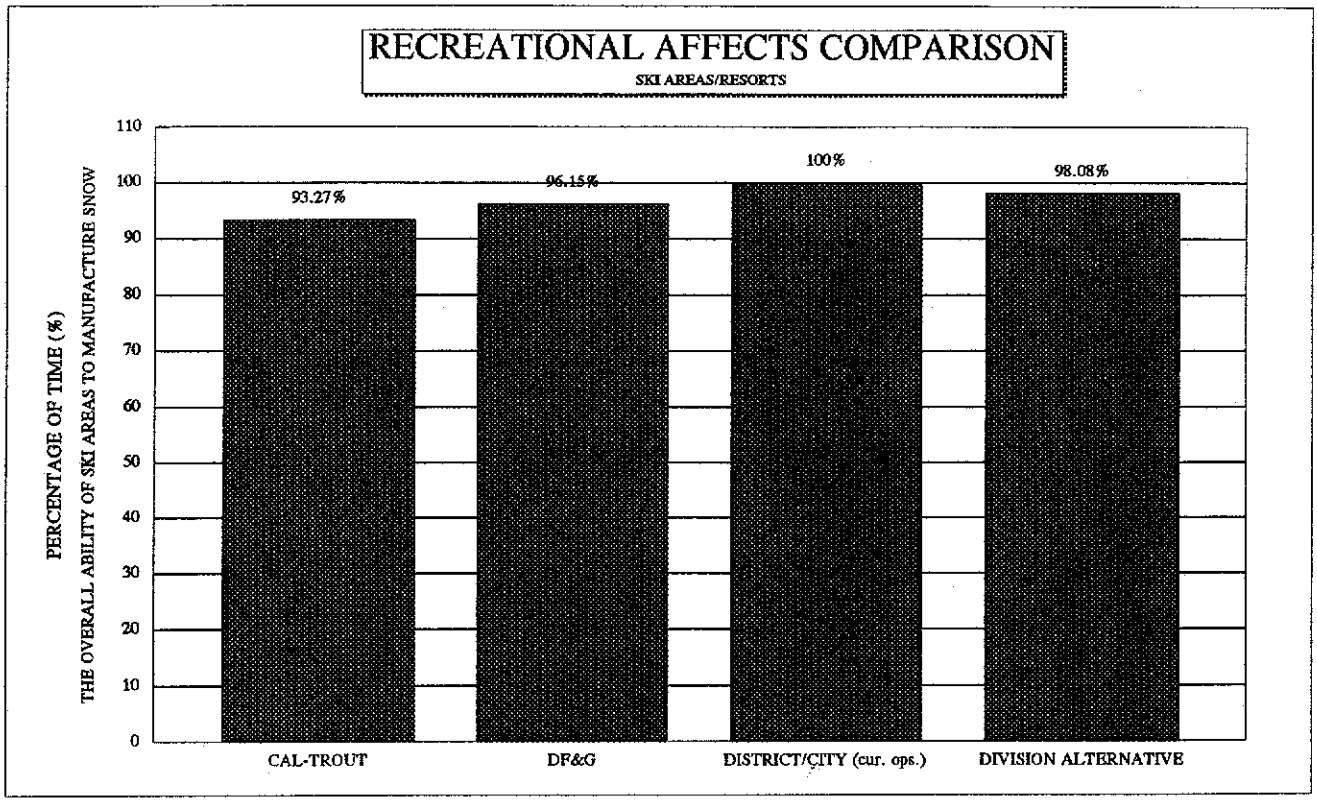
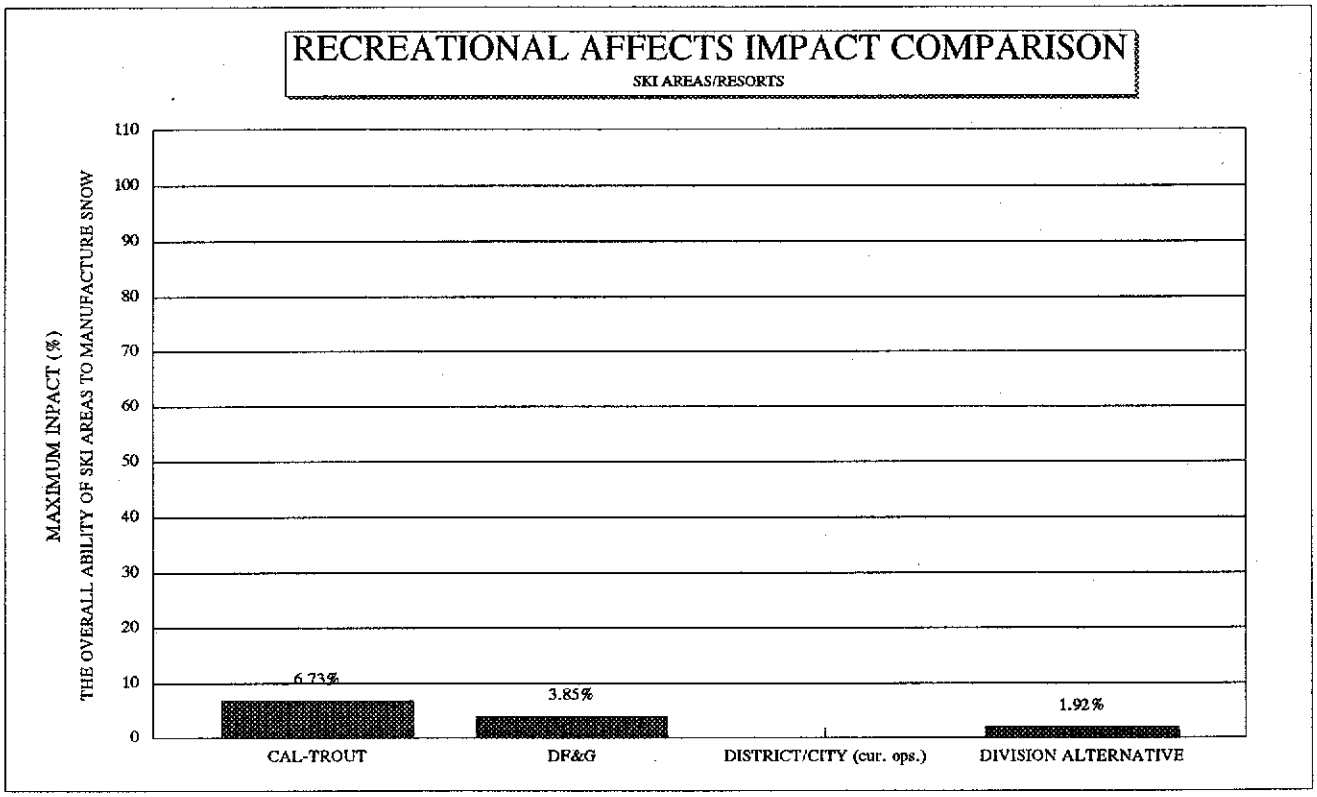

RECREATIONAL AFFECTS IMPACT COMPARISON
STANFIELD MARSH
MAXIMUM IMPACT (%)
STANFIELD MARSH IS UNAFFECTED
110
100
90
80
70
60
50
40
30
20
10
0
12.83%
5.93%
2.09%
CAL-TROUT
DF&G
DISTRICT/CITY (cur. ops.)
DIVISION ALTERNATIVE

FIGURE 20


RECREATIONAL AFFECTS COMPARISON
SKI AREAS/RESORTS
PERCENTAGE OF TIME (%)
THE OVERALL ABILITY OF SKI AREAS TO MANUFACTURE SNOW
110
100
90
80
70
60
50
40
30
20
10
0
93.27%
96.15%
100%
98.08%
CAL-TROUT
DF&G
DISTRICT/CITY (cur. ops.)
DIVISION ALTERNATIVE


RECREATIONAL AFFECTS IMPACT COMPARISON
SKI AREAS/RESORTS
MAXIMUM INPACT (%)
THE OVERALL ABILITY OF SKI AREAS TO MANUFACTURE SNOW
110
100
90
80
70
60
50
40
30
20
10
0
6.73%
3.85%
1.92%
CAL-TROUT
DF&G
DISTRICT/CITY (cur. ops.)
DIVISION ALTERNATIVE

ATTACHMENT

MODEL RUNS

CAL-TROUT: MAXIMUM FISH RELEASE OF 2 CFS YEAR ROUND

DATE YEAR	MONTH	PRECIPITATION (IN)	ACCUMULATED PRECIPITATION (water year oct.-sep) (IN)	CALCULATED UNIMPAIRED FLOW (AF)	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE (AF)	BBMWD DEMAND (Snowmkg) (AF)	MUTUAL DEMAND (AF)	MUTUAL RELEASE (AF)	ESTIMATED EVAP RATE (FT/MONTH)	EST. EVAP. LOSSES (AF)	ADJUSTED E.O.M. STORAGE (AF)	DERIVED SURFACE AREA (AC)	ADJUSTED STAFF GAGE ELEVATION (FT)	HISTORIC E.O.M. STORAGE (AF)	HISTORIC STAFF GAGE ELEVATION (FT)
1938	4		58.59							STARTING CAPACITY >		64433.0	2814.9	69.5		
1939	1	4.95	13.26	1,367	wet	122	125	0	0	0.07	197.0	65356.0	2831.9	69.8	65573	69.8
1939	2	4.11	17.37	1,496	wet	110	125	0	0	0.07	198.2	66418.7	2851.2	70.1	66840	70.3
1939	3	2.72	20.09	3,567	wet	122	0	0	0	0.17	484.7	69379.0	2904.3	71.1	69883	71.3
1939	4	3.21	23.30	3,516	wet	118	0	0	0	0.28	813.2	71963.8	2949.6	71.9	72167	72.0
1939	5	0.00	23.30	1,300	normal	122	0	0	0	0.40	1179.8	71962.0	2949.6	71.9	71405	71.7
1939	6	0.00	23.30	(178)	normal	118	0	0	0	0.49	1445.3	70220.7	2919.2	71.4	68616	70.8
1939	7	0.37	23.67	210	normal	122	0	0	0	0.58	1693.1	68615.5	2890.8	70.8	65319	69.8
1939	8	0.77	24.44	971	normal	122	0	373	373	0.60	1734.5	67357.1	2868.2	70.4	62117	68.7
1939	9	7.71	32.15	1,791	normal	118	0	0	0	0.47	1348.1	67682.0	2874.1	70.5	60853	68.2
1939	10	0.75	0.75	436	normal	122	0	0	0	0.36	1034.7	66961.4	2861.1	70.3	58958	67.6
1939	11	1.56	2.31	562	normal	118	125	0	0	0.25	715.3	66565.1	2853.9	70.2	57483	67.0
1939	12	1.02	3.33	496	normal	122	125	0	0	0.11	313.9	66500.2	2852.7	70.2	57483	67.0
1940	1	7.69	11.02	1,898	normal	122	125	0	0	0.08	228.2	67923.0	2878.4	70.6	59168	67.6
1940	2	6.99	18.01	1,928	normal	110	125	0	0	0.09	259.1	69356.9	2903.9	71.1	60853	68.2
1940	3	3.79	21.80	1,626	normal	122	0	0	0	0.21	609.8	70251.1	2919.7	71.4	61906	68.6
1940	4	1.63	23.43	1,374	normal	118	0	0	0	0.27	788.3	70718.8	2927.9	71.5	62538	68.8
1940	5	0.00	23.43	311	normal	122	0	0	0	0.43	1259.0	69648.7	2909.1	71.2	60853	68.2
1940	6	0.00	23.43	596	normal	118	0	288	288	0.54	1570.9	68267.8	2884.6	70.7	58536	67.4
1940	7	0.00	23.43	90	normal	122	0	729	729	0.56	1615.4	65891.5	2841.6	70.0	54956	66.1
1940	8	0.00	23.43	(179)	normal	122	0	686	686	0.60	1705.0	63199.5	2791.9	69.0	51035	64.6
1940	9	0.55	23.98	26	normal	118	0	874	874	0.47	1312.2	60921.3	2748.9	68.3	47649	63.2
1940	10	1.99	1.99	660	normal	122	0	664	0	0.39	1072.1	60387.2	2738.7	68.1	45656	62.4
1940	11	2.24	4.23	198	normal	118	125	453	0	0.23	629.9	59712.3	2725.7	67.8	45059	62.1
1940	12	14.64	18.87	4,068	normal	122	125	0	0	0.10	272.6	63260.7	2793.1	69.1	48644	63.6
1941	1	3.84	22.71	1,392	normal	122	125	0	0	0.08	223.4	64182.3	2810.2	69.4	49839	64.1
1941	2	13.67	36.38	4,105	normal	110	125	0	0	0.10	281.0	67771.3	2875.7	70.6	53692	65.6
1941	3	11.26	47.64	5,948	normal	122	0	0	0	0.18	517.6	73079.6	2968.9	72.3	59168	67.6
1941	4	7.01	54.65	6,107	normal	118	0	0	0	0.23	682.8	73320.0	2973.0	72.3	64644	69.5
1941	5	0.61	55.26	6,164	wet	122	0	0	0	0.41	1218.9	73320.0	2973.0	72.3	69630	71.2
1941	6	0.00	55.26	873	wet	118	0	0	0	0.47	1397.3	72677.7	2962.0	72.1	69123	71.0
1941	7	0.00	55.26	107	wet	122	0	0	0	0.56	1658.7	71004.0	2932.9	71.6	67602	70.5
1941	8	1.03	56.29	849	wet	122	0	0	0	0.55	1613.1	70117.9	2917.4	71.3	66334	70.1
1941	9	0.00	56.29	(101)	wet	118	0	0	0	0.45	1312.8	68586.1	2890.2	70.8	63802	69.2
1941	10	3.49	3.49	1,021	wet	122	0	0	0	0.34	982.7	68502.4	2888.7	70.8	63170	69.0
1941	11	1.48	4.97	594	wet	118	125	0	0	0.26	751.1	68102.3	2881.6	70.7	62959	69.0
1941	12	8.79	13.76	1,848	wet	122	125	0	0	0.09	259.3	69444.0	2905.5	71.1	64433	69.5
1942	1	0.29	14.05	224	wet	122	125	0	0	0.08	232.4	69188.5	2900.9	71.0	64433	69.5
1942	2	2.71	16.76	884	wet	110	125	0	0	0.09	261.1	69576.5	2907.8	71.2	65065	69.7
1942	3	2.73	19.49	1,524	wet	122	0	0	0	0.18	523.4	70455.1	2923.3	71.4	66080	70.0
1942	4	3.25	22.74	2,972	wet	118	0	0	0	0.24	701.6	72607.5	2960.7	72.1	68362	70.8
1942	5	0.00	22.74	956	normal	122	0	0	0	0.38	1125.1	72316.4	2955.7	72.0	67347	70.4
1942	6	0.00	22.74	(213)	normal	118	0	32	32	0.50	1477.9	70475.5	2923.7	71.4	64223	69.4
1942	7	0.87	23.61	665	normal	122	0	910	910	0.59	1725.0	68383.6	2886.6	70.8	60643	68.2
1942	8	0.12	23.73	432	normal	122	0	1112	1112	0.57	1645.4	65936.2	2842.5	70.0	56641	66.7
1942	9	0.00	23.73	116	normal	118	0	966	966	0.46	1307.5	63660.7	2800.5	69.2	53060	65.4
1942	10	0.47	0.47	399	normal	122	0	832	832	0.38	1064.2	62041.5	2770.2	68.6	50437	64.3

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1942	11	0.67	1.14	496	normal	118	125	476	476	0.38	1052.7	60765.8	2746.0	68.2	48843	63.7
1942	12	1.87	3.01	486	normal	122	125	359	0	0.27	741.4	60263.4	2736.3	68.0	48445	63.5
1943	1	19.71	22.72	3,783	normal	122	125	0	0	0.10	273.6	63525.7	2798.0	69.2	52030	65.0
1943	2	9.42	32.14	2,945	normal	110	125	0	0	0.08	223.8	66011.9	2843.8	70.0	54745	66.0
1943	3	4.83	36.97	6,428	normal	122	0	0	0	0.09	255.9	72062.0	2951.3	71.9	60643	68.2
1943	4	2.65	39.62	5,223	normal	118	0	0	0	0.20	590.3	73320.0	2973.0	72.3	65065	69.7
1943	5	0.00	39.62	969	wet	122	0	0	0	0.29	862.2	73304.8	2972.7	72.3	64854	69.6
1943	6	0.00	39.62	212	wet	118	0	0	0	0.42	1248.5	72150.3	2952.8	72.0	63381	69.1
1943	7	0.00	39.62	491	wet	122	0	0	0	0.46	1358.3	71161.0	2935.6	71.7	60432	68.1
1943	8	0.00	39.62	557	wet	122	0	191	191	0.57	1673.3	69731.7	2910.6	71.2	57062	66.9
1943	9	0.25	39.87	273	wet	118	0	159	159	0.59	1717.2	68010.4	2879.9	70.6	53902	65.7
1943	10	1.85	1.85	854	wet	122	0	0	0	0.52	1497.6	67244.9	2866.2	70.4	52428	65.1
1943	11	0.20	2.05	66	wet	118	125	0	0	0.39	1117.8	65950.0	2842.7	70.0	50835	64.5
1943	12	9.08	11.13	1,635	wet	122	125	0	0	0.25	710.7	66627.4	2855.0	70.2	52130	65.0
1944	1	2.48	13.61	475	wet	122	125	0	0	0.08	228.4	66627.0	2855.0	70.2	52428	65.1
1944	2	12.05	25.66	1,754	wet	110	125	0	0	0.07	199.9	67946.1	2878.8	70.6	53902	65.7
1944	3	2.38	28.04	2,758	wet	122	0	0	0	0.11	316.7	70265.4	2920.0	71.4	56220	66.6
1944	4	3.00	31.04	4,429	wet	118	0	0	0	0.17	496.4	73320.0	2973.0	72.3	60011	67.5
1944	5	0.20	31.24	1,496	normal	122	0	0	0	0.24	713.5	73320.0	2973.0	72.3	60432	68.1
1944	6	0.00	31.24	140	normal	118	0	0	0	0.38	1129.7	72212.3	2953.9	72.0	58958	67.6
1944	7	0.00	31.24	532	normal	122	0	265	265	0.44	1299.7	71057.5	2933.8	71.6	55798	66.4
1944	8	0.00	31.24	374	normal	122	0	965	965	0.54	1584.3	68760.3	2893.3	70.9	51632	64.8
1944	9	0.00	31.24	197	normal	118	0	894	894	0.58	1678.1	66267.1	2846.5	70.1	47649	63.2
1944	10	0.00	0.00	250	normal	122	0	718	718	0.50	1424.2	64252.9	2811.5	69.4	44661	61.9
1944	11	13.70	13.70	2,889	normal	118	125	0	0	0.38	1068.4	65830.5	2840.5	69.9	46851	62.9
1944	12	2.08	15.78	616	normal	122	125	0	0	0.20	568.1	65631.4	2836.9	69.9	47250	63.0
1945	1	2.51	18.29	568	normal	122	125	0	0	0.07	198.6	65753.8	2839.1	69.9	47649	63.2
1945	2	8.95	27.24	3,807	normal	110	125	0	0	0.09	255.5	69070.3	2898.8	71.0	51234	64.7
1945	3	12.54	39.78	3,471	normal	122	0	0	0	0.15	434.8	71984.5	2950.0	71.9	54324	65.8
1945	4	1.17	40.95	5,501	normal	118	0	0	0	0.25	737.5	73320.0	2973.0	72.3	59168	67.6
1945	5	0.11	41.06	1,530	wet	122	0	0	0	0.39	1159.5	73320.0	2973.0	72.3	59590	67.8
1945	6	0.00	41.06	392	wet	118	0	0	0	0.49	1456.8	72137.2	2952.6	72.0	58115	67.3
1945	7	0.14	41.20	697	wet	122	0	154	154	0.59	1742.0	70816.2	2929.6	71.5	55377	66.2
1945	8	2.21	43.41	1,149	wet	122	0	0	0	0.57	1669.9	70173.3	2918.3	71.3	53271	65.4
1945	9	0.66	44.07	461	wet	118	0	460	460	0.49	1430.0	68626.3	2891.0	70.8	50038	64.2
1945	10	1.78	1.78	916	wet	122	0	312	312	0.38	1098.6	68009.8	2879.9	70.6	47449	63.1
1945	11	0.82	2.60	142	wet	118	125	158	158	0.23	662.4	67088.4	2863.4	70.3	46253	62.6
1945	12	15.37	17.97	5,173	wet	122	125	0	0	0.09	257.7	71756.7	2946.0	71.8	50835	64.5
1946	1	0.73	18.70	574	wet	122	125	0	0	0.07	206.2	71877.4	2948.1	71.9	51234	64.7
1946	2	4.23	22.93	997	wet	110	125	0	0	0.08	235.8	72403.6	2957.2	72.0	52030	65.0
1946	3	11.31	34.24	2,304	wet	122	0	0	0	0.17	502.7	73320.0	2973.0	72.3	53902	65.7
1946	4	1.73	35.97	3,063	wet	118	0	0	0	0.28	832.4	73320.0	2973.0	72.3	56220	66.6
1946	5	0.31	36.28	364	normal	122	0	0	0	0.40	1189.2	72372.8	2956.7	72.0	55166	66.2
1946	6	0.00	36.28	154	normal	118	0	173	173	0.51	1507.9	70727.9	2928.1	71.5	52638	65.2
1946	7	3.26	39.54	1,057	normal	122	0	579	579	0.57	1669.0	69414.9	2905.0	71.1	49640	64.0
1946	8	0.07	39.61	142	normal	122	0	754	754	0.59	1713.9	66967.0	2861.2	70.3	46054	62.5
1946	9	1.76	41.37	338	normal	118	0	1159	1159	0.51	1459.2	64568.8	2817.4	69.5	42867	61.1
1946	10	6.68	6.68	488	normal	122	0	619	619	0.34	957.9	63357.9	2794.9	69.1	41473	60.5
1946	11	13.79	20.47	3,528	normal	118	125	0	0	0.20	559.0	66083.9	2845.2	70.0	44462	61.8
1946	12	5.19	25.66	1,829	normal	122	125	0	0	0.10	284.5	67381.4	2868.7	70.4	46054	62.5

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1947	1	2.72	28.38	565	normal	122	125	0	0	0.07	200.8	67498.6	2870.8	70.5	46452	62.7
1947	2	1.52	29.90	838	normal	110	125	0	0	0.10	287.1	67814.5	2876.4	70.6	47050	63.0
1947	3	1.36	31.26	1,106	normal	122	0	0	0	0.21	604.1	68194.4	2883.2	70.7	47649	63.2
1947	4	0.70	31.96	474	normal	118	0	0	0	0.27	778.5	67771.9	2875.7	70.6	47449	63.1
1947	5	0.03	31.99	116	normal	122	0	229	229	0.44	1265.3	66271.7	2848.6	70.1	45656	62.4
1947	6	0.04	32.03	(43)	normal	118	0	1004	1004	0.50	1424.3	63682.4	2801.0	69.2	43066	61.2
1947	7	0.00	32.03	(46)	normal	122	0	1720	1720	0.59	1652.6	60141.8	2734.0	68.0	39431	59.6
1947	8	1.19	33.22	336	normal	122	0	1644	0	0.57	1558.4	58797.4	2708.0	67.5	36639	58.2
1947	9	0.12	33.34	52	normal	118	0	1767	0	0.52	1408.1	57323.3	2679.0	67.0	33849	56.8
1947	10	0.59	0.59	139	normal	122	0	1484	0	0.39	1044.8	56295.5	2658.6	66.6	32104	55.9
1947	11	0.26	0.85	106	normal	118	125	1128	0	0.22	584.9	55573.6	2644.1	66.3	31232	55.4
1947	12	7.52	8.37	865	normal	122	125	576	0	0.08	211.5	55980.0	2652.3	66.5	31929	55.8
1948	1	0.12	8.49	161	normal	122	125	675	0	0.08	212.2	55681.8	2646.3	66.4	31929	55.8
1948	2	7.84	16.33	1,209	normal	110	125	0	0	0.08	211.7	56444.1	2661.6	66.6	32976	56.3
1948	3	7.48	23.81	1,181	normal	122	0	0	0	0.15	399.2	57103.9	2674.7	66.9	33849	56.8
1948	4	4.25	28.06	2,615	normal	118	0	0	0	0.25	668.7	58932.2	2710.6	67.5	35941	57.9
1948	5	0.15	28.21	493	normal	122	0	381	0	0.39	1057.1	58246.1	2697.2	67.3	35244	57.5
1948	6	0.13	28.34	192	normal	118	0	1268	0	0.49	1321.6	56998.5	2672.6	66.8	33151	56.4
1948	7	0.04	28.38	(69)	normal	122	0	1828	0	0.56	1496.7	55310.8	2638.8	66.2	29863	54.6
1948	8	0.00	28.38	(19)	normal	122	0	2014	0	0.57	1504.1	53665.7	2605.4	65.6	26462	52.6
1948	9	0.00	28.38	(50)	normal	118	0	1815	0	0.49	1276.6	52221.0	2575.5	65.0	23209	50.5
1948	10	1.67	1.67	524	normal	122	0	1507	0	0.37	952.9	51670.1	2563.9	64.8	21581	49.3
1948	11	0.00	1.67	59	normal	118	125	1214	0	0.23	589.7	50896.4	2547.6	64.5	20361	48.4
1948	12	7.79	9.46	656	normal	122	125	693	0	0.08	203.8	51101.6	2552.0	64.6	20620	48.6
1949	1	11.96	21.42	1,012	normal	122	125	0	0	0.03	76.6	51790.0	2566.4	64.9	21581	49.3
1949	2	4.13	25.55	992	normal	110	125	0	0	0.06	154.0	52393.1	2579.0	65.1	22470	50.0
1949	3	4.79	30.34	1,593	normal	122	0	0	0	0.15	386.9	53477.2	2601.5	65.5	23800	50.9
1949	4	0.02	30.36	4,025	normal	118	0	0	0	0.26	676.4	56707.8	2666.8	66.7	27350	53.1
1949	5	1.38	31.74	697	normal	122	0	0	0	0.37	986.7	56296.1	2658.6	66.6	27350	53.1
1949	6	0.00	31.74	172	normal	118	0	1197	0	0.51	1355.9	54994.2	2632.4	66.1	25279	51.8
1949	7	0.22	31.96	108	normal	122	0	1672	0	0.57	1500.5	53479.7	2601.5	65.5	22322	49.8
1949	8	0.01	31.97	110	normal	122	0	1741	0	0.57	1482.9	51984.8	2570.5	64.9	19583	47.8
1949	9	0.09	32.06	244	normal	118	0	1590	0	0.50	1285.3	50825.6	2546.1	64.5	17248	46.0
1949	10	1.07	1.07	95	normal	122	0	1272	0	0.35	891.1	49907.4	2526.6	64.1	16080	45.0
1949	11	4.28	5.35	564	normal	118	125	1002	0	0.26	656.9	49571.5	2519.4	64.0	15951	44.9
1949	12	7.29	12.64	812	normal	122	125	455	0	0.07	176.4	49960.2	2527.7	64.1	16800	45.4
1950	1	5.19	17.83	610	normal	122	125	0	0	0.06	151.7	50171.5	2532.2	64.2	17118	45.9
1950	2	4.14	21.97	1,973	normal	110	125	0	0	0.10	253.2	51656.3	2563.6	64.8	18933	47.3
1950	3	2.84	24.81	1,234	normal	122	0	99	0	0.20	512.7	52255.6	2576.2	65.1	19842	48.0
1950	4	3.10	27.91	851	normal	118	0	0	0	0.28	721.3	52267.2	2576.4	65.1	20231	48.3
1950	5	0.64	28.55	134	normal	122	0	859	0	0.39	1004.8	51274.4	2555.6	64.7	19453	47.7
1950	6	0.00	28.55	(45)	normal	118	0	1598	0	0.47	1201.1	49910.3	2526.6	64.1	17767	46.4
1950	7	1.18	29.73	231	normal	122	0	1859	0	0.57	1440.2	48579.1	2497.9	63.6	15692	44.6
1950	8	0.01	29.74	124	normal	122	0	456	0	0.57	1423.8	47157.3	2466.7	63.0	13048	42.1
1950	9	0.79	30.53	386	normal	118	0	456	0	0.46	1134.7	46290.6	2447.4	62.6	11500	40.5
1950	10	0.13	0.13	235	normal	122	0	456	0	0.40	979.0	45424.7	2428.0	62.3	10055	38.8
1950	11	2.39	2.52	378	normal	118	125	456	0	0.26	631.3	44928.4	2416.7	62.0	9849	38.6
1950	12	0.00	2.52	30	normal	122	125	456	0	0.11	265.8	44445.6	2405.7	61.8	9746	38.5
1951	1	4.93	7.45	602	normal	122	125	456	0	0.07	168.4	44632.2	2409.9	61.9	10262	39.1
1951	2	3.64	11.09	421	normal	110	125	456	0	0.09	216.9	44601.3	2409.2	61.9	10571	39.5

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1951	3	2.29	13.38	123	normal	122	0	456	0	0.18	433.7	44168.6	2399.3	61.7	10468	39.3
1951	4	4.45	17.83	105	normal	118	0	456	0	0.25	599.8	43555.8	2385.2	61.4	10262	39.1
1951	5	1.04	18.87	198	dry	122	0	456	0	0.39	930.2	42701.6	2365.3	61.1	9746	38.5
1951	6	0.00	18.87	(552)	dry	118	0	456	0	0.47	1111.7	40919.9	2323.0	60.3	7579	35.5
1951	7	3.06	21.93	243	dry	122	0	456	0	0.57	1324.1	39716.7	2293.9	59.7	5511	32.2
1951	8	0.12	22.05	(392)	dry	122	0	456	0	0.56	1284.6	37918.2	2249.4	58.8	2930	26.4
1951	9	1.30	23.35	135	dry	118	0	456	0	0.48	1079.7	36855.5	2222.5	58.3	1400	21.0
1951	10	2.03	2.03	427	dry	122	0	456	0	0.36	800.1	36360.4	2209.8	58.1	950	18.6
1951	11	3.87	5.90	293	dry	118	125	456	0	0.21	464.1	35946.3	2199.1	57.9	950	18.6
1951	12	13.35	19.25	1,216	dry	122	125	0	0	0.08	175.9	36739.4	2219.5	58.3	2125	23.9
1952	1	13.27	32.52	614	dry	122	125	0	0	0.05	111.0	36995.4	2226.0	58.4	2721	25.8
1952	2	1.91	34.43	654	dry	110	125	0	0	0.07	155.8	37258.6	2232.7	58.5	3347	27.5
1952	3	16.14	50.57	3,079	dry	122	0	0	0	0.13	290.3	39925.4	2299.0	59.8	6338	33.6
1952	4	3.12	53.69	12,887	dry	118	0	0	0	0.23	528.8	52165.6	2574.3	65.0	18933	47.3
1952	5	0.00	53.69	4,687	wet	122	0	0	0	0.42	1081.2	55649.4	2645.7	66.3	22914	50.3
1952	6	0.00	53.69	243	wet	118	0	0	0	0.48	1269.9	54504.5	2622.5	65.9	22322	49.8
1952	7	2.08	55.77	404	wet	122	0	0	0	0.55	1442.4	53344.1	2598.7	65.5	21730	49.4
1952	8	0.42	56.19	113	wet	122	0	601	0	0.58	1507.3	51827.8	2567.2	64.9	20361	48.4
1952	9	2.78	58.97	523	wet	118	0	455	0	0.48	1232.3	51000.5	2549.8	64.6	19583	47.8
1952	10	0.00	0.00	241	wet	122	0	833	0	0.40	1019.9	50099.6	2530.7	64.2	18674	47.1
1952	11	6.47	6.47	752	wet	118	125	272	0	0.19	480.8	50127.8	2531.3	64.2	19064	47.4
1952	12	5.17	11.64	1,055	wet	122	125	0	0	0.09	227.8	50708.0	2543.6	64.4	19972	48.1
1953	1	1.80	13.44	554	wet	122	125	0	0	0.10	254.4	50760.6	2544.7	64.5	20361	48.4
1953	2	1.79	15.23	442	wet	110	125	360	0	0.11	279.9	50687.7	2543.2	64.4	20620	48.6
1953	3	3.47	18.70	1,332	wet	122	0	73	0	0.22	559.5	51338.2	2556.9	64.7	21581	49.3
1953	4	1.85	20.55	828	wet	118	0	16	0	0.31	792.7	51255.5	2555.2	64.7	21879	49.5
1953	5	1.94	22.49	204	dry	122	0	410	0	0.39	996.5	50341.0	2535.8	64.3	21286	49.1
1953	6	0.00	22.49	173	dry	118	0	1282	0	0.52	1318.6	49077.4	2508.7	63.8	19842	48.0
1953	7	0.03	22.52	429	dry	122	0	456	0	0.64	1605.6	47778.8	2480.4	63.3	17767	46.4
1953	8	0.07	22.59	84	dry	122	0	456	0	0.61	1513.0	46227.8	2446.0	62.6	15302	44.3
1953	9	0.03	22.62	235	dry	118	0	456	0	0.52	1271.9	45072.8	2420.0	62.1	13151	42.2
1953	10	0.31	0.31	320	dry	122	0	456	0	0.38	919.6	44351.2	2403.5	61.8	11809	40.8
1953	11	1.56	1.87	133	dry	118	125	456	0	0.25	600.9	43640.4	2387.1	61.5	11397	40.4
1953	12	0.45	2.32	130	dry	122	125	456	0	0.09	214.8	43308.5	2379.4	61.3	11397	40.4
1954	1	16.52	18.84	1,538	dry	122	125	0	0	0.07	166.6	44433.0	2405.4	61.8	12841	41.9
1954	2	5.89	24.73	1,047	dry	110	125	0	0	0.10	240.5	45004.4	2418.4	62.1	13746	42.8
1954	3	14.35	39.08	2,730	dry	122	0	0	0	0.18	435.3	47177.1	2467.1	63.0	16210	45.1
1954	4	0.23	39.31	6,286	dry	118	0	0	0	0.29	715.5	52629.6	2584.0	65.2	22026	49.6
1954	5	0.23	39.54	1,089	wet	122	0	0	0	0.46	1188.6	52408.0	2579.4	65.1	22322	49.8
1954	6	0.54	40.08	233	wet	118	0	390	0	0.57	1470.2	51052.8	2550.9	64.6	21484	49.3
1954	7	0.92	41.00	395	wet	122	0	1231	0	0.63	1607.1	49718.7	2522.5	64.0	19842	48.0
1954	8	0.41	41.41	438	wet	122	0	1493	0	0.60	1513.5	48521.2	2496.6	63.6	18156	46.7
1954	9	0.60	42.01	389	wet	118	0	456	0	0.50	1248.3	47543.9	2475.2	63.2	16470	45.3
1954	10	0.00	0.00	(71)	wet	122	0	456	0	0.40	990.1	46360.8	2449.0	62.7	14914	43.9
1954	11	4.32	4.32	477	wet	118	125	456	0	0.25	612.2	45982.5	2440.5	62.5	14914	43.9
1954	12	3.38	7.70	782	wet	122	125	0	0	0.09	219.6	46297.9	2447.6	62.6	15562	44.5
1955	1	9.64	17.34	349	wet	122	125	0	0	0.06	146.9	46253.0	2446.6	62.6	15821	44.8
1955	2	1.45	18.79	395	wet	110	125	0	0	0.09	220.2	46192.8	2445.2	62.6	16080	45.0
1955	3	0.61	19.40	2,110	wet	122	0	0	0	0.19	464.6	47716.2	2479.0	63.2	17896	46.5
1955	4	1.47	20.87	743	wet	118	0	342	0	0.26	644.5	47696.7	2478.6	63.2	18156	46.7

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1955	5	4.01	24.88	1,301	dry	122	0	221	0	0.41	1016.2	47859.5	2482.2	63.3	18804	47.2
1955	6	0.00	24.88	235	dry	118	0	456	0	0.53	1315.6	46660.9	2455.7	62.8	17507	46.2
1955	7	1.95	26.83	37	dry	122	0	456	0	0.57	1399.7	45176.2	2422.3	62.2	15562	44.5
1955	8	2.77	29.60	806	dry	122	0	456	0	0.61	1477.6	44382.6	2404.2	61.8	14135	43.2
1955	9	0.00	29.60	(42)	dry	118	0	456	0	0.51	1226.2	42996.4	2372.2	61.2	11706	40.7
1955	10	0.00	0.00	307	dry	122	0	456	0	0.40	948.9	42232.5	2354.3	60.9	10365	39.2
1955	11	3.21	3.21	335	dry	118	125	456	0	0.24	565.0	41759.5	2343.1	60.6	10055	38.8
1955	12	2.58	5.79	123	dry	122	125	456	0	0.10	234.3	41401.2	2334.5	60.5	10055	38.8
1956	1	12.19	17.98	1,353	dry	122	125	0	0	0.09	210.1	42297.1	2355.8	60.9	11294	40.3
1956	2	2.07	20.05	1,254	dry	110	125	0	0	0.09	212.0	43104.1	2374.7	61.2	12428	41.5
1956	3	0.00	20.05	(349)	dry	122	0	456	0	0.20	474.9	42158.1	2352.5	60.8	11809	40.8
1956	4	4.09	24.14	437	dry	118	0	456	0	0.25	588.1	41889.0	2346.1	60.7	11913	41.0
1956	5	1.67	25.81	482	normal	122	0	456	0	0.40	936.5	41310.6	2332.4	60.4	11603	40.6
1956	6	0.00	25.81	74	normal	118	0	456	0	0.53	1236.2	40030.4	2301.5	59.8	9849	38.6
1956	7	1.21	27.02	62	normal	122	0	456	0	0.58	1334.9	38635.5	2267.3	59.2	7682	35.7
1956	8	0.00	27.02	176	normal	122	0	456	0	0.56	1269.7	37419.8	2236.8	58.6	5511	32.2
1956	9	0.00	27.02	(399)	normal	118	0	456	0	0.52	1163.1	35739.7	2193.8	57.8	2840	26.1
1956	10	0.25	0.25	265	normal	122	0	456	0	0.35	767.8	35114.9	2177.5	57.4	1300	20.5
1956	11	0.00	0.25	340	normal	118	125	456	0	0.21	457.3	34754.6	2168.0	57.3	1000	18.9
1956	12	0.59	0.84	10	normal	122	125	456	0	0.09	195.1	34322.5	2156.5	57.0	592	16.0
1957	1	16.88	19.72	2,368	normal	122	125	0	0	0.06	129.4	36314.1	2208.6	58.1	2930	26.4
1957	2	3.99	23.71	2,897	normal	110	125	0	0	0.10	220.9	38755.3	2270.2	59.2	5766	32.6
1957	3	2.38	26.09	546	normal	122	0	0	0	0.19	431.3	38747.9	2270.0	59.2	6148	33.3
1957	4	2.91	29.00	615	normal	118	0	456	0	0.25	567.5	38677.4	2268.3	59.2	6530	33.9
1957	5	3.60	32.60	403	normal	122	0	363	0	0.35	793.9	38164.5	2255.5	59.0	6594	34.0
1957	6	0.28	32.88	116	normal	118	0	456	0	0.54	1218.0	36946.5	2224.8	58.4	6084	33.2
1957	7	0.43	33.31	40	normal	122	0	456	0	0.59	1312.6	35551.9	2188.9	57.7	4875	31.0
1957	8	0.27	33.58	(962)	normal	122	0	456	0	0.58	1269.5	33198.3	2126.4	56.4	2452	25.0
1957	9	0.00	33.58	411	normal	118	0	456	0	0.46	978.1	32513.2	2107.7	56.1	1946	23.2
1957	10	4.51	4.51	203	normal	122	0	456	0	0.33	695.5	31898.7	2090.7	55.7	1789	22.6
1957	11	3.12	7.63	84	normal	118	125	456	0	0.21	439.1	31300.6	2074.1	55.4	1809	22.7
1957	12	9.11	16.74	1,302	normal	122	125	178	0	0.09	186.7	32169.0	2098.2	55.9	3079	26.8
1958	1	3.10	19.84	620	normal	122	125	456	0	0.08	167.9	32374.1	2103.9	56.0	3664	28.3
1958	2	12.62	32.46	3,059	normal	110	125	0	0	0.09	189.3	35008.8	2174.7	57.4	6657	34.1
1958	3	12.92	45.38	5,314	normal	122	0	0	0	0.14	304.5	39896.3	2298.3	59.8	11809	40.8
1958	4	11.73	57.11	8,765	normal	118	0	0	0	0.23	528.6	48014.7	2485.6	63.4	20231	48.3
1958	5	1.00	58.11	4,736	wet	122	0	0	0	0.42	1043.9	51584.8	2562.1	64.8	24243	51.2
1958	6	0.00	58.11	263	wet	118	0	0	0	0.48	1229.8	50499.9	2539.2	64.4	23652	50.8
1958	7	0.04	58.15	(52)	wet	122	0	0	0	0.56	1422.0	48904.0	2504.9	63.7	22618	50.1
1958	8	0.78	58.93	595	wet	122	0	0	0	0.60	1503.0	47874.0	2482.5	63.3	22174	49.7
1958	9	1.81	60.74	99	wet	118	0	47	0	0.49	1216.4	46638.6	2455.2	62.8	21434	49.2
1958	10	0.16	0.16	(156)	wet	122	0	201	0	0.39	957.5	45403.1	2427.5	62.3	20620	48.6
1958	11	1.85	2.01	872	wet	118	125	177	0	0.21	509.8	45522.3	2430.2	62.3	21139	49.0
1958	12	0.00	2.01	(351)	wet	122	125	374	0	0.10	243.0	44681.3	2411.1	61.9	20620	48.6
1959	1	3.82	5.83	263	wet	122	125	456	0	0.08	192.9	44504.4	2407.0	61.9	20749	48.7
1959	2	17.55	23.38	1,857	wet	110	125	0	0	0.08	192.6	45933.8	2439.4	62.5	22470	50.0
1959	3	0.00	23.38	1,253	wet	122	0	24	0	0.21	512.3	46552.6	2453.3	62.7	23356	50.6
1959	4	0.59	23.97	84	wet	118	0	457	0	0.30	736.0	45782.6	2436.0	62.4	22914	50.3
1959	5	0.17	24.14	(250)	normal	122	0	456	0	0.40	974.4	44436.2	2405.5	61.8	21730	49.4
1959	6	0.00	24.14	86	normal	118	0	456	0	0.56	1347.1	43057.1	2373.6	61.2	19842	48.0

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1959	7	0.20	24.34	609	normal	122	0	456	0	0.64	1519.1	42025.0	2349.4	60.8	17377	46.1
1959	8	0.55	24.89	80	normal	122	0	456	0	0.60	1409.6	40573.4	2314.7	60.1	15044	44.1
1959	9	1.15	26.04	(57)	normal	118	0	456	0	0.48	1111.0	39287.3	2283.4	59.5	13151	42.2
1959	10	0.46	0.46	488	normal	122	0	456	0	0.40	913.3	38740.0	2269.8	59.2	12222	41.3
1959	11	1.70	2.16	597	normal	118	125	456	0	0.25	567.5	38526.5	2264.6	59.1	12016	41.1
1959	12	0.74	2.90	141	normal	122	125	456	0	0.10	226.5	38194.1	2256.3	59.0	11809	40.8
1960	1	6.17	9.07	597	normal	122	125	0	0	0.06	135.4	38408.7	2261.6	59.1	12325	41.4
1960	2	5.50	14.57	729	normal	110	125	0	0	0.08	180.9	38721.8	2269.4	59.2	12944	42.0
1960	3	2.12	16.69	1,882	normal	122	0	219	0	0.21	476.6	40005.2	2300.9	59.8	14525	43.6
1960	4	5.14	21.83	734	normal	118	0	327	0	0.28	644.3	39977.0	2300.2	59.8	14655	43.7
1960	5	0.32	22.15	1,123	normal	122	0	406	0	0.41	943.1	40034.9	2301.6	59.8	15173	44.2
1960	6	0.00	22.15	(204)	normal	118	0	456	0	0.56	1288.9	38423.9	2262.0	59.1	13358	42.4
1960	7	0.05	22.20	610	normal	122	0	456	0	0.59	1334.6	37577.4	2240.8	58.7	11706	40.7
1960	8	0.03	22.23	(410)	normal	122	0	456	0	0.59	1322.1	35723.3	2193.3	57.8	9023	37.5
1960	9	0.28	22.51	(392)	normal	118	0	456	0	0.51	1118.6	34094.7	2150.5	56.9	6721	34.2
1960	10	1.86	1.86	1,012	normal	122	0	456	0	0.36	774.2	34210.5	2153.6	57.0	6402	33.7
1960	11	6.30	8.16	469	normal	118	125	456	0	0.23	495.3	33941.2	2146.4	56.8	6338	33.6
1960	12	0.66	8.82	(32)	normal	122	125	456	0	0.08	171.7	33490.5	2134.3	56.6	6084	33.2
1961	1	2.63	11.45	400	normal	122	125	456	0	0.08	170.7	33472.8	2133.8	56.6	6084	33.2
1961	2	0.04	11.49	(180)	normal	110	125	456	0	0.11	234.7	32823.1	2116.2	56.2	5447	32.1
1961	3	2.97	14.46	71	normal	122	0	456	0	0.19	402.1	32370.0	2103.8	56.0	5257	31.7
1961	4	0.00	14.46	183	normal	118	0	456	0	0.27	566.0	31867.0	2089.9	55.7	5193	31.6
1961	5	0.23	14.69	(96)	dry	122	0	456	0	0.39	815.0	30833.9	2060.9	55.2	4683	30.6
1961	6	0.00	14.69	(603)	dry	118	0	456	0	0.54	1112.9	29000.0	2008.2	54.1	3258	27.3
1961	7	0.12	14.81	75	dry	122	0	456	0	0.60	1204.9	27748.1	1971.0	53.4	2333	24.6
1961	8	1.88	16.69	146	dry	122	0	456	0	0.59	1162.9	26609.2	1936.4	52.7	1617	21.9
1961	9	0.00	16.69	77	dry	118	0	456	0	0.47	910.1	25658.1	1906.8	52.1	1000	18.9
1961	10	0.00	0.00	215	dry	122	0	456	0	0.35	667.4	25083.7	1888.6	51.7	693	16.8
1961	11	5.14	5.14	87	dry	118	125	456	0	0.21	396.6	24531.1	1870.9	51.3	540	15.6
1961	12	5.27	10.41	173	dry	122	125	0	0	0.09	168.4	24288.7	1863.1	51.2	700	16.9
1962	1	6.92	17.33	214	dry	122	125	456	0	0.08	149.0	24106.7	1857.2	51.1	900	18.2
1962	2	16.36	33.69	2,790	dry	110	125	0	0	0.08	148.6	26513.1	1933.4	52.6	3864	28.3
1962	3	5.32	39.01	2,845	dry	122	0	0	0	0.15	290.0	28946.1	2006.6	54.1	6402	33.7
1962	4	0.00	39.01	4,291	dry	118	0	0	0	0.30	602.0	32517.1	2107.8	56.1	10365	39.2
1962	5	2.03	41.04	1,099	wet	122	0	0	0	0.38	801.0	32693.1	2112.6	56.2	10984	39.9
1962	6	0.17	41.21	13	wet	118	0	456	0	0.50	1056.3	31531.8	2080.5	55.5	10365	39.2
1962	7	0.53	41.74	(97)	wet	122	0	456	0	0.58	1206.7	30106.1	2040.2	54.7	9436	38.1
1962	8	0.40	42.14	(88)	wet	122	0	456	0	0.61	1244.5	28651.6	1997.9	53.9	7888	36.0
1962	9	0.27	42.41	249	wet	118	0	456	0	0.50	999.0	27783.6	1972.1	53.4	7102	34.8
1962	10	0.56	0.56	61	wet	122	0	456	0	0.38	749.4	26973.2	1947.6	52.9	6594	34.0
1962	11	0.19	0.75	178	wet	118	125	456	0	0.25	486.9	26421.3	1930.6	52.5	6338	33.6
1962	12	0.21	0.96	135	wet	122	125	456	0	0.10	193.1	26116.3	1921.1	52.4	6338	33.6
1963	1	0.77	1.73	188	wet	122	125	456	0	0.07	134.5	25922.8	1915.1	52.2	6465	33.8
1963	2	0.00	1.73	308	wet	110	125	456	0	0.12	229.8	25766.0	1910.2	52.1	6657	34.1
1963	3	6.16	7.89	306	wet	122	0	456	0	0.18	343.8	25606.2	1905.2	52.0	6784	34.3
1963	4	4.88	12.77	630	wet	118	0	456	0	0.24	457.2	25660.9	1906.9	52.1	7166	34.9
1963	5	0.00	12.77	327	dry	122	0	456	0	0.43	820.0	25045.9	1887.4	51.7	7039	34.7
1963	6	0.00	12.77	(135)	dry	118	0	456	0	0.48	906.0	23887.0	1850.0	50.9	6338	33.6
1963	7	0.00	12.77	(698)	dry	122	0	456	0	0.58	1073.0	21994.0	1786.5	49.6	4557	30.3
1963	8	1.48	14.25	552	dry	122	0	456	0	0.58	1036.2	21387.8	1765.5	49.2	3109	26.9

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1963	9	5.15	19.40	390	dry	118	0	456	0	0.50	882.7	20777.1	1744.0	48.7	2870	26.2
1963	10	1.41	1.41	85	dry	122	0	456	0	0.36	662.7	20077.4	1718.9	48.2	2572	25.3
1963	11	5.08	6.49	265	dry	118	125	456	0	0.23	395.3	19704.0	1705.3	47.9	2751	25.9
1963	12	1.06	7.55	98	dry	122	125	456	0	0.10	170.5	19384.5	1693.6	47.7	2812	26.1
1964	1	4.80	12.35	297	dry	122	125	456	0	0.07	118.5	19315.9	1691.0	47.6	3079	26.8
1964	2	0.51	12.86	7	dry	110	125	456	0	0.09	152.2	18935.7	1676.9	47.3	3049	26.7
1964	3	5.40	18.26	950	dry	122	0	456	0	0.17	285.1	19478.7	1697.0	47.8	3920	28.9
1964	4	3.36	21.62	2,465	dry	118	0	0	0	0.24	407.3	21418.4	1766.6	49.2	6212	33.4
1964	5	2.52	24.14	955	normal	122	0	338	0	0.40	706.6	21544.8	1771.0	49.3	6784	34.3
1964	6	0.00	24.14	295	normal	118	0	456	0	0.49	867.8	20854.0	1746.7	48.8	6594	34.0
1964	7	1.45	25.59	(155)	normal	122	0	456	0	0.61	1066.5	19511.5	1698.2	47.8	5447	32.1
1964	8	0.26	25.85	(117)	normal	122	0	456	0	0.60	1018.9	18253.6	1651.0	46.8	4302	29.8
1964	9	0.23	26.08	(519)	normal	118	0	456	0	0.49	809.0	16807.6	1594.4	45.6	2930	26.4
1964	10	0.62	0.62	143	normal	122	0	456	0	0.42	669.6	16158.9	1568.1	45.1	2423	24.9
1964	11	4.58	5.20	195	normal	118	125	456	0	0.21	329.3	15781.6	1552.5	44.7	2542	25.3
1964	12	0.00	5.20	277	normal	122	125	0	0	0.10	155.2	15656.4	1547.2	44.6	2781	26.0
1965	1	1.88	7.08	330	normal	122	125	456	0	0.08	123.8	15615.6	1545.5	44.6	3079	26.8
1965	2	1.46	8.54	221	normal	110	125	456	0	0.10	154.6	15447.0	1538.5	44.4	3258	27.3
1965	3	2.06	10.60	229	normal	122	0	456	0	0.18	276.9	15277.1	1531.3	44.3	3410	27.7
1965	4	15.73	26.33	4,359	normal	118	0	0	0	0.25	382.8	19135.3	1684.3	47.5	7579	35.5
1965	5	0.00	26.33	1,279	normal	122	0	0	0	0.41	690.6	19601.7	1701.6	47.9	8404	36.7
1965	6	0.04	26.37	(84)	normal	118	0	456	0	0.48	816.7	18583.0	1663.6	47.1	7785	35.8
1965	7	1.37	27.74	122	normal	122	0	456	0	0.59	981.5	17601.5	1625.8	46.3	7269	35.1
1965	8	1.83	29.57	470	normal	122	0	456	0	0.60	975.5	16974.0	1601.0	45.8	6784	34.3
1965	9	0.64	30.21	246	normal	118	0	456	0	0.46	736.5	16365.5	1576.5	45.2	6402	33.7
1965	10	0.13	0.13	98	normal	122	0	456	0	0.42	662.1	15679.4	1548.2	44.6	6020	33.1
1965	11	26.87	27.00	8,418	normal	118	125	0	0	0.26	402.5	23451.8	1835.7	50.6	14135	43.2
1965	12	12.03	39.03	4,288	normal	122	125	0	0	0.09	165.2	27327.6	1958.3	53.1	18286	46.8
1966	1	1.89	40.92	1,410	normal	122	125	0	0	0.07	137.1	28353.5	1989.1	53.7	19583	47.8
1966	2	3.67	44.59	1,429	normal	110	125	0	0	0.08	159.1	29388.4	2019.5	54.3	20879	48.8
1966	3	1.70	46.29	3,153	normal	122	0	0	0	0.22	444.3	31975.1	2092.9	55.8	23652	50.8
1966	4	0.14	46.43	828	normal	118	0	0	0	0.30	627.9	32057.3	2095.1	55.8	23948	51.0
1966	5	0.08	46.51	353	wet	122	0	0	0	0.45	942.8	31345.4	2075.3	55.4	23504	50.7
1966	6	0.00	46.51	(54)	wet	118	0	164	0	0.56	1162.2	30011.3	2037.5	54.7	22470	50.0
1966	7	0.00	46.51	431	wet	122	0	456	0	0.68	1385.5	28934.8	2006.3	54.1	21730	49.4
1966	8	0.33	46.84	86	wet	122	0	456	0	0.63	1263.9	27634.8	1967.6	53.3	20749	48.7
1966	9	0.44	47.28	(44)	wet	118	0	456	0	0.52	1023.2	26449.7	1931.5	52.6	19842	48.0
1966	10	0.50	0.50	267	wet	122	0	456	0	0.40	772.6	25822.1	1912.0	52.2	19455	47.7
1966	11	3.13	3.63	568	wet	118	125	456	0	0.27	516.2	25630.8	1906.0	52.1	19583	47.8
1966	12	22.40	26.03	13,071	wet	122	125	0	0	0.11	209.7	38245.2	2257.5	59.0	32453	56.0
1967	1	9.24	35.27	881	wet	122	125	0	0	0.09	203.2	38676.0	2268.3	59.2	33151	56.4
1967	2	0.00	35.27	1,273	wet	110	125	0	0	0.11	249.5	39464.5	2287.7	59.6	34198	57.0
1967	3	7.30	42.57	2,533	wet	122	0	0	0	0.21	480.4	41395.1	2334.4	60.5	36290	58.0
1967	4	13.64	56.21	4,319	wet	118	0	0	0	0.22	513.6	45082.5	2420.2	62.1	40128	59.9
1967	5	0.67	56.88	4,496	wet	122	0	0	0	0.42	1016.5	48440.0	2494.9	63.5	43664	61.5
1967	6	0.06	56.94	1,187	wet	118	0	0	0	0.51	1272.4	48236.7	2490.4	63.4	43664	61.5
1967	7	0.05	56.99	709	wet	122	0	0	0	0.65	1618.8	47204.9	2467.8	63.0	42867	61.1
1967	8	1.49	58.48	899	wet	122	0	0	0	0.65	1604.0	46377.8	2449.4	62.7	42270	60.9
1967	9	1.70	60.18	546	wet	118	0	0	0	0.50	1224.7	45581.1	2431.5	62.3	41672	60.6
1967	10	0.00	0.00	242	wet	122	0	0	0	0.40	972.6	44728.6	2412.1	62.0	40875	60.2

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1967	11	7.88	7.88	1,106	wet	118	125	0	0	0.27	651.3	44940.3	2417.0	62.1	41274	60.4
1967	12	2.92	10.80	1,378	wet	122	125	0	0	0.08	193.4	45877.9	2438.2	62.5	42469	61.0
1968	1	3.04	13.84	682	wet	122	125	0	0	0.08	195.1	46117.9	2443.6	62.6	42967	61.2
1968	2	2.46	16.30	1,551	wet	110	125	0	0	0.11	268.8	47165.1	2468.9	63.0	44262	61.8
1968	3	3.14	19.44	1,617	wet	122	0	0	0	0.20	493.4	48166.7	2488.9	63.4	45408	62.3
1968	4	2.18	21.62	1,240	wet	118	0	0	0	0.25	622.2	48666.5	2499.8	63.6	46054	62.5
1968	5	0.18	21.80	377	normal	122	0	0	0	0.41	1024.9	47896.6	2483.0	63.3	45457	62.3
1968	6	0.00	21.80	215	normal	118	0	374	0	0.54	1340.8	46652.7	2455.5	62.8	44262	61.8
1968	7	0.56	22.36	640	normal	122	0	963	0	0.60	1473.3	45697.4	2434.1	62.4	43266	61.3
1968	8	0.41	22.77	396	normal	122	0	1014	0	0.56	1363.1	44608.3	2409.4	61.9	42270	60.9
1968	9	0.00	22.77	(201)	normal	118	0	1427	0	0.50	1204.7	43084.6	2374.2	61.2	40476	60.1
1968	10	0.28	0.28	171	normal	122	0	1121	0	0.39	926.0	42207.7	2353.7	60.8	39606	59.6
1968	11	0.00	0.28	558	normal	118	125	775	0	0.25	588.4	41934.3	2347.2	60.7	39606	59.6
1968	12	3.62	3.90	375	normal	122	125	756	0	0.09	211.2	41851.0	2345.2	60.7	39780	59.7
1969	1	40.80	44.70	20,533	normal	122	125	0	0	0.09	211.1	61926.0	2768.0	68.6	60011	67.9
1969	2	29.65	74.35	8,441	normal	110	125	0	0	0.08	221.4	69910.5	2913.7	71.3	62959	69.0
1969	3	3.85	78.20	6,910	normal	122	0	0	0	0.16	466.2	73320.0	2973.0	72.3	66080	70.0
1969	4	2.26	80.46	12,646	normal	118	0	0	0	0.27	802.7	73320.0	2973.0	72.3	72167	72.0
1969	5	1.64	82.10	7,390	wet	122	0	0	0	0.42	1248.7	73320.0	2973.0	72.3	72167	72.0
1969	6	1.00	83.10	1,969	wet	118	0	0	0	0.51	1516.2	73320.0	2973.0	72.3	71913	71.9
1969	7	2.67	85.77	1,910	wet	122	0	0	0	0.60	1783.8	73320.0	2973.0	72.3	71660	71.8
1969	8	0.03	85.80	(364)	wet	122	0	0	0	0.63	1873.0	70961.0	2932.2	71.6	69123	71.0
1969	9	0.75	86.55	(81)	wet	118	0	0	0	0.52	1524.7	69237.3	2901.8	71.0	65065	69.7
1969	10	0.11	0.11	375	wet	122	0	0	0	0.36	1044.7	68445.6	2887.7	70.8	63381	69.1
1969	11	2.93	3.04	951	wet	118	125	0	0	0.25	721.9	68431.7	2887.5	70.8	63381	69.1
1969	12	0.24	3.28	547	wet	122	125	0	0	0.10	288.7	68443.0	2887.7	70.8	63381	69.1
1970	1	2.79	6.07	585	wet	122	125	0	0	0.09	259.9	68521.1	2889.1	70.8	63381	69.1
1970	2	0.94	7.01	561	wet	110	125	0	0	0.10	288.9	68558.2	2889.7	70.8	63381	69.1
1970	3	8.38	15.39	2,232	wet	122	0	0	0	0.19	549.1	70119.1	2917.4	71.3	65065	69.7
1970	4	2.77	18.16	675	wet	118	0	0	0	0.24	700.2	69975.9	2914.9	71.3	65065	69.7
1970	5	0.10	18.26	361	dry	122	0	0	0	0.42	1224.2	68990.7	2897.4	71.0	64223	69.4
1970	6	0.05	18.31	412	dry	118	0	563	563	0.52	1506.7	67215.0	2865.7	70.4	63170	69.0
1970	7	0.19	18.50	629	dry	122	0	1206	1206	0.61	1748.0	64768.0	2821.1	69.6	62117	68.7
1970	8	1.65	20.15	1,676	dry	122	0	1156	1156	0.61	1720.8	63445.1	2796.5	69.1	62117	68.7
1970	9	0.00	20.15	48	dry	118	0	916	916	0.48	1342.3	61116.8	2752.7	68.3	60853	68.2
1970	10	0.02	0.02	(208)	dry	122	0	945	0	0.39	1073.5	59713.3	2725.7	67.8	59590	67.8
1970	11	16.26	16.28	1,332	dry	118	125	0	0	0.26	708.7	60093.6	2733.1	68.0	60221	68.0
1970	12	0.00	16.28	1,509	dry	122	125	0	0	0.09	246.0	61109.6	2752.5	68.3	61485	68.5
1971	1	1.52	17.80	640	dry	122	125	0	0	0.08	220.2	61282.4	2755.8	68.4	61906	68.6
1971	2	1.48	19.28	485	dry	110	125	0	0	0.10	275.6	61256.8	2755.3	68.4	62117	68.7
1971	3	0.85	20.13	788	dry	122	0	0	0	0.21	578.6	61344.2	2757.0	68.4	62327	68.7
1971	4	1.92	22.05	533	dry	118	0	0	0	0.27	744.4	61014.8	2750.7	68.3	62117	68.7
1971	5	2.43	24.48	621	normal	122	0	193	0	0.38	1045.3	60468.5	2740.3	68.1	61696	68.5
1971	6	0.00	24.48	337	normal	118	0	828	0	0.51	1397.5	59290.0	2717.5	67.7	60643	68.2
1971	7	0.52	25.00	569	normal	122	0	1319	0	0.60	1630.5	58106.5	2694.5	67.3	59590	67.8
1971	8	0.55	25.55	347	normal	122	0	1442	0	0.62	1670.6	56660.9	2665.9	66.7	58115	67.3
1971	9	0.00	25.55	(71)	normal	118	0	1470	0	0.51	1359.6	55112.3	2634.8	66.1	56641	66.7
1971	10	3.85	3.85	514	normal	122	0	1269	0	0.35	922.2	54582.1	2624.1	65.9	56220	66.6
1971	11	1.29	5.14	628	normal	118	125	857	0	0.24	629.8	54337.3	2619.1	65.9	56220	66.6
1971	12	22.32	27.46	6,112	normal	122	125	0	0	0.08	209.5	59992.8	2731.1	67.9	62117	68.7

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1972	1	0.00	27.46	220	normal	122	125	0	0	0.08	218.5	59747.3	2726.4	67.8	62117	68.7
1972	2	0.18	27.64	91	normal	110	125	181	0	0.11	299.9	59303.4	2717.8	67.7	61906	68.6
1972	3	0.00	27.64	420	normal	122	0	484	0	0.23	625.1	58976.3	2711.5	67.6	61696	68.5
1972	4	1.01	28.65	(79)	normal	118	0	637	0	0.28	759.2	58020.1	2692.8	67.2	60853	68.2
1972	5	0.73	29.38	480	normal	122	0	1019	0	0.41	1104.0	57274.1	2678.1	66.9	60221	68.0
1972	6	0.46	29.84	320	normal	118	0	1214	0	0.51	1365.8	56110.3	2654.9	66.5	59168	67.6
1972	7	0.00	29.84	(71)	normal	122	0	1855	0	0.63	1672.6	54244.7	2617.2	65.8	57062	66.9
1972	8	0.35	30.19	529	normal	122	0	1983	0	0.59	1544.2	53107.5	2593.9	65.4	54535	65.9
1972	9	0.00	30.19	212	normal	118	0	1985	0	0.49	1271.0	51930.5	2569.4	64.9	52428	65.1
1972	10	1.29	1.29	106	normal	122	0	1334	0	0.36	925.0	50989.5	2549.6	64.6	51234	64.7
1972	11	6.56	7.85	1,150	normal	118	125	518	0	0.22	560.9	51335.6	2556.9	64.7	51831	64.9
1972	12	0.00	7.85	1,457	normal	122	125	0	0	0.09	230.1	52315.5	2577.4	65.1	53060	65.4
1973	1	6.43	14.28	1,443	normal	122	125	0	0	0.07	180.4	53331.1	2598.5	65.5	54324	65.8
1973	2	12.10	26.38	1,496	normal	110	125	0	0	0.09	233.9	54358.2	2619.5	65.9	55587	66.3
1973	3	11.14	37.52	3,344	normal	122	0	0	0	0.15	392.9	57187.3	2676.4	66.9	58536	67.4
1973	4	0.00	37.52	6,185	normal	118	0	0	0	0.26	695.9	62558.4	2779.9	68.8	64012	69.3
1973	5	0.53	38.05	4,327	normal	122	0	0	0	0.44	1223.2	65540.3	2835.2	69.8	67094	70.3
1973	6	0.00	38.05	17	normal	118	0	0	0	0.54	1531.0	63908.3	2805.1	69.3	65573	69.8
1973	7	0.00	38.05	152	normal	122	0	186	186	0.61	1711.1	62041.1	2770.2	68.6	64012	69.3
1973	8	0.59	38.64	544	normal	122	0	276	276	0.58	1606.7	60580.4	2742.4	68.1	62538	68.8
1973	9	0.00	38.64	262	normal	118	0	400	0	0.49	1343.8	59360.6	2719.3	67.7	60853	68.2
1973	10	0.00	0.00	(16)	normal	122	0	417	0	0.40	1087.7	58154.9	2695.4	67.3	59168	67.6
1973	11	4.42	4.42	925	normal	118	125	0	0	0.25	673.9	58163.0	2695.6	67.3	59168	67.6
1973	12	0.93	5.35	85	normal	122	125	0	0	0.11	296.5	57704.5	2686.6	67.1	58958	67.6
1974	1	12.55	17.90	2,322	normal	122	125	0	0	0.08	214.9	59564.6	2722.9	67.8	61064	68.3
1974	2	0.05	17.95	905	normal	110	125	0	0	0.10	272.3	59962.3	2730.5	67.9	61696	68.5
1974	3	7.53	25.48	2,658	normal	122	0	0	0	0.20	546.1	61952.2	2768.5	68.6	63802	69.2
1974	4	1.15	26.63	1,413	normal	118	0	0	0	0.28	775.2	62472.0	2778.3	68.8	64433	69.5
1974	5	0.39	27.02	537	normal	122	0	0	0	0.43	1194.7	61692.4	2763.6	68.5	63591	69.2
1974	6	0.00	27.02	150	normal	118	0	891	891	0.55	1520.0	59313.4	2718.0	67.7	61485	68.5
1974	7	0.29	27.31	356	normal	122	0	1208	0	0.59	1603.6	57943.8	2691.3	67.2	59168	67.6
1974	8	1.25	28.56	410	normal	122	0	1329	0	0.58	1560.9	56670.8	2666.1	66.7	56851	66.8
1974	9	0.70	29.26	678	normal	118	0	1348	0	0.53	1413.0	55817.8	2649.1	66.4	54956	66.1
1974	10	3.12	3.12	855	normal	122	0	1234	0	0.41	1086.1	55464.7	2641.9	66.3	53692	65.6
1974	11	0.72	3.84	138	normal	118	125	724	0	0.24	634.1	54725.6	2627.0	66.0	52850	65.3
1974	12	5.88	9.72	1,139	normal	122	125	0	0	0.09	236.4	55381.2	2640.3	66.2	53692	65.6
1975	1	1.74	11.46	627	normal	122	125	663	0	0.08	211.2	55550.0	2643.7	66.3	54114	65.8
1975	2	3.13	14.59	653	normal	110	125	0	0	0.09	237.9	55730.0	2647.3	66.4	54535	65.9
1975	3	8.03	22.62	860	normal	122	0	0	0	0.17	450.0	56018.0	2653.1	66.5	54956	66.1
1975	4	4.99	27.61	2,019	normal	118	0	0	0	0.29	769.4	57149.6	2675.6	66.9	56220	66.6
1975	5	0.40	28.01	1,257	normal	122	0	0	0	0.40	1070.2	57214.4	2676.9	66.9	56430	66.6
1975	6	0.00	28.01	(33)	normal	118	0	1041	0	0.51	1365.2	55698.2	2646.6	66.4	54324	65.8
1975	7	0.00	28.01	465	normal	122	0	1789	0	0.61	1614.5	54426.7	2620.9	65.9	51632	64.8
1975	8	0.00	28.01	469	normal	122	0	2393	0	0.58	1520.1	53253.6	2596.9	65.4	48843	63.7
1975	9	0.43	28.44	649	normal	118	0	2133	0	0.51	1324.4	52460.2	2580.4	65.1	46452	62.7
1975	10	0.79	0.79	544	normal	122	0	1569	0	0.39	1006.4	51875.8	2568.2	64.9	44661	61.9
1975	11	3.10	3.89	613	normal	118	125	1317	0	0.26	667.7	51578.0	2562.0	64.8	43664	61.5
1975	12	0.55	4.44	358	normal	122	125	884	0	0.10	256.2	51432.8	2558.9	64.7	43664	61.5
1976	1	0.00	4.44	(359)	normal	122	125	456	0	0.09	230.3	50596.5	2541.3	64.4	42270	60.9
1976	2	12.04	16.48	953	normal	110	125	0	0	0.10	254.1	51060.4	2551.1	64.6	42867	61.1

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1976	3	5.26	21.74	2,811	normal	122	0	0	0	0.18	459.2	53290.2	2597.6	65.5	45258	62.2
1976	4	2.60	24.34	814	normal	118	0	146	0	0.26	675.4	53310.8	2598.1	65.5	45457	62.3
1976	5	0.25	24.59	179	normal	122	0	806	0	0.43	1117.2	52250.7	2576.1	65.1	44262	61.8
1976	6	0.19	24.78	51	normal	118	0	1620	0	0.51	1313.8	50869.9	2547.1	64.5	41872	60.7
1976	7	0.77	25.55	442	normal	122	0	456	0	0.59	1502.8	49687.1	2521.8	64.0	39606	59.6
1976	8	0.00	25.55	583	normal	122	0	456	0	0.56	1412.2	48735.9	2501.3	63.6	37162	58.5
1976	9	8.76	34.31	2,002	normal	118	0	0	0	0.48	1200.6	49419.3	2516.1	63.9	37686	58.7
1976	10	0.60	0.60	113	normal	122	0	456	0	0.39	981.3	48429.0	2494.6	63.5	36813	58.3
1976	11	0.15	0.75	581	normal	118	125	456	0	0.26	648.6	48118.4	2487.8	63.4	36639	58.2
1976	12	1.30	2.05	141	normal	122	125	456	0	0.10	248.8	47763.6	2480.1	63.2	36290	58.0
1977	1	6.80	8.85	724	normal	122	125	0	0	0.08	198.4	48042.2	2486.2	63.4	36559	58.2
1977	2	0.53	9.38	316	normal	110	125	0	0	0.11	273.5	47849.7	2482.0	63.3	36559	58.2
1977	3	3.08	12.46	371	normal	122	0	0	0	0.17	421.9	47676.8	2478.2	63.2	36559	58.2
1977	4	0.00	12.46	632	normal	118	0	0	0	0.29	718.7	47472.1	2473.7	63.1	36559	58.2
1977	5	5.67	18.13	1,131	dry	122	0	0	0	0.35	865.8	47615.3	2476.8	63.2	36925	58.4
1977	6	0.00	18.13	654	dry	118	0	456	0	0.53	1312.7	46838.6	2459.6	62.9	36421	58.1
1977	7	0.00	18.13	0	dry	122	0	456	0	0.71	1734.0	44982.6	2417.9	62.1	34771	57.3
1977	8	2.87	21.00	305	dry	122	0	456	0	0.81	1474.9	43690.7	2388.3	61.5	33547	56.6
1977	9	0.00	21.00	81	dry	118	0	456	0	0.50	1194.2	42459.5	2359.6	61.0	32357	56.0
1977	10	0.00	0.00	303	dry	122	0	456	0	0.41	967.4	41673.1	2341.0	60.6	31682	55.6
1977	11	0.39	0.39	0	dry	118	125	456	0	0.33	772.5	40657.5	2316.7	60.1	31024	55.3
1977	12	12.61	13.00	2,595	dry	122	125	0	0	0.12	278.0	42727.5	2365.9	61.1	33377	56.5
1978	1	12.30	25.30	4,107	dry	122	125	0	0	0.09	212.9	46374.6	2449.3	62.7	37292	58.5
1978	2	13.49	38.79	7,160	dry	110	125	0	0	0.10	244.9	53054.7	2592.8	65.4	44222	61.7
1978	3	20.10	58.89	13,358	dry	122	0	0	0	0.21	544.5	65746.2	2839.0	69.9	57044	66.9
1978	4	8.06	66.95	7,827	dry	118	0	0	0	0.25	709.7	72745.4	2963.1	72.2	64180	69.4
1978	5	0.61	67.56	3,529	wet	122	0	0	0	0.41	1214.9	73320.0	2973.0	72.3	66544	70.2
1978	6	0.00	67.56	726	wet	118	0	0	0	0.75	2229.7	71698.3	2945.0	71.8	65126	69.7
1978	7	0.06	67.62	336	wet	122	0	0	0	0.60	1767.0	70145.3	2917.8	71.3	63766	69.2
1978	8	0.00	67.62	0	wet	122	0	0	0	0.64	1879.1	68144.2	2882.3	70.7	61962	68.6
1978	9	2.05	69.67	809	wet	118	0	0	0	0.50	1441.2	67394.0	2868.9	70.4	61380	68.4
1978	10	0.31	0.31	0	wet	122	0	0	0	0.50	1434.4	65837.5	2840.7	69.9	60000	67.9
1978	11	7.61	7.92	1,264	wet	118	125	0	0	0.23	653.4	66205.2	2847.4	70.1	60457	68.1
1978	12	3.83	11.75	1,998	wet	122	125	0	0	0.09	256.3	67699.9	2874.4	70.5	61380	68.4
1979	1	9.98	21.73	2,527	wet	122	125	0	0	0.07	201.2	69778.7	2911.4	71.2	63009	69.0
1979	2	9.23	30.96	2,652	wet	110	125	0	0	0.09	262.0	71933.7	2949.1	71.9	62244	68.7
1979	3	10.30	41.26	5,752	wet	122	0	0	0	0.18	530.8	73320.0	2973.0	72.3	69915	71.3
1979	4	0.00	41.26	7,409	wet	118	0	0	0	0.27	802.7	73320.0	2973.0	72.3	72236	72.0
1979	5	0.50	41.76	4,092	wet	122	0	0	0	0.42	1248.7	73320.0	2973.0	72.3	72113	72.0
1979	6	0.00	41.76	92	wet	118	0	0	0	0.53	1575.7	71718.3	2945.4	71.8	70648	71.5
1979	7	1.23	42.99	745	wet	122	0	0	0	0.59	1737.8	70603.6	2925.9	71.5	69671	71.2
1979	8	0.15	43.14	640	wet	122	0	0	0	0.58	1682.4	69439.2	2905.4	71.1	67986	70.6
1979	9	0.23	43.37	974	wet	118	0	0	0	0.52	1510.8	68784.4	2893.8	70.9	66308	70.1
1979	10	2.31	2.31	257	wet	122	0	0	0	0.42	1200.9	67718.4	2874.7	70.6	64653	69.5
1979	11	0.00	2.31	115	wet	118	125	0	0	0.25	718.7	66871.8	2859.5	70.3	64062	69.3
1979	12	0.94	3.25	192	wet	122	125	0	0	0.11	314.5	66502.2	2852.8	70.2	63944	69.3
1980	1	20.97	24.22	6,196	wet	122	125	0	0	0.09	256.7	72194.5	2953.6	72.0	65362	69.8
1980	2	26.31	50.53	13,898	wet	110	125	0	0	0.11	324.9	73320.0	2973.0	72.3	66308	70.1
1980	3	7.99	58.52	6,090	wet	122	0	0	0	0.18	535.1	73320.0	2973.0	72.3	71869	71.9
1980	4	2.77	61.29	6,882	wet	118	0	0	0	0.28	832.4	73320.0	2973.0	72.3	72358	72.0

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1980	5	1.40	62.69	5,758	wet	118	0	0	0	0.37	1100.0	73320.0	2973.0	72.3	71381	71.7
1980	6	0.00	62.69	1,160	wet	122	0	0	0	0.51	1516.2	72841.8	2964.8	72.2	70892	71.6
1980	7	1.43	64.12	813	wet	118	0	0	0	0.61	1808.5	71728.3	2945.5	71.8	69915	71.3
1980	8	0.00	64.12	541	wet	122	0	0	0	0.60	1767.3	70379.9	2922.0	71.4	68706	70.9
1980	9	0.00	64.12	571	wet	118	0	0	0	0.51	1490.2	69342.7	2903.7	71.1	66544	70.2
1980	10	1.13	1.13	389	wet	122	0	0	0	0.39	1132.4	68477.3	2888.3	70.8	64653	69.5
1980	11	0.00	1.13	0	wet	118	125	0	0	0.33	953.1	67281.2	2866.8	70.4	63707	69.2
1980	12	1.01	2.14	161	wet	122	125	0	0	0.12	344.0	66851.1	2859.1	70.3	63475	69.1
1981	1	3.50	5.64	507	wet	122	125	0	0	0.09	265.9	66845.2	2859.0	70.3	63707	69.2
1981	2	3.46	9.10	1,286	wet	110	125	0	0	0.11	305.9	67590.3	2872.4	70.5	64653	69.5
1981	3	4.08	13.18	1,967	wet	122	0	0	0	0.19	542.9	68892.4	2895.7	70.9	66071	70.0
1981	4	0.88	14.06	1,304	wet	118	0	0	0	0.29	834.0	69244.5	2901.9	71.0	66544	70.2
1981	5	0.71	14.77	0	dry	122	0	0	0	0.50	1442.3	67680.2	2874.0	70.5	65126	69.7
1981	6	0.00	14.77	441	dry	118	0	714	714	0.57	1638.2	65651.0	2837.3	69.9	63707	69.2
1981	7	0.17	14.94	0	dry	122	0	1247	1247	0.64	1813.0	62469.0	2778.3	68.8	61380	68.4
1981	8	0.50	15.44	261	dry	122	0	1437	1437	0.63	1747.5	59423.5	2720.1	67.7	59313	67.7
1981	9	0.09	15.53	229	dry	118	0	1597	0	0.52	1425.3	58109.2	2694.5	67.3	57494	67.0
1981	10	0.57	0.57	0	dry	122	0	737	0	0.41	1094.0	56893.2	2670.5	66.8	56145	66.5
1981	11	2.61	3.18	489	dry	118	125	472	0	0.26	681.0	56458.2	2661.9	66.6	55920	66.4
1981	12	0.10	3.28	84	dry	122	125	0	0	0.11	298.1	55997.1	2652.6	66.5	55695	66.4
1982	1	3.98	7.26	1,820	dry	122	125	0	0	0.08	198.9	57371.0	2680.0	67.0	57269	66.9
1982	2	4.65	11.91	2,096	dry	110	125	0	0	0.10	270.7	58960.8	2711.2	67.6	59084	67.6
1982	3	18.16	30.07	3,951	dry	122	0	0	0	0.17	471.7	62317.6	2775.4	68.7	62544	68.8
1982	4	2.40	32.47	7,618	dry	118	0	0	0	0.26	713.3	69104.2	2899.5	71.0	69427	71.1
1982	5	0.59	33.06	2,658	normal	122	0	0	0	0.41	1183.0	70457.4	2923.3	71.4	70892	71.6
1982	6	0.20	33.26	272	normal	118	0	0	0	0.49	1438.3	69173.4	2900.7	71.0	69725	71.2
1982	7	0.78	34.04	411	normal	122	0	0	0	0.59	1720.1	67742.6	2875.1	70.6	68413	70.8
1982	8	2.26	36.30	871	normal	122	0	210	210	0.60	1719.3	66562.4	2853.9	70.2	67558	70.5
1982	9	0.10	36.40	459	normal	118	0	461	461	0.49	1409.8	65032.5	2825.9	69.7	66256	70.1
1982	10	1.75	1.75	102	normal	122	0	37	37	0.37	1051.2	63923.9	2805.4	69.3	64565	69.5
1982	11	8.78	10.53	1,379	normal	118	125	0	0	0.22	622.8	64436.6	2814.9	69.5	65275	69.7
1982	12	5.52	16.05	3,583	normal	122	125	0	0	0.09	259.0	67513.2	2871.0	70.5	66837	70.3
1983	1	8.21	24.26	1,013	normal	122	125	0	0	0.08	241.2	68037.5	2880.4	70.7	64979	69.6
1983	2	8.71	32.97	4,769	normal	110	125	0	0	0.10	285.2	72286.3	2955.2	72.0	68137	70.7
1983	3	13.50	46.47	9,623	normal	122	0	0	0	0.18	526.0	73320.0	2973.0	72.3	71625	71.8
1983	4	4.70	51.17	6,097	normal	118	0	0	0	0.23	680.8	73320.0	2973.0	72.3	73231	72.3
1983	5	0.00	51.17	6,908	wet	122	0	0	0	0.41	1204.1	73320.0	2973.0	72.3	72358	72.0
1983	6	0.00	51.17	1,407	wet	118	0	0	0	0.51	1510.3	73098.8	2969.2	72.3	71327	71.7
1983	7	0.00	51.17	279	wet	122	0	0	0	0.59	1763.7	71492.0	2941.4	71.8	69861	71.2
1983	8	3.65	54.82	1,715	wet	122	0	0	0	0.59	1726.6	71358.4	2939.1	71.7	69861	71.2
1983	9	1.15	55.97	595	wet	118	0	0	0	0.53	1548.9	70286.2	2920.3	71.4	67116	70.4
1983	10	3.35	3.35	725	wet	122	0	0	0	0.39	1130.2	69759.1	2911.0	71.2	64416	69.5
1983	11	6.04	9.39	2,012	wet	118	125	0	0	0.27	780.2	70747.8	2928.4	71.5	65629	69.9
1983	12	7.66	17.05	0	wet	122	125	0	0	0.24	708.7	69792.1	2911.6	71.2	64705	69.6
1984	1	0.06	17.11	1,980	wet	122	125	0	0	0.09	265.0	71260.1	2937.4	71.7	65977	70.0
1984	2	0.25	17.36	314	wet	110	125	0	0	0.11	317.2	71021.9	2933.2	71.6	65693	69.9
1984	3	0.18	17.54	758	wet	122	0	0	0	0.21	627.7	71030.2	2933.4	71.6	65835	69.9
1984	4	0.02	17.56	50	wet	118	0	0	0	0.27	780.3	70181.9	2918.5	71.3	65126	69.7
1984	5	0.00	17.56	357	dry	122	0	37	37	0.48	1389.2	68990.7	2897.4	71.0	64133	69.4
1984	6	0.00	17.56	0	dry	118	0	866	866	0.59	1712.4	66294.3	2849.0	70.1	62032	68.6

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1984	7	1.84	19.40	2,068	dry	122	0	886	886	0.59	1675.2	65679.1	2837.8	69.9	61892	68.6
1984	8	2.23	21.63	1,927	dry	122	0	709	709	0.59	1674.3	65100.8	2827.2	69.7	62171	68.7
1984	9	0.02	21.65	168	dry	118	0	867	867	0.51	1444.7	62839.2	2785.2	68.9	60915	68.3
1984	10	0.00	0.00	177	dry	122	0	849	849	0.36	1002.7	61042.5	2751.2	68.3	59405	67.7
1984	11	2.83	2.83	422	dry	118	125	374	0	0.24	671.3	60550.2	2741.8	68.1	59130	67.6
1984	12	12.77	15.60	2,348	dry	122	125	0	0	0.09	241.3	62409.9	2777.1	68.8	61194	68.4
1985	1	2.02	17.62	639	dry	122	125	0	0	0.08	208.3	62593.6	2780.6	68.8	61613	68.5
1985	2	0.51	18.13	1,283	dry	110	125	0	0	0.10	266.9	63374.7	2795.2	69.1	62590	68.8
1985	3	1.86	19.99	1,636	dry	122	0	0	0	0.18	514.3	64374.4	2813.8	69.4	63707	69.2
1985	4	1.62	21.61	1,997	dry	118	0	0	0	0.30	855.4	65398.0	2832.6	69.8	64842	69.6
1985	5	0.07	21.68	0	normal	122	0	382	382	0.45	1274.7	63619.3	2799.8	69.2	63568	69.2
1985	6	0.38	22.06	0	normal	118	0	1258	1258	0.55	1548.3	60695.0	2744.6	68.2	61334	68.4
1985	7	0.91	22.97	863	normal	122	0	1514	0	0.61	1674.2	59761.8	2726.7	67.8	60503	68.1
1985	8	0.00	22.97	0	normal	122	0	1554	0	0.65	1766.9	57872.9	2689.9	67.2	58718	67.5
1985	9	0.90	23.87	0	normal	118	0	1466	0	0.53	1417.6	56337.4	2659.5	66.6	56954	66.8
1985	10	0.37	0.37	301	normal	122	0	945	0	0.39	1029.2	55487.1	2642.4	66.3	55073	66.1
1985	11	10.00	10.37	1,667	normal	118	125	0	0	0.25	650.0	56261.1	2657.9	66.6	55740	66.4
1985	12	3.76	14.13	1,111	normal	122	125	0	0	0.10	268.5	56856.7	2669.8	66.8	56550	66.7
1986	1	4.94	19.07	1,177	normal	122	125	0	0	0.10	275.0	57511.7	2682.8	67.0	57359	67.0
1986	2	12.13	31.20	5,838	normal	110	125	0	0	0.11	292.4	62822.3	2784.9	68.9	62869	68.9
1986	3	7.21	38.41	3,721	normal	122	0	0	0	0.21	590.4	65830.9	2840.5	69.9	65977	70.0
1986	4	0.00	38.41	1,231	normal	118	0	0	0	0.28	798.2	66145.7	2846.3	70.0	66402	70.1
1986	5	0.00	38.41	236	normal	122	0	0	0	0.43	1223.9	65035.8	2826.0	69.7	65409	69.8
1986	6	0.00	38.41	0	normal	118	0	74	74	0.61	1732.3	63111.4	2790.3	69.0	63568	69.2
1986	7	0.88	39.29	0	normal	122	0	527	527	0.59	1632.3	60830.1	2747.2	68.2	61613	68.5
1986	8	3.26	42.55	769	normal	122	0	862	0	0.63	1722.5	59754.6	2726.5	67.8	60640	68.2
1986	9	2.74	45.29	141	normal	118	0	743	0	0.45	1216.0	58561.6	2703.4	67.4	59542	67.8
1986	10	0.00	0.00	183	normal	122	0	677	0	0.36	973.2	57649.4	2685.5	67.1	58306	67.3
1986	11	2.40	2.40	264	normal	118	125	331	0	0.26	695.5	56974.8	2672.1	66.8	57494	67.0
1986	12	1.60	4.00	252	normal	122	125	350	0	0.10	272.6	56707.3	2666.8	66.7	57359	67.0
1987	1	1.59	5.59	276	normal	122	125	0	0	0.08	210.7	56525.6	2663.2	66.7	57359	67.0
1987	2	2.66	8.25	1,249	normal	110	125	0	0	0.10	253.0	57286.6	2678.3	67.0	58306	67.3
1987	3	3.90	12.15	1,341	normal	122	0	0	0	0.19	495.5	58010.1	2692.6	67.2	59130	67.6
1987	4	1.58	13.73	1,797	normal	118	0	0	0	0.30	810.5	58878.6	2709.6	67.5	60091	68.0
1987	5	0.28	14.01	281	dry	122	0	414	0	0.40	1083.8	57953.8	2691.5	67.2	59287	67.7
1987	6	0.00	14.01	82	dry	118	0	1369	0	0.53	1423.8	56494.0	2662.6	66.7	57899	67.2
1987	7	0.49	14.50	0	dry	122	0	1760	0	0.60	1589.6	54782.5	2628.2	66.0	56280	66.6
1987	8	0.17	14.67	254	dry	122	0	1820	0	0.59	1558.5	53356.0	2599.0	65.5	54941	66.1
1987	9	0.28	14.95	133	dry	118	0	1758	0	0.50	1294.3	52076.7	2572.4	65.0	53748	65.6
1987	10	5.12	5.12	1,328	dry	122	0	1306	0	0.40	1029.0	52253.7	2576.1	65.1	54013	65.7
1987	11	4.54	9.66	283	dry	118	125	292	0	0.24	628.6	51665.1	2563.8	64.8	53616	65.6
1987	12	4.45	14.11	981	dry	122	125	0	0	0.09	230.7	52168.4	2574.4	65.0	54279	65.8
1988	1	3.79	17.90	805	dry	122	125	0	0	0.09	221.4	52505.0	2581.4	65.2	54808	66.0
1988	2	1.35	19.25	439	dry	110	125	0	0	0.10	268.5	52440.5	2580.0	65.1	54941	66.1
1988	3	1.00	20.25	288	dry	122	0	0	0	0.20	523.7	52082.8	2572.6	65.0	54675	66.0
1988	4	5.50	25.75	1,669	dry	118	0	0	0	0.27	699.7	52934.1	2590.3	65.3	55605	66.3
1988	5	0.48	26.23	436	normal	122	0	474	0	0.41	1059.4	52188.6	2574.8	65.0	54941	66.1
1988	6	0.01	26.24	191	normal	118	0	1279	0	0.52	1336.3	50925.3	2548.2	64.5	53748	65.6
1988	7	0.00	26.24	0	normal	122	0	1910	0	0.70	1778.7	49024.7	2507.6	63.8	51912	64.9
1988	8	2.65	28.89	359	normal	122	0	1810	0	0.59	1474.4	47787.2	2480.6	63.3	50741	64.5

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1988	9	0.00	28.89	0	normal	118	0	1688	0	0.55	1356.9	46312.3	2447.9	62.6	49334	63.9
1988	10	0.00	0.00	0	normal	122	0	1686	0	0.45	1099.1	45091.2	2420.4	62.1	48191	63.4
1988	11	2.97	2.97	364	normal	118	125	456	0	0.27	641.4	44570.8	2408.5	61.9	47811	63.3
1988	12	6.43	9.40	0	normal	122	125	0	0	0.14	332.4	43991.4	2395.2	61.6	47314	63.1
1989	1	1.88	11.28	0	normal	122	125	0	0	0.22	527.0	43217.5	2377.3	61.3	46699	62.8
1989	2	6.39	17.67	2511	normal	110	125	0	0	0.09	214.0	45279.5	2424.7	62.2	48953	63.7
1989	3	2.76	20.43	1732	normal	122	0	0	0	0.22	533.4	46356.1	2448.9	62.7	50094	64.2
1989	4	0.39	20.82	307	normal	118	0	0	0	0.31	759.2	45785.9	2436.1	62.4	49587	64.0
1989	5	1.11	21.93	0	dry	122	0	0	0	0.44	1071.9	44592.1	2409.0	61.9	48445	63.5
1989	6	0.00	21.93	180	dry	118	0	0	0	0.52	1250.3	43403.8	2381.7	61.4	47314	63.1
1989	7	0.00	21.93	0	dry	122	0	0	0	0.79	1881.5	41400.3	2334.5	60.5	45344	62.2
1989	8	0.38	22.31	0	dry	122	0	0	0	0.59	1372.7	39905.6	2298.5	59.8	43903	61.6
1989	9	1.60	23.91	217	dry	118	0	0	0	0.49	1126.3	38878.3	2273.3	59.3	42943	61.2
1989	10	2.61	2.61	0	dry	122	0	0	0	0.39	886.6	37869.7	2248.1	58.8	42004	60.8
1989	11	0.20	2.81	20	dry	118	125	0	0	0.26	584.5	37062.2	2227.7	58.4	41302	60.4
1989	12	0.00	2.81	0	dry	122	125	0	0	0.15	334.2	36481.1	2212.9	58.1	40834	60.2
1990	1	6.70	9.51	517	dry	122	125	0	0	0.07	154.9	36596.1	2215.8	58.2	41068	60.3
1990	2	6.18	15.69	352	dry	110	125	0	0	0.08	177.3	36535.9	2214.3	58.2	41185	60.4
1990	3	2.67	18.36	2475	dry	122	0	0	0	0.20	449.5	38439.4	2262.4	59.1	43183	61.3
1990	4	1.33	19.69	689	dry	118	0	0	0	0.28	633.5	38376.9	2260.8	59.1	43183	61.3
1990	5	0.96	20.65	262	dry	122	0	0	0	0.40	904.3	37612.6	2241.7	58.7	42473	61.0
1990	6	0.20	20.85	333	dry	118	0	0	0	0.53	1188.1	36639.5	2217.0	58.2	41536	60.5
1990	7	0.73	21.58	0	dry	122	0	0	0	0.59	1308.0	35209.5	2179.9	57.5	40142	59.9
1990	8	0.55	22.13	189	dry	122	0	0	0	0.57	1242.6	34033.9	2148.8	56.9	39005	59.4
1990	9	0.00	22.13	0	dry	118	0	0	0	0.49	1052.9	32863.0	2117.3	56.3	37879	58.8
1990	10	0.00	0.00	0	dry	122	0	0	0	0.44	931.6	31809.4	2088.3	55.7	36888	58.3
1990	11	1.77	1.77	0	dry	118	125	0	0	0.35	730.9	30835.5	2061.0	55.2	36009	57.9
1990	12	1.11	2.88	39	dry	122	125	0	0	0.08	164.9	30462.6	2050.4	54.9	35690	57.7

PRECIPITATION: SWRCB Exhibit #1, Report of Investigation, P.7.
CALCULATED UNIMPAIRED FLOW: BBMWD/CITY Exhibit # 7-2 thru 7-7, Simulated model runs
SEASON DEFINITION FOR FISH RELEASE: Derived (see staff report)
BBMWD DEMAND: BBMWD/CITY Exhibit #7-2 thru 7-7, Simulated model runs
MUTUAL DEMAND: BBMWD/CITY Exhibits #7-2 thru 7-7, Simulated Model Runs
MUTUAL RELEASE: Derived, based on current operational policy; SWRCB Exhibit #1, report of Investigation, P.10.
ESTIMATED EVAPORATION RATES: BBMWD?CITY Exhibit #7-2 thru 7-7, Simulated model runs
ESTIMATED EVAPORATION LOSSES: Derived: (evap. rate)x(lake surface area)
ADJUSTED E.O.M. STORAGE: Derived: (previous E.O.M. storage)+(unimpaired flow)-(fish release)-(BBMWD demand)-(Mutual Demand)-(Evap. losses)
DERIVED SURFACE AREA: (surface area)=(26.0139)x(adj. E.O.M. storage)^0.423
ADJUSTED STAFF GAGE ELEVATION: Derived: (gage elevation)=(2.1702)x(adj. E.O.M. storage)^0.313
HISTORIC E.O.M. STORAGE: SWRCB Exhibit #1, Report of Investigation, P.8.
HISTORIC STAFF GAGE ELEVATION: Derived: (gage elevation)=(2.1702)x(historic E.O.M. storage)^0.313

DFG: USING A MAXIMUM RELEASE RATE OF 1.2 CFS YEAR-ROUND

DATE YEAR	MONTH	PRECIPITATION (IN)	ACCUMULATED PRECIPITATION (water year oct-sep) (IN)	CALCULATED UNIMPAIRED FLOW (AF)	SEASON DEFINITIO FOR FISH RELEASES	FISH RELEASE (AF)	BBMWD DEMAND (Snowmkg) (AF)	MUTUAL DEMAND (AF)	MUTUAL RELEASE (AF)	ESTIMATED EVAP RATE (FT/MONTH)	EST. EVAP. LOSSES (AF)	ADJUSTED E.O.M. STORAGE (AF)	DERIVED SURFACE AREA (AC)	ADJUSTED STAFF GAGE ELEVATION (FT)	HISTORIC E.O.M. STORAGE (AF)	HISTORIC STAFF GAGE ELEVATION (FT)
1938	4		58.59							STARTING CAPACITY >		64433.0	2814.9	69.5		
1939	1	4.95	13.26	1,367	wet	74	125	0	0	0.07	197.0	65404.0	2832.7	69.8	65573	69.8
1939	2	4.11	17.37	1,496	wet	66	125	0	0	0.07	198.3	66510.7	2852.9	70.2	66840	70.3
1939	3	2.72	20.09	3,567	wet	74	0	0	0	0.17	485.0	69518.7	2906.8	71.1	69883	71.3
1939	4	3.21	23.30	3,516	wet	71	0	0	0	0.28	813.9	72149.8	2952.8	72.0	72167	72.0
1939	5	0.00	23.30	1,300	normal	74	0	0	0	0.40	1181.1	72194.6	2953.6	72.0	71405	71.7
1939	6	0.00	23.30	(178)	normal	71	0	0	0	0.49	1447.3	70498.4	2924.1	71.4	68616	70.8
1939	7	0.37	23.67	210	normal	74	0	0	0	0.58	1696.0	68938.4	2896.5	70.9	65319	69.8
1939	8	0.77	24.44	971	normal	74	0	373	373	0.60	1737.9	67724.5	2874.8	70.6	62117	68.7
1939	9	7.71	32.15	1,791	normal	71	0	0	0	0.47	1351.2	68093.3	2881.4	70.7	60853	68.2
1939	10	0.75	0.75	436	normal	74	0	0	0	0.36	1037.3	67418.0	2869.3	70.5	58958	67.6
1939	11	1.56	2.31	562	normal	71	125	0	0	0.25	717.3	67066.7	2863.0	70.3	57483	67.0
1939	12	1.02	3.33	496	normal	74	125	0	0	0.11	314.9	67048.8	2862.7	70.3	57483	67.0
1940	1	7.69	11.02	1,898	normal	74	125	0	0	0.08	229.0	68518.8	2889.0	70.8	59168	67.6
1940	2	6.99	18.01	1,928	normal	66	125	0	0	0.09	260.0	69995.7	2915.2	71.3	60853	68.2
1940	3	3.79	21.80	1,626	normal	74	0	0	0	0.21	612.2	70935.6	2931.7	71.6	61906	68.6
1940	4	1.63	23.43	1,374	normal	71	0	0	0	0.27	791.6	71447.0	2940.6	71.7	62538	68.8
1940	5	0.00	23.43	311	normal	74	0	0	0	0.43	1264.5	70419.5	2922.7	71.4	60853	68.2
1940	6	0.00	23.43	596	normal	71	0	288	288	0.54	1578.2	69078.3	2899.0	71.0	58536	67.4
1940	7	0.00	23.43	90	normal	74	0	729	729	0.56	1623.4	66741.8	2857.1	70.2	54956	66.1
1940	8	0.00	23.43	(179)	normal	74	0	686	686	0.60	1714.3	64088.6	2808.5	69.3	51035	64.6
1940	9	0.55	23.98	26	normal	71	0	874	874	0.47	1320.0	61849.6	2766.6	68.6	47649	63.2
1940	10	1.99	1.99	660	normal	74	0	664	664	0.39	1079.0	60692.6	2744.6	68.2	45656	62.4
1940	11	2.24	4.23	198	normal	71	125	453	0	0.23	631.2	60063.4	2732.5	68.0	45059	62.1
1940	12	14.64	18.87	4,068	normal	74	125	0	0	0.10	273.2	63659.1	2800.5	69.2	48644	63.6
1941	1	3.84	22.71	1,392	normal	74	125	0	0	0.08	224.0	64628.1	2818.5	69.5	49839	64.1
1941	2	13.67	36.38	4,105	normal	66	125	0	0	0.10	281.8	68260.2	2884.4	70.7	53692	65.6
1941	3	11.26	47.64	5,948	normal	74	0	0	0	0.18	519.2	73320.0	2973.0	72.3	59168	67.6
1941	4	7.01	54.65	6,107	normal	71	0	0	0	0.23	683.8	73320.0	2973.0	72.3	64644	69.5
1941	5	0.61	55.26	6,164	wet	74	0	0	0	0.41	1218.9	73320.0	2973.0	72.3	69630	71.2
1941	6	0.00	55.26	873	wet	71	0	0	0	0.47	1397.3	72724.7	2962.8	72.1	69123	71.0
1941	7	0.00	55.26	107	wet	74	0	0	0	0.56	1659.1	71098.5	2934.6	71.6	67602	70.5
1941	8	1.03	56.29	849	wet	74	0	0	0	0.55	1614.0	70259.5	2919.9	71.4	66334	70.1
1941	9	0.00	56.29	(101)	wet	71	0	0	0	0.45	1313.9	68773.6	2893.6	70.9	63802	69.2
1941	10	3.49	3.49	1,021	wet	74	0	0	0	0.34	983.8	68736.8	2892.9	70.9	63170	69.0
1941	11	1.48	4.97	594	wet	71	125	0	0	0.26	752.2	68382.6	2886.6	70.8	62959	69.0
1941	12	8.79	13.76	1,848	wet	74	125	0	0	0.09	259.8	69771.8	2911.3	71.2	64433	69.5
1942	1	0.29	14.05	224	wet	74	125	0	0	0.08	232.9	69563.9	2907.6	71.1	64433	69.5
1942	2	2.71	16.76	884	wet	66	125	0	0	0.09	261.7	69995.2	2915.2	71.3	65065	69.7
1942	3	2.73	19.49	1,524	wet	74	0	0	0	0.18	524.7	70920.5	2931.4	71.6	66080	70.0
1942	4	3.25	22.74	2,972	wet	71	0	0	0	0.24	703.5	73118.0	2969.5	72.3	68362	70.8
1942	5	0.00	22.74	956	normal	74	0	0	0	0.38	1128.4	72871.5	2965.3	72.2	67347	70.4
1942	6	0.00	22.74	(213)	normal	71	0	32	32	0.50	1482.6	71072.9	2934.1	71.6	64223	69.4
1942	7	0.87	23.61	665	normal	74	0	910	910	0.59	1731.1	69022.8	2898.0	71.0	60643	68.2
1942	8	0.12	23.73	432	normal	74	0	1112	1112	0.57	1651.9	66616.9	2854.8	70.2	56641	66.7
1942	9	0.00	23.73	116	normal	71	0	966	966	0.46	1313.2	64382.7	2813.9	69.4	53060	65.4
1942	10	0.47	0.47	399	normal	74	0	832	832	0.38	1069.3	62806.4	2784.6	68.9	50437	64.3

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITIO FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1942	11	0.67	1.14	496	normal	71	125	476	476	0.38	1058.1	61572.2	2761.3	68.5	48843	63.7
1942	12	1.87	3.01	486	normal	74	125	359	359	0.27	745.6	60754.7	2745.7	68.2	48445	63.5
1943	1	19.71	22.72	3,783	normal	74	125	0	0	0.10	274.6	64064.1	2808.0	69.3	52030	65.0
1943	2	9.42	32.14	2,945	normal	66	125	0	0	0.08	224.6	66593.5	2854.4	70.2	54745	66.0
1943	3	4.83	36.97	6,428	normal	74	0	0	0	0.09	256.9	72690.6	2962.2	72.1	60643	68.2
1943	4	2.65	39.62	5,223	normal	71	0	0	0	0.20	592.4	73320.0	2973.0	72.3	65065	69.7
1943	5	0.00	39.62	969	wet	74	0	0	0	0.29	862.2	73320.0	2973.0	72.3	64854	69.6
1943	6	0.00	39.62	212	wet	71	0	0	0	0.42	1248.7	72212.3	2953.9	72.0	63381	69.1
1943	7	0.00	39.62	491	wet	74	0	0	0	0.46	1358.8	71270.5	2937.6	71.7	60432	68.1
1943	8	0.00	39.62	557	wet	74	0	191	191	0.57	1674.4	69888.1	2913.3	71.3	57062	66.9
1943	9	0.25	39.87	273	wet	71	0	159	159	0.59	1718.9	68212.3	2883.6	70.7	53902	65.7
1943	10	1.85	1.85	854	wet	74	0	0	0	0.52	1499.5	67492.8	2870.7	70.5	52428	65.1
1943	11	0.20	2.05	66	wet	71	125	0	0	0.39	1119.6	66243.3	2848.1	70.1	50835	64.5
1943	12	9.08	11.13	1,635	wet	74	125	0	0	0.25	712.0	66967.3	2861.2	70.3	52130	65.0
1944	1	2.48	13.61	475	wet	74	125	0	0	0.08	228.9	67014.4	2862.0	70.3	52428	65.1
1944	2	12.05	25.66	1,754	wet	66	125	0	0	0.07	200.3	68377.0	2886.5	70.8	53902	65.7
1944	3	2.38	28.04	2,758	wet	74	0	0	0	0.11	317.5	70743.5	2928.3	71.5	56220	66.6
1944	4	3.00	31.04	4,429	wet	71	0	0	0	0.17	497.8	73320.0	2973.0	72.3	60011	67.9
1944	5	0.20	31.24	1,496	normal	74	0	0	0	0.24	713.5	73320.0	2973.0	72.3	60432	68.1
1944	6	0.00	31.24	140	normal	71	0	0	0	0.38	1129.7	72259.3	2954.7	72.0	58958	67.6
1944	7	0.00	31.24	532	normal	74	0	265	265	0.44	1300.1	71152.2	2935.5	71.7	55798	66.4
1944	8	0.00	31.24	374	normal	74	0	965	965	0.54	1585.2	68902.0	2895.9	70.9	51632	64.8
1944	9	0.00	31.24	197	normal	71	0	894	894	0.58	1679.6	66454.4	2851.9	70.1	47649	63.2
1944	10	0.00	0.00	250	normal	74	0	718	718	0.50	1425.9	64486.5	2815.9	69.5	44661	61.9
1944	11	13.70	13.70	2,889	normal	71	125	0	0	0.38	1070.0	66109.4	2845.6	70.0	46851	62.9
1944	12	2.08	15.78	616	normal	74	125	0	0	0.20	569.1	65957.3	2842.8	70.0	47250	63.0
1945	1	2.51	18.29	568	normal	74	125	0	0	0.07	199.0	66127.3	2845.9	70.0	47649	63.2
1945	2	8.95	27.24	3,807	normal	66	125	0	0	0.09	256.1	69487.2	2906.2	71.1	51234	64.7
1945	3	12.54	39.78	3,471	normal	74	0	0	0	0.15	435.9	72448.2	2958.0	72.1	54324	65.8
1945	4	1.17	40.95	5,501	normal	71	0	0	0	0.25	739.5	73320.0	2973.0	72.3	59168	67.6
1945	5	0.11	41.06	1,530	wet	74	0	0	0	0.39	1159.5	73320.0	2973.0	72.3	59590	67.8
1945	6	0.00	41.06	392	wet	71	0	0	0	0.49	1456.8	72184.2	2953.4	72.0	58115	67.3
1945	7	0.14	41.20	697	wet	74	0	154	154	0.59	1742.5	70910.7	2931.3	71.6	55377	66.2
1945	8	2.21	43.41	1,149	wet	74	0	0	0	0.57	1670.8	70314.9	2920.8	71.4	53271	65.4
1945	9	0.66	44.07	461	wet	71	0	460	460	0.49	1431.2	68813.7	2894.3	70.9	50038	64.2
1945	10	1.78	1.78	916	wet	74	0	312	312	0.38	1099.8	68243.8	2884.1	70.7	47449	63.1
1945	11	0.82	2.60	142	wet	71	125	158	158	0.23	663.3	67368.5	2868.4	70.4	46253	62.6
1945	12	15.37	17.97	5,173	wet	74	125	0	0	0.09	258.2	72084.3	2951.7	71.9	50835	64.5
1946	1	0.73	18.70	574	wet	74	125	0	0	0.07	206.6	72252.7	2954.6	72.0	51234	64.7
1946	2	4.23	22.93	997	wet	66	125	0	0	0.08	236.4	72822.3	2964.4	72.2	52030	65.0
1946	3	11.31	34.24	2,304	wet	74	0	0	0	0.17	504.0	73320.0	2973.0	72.3	53902	65.7
1946	4	1.73	35.97	3,063	wet	71	0	0	0	0.28	832.4	73320.0	2973.0	72.3	56220	66.6
1946	5	0.31	36.28	364	normal	74	0	0	0	0.40	1189.2	72420.8	2957.5	72.1	55166	66.2
1946	6	0.00	36.28	154	normal	71	0	173	173	0.51	1508.3	70822.5	2929.7	71.5	52638	65.2
1946	7	3.26	39.54	1,057	normal	74	0	579	579	0.57	1669.9	69556.5	2907.5	71.1	49640	64.0
1946	8	0.07	39.61	142	normal	74	0	754	754	0.59	1715.4	67155.1	2864.6	70.4	46054	62.5
1946	9	1.76	41.37	338	normal	71	0	1159	1159	0.51	1460.9	64802.2	2821.7	69.6	42867	61.1
1946	10	6.68	6.68	488	normal	74	0	619	619	0.34	959.4	63637.8	2800.1	69.2	41473	60.5
1946	11	13.79	20.47	3,528	normal	71	125	0	0	0.20	560.0	66409.8	2851.1	70.1	44462	61.8
1946	12	5.19	25.66	1,829	normal	74	125	0	0	0.10	285.1	67754.7	2875.4	70.6	46054	62.5

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITIO FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1947	1	2.72	28.38	565	normal	74	125	0	0	0.07	201.3	67919.4	2878.3	70.6	46452	62.7
1947	2	1.52	29.90	838	normal	66	125	0	0	0.10	287.8	68278.6	2884.7	70.7	47050	63.0
1947	3	1.36	31.26	1,106	normal	74	0	0	0	0.21	605.8	68704.8	2892.4	70.9	47649	63.2
1947	4	0.70	31.96	474	normal	71	0	0	0	0.27	780.9	68326.8	2885.6	70.8	47449	63.1
1947	5	0.03	31.99	116	normal	74	0	229	229	0.44	1269.7	66870.2	2859.4	70.3	45656	62.4
1947	6	0.04	32.03	(43)	normal	71	0	1004	1004	0.50	1429.7	64322.5	2812.8	69.4	43066	61.2
1947	7	0.00	32.03	(46)	normal	74	0	1720	1720	0.59	1659.6	60822.9	2747.0	68.2	39431	59.6
1947	8	1.19	33.22	336	normal	74	0	1644	0	0.57	1565.8	59519.1	2722.0	67.8	36639	58.2
1947	9	0.12	33.34	52	normal	71	0	1767	0	0.52	1415.4	58084.6	2694.0	67.2	33849	56.8
1947	10	0.59	0.59	139	normal	74	0	1484	0	0.39	1050.7	57099.0	2674.6	66.9	32104	55.9
1947	11	0.26	0.85	106	normal	71	125	1128	0	0.22	588.4	56420.6	2661.1	66.6	31232	55.4
1947	12	7.52	8.37	865	normal	74	125	576	0	0.08	212.9	56873.7	2670.1	66.8	31929	55.8
1948	1	0.12	8.49	161	normal	74	125	675	0	0.08	213.6	56622.1	2665.1	66.7	31929	55.8
1948	2	7.84	16.33	1,209	normal	66	125	0	0	0.08	213.2	57426.8	2681.1	67.0	32976	56.3
1948	3	7.48	23.81	1,181	normal	74	0	0	0	0.15	402.2	58131.7	2695.0	67.3	33849	56.8
1948	4	4.25	28.06	2,615	normal	71	0	0	0	0.25	673.7	60001.9	2731.3	67.9	35941	57.9
1948	5	0.15	28.21	493	normal	74	0	381	0	0.39	1065.2	59355.7	2718.8	67.7	35244	57.5
1948	6	0.13	28.34	192	normal	71	0	1268	0	0.49	1332.2	58144.5	2695.2	67.3	33151	56.4
1948	7	0.04	28.38	(69)	normal	74	0	1828	0	0.56	1509.3	56492.2	2662.5	66.7	29863	54.6
1948	8	0.00	28.38	(19)	normal	74	0	2014	0	0.57	1517.6	54881.6	2630.2	66.1	26462	52.6
1948	9	0.00	28.38	(50)	normal	71	0	1815	0	0.49	1288.8	53471.8	2601.4	65.5	23209	50.5
1948	10	1.67	1.67	524	normal	74	0	1507	0	0.37	962.5	52959.3	2590.8	65.3	21581	49.3
1948	11	0.00	1.67	59	normal	71	125	1214	0	0.23	595.9	52226.4	2575.6	65.0	20361	48.4
1948	12	7.79	9.46	656	normal	74	125	693	0	0.08	206.0	52477.3	2580.8	65.1	20620	48.6
1949	1	11.96	21.42	1,012	normal	74	125	0	0	0.03	77.4	53212.9	2596.0	65.4	21581	49.3
1949	2	4.13	25.55	992	normal	66	125	0	0	0.06	155.8	53858.1	2609.3	65.7	22470	50.0
1949	3	4.79	30.34	1,593	normal	74	0	0	0	0.15	391.4	54985.8	2632.3	66.1	23800	50.9
1949	4	0.02	30.36	4,025	normal	71	0	0	0	0.26	684.4	58255.4	2697.4	67.3	27350	53.1
1949	5	1.38	31.74	697	normal	74	0	0	0	0.37	998.0	57880.3	2690.0	67.2	27350	53.1
1949	6	0.00	31.74	172	normal	71	0	1197	0	0.51	1371.9	56609.4	2664.9	66.7	25279	51.8
1949	7	0.22	31.96	108	normal	74	0	1672	0	0.57	1519.0	55124.4	2635.1	66.2	22322	49.8
1949	8	0.01	31.97	110	normal	74	0	1741	0	0.57	1502.0	53658.4	2605.2	65.6	19583	47.8
1949	9	0.09	32.06	244	normal	71	0	1590	0	0.50	1302.6	52528.8	2581.9	65.2	17248	46.0
1949	10	1.07	1.07	95	normal	74	0	1272	0	0.35	903.7	51646.2	2563.4	64.8	16080	45.0
1949	11	4.28	5.35	564	normal	71	125	1002	0	0.26	666.5	51347.7	2557.1	64.7	15951	44.9
1949	12	7.29	12.64	812	normal	74	125	455	0	0.07	179.0	51781.7	2566.3	64.9	16600	45.4
1950	1	5.19	17.83	610	normal	74	125	0	0	0.06	154.0	52038.7	2571.6	65.0	17118	45.9
1950	2	4.14	21.97	1,973	normal	66	125	0	0	0.10	257.2	53563.6	2603.3	65.6	18933	47.3
1950	3	2.84	24.81	1,234	normal	74	0	99	0	0.20	520.7	54202.9	2616.4	65.8	19842	48.0
1950	4	3.10	27.91	851	normal	71	0	0	0	0.28	732.6	54250.3	2617.3	65.8	20231	48.3
1950	5	0.64	28.55	134	normal	74	0	859	0	0.39	1020.8	53289.6	2597.6	65.5	19453	47.7
1950	6	0.00	28.55	(45)	normal	71	0	1598	0	0.47	1220.9	51952.7	2569.8	64.9	17767	46.4
1950	7	1.18	29.73	231	normal	74	0	1859	0	0.57	1464.8	50644.9	2542.3	64.4	15692	44.6
1950	8	0.01	29.74	124	normal	74	0	456	0	0.57	1449.1	49245.8	2512.3	63.9	13048	42.1
1950	9	0.79	30.53	386	normal	71	0	456	0	0.46	1155.7	48405.1	2494.1	63.5	11500	40.5
1950	10	0.13	0.13	235	normal	74	0	456	0	0.40	997.6	47568.5	2475.8	63.2	10055	38.8
1950	11	2.39	2.52	378	normal	71	125	456	0	0.26	643.7	47106.8	2465.6	63.0	9849	38.6
1950	12	0.00	2.52	30	normal	74	125	456	0	0.11	271.2	46666.5	2455.8	62.8	9746	38.5
1951	1	4.93	7.45	602	normal	74	125	456	0	0.07	171.9	46897.6	2460.9	62.9	10262	39.1
1951	2	3.64	11.09	421	normal	66	125	456	0	0.09	221.5	46906.1	2461.1	62.9	10571	39.5

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITIO FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1951	3	2.29	13.38	123	normal	74	0	456	0	0.18	443.0	46512.1	2452.4	62.7	10468	39.3
1951	4	4.45	17.83	105	normal	71	0	456	0	0.25	613.1	45933.0	2439.4	62.5	10262	39.1
1951	5	1.04	18.87	198	dry	74	0	456	0	0.39	951.4	45105.7	2420.7	62.1	9746	38.5
1951	6	0.00	18.87	(552)	dry	71	0	456	0	0.47	1137.7	43344.9	2380.3	61.4	7579	35.5
1951	7	3.06	21.93	243	dry	74	0	456	0	0.57	1356.8	42157.2	2352.5	60.8	5511	32.2
1951	8	0.12	22.05	(392)	dry	74	0	456	0	0.56	1317.4	40373.8	2309.9	60.0	2930	26.4
1951	9	1.30	23.35	135	dry	71	0	456	0	0.48	1108.7	39329.1	2284.4	59.5	1400	21.0
1951	10	2.03	2.03	427	dry	74	0	456	0	0.36	822.4	38859.7	2272.8	59.3	950	18.6
1951	11	3.87	5.90	293	dry	71	125	456	0	0.21	477.3	38479.4	2263.4	59.1	950	18.6
1951	12	13.35	19.25	1,216	dry	74	125	0	0	0.08	181.1	39315.3	2284.0	59.5	2125	23.9
1952	1	13.27	32.52	614	dry	74	125	0	0	0.05	114.2	39616.1	2291.4	59.7	2721	25.8
1952	2	1.91	34.43	654	dry	66	125	0	0	0.07	160.4	39918.7	2298.8	59.8	3347	27.5
1952	3	16.14	50.57	3,079	dry	74	0	0	0	0.13	298.8	42624.9	2363.5	61.0	6338	33.6
1952	4	3.12	53.69	12,887	dry	71	0	0	0	0.23	543.6	54897.3	2630.5	66.1	18933	47.3
1952	5	0.00	53.69	4,687	wet	74	0	0	0	0.42	1104.8	58405.5	2700.3	67.4	22914	50.3
1952	6	0.00	53.69	243	wet	71	0	0	0	0.48	1296.2	57281.3	2678.2	67.0	22322	49.8
1952	7	2.08	55.77	404	wet	74	0	0	0	0.55	1473.0	56138.3	2655.5	66.5	21730	49.4
1952	8	0.42	56.19	113	wet	74	0	601	0	0.58	1540.2	54637.1	2625.2	66.0	20361	48.4
1952	9	2.78	58.97	523	wet	71	0	455	0	0.48	1260.1	53829.0	2608.7	65.7	19583	47.8
1952	10	0.00	0.00	241	wet	74	0	833	0	0.40	1043.5	52952.5	2590.7	65.3	18674	47.1
1952	11	6.47	6.47	752	wet	71	125	272	0	0.19	492.2	53016.3	2592.0	65.3	19064	47.4
1952	12	5.17	11.64	1,055	wet	74	125	0	0	0.09	233.3	53639.0	2604.8	65.6	19972	48.1
1953	1	1.80	13.44	554	wet	74	125	0	0	0.10	260.5	53733.6	2606.7	65.6	20361	48.4
1953	2	1.79	15.23	442	wet	66	125	360	0	0.11	286.7	53697.8	2606.0	65.6	20620	48.6
1953	3	3.47	18.70	1,332	wet	74	0	73	0	0.22	573.3	54382.5	2620.0	65.9	21581	49.3
1953	4	1.85	20.55	828	wet	71	0	16	0	0.31	812.2	54327.3	2618.9	65.9	21879	49.5
1953	5	1.94	22.49	204	dry	74	0	410	0	0.39	1021.4	53435.9	2600.6	65.5	21286	49.1
1953	6	0.00	22.49	173	dry	71	0	1282	0	0.52	1352.3	52185.6	2574.7	65.0	19842	48.0
1953	7	0.03	22.52	429	dry	74	0	456	0	0.64	1647.8	50892.8	2547.5	64.5	17767	46.4
1953	8	0.07	22.59	84	dry	74	0	456	0	0.61	1554.0	49348.8	2514.6	63.9	15302	44.3
1953	9	0.03	22.62	235	dry	71	0	456	0	0.52	1307.6	48205.2	2489.7	63.4	13151	42.2
1953	10	0.31	0.31	320	dry	74	0	456	0	0.38	946.1	47505.1	2474.4	63.1	11809	40.8
1953	11	1.56	1.87	133	dry	71	125	456	0	0.25	618.6	46823.5	2459.3	62.9	11397	40.4
1953	12	0.45	2.32	130	dry	74	125	456	0	0.09	221.3	46533.2	2452.8	62.7	11397	40.4
1954	1	16.52	18.84	1,538	dry	74	125	0	0	0.07	171.7	47700.5	2478.7	63.2	12841	41.9
1954	2	5.89	24.73	1,047	dry	66	125	0	0	0.10	247.9	48308.6	2492.0	63.5	13746	42.8
1954	3	14.35	39.08	2,730	dry	74	0	0	0	0.18	448.6	50516.0	2539.5	64.4	16210	45.1
1954	4	0.23	39.31	6,286	dry	71	0	0	0	0.29	736.5	55994.6	2652.6	66.5	22026	49.6
1954	5	0.23	39.54	1,089	wet	74	0	0	0	0.46	1220.2	55789.4	2648.5	66.4	22322	49.8
1954	6	0.54	40.08	233	wet	71	0	390	0	0.57	1509.6	54441.7	2621.2	65.9	21484	49.3
1954	7	0.92	41.00	395	wet	74	0	1231	0	0.63	1651.4	53111.4	2593.9	65.4	19842	48.0
1954	8	0.41	41.41	438	wet	74	0	1493	0	0.60	1556.4	51919.0	2569.1	64.9	18156	46.7
1954	9	0.60	42.01	389	wet	71	0	456	0	0.50	1284.6	50952.4	2548.8	64.5	16470	45.3
1954	10	0.00	0.00	(71)	wet	74	0	456	0	0.40	1019.5	49787.9	2524.0	64.1	14914	43.9
1954	11	4.32	4.32	477	wet	71	125	456	0	0.25	631.0	49437.9	2516.5	63.9	14914	43.9
1954	12	3.38	7.70	782	wet	74	125	0	0	0.09	226.5	49794.4	2524.1	64.1	15562	44.5
1955	1	9.64	17.34	349	wet	74	125	0	0	0.06	151.4	49793.0	2524.1	64.1	15821	44.8
1955	2	1.45	18.79	395	wet	66	125	0	0	0.09	227.2	49769.8	2523.6	64.1	16080	45.0
1955	3	0.61	19.40	2,110	wet	74	0	0	0	0.19	479.5	51326.3	2556.7	64.7	17896	46.5
1955	4	1.47	20.87	743	wet	71	0	342	0	0.26	664.7	51333.6	2556.9	64.7	18156	46.7

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITIO FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1955	5	4.01	24.88	1,301	dry	74	0	221	0	0.41	1048.3	51512.3	2560.6	64.8	18804	47.2
1955	6	0.00	24.88	235	dry	71	0	456	0	0.53	1357.1	50319.1	2535.4	64.3	17507	46.2
1955	7	1.95	26.83	37	dry	74	0	456	0	0.57	1445.2	48837.0	2503.5	63.7	15562	44.5
1955	8	2.77	29.60	806	dry	74	0	456	0	0.61	1527.1	48041.9	2486.2	63.4	14135	43.2
1955	9	0.00	29.60	(42)	dry	71	0	456	0	0.51	1267.9	46660.9	2455.7	62.8	11706	40.7
1955	10	0.00	0.00	307	dry	74	0	456	0	0.40	982.3	45911.6	2438.9	62.5	10365	39.2
1955	11	3.21	3.21	335	dry	71	125	456	0	0.24	585.3	45465.3	2428.9	62.3	10055	38.8
1955	12	2.58	5.79	123	dry	74	125	456	0	0.10	242.9	45146.4	2421.6	62.1	10055	38.8
1956	1	12.19	17.98	1,353	dry	74	125	0	0	0.09	217.9	46082.5	2442.8	62.5	11294	40.3
1956	2	2.07	20.05	1,254	dry	66	125	0	0	0.09	219.8	46925.6	2461.6	62.9	12428	41.5
1956	3	0.00	20.05	(349)	dry	74	0	456	0	0.20	492.3	46010.3	2441.1	62.5	11809	40.8
1956	4	4.09	24.14	437	dry	71	0	456	0	0.25	610.3	45766.0	2435.7	62.4	11913	41.0
1956	5	1.67	25.81	482	normal	74	0	456	0	0.40	974.3	45199.8	2422.9	62.2	11603	40.6
1956	6	0.00	25.81	74	normal	71	0	456	0	0.53	1284.1	43918.6	2393.6	61.6	9849	38.6
1956	7	1.21	27.02	62	normal	74	0	456	0	0.58	1388.3	42518.4	2361.0	61.0	7682	35.7
1956	8	0.00	27.02	176	normal	74	0	456	0	0.56	1322.2	41298.2	2332.1	60.4	5511	32.2
1956	9	0.00	27.02	(399)	normal	71	0	456	0	0.52	1212.7	39615.5	2291.4	59.7	2840	26.1
1956	10	0.25	0.25	265	normal	74	0	456	0	0.35	802.0	39004.5	2276.4	59.4	1300	20.5
1956	11	0.00	0.25	340	normal	71	125	456	0	0.21	478.0	38670.5	2268.1	59.2	1000	18.9
1956	12	0.59	0.84	10	normal	74	125	456	0	0.09	204.1	38277.4	2258.3	59.0	592	16.0
1957	1	18.88	19.72	2,368	normal	74	125	0	0	0.06	135.5	40310.9	2308.3	60.0	2930	26.4
1957	2	3.99	23.71	2,897	normal	66	125	0	0	0.10	230.8	42786.0	2367.3	61.1	5766	32.6
1957	3	2.38	26.09	546	normal	74	0	0	0	0.19	449.8	42808.3	2367.8	61.1	6148	33.3
1957	4	2.91	29.00	615	normal	71	0	456	0	0.25	591.9	42760.3	2366.7	61.1	6530	33.9
1957	5	3.60	32.60	403	normal	74	0	363	0	0.35	828.3	42261.0	2354.9	60.9	6594	34.0
1957	6	0.28	32.88	118	normal	71	0	456	0	0.54	1271.7	41036.3	2325.8	60.3	6084	33.2
1957	7	0.43	33.31	40	normal	74	0	456	0	0.59	1372.2	39630.1	2291.8	59.7	4875	31.0
1957	8	0.27	33.58	(962)	normal	74	0	456	0	0.58	1329.2	37264.9	2232.9	58.5	2452	25.0
1957	9	0.00	33.58	411	normal	71	0	456	0	0.46	1027.1	36577.7	2215.4	58.2	1946	23.2
1957	10	4.51	4.51	203	normal	74	0	456	0	0.33	731.1	35975.7	2199.9	57.9	1789	22.6
1957	11	3.12	7.63	84	normal	71	125	456	0	0.21	462.0	35401.7	2185.0	57.6	1809	22.7
1957	12	9.11	16.74	1,302	normal	74	125	178	0	0.09	196.6	36308.0	2208.4	58.0	3079	26.8
1958	1	3.10	19.84	620	normal	74	125	456	0	0.08	176.7	36552.4	2214.7	58.2	3664	28.3
1958	2	12.62	32.46	3,059	normal	66	125	0	0	0.09	199.3	39221.0	2281.7	59.5	6657	34.1
1958	3	12.92	45.38	5,314	normal	74	0	0	0	0.14	319.4	44141.6	2398.7	61.7	11809	40.8
1958	4	11.73	57.11	8,765	normal	71	0	0	0	0.23	551.7	52283.9	2576.8	65.1	20231	48.3
1958	5	1.00	58.11	4,736	wet	74	0	0	0	0.42	1082.2	55863.7	2650.0	66.4	24243	51.2
1958	6	0.00	58.11	263	wet	71	0	0	0	0.48	1272.0	54783.7	2628.2	66.0	23652	50.8
1958	7	0.04	58.15	(52)	wet	74	0	0	0	0.56	1471.8	53185.9	2595.5	65.4	22618	50.1
1958	8	0.78	58.93	595	wet	74	0	0	0	0.60	1557.3	52149.6	2574.0	65.0	22174	49.7
1958	9	1.81	60.74	99	wet	71	0	47	0	0.49	1261.2	50916.4	2548.0	64.5	21434	49.2
1958	10	0.16	0.16	(156)	wet	74	0	201	0	0.39	993.7	49692.6	2522.0	64.0	20620	48.6
1958	11	1.85	2.01	872	wet	71	125	177	0	0.21	529.6	49839.0	2525.1	64.1	21139	49.0
1958	12	0.00	2.01	(351)	wet	74	125	374	0	0.10	252.5	49036.5	2507.8	63.8	20620	48.6
1959	1	3.82	5.83	263	wet	74	125	456	0	0.08	200.6	48899.9	2504.9	63.7	20749	48.7
1959	2	17.55	23.38	1,857	wet	66	125	0	0	0.08	200.4	50365.5	2536.3	64.3	22470	50.0
1959	3	0.00	23.38	1,253	wet	74	0	24	0	0.21	532.6	51011.9	2550.1	64.6	23356	50.6
1959	4	0.59	23.97	84	wet	71	0	457	0	0.30	765.0	50259.8	2534.1	64.3	22914	50.3
1959	5	0.17	24.14	(250)	normal	74	0	456	0	0.40	1013.6	48922.2	2505.3	63.7	21730	49.4
1959	6	0.00	24.14	86	normal	71	0	456	0	0.56	1403.0	47534.2	2475.0	63.2	19842	48.0

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITIO FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1959	7	0.20	24.34	609	normal	74	0	456	0	0.64	1584.0	46485.2	2451.8	62.7	17377	46.1
1959	8	0.55	24.89	80	normal	74	0	456	0	0.60	1471.1	45020.1	2418.8	62.1	15044	44.1
1959	9	1.15	26.04	(57)	normal	71	0	456	0	0.48	1161.0	43731.1	2389.2	61.5	13151	42.2
1959	10	0.46	0.46	488	normal	74	0	456	0	0.40	955.7	43189.4	2376.7	61.3	12222	41.3
1959	11	1.70	2.16	597	normal	71	125	456	0	0.25	594.2	42996.3	2372.2	61.2	12016	41.1
1959	12	0.74	2.90	141	normal	74	125	456	0	0.10	237.2	42701.0	2365.3	61.1	11809	40.8
1960	1	6.17	9.07	597	normal	74	125	0	0	0.06	141.9	42957.1	2371.3	61.2	12325	41.4
1960	2	5.50	14.57	729	normal	66	125	0	0	0.08	189.7	43305.4	2379.4	61.3	12944	42.0
1960	3	2.12	16.69	1,882	normal	74	0	219	0	0.21	499.7	44613.8	2409.5	61.9	14525	43.6
1960	4	5.14	21.83	734	normal	71	0	327	0	0.28	674.7	44602.1	2409.3	61.9	14655	43.7
1960	5	0.32	22.15	1,123	normal	74	0	406	0	0.41	987.8	44663.3	2410.7	61.9	15173	44.2
1960	6	0.00	22.15	(204)	normal	71	0	456	0	0.56	1350.0	43038.3	2373.2	61.2	13358	42.4
1960	7	0.05	22.20	610	normal	74	0	456	0	0.59	1400.2	42174.2	2352.9	60.8	11706	40.7
1960	8	0.03	22.23	(410)	normal	74	0	456	0	0.59	1388.2	40302.0	2308.1	60.0	9023	37.5
1960	9	0.28	22.51	(392)	normal	71	0	456	0	0.51	1177.1	38661.8	2267.9	59.2	6721	34.2
1960	10	1.86	1.86	1,012	normal	74	0	456	0	0.36	816.4	38783.4	2270.9	59.3	6402	33.7
1960	11	6.30	8.16	469	normal	71	125	456	0	0.23	522.3	38534.1	2264.7	59.1	6338	33.6
1960	12	0.66	8.82	(32)	normal	74	125	456	0	0.08	181.2	38121.9	2254.5	58.9	6084	33.2
1961	1	2.63	11.45	400	normal	74	125	456	0	0.08	180.4	38142.5	2255.0	58.9	6084	33.2
1961	2	0.04	11.49	(180)	normal	66	125	456	0	0.11	248.0	37523.5	2239.4	58.6	5447	32.1
1961	3	2.97	14.46	71	normal	74	0	456	0	0.19	425.5	37095.0	2228.6	58.4	5257	31.7
1961	4	0.00	14.46	183	normal	71	0	456	0	0.27	601.7	36605.3	2216.1	58.2	5193	31.6
1961	5	0.23	14.69	(96)	dry	74	0	456	0	0.39	864.3	35571.0	2189.4	57.7	4683	30.6
1961	6	0.00	14.69	(603)	dry	71	0	456	0	0.54	1182.3	33714.8	2140.3	56.7	3258	27.3
1961	7	0.12	14.81	75	dry	74	0	456	0	0.60	1284.2	32431.6	2105.5	56.0	2333	24.6
1961	8	1.88	16.69	146	dry	74	0	456	0	0.59	1242.2	31261.4	2073.0	55.4	1617	21.9
1961	9	0.00	16.69	77	dry	71	0	456	0	0.47	974.3	30293.1	2045.6	54.8	1000	18.9
1961	10	0.00	0.00	215	dry	74	0	456	0	0.35	715.9	29718.1	2029.1	54.5	693	16.8
1961	11	5.14	5.14	87	dry	71	125	456	0	0.21	426.1	29183.0	2013.5	54.2	540	15.6
1961	12	5.27	10.41	173	dry	74	125	0	0	0.09	181.2	28975.8	2007.5	54.1	700	16.9
1962	1	6.92	17.33	214	dry	74	125	456	0	0.08	160.6	28830.2	2003.2	54.0	900	18.2
1962	2	16.36	33.69	2,790	dry	66	125	0	0	0.08	160.3	31268.9	2073.2	55.4	3664	28.3
1962	3	5.32	39.01	2,845	dry	74	0	0	0	0.15	311.0	33729.0	2140.7	56.7	6402	33.7
1962	4	0.00	39.01	4,291	dry	71	0	0	0	0.30	642.2	37306.8	2233.9	58.5	10365	39.2
1962	5	2.03	41.04	1,099	wet	74	0	0	0	0.38	848.9	37482.9	2238.4	58.6	10984	39.9
1962	6	0.17	41.21	13	wet	71	0	456	0	0.50	1119.2	36305.7	2208.4	58.0	10365	39.2
1962	7	0.53	41.74	(97)	wet	74	0	456	0	0.58	1280.9	34853.8	2170.6	57.3	9436	38.1
1962	8	0.40	42.14	(88)	wet	74	0	456	0	0.61	1324.1	33367.8	2130.9	56.5	7888	36.0
1962	9	0.27	42.41	249	wet	71	0	456	0	0.50	1065.5	32480.3	2106.8	56.1	7102	34.8
1962	10	0.56	0.56	61	wet	74	0	456	0	0.38	800.6	31666.7	2084.3	55.6	6594	34.0
1962	11	0.19	0.75	178	wet	71	125	456	0	0.25	521.1	31127.6	2069.2	55.3	6338	33.6
1962	12	0.21	0.96	135	wet	74	125	456	0	0.10	206.9	30856.7	2061.6	55.2	6338	33.6
1963	1	0.77	1.73	188	wet	74	125	456	0	0.07	144.3	30701.4	2057.2	55.1	6465	33.8
1963	2	0.00	1.73	308	wet	66	125	456	0	0.12	246.9	30571.5	2053.5	55.0	6657	34.1
1963	3	6.16	7.89	306	wet	74	0	456	0	0.18	369.6	30433.9	2049.6	54.9	6784	34.3
1963	4	4.88	12.77	630	wet	71	0	456	0	0.24	491.9	30501.0	2051.5	55.0	7166	34.9
1963	5	0.00	12.77	327	dry	74	0	456	0	0.43	882.1	29871.9	2033.5	54.6	7039	34.7
1963	6	0.00	12.77	(135)	dry	71	0	456	0	0.48	976.1	28689.8	1999.1	53.9	6338	33.6
1963	7	0.00	12.77	(698)	dry	74	0	456	0	0.58	1159.5	26758.3	1941.0	52.8	4557	30.3
1963	8	1.48	14.25	552	dry	74	0	456	0	0.58	1125.8	26110.6	1921.0	52.4	3109	26.9

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITIO FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1963	9	5.15	19.40	390	dry	71	0	456	0	0.50	960.5	25469.1	1900.9	51.9	2870	26.2
1963	10	1.41	1.41	85	dry	74	0	456	0	0.38	722.3	24757.8	1878.2	51.5	2572	25.3
1963	11	5.08	6.49	265	dry	71	125	456	0	0.23	432.0	24394.8	1866.5	51.3	2751	25.9
1963	12	1.06	7.55	98	dry	74	125	456	0	0.10	186.7	24107.1	1857.2	51.1	2812	26.1
1964	1	4.80	12.35	297	dry	74	125	456	0	0.07	130.0	24075.1	1856.1	51.0	3079	26.8
1964	2	0.51	12.86	7	dry	66	125	456	0	0.09	167.1	23724.1	1844.6	50.8	3049	26.7
1964	3	5.40	18.26	950	dry	74	0	456	0	0.17	313.6	24286.5	1863.0	51.2	3920	28.9
1964	4	3.36	21.62	2,465	dry	71	0	0	0	0.24	447.1	26233.4	1924.8	52.4	6212	33.4
1964	5	2.52	24.14	955	normal	74	0	338	0	0.40	769.9	26344.4	1928.2	52.5	6784	34.3
1964	6	0.00	24.14	295	normal	71	0	456	0	0.49	944.8	25623.6	1905.7	52.0	6594	34.0
1964	7	1.45	25.59	(155)	normal	74	0	456	0	0.61	1162.5	24232.1	1861.2	51.1	5447	32.1
1964	8	0.26	25.85	(117)	normal	74	0	456	0	0.60	1116.7	22924.4	1818.1	50.3	4302	29.8
1964	9	0.23	26.08	(519)	normal	71	0	456	0	0.49	890.9	21443.5	1767.4	49.2	2930	26.4
1964	10	0.62	0.62	143	normal	74	0	456	0	0.42	742.3	20770.2	1743.7	48.7	3423	24.9
1964	11	4.58	5.20	195	normal	71	125	456	0	0.21	366.2	20403.0	1730.6	48.5	2542	25.3
1964	12	0.00	5.20	277	normal	74	125	0	0	0.10	173.1	20307.9	1727.2	48.4	2781	26.0
1965	1	1.88	7.08	330	normal	74	125	456	0	0.08	138.2	20300.8	1727.0	48.4	3079	26.8
1965	2	1.46	8.54	221	normal	66	125	456	0	0.10	172.7	20158.1	1721.8	48.3	3258	27.3
1965	3	2.06	10.60	229	normal	74	0	456	0	0.18	309.9	20003.1	1716.2	48.2	3410	27.7
1965	4	15.73	26.33	4,359	normal	71	0	0	0	0.25	429.1	23862.1	1849.2	50.9	7579	35.5
1965	5	0.00	26.33	1,279	normal	74	0	0	0	0.41	758.2	24308.9	1863.7	51.2	8404	36.7
1965	6	0.04	26.37	(84)	normal	71	0	456	0	0.48	894.6	23259.3	1829.3	50.5	7785	35.8
1965	7	1.37	27.74	122	normal	74	0	456	0	0.59	1079.3	22228.1	1794.5	49.8	7269	35.1
1965	8	1.83	29.57	470	normal	74	0	456	0	0.60	1076.7	21547.4	1771.1	49.3	6784	34.3
1965	9	0.64	30.21	246	normal	71	0	456	0	0.46	814.7	20907.7	1748.6	48.8	6402	33.7
1965	10	0.13	0.13	98	normal	74	0	456	0	0.42	734.4	20197.3	1723.2	48.3	6020	33.1
1965	11	26.87	27.00	8,418	normal	71	125	0	0	0.26	448.0	27971.2	1977.7	53.5	14135	43.2
1965	12	12.03	39.03	4,288	normal	74	125	0	0	0.09	178.0	31882.2	2090.3	55.7	18286	46.8
1966	1	1.89	40.92	1,410	normal	74	125	0	0	0.07	146.3	32946.9	2119.5	56.3	19583	47.8
1966	2	3.67	44.59	1,429	normal	66	125	0	0	0.08	169.6	34015.3	2148.3	56.9	20879	48.8
1966	3	1.70	46.29	3,153	normal	74	0	0	0	0.22	472.6	36621.7	2216.5	58.2	23652	50.8
1966	4	0.14	46.43	828	normal	71	0	0	0	0.30	664.9	36713.8	2218.9	58.2	23948	51.0
1966	5	0.08	46.51	353	wet	74	0	0	0	0.45	998.5	35994.3	2200.4	57.9	23504	50.7
1966	6	0.00	46.51	(54)	wet	71	0	164	0	0.56	1232.2	34637.1	2164.9	57.2	22470	50.0
1966	7	0.00	46.51	431	wet	74	0	456	0	0.68	1472.1	33522.0	2135.1	56.6	21730	49.4
1966	8	0.33	46.84	86	wet	74	0	456	0	0.63	1345.1	32188.9	2098.8	55.9	20749	48.7
1966	9	0.44	47.28	(44)	wet	71	0	456	0	0.52	1091.4	30982.5	2065.1	55.2	19842	48.0
1966	10	0.50	0.50	267	wet	74	0	456	0	0.40	826.1	30349.4	2047.2	54.9	19455	47.7
1966	11	3.13	3.63	568	wet	71	125	456	0	0.27	552.7	30168.7	2042.0	54.8	19583	47.8
1966	12	22.40	26.03	13,071	wet	74	125	0	0	0.11	224.6	42816.1	2368.0	61.1	32453	56.0
1967	1	9.24	35.27	881	wet	74	125	0	0	0.09	213.1	43285.0	2378.9	61.3	33151	56.4
1967	2	0.00	35.27	1,273	wet	66	125	0	0	0.11	261.7	44105.3	2397.9	61.7	34198	57.0
1967	3	7.30	42.57	2,533	wet	74	0	0	0	0.21	503.6	46060.7	2442.3	62.5	36290	58.0
1967	4	13.64	56.21	4,319	wet	71	0	0	0	0.22	537.3	49771.4	2523.6	64.1	40128	59.9
1967	5	0.67	56.88	4,496	wet	74	0	0	0	0.42	1059.9	53133.5	2594.4	65.4	43664	61.5
1967	6	0.06	56.94	1,187	wet	71	0	0	0	0.51	1323.1	52926.4	2590.1	65.3	43664	61.5
1967	7	0.05	56.99	709	wet	74	0	0	0	0.65	1683.6	51877.8	2568.3	64.9	42867	61.1
1967	8	1.49	58.48	899	wet	74	0	0	0	0.65	1669.4	51033.4	2550.5	64.6	42270	60.9
1967	9	1.70	60.18	546	wet	71	0	0	0	0.50	1275.3	50233.1	2533.5	64.3	41672	60.6
1967	10	0.00	0.00	242	wet	74	0	0	0	0.40	1013.4	49387.7	2515.4	63.9	40875	60.2

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITIO FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1967	11	7.88	7.88	1,106	wet	71	125	0	0	0.27	679.2	49618.6	2520.4	64.0	41274	60.4
1967	12	2.92	10.80	1,378	wet	74	125	0	0	0.08	201.6	50596.0	2541.2	64.4	42469	61.0
1968	1	3.04	13.84	682	wet	74	125	0	0	0.08	203.3	50875.7	2547.2	64.5	42967	61.2
1968	2	2.46	16.30	1,551	wet	66	125	0	0	0.11	280.2	51955.5	2569.9	64.9	44262	61.8
1968	3	3.14	19.44	1,617	wet	74	0	0	0	0.20	514.0	52984.5	2591.3	65.3	45408	62.3
1968	4	2.18	21.62	1,240	wet	71	0	0	0	0.25	647.8	53505.7	2602.1	65.5	46054	62.5
1968	5	0.18	21.80	377	normal	74	0	0	0	0.41	1066.8	52741.8	2586.3	65.2	45457	62.3
1968	6	0.00	21.80	215	normal	71	0	374	0	0.54	1396.6	51489.2	2560.1	64.8	44262	61.8
1968	7	0.56	22.36	640	normal	74	0	963	0	0.60	1536.1	50519.1	2539.6	64.4	43266	61.3
1968	8	0.41	22.77	396	normal	74	0	1014	0	0.56	1422.2	49419.0	2516.1	63.9	42270	60.9
1968	9	0.00	22.77	(201)	normal	71	0	1427	0	0.50	1258.0	47888.9	2482.8	63.3	40476	60.1
1968	10	0.28	0.28	171	normal	74	0	1121	0	0.39	968.3	47017.6	2463.6	62.9	39606	59.6
1968	11	0.00	0.28	558	normal	71	125	775	0	0.25	615.9	46763.7	2458.0	62.8	39606	59.6
1968	12	3.62	3.90	375	normal	74	125	756	0	0.09	221.2	46718.5	2457.0	62.8	39780	59.7
1969	1	40.80	44.70	20,533	normal	74	125	0	0	0.09	221.1	66831.4	2858.7	70.3	60011	67.9
1969	2	29.65	74.35	8,441	normal	66	125	0	0	0.08	228.7	73320.0	2973.0	72.3	62959	69.0
1969	3	3.85	78.20	6,910	normal	74	0	0	0	0.16	475.7	73320.0	2973.0	72.3	66080	70.0
1969	4	2.26	80.46	12,646	normal	71	0	0	0	0.27	802.7	73320.0	2973.0	72.3	72167	72.0
1969	5	1.64	82.10	7,390	wet	74	0	0	0	0.42	1248.7	73320.0	2973.0	72.3	72167	72.0
1969	6	1.00	83.10	1,969	wet	71	0	0	0	0.51	1516.2	73320.0	2973.0	72.3	71913	71.9
1969	7	2.67	85.77	1,910	wet	74	0	0	0	0.60	1783.8	73320.0	2973.0	72.3	71660	71.8
1969	8	0.03	85.80	(364)	wet	74	0	0	0	0.63	1873.0	71009.0	2933.0	71.6	69123	71.0
1969	9	0.75	86.55	(81)	wet	71	0	0	0	0.52	1525.2	69331.9	2903.5	71.1	65065	69.7
1969	10	0.11	0.11	375	wet	74	0	0	0	0.36	1045.3	68587.6	2890.3	70.8	63381	69.1
1969	11	2.93	3.04	951	wet	71	125	0	0	0.25	722.6	68620.0	2890.8	70.8	63381	69.1
1969	12	0.24	3.28	547	wet	74	125	0	0	0.10	289.1	68678.9	2891.9	70.9	63381	69.1
1970	1	2.79	6.07	585	wet	74	125	0	0	0.09	260.3	68804.7	2894.1	70.9	63381	69.1
1970	2	0.94	7.01	561	wet	66	125	0	0	0.10	289.4	68885.3	2895.6	70.9	63381	69.1
1970	3	8.38	15.39	2,232	wet	74	0	0	0	0.19	550.2	70493.1	2924.0	71.4	65065	69.7
1970	4	2.77	18.16	675	wet	71	0	0	0	0.24	701.8	70395.4	2922.2	71.4	65065	69.7
1970	5	0.10	18.26	361	dry	74	0	0	0	0.42	1227.3	69455.0	2905.7	71.1	64223	69.4
1970	6	0.05	18.31	412	dry	71	0	563	563	0.52	1510.9	67722.1	2874.8	70.6	63170	69.0
1970	7	0.19	18.50	629	dry	74	0	1206	1206	0.61	1753.6	65317.5	2831.1	69.8	62117	68.7
1970	8	1.65	20.15	1,676	dry	74	0	1156	1156	0.61	1727.0	64036.5	2807.5	69.3	62117	68.7
1970	9	0.00	20.15	48	dry	71	0	916	916	0.48	1347.6	61749.8	2764.7	68.5	60853	68.2
1970	10	0.02	0.02	(208)	dry	74	0	945	945	0.39	1078.2	59444.6	2720.5	67.7	59590	67.8
1970	11	16.26	16.28	1,332	dry	71	125	0	0	0.26	707.3	59873.3	2728.8	67.9	60221	68.0
1970	12	0.00	16.28	1,509	dry	74	125	0	0	0.09	245.6	60937.7	2749.2	68.3	61485	68.5
1971	1	1.52	17.80	640	dry	74	125	0	0	0.08	219.9	61158.7	2753.5	68.3	61906	68.6
1971	2	1.48	19.28	485	dry	66	125	0	0	0.10	275.3	61177.4	2753.8	68.3	62117	68.7
1971	3	0.85	20.13	788	dry	74	0	0	0	0.21	578.3	61313.1	2756.4	68.4	62327	68.7
1971	4	1.92	22.05	533	dry	71	0	0	0	0.27	744.2	61030.9	2751.0	68.3	62117	68.7
1971	5	2.43	24.48	621	normal	74	0	193	0	0.38	1045.4	60532.5	2741.5	68.1	61696	68.5
1971	6	0.00	24.48	337	normal	71	0	828	0	0.51	1398.2	59400.3	2719.7	67.7	60643	68.2
1971	7	0.52	25.00	569	normal	74	0	1319	0	0.60	1631.8	58263.5	2697.5	67.3	59590	67.8
1971	8	0.55	25.55	347	normal	74	0	1442	0	0.62	1672.5	56864.0	2669.9	66.8	58115	67.3
1971	9	0.00	25.55	(71)	normal	71	0	1470	0	0.51	1361.7	55360.4	2639.8	66.2	56641	66.7
1971	10	3.85	3.85	514	normal	74	0	1269	0	0.35	923.9	54876.4	2630.1	66.1	56220	66.6
1971	11	1.29	5.14	628	normal	71	125	857	0	0.24	631.2	54677.2	2626.0	66.0	56220	66.6
1971	12	22.32	27.46	6,112	normal	74	125	0	0	0.08	210.1	60380.1	2738.6	68.1	62117	68.7

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITIO FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1972	1	0.00	27.46	220	normal	74	125	0	0	0.08	219.1	60182.0	2734.8	68.0	62117	68.7
1972	2	0.18	27.64	91	normal	66	125	181	0	0.11	300.8	59781.2	2727.0	67.9	61906	68.6
1972	3	0.00	27.64	420	normal	74	0	484	0	0.23	627.2	59500.0	2721.6	67.8	61696	68.5
1972	4	1.01	28.65	(79)	normal	71	0	637	0	0.28	762.1	58587.9	2703.9	67.4	60853	68.2
1972	5	0.73	29.38	480	normal	74	0	1019	0	0.41	1108.6	57885.4	2690.1	67.2	60221	68.0
1972	6	0.46	29.84	320	normal	71	0	1214	0	0.51	1372.0	56762.4	2667.9	66.8	59168	67.6
1972	7	0.00	29.84	(71)	normal	74	0	1855	0	0.63	1680.8	54936.6	2631.3	66.1	57062	66.9
1972	8	0.35	30.19	529	normal	74	0	1983	0	0.59	1552.5	53839.1	2608.9	65.7	54535	65.9
1972	9	0.00	30.19	212	normal	71	0	1985	0	0.49	1278.4	52701.8	2585.5	65.2	52428	65.1
1972	10	1.29	1.29	106	normal	74	0	1334	0	0.36	930.8	51803.0	2566.7	64.9	51234	64.7
1972	11	6.56	7.85	1,150	normal	71	125	518	0	0.22	564.7	52192.3	2574.9	65.0	51831	64.9
1972	12	0.00	7.85	1,457	normal	74	125	0	0	0.09	231.7	53218.6	2596.2	65.4	53060	65.4
1973	1	6.43	14.28	1,443	normal	74	125	0	0	0.07	181.7	54280.9	2617.9	65.8	54324	65.8
1973	2	12.10	26.38	1,496	normal	66	125	0	0	0.09	235.6	55350.3	2639.6	66.2	55587	66.3
1973	3	11.14	37.52	3,344	normal	74	0	0	0	0.15	395.9	58224.3	2696.8	67.3	58536	67.4
1973	4	0.00	37.52	6,185	normal	71	0	0	0	0.26	701.2	63637.1	2800.1	69.2	64012	69.3
1973	5	0.53	38.05	4,327	normal	74	0	0	0	0.44	1232.0	66658.1	2855.6	70.2	67094	70.3
1973	6	0.00	38.05	17	normal	71	0	0	0	0.54	1542.0	65062.1	2826.5	69.7	65573	69.8
1973	7	0.00	38.05	152	normal	74	0	186	186	0.61	1724.1	63229.9	2792.5	69.1	64012	69.3
1973	8	0.59	38.64	544	normal	74	0	276	276	0.58	1619.7	61804.3	2765.7	68.6	62538	68.8
1973	9	0.00	38.64	262	normal	71	0	400	400	0.49	1355.2	60240.1	2735.9	68.0	60853	68.2
1973	10	0.00	0.00	(16)	normal	74	0	417	0	0.40	1094.4	59055.7	2713.0	67.6	59168	67.6
1973	11	4.42	4.42	925	normal	71	125	0	0	0.25	678.2	59106.5	2714.0	67.6	59168	67.6
1973	12	0.93	5.35	85	normal	74	125	0	0	0.11	298.5	58693.9	2706.0	67.5	58958	67.6
1974	1	12.55	17.90	2,322	normal	74	125	0	0	0.08	216.5	60600.5	2742.8	68.1	61064	68.3
1974	2	0.05	17.95	905	normal	66	125	0	0	0.10	274.3	61040.2	2751.2	68.3	61696	68.5
1974	3	7.53	25.48	2,658	normal	74	0	0	0	0.20	550.2	63073.9	2789.6	69.0	63802	69.2
1974	4	1.15	26.63	1,413	normal	71	0	0	0	0.28	781.1	63634.9	2800.1	69.2	64433	69.5
1974	5	0.39	27.02	537	normal	74	0	0	0	0.43	1204.0	62893.8	2786.2	68.9	63591	69.2
1974	6	0.00	27.02	150	normal	71	0	891	891	0.55	1532.4	60549.4	2741.8	68.1	61485	68.5
1974	7	0.29	27.31	356	normal	74	0	1208	0	0.59	1617.7	59213.7	2716.1	67.7	59168	67.6
1974	8	1.25	28.56	410	normal	74	0	1329	0	0.58	1575.3	57974.4	2691.9	67.2	56851	66.8
1974	9	0.70	29.26	678	normal	71	0	1348	0	0.53	1426.7	57154.7	2675.7	66.9	54956	66.1
1974	10	3.12	3.12	855	normal	74	0	1234	0	0.41	1097.0	56838.7	2669.4	66.8	53692	65.6
1974	11	0.72	3.84	138	normal	71	125	724	0	0.24	640.7	56140.0	2655.5	66.5	52850	65.3
1974	12	5.88	9.72	1,139	normal	74	125	0	0	0.09	239.0	56841.0	2669.5	66.8	53692	65.6
1975	1	1.74	11.46	627	normal	74	125	663	0	0.08	213.6	57055.5	2673.7	66.9	54114	65.8
1975	2	3.13	14.59	653	normal	66	125	0	0	0.09	240.6	57276.8	2678.1	66.9	54535	65.9
1975	3	8.03	22.62	860	normal	74	0	0	0	0.17	455.3	57607.5	2684.7	67.1	54956	66.1
1975	4	4.99	27.61	2,019	normal	71	0	0	0	0.29	778.5	58777.0	2707.6	67.5	56220	66.6
1975	5	0.40	28.01	1,257	normal	74	0	0	0	0.40	1083.0	58877.0	2709.5	67.5	56430	66.6
1975	6	0.00	28.01	(33)	normal	71	0	1041	0	0.51	1381.9	57391.1	2680.4	67.0	54324	65.8
1975	7	0.00	28.01	465	normal	74	0	1789	0	0.61	1635.0	56147.1	2655.7	66.5	51632	64.8
1975	8	0.00	28.01	469	normal	74	0	2393	0	0.58	1540.3	55001.8	2632.6	66.1	48843	63.7
1975	9	0.43	28.44	649	normal	71	0	2133	0	0.51	1342.6	54237.2	2617.1	65.8	46452	62.7
1975	10	0.79	0.79	544	normal	74	0	1569	0	0.39	1020.7	53686.5	2605.8	65.6	44661	61.9
1975	11	3.10	3.89	613	normal	71	125	1317	0	0.26	677.5	53426.0	2600.4	65.5	43664	61.5
1975	12	0.55	4.44	358	normal	74	125	884	0	0.10	260.0	53325.0	2598.3	65.5	43664	61.5
1976	1	0.00	4.44	(359)	normal	74	125	456	0	0.09	233.9	52533.1	2582.0	65.2	42270	60.9
1976	2	12.04	16.48	953	normal	66	125	0	0	0.10	258.2	53036.9	2592.4	65.4	42867	61.1

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITIO FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1976	3	5.26	21.74	2,811	normal	74	0	0	0	0.18	466.6	55307.3	2638.8	66.2	45258	62.2
1976	4	2.60	24.34	814	normal	71	0	146	0	0.26	686.1	55364.2	2639.9	66.2	45457	62.3
1976	5	0.25	24.59	179	normal	74	0	806	0	0.43	1135.2	54334.1	2619.0	65.9	44262	61.8
1976	6	0.19	24.78	51	normal	71	0	1620	0	0.51	1335.7	52978.3	2591.2	65.3	41872	60.7
1976	7	0.77	25.55	442	normal	74	0	456	0	0.59	1528.8	51817.5	2567.0	64.9	39606	59.6
1976	8	0.00	25.55	583	normal	74	0	456	0	0.56	1437.5	50889.0	2547.5	64.5	37162	58.5
1976	9	8.76	34.31	2,002	normal	71	0	0	0	0.48	1222.8	51597.2	2562.4	64.8	37686	58.7
1976	10	0.60	0.60	113	normal	74	0	456	0	0.39	999.3	50636.9	2542.1	64.4	36813	58.3
1976	11	0.15	0.75	581	normal	71	125	456	0	0.26	660.9	50360.9	2536.2	64.3	36639	58.2
1976	12	1.30	2.05	141	normal	74	125	456	0	0.10	253.6	50049.3	2529.6	64.2	36290	58.0
1977	1	6.80	8.85	724	normal	74	125	0	0	0.08	202.4	50372.0	2536.5	64.3	36559	58.2
1977	2	0.53	9.38	316	normal	66	125	0	0	0.11	279.0	50217.9	2533.2	64.2	36559	58.2
1977	3	3.08	12.46	371	normal	74	0	0	0	0.17	430.6	50084.3	2530.3	64.2	36559	58.2
1977	4	0.00	12.46	632	normal	71	0	0	0	0.29	733.8	49911.5	2526.6	64.1	36559	58.2
1977	5	5.67	18.13	1,131	dry	74	0	0	0	0.35	884.3	50084.2	2530.3	64.2	36925	58.4
1977	6	0.00	18.13	654	dry	71	0	456	0	0.53	1341.1	49326.1	2514.1	63.9	36421	58.1
1977	7	0.00	18.13	0	dry	74	0	456	0	0.71	1772.4	47479.7	2473.8	63.1	34771	57.3
1977	8	2.87	21.00	305	dry	74	0	456	0	0.61	1509.0	46201.6	2445.4	62.6	33547	56.6
1977	9	0.00	21.00	81	dry	71	0	456	0	0.50	1222.7	44988.9	2418.1	62.1	32357	56.0
1977	10	0.00	0.00	303	dry	74	0	456	0	0.41	991.4	44226.5	2400.7	61.7	31682	55.6
1977	11	0.39	0.39	0	dry	71	125	456	0	0.33	792.2	43238.3	2377.8	61.3	31024	55.3
1977	12	12.61	13.00	2,595	dry	74	125	0	0	0.12	285.3	45349.0	2426.2	62.2	33377	56.5
1978	1	12.30	25.30	4,107	dry	74	125	0	0	0.09	218.4	49038.6	2507.9	63.8	37292	58.5
1978	2	13.49	38.79	7,160	dry	66	125	0	0	0.10	250.8	55756.8	2647.8	66.4	44222	61.7
1978	3	20.10	58.89	13,358	dry	74	0	0	0	0.21	556.0	68484.8	2888.4	70.8	57044	66.9
1978	4	8.06	66.95	7,827	dry	71	0	0	0	0.25	722.1	73320.0	2973.0	72.3	64180	69.4
1978	5	0.61	67.56	3,529	wet	74	0	0	0	0.41	1218.9	73320.0	2973.0	72.3	66544	70.2
1978	6	0.00	67.56	726	wet	71	0	0	0	0.75	2229.7	71745.3	2945.8	71.8	65126	69.7
1978	7	0.06	67.62	336	wet	74	0	0	0	0.60	1767.5	70239.8	2919.5	71.4	63766	69.2
1978	8	0.00	67.62	0	wet	74	0	0	0	0.64	1880.2	68285.6	2884.9	70.7	61962	68.6
1978	9	2.05	69.67	809	wet	71	0	0	0	0.50	1442.4	67581.2	2872.2	70.5	61380	68.4
1978	10	0.31	0.31	0	wet	74	0	0	0	0.50	1436.1	66071.0	2844.9	70.0	60000	67.9
1978	11	7.61	7.92	1,264	wet	71	125	0	0	0.23	654.3	66484.7	2852.4	70.1	60457	68.1
1978	12	3.83	11.75	1,998	wet	74	125	0	0	0.09	256.7	68027.0	2880.2	70.7	61380	68.4
1979	1	9.98	21.73	2,527	wet	74	125	0	0	0.07	201.6	70153.4	2918.0	71.3	63009	69.0
1979	2	9.23	30.96	2,652	wet	66	125	0	0	0.09	262.6	72351.7	2956.3	72.0	62244	68.7
1979	3	10.30	41.26	5,752	wet	74	0	0	0	0.18	532.1	73320.0	2973.0	72.3	69915	71.3
1979	4	0.00	41.26	7,409	wet	71	0	0	0	0.27	802.7	73320.0	2973.0	72.3	72236	72.0
1979	5	0.50	41.76	4,092	wet	74	0	0	0	0.42	1248.7	73320.0	2973.0	72.3	72113	72.0
1979	6	0.00	41.76	92	wet	71	0	0	0	0.53	1575.7	71765.3	2946.2	71.8	70648	71.5
1979	7	1.23	42.99	745	wet	74	0	0	0	0.59	1738.2	70698.1	2927.6	71.5	69671	71.2
1979	8	0.15	43.14	640	wet	74	0	0	0	0.58	1683.3	69580.7	2907.9	71.2	67986	70.6
1979	9	0.23	43.37	974	wet	71	0	0	0	0.52	1512.1	68971.6	2897.1	71.0	66308	70.1
1979	10	2.31	2.31	257	wet	74	0	0	0	0.42	1202.3	67952.3	2878.9	70.6	64653	69.5
1979	11	0.00	2.31	115	wet	71	125	0	0	0.25	719.7	67151.6	2864.5	70.4	64062	69.3
1979	12	0.94	3.25	192	wet	74	125	0	0	0.11	315.1	66829.5	2858.7	70.3	63944	69.3
1980	1	20.97	24.22	6,196	wet	74	125	0	0	0.09	257.3	72569.2	2960.1	72.1	65362	69.8
1980	2	26.31	50.53	13,898	wet	66	125	0	0	0.11	325.6	73320.0	2973.0	72.3	66308	70.1
1980	3	7.99	58.52	6,090	wet	74	0	0	0	0.18	535.1	73320.0	2973.0	72.3	71869	71.9
1980	4	2.77	61.29	6,882	wet	71	0	0	0	0.28	832.4	73320.0	2973.0	72.3	72358	72.0

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITIO FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1980	5	1.40	62.69	5,758	wet	74	0	0	0	0.37	1100.0	73320.0	2973.0	72.3	71381	71.7
1980	6	0.00	62.69	1,160	wet	71	0	0	0	0.51	1516.2	72892.8	2965.7	72.2	70892	71.6
1980	7	1.43	64.12	813	wet	74	0	0	0	0.61	1809.1	71822.7	2947.2	71.9	69915	71.3
1980	8	0.00	64.12	541	wet	74	0	0	0	0.60	1768.3	70521.4	2924.5	71.5	68706	70.9
1980	9	0.00	64.12	571	wet	71	0	0	0	0.51	1491.5	69529.9	2907.0	71.1	66544	70.2
1980	10	1.13	1.13	389	wet	74	0	0	0	0.39	1133.7	68711.2	2892.5	70.9	64653	69.5
1980	11	0.00	1.13	0	wet	71	125	0	0	0.33	954.5	67560.7	2871.9	70.5	63707	69.2
1980	12	1.01	2.14	161	wet	74	125	0	0	0.12	344.6	67178.1	2865.0	70.4	63475	69.1
1981	1	3.50	5.64	507	wet	74	125	0	0	0.09	266.4	67219.6	2865.7	70.4	63707	69.2
1981	2	3.46	9.10	1,286	wet	66	125	0	0	0.11	306.6	68008.0	2879.9	70.6	64653	69.5
1981	3	4.08	13.18	1,967	wet	74	0	0	0	0.19	544.3	69356.7	2903.9	71.1	66071	70.0
1981	4	0.88	14.06	1,304	wet	71	0	0	0	0.29	836.3	69753.4	2910.9	71.2	66544	70.2
1981	5	0.71	14.77	0	dry	74	0	0	0	0.50	1446.7	68232.6	2883.9	70.7	65126	69.7
1981	6	0.00	14.77	441	dry	71	0	714	714	0.57	1643.8	66244.8	2848.1	70.1	63707	69.2
1981	7	0.17	14.94	0	dry	74	0	1247	1247	0.64	1819.9	63103.9	2790.2	69.0	61380	68.4
1981	8	0.50	15.44	261	dry	74	0	1437	1437	0.63	1755.0	60098.9	2733.2	68.0	59313	67.7
1981	9	0.09	15.53	229	dry	71	0	1597	0	0.52	1432.2	58824.7	2708.5	67.5	57494	67.0
1981	10	0.57	0.57	0	dry	74	0	737	0	0.41	1099.7	57651.0	2685.5	67.1	56145	66.5
1981	11	2.61	3.18	489	dry	71	125	472	0	0.26	684.8	57259.2	2677.8	66.9	55920	66.4
1981	12	0.10	3.28	84	dry	74	125	0	0	0.11	299.9	56844.3	2669.6	66.8	55695	66.4
1982	1	3.98	7.26	1,820	dry	74	125	0	0	0.08	200.2	58265.0	2697.6	67.3	57269	66.9
1982	2	4.65	11.91	2,096	dry	66	125	0	0	0.10	272.5	59897.0	2729.3	67.9	59084	67.6
1982	3	18.16	30.07	3,951	dry	74	0	0	0	0.17	474.9	63298.6	2793.8	69.1	62544	68.8
1982	4	2.40	32.47	7,618	dry	71	0	0	0	0.26	718.0	70127.5	2917.5	71.3	69427	71.1
1982	5	0.59	33.06	2,658	normal	74	0	0	0	0.41	1190.4	71521.4	2941.9	71.8	70892	71.6
1982	6	0.20	33.26	272	normal	71	0	0	0	0.49	1447.4	70275.2	2920.1	71.4	69725	71.2
1982	7	0.78	34.04	411	normal	74	0	0	0	0.59	1731.6	68880.8	2895.5	70.9	68413	70.8
1982	8	2.26	36.30	871	normal	74	0	210	210	0.60	1731.5	67736.5	2875.0	70.6	67558	70.5
1982	9	0.10	36.40	459	normal	71	0	461	461	0.49	1420.3	66243.2	2848.1	70.1	66256	70.1
1982	10	1.75	1.75	102	normal	74	0	37	37	0.37	1059.5	65174.3	2828.5	69.7	64565	69.5
1982	11	8.78	10.53	1,379	normal	71	125	0	0	0.22	627.9	65728.8	2838.7	69.9	65275	69.7
1982	12	5.52	16.05	3,583	normal	74	125	0	0	0.09	261.2	68851.3	2895.0	70.9	66837	70.3
1983	1	8.21	24.26	1,013	normal	74	125	0	0	0.08	243.2	69421.6	2905.1	71.1	64979	69.6
1983	2	8.71	32.97	4,769	normal	66	125	0	0	0.10	287.6	73320.0	2973.0	72.3	68137	70.7
1983	3	13.50	46.47	9,623	normal	74	0	0	0	0.18	529.2	73320.0	2973.0	72.3	71625	71.8
1983	4	4.70	51.17	6,097	normal	71	0	0	0	0.23	680.8	73320.0	2973.0	72.3	73231	72.3
1983	5	0.00	51.17	6,908	wet	74	0	0	0	0.41	1204.1	73320.0	2973.0	72.3	72358	72.0
1983	6	0.00	51.17	1,407	wet	71	0	0	0	0.51	1510.3	73145.8	2970.0	72.3	71327	71.7
1983	7	0.00	51.17	279	wet	74	0	0	0	0.59	1764.2	71586.5	2943.1	71.8	69861	71.2
1983	8	3.65	54.82	1,715	wet	74	0	0	0	0.59	1727.6	71500.0	2941.6	71.8	69861	71.2
1983	9	1.15	55.97	595	wet	71	0	0	0	0.53	1550.2	70473.5	2923.6	71.4	67116	70.4
1983	10	3.35	3.35	725	wet	74	0	0	0	0.39	1131.4	69993.1	2915.2	71.3	64416	69.5
1983	11	6.04	9.39	2,012	wet	71	125	0	0	0.27	781.3	71027.7	2933.3	71.6	65629	69.9
1983	12	7.66	17.05	0	wet	74	125	0	0	0.24	709.9	70118.8	2917.4	71.3	64705	69.6
1984	1	0.06	17.11	1,980	wet	74	125	0	0	0.09	265.5	71634.3	2943.9	71.8	65977	70.0
1984	2	0.25	17.36	314	wet	66	125	0	0	0.11	317.9	71439.4	2940.5	71.7	65693	69.9
1984	3	0.18	17.54	758	wet	74	0	0	0	0.21	629.3	71494.1	2941.5	71.8	65835	69.9
1984	4	0.02	17.56	50	wet	71	0	0	0	0.27	782.4	70690.7	2927.4	71.5	65126	69.7
1984	5	0.00	17.56	357	dry	74	0	37	37	0.48	1393.5	69543.2	2907.2	71.1	64133	69.4
1984	6	0.00	17.56	0	dry	71	0	866	866	0.59	1718.2	66888.0	2859.7	70.3	62032	68.6

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITIO FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1984	7	1.84	19.40	2,068	dry	74	0	886	886	0.59	1681.5	66314.5	2849.4	70.1	61892	68.6
1984	8	2.23	21.63	1,927	dry	74	0	709	709	0.59	1681.1	65777.4	2839.6	69.9	62171	68.7
1984	9	0.02	21.65	168	dry	71	0	867	867	0.51	1451.0	63556.4	2798.6	69.2	60915	68.3
1984	10	0.00	0.00	177	dry	74	0	849	849	0.36	1007.5	61802.9	2765.7	68.6	59405	67.7
1984	11	2.83	2.83	422	dry	71	125	374	374	0.24	674.8	60980.1	2750.0	68.3	59130	67.6
1984	12	12.77	15.60	2,348	dry	74	125	0	0	0.09	242.0	62887.1	2786.1	68.9	61194	68.4
1985	1	2.02	17.62	639	dry	74	125	0	0	0.08	209.0	63118.1	2790.4	69.0	61613	68.5
1985	2	0.51	18.13	1,283	dry	66	125	0	0	0.10	267.9	63942.2	2805.8	69.3	62590	68.8
1985	3	1.86	19.99	1,636	dry	74	0	0	0	0.18	516.3	64988.0	2825.1	69.6	63707	69.2
1985	4	1.62	21.61	1,997	dry	71	0	0	0	0.30	858.8	66055.1	2844.6	70.0	64842	69.6
1985	5	0.07	21.68	0	normal	74	0	382	382	0.45	1280.1	64319.0	2812.8	69.4	63568	69.2
1985	6	0.38	22.06	0	normal	71	0	1258	1258	0.55	1555.5	61434.6	2758.7	68.4	61334	68.4
1985	7	0.91	22.97	863	normal	74	0	1514	1514	0.61	1682.8	59026.8	2712.4	67.6	60503	68.1
1985	8	0.00	22.97	0	normal	74	0	1554	0	0.65	1757.7	57195.1	2676.5	66.9	58718	67.5
1985	9	0.90	23.87	0	normal	71	0	1466	0	0.53	1410.5	55713.6	2647.0	66.4	56954	66.8
1985	10	0.37	0.37	301	normal	74	0	945	0	0.39	1024.4	54916.2	2630.9	66.1	55073	66.1
1985	11	10.00	10.37	1,667	normal	71	125	0	0	0.25	647.2	55740.0	2647.5	66.4	55740	66.4
1985	12	3.76	14.13	1,111	normal	74	125	0	0	0.10	267.4	56384.6	2660.4	66.6	56550	66.7
1986	1	4.94	19.07	1,177	normal	74	125	0	0	0.10	274.0	57088.6	2674.4	66.9	57359	67.0
1986	2	12.13	31.20	5,838	normal	66	125	0	0	0.11	291.5	62444.1	2777.8	68.8	62869	68.9
1986	3	7.21	38.41	3,721	normal	74	0	0	0	0.21	588.9	65502.2	2834.5	69.8	65977	70.0
1986	4	0.00	38.41	1,231	normal	71	0	0	0	0.28	796.5	65865.7	2841.2	69.9	66402	70.1
1986	5	0.00	38.41	236	normal	74	0	0	0	0.43	1221.7	64806.0	2821.8	69.6	65409	69.8
1986	6	0.00	38.41	0	normal	71	0	74	74	0.61	1729.7	62931.3	2786.9	69.0	63568	69.2
1986	7	0.88	39.29	0	normal	74	0	527	527	0.59	1630.4	60699.9	2744.7	68.2	61613	68.5
1986	8	3.26	42.55	769	normal	74	0	862	0	0.63	1720.9	59674.0	2725.0	67.8	60640	68.2
1986	9	2.74	45.29	141	normal	71	0	743	0	0.45	1215.3	58528.7	2702.7	67.4	59542	67.8
1986	10	0.00	0.00	183	normal	74	0	677	0	0.36	973.0	57664.7	2685.8	67.1	58306	67.3
1986	11	2.40	2.40	264	normal	71	125	331	0	0.26	695.6	57037.1	2673.4	66.9	57494	67.0
1986	12	1.60	4.00	252	normal	74	125	350	0	0.10	272.7	56817.4	2669.0	66.8	57359	67.0
1987	1	1.59	5.59	276	normal	74	125	0	0	0.08	210.9	56683.5	2666.4	66.7	57359	67.0
1987	2	2.66	8.25	1,249	normal	66	125	0	0	0.10	253.3	57488.2	2682.3	67.0	58306	67.3
1987	3	3.90	12.15	1,341	normal	74	0	0	0	0.19	496.2	58259.0	2697.5	67.3	59130	67.6
1987	4	1.58	13.73	1,797	normal	71	0	0	0	0.30	811.9	59173.1	2715.3	67.6	60091	68.0
1987	5	0.28	14.01	281	dry	74	0	414	0	0.40	1086.1	58293.9	2698.1	67.3	59267	67.7
1987	6	0.00	14.01	82	dry	71	0	1369	0	0.53	1427.3	56877.6	2670.2	66.8	57899	67.2
1987	7	0.49	14.50	0	dry	74	0	1760	0	0.60	1594.1	55209.5	2636.8	66.2	56280	66.6
1987	8	0.17	14.67	254	dry	74	0	1820	0	0.59	1563.6	53825.9	2608.6	65.7	54941	66.1
1987	9	0.28	14.95	133	dry	71	0	1758	0	0.50	1299.1	52588.8	2583.1	65.2	53748	65.6
1987	10	5.12	5.12	1,328	dry	74	0	1306	0	0.40	1033.2	52809.5	2587.7	65.3	54013	65.7
1987	11	4.54	9.66	283	dry	71	125	292	0	0.24	631.4	52265.1	2576.4	65.1	53616	65.6
1987	12	4.45	14.11	981	dry	74	125	0	0	0.09	231.9	52815.3	2587.8	65.3	54279	65.8
1988	1	3.79	17.90	805	dry	74	125	0	0	0.09	222.6	53198.7	2595.7	65.4	54808	66.0
1988	2	1.35	19.25	439	dry	66	125	0	0	0.10	270.0	53176.8	2595.3	65.4	54941	66.1
1988	3	1.00	20.25	288	dry	74	0	0	0	0.20	526.8	52863.9	2588.8	65.3	54675	66.0
1988	4	5.50	25.75	1,669	dry	71	0	0	0	0.27	704.2	53757.8	2607.2	65.6	55605	66.3
1988	5	0.48	26.23	436	normal	74	0	474	0	0.41	1066.4	53053.4	2592.7	65.4	54941	66.1
1988	6	0.01	26.24	191	normal	71	0	1279	0	0.52	1345.6	51827.8	2567.2	64.9	53748	65.6
1988	7	0.00	26.24	0	normal	74	0	1910	0	0.70	1791.9	49961.8	2527.7	64.1	51912	64.9
1988	8	2.65	28.89	359	normal	74	0	1810	0	0.59	1486.3	48760.5	2501.8	63.7	50741	64.5

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITIO FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1988	9	0.00	28.89	0	normal	71	0	1688	0	0.55	1368.5	47321.0	2470.3	63.1	49334	63.9
1988	10	0.00	0.00	0	normal	74	0	1686	0	0.45	1109.2	46137.9	2444.0	62.6	48191	63.4
1988	11	2.97	2.97	364	normal	71	125	456	0	0.27	647.7	45658.2	2433.2	62.4	47811	63.3
1988	12	6.43	9.40	0	normal	74	125	0	0	0.14	335.8	45123.4	2421.1	62.1	47314	63.1
1989	1	1.88	11.28	0	normal	74	125	0	0	0.22	532.6	44391.8	2404.4	61.8	46699	62.8
1989	2	6.39	17.67	2511	normal	66	125	0	0	0.09	216.4	46495.4	2452.0	62.7	48953	63.7
1989	3	2.76	20.43	1732	normal	74	0	0	0	0.22	539.4	47613.9	2476.8	63.2	50094	64.2
1989	4	0.39	20.82	307	normal	71	0	0	0	0.31	767.8	47082.1	2465.0	63.0	49587	64.0
1989	5	1.11	21.93	0	dry	74	0	0	0	0.44	1084.6	45923.5	2439.2	62.5	48445	63.5
1989	6	0.00	21.93	180	dry	71	0	0	0	0.52	1265.9	44766.6	2413.0	62.0	47314	63.1
1989	7	0.00	21.93	0	dry	74	0	0	0	0.79	1906.3	42786.3	2367.3	61.1	45344	62.2
1989	8	0.38	22.31	0	dry	74	0	0	0	0.59	1392.0	41320.3	2332.6	60.4	43903	61.6
1989	9	1.60	23.91	217	dry	71	0	0	0	0.49	1143.0	40323.4	2308.6	60.0	42943	61.2
1989	10	2.61	2.61	0	dry	74	0	0	0	0.39	900.4	39349.0	2284.9	59.5	42004	60.8
1989	11	0.20	2.81	20	dry	71	125	0	0	0.26	594.1	38578.9	2265.9	59.2	41302	60.4
1989	12	0.00	2.81	0	dry	74	125	0	0	0.15	339.9	38040.0	2252.4	58.9	40834	60.2
1990	1	6.70	9.51	517	dry	74	125	0	0	0.07	157.7	38200.4	2256.4	59.0	41068	60.3
1990	2	6.18	15.69	352	dry	66	125	0	0	0.08	180.5	38180.9	2255.9	59.0	41185	60.4
1990	3	2.67	18.36	2475	dry	74	0	0	0	0.20	458.0	40123.9	2303.8	59.9	43183	61.3
1990	4	1.33	19.69	689	dry	71	0	0	0	0.28	645.1	40096.8	2303.1	59.9	43183	61.3
1990	5	0.96	20.65	262	dry	74	0	0	0	0.40	921.3	39363.6	2285.2	59.5	42473	61.0
1990	6	0.20	20.85	333	dry	71	0	0	0	0.53	1211.2	38414.4	2261.8	59.1	41536	60.5
1990	7	0.73	21.58	0	dry	74	0	0	0	0.59	1334.4	37006.0	2226.3	58.4	40142	59.9
1990	8	0.55	22.13	189	dry	74	0	0	0	0.57	1269.0	35852.0	2196.7	57.8	39005	59.4
1990	9	0.00	22.13	0	dry	71	0	0	0	0.49	1076.4	34704.6	2166.7	57.2	37879	58.8
1990	10	0.00	0.00	0	dry	74	0	0	0	0.44	953.3	33677.3	2139.3	56.7	36888	58.3
1990	11	1.77	1.77	0	dry	71	125	0	0	0.35	748.8	32732.5	2113.7	56.2	36009	57.9
1990	12	1.11	2.88	39	dry	74	125	0	0	0.08	169.1	32403.4	2104.7	56.0	35690	57.7

PRECIPITATION: SWRCB Exhibit #1, Report of Investigation, P.7.
CALCULATED UNIMPAIRED FLOW: BBMWD/CITY Exhibit # 7-2 thru 7-7, Simulated model runs
SEASON DEFINITION FOR FISH RELEASE: Derived (see staff report)
BBMWD DEMAND: BBMWD/CITY Exhibit #7-2 thru 7-7, Simulated model runs
MUTUAL DEMAND: BBMWD/CITY Exhibits #7-2 thru 7-7, Simulated Model Runs
MUTUAL RELEASE: Derived, based on current operational policy; SWRCB Exhibit #1, report of Investigation, P.10.
ESTIMATED EVAPORATION RATES: BBMWD?CITY Exhibit #7-2 thru 7-7, Simulated model runs
ESTIMATED EVAPORATION LOSSES: Derived: (evap. rate)x(lake surface area)
ADJUSTED E.O.M. STORAGE: Derived: (previous E.O.M. storage)+(unimpaired flow)-(fish release)-(BBMWD demand)-(Mutual Demand)-(Evap. losses)
DERIVED SURFACE AREA: (surface area)=(26.0139)x(adj. E.O.M. storage)^0.423
ADJUSTED STAFF GAGE ELEVATION: Derived: (gage elevation)=(2.1702)x(adj. E.O.M. storage)^0.313
HISTORIC E.O.M. STORAGE: SWRCB Exhibit #1, Report of Investigation, P.8.
HISTORIC STAFF GAGE ELEVATION: Derived: (gage elevation)=(2.1702)x(historic E.O.M. storage)^0.313

DISTRICT/CITY: CURRRENT OPERATION -- 0.1 CFS YEAR-ROUND

DATE YEAR	MONTH	PRECIPITATION (IN)	ACCUMULATED PRECIPITATION (water year oct.-sep) (IN)	CALCULATED UNIMPAIRED FLOW (AF)	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE (AF)	BBMWD DEMAND (Snowmkg) (AF)	MUTUAL DEMAND (AF)	MUTUAL RELEASE (AF)	ESTIMATED EVAP RATE (FT/MONTH)	EST. EVAP. LOSSES (AF)	ADJUSTED E.O.M. STORAGE (AF)	DERIVED SURFACE AREA (AC)	ADJUSTED STAFF GAGE ELEVATION (FT)	HISTORIC E.O.M. STORAGE (AF)	HISTORIC STAFF GAGE ELEVATION (FT)
1938	4		58.59							STARTING CAPACITY >		64433.0	2814.9	69.5		
1939	1	4.95	13.26	1,367	wet	6	125	0	0	0.07	197.0	65472.0	2834.0	69.8	65573	69.8
1939	2	4.11	17.37	1,496	wet	6	125	0	0	0.07	198.4	66638.6	2855.2	70.2	66840	70.3
1939	3	2.72	20.09	3,567	wet	6	0	0	0	0.17	485.4	69714.2	2910.3	71.2	69883	71.3
1939	4	3.21	23.30	3,516	wet	6	0	0	0	0.28	814.9	72409.3	2957.3	72.0	72167	72.0
1939	5	0.00	23.30	1,300	normal	6	0	0	0	0.40	1182.9	72520.4	2959.2	72.1	71405	71.7
1939	6	0.00	23.30	(178)	normal	6	0	0	0	0.49	1450.0	70886.4	2930.8	71.6	68616	70.8
1939	7	0.37	23.67	210	normal	6	0	0	0	0.58	1699.9	69390.5	2904.5	71.1	65319	69.8
1939	8	0.77	24.44	971	normal	6	0	373	373	0.60	1742.7	68239.8	2884.1	70.7	62117	68.7
1939	9	7.71	32.15	1,791	normal	6	0	0	0	0.47	1355.5	68669.3	2891.7	70.9	60853	68.2
1939	10	0.75	0.75	436	normal	6	0	0	0	0.36	1041.0	68058.2	2880.8	70.7	58958	67.6
1939	11	1.56	2.31	562	normal	6	125	0	0	0.25	720.2	67769.0	2875.6	70.6	57483	67.0
1939	12	1.02	3.33	496	normal	6	125	0	0	0.11	316.3	67817.7	2876.5	70.6	57483	67.0
1940	1	7.69	11.02	1,898	normal	6	125	0	0	0.08	230.1	69354.6	2903.9	71.1	59168	67.6
1940	2	6.99	18.01	1,928	normal	6	125	0	0	0.09	261.4	70890.2	2930.9	71.6	60853	68.2
1940	3	3.79	21.80	1,626	normal	6	0	0	0	0.21	615.5	71894.8	2948.4	71.9	61906	68.6
1940	4	1.63	23.43	1,374	normal	6	0	0	0	0.27	796.1	72466.7	2958.3	72.1	62538	68.8
1940	5	0.00	23.43	311	normal	6	0	0	0	0.43	1272.1	71499.6	2941.5	71.8	60853	68.2
1940	6	0.00	23.43	596	normal	6	0	288	288	0.54	1588.4	70213.2	2919.0	71.4	58536	67.4
1940	7	0.00	23.43	90	normal	6	0	729	729	0.56	1634.7	67933.5	2878.6	70.6	54956	66.1
1940	8	0.00	23.43	(179)	normal	6	0	686	686	0.60	1727.1	65335.4	2831.5	69.8	51035	64.6
1940	9	0.55	23.98	26	normal	6	0	874	874	0.47	1330.8	63150.6	2791.0	69.0	47649	63.2
1940	10	1.99	1.99	660	normal	6	0	664	664	0.39	1088.5	62052.1	2770.4	68.6	45656	62.4
1940	11	2.24	4.23	198	normal	6	125	453	453	0.23	637.2	61028.9	2751.0	68.3	45059	62.1
1940	12	14.64	18.87	4,068	normal	6	125	0	0	0.10	275.1	64690.8	2819.6	69.5	48644	63.6
1941	1	3.84	22.71	1,392	normal	6	125	0	0	0.08	225.6	65726.2	2838.6	69.9	49839	64.1
1941	2	13.67	36.38	4,105	normal	6	125	0	0	0.10	283.9	69416.3	2905.0	71.1	53692	65.6
1941	3	11.26	47.64	5,948	normal	6	0	0	0	0.18	522.9	73320.0	2973.0	72.3	59168	67.6
1941	4	7.01	54.65	6,107	normal	6	0	0	0	0.23	683.8	73320.0	2973.0	72.3	64644	69.5
1941	5	0.61	55.26	6,164	wet	6	0	0	0	0.41	1218.9	73320.0	2973.0	72.3	69630	71.2
1941	6	0.00	55.26	873	wet	6	0	0	0	0.47	1397.3	72789.7	2963.9	72.2	69123	71.0
1941	7	0.00	55.26	107	wet	6	0	0	0	0.56	1659.8	71230.9	2936.9	71.7	67602	70.5
1941	8	1.03	56.29	849	wet	6	0	0	0	0.55	1615.3	70458.6	2923.4	71.4	66334	70.1
1941	9	0.00	56.29	(101)	wet	6	0	0	0	0.45	1315.5	69036.1	2898.2	71.0	63802	69.2
1941	10	3.49	3.49	1,021	wet	6	0	0	0	0.34	985.4	69065.7	2898.8	71.0	63170	69.0
1941	11	1.48	4.97	594	wet	6	125	0	0	0.26	753.7	68775.0	2893.6	70.9	62959	69.0
1941	12	8.79	13.76	1,848	wet	6	125	0	0	0.09	260.4	70231.6	2919.4	71.4	64433	69.5
1942	1	0.29	14.05	224	wet	6	125	0	0	0.08	233.5	70091.1	2916.9	71.3	64433	69.5
1942	2	2.71	16.76	884	wet	6	125	0	0	0.09	262.5	70581.6	2925.5	71.5	65065	69.7
1942	3	2.73	19.49	1,524	wet	6	0	0	0	0.18	526.6	71573.0	2942.8	71.8	66080	70.0
1942	4	3.25	22.74	2,972	wet	6	0	0	0	0.24	706.3	73320.0	2973.0	72.3	68362	70.8
1942	5	0.00	22.74	956	normal	6	0	0	0	0.38	1129.7	73140.3	2969.9	72.3	67347	70.4
1942	6	0.00	22.74	(213)	normal	6	0	32	32	0.50	1485.0	71404.3	2939.9	71.7	64223	69.4
1942	7	0.87	23.61	665	normal	6	0	910	910	0.59	1734.5	69418.8	2905.0	71.1	60643	68.2
1942	8	0.12	23.73	432	normal	6	0	1112	1112	0.57	1655.9	67076.9	2863.2	70.3	56641	66.7
1942	9	0.00	23.73	116	normal	6	0	966	966	0.46	1317.1	64903.9	2823.6	69.6	53060	65.4
1942	10	0.47	0.47	399	normal	6	0	832	832	0.38	1072.9	63391.9	2795.5	69.1	50437	64.3

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1942	11	0.67	1.14	496	normal	6	125	476	476	0.38	1062.3	62218.6	2773.5	68.7	48843	63.7
1942	12	1.87	3.01	486	normal	6	125	359	359	0.27	748.9	61465.7	2759.3	68.4	48445	63.5
1943	1	19.71	22.72	3,783	normal	6	125	0	0	0.10	275.9	64841.8	2822.4	69.6	52030	65.0
1943	2	9.42	32.14	2,945	normal	6	125	0	0	0.08	225.8	67430.0	2869.5	70.5	54745	66.0
1943	3	4.83	36.97	6,428	normal	6	0	0	0	0.09	258.3	73320.0	2973.0	72.3	60643	68.2
1943	4	2.65	39.62	5,223	normal	6	0	0	0	0.20	594.6	73320.0	2973.0	72.3	65065	69.7
1943	5	0.00	39.62	969	wet	6	0	0	0	0.29	862.2	73320.0	2973.0	72.3	64854	69.6
1943	6	0.00	39.62	212	wet	6	0	0	0	0.42	1248.7	72277.3	2955.0	72.0	63381	69.1
1943	7	0.00	39.62	491	wet	6	0	0	0	0.46	1359.3	71403.0	2939.9	71.7	60432	68.1
1943	8	0.00	39.62	557	wet	6	0	191	191	0.57	1675.7	70087.3	2916.8	71.3	57062	66.9
1943	9	0.25	39.87	273	wet	6	0	159	159	0.59	1720.9	68474.4	2888.2	70.8	53902	65.7
1943	10	1.85	1.85	854	wet	6	0	0	0	0.52	1501.9	67820.5	2876.5	70.6	52428	65.1
1943	11	0.20	2.05	66	wet	6	125	0	0	0.39	1121.9	66633.6	2855.1	70.2	50835	64.5
1943	12	9.08	11.13	1,635	wet	6	125	0	0	0.25	713.8	67423.8	2869.4	70.5	52130	65.0
1944	1	2.48	13.61	475	wet	6	125	0	0	0.08	229.6	67538.3	2871.5	70.5	52428	65.1
1944	2	12.05	25.66	1,754	wet	6	125	0	0	0.07	201.0	68960.3	2896.9	71.0	53902	65.7
1944	3	2.38	28.04	2,758	wet	6	0	0	0	0.11	318.7	71393.6	2939.7	71.7	56220	66.6
1944	4	3.00	31.04	4,429	wet	6	0	0	0	0.17	499.7	73320.0	2973.0	72.3	60011	67.9
1944	5	0.20	31.24	1,496	normal	6	0	0	0	0.24	713.5	73320.0	2973.0	72.3	60432	68.1
1944	6	0.00	31.24	140	normal	6	0	0	0	0.38	1129.7	72324.3	2955.9	72.0	58958	67.6
1944	7	0.00	31.24	532	normal	6	0	265	265	0.44	1300.6	71284.7	2937.8	71.7	55798	66.4
1944	8	0.00	31.24	374	normal	6	0	965	965	0.54	1586.4	69101.3	2899.4	71.0	51632	64.8
1944	9	0.00	31.24	197	normal	6	0	894	894	0.58	1681.7	66716.6	2856.6	70.2	47649	63.2
1944	10	0.00	0.00	250	normal	6	0	718	718	0.50	1428.3	64814.3	2821.9	69.6	44661	61.9
1944	11	13.70	13.70	2,889	normal	6	125	0	0	0.38	1072.3	66500.0	2852.7	70.2	46851	62.9
1944	12	2.08	15.78	616	normal	6	125	0	0	0.20	570.5	66414.4	2851.2	70.1	47250	63.0
1945	1	2.51	18.29	568	normal	6	125	0	0	0.07	199.6	66651.8	2855.5	70.2	47649	63.2
1945	2	8.95	27.24	3,807	normal	6	125	0	0	0.09	257.0	70070.9	2916.5	71.3	51234	64.7
1945	3	12.54	39.78	3,471	normal	6	0	0	0	0.15	437.5	73098.4	2969.2	72.3	54324	65.8
1945	4	1.17	40.95	5,501	normal	6	0	0	0	0.25	742.3	73320.0	2973.0	72.3	59168	67.6
1945	5	0.11	41.06	1,530	wet	6	0	0	0	0.39	1159.5	73320.0	2973.0	72.3	59590	67.8
1945	6	0.00	41.06	392	wet	6	0	0	0	0.49	1456.8	72249.2	2954.6	72.0	58115	67.3
1945	7	0.14	41.20	697	wet	6	0	154	154	0.59	1743.2	71043.0	2933.6	71.6	55377	66.2
1945	8	2.21	43.41	1,149	wet	6	0	0	0	0.57	1672.1	70513.9	2924.3	71.5	53271	65.4
1945	9	0.66	44.07	461	wet	6	0	460	460	0.49	1432.9	69076.0	2899.0	71.0	50038	64.2
1945	10	1.78	1.78	916	wet	6	0	312	312	0.38	1101.6	68572.4	2890.0	70.8	47449	63.1
1945	11	0.82	2.60	142	wet	6	125	158	158	0.23	664.7	67760.7	2875.5	70.6	46253	62.6
1945	12	15.37	17.97	5,173	wet	6	125	0	0	0.09	258.8	72543.9	2959.6	72.1	50835	64.5
1946	1	0.73	18.70	574	wet	6	125	0	0	0.07	207.2	72779.7	2963.7	72.2	51234	64.7
1946	2	4.23	22.93	997	wet	6	125	0	0	0.08	237.1	73320.0	2973.0	72.3	52030	65.0
1946	3	11.31	34.24	2,304	wet	6	0	0	0	0.17	505.4	73320.0	2973.0	72.3	53902	65.7
1946	4	1.73	35.97	3,063	wet	6	0	0	0	0.28	832.4	73320.0	2973.0	72.3	56220	66.6
1946	5	0.31	36.28	364	normal	6	0	0	0	0.40	1189.2	72488.8	2958.7	72.1	55166	66.2
1946	6	0.00	36.28	154	normal	6	0	173	173	0.51	1508.9	70954.9	2932.0	71.6	52638	65.2
1946	7	3.26	39.54	1,057	normal	6	0	579	579	0.57	1671.3	69755.6	2911.0	71.2	49640	64.0
1946	8	0.07	39.61	142	normal	6	0	754	754	0.59	1717.5	67420.1	2869.3	70.5	46054	62.5
1946	9	1.76	41.37	338	normal	6	0	1159	1159	0.51	1463.4	65129.8	2827.7	69.7	42867	61.1
1946	10	6.68	6.68	488	normal	6	0	619	619	0.34	961.4	64031.3	2807.4	69.3	41473	60.5
1946	11	13.79	20.47	3,528	normal	6	125	0	0	0.20	561.5	66866.8	2859.4	70.3	44462	61.8
1946	12	5.19	25.66	1,829	normal	6	125	0	0	0.10	285.9	68278.9	2884.8	70.7	46054	62.5

DISTRICT/CITY

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1947	1	2.72	28.38	565	normal	6	125	0	0	0.07	201.9	68511.0	2888.9	70.8	46452	62.7
1947	2	1.52	29.90	838	normal	6	125	0	0	0.10	288.9	68929.1	2896.3	70.9	47050	63.0
1947	3	1.36	31.26	1,106	normal	6	0	0	0	0.21	608.2	69420.9	2905.1	71.1	47649	63.2
1947	4	0.70	31.96	474	normal	6	0	0	0	0.27	784.4	69104.5	2899.5	71.0	47449	63.1
1947	5	0.03	31.99	116	normal	6	0	229	229	0.44	1275.8	67709.7	2874.6	70.5	45656	62.4
1947	6	0.04	32.03	(43)	normal	6	0	1004	1004	0.50	1437.3	65219.4	2829.4	69.7	43066	61.2
1947	7	0.00	32.03	(46)	normal	6	0	1720	1720	0.59	1669.3	61778.1	2765.2	68.6	39431	59.6
1947	8	1.19	33.22	336	normal	6	0	1644	1644	0.57	1576.2	58888.0	2709.7	67.5	36639	58.2
1947	9	0.12	33.34	52	normal	6	0	1767	0	0.52	1409.1	57524.9	2683.0	67.0	33849	56.8
1947	10	0.59	0.59	139	normal	6	0	1484	0	0.39	1046.4	56611.5	2664.9	66.7	32104	55.9
1947	11	0.26	0.85	106	normal	6	125	1128	0	0.22	586.3	56000.2	2652.7	66.5	31232	55.4
1947	12	7.52	8.37	865	normal	6	125	576	0	0.08	212.2	56522.0	2663.1	66.7	31929	55.8
1948	1	0.12	8.49	161	normal	6	125	675	0	0.08	213.1	56339.0	2659.5	66.6	31929	55.8
1948	2	7.84	16.33	1,209	normal	6	125	0	0	0.08	212.8	57204.2	2676.7	66.9	32976	56.3
1948	3	7.48	23.81	1,181	normal	6	0	0	0	0.15	401.5	57977.7	2691.9	67.2	33849	56.8
1948	4	4.25	28.06	2,615	normal	6	0	0	0	0.25	673.0	59913.7	2729.6	67.9	35941	57.9
1948	5	0.15	28.21	493	normal	6	0	381	0	0.39	1064.5	59336.2	2718.4	67.7	35244	57.5
1948	6	0.13	28.34	192	normal	6	0	1268	0	0.49	1332.0	58190.1	2696.1	67.3	33151	56.4
1948	7	0.04	28.38	(69)	normal	6	0	1828	0	0.56	1509.8	56605.3	2664.8	66.7	29863	54.6
1948	8	0.00	28.38	(19)	normal	6	0	2014	0	0.57	1518.9	55061.4	2633.8	66.1	26462	52.6
1948	9	0.00	28.38	(50)	normal	6	0	1815	0	0.49	1290.6	53714.8	2606.4	65.6	23209	50.5
1948	10	1.67	1.67	524	normal	6	0	1507	0	0.37	964.4	53268.5	2597.2	65.4	21581	49.3
1948	11	0.00	1.67	59	normal	6	125	1214	0	0.23	597.4	52599.1	2583.3	65.2	20361	48.4
1948	12	7.79	9.46	656	normal	6	125	693	0	0.08	206.7	52917.5	2589.9	65.3	20620	48.6
1949	1	11.96	21.42	1,012	normal	6	125	0	0	0.03	77.7	53720.8	2606.5	65.6	21581	49.3
1949	2	4.13	25.55	992	normal	6	125	0	0	0.06	156.4	54425.4	2620.9	65.9	22470	50.0
1949	3	4.79	30.34	1,593	normal	6	0	0	0	0.15	393.1	55619.2	2645.1	66.3	23800	50.9
1949	4	0.02	30.36	4,025	normal	6	0	0	0	0.26	687.7	58950.5	2711.0	67.6	27350	53.1
1949	5	1.38	31.74	697	normal	6	0	0	0	0.37	1003.1	58638.5	2704.9	67.4	27350	53.1
1949	6	0.00	31.74	172	normal	6	0	1197	0	0.51	1379.5	57425.0	2681.1	67.0	25279	51.8
1949	7	0.22	31.96	108	normal	6	0	1672	0	0.57	1528.2	55998.8	2652.7	66.5	22322	49.8
1949	8	0.01	31.97	110	normal	6	0	1741	0	0.57	1512.0	54590.8	2624.3	66.0	19583	47.8
1949	9	0.09	32.06	244	normal	6	0	1590	0	0.50	1312.1	53516.6	2602.3	65.5	17248	46.0
1949	10	1.07	1.07	95	normal	6	0	1272	0	0.35	910.8	52694.8	2585.3	65.2	16080	45.0
1949	11	4.28	5.35	564	normal	6	125	1002	0	0.26	672.2	52455.6	2580.3	65.1	15951	44.9
1949	12	7.29	12.64	812	normal	6	125	455	0	0.07	180.6	52956.0	2590.7	65.3	16600	45.4
1950	1	5.19	17.83	610	normal	6	125	0	0	0.06	155.4	53279.6	2597.4	65.5	17118	45.9
1950	2	4.14	21.97	1,973	normal	6	125	0	0	0.10	259.7	54861.8	2629.8	66.1	18933	47.3
1950	3	2.84	24.81	1,234	normal	6	0	99	0	0.20	526.0	55563.9	2643.9	66.3	19842	48.0
1950	4	3.10	27.91	851	normal	6	0	0	0	0.28	740.3	55668.6	2646.1	66.4	20231	48.3
1950	5	0.64	28.55	134	normal	6	0	859	0	0.39	1032.0	54764.6	2627.8	66.0	19453	47.7
1950	6	0.00	28.55	(45)	normal	6	0	1598	0	0.47	1235.1	53478.5	2601.5	65.5	17767	46.4
1950	7	1.18	29.73	231	normal	6	0	1859	0	0.57	1482.9	52220.7	2575.4	65.0	15692	44.6
1950	8	0.01	29.74	124	normal	6	0	456	0	0.57	1468.0	50870.7	2547.1	64.5	13048	42.1
1950	9	0.79	30.53	386	normal	6	0	456	0	0.46	1171.7	50079.0	2530.2	64.2	11500	40.5
1950	10	0.13	0.13	235	normal	6	0	456	0	0.40	1012.1	49295.9	2513.4	63.9	10055	38.8
1950	11	2.39	2.52	378	normal	6	125	456	0	0.26	653.5	48889.4	2504.6	63.7	9849	38.6
1950	12	0.00	2.52	30	normal	6	125	456	0	0.11	275.5	48512.9	2496.5	63.6	9746	38.5
1951	1	4.93	7.45	602	normal	6	125	456	0	0.07	174.8	48809.2	2502.9	63.7	10262	39.1
1951	2	3.64	11.09	421	normal	6	125	456	0	0.09	225.3	48873.9	2504.3	63.7	10571	39.5

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1951	3	2.29	13.38	123	normal	6	0	456	0	0.18	450.8	48540.2	2497.0	63.6	10468	39.3
1951	4	4.45	17.83	105	normal	6	0	456	0	0.25	624.3	48014.9	2485.6	63.4	10262	39.1
1951	5	1.04	18.87	198	dry	6	0	456	0	0.39	969.4	47237.5	2468.5	63.0	9746	38.5
1951	6	0.00	18.87	(552)	dry	6	0	456	0	0.47	1160.2	45519.3	2430.1	62.3	7579	35.5
1951	7	3.06	21.93	243	dry	6	0	456	0	0.57	1385.2	44371.2	2404.0	61.8	5511	32.2
1951	8	0.12	22.05	(392)	dry	6	0	456	0	0.56	1346.2	42627.0	2363.5	61.0	2930	26.4
1951	9	1.30	23.35	135	dry	6	0	456	0	0.48	1134.5	41621.5	2339.8	60.6	1400	21.0
1951	10	2.03	2.03	427	dry	6	0	456	0	0.36	842.3	41200.1	2329.7	60.4	950	18.6
1951	11	3.87	5.90	293	dry	6	125	456	0	0.21	489.2	40872.9	2321.9	60.2	950	18.6
1951	12	13.35	19.25	1,216	dry	6	125	0	0	0.08	185.8	41772.1	2343.4	60.7	2125	23.9
1952	1	13.27	32.52	614	dry	6	125	0	0	0.05	117.2	42138.0	2352.0	60.8	2721	25.8
1952	2	1.91	34.43	654	dry	6	125	0	0	0.07	164.6	42496.3	2360.5	61.0	3347	27.5
1952	3	16.14	50.57	3,079	dry	6	0	0	0	0.13	306.9	45262.5	2424.3	62.2	6338	33.6
1952	4	3.12	53.69	12,887	dry	6	0	0	0	0.23	557.6	57585.9	2684.2	67.1	18933	47.3
1952	5	0.00	53.69	4,687	wet	6	0	0	0	0.42	1127.4	61139.5	2753.1	68.3	22914	50.3
1952	6	0.00	53.69	243	wet	6	0	0	0	0.48	1321.5	60055.0	2732.3	67.9	22322	49.8
1952	7	2.08	55.77	404	wet	6	0	0	0	0.55	1502.8	58950.3	2710.9	67.6	21730	49.4
1952	8	0.42	56.19	113	wet	6	0	601	0	0.58	1572.3	57484.9	2682.2	67.0	20361	48.4
1952	9	2.78	58.97	523	wet	6	0	455	0	0.48	1287.5	56714.4	2667.0	66.7	19583	47.8
1952	10	0.00	0.00	241	wet	6	0	833	0	0.40	1066.8	55882.6	2650.4	66.4	18674	47.1
1952	11	6.47	6.47	752	wet	6	125	272	0	0.19	503.6	56000.1	2652.7	66.5	19064	47.4
1952	12	5.17	11.64	1,055	wet	6	125	0	0	0.09	238.7	56685.3	2666.4	66.7	19972	48.1
1953	1	1.80	13.44	554	wet	6	125	0	0	0.10	266.6	56841.7	2669.5	66.8	20361	48.4
1953	2	1.79	15.23	442	wet	6	125	360	0	0.11	293.6	56859.0	2669.8	66.8	20620	48.6
1953	3	3.47	18.70	1,332	wet	6	0	73	0	0.22	587.4	57597.7	2684.5	67.1	21581	49.3
1953	4	1.85	20.55	828	wet	6	0	16	0	0.31	832.2	57587.5	2684.3	67.1	21879	49.5
1953	5	1.94	22.49	204	dry	6	0	410	0	0.39	1046.9	56738.6	2667.4	66.8	21286	49.1
1953	6	0.00	22.49	173	dry	6	0	1282	0	0.52	1387.1	55518.6	2643.0	66.3	19842	48.0
1953	7	0.03	22.52	429	dry	6	0	456	0	0.64	1691.5	54250.0	2617.3	65.8	17767	46.4
1953	8	0.07	22.59	84	dry	6	0	456	0	0.61	1596.6	52731.5	2586.1	65.2	15302	44.3
1953	9	0.03	22.62	235	dry	6	0	456	0	0.52	1344.8	51615.7	2562.8	64.8	13151	42.2
1953	10	0.31	0.31	320	dry	6	0	456	0	0.38	973.9	50955.8	2548.9	64.5	11809	40.8
1953	11	1.56	1.87	133	dry	6	125	456	0	0.25	637.2	50320.6	2535.4	64.3	11397	40.4
1953	12	0.45	2.32	130	dry	6	125	456	0	0.09	228.2	50091.4	2530.5	64.2	11397	40.4
1954	1	16.52	18.84	1,538	dry	6	125	0	0	0.07	177.1	51321.3	2556.6	64.7	12841	41.9
1954	2	5.89	24.73	1,047	dry	6	125	0	0	0.10	255.7	51981.6	2570.5	64.9	13746	42.8
1954	3	14.35	39.08	2,730	dry	6	0	0	0	0.18	462.7	54243.0	2617.2	65.8	16210	45.1
1954	4	0.23	39.31	6,286	dry	6	0	0	0	0.29	759.0	59764.0	2726.7	67.8	22026	49.6
1954	5	0.23	39.54	1,089	wet	6	0	0	0	0.46	1254.3	59592.7	2723.4	67.8	22322	49.8
1954	6	0.54	40.08	233	wet	6	0	390	0	0.57	1552.3	58267.4	2697.6	67.3	21484	49.3
1954	7	0.92	41.00	395	wet	6	0	1231	0	0.63	1699.5	56956.9	2671.8	66.8	19842	48.0
1954	8	0.41	41.41	438	wet	6	0	1493	0	0.60	1603.1	55785.8	2648.4	66.4	18156	46.7
1954	9	0.60	42.01	389	wet	6	0	456	0	0.50	1324.2	54844.6	2629.4	66.0	16470	45.3
1954	10	0.00	0.00	(71)	wet	6	0	456	0	0.40	1051.8	53715.8	2606.4	65.6	14914	43.9
1954	11	4.32	4.32	477	wet	6	125	456	0	0.25	651.6	53410.2	2600.1	65.5	14914	43.9
1954	12	3.38	7.70	782	wet	6	125	0	0	0.09	234.0	53827.2	2608.7	65.7	15562	44.5
1955	1	9.64	17.34	349	wet	6	125	0	0	0.06	156.5	53888.7	2609.9	65.7	15821	44.8
1955	2	1.45	18.79	395	wet	6	125	0	0	0.09	234.9	53917.8	2610.5	65.7	16080	45.0
1955	3	0.61	19.40	2,110	wet	6	0	0	0	0.19	496.0	55525.8	2643.2	66.3	17896	46.5
1955	4	1.47	20.87	743	wet	6	0	342	0	0.26	687.2	55575.6	2644.2	66.3	18156	46.7

DISTRICT/CITY

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1955	5	4.01	24.88	1,301	dry	6	0	221	0	0.41	1084.1	55786.5	2648.4	66.4	18804	47.2
1955	6	0.00	24.88	235	dry	6	0	456	0	0.53	1403.7	54611.8	2624.7	66.0	17507	46.2
1955	7	1.95	26.83	37	dry	6	0	456	0	0.57	1496.1	53146.7	2594.7	65.4	15562	44.5
1955	8	2.77	29.60	806	dry	6	0	456	0	0.61	1582.7	52364.0	2578.4	65.1	14135	43.2
1955	9	0.00	29.60	(42)	dry	6	0	456	0	0.51	1315.0	51001.0	2549.8	64.6	11706	40.7
1955	10	0.00	0.00	307	dry	6	0	456	0	0.40	1019.9	50282.0	2534.6	64.3	10365	39.2
1955	11	3.21	3.21	335	dry	6	125	456	0	0.24	608.3	49877.7	2525.9	64.1	10055	38.8
1955	12	2.58	5.79	123	dry	6	125	456	0	0.10	252.6	49617.1	2520.3	64.0	10055	38.8
1956	1	12.19	17.98	1,353	dry	6	125	0	0	0.09	226.8	50612.3	2541.6	64.4	11294	40.3
1956	2	2.07	20.05	1,254	dry	6	125	0	0	0.09	228.7	51506.6	2560.5	64.8	12428	41.5
1956	3	0.00	20.05	(349)	dry	6	0	456	0	0.20	512.1	50639.5	2542.2	64.4	11809	40.8
1956	4	4.09	24.14	437	dry	6	0	456	0	0.25	635.5	50434.9	2537.8	64.3	11913	41.0
1956	5	1.67	25.81	482	normal	6	0	456	0	0.40	1015.1	49895.8	2526.3	64.1	11603	40.6
1956	6	0.00	25.81	74	normal	6	0	456	0	0.53	1338.9	48624.9	2498.9	63.6	9849	38.6
1956	7	1.21	27.02	62	normal	6	0	456	0	0.58	1449.4	47231.5	2468.3	63.0	7682	35.7
1956	8	0.00	27.02	176	normal	6	0	456	0	0.56	1382.3	46019.2	2441.3	62.5	5511	32.2
1956	9	0.00	27.02	(399)	normal	6	0	456	0	0.52	1269.5	44344.7	2403.4	61.8	2840	26.1
1956	10	0.25	0.25	265	normal	6	0	456	0	0.35	841.2	43762.6	2390.0	61.5	1300	20.5
1956	11	0.00	0.25	340	normal	6	125	456	0	0.21	501.9	43469.7	2383.2	61.4	1000	18.9
1956	12	0.59	0.84	10	normal	6	125	456	0	0.09	214.5	43134.2	2375.4	61.3	592	16.0
1957	1	18.88	19.72	2,368	normal	6	125	0	0	0.06	142.5	45228.7	2423.5	62.2	2930	26.4
1957	2	3.99	23.71	2,897	normal	6	125	0	0	0.10	242.4	47752.3	2479.8	63.2	5766	32.6
1957	3	2.38	26.09	546	normal	6	0	0	0	0.19	471.2	47821.1	2481.3	63.3	6148	33.3
1957	4	2.91	29.00	615	normal	6	0	456	0	0.25	620.3	47809.8	2481.1	63.3	6530	33.9
1957	5	3.60	32.60	403	normal	6	0	363	0	0.35	868.4	47338.4	2470.7	63.1	6594	34.0
1957	6	0.28	32.88	118	normal	6	0	456	0	0.54	1334.2	46116.2	2443.5	62.6	6084	33.2
1957	7	0.43	33.31	40	normal	6	0	456	0	0.59	1441.7	44708.6	2411.7	62.0	4875	31.0
1957	8	0.27	33.58	(962)	normal	6	0	456	0	0.58	1398.8	42341.8	2356.8	60.9	2452	25.0
1957	9	0.00	33.58	411	normal	6	0	456	0	0.46	1084.1	41662.7	2340.8	60.6	1946	23.2
1957	10	4.51	4.51	203	normal	6	0	456	0	0.33	772.5	41087.2	2327.0	60.3	1789	22.6
1957	11	3.12	7.63	84	normal	6	125	456	0	0.21	488.7	40551.5	2314.2	60.1	1809	22.7
1957	12	9.11	16.74	1,302	normal	6	125	178	0	0.09	208.3	41514.2	2337.2	60.5	3079	26.8
1958	1	3.10	19.84	620	normal	6	125	456	0	0.08	187.0	41816.3	2344.4	60.7	3664	28.3
1958	2	12.62	32.46	3,059	normal	6	125	0	0	0.09	211.0	44533.3	2407.7	61.9	6657	34.1
1958	3	12.92	45.38	5,314	normal	6	0	0	0	0.14	337.1	49504.2	2517.9	64.0	11809	40.8
1958	4	11.73	57.11	8,765	normal	6	0	0	0	0.23	579.1	57684.1	2686.2	67.1	20231	48.3
1958	5	1.00	58.11	4,736	wet	6	0	0	0	0.42	1128.2	61285.9	2755.9	68.4	24243	51.2
1958	6	0.00	58.11	263	wet	6	0	0	0	0.48	1322.8	60220.1	2735.5	68.0	23652	50.8
1958	7	0.04	58.15	(52)	wet	6	0	0	0	0.56	1531.9	58630.2	2704.7	67.4	22618	50.1
1958	8	0.78	58.93	595	wet	6	0	0	0	0.60	1622.8	57596.4	2684.4	67.1	22174	49.7
1958	9	1.81	60.74	99	wet	6	0	47	0	0.49	1315.4	56374.0	2660.2	66.6	21434	49.2
1958	10	0.16	0.16	(156)	wet	6	0	201	0	0.39	1037.5	55174.5	2636.1	66.2	20620	48.6
1958	11	1.85	2.01	872	wet	6	125	177	0	0.21	553.6	55361.9	2639.9	66.2	21139	49.0
1958	12	0.00	2.01	(351)	wet	6	125	374	0	0.10	264.0	54616.0	2624.8	66.0	20620	48.6
1959	1	3.82	5.83	263	wet	6	125	456	0	0.08	210.0	54538.0	2623.2	65.9	20749	48.7
1959	2	17.55	23.38	1,857	wet	6	125	0	0	0.08	209.9	56054.1	2653.8	66.5	22470	50.0
1959	3	0.00	23.38	1,253	wet	6	0	24	0	0.21	557.3	56743.8	2667.6	66.8	23356	50.6
1959	4	0.59	23.97	84	wet	6	0	457	0	0.30	800.3	56021.6	2653.1	66.5	22914	50.3
1959	5	0.17	24.14	(250)	normal	6	0	456	0	0.40	1061.3	54704.3	2626.6	66.0	21730	49.4
1959	6	0.00	24.14	86	normal	6	0	456	0	0.56	1470.9	53313.4	2598.1	65.5	19842	48.0

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1959	7	0.20	24.34	609	normal	6	0	456	0	0.64	1662.8	52253.6	2576.1	65.1	17377	46.1
1959	8	0.55	24.89	80	normal	6	0	456	0	0.60	1545.7	50782.0	2545.2	64.5	15044	44.1
1959	9	1.15	26.04	(57)	normal	6	0	456	0	0.48	1221.7	49497.3	2517.8	64.0	13151	42.2
1959	10	0.46	0.46	488	normal	6	0	456	0	0.40	1007.1	48972.2	2506.4	63.7	12222	41.3
1959	11	1.70	2.16	597	normal	6	125	456	0	0.25	626.6	48811.6	2502.9	63.7	12016	41.1
1959	12	0.74	2.90	141	normal	6	125	456	0	0.10	250.3	48571.3	2497.7	63.6	11809	40.8
1960	1	6.17	9.07	597	normal	6	125	0	0	0.06	149.9	48887.4	2504.6	63.7	12325	41.4
1960	2	5.50	14.57	729	normal	6	125	0	0	0.08	200.4	49285.0	2513.2	63.9	12944	42.0
1960	3	2.12	16.69	1,882	normal	6	0	219	0	0.21	527.8	50633.3	2542.0	64.4	14525	43.6
1960	4	5.14	21.83	734	normal	6	0	327	0	0.28	711.8	50649.5	2542.4	64.4	14655	43.7
1960	5	0.32	22.15	1,123	normal	6	0	406	0	0.41	1042.4	50724.1	2544.0	64.5	15173	44.2
1960	6	0.00	22.15	(204)	normal	6	0	456	0	0.56	1424.6	49089.5	2509.0	63.8	13358	42.4
1960	7	0.05	22.20	610	normal	6	0	456	0	0.59	1480.3	48213.2	2489.9	63.4	11706	40.7
1960	8	0.03	22.23	(410)	normal	6	0	456	0	0.59	1469.1	46328.2	2448.3	62.6	9023	37.5
1960	9	0.28	22.51	(392)	normal	6	0	456	0	0.51	1248.6	44681.5	2411.1	61.9	6721	34.2
1960	10	1.86	1.86	1,012	normal	6	0	456	0	0.36	868.0	44819.6	2414.2	62.0	6402	33.7
1960	11	6.30	8.16	469	normal	6	125	456	0	0.23	555.3	44602.3	2409.3	61.9	6338	33.6
1960	12	0.66	8.82	(32)	normal	6	125	456	0	0.08	192.7	44246.5	2401.1	61.8	6084	33.2
1961	1	2.63	11.45	400	normal	6	125	456	0	0.08	192.1	44323.5	2402.9	61.8	6084	33.2
1961	2	0.04	11.49	(180)	normal	6	125	456	0	0.11	264.3	43748.1	2389.6	61.5	5447	32.1
1961	3	2.97	14.46	71	normal	6	0	456	0	0.19	454.0	43359.1	2380.6	61.4	5257	31.7
1961	4	0.00	14.46	183	normal	6	0	456	0	0.27	642.8	42893.3	2369.8	61.2	5193	31.6
1961	5	0.23	14.69	(96)	dry	6	0	456	0	0.39	924.2	41867.1	2345.6	60.7	4683	30.6
1961	6	0.00	14.69	(603)	dry	6	0	456	0	0.54	1266.6	39991.5	2300.6	59.8	3258	27.3
1961	7	0.12	14.81	75	dry	6	0	456	0	0.60	1380.3	38680.1	2268.4	59.2	2333	24.6
1961	8	1.88	16.69	146	dry	6	0	456	0	0.59	1338.3	37481.8	2238.4	58.6	1617	21.9
1961	9	0.00	16.69	77	dry	6	0	456	0	0.47	1052.0	36500.8	2213.4	58.1	1000	18.9
1961	10	0.00	0.00	215	dry	6	0	456	0	0.35	774.7	35935.1	2198.8	57.9	693	16.8
1961	11	5.14	5.14	87	dry	6	125	456	0	0.21	461.8	35429.3	2185.7	57.6	540	15.6
1961	12	5.27	10.41	173	dry	6	125	0	0	0.09	196.7	35274.6	2181.6	57.5	700	16.9
1962	1	6.92	17.33	214	dry	6	125	456	0	0.08	174.5	35183.1	2179.2	57.5	900	18.2
1962	2	16.36	33.69	2,790	dry	6	125	0	0	0.08	174.3	37667.8	2243.1	58.7	3664	28.3
1962	3	5.32	39.01	2,845	dry	6	0	0	0	0.15	336.5	40170.3	2304.9	59.9	6402	33.7
1962	4	0.00	39.01	4,291	dry	6	0	0	0	0.30	691.5	43763.8	2390.0	61.5	10365	39.2
1962	5	2.03	41.04	1,099	wet	6	0	0	0	0.38	908.2	43948.6	2394.3	61.6	10984	39.9
1962	6	0.17	41.21	13	wet	6	0	456	0	0.50	1197.1	42758.5	2366.6	61.1	10365	39.2
1962	7	0.53	41.74	(97)	wet	6	0	456	0	0.58	1372.6	41282.9	2331.7	60.4	9436	38.1
1962	8	0.40	42.14	(88)	wet	6	0	456	0	0.61	1422.3	39766.5	2295.1	59.7	7886	36.0
1962	9	0.27	42.41	249	wet	6	0	456	0	0.50	1147.5	38862.0	2272.9	59.3	7102	34.8
1962	10	0.56	0.56	61	wet	6	0	456	0	0.38	863.7	38053.3	2252.7	58.9	6594	34.0
1962	11	0.19	0.75	178	wet	6	125	456	0	0.25	563.2	37537.1	2239.8	58.7	6338	33.6
1962	12	0.21	0.96	135	wet	6	125	456	0	0.10	224.0	37317.1	2234.2	58.5	6338	33.6
1963	1	0.77	1.73	188	wet	6	125	456	0	0.07	156.4	37217.7	2231.7	58.5	6465	33.8
1963	2	0.00	1.73	308	wet	6	125	456	0	0.12	267.8	37126.9	2229.4	58.5	6657	34.1
1963	3	6.16	7.89	306	wet	6	0	456	0	0.18	401.3	37025.6	2226.8	58.4	6784	34.3
1963	4	4.88	12.77	630	wet	6	0	456	0	0.24	534.4	37115.2	2229.1	58.4	7166	34.9
1963	5	0.00	12.77	327	dry	6	0	456	0	0.43	958.5	36477.7	2212.8	58.1	7039	34.7
1963	6	0.00	12.77	(135)	dry	6	0	456	0	0.48	1062.1	35274.5	2181.6	57.5	6338	33.6
1963	7	0.00	12.77	(698)	dry	6	0	456	0	0.58	1265.3	33305.2	2129.3	56.5	4557	30.3
1963	8	1.48	14.25	552	dry	6	0	456	0	0.58	1235.0	32616.2	2110.5	56.1	3109	26.9

DISTRICT/CITY

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1963	9	5.15	19.40	390	dry	6	0	456	0	0.50	1055.3	31945.0	2092.0	55.8	2870	26.2
1963	10	1.41	1.41	85	dry	6	0	456	0	0.38	795.0	31229.0	2072.1	55.4	2572	25.3
1963	11	5.08	6.49	265	dry	6	125	456	0	0.23	476.6	30886.4	2062.4	55.2	2751	25.9
1963	12	1.06	7.55	98	dry	6	125	456	0	0.10	206.2	30647.2	2055.6	55.0	2812	26.1
1964	1	4.80	12.35	297	dry	6	125	456	0	0.07	143.9	30669.3	2056.3	55.1	3079	26.8
1964	2	0.51	12.86	7	dry	6	125	456	0	0.09	185.1	30360.2	2047.5	54.9	3049	26.7
1964	3	5.40	18.26	950	dry	6	0	456	0	0.17	348.1	30956.1	2064.4	55.2	3920	28.9
1964	4	3.36	21.62	2,465	dry	6	0	0	0	0.24	495.5	32919.7	2118.8	56.3	6212	33.4
1964	5	2.52	24.14	955	normal	6	0	338	0	0.40	847.5	33021.2	2121.6	56.3	6784	34.3
1964	6	0.00	24.14	295	normal	6	0	456	0	0.49	1039.6	32270.6	2101.0	55.9	6594	34.0
1964	7	1.45	25.59	(155)	normal	6	0	456	0	0.61	1281.6	30828.0	2060.8	55.1	5447	32.1
1964	8	0.26	25.85	(117)	normal	6	0	456	0	0.60	1236.5	29468.5	2021.8	54.4	4302	29.8
1964	9	0.23	26.08	(519)	normal	6	0	456	0	0.49	990.7	27952.8	1977.2	53.5	2930	26.4
1964	10	0.62	0.62	143	normal	6	0	456	0	0.42	830.4	27259.4	1956.3	53.1	2423	24.9
1964	11	4.58	5.20	195	normal	6	125	456	0	0.21	410.8	26912.6	1945.7	52.9	2542	25.3
1964	12	0.00	5.20	277	normal	6	125	0	0	0.10	194.6	26864.0	1944.2	52.8	2781	26.0
1965	1	1.88	7.08	330	normal	6	125	456	0	0.08	155.5	26907.5	1945.5	52.9	3079	26.8
1965	2	1.46	8.54	221	normal	6	125	456	0	0.10	194.6	26802.9	1942.3	52.8	3258	27.3
1965	3	2.06	10.60	229	normal	6	0	456	0	0.18	349.6	26676.3	1938.5	52.7	3410	27.7
1965	4	15.73	26.33	4,359	normal	6	0	0	0	0.25	484.6	30544.7	2052.7	55.0	7579	35.5
1965	5	0.00	26.33	1,279	normal	6	0	0	0	0.41	841.6	30976.1	2065.0	55.2	8404	36.7
1965	6	0.04	26.37	(84)	normal	6	0	456	0	0.48	991.2	29894.9	2034.2	54.6	7785	35.8
1965	7	1.37	27.74	122	normal	6	0	456	0	0.59	1200.1	28810.8	2002.6	54.0	7269	35.1
1965	8	1.83	29.57	470	normal	6	0	456	0	0.60	1201.6	28073.2	1980.8	53.6	6784	34.3
1965	9	0.64	30.21	246	normal	6	0	456	0	0.46	911.2	27402.0	1960.6	53.2	6402	33.7
1965	10	0.13	0.13	98	normal	6	0	456	0	0.42	823.4	26670.6	1938.3	52.7	6020	33.1
1965	11	26.87	27.00	8,418	normal	6	125	0	0	0.26	504.0	34453.6	2160.0	57.1	14135	43.2
1965	12	12.03	39.03	4,288	normal	6	125	0	0	0.09	194.4	38416.2	2261.8	59.1	18286	46.8
1966	1	1.89	40.92	1,410	normal	6	125	0	0	0.07	158.3	39536.9	2289.5	59.6	19583	47.8
1966	2	3.67	44.59	1,429	normal	6	125	0	0	0.08	183.2	40651.7	2316.6	60.1	20879	48.8
1966	3	1.70	46.29	3,153	normal	6	0	0	0	0.22	509.6	43289.1	2379.0	61.3	23652	50.8
1966	4	0.14	46.43	828	normal	6	0	0	0	0.30	713.7	43397.4	2381.5	61.4	23948	51.0
1966	5	0.08	46.51	353	wet	6	0	0	0	0.45	1071.7	42672.7	2364.6	61.1	23504	50.7
1966	6	0.00	46.51	(54)	wet	6	0	164	0	0.56	1324.2	41288.5	2331.9	60.4	22470	50.0
1966	7	0.00	46.51	431	wet	6	0	456	0	0.68	1585.7	40127.9	2303.9	59.9	21730	49.4
1966	8	0.33	46.84	86	wet	6	0	456	0	0.63	1451.5	38756.4	2270.3	59.2	20749	48.7
1966	9	0.44	47.28	(44)	wet	6	0	456	0	0.52	1180.5	37525.9	2239.5	58.6	19842	48.0
1966	10	0.50	0.50	267	wet	6	0	456	0	0.40	895.8	36891.1	2223.4	58.3	19455	47.7
1966	11	3.13	3.63	568	wet	6	125	456	0	0.27	600.3	36727.8	2219.2	58.3	19583	47.8
1966	12	22.40	26.03	13,071	wet	6	125	0	0	0.11	244.1	49423.7	2516.2	63.9	32453	56.0
1967	1	9.24	35.27	881	wet	6	125	0	0	0.09	226.5	49947.2	2527.4	64.1	33151	56.4
1967	2	0.00	35.27	1,273	wet	6	125	0	0	0.11	278.0	50811.2	2545.8	64.5	34198	57.0
1967	3	7.30	42.57	2,533	wet	6	0	0	0	0.21	534.6	52803.6	2587.6	65.3	36290	58.0
1967	4	13.64	56.21	4,319	wet	6	0	0	0	0.22	569.3	56547.3	2663.6	66.7	40128	59.9
1967	5	0.67	56.88	4,496	wet	6	0	0	0	0.42	1118.7	59918.6	2729.7	67.9	43664	61.5
1967	6	0.06	56.94	1,187	wet	6	0	0	0	0.51	1392.1	59707.4	2725.6	67.8	43664	61.5
1967	7	0.05	56.99	709	wet	6	0	0	0	0.65	1771.7	58638.8	2704.9	67.4	42867	61.1
1967	8	1.49	58.48	899	wet	6	0	0	0	0.65	1758.2	57773.6	2687.9	67.1	42270	60.9
1967	9	1.70	60.18	546	wet	6	0	0	0	0.50	1344.0	56969.7	2672.0	66.8	41672	60.6
1967	10	0.00	0.00	242	wet	6	0	0	0	0.40	1068.8	56136.8	2655.4	66.5	40875	60.2

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DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1967	11	7.88	7.88	1,106	wet	6	125	0	0	0.27	717.0	56394.9	2660.6	66.6	41274	60.4
1967	12	2.92	10.80	1,378	wet	6	125	0	0	0.08	212.8	57429.0	2681.1	67.0	42469	61.0
1968	1	3.04	13.84	682	wet	6	125	0	0	0.08	214.5	57765.5	2687.8	67.1	42967	61.2
1968	2	2.46	16.30	1,551	wet	6	125	0	0	0.11	295.7	58889.9	2709.8	67.5	44262	61.8
1968	3	3.14	19.44	1,617	wet	6	0	0	0	0.20	542.0	59958.9	2730.5	67.9	45408	62.3
1968	4	2.18	21.62	1,240	wet	6	0	0	0	0.25	682.6	60510.3	2741.1	68.1	46054	62.5
1968	5	0.18	21.80	377	normal	6	0	0	0	0.41	1123.8	59757.5	2726.6	67.8	45457	62.3
1968	6	0.00	21.80	215	normal	6	0	374	0	0.54	1472.4	58494.1	2702.1	67.4	44262	61.8
1968	7	0.56	22.36	640	normal	6	0	963	0	0.60	1621.2	57506.9	2682.7	67.0	43266	61.3
1968	8	0.41	22.77	396	normal	6	0	1014	0	0.56	1502.3	56394.6	2660.6	66.6	42270	60.9
1968	9	0.00	22.77	(201)	normal	6	0	1427	0	0.50	1330.3	54857.3	2629.7	66.1	40476	60.1
1968	10	0.28	0.28	171	normal	6	0	1121	0	0.39	1025.6	53996.7	2612.1	65.7	39606	59.6
1968	11	0.00	0.28	558	normal	6	125	775	0	0.25	653.0	53770.7	2607.5	65.6	39606	59.6
1968	12	3.62	3.90	375	normal	6	125	756	0	0.09	234.7	53780.0	2607.7	65.6	39780	59.7
1969	1	40.80	44.70	20,533	normal	6	125	0	0	0.09	234.7	73320.0	2973.0	72.3	60011	67.9
1969	2	29.65	74.35	8,441	normal	6	125	0	0	0.08	237.8	73320.0	2973.0	72.3	62959	69.0
1969	3	3.85	78.20	6,910	normal	6	0	0	0	0.16	475.7	73320.0	2973.0	72.3	66080	70.0
1969	4	2.26	80.46	12,646	normal	6	0	0	0	0.27	802.7	73320.0	2973.0	72.3	72167	72.0
1969	5	1.64	82.10	7,390	wet	6	0	0	0	0.42	1248.7	73320.0	2973.0	72.3	72167	72.0
1969	6	1.00	83.10	1,969	wet	6	0	0	0	0.51	1516.2	73320.0	2973.0	72.3	71913	71.9
1969	7	2.67	85.77	1,910	wet	6	0	0	0	0.60	1783.8	73320.0	2973.0	72.3	71660	71.8
1969	8	0.03	85.80	(364)	wet	6	0	0	0	0.63	1873.0	71077.0	2934.2	71.6	69123	71.0
1969	9	0.75	86.55	(81)	wet	6	0	0	0	0.52	1525.8	69464.2	2905.8	71.1	65065	69.7
1969	10	0.11	0.11	375	wet	6	0	0	0	0.36	1046.1	68787.1	2893.8	70.9	63381	69.1
1969	11	2.93	3.04	951	wet	6	125	0	0	0.25	723.5	68883.7	2895.5	70.9	63381	69.1
1969	12	0.24	3.28	547	wet	6	125	0	0	0.10	289.6	69010.1	2897.8	71.0	63381	69.1
1970	1	2.79	6.07	585	wet	6	125	0	0	0.09	260.8	69203.3	2901.2	71.0	63381	69.1
1970	2	0.94	7.01	561	wet	6	125	0	0	0.10	290.1	69343.2	2903.7	71.1	63381	69.1
1970	3	8.38	15.39	2,232	wet	6	0	0	0	0.19	551.7	71017.5	2933.1	71.6	65065	69.7
1970	4	2.77	18.16	675	wet	6	0	0	0	0.24	704.0	70982.6	2932.5	71.6	65065	69.7
1970	5	0.10	18.26	361	dry	6	0	0	0	0.42	1231.7	70105.9	2917.2	71.3	64223	69.4
1970	6	0.05	18.31	412	dry	6	0	563	563	0.52	1516.9	68432.0	2887.5	70.8	63170	69.0
1970	7	0.19	18.50	629	dry	6	0	1206	1206	0.61	1761.4	66087.6	2845.2	70.0	62117	68.7
1970	8	1.65	20.15	1,676	dry	6	0	1156	1156	0.61	1735.6	64866.0	2822.9	69.6	62117	68.7
1970	9	0.00	20.15	48	dry	6	0	916	916	0.48	1355.0	62637.0	2781.4	68.9	60853	68.2
1970	10	0.02	0.02	(208)	dry	6	0	945	945	0.39	1084.8	60393.3	2738.8	68.1	59590	67.8
1970	11	16.26	16.28	1,332	dry	6	125	0	0	0.26	712.1	60882.2	2748.2	68.2	60221	68.0
1970	12	0.00	16.28	1,509	dry	6	125	0	0	0.09	247.3	62012.9	2769.7	68.6	61485	68.5
1971	1	1.52	17.80	640	dry	6	125	0	0	0.08	221.6	62300.3	2775.1	68.7	61906	68.6
1971	2	1.48	19.28	485	dry	6	125	0	0	0.10	277.5	62376.8	2776.5	68.8	62117	68.7
1971	3	0.85	20.13	788	dry	6	0	0	0	0.21	583.1	62575.7	2780.3	68.8	62327	68.7
1971	4	1.92	22.05	533	dry	6	0	0	0	0.27	750.7	62352.0	2776.1	68.8	62117	68.7
1971	5	2.43	24.48	621	normal	6	0	193	193	0.38	1054.9	61719.1	2764.1	68.5	61696	68.5
1971	6	0.00	24.48	337	normal	6	0	828	828	0.51	1409.7	59812.5	2727.6	67.9	60643	68.2
1971	7	0.52	25.00	569	normal	6	0	1319	0	0.60	1636.6	58738.9	2706.8	67.5	59590	67.8
1971	8	0.55	25.55	347	normal	6	0	1442	0	0.62	1678.2	57401.6	2680.6	67.0	58115	67.3
1971	9	0.00	25.55	(71)	normal	6	0	1470	0	0.51	1367.1	55957.5	2651.9	66.5	56641	66.7
1971	10	3.85	3.85	514	normal	6	0	1269	0	0.35	928.1	55537.4	2643.4	66.3	56220	66.6
1971	11	1.29	5.14	628	normal	6	125	857	0	0.24	634.4	55400.0	2640.6	66.3	56220	66.6
1971	12	22.32	27.46	6,112	normal	6	125	0	0	0.08	211.3	61169.7	2753.7	68.3	62117	68.7

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct -sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1972	1	0.00	27.46	220	normal	6	125	0	0	0.08	220.3	61038.4	2751.2	68.3	62117	68.7
1972	2	0.18	27.64	91	normal	6	125	181	0	0.11	302.6	60695.8	2744.6	68.2	61906	68.6
1972	3	0.00	27.64	420	normal	6	0	484	0	0.23	631.3	60478.5	2740.5	68.1	61696	68.5
1972	4	1.01	28.65	(79)	normal	6	0	637	0	0.28	767.3	59626.2	2724.1	67.8	60853	68.2
1972	5	0.73	29.38	480	normal	6	0	1019	0	0.41	1116.9	58983.3	2711.6	67.6	60221	68.0
1972	6	0.46	29.84	320	normal	6	0	1214	0	0.51	1382.9	57914.4	2690.7	67.2	59168	67.6
1972	7	0.00	29.84	(71)	normal	6	0	1855	0	0.63	1695.1	56142.3	2655.6	66.5	57062	66.9
1972	8	0.35	30.19	529	normal	6	0	1983	0	0.59	1566.8	55098.5	2634.6	66.1	54535	65.9
1972	9	0.00	30.19	212	normal	6	0	1985	0	0.49	1290.9	54013.6	2612.5	65.7	52428	65.1
1972	10	1.29	1.29	106	normal	6	0	1334	0	0.36	940.5	53173.1	2595.2	65.4	51234	64.7
1972	11	6.56	7.85	1,150	normal	6	125	518	0	0.22	570.9	53621.1	2604.4	65.6	51831	64.9
1972	12	0.00	7.85	1,457	normal	6	125	0	0	0.09	234.4	54712.7	2626.7	66.0	53060	65.4
1973	1	6.43	14.28	1,443	normal	6	125	0	0	0.07	183.9	55840.9	2649.5	66.4	54324	65.8
1973	2	12.10	26.38	1,496	normal	6	125	0	0	0.09	238.5	56967.4	2672.0	66.8	55587	66.3
1973	3	11.14	37.52	3,344	normal	6	0	0	0	0.15	400.8	59904.6	2729.4	67.9	58536	67.4
1973	4	0.00	37.52	6,185	normal	6	0	0	0	0.26	709.7	65374.0	2832.2	69.8	64012	69.3
1973	5	0.53	38.05	4,327	normal	6	0	0	0	0.44	1246.2	68448.8	2887.8	70.8	67094	70.3
1973	6	0.00	38.05	17	normal	6	0	0	0	0.54	1559.4	66900.4	2860.0	70.3	65573	69.8
1973	7	0.00	38.05	152	normal	6	0	186	186	0.61	1744.6	65115.8	2827.4	69.7	64012	69.3
1973	8	0.59	38.64	544	normal	6	0	276	276	0.58	1639.9	63737.9	2802.0	69.2	62538	68.8
1973	9	0.00	38.64	262	normal	6	0	400	400	0.49	1373.0	62220.9	2773.6	68.7	60853	68.2
1973	10	0.00	0.00	(16)	normal	6	0	417	417	0.40	1109.4	60672.5	2744.2	68.2	59168	67.6
1973	11	4.42	4.42	925	normal	6	125	0	0	0.25	686.0	60780.5	2746.2	68.2	59168	67.6
1973	12	0.93	5.35	85	normal	6	125	0	0	0.11	302.1	60432.4	2739.6	68.1	58958	67.6
1974	1	12.55	17.90	2,322	normal	6	125	0	0	0.08	219.2	62404.2	2777.0	68.8	61064	68.3
1974	2	0.05	17.95	905	normal	6	125	0	0	0.10	277.7	62900.5	2786.4	68.9	61696	68.5
1974	3	7.53	25.48	2,658	normal	6	0	0	0	0.20	557.3	64995.2	2825.2	69.7	63802	69.2
1974	4	1.15	26.63	1,413	normal	6	0	0	0	0.28	791.1	65611.2	2836.5	69.9	64433	69.5
1974	5	0.39	27.02	537	normal	6	0	0	0	0.43	1219.7	64922.5	2823.9	69.6	63591	69.2
1974	6	0.00	27.02	150	normal	6	0	891	891	0.55	1553.1	62622.3	2781.1	68.8	61485	68.5
1974	7	0.29	27.31	356	normal	6	0	1208	1208	0.59	1640.9	60123.4	2733.6	68.0	59168	67.6
1974	8	1.25	28.56	410	normal	6	0	1329	0	0.58	1585.5	58941.9	2710.8	67.6	56851	66.8
1974	9	0.70	29.26	678	normal	6	0	1348	0	0.53	1436.7	58177.2	2695.9	67.3	54956	66.1
1974	10	3.12	3.12	855	normal	6	0	1234	0	0.41	1105.3	57920.9	2690.8	67.2	53692	65.6
1974	11	0.72	3.84	138	normal	6	125	724	0	0.24	645.8	57282.1	2678.2	67.0	52850	65.3
1974	12	5.88	9.72	1,139	normal	6	125	0	0	0.09	241.0	58049.1	2693.3	67.2	53692	65.6
1975	1	1.74	11.46	627	normal	6	125	663	0	0.08	215.5	58329.6	2698.8	67.3	54114	65.8
1975	2	3.13	14.59	653	normal	6	125	0	0	0.09	242.9	58608.7	2704.3	67.4	54535	65.9
1975	3	8.03	22.62	860	normal	6	0	0	0	0.17	459.7	59003.0	2712.0	67.6	54956	66.1
1975	4	4.99	27.61	2,019	normal	6	0	0	0	0.29	786.5	60229.5	2735.7	68.0	56220	66.6
1975	5	0.40	28.01	1,257	normal	6	0	0	0	0.40	1094.3	60386.2	2738.7	68.1	56430	66.6
1975	6	0.00	28.01	(33)	normal	6	0	1041	0	0.51	1396.7	58950.5	2711.0	67.6	54324	65.8
1975	7	0.00	28.01	465	normal	6	0	1789	0	0.61	1653.7	57755.8	2687.6	67.1	51632	64.8
1975	8	0.00	28.01	469	normal	6	0	2393	0	0.58	1558.8	56660.0	2665.9	66.7	48843	63.7
1975	9	0.43	28.44	649	normal	6	0	2133	0	0.51	1359.6	55943.4	2651.6	66.5	46452	62.7
1975	10	0.79	0.79	544	normal	6	0	1569	0	0.39	1034.1	55447.3	2641.6	66.3	44661	61.9
1975	11	3.10	3.89	613	normal	6	125	1317	0	0.26	686.8	55242.5	2637.5	66.2	43664	61.5
1975	12	0.55	4.44	358	normal	6	125	884	0	0.10	263.7	55205.8	2636.7	66.2	43664	61.5
1976	1	0.00	4.44	(359)	normal	6	125	456	0	0.09	237.3	54478.5	2622.0	65.9	42270	60.9
1976	2	12.04	16.48	953	normal	6	125	0	0	0.10	262.2	55038.3	2633.3	66.1	42867	61.1

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1976	3	5.26	21.74	2,811	normal	6	0	0	0	0.18	474.0	57369.3	2680.0	67.0	45258	62.2
1976	4	2.60	24.34	814	normal	6	0	146	0	0.26	696.8	57480.5	2682.1	67.0	45457	62.3
1976	5	0.25	24.59	179	normal	6	0	806	0	0.43	1153.3	56500.1	2662.7	66.7	44262	61.8
1976	6	0.19	24.78	51	normal	6	0	1620	0	0.51	1358.0	55187.2	2636.3	66.2	41872	60.7
1976	7	0.77	25.55	442	normal	6	0	456	0	0.59	1555.4	54067.7	2613.6	65.8	39606	59.6
1976	8	0.00	25.55	583	normal	6	0	456	0	0.56	1463.6	53181.1	2595.4	65.4	37162	58.5
1976	9	8.76	34.31	2,002	normal	6	0	0	0	0.48	1245.8	53931.3	2610.8	65.7	37686	58.7
1976	10	0.60	0.60	113	normal	6	0	456	0	0.39	1018.2	53020.1	2592.1	65.4	36813	58.3
1976	11	0.15	0.75	581	normal	6	125	456	0	0.26	673.9	52796.2	2587.4	65.3	36639	58.2
1976	12	1.30	2.05	141	normal	6	125	456	0	0.10	258.7	52547.4	2582.3	65.2	36290	58.0
1977	1	6.80	8.85	724	normal	6	125	0	0	0.08	206.6	52933.9	2590.3	65.3	36559	58.2
1977	2	0.53	9.38	316	normal	6	125	0	0	0.11	284.9	52833.9	2588.2	65.3	36559	58.2
1977	3	3.08	12.46	371	normal	6	0	0	0	0.17	440.0	52758.9	2586.6	65.2	36559	58.2
1977	4	0.00	12.46	632	normal	6	0	0	0	0.29	750.1	52634.8	2584.1	65.2	36559	58.2
1977	5	5.67	18.13	1,131	dry	6	0	0	0	0.35	904.4	52855.4	2588.6	65.3	36925	58.4
1977	6	0.00	18.13	654	dry	6	0	456	0	0.53	1372.0	52131.4	2573.6	65.0	36421	58.1
1977	7	0.00	18.13	0	dry	6	0	456	0	0.71	1814.4	50311.0	2535.2	64.3	34771	57.3
1977	8	2.87	21.00	305	dry	6	0	456	0	0.61	1546.5	49063.6	2508.4	63.8	33547	56.6
1977	9	0.00	21.00	81	dry	6	0	456	0	0.50	1254.2	47884.4	2482.7	63.3	32357	56.0
1977	10	0.00	0.00	303	dry	6	0	456	0	0.41	1017.9	47163.5	2466.8	63.0	31682	55.6
1977	11	0.39	0.39	0	dry	6	125	456	0	0.33	814.1	46218.4	2445.8	62.6	31024	55.3
1977	12	12.61	13.00	2,595	dry	6	125	0	0	0.12	293.5	48388.9	2493.8	63.5	33377	56.5
1978	1	12.30	25.30	4,107	dry	6	125	0	0	0.09	224.4	52140.5	2573.8	65.0	37292	58.5
1978	2	13.49	38.79	7,160	dry	6	125	0	0	0.10	257.4	58912.1	2710.2	67.5	44222	61.7
1978	3	20.10	58.89	13,358	dry	6	0	0	0	0.21	569.1	71694.9	2944.9	71.8	57044	66.9
1978	4	8.06	66.95	7,827	dry	6	0	0	0	0.25	736.2	73320.0	2973.0	72.3	64180	69.4
1978	5	0.61	67.56	3,529	wet	6	0	0	0	0.41	1218.9	73320.0	2973.0	72.3	66544	70.2
1978	6	0.00	67.56	726	wet	6	0	0	0	0.75	2229.7	71810.3	2946.9	71.9	65126	69.7
1978	7	0.06	67.62	336	wet	6	0	0	0	0.60	1768.2	70372.1	2921.8	71.4	63766	69.2
1978	8	0.00	67.62	0	wet	6	0	0	0	0.64	1881.7	68484.4	2888.4	70.8	61962	68.6
1978	9	2.05	69.67	809	wet	6	0	0	0	0.50	1444.2	67843.2	2877.0	70.6	61380	68.4
1978	10	0.31	0.31	0	wet	6	0	0	0	0.50	1438.5	66398.7	2850.9	70.1	60000	67.9
1978	11	7.61	7.92	1,264	wet	6	125	0	0	0.23	655.7	66876.0	2859.5	70.3	60457	68.1
1978	12	3.83	11.75	1,998	wet	6	125	0	0	0.09	257.4	68485.7	2888.4	70.8	61380	68.4
1979	1	9.98	21.73	2,527	wet	6	125	0	0	0.07	202.2	70679.5	2927.2	71.5	63009	69.0
1979	2	9.23	30.96	2,652	wet	6	125	0	0	0.09	263.5	72937.0	2966.4	72.2	62244	68.7
1979	3	10.30	41.26	5,752	wet	6	0	0	0	0.18	534.0	73320.0	2973.0	72.3	69915	71.3
1979	4	0.00	41.26	7,409	wet	6	0	0	0	0.27	802.7	73320.0	2973.0	72.3	72236	72.0
1979	5	0.50	41.76	4,092	wet	6	0	0	0	0.42	1248.7	73320.0	2973.0	72.3	72113	72.0
1979	6	0.00	41.76	92	wet	6	0	0	0	0.53	1575.7	71830.3	2947.3	71.9	70648	71.5
1979	7	1.23	42.99	745	wet	6	0	0	0	0.59	1738.9	70830.4	2929.9	71.6	69671	71.2
1979	8	0.15	43.14	640	wet	6	0	0	0	0.58	1684.7	69779.7	2911.4	71.2	67986	70.6
1979	9	0.23	43.37	974	wet	6	0	0	0	0.52	1513.9	69233.8	2901.8	71.0	66308	70.1
1979	10	2.31	2.31	257	wet	6	0	0	0	0.42	1204.2	68280.6	2884.8	70.7	64653	69.5
1979	11	0.00	2.31	115	wet	6	125	0	0	0.25	721.2	67543.4	2871.6	70.5	64062	69.3
1979	12	0.94	3.25	192	wet	6	125	0	0	0.11	315.9	67288.5	2867.0	70.4	63944	69.3
1980	1	20.97	24.22	6,196	wet	6	125	0	0	0.09	258.0	73095.5	2969.1	72.3	65362	69.8
1980	2	26.31	50.53	13,898	wet	6	125	0	0	0.11	326.6	73320.0	2973.0	72.3	66308	70.1
1980	3	7.99	58.52	6,090	wet	6	0	0	0	0.18	535.1	73320.0	2973.0	72.3	71869	71.9
1980	4	2.77	61.29	6,882	wet	6	0	0	0	0.28	832.4	73320.0	2973.0	72.3	72358	72.0

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YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1980	5	1.40	62.69	5,758	wet	6	0	0	0	0.37	1100.0	73320.0	2973.0	72.3	71381	71.7
1980	6	0.00	62.69	1,160	wet	6	0	0	0	0.51	1516.2	72957.8	2966.8	72.2	70892	71.6
1980	7	1.43	64.12	813	wet	6	0	0	0	0.61	1809.7	71955.0	2949.5	71.9	69915	71.3
1980	8	0.00	64.12	541	wet	6	0	0	0	0.60	1769.7	70720.4	2927.9	71.5	68706	70.9
1980	9	0.00	64.12	571	wet	6	0	0	0	0.51	1493.3	69792.1	2911.6	71.2	66544	70.2
1980	10	1.13	1.13	389	wet	6	0	0	0	0.39	1135.5	69039.6	2898.3	71.0	64653	69.5
1980	11	0.00	1.13	0	wet	6	125	0	0	0.33	956.4	67952.1	2878.9	70.6	63707	69.2
1980	12	1.01	2.14	161	wet	6	125	0	0	0.12	345.5	67636.7	2873.2	70.5	63475	69.1
1981	1	3.50	5.64	507	wet	6	125	0	0	0.09	267.2	67745.5	2875.2	70.6	63707	69.2
1981	2	3.46	9.10	1,286	wet	6	125	0	0	0.11	307.6	68592.8	2890.4	70.8	64653	69.5
1981	3	4.08	13.18	1,967	wet	6	0	0	0	0.19	546.3	70007.5	2915.4	71.3	66071	70.0
1981	4	0.88	14.06	1,304	wet	6	0	0	0	0.29	839.6	70465.9	2923.5	71.4	66544	70.2
1981	5	0.71	14.77	0	dry	6	0	0	0	0.50	1453.0	69006.9	2897.7	71.0	65126	69.7
1981	6	0.00	14.77	441	dry	6	0	714	714	0.57	1651.7	67076.2	2863.1	70.3	63707	69.2
1981	7	0.17	14.94	0	dry	6	0	1247	1247	0.64	1829.6	63993.7	2806.7	69.3	61380	68.4
1981	8	0.50	15.44	261	dry	6	0	1437	1437	0.63	1765.4	61046.2	2751.3	68.3	59313	67.7
1981	9	0.09	15.53	229	dry	6	0	1597	0	0.52	1441.7	59827.5	2727.9	67.9	57494	67.0
1981	10	0.57	0.57	0	dry	6	0	737	0	0.41	1107.5	58714.0	2706.3	67.5	56145	66.5
1981	11	2.61	3.18	489	dry	6	125	472	0	0.26	690.1	58381.9	2699.9	67.4	55920	66.4
1981	12	0.10	3.28	84	dry	6	125	0	0	0.11	302.4	58032.5	2693.0	67.2	55695	66.4
1982	1	3.98	7.26	1,820	dry	6	125	0	0	0.08	202.0	59519.4	2722.0	67.8	57269	66.9
1982	2	4.65	11.91	2,096	dry	6	125	0	0	0.10	274.9	61209.0	2754.4	68.4	59084	67.6
1982	3	18.16	30.07	3,951	dry	6	0	0	0	0.17	479.3	64674.2	2819.3	69.5	62544	68.8
1982	4	2.40	32.47	7,618	dry	6	0	0	0	0.26	724.6	71561.6	2942.6	71.8	69427	71.1
1982	5	0.59	33.06	2,658	normal	6	0	0	0	0.41	1200.6	73013.2	2967.7	72.2	70892	71.6
1982	6	0.20	33.26	272	normal	6	0	0	0	0.49	1460.1	71819.3	2947.1	71.9	69725	71.2
1982	7	0.78	34.04	411	normal	6	0	0	0	0.59	1747.6	70476.9	2923.7	71.4	68413	70.8
1982	8	2.26	36.30	871	normal	6	0	210	210	0.60	1748.4	69383.8	2904.4	71.1	67558	70.5
1982	9	0.10	36.40	459	normal	6	0	461	461	0.49	1434.8	67940.9	2878.7	70.6	66256	70.1
1982	10	1.75	1.75	102	normal	6	0	37	37	0.37	1070.9	66928.6	2860.5	70.3	64565	69.5
1982	11	8.78	10.53	1,379	normal	6	125	0	0	0.22	635.0	67541.1	2871.5	70.5	65275	69.7
1982	12	5.52	16.05	3,583	normal	6	125	0	0	0.09	264.2	70728.5	2928.1	71.5	66837	70.3
1983	1	8.21	24.26	1,013	normal	6	125	0	0	0.08	246.0	71364.0	2939.2	71.7	64979	69.6
1983	2	8.71	32.97	4,769	normal	6	125	0	0	0.10	291.0	73320.0	2973.0	72.3	68137	70.7
1983	3	13.50	46.47	9,623	normal	6	0	0	0	0.18	529.2	73320.0	2973.0	72.3	71625	71.8
1983	4	4.70	51.17	6,097	normal	6	0	0	0	0.23	680.8	73320.0	2973.0	72.3	73231	72.3
1983	5	0.00	51.17	6,908	wet	6	0	0	0	0.41	1204.1	73320.0	2973.0	72.3	72358	72.0
1983	6	0.00	51.17	1,407	wet	6	0	0	0	0.51	1510.3	73210.8	2971.1	72.3	71327	71.7
1983	7	0.00	51.17	279	wet	6	0	0	0	0.59	1764.8	71718.9	2945.4	71.8	69861	71.2
1983	8	3.65	54.82	1,715	wet	6	0	0	0	0.59	1728.9	71698.9	2945.0	71.8	69861	71.2
1983	9	1.15	55.97	595	wet	6	0	0	0	0.53	1552.0	70735.6	2928.2	71.5	67116	70.4
1983	10	3.35	3.35	725	wet	6	0	0	0	0.39	1133.2	70321.5	2920.9	71.4	64416	69.5
1983	11	6.04	9.39	2,012	wet	6	125	0	0	0.27	782.8	71419.5	2940.2	71.7	65629	69.9
1983	12	7.66	17.05	0	wet	6	125	0	0	0.24	711.5	70577.0	2925.4	71.5	64705	69.6
1984	1	0.06	17.11	1,980	wet	6	125	0	0	0.09	266.2	72159.8	2953.0	72.0	65977	70.0
1984	2	0.25	17.36	314	wet	6	125	0	0	0.11	318.9	72023.8	2950.7	71.9	65693	69.9
1984	3	0.18	17.54	758	wet	6	0	0	0	0.21	631.4	72144.4	2952.7	72.0	65835	69.9
1984	4	0.02	17.56	50	wet	6	0	0	0	0.27	785.4	71403.0	2939.9	71.7	65126	69.7
1984	5	0.00	17.56	357	dry	6	0	37	37	0.48	1399.4	70317.6	2920.9	71.4	64133	69.4
1984	6	0.00	17.56	0	dry	6	0	866	866	0.59	1726.2	67719.3	2874.7	70.6	62032	68.6

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YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1984	7	1.84	19.40	2,068	dry	6	0	886	886	0.59	1690.3	67205.0	2865.5	70.4	61892	68.6
1984	8	2.23	21.63	1,927	dry	6	0	709	709	0.59	1690.6	66726.4	2856.8	70.2	62171	68.7
1984	9	0.02	21.65	168	dry	6	0	867	867	0.51	1459.8	64561.5	2817.2	69.5	60915	68.3
1984	10	0.00	0.00	177	dry	6	0	849	849	0.36	1014.2	62869.3	2785.8	68.9	59405	67.7
1984	11	2.83	2.83	422	dry	6	125	374	374	0.24	679.7	62106.8	2771.4	68.7	59130	67.6
1984	12	12.77	15.60	2,348	dry	6	125	0	0	0.09	243.9	64079.7	2808.3	69.3	61194	68.4
1985	1	2.02	17.62	639	dry	6	125	0	0	0.08	210.6	64377.1	2813.8	69.4	61613	68.5
1985	2	0.51	18.13	1,283	dry	6	125	0	0	0.10	270.1	65259.0	2830.1	69.7	62590	68.8
1985	3	1.86	19.99	1,636	dry	6	0	0	0	0.18	520.7	66368.2	2850.3	70.1	63707	69.2
1985	4	1.62	21.61	1,997	dry	6	0	0	0	0.30	866.5	67492.7	2870.7	70.5	64842	69.6
1985	5	0.07	21.68	0	normal	6	0	382	382	0.45	1291.8	65812.9	2840.2	69.9	63568	69.2
1985	6	0.38	22.06	0	normal	6	0	1258	1258	0.55	1570.6	62978.3	2787.8	69.0	61334	68.4
1985	7	0.91	22.97	863	normal	6	0	1514	1514	0.61	1700.6	60620.7	2743.2	68.1	60503	68.1
1985	8	0.00	22.97	0	normal	6	0	1554	0	0.65	1777.6	58837.2	2708.7	67.5	58718	67.5
1985	9	0.90	23.87	0	normal	6	0	1466	0	0.53	1427.5	57403.6	2680.6	67.0	56954	66.8
1985	10	0.37	0.37	301	normal	6	0	945	0	0.39	1037.4	56661.2	2665.9	66.7	55073	66.1
1985	11	10.00	10.37	1,667	normal	6	125	0	0	0.25	655.8	57541.4	2683.3	67.0	55740	66.4
1985	12	3.76	14.13	1,111	normal	6	125	0	0	0.10	271.0	58250.4	2697.3	67.3	56550	66.7
1986	1	4.94	19.07	1,177	normal	6	125	0	0	0.10	277.8	59018.6	2712.3	67.6	57359	67.0
1986	2	12.13	31.20	5,838	normal	6	125	0	0	0.11	295.6	64430.0	2814.8	69.5	62869	68.9
1986	3	7.21	38.41	3,721	normal	6	0	0	0	0.21	596.7	67548.2	2871.7	70.5	65977	70.0
1986	4	0.00	38.41	1,231	normal	6	0	0	0	0.28	806.9	67966.3	2879.2	70.6	66402	70.1
1986	5	0.00	38.41	236	normal	6	0	0	0	0.43	1238.0	66958.2	2861.0	70.3	65409	69.8
1986	6	0.00	38.41	0	normal	6	0	74	74	0.61	1753.8	65124.4	2827.6	69.7	63568	69.2
1986	7	0.88	39.29	0	normal	6	0	527	527	0.59	1654.2	62937.3	2787.0	69.0	61613	68.5
1986	8	3.26	42.55	769	normal	6	0	862	862	0.63	1747.5	61090.8	2752.2	68.3	60640	68.2
1986	9	2.74	45.29	141	normal	6	0	743	0	0.45	1227.5	59998.3	2731.2	67.9	59542	67.8
1986	10	0.00	0.00	183	normal	6	0	677	0	0.36	983.2	59192.1	2715.6	67.6	58306	67.3
1986	11	2.40	2.40	264	normal	6	125	331	0	0.26	703.4	58621.8	2704.5	67.4	57494	67.0
1986	12	1.60	4.00	252	normal	6	125	350	0	0.10	275.9	58466.9	2701.5	67.4	57359	67.0
1987	1	1.59	5.59	276	normal	6	125	0	0	0.08	213.4	58398.5	2700.2	67.4	57359	67.0
1987	2	2.66	8.25	1,249	normal	6	125	0	0	0.10	256.5	59260.0	2717.0	67.7	58306	67.3
1987	3	3.90	12.15	1,341	normal	6	0	0	0	0.19	502.6	60092.3	2733.0	68.0	59130	67.6
1987	4	1.58	13.73	1,797	normal	6	0	0	0	0.30	822.6	61060.7	2751.6	68.3	60091	68.0
1987	5	0.28	14.01	281	dry	6	0	414	0	0.40	1100.6	60235.0	2735.8	68.0	59267	67.7
1987	6	0.00	14.01	82	dry	6	0	1369	0	0.53	1447.2	58863.8	2709.3	67.5	57899	67.2
1987	7	0.49	14.50	0	dry	6	0	1760	0	0.60	1617.4	57240.4	2677.4	66.9	56280	66.8
1987	8	0.17	14.67	254	dry	6	0	1820	0	0.59	1587.7	55900.7	2650.7	66.4	54941	66.1
1987	9	0.28	14.95	133	dry	6	0	1758	0	0.50	1320.1	54707.6	2626.6	66.0	53748	65.6
1987	10	5.12	5.12	1,328	dry	6	0	1306	0	0.40	1050.7	54979.0	2632.1	66.1	54013	65.7
1987	11	4.54	9.66	283	dry	6	125	292	0	0.24	642.2	54488.7	2622.2	65.9	53616	65.6
1987	12	4.45	14.11	981	dry	6	125	0	0	0.09	236.0	55102.7	2634.6	66.1	54279	65.8
1988	1	3.79	17.90	805	dry	6	125	0	0	0.09	226.6	55550.1	2643.7	66.3	54808	66.0
1988	2	1.35	19.25	439	dry	6	125	0	0	0.10	274.9	55583.2	2644.3	66.3	54941	66.1
1988	3	1.00	20.25	288	dry	6	0	0	0	0.20	536.8	55328.4	2639.2	66.2	54675	66.0
1988	4	5.50	25.75	1,669	dry	6	0	0	0	0.27	717.9	56273.5	2658.2	66.6	55605	66.3
1988	5	0.48	26.23	436	normal	6	0	474	0	0.41	1087.2	55616.3	2645.0	66.3	54941	66.1
1988	6	0.01	26.24	191	normal	6	0	1279	0	0.52	1372.8	54428.6	2621.0	65.9	53748	65.6
1988	7	0.00	26.24	0	normal	6	0	1910	0	0.70	1829.4	52593.2	2583.2	65.2	51912	64.9
1988	8	2.65	28.89	359	normal	6	0	1810	0	0.59	1518.9	51427.2	2558.8	64.7	50741	64.5

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1988	9	0.00	28.89	0	normal	6	0	1688	0	0.55	1399.7	50021.6	2529.0	64.2	49334	63.9
1988	10	0.00	0.00	0	normal	6	0	1686	0	0.45	1135.5	48880.0	2504.4	63.7	48191	63.4
1988	11	2.97	2.97	364	normal	6	125	456	0	0.27	663.7	48449.4	2495.1	63.5	47811	63.3
1988	12	6.43	9.40	0	normal	6	125	0	0	0.14	344.3	47974.1	2484.7	63.3	47314	63.1
1989	1	1.88	11.28	0	normal	6	125	0	0	0.22	546.6	47296.4	2469.8	63.1	46699	62.8
1989	2	6.39	17.67	2511	normal	6	125	0	0	0.09	222.3	49454.1	2516.8	63.9	48953	63.7
1989	3	2.76	20.43	1732	normal	6	0	0	0	0.22	553.7	50626.4	2541.9	64.4	50094	64.2
1989	4	0.39	20.82	307	normal	6	0	0	0	0.31	788.0	50139.5	2531.5	64.2	49587	64.0
1989	5	1.11	21.93	0	dry	6	0	0	0	0.44	1113.9	49019.6	2507.4	63.8	48445	63.5
1989	6	0.00	21.93	180	dry	6	0	0	0	0.52	1301.4	47892.2	2482.9	63.3	47314	63.1
1989	7	0.00	21.93	0	dry	6	0	0	0	0.79	1961.5	45924.7	2439.2	62.5	45344	62.2
1989	8	0.38	22.31	0	dry	6	0	0	0	0.59	1434.3	44484.5	2406.6	61.9	43903	61.6
1989	9	1.60	23.91	217	dry	6	0	0	0	0.49	1179.2	43516.3	2384.3	61.4	42943	61.2
1989	10	2.61	2.61	0	dry	6	0	0	0	0.39	929.9	42580.4	2362.4	61.0	42004	60.8
1989	11	0.20	2.81	20	dry	6	125	0	0	0.26	614.2	41855.2	2345.3	60.7	41302	60.4
1989	12	0.00	2.81	0	dry	6	125	0	0	0.15	351.8	41372.4	2333.9	60.5	40834	60.2
1990	1	6.70	9.51	517	dry	6	125	0	0	0.07	163.4	41595.0	2339.2	60.6	41068	60.3
1990	2	6.18	15.69	352	dry	6	125	0	0	0.08	187.1	41628.9	2340.0	60.6	41185	60.4
1990	3	2.67	18.36	2475	dry	6	0	0	0	0.20	475.0	43622.8	2386.7	61.5	43183	61.3
1990	4	1.33	19.69	689	dry	6	0	0	0	0.28	668.3	43637.6	2387.1	61.5	43183	61.3
1990	5	0.96	20.65	262	dry	6	0	0	0	0.40	954.8	42938.7	2370.8	61.2	42473	61.0
1990	6	0.20	20.85	333	dry	6	0	0	0	0.53	1256.5	42009.2	2349.0	60.8	41536	60.5
1990	7	0.73	21.58	0	dry	6	0	0	0	0.59	1385.9	40617.3	2315.7	60.1	40142	59.9
1990	8	0.55	22.13	189	dry	6	0	0	0	0.57	1320.0	39480.3	2288.1	59.6	39005	59.4
1990	9	0.00	22.13	0	dry	6	0	0	0	0.49	1121.2	38353.1	2260.2	59.1	37879	58.8
1990	10	0.00	0.00	0	dry	6	0	0	0	0.44	994.5	37352.6	2235.1	58.6	36888	58.3
1990	11	1.77	1.77	0	dry	6	125	0	0	0.35	782.3	36439.4	2211.8	58.1	36009	57.9
1990	12	1.11	2.88	39	dry	6	125	0	0	0.08	176.9	36170.4	2204.9	58.0	35690	57.7

PRECIPITATION: SWRCB Exhibit #1, Report of Investigation, P.7.
CALCULATED UNIMPAIRED FLOW: BBMWD/CITY Exhibit # 7-2 thru 7-7, Simulated model runs
SEASON DEFINITION FOR FISH RELEASE: Derived (see staff report)
BBMWD DEMAND: BBMWD/CITY Exhibit #7-2 thru 7-7, Simulated model runs
MUTUAL DEMAND: BBMWD/CITY Exhibits #7-2 thru 7-7, Simulated Model Runs
MUTUAL RELEASE: Derived, based on current operational policy; SWRCB Exhibit #1, report of Investigation, P.10.
ESTIMATED EVAPORATION RATES: BBMWD?CITY Exhibit #7-2 thru 7-7, Simulated model runs
ESTIMATED EVAPORATION LOSSES: Derived: (evap. rate)x(lake surface area)
ADJUSTED E.O.M. STORAGE: Derived: (previous E.O.M. storage)+(unimpaired flow)-(fish release)-(BBMWD demand)-(Mutual Demand)-(Evap. losses)
DERIVED SURFACE AREA: (surface area)=(26.0139)x(adj. E.O.M. storage)^0.423
ADJUSTED STAFF GAGE ELEVATION: Derived: (gage elevation)=(2.1702)x(adj. E.O.M. storage)^0.313
HISTORIC E.O.M. STORAGE: SWRCB Exhibit #1, Report of Investigation, P.8.
HISTORIC STAFF GAGE ELEVATION: Derived: (gage elevation)=(2.1702)x(historic E.O.M. storage)^0.313

DIVISION PROPOSED ALTERNATIVE: Using three water-year type definition (WET-25%/NORMAL-50%/DRY-25%) for accumulated rainfall as of May 1
Maximum fish release of 1.2 cfs (dry-year); 0.5 (normal-year); 0.3 (wet-year)

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1938	4		58.59							STARTING CAPACITY >		64433.0	2814.9	69.5		
1939	1	4.95	13.26	1,367	wet	18.5	125	0	0	0.07	197.0	65459.5	2833.8	69.8	65573	69.8
1939	2	4.11	17.37	1,496	wet	16.5	125	0	0	0.07	198.4	66615.6	2854.8	70.2	66840	70.3
1939	3	2.72	20.09	3,567	wet	18.5	0	0	0	0.17	485.3	69678.8	2909.6	71.2	69883	71.3
1939	4	3.21	23.30	3,516	wet	18	0	0	0	0.28	814.7	72362.1	2956.5	72.0	72167	72.0
1939	5	0.00	23.30	1,300	normal	31	0	0	0	0.40	1182.6	72448.5	2958.0	72.1	71405	71.7
1939	6	0.00	23.30	(178)	normal	30	0	0	0	0.49	1449.4	70791.1	2929.2	71.5	68616	70.8
1939	7	0.37	23.67	210	normal	31	0	0	0	0.58	1698.9	69271.1	2902.4	71.1	65319	69.8
1939	8	0.77	24.44	971	normal	31	0	373	373	0.60	1741.4	68096.7	2881.5	70.7	62117	68.7
1939	9	7.71	32.15	1,791	normal	30	0	0	0	0.47	1354.3	68503.4	2888.8	70.8	60863	68.2
1939	10	0.75	0.75	436	normal	31	0	0	0	0.36	1040.0	67868.4	2877.4	70.6	58958	67.6
1939	11	1.56	2.31	562	normal	30	125	0	0	0.25	719.4	67556.1	2871.8	70.5	57483	67.0
1939	12	1.02	3.33	496	normal	31	125	0	0	0.11	315.9	67580.2	2872.2	70.5	57483	67.0
1940	1	7.69	11.02	1,898	normal	31	125	0	0	0.08	229.8	69092.4	2899.2	71.0	59168	67.6
1940	2	6.99	18.01	1,928	normal	28	125	0	0	0.09	260.9	70606.5	2925.9	71.5	60853	68.2
1940	3	3.79	21.80	1,626	normal	31	0	0	0	0.21	614.4	71587.0	2943.1	71.8	61906	68.6
1940	4	1.63	23.43	1,374	normal	30	0	0	0	0.27	794.6	72136.4	2952.6	72.0	62538	68.8
1940	5	0.00	23.43	311	normal	31	0	0	0	0.43	1269.6	71146.8	2935.4	71.7	60853	68.2
1940	6	0.00	23.43	596	normal	30	0	288	288	0.54	1585.1	69839.7	2912.5	71.2	58536	67.4
1940	7	0.00	23.43	90	normal	31	0	729	729	0.56	1631.0	67538.7	2871.5	70.5	54956	66.1
1940	8	0.00	23.43	(179)	normal	31	0	686	686	0.60	1722.9	64919.8	2823.8	69.6	51035	64.6
1940	9	0.55	23.98	26	normal	30	0	874	874	0.47	1327.2	62714.6	2782.9	68.9	47649	63.2
1940	10	1.99	1.99	660	normal	31	0	664	664	0.39	1085.3	61594.3	2761.7	68.5	45656	62.4
1940	11	2.24	4.23	198	normal	30	125	453	453	0.23	635.2	60549.1	2741.8	68.1	45059	62.1
1940	12	14.64	18.87	4,068	normal	31	125	0	0	0.10	274.2	64186.9	2810.3	69.4	48644	63.6
1941	1	3.84	22.71	1,392	normal	31	125	0	0	0.08	224.8	65198.1	2829.0	69.7	49839	64.1
1941	2	13.67	36.38	4,105	normal	28	125	0	0	0.10	282.9	68867.2	2895.2	70.9	53692	65.6
1941	3	11.26	47.64	5,948	normal	31	0	0	0	0.18	521.1	73320.0	2973.0	72.3	59168	67.6
1941	4	7.01	54.65	6,107	normal	30	0	0	0	0.23	683.8	73320.0	2973.0	72.3	64644	69.5
1941	5	0.61	55.26	6,164	wet	18.5	0	0	0	0.41	1218.9	73320.0	2973.0	72.3	69630	71.2
1941	6	0.00	55.26	873	wet	18	0	0	0	0.47	1397.3	72777.7	2963.7	72.2	69123	71.0
1941	7	0.00	55.26	107	wet	18.5	0	0	0	0.56	1659.7	71206.5	2936.4	71.7	67602	70.5
1941	8	1.03	56.29	849	wet	18.5	0	0	0	0.55	1615.0	70422.0	2922.7	71.4	66334	70.1
1941	9	0.00	56.29	(101)	wet	18	0	0	0	0.45	1315.2	68987.8	2897.4	71.0	63802	69.2
1941	10	3.49	3.49	1,021	wet	18.5	0	0	0	0.34	985.1	69005.2	2897.7	71.0	63170	69.0
1941	11	1.48	4.97	594	wet	18	125	0	0	0.26	753.4	68702.8	2892.3	70.9	62959	69.0
1941	12	8.79	13.76	1,848	wet	18.5	125	0	0	0.09	260.3	70147.0	2917.9	71.3	64433	69.5
1942	1	0.29	14.05	224	wet	18.5	125	0	0	0.08	233.4	69994.0	2915.2	71.3	64433	69.5
1942	2	2.71	16.76	884	wet	16.5	125	0	0	0.09	262.4	70474.2	2923.6	71.4	65065	69.7
1942	3	2.73	19.49	1,524	wet	18.5	0	0	0	0.18	526.3	71453.4	2940.7	71.7	66080	70.0
1942	4	3.25	22.74	2,972	wet	18	0	0	0	0.24	705.8	73320.0	2973.0	72.3	68362	70.8
1942	5	0.00	22.74	956	normal	31	0	0	0	0.38	1129.7	73115.3	2969.5	72.3	67347	70.4
1942	6	0.00	22.74	(213)	normal	30	0	32	32	0.50	1484.7	71355.5	2939.0	71.7	64223	69.4
1942	7	0.87	23.61	665	normal	31	0	910	910	0.59	1734.0	69345.5	2903.7	71.1	60643	68.2
1942	8	0.12	23.73	432	normal	31	0	1112	1112	0.57	1655.1	66979.4	2861.4	70.3	56641	66.7
1942	9	0.00	23.73	116	normal	30	0	966	966	0.46	1316.2	64783.1	2821.3	69.6	53060	65.4
1942	10	0.47	0.47	399	normal	31	0	832	832	0.38	1072.1	63247.0	2792.8	69.1	50437	64.3

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1942	11	0.67	1.14	496	normal	30	125	476	476	0.38	1061.3	62050.7	2770.4	68.6	48843	63.7
1942	12	1.87	3.01	486	normal	31	125	359	359	0.27	748.0	61273.7	2755.6	68.4	48445	63.5
1943	1	19.71	22.72	3,783	normal	31	125	0	0	0.10	275.6	64625.2	2818.4	69.5	52030	65.0
1943	2	9.42	32.14	2,945	normal	28	125	0	0	0.08	225.5	67191.7	2865.2	70.4	54745	66.0
1943	3	4.83	36.97	6,428	normal	31	0	0	0	0.09	257.9	73320.0	2973.0	72.3	60643	68.2
1943	4	2.65	39.62	5,223	normal	30	0	0	0	0.20	594.6	73320.0	2973.0	72.3	65065	69.7
1943	5	0.00	39.62	969	wet	18.5	0	0	0	0.29	862.2	73320.0	2973.0	72.3	64854	69.6
1943	6	0.00	39.62	212	wet	18	0	0	0	0.42	1248.7	72265.3	2954.8	72.0	63381	69.1
1943	7	0.00	39.62	491	wet	18.5	0	0	0	0.46	1359.2	71378.6	2939.4	71.7	60432	68.1
1943	8	0.00	39.62	557	wet	18.5	0	191	191	0.57	1675.5	70050.6	2916.2	71.3	57062	66.9
1943	9	0.25	39.87	273	wet	18	0	159	159	0.59	1720.5	68426.1	2887.4	70.8	53902	65.7
1943	10	1.85	1.85	854	wet	18.5	0	0	0	0.52	1501.4	67760.1	2875.5	70.6	52428	65.1
1943	11	0.20	2.05	66	wet	18	125	0	0	0.39	1121.4	66561.7	2853.8	70.2	50835	64.5
1943	12	9.08	11.13	1,635	wet	18.5	125	0	0	0.25	713.5	67339.8	2867.9	70.4	52180	65.0
1944	1	2.48	13.61	475	wet	18.5	125	0	0	0.08	229.4	67441.8	2869.7	70.5	52428	65.1
1944	2	12.05	25.66	1,754	wet	16.5	125	0	0	0.07	200.9	68853.4	2895.0	70.9	53902	65.7
1944	3	2.38	28.04	2,758	wet	18.5	0	0	0	0.11	318.4	71274.5	2937.6	71.7	56220	66.6
1944	4	3.00	31.04	4,429	wet	18	0	0	0	0.17	499.4	73320.0	2973.0	72.3	60011	67.9
1944	5	0.20	31.24	1,496	normal	31	0	0	0	0.24	713.5	73320.0	2973.0	72.3	60432	68.1
1944	6	0.00	31.24	140	normal	30	0	0	0	0.38	1129.7	72300.3	2955.4	72.0	58958	67.6
1944	7	0.00	31.24	532	normal	31	0	265	265	0.44	1300.4	71235.9	2937.0	71.7	55798	66.4
1944	8	0.00	31.24	374	normal	31	0	965	965	0.54	1586.0	69027.9	2898.1	71.0	51632	64.8
1944	9	0.00	31.24	197	normal	30	0	894	894	0.58	1680.9	66620.0	2854.9	70.2	47649	63.2
1944	10	0.00	0.00	250	normal	31	0	718	718	0.50	1427.4	64693.6	2819.7	69.6	44661	61.9
1944	11	13.70	13.70	2,889	normal	30	125	0	0	0.38	1071.5	66356.1	2850.1	70.1	46851	62.9
1944	12	2.08	15.78	616	normal	31	125	0	0	0.20	570.0	66246.1	2848.1	70.1	47250	63.0
1945	1	2.51	18.29	568	normal	31	125	0	0	0.07	199.4	66458.7	2852.0	70.1	47649	63.2
1945	2	8.95	27.24	3,807	normal	28	125	0	0	0.09	256.7	69856.0	2912.8	71.2	51234	64.7
1945	3	12.54	39.78	3,471	normal	31	0	0	0	0.15	436.9	72859.1	2965.1	72.2	54324	65.8
1945	4	1.17	40.95	5,501	normal	30	0	0	0	0.25	741.3	73320.0	2973.0	72.3	59168	67.6
1945	5	0.11	41.06	1,530	wet	18.5	0	0	0	0.39	1159.5	73320.0	2973.0	72.3	59590	67.8
1945	6	0.00	41.06	392	wet	18	0	0	0	0.49	1456.8	72237.2	2954.3	72.0	58115	67.3
1945	7	0.14	41.20	697	wet	18.5	0	154	154	0.59	1743.1	71018.7	2933.2	71.6	55377	66.2
1945	8	2.21	43.41	1,149	wet	18.5	0	0	0	0.57	1671.9	70477.3	2923.7	71.4	53271	65.4
1945	9	0.66	44.07	461	wet	18	0	460	460	0.49	1432.6	69027.7	2898.1	71.0	50038	64.2
1945	10	1.78	1.78	916	wet	18.5	0	312	312	0.38	1101.3	68511.9	2888.9	70.8	47449	63.1
1945	11	0.82	2.60	142	wet	18	125	158	158	0.23	664.4	67688.4	2874.2	70.5	46253	62.6
1945	12	15.37	17.97	5,173	wet	18.5	125	0	0	0.09	258.7	72459.3	2958.2	72.1	50835	64.5
1946	1	0.73	18.70	574	wet	18.5	125	0	0	0.07	207.1	72682.7	2962.0	72.1	51234	64.7
1946	2	4.23	22.93	997	wet	16.5	125	0	0	0.08	237.0	73301.2	2972.7	72.3	52030	65.0
1946	3	11.31	34.24	2,304	wet	18.5	0	0	0	0.17	505.4	73320.0	2973.0	72.3	53902	65.7
1946	4	1.73	35.97	3,063	wet	18	0	0	0	0.28	832.4	73320.0	2973.0	72.3	56220	66.6
1946	5	0.31	36.28	364	normal	31	0	0	0	0.40	1189.2	72463.8	2958.3	72.1	55166	66.2
1946	6	0.00	36.28	154	normal	30	0	173	173	0.51	1508.7	70906.1	2931.2	71.6	52638	65.2
1946	7	3.26	39.54	1,057	normal	31	0	579	579	0.57	1670.8	69682.3	2909.7	71.2	49640	64.0
1946	8	0.07	39.61	142	normal	31	0	754	754	0.59	1716.7	67322.6	2867.6	70.4	46054	62.5
1946	9	1.76	41.37	338	normal	30	0	1159	1159	0.51	1462.5	65009.1	2825.5	69.7	42867	61.1
1946	10	6.68	6.68	488	normal	31	0	619	619	0.34	960.7	63886.5	2804.7	69.3	41473	60.5
1946	11	13.79	20.47	3,528	normal	30	125	0	0	0.20	560.9	66698.5	2856.3	70.2	44462	61.8
1946	12	5.19	25.66	1,829	normal	31	125	0	0	0.10	285.6	68085.9	2881.3	70.7	46054	62.5

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1947	1	2.72	28.38	565	normal	31	125	0	0	0.07	201.7	68293.2	2885.0	70.7	46452	62.7
1947	2	1.52	29.90	838	normal	28	125	0	0	0.10	288.5	68689.7	2892.1	70.9	47050	63.0
1947	3	1.36	31.26	1,106	normal	31	0	0	0	0.21	607.3	69157.3	2900.4	71.0	47649	63.2
1947	4	0.70	31.96	474	normal	30	0	0	0	0.27	783.1	68818.2	2894.4	70.9	47449	63.1
1947	5	0.03	31.99	116	normal	31	0	229	229	0.44	1273.5	67400.7	2869.0	70.4	45656	62.4
1947	6	0.04	32.03	(43)	normal	30	0	1004	1004	0.50	1434.5	64889.2	2823.3	69.6	43066	61.2
1947	7	0.00	32.03	(46)	normal	31	0	1720	1720	0.59	1665.7	61426.5	2758.5	68.4	39431	59.6
1947	8	1.19	33.22	336	normal	31	0	1644	1644	0.57	1572.4	58515.1	2702.5	67.4	36639	58.2
1947	9	0.12	33.34	52	normal	30	0	1767	0	0.52	1405.3	57131.8	2675.3	66.9	33849	56.8
1947	10	0.59	0.59	139	normal	31	0	1484	0	0.39	1043.3	56196.5	2656.6	66.6	32104	55.9
1947	11	0.26	0.85	106	normal	30	125	1128	0	0.22	584.5	55563.0	2643.9	66.3	31232	55.4
1947	12	7.52	8.37	865	normal	31	125	576	0	0.08	211.5	56060.5	2653.9	66.5	31929	55.8
1948	1	0.12	8.49	161	normal	31	125	675	0	0.08	212.3	55853.2	2649.8	66.4	31929	55.8
1948	2	7.84	16.33	1,209	normal	28	125	0	0	0.08	212.0	56697.2	2666.6	66.7	32976	56.3
1948	3	7.48	23.81	1,181	normal	31	0	0	0	0.15	400.0	57447.2	2681.5	67.0	33849	56.8
1948	4	4.25	28.06	2,615	normal	30	0	0	0	0.25	670.4	59361.8	2718.9	67.7	35941	57.9
1948	5	0.15	28.21	493	normal	31	0	381	0	0.39	1060.4	58763.5	2707.3	67.5	35244	57.5
1948	6	0.13	28.34	192	normal	30	0	1268	0	0.49	1326.6	57598.9	2684.5	67.1	33151	56.4
1948	7	0.04	28.38	(69)	normal	31	0	1828	0	0.56	1503.3	55995.6	2652.6	66.5	29863	54.6
1948	8	0.00	28.38	(19)	normal	31	0	2014	0	0.57	1512.0	54433.6	2621.1	65.9	26462	52.6
1948	9	0.00	28.38	(50)	normal	30	0	1815	0	0.49	1284.3	53069.3	2593.1	65.4	23209	50.5
1948	10	1.67	1.67	524	normal	31	0	1507	0	0.37	959.4	52602.8	2583.4	65.2	21581	49.3
1948	11	0.00	1.67	59	normal	30	125	1214	0	0.23	594.2	51912.6	2569.0	64.9	20361	48.4
1948	12	7.79	9.46	656	normal	31	125	693	0	0.08	205.5	52207.1	2575.2	65.0	20620	48.6
1949	1	11.96	21.42	1,012	normal	31	125	0	0	0.03	77.3	52985.9	2591.3	65.3	21581	49.3
1949	2	4.13	25.55	992	normal	28	125	0	0	0.06	155.5	53669.4	2605.4	65.6	22470	50.0
1949	3	4.79	30.34	1,593	normal	31	0	0	0	0.15	390.8	54840.6	2629.3	66.0	23800	50.9
1949	4	0.02	30.36	4,025	normal	30	0	0	0	0.26	683.6	58151.9	2695.4	67.3	27350	53.1
1949	5	1.38	31.74	697	normal	31	0	0	0	0.37	997.3	57820.7	2688.9	67.1	27350	53.1
1949	6	0.00	31.74	172	normal	30	0	1197	0	0.51	1371.3	56591.3	2664.5	66.7	25279	51.8
1949	7	0.22	31.96	108	normal	31	0	1672	0	0.57	1518.8	55149.6	2635.6	66.2	22322	49.8
1949	8	0.01	31.97	110	normal	31	0	1741	0	0.57	1502.3	53726.3	2606.6	65.6	19583	47.8
1949	9	0.09	32.06	244	normal	30	0	1590	0	0.50	1303.3	52637.0	2584.1	65.2	17248	46.0
1949	10	1.07	1.07	95	normal	31	0	1272	0	0.35	904.4	51796.5	2566.6	64.9	16080	45.0
1949	11	4.28	5.35	564	normal	30	125	1002	0	0.26	667.3	51538.2	2561.2	64.8	15951	44.9
1949	12	7.29	12.64	812	normal	31	125	455	0	0.07	179.3	52014.9	2571.2	65.0	16600	45.4
1950	1	5.19	17.83	610	normal	31	125	0	0	0.06	154.3	52314.7	2577.4	65.1	17118	45.9
1950	2	4.14	21.97	1,973	normal	28	125	0	0	0.10	257.7	53876.9	2609.7	65.7	18933	47.3
1950	3	2.84	24.81	1,234	normal	31	0	99	0	0.20	521.9	54558.0	2623.6	65.9	19842	48.0
1950	4	3.10	27.91	851	normal	30	0	0	0	0.28	734.6	54644.4	2625.4	66.0	20231	48.3
1950	5	0.64	28.55	134	normal	31	0	859	0	0.39	1023.9	53723.5	2606.5	65.6	19453	47.7
1950	6	0.00	28.55	(45)	normal	30	0	1598	0	0.47	1225.1	52423.4	2579.7	65.1	17767	46.4
1950	7	1.18	29.73	231	normal	31	0	1859	0	0.57	1470.4	51153.0	2553.0	64.6	15692	44.6
1950	8	0.01	29.74	124	normal	31	0	456	0	0.57	1455.2	49790.8	2524.1	64.1	13048	42.1
1950	9	0.79	30.53	386	normal	30	0	456	0	0.46	1161.1	48985.7	2506.7	63.8	11500	40.5
1950	10	0.13	0.13	235	normal	31	0	456	0	0.40	1002.7	48187.0	2489.3	63.4	10055	38.8
1950	11	2.39	2.52	378	normal	30	125	456	0	0.26	647.2	47762.8	2480.1	63.2	9849	38.6
1950	12	0.00	2.52	30	normal	31	125	456	0	0.11	272.8	47364.0	2471.3	63.1	9746	38.5
1951	1	4.93	7.45	602	normal	31	125	456	0	0.07	173.0	47637.0	2477.3	63.2	10262	39.1
1951	2	3.64	11.09	421	normal	28	125	456	0	0.09	223.0	47682.1	2478.3	63.2	10571	39.5

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YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1951	3	2.29	13.38	123	normal	31	0	456	0	0.18	446.1	47328.0	2470.5	63.1	10468	39.3
1951	4	4.45	17.83	105	normal	30	0	456	0	0.25	617.6	46785.3	2458.5	62.8	10262	39.1
1951	5	1.04	18.87	198	dry	74	0	456	0	0.39	958.8	45950.5	2439.8	62.5	9746	38.5
1951	6	0.00	18.87	(552)	dry	71	0	456	0	0.47	1146.7	44180.8	2399.6	61.7	7579	35.5
1951	7	3.06	21.93	243	dry	74	0	456	0	0.57	1367.8	42982.1	2371.8	61.2	5511	32.2
1951	8	0.12	22.05	(392)	dry	74	0	456	0	0.56	1328.2	41187.8	2329.4	60.4	2930	26.4
1951	9	1.30	23.35	135	dry	71	0	456	0	0.48	1118.1	40133.7	2304.0	59.9	1400	21.0
1951	10	2.03	2.03	427	dry	74	0	456	0	0.36	829.5	39657.2	2292.4	59.7	950	18.6
1951	11	3.87	5.90	293	dry	71	125	456	0	0.21	481.4	39272.8	2283.0	59.5	950	18.6
1951	12	13.35	19.25	1,216	dry	74	125	0	0	0.08	182.6	40107.2	2303.4	59.9	2125	23.9
1952	1	13.27	32.52	614	dry	74	125	0	0	0.05	115.2	40407.0	2310.7	60.0	2721	25.8
1952	2	1.91	34.43	654	dry	66	125	0	0	0.07	161.7	40708.3	2317.9	60.2	3347	27.5
1952	3	16.14	50.57	3,079	dry	74	0	0	0	0.13	301.3	43411.9	2381.8	61.4	6338	33.6
1952	4	3.12	53.69	12,887	dry	71	0	0	0	0.23	547.8	55680.1	2646.3	66.4	18933	47.3
1952	5	0.00	53.69	4,687	wet	18.5	0	0	0	0.42	1111.4	59237.2	2716.5	67.7	22914	50.3
1952	6	0.00	53.69	243	wet	18	0	0	0	0.48	1303.9	58158.3	2695.5	67.3	22322	49.8
1952	7	2.08	55.77	404	wet	18.5	0	0	0	0.55	1482.5	57061.2	2673.9	66.9	21730	49.4
1952	8	0.42	56.19	113	wet	18.5	0	601	0	0.58	1550.8	55604.9	2644.8	66.3	20361	48.4
1952	9	2.78	58.97	523	wet	18	0	455	0	0.48	1269.5	54840.4	2629.3	66.0	19583	47.8
1952	10	0.00	0.00	241	wet	18.5	0	833	0	0.40	1051.7	54011.2	2612.4	65.7	18674	47.1
1952	11	6.47	6.47	752	wet	18	125	272	0	0.19	496.4	54123.8	2614.7	65.8	19064	47.4
1952	12	5.17	11.64	1,055	wet	18.5	125	0	0	0.09	235.3	54800.0	2628.5	66.0	19972	48.1
1953	1	1.80	13.44	554	wet	18.5	125	0	0	0.10	262.9	54947.6	2631.5	66.1	20361	48.4
1953	2	1.79	15.23	442	wet	16.5	125	360	0	0.11	289.5	54958.7	2631.7	66.1	20620	48.6
1953	3	3.47	18.70	1,332	wet	18.5	0	73	0	0.22	579.0	55693.2	2646.5	66.4	21581	49.3
1953	4	1.85	20.55	828	wet	18	0	16	0	0.31	820.4	55682.8	2646.3	66.4	21879	49.5
1953	5	1.94	22.49	204	dry	74	0	410	0	0.39	1032.1	54780.7	2628.1	66.0	21286	49.1
1953	6	0.00	22.49	173	dry	71	0	1282	0	0.52	1366.6	53516.1	2602.3	65.5	19842	48.0
1953	7	0.03	22.52	429	dry	74	0	456	0	0.64	1665.5	52205.6	2575.1	65.0	17767	46.4
1953	8	0.07	22.59	84	dry	74	0	456	0	0.61	1570.8	50644.8	2542.3	64.4	15302	44.3
1953	9	0.03	22.62	235	dry	71	0	456	0	0.52	1322.0	49486.8	2517.5	64.0	13151	42.2
1953	10	0.31	0.31	320	dry	74	0	456	0	0.38	956.7	48776.1	2502.2	63.7	11809	40.8
1953	11	1.56	1.87	133	dry	71	125	456	0	0.25	625.5	48087.6	2487.2	63.4	11397	40.4
1953	12	0.45	2.32	130	dry	74	125	456	0	0.09	223.8	47794.7	2480.8	63.3	11397	40.4
1954	1	16.52	18.84	1,538	dry	74	125	0	0	0.07	173.7	48960.1	2506.2	63.7	12841	41.9
1954	2	5.89	24.73	1,047	dry	66	125	0	0	0.10	250.6	49565.5	2519.2	64.0	13746	42.8
1954	3	14.35	39.08	2,730	dry	74	0	0	0	0.18	453.5	51768.0	2566.0	64.9	16210	45.1
1954	4	0.23	39.31	6,286	dry	71	0	0	0	0.29	744.1	57238.9	2677.4	66.9	22026	49.6
1954	5	0.23	39.54	1,089	wet	18.5	0	0	0	0.46	1231.6	57077.8	2674.2	66.9	22322	49.8
1954	6	0.54	40.08	233	wet	18	0	390	0	0.57	1524.3	55768.5	2648.1	66.4	21484	49.3
1954	7	0.92	41.00	395	wet	18.5	0	1231	0	0.63	1668.3	54476.7	2621.9	65.9	19842	48.0
1954	8	0.41	41.41	438	wet	18.5	0	1493	0	0.60	1573.2	53323.1	2598.3	65.5	18156	46.7
1954	9	0.60	42.01	389	wet	18	0	456	0	0.50	1299.2	52394.9	2579.1	65.1	16470	45.3
1954	10	0.00	0.00	(71)	wet	18.5	0	456	0	0.40	1031.6	51273.8	2555.6	64.7	14914	43.9
1954	11	4.32	4.32	477	wet	18	125	456	0	0.25	638.9	50968.9	2549.2	64.5	14914	43.9
1954	12	3.38	7.70	782	wet	18.5	125	0	0	0.09	229.4	51378.0	2557.8	64.7	15562	44.5
1955	1	9.64	17.34	349	wet	18.5	125	0	0	0.06	153.5	51430.0	2558.9	64.7	15821	44.8
1955	2	1.45	18.79	395	wet	16.5	125	0	0	0.09	230.3	51453.2	2559.4	64.7	16080	45.0
1955	3	0.61	19.40	2,110	wet	18.5	0	0	0	0.19	486.3	53058.4	2592.8	65.4	17896	46.5
1955	4	1.47	20.87	743	wet	18	0	342	0	0.26	674.1	53109.3	2593.9	65.4	18156	46.7

DIVIDION PROPOSED ALTERNATIVE

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1955	5	4.01	24.88	1,301	dry	74	0	221	0	0.41	1063.5	53272.8	2597.3	65.4	18804	47.2
1955	6	0.00	24.88	235	dry	71	0	456	0	0.53	1376.6	52060.2	2572.1	65.0	17507	46.2
1955	7	1.95	26.83	37	dry	74	0	456	0	0.57	1466.1	50557.1	2540.4	64.4	15562	44.5
1955	8	2.77	29.60	806	dry	74	0	456	0	0.61	1549.7	49739.5	2523.0	64.1	14135	43.2
1955	9	0.00	29.60	(42)	dry	71	0	456	0	0.51	1286.7	48339.8	2492.7	63.5	11706	40.7
1955	10	0.00	0.00	307	dry	74	0	456	0	0.40	997.1	47575.7	2475.9	63.2	10365	39.2
1955	11	3.21	3.21	335	dry	71	125	456	0	0.24	594.2	47120.5	2465.9	63.0	10055	38.8
1955	12	2.58	5.79	123	dry	74	125	456	0	0.10	246.6	46797.9	2458.7	62.8	10055	38.8
1956	1	12.19	17.98	1,353	dry	74	125	0	0	0.09	221.3	47730.6	2479.3	63.2	11294	40.3
1956	2	2.07	20.05	1,254	dry	66	125	0	0	0.09	223.1	48570.4	2497.7	63.6	12428	41.5
1956	3	0.00	20.05	(349)	dry	74	0	456	0	0.20	499.5	47647.9	2477.5	63.2	11809	40.8
1956	4	4.09	24.14	437	dry	71	0	456	0	0.25	619.4	47394.5	2471.9	63.1	11913	41.0
1956	5	1.67	25.81	482	normal	31	0	456	0	0.40	988.8	46856.7	2460.0	62.9	11603	40.6
1956	6	0.00	25.81	74	normal	30	0	456	0	0.53	1303.8	45596.9	2431.8	62.3	9849	38.6
1956	7	1.21	27.02	62	normal	31	0	456	0	0.58	1410.5	44217.5	2400.4	61.7	7682	35.7
1956	8	0.00	27.02	176	normal	31	0	456	0	0.56	1344.2	43018.2	2372.7	61.2	5511	32.2
1956	9	0.00	27.02	(399)	normal	30	0	456	0	0.52	1233.8	41355.4	2333.5	60.5	2840	26.1
1956	10	0.25	0.25	265	normal	31	0	456	0	0.35	816.7	40772.7	2319.5	60.2	1300	20.5
1956	11	0.00	0.25	340	normal	30	125	456	0	0.21	487.1	40470.6	2312.2	60.1	1000	18.9
1956	12	0.59	0.84	10	normal	31	125	456	0	0.09	208.1	40116.5	2303.6	59.9	592	16.0
1957	1	18.88	19.72	2,368	normal	31	125	0	0	0.06	138.2	42190.3	2353.3	60.8	2930	26.4
1957	2	3.99	23.71	2,897	normal	28	125	0	0	0.10	235.3	44699.0	2411.5	62.0	5766	32.6
1957	3	2.38	26.09	546	normal	31	0	0	0	0.19	458.2	44755.8	2412.8	62.0	6148	33.3
1957	4	2.91	29.00	615	normal	30	0	456	0	0.25	603.2	44737.6	2412.3	62.0	6530	33.9
1957	5	3.60	32.60	403	normal	31	0	363	0	0.35	844.3	44265.3	2401.5	61.8	6594	34.0
1957	6	0.28	32.88	118	normal	30	0	456	0	0.54	1296.8	43056.4	2373.6	61.2	6084	33.2
1957	7	0.43	33.31	40	normal	31	0	456	0	0.59	1400.4	41665.0	2340.8	60.6	4875	31.0
1957	8	0.27	33.58	(962)	normal	31	0	456	0	0.58	1357.7	39314.4	2284.0	59.5	2452	25.0
1957	9	0.00	33.58	411	normal	30	0	456	0	0.46	1050.7	38644.7	2267.5	59.2	1946	23.2
1957	10	4.51	4.51	203	normal	31	0	456	0	0.33	748.3	38068.4	2253.1	58.9	1789	22.6
1957	11	3.12	7.63	84	normal	30	125	456	0	0.21	473.2	37524.3	2239.4	58.6	1809	22.7
1957	12	9.11	16.74	1,302	normal	31	125	178	0	0.09	201.5	38468.7	2263.1	59.1	3079	26.8
1958	1	3.10	19.84	620	normal	31	125	456	0	0.08	181.0	38751.7	2270.1	59.2	3664	28.3
1958	2	12.62	32.46	3,059	normal	28	125	0	0	0.09	204.3	41453.4	2335.8	60.5	6657	34.1
1958	3	12.92	45.38	5,314	normal	31	0	0	0	0.14	327.0	46409.4	2450.1	62.7	11809	40.8
1958	4	11.73	57.11	8,765	normal	30	0	0	0	0.23	563.5	54580.8	2624.1	65.9	20231	48.3
1958	5	1.00	58.11	4,736	wet	18.5	0	0	0	0.42	1102.1	58196.2	2696.2	67.3	24243	51.2
1958	6	0.00	58.11	263	wet	18	0	0	0	0.48	1294.2	57147.1	2675.6	66.9	23652	50.8
1958	7	0.04	58.15	(52)	wet	18.5	0	0	0	0.56	1498.3	55578.2	2644.2	66.3	22618	50.1
1958	8	0.78	58.93	595	wet	18.5	0	0	0	0.60	1586.5	54568.2	2623.8	65.9	22174	49.7
1958	9	1.81	60.74	99	wet	18	0	47	0	0.49	1285.7	53363.5	2599.1	65.5	21434	49.2
1958	10	0.16	0.16	(156)	wet	18.5	0	201	0	0.39	1013.7	52175.4	2574.5	65.0	20620	48.6
1958	11	1.85	2.01	872	wet	18	125	177	0	0.21	540.6	52363.7	2578.4	65.1	21139	49.0
1958	12	0.00	2.01	(351)	wet	18.5	125	374	0	0.10	257.8	51611.4	2562.7	64.8	20620	48.6
1959	1	3.82	5.83	263	wet	18.5	125	456	0	0.08	205.0	51525.9	2560.9	64.8	20749	48.7
1959	2	17.55	23.38	1,857	wet	16.5	125	0	0	0.08	204.9	53036.5	2592.4	65.4	22470	50.0
1959	3	0.00	23.38	1,253	wet	18.5	0	24	0	0.21	544.4	53726.6	2606.6	65.6	23356	50.6
1959	4	0.59	23.97	84	wet	18	0	457	0	0.30	782.0	53010.6	2591.9	65.3	22914	50.3
1959	5	0.17	24.14	(250)	normal	31	0	456	0	0.40	1036.7	51692.9	2564.4	64.8	21730	49.4
1959	6	0.00	24.14	86	normal	30	0	456	0	0.56	1436.1	50312.8	2535.2	64.3	19842	48.0

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1959	7	0.20	24.34	609	normal	31	0	456	0	0.64	1622.5	49268.3	2512.8	63.9	17377	46.1
1959	8	0.55	24.89	80	normal	31	0	456	0	0.60	1507.7	47809.6	2481.1	63.3	15044	44.1
1959	9	1.15	26.04	(57)	normal	30	0	456	0	0.48	1190.9	46531.7	2452.8	62.7	13151	42.2
1959	10	0.46	0.46	488	normal	31	0	456	0	0.40	981.1	46007.5	2441.1	62.5	12222	41.3
1959	11	1.70	2.16	597	normal	30	125	456	0	0.25	610.3	45839.3	2437.3	62.4	12016	41.1
1959	12	0.74	2.90	141	normal	31	125	456	0	0.10	243.7	45580.5	2431.5	62.3	11809	40.8
1960	1	6.17	9.07	597	normal	31	125	0	0	0.06	145.9	45875.6	2438.1	62.5	12325	41.4
1960	2	5.50	14.57	729	normal	28	125	0	0	0.08	195.0	46256.6	2446.7	62.6	12944	42.0
1960	3	2.12	16.69	1,882	normal	31	0	219	0	0.21	513.8	47593.8	2476.3	63.2	14525	43.6
1960	4	5.14	21.83	734	normal	30	0	327	0	0.28	693.4	47604.4	2476.6	63.2	14655	43.7
1960	5	0.32	22.15	1,123	normal	31	0	406	0	0.41	1015.4	47681.0	2478.3	63.2	15173	44.2
1960	6	0.00	22.15	(204)	normal	30	0	456	0	0.56	1387.8	46059.2	2442.2	62.5	13358	42.4
1960	7	0.05	22.20	610	normal	31	0	456	0	0.59	1440.9	45197.3	2422.8	62.2	11706	40.7
1960	8	0.03	22.23	(410)	normal	31	0	456	0	0.59	1429.5	43326.8	2379.9	61.3	9023	37.5
1960	9	0.28	22.51	(392)	normal	30	0	456	0	0.51	1213.7	41691.1	2341.4	60.6	6721	34.2
1960	10	1.86	1.86	1,012	normal	31	0	456	0	0.36	842.9	41829.2	2344.7	60.7	6402	33.7
1960	11	6.30	8.16	469	normal	30	125	456	0	0.23	539.3	41603.9	2339.4	60.6	6338	33.6
1960	12	0.66	8.82	(32)	normal	31	125	456	0	0.08	187.1	41228.7	2330.4	60.4	6084	33.2
1961	1	2.63	11.45	400	normal	31	125	456	0	0.08	186.4	41286.3	2331.8	60.4	6084	33.2
1961	2	0.04	11.49	(180)	normal	28	125	456	0	0.11	256.5	40696.8	2317.7	60.2	5447	32.1
1961	3	2.97	14.46	71	normal	31	0	456	0	0.19	440.4	40296.5	2308.0	60.0	5257	31.7
1961	4	0.00	14.46	183	normal	30	0	456	0	0.27	623.2	39826.3	2296.6	59.8	5193	31.6
1961	5	0.23	14.69	(96)	dry	74	0	456	0	0.39	895.7	38760.6	2270.4	59.2	4683	30.6
1961	6	0.00	14.69	(603)	dry	71	0	456	0	0.54	1226.0	36860.6	2222.6	58.3	3258	27.3
1961	7	0.12	14.81	75	dry	74	0	456	0	0.60	1333.6	35528.1	2188.3	57.7	2333	24.6
1961	8	1.88	16.69	146	dry	74	0	456	0	0.59	1291.1	34309.0	2156.2	57.0	1617	21.9
1961	9	0.00	16.69	77	dry	71	0	456	0	0.47	1013.4	33301.6	2129.2	56.5	1000	18.9
1961	10	0.00	0.00	215	dry	74	0	456	0	0.35	745.2	32697.4	2112.7	56.2	693	16.8
1961	11	5.14	5.14	87	dry	71	125	456	0	0.21	443.7	32144.7	2097.6	55.9	540	15.6
1961	12	5.27	10.41	173	dry	74	125	0	0	0.09	188.8	31930.0	2091.6	55.8	700	16.9
1962	1	6.92	17.33	214	dry	74	125	456	0	0.08	167.3	31777.6	2087.4	55.7	900	18.2
1962	2	16.36	33.69	2,790	dry	66	125	0	0	0.08	167.0	34209.6	2153.5	57.0	3664	28.3
1962	3	5.32	39.01	2,845	dry	74	0	0	0	0.15	323.0	36657.6	2217.4	58.2	6402	33.7
1962	4	0.00	39.01	4,291	dry	71	0	0	0	0.30	665.2	40212.4	2305.9	59.9	10365	39.2
1962	5	2.03	41.04	1,099	wet	18.5	0	0	0	0.38	876.3	40416.6	2310.9	60.0	10984	39.9
1962	6	0.17	41.21	13	wet	18	0	456	0	0.50	1155.4	39256.2	2282.6	59.5	10365	39.2
1962	7	0.53	41.74	(97)	wet	18.5	0	456	0	0.58	1323.9	37816.8	2246.8	58.8	9436	38.1
1962	8	0.40	42.14	(88)	wet	18.5	0	456	0	0.61	1370.6	36339.7	2209.3	58.1	7888	36.0
1962	9	0.27	42.41	249	wet	18	0	456	0	0.50	1104.6	35466.1	2186.6	57.6	7102	34.8
1962	10	0.56	0.56	61	wet	18.5	0	456	0	0.38	830.9	34677.7	2165.9	57.2	6594	34.0
1962	11	0.19	0.75	178	wet	18	125	456	0	0.25	541.5	34171.2	2152.5	57.0	6338	33.6
1962	12	0.21	0.96	135	wet	18.5	125	456	0	0.10	215.3	33947.4	2146.5	56.8	6338	33.6
1963	1	0.77	1.73	188	wet	18.5	125	456	0	0.07	150.3	33841.7	2143.7	56.8	6465	33.8
1963	2	0.00	1.73	308	wet	16.5	125	456	0	0.12	257.2	33750.9	2141.3	56.7	6657	34.1
1963	3	6.16	7.89	306	wet	18.5	0	456	0	0.18	385.4	33653.0	2138.6	56.7	6784	34.3
1963	4	4.88	12.77	630	wet	18	0	456	0	0.24	513.3	33751.7	2141.3	56.7	7166	34.9
1963	5	0.00	12.77	327	dry	74	0	456	0	0.43	920.8	33084.0	2123.3	56.4	7039	34.7
1963	6	0.00	12.77	(135)	dry	71	0	456	0	0.48	1019.2	31858.8	2089.6	55.7	6338	33.6
1963	7	0.00	12.77	(698)	dry	74	0	456	0	0.58	1212.0	29874.8	2033.6	54.6	4557	30.3
1963	8	1.48	14.25	552	dry	74	0	456	0	0.58	1179.5	29173.3	2013.2	54.2	3109	26.9

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1963	9	5.15	19.40	390	dry	71	0	456	0	0.50	1006.6	28485.7	1993.0	53.8	2870	26.2
1963	10	1.41	1.41	85	dry	74	0	456	0	0.38	757.3	27739.4	1970.8	53.4	2572	25.3
1963	11	5.08	6.49	265	dry	71	125	456	0	0.23	453.3	27355.1	1959.2	53.1	2751	25.9
1963	12	1.06	7.55	98	dry	74	125	456	0	0.10	195.9	27058.2	1950.1	52.9	2812	26.1
1964	1	4.80	12.35	297	dry	74	125	456	0	0.07	136.5	27019.7	1949.0	52.9	3079	26.8
1964	2	0.51	12.86	7	dry	66	125	456	0	0.09	175.4	26660.3	1938.0	52.7	3049	26.7
1964	3	5.40	18.26	950	dry	74	0	456	0	0.17	329.5	27206.8	1954.7	53.0	3920	28.9
1964	4	3.36	21.62	2,465	dry	71	0	0	0	0.24	469.1	29131.7	2012.0	54.2	6212	33.4
1964	5	2.52	24.14	955	normal	31	0	338	0	0.40	804.8	29250.9	2015.5	54.3	6784	34.3
1964	6	0.00	24.14	295	normal	30	0	456	0	0.49	987.6	28528.3	1994.3	53.8	6594	34.0
1964	7	1.45	25.59	(155)	normal	31	0	456	0	0.61	1216.5	27125.8	1952.2	53.0	5447	32.1
1964	8	0.26	25.85	(117)	normal	31	0	456	0	0.60	1171.3	25806.5	1911.5	52.2	4302	29.8
1964	9	0.23	26.08	(519)	normal	30	0	456	0	0.49	936.6	24320.8	1864.1	51.2	2930	26.4
1964	10	0.62	0.62	143	normal	31	0	456	0	0.42	782.9	23649.9	1842.2	50.8	2423	24.9
1964	11	4.58	5.20	195	normal	30	125	456	0	0.21	386.9	23303.0	1830.7	50.5	2542	25.3
1964	12	0.00	5.20	277	normal	31	125	0	0	0.10	183.1	23241.0	1828.7	50.5	2781	26.0
1965	1	1.88	7.08	330	normal	31	125	456	0	0.08	146.3	23268.7	1829.6	50.5	3079	26.8
1965	2	1.46	8.54	221	normal	28	125	456	0	0.10	183.0	23153.7	1825.7	50.4	3258	27.3
1965	3	2.06	10.60	229	normal	31	0	456	0	0.18	328.6	23023.1	1821.4	50.3	3410	27.7
1965	4	15.73	26.33	4,359	normal	30	0	0	0	0.25	455.3	26896.7	1945.2	52.8	7579	35.5
1965	5	0.00	26.33	1,279	normal	31	0	0	0	0.41	797.5	27347.2	1958.9	53.1	8404	36.7
1965	6	0.04	26.37	(84)	normal	30	0	456	0	0.48	940.3	26292.9	1926.6	52.5	7785	35.8
1965	7	1.37	27.74	122	normal	31	0	456	0	0.59	1136.7	25247.2	1893.8	51.8	7269	35.1
1965	8	1.83	29.57	470	normal	31	0	456	0	0.60	1136.3	24549.9	1871.5	51.4	6784	34.3
1965	9	0.64	30.21	246	normal	30	0	456	0	0.46	860.9	23905.0	1850.6	50.9	6402	33.7
1965	10	0.13	0.13	98	normal	31	0	456	0	0.42	777.2	23194.8	1827.1	50.5	6020	33.1
1965	11	26.87	27.00	8,418	normal	30	125	0	0	0.26	475.0	30982.7	2065.1	55.2	14135	43.2
1965	12	12.03	39.03	4,288	normal	31	125	0	0	0.09	185.9	34928.8	2172.6	57.3	18286	46.8
1966	1	1.89	40.92	1,410	normal	31	125	0	0	0.07	152.1	36030.8	2201.3	57.9	19583	47.8
1966	2	3.67	44.59	1,429	normal	28	125	0	0	0.08	176.1	37130.7	2229.5	58.5	20879	48.8
1966	3	1.70	46.29	3,153	normal	31	0	0	0	0.22	490.5	39762.2	2295.0	59.7	23652	50.8
1966	4	0.14	46.43	828	normal	30	0	0	0	0.30	688.5	39871.7	2297.7	59.8	23948	51.0
1966	5	0.08	46.51	353	wet	18.5	0	0	0	0.45	1033.9	39172.2	2280.5	59.4	23504	50.7
1966	6	0.00	46.51	(54)	wet	18	0	164	0	0.56	1277.1	37823.1	2247.0	58.8	22470	50.0
1966	7	0.00	46.51	431	wet	18.5	0	456	0	0.68	1527.9	36707.7	2218.7	58.2	21730	49.4
1966	8	0.33	46.84	86	wet	18.5	0	456	0	0.63	1397.8	35377.4	2184.3	57.6	20749	48.7
1966	9	0.44	47.28	(44)	wet	18	0	456	0	0.52	1135.8	34179.6	2152.7	57.0	19842	48.0
1966	10	0.50	0.50	267	wet	18.5	0	456	0	0.40	861.1	33567.0	2136.3	56.6	19455	47.7
1966	11	3.13	3.63	568	wet	18	125	456	0	0.27	576.8	33415.2	2132.2	56.6	19583	47.8
1966	12	22.40	26.03	13,071	wet	18.5	125	0	0	0.11	234.5	46108.1	2443.3	62.6	32453	56.0
1967	1	9.24	35.27	881	wet	18.5	125	0	0	0.09	219.9	46625.7	2454.9	62.8	33151	56.4
1967	2	0.00	35.27	1,273	wet	16.5	125	0	0	0.11	270.0	47487.2	2474.0	63.1	34198	57.0
1967	3	7.30	42.57	2,533	wet	18.5	0	0	0	0.21	519.5	49482.2	2517.4	64.0	36290	58.0
1967	4	13.64	56.21	4,319	wet	18	0	0	0	0.22	553.8	53229.3	2596.4	65.4	40128	59.9
1967	5	0.67	56.88	4,496	wet	18.5	0	0	0	0.42	1090.5	56616.3	2665.0	66.7	43664	61.5
1967	6	0.06	56.94	1,187	wet	18	0	0	0	0.51	1359.2	56426.2	2661.2	66.6	43664	61.5
1967	7	0.05	56.99	709	wet	18.5	0	0	0	0.65	1729.8	55386.9	2640.4	66.3	42867	61.1
1967	8	1.49	58.48	899	wet	18.5	0	0	0	0.65	1716.2	54551.1	2623.5	65.9	42270	60.9
1967	9	1.70	60.18	546	wet	18	0	0	0	0.50	1311.7	53767.4	2607.4	65.6	41672	60.6
1967	10	0.00	0.00	242	wet	18.5	0	0	0	0.40	1043.0	52947.9	2590.6	65.3	40875	60.2

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1967	11	7.88	7.88	1,106	wet	18	125	0	0	0.27	699.5	53211.5	2596.0	65.4	41274	60.4
1967	12	2.92	10.80	1,378	wet	18.5	125	0	0	0.08	207.7	54238.3	2617.1	65.8	42469	61.0
1968	1	3.04	13.84	682	wet	18.5	125	0	0	0.08	209.4	54567.4	2623.8	65.9	42967	61.2
1968	2	2.46	16.30	1,551	wet	16.5	125	0	0	0.11	288.6	55688.3	2646.5	66.4	44262	61.8
1968	3	3.14	19.44	1,617	wet	18.5	0	0	0	0.20	529.3	56757.5	2667.8	66.8	45408	62.3
1968	4	2.18	21.62	1,240	wet	18	0	0	0	0.25	667.0	57312.6	2678.8	67.0	46054	62.5
1968	5	0.18	21.80	377	normal	31	0	0	0	0.41	1098.3	56560.3	2663.9	66.7	45457	62.3
1968	6	0.00	21.80	215	normal	30	0	374	0	0.54	1438.5	55306.7	2638.8	66.2	44262	61.8
1968	7	0.56	22.36	640	normal	31	0	963	0	0.60	1583.3	54332.5	2619.0	65.9	43266	61.3
1968	8	0.41	22.77	396	normal	31	0	1014	0	0.56	1466.6	53230.9	2596.4	65.4	42270	60.9
1968	9	0.00	22.77	(201)	normal	30	0	1427	0	0.50	1298.2	51701.6	2564.6	64.8	40476	60.1
1968	10	0.28	0.28	171	normal	31	0	1121	0	0.39	1000.2	50841.5	2546.5	64.5	39606	59.6
1968	11	0.00	0.28	558	normal	30	125	775	0	0.25	636.6	50607.8	2541.5	64.4	39606	59.6
1968	12	3.62	3.90	375	normal	31	125	756	0	0.09	228.7	50598.1	2541.3	64.4	39780	59.7
1969	1	40.80	44.70	20,533	normal	31	125	0	0	0.09	228.7	70746.4	2928.4	71.5	60011	67.9
1969	2	29.65	74.35	8,441	normal	28	125	0	0	0.08	234.3	73320.0	2973.0	72.3	62959	69.0
1969	3	3.85	78.20	6,910	normal	31	0	0	0	0.16	475.7	73320.0	2973.0	72.3	66080	70.0
1969	4	2.26	80.46	12,646	normal	30	0	0	0	0.27	802.7	73320.0	2973.0	72.3	72167	72.0
1969	5	1.64	82.10	7,390	wet	18.5	0	0	0	0.42	1248.7	73320.0	2973.0	72.3	72167	72.0
1969	6	1.00	83.10	1,969	wet	18	0	0	0	0.51	1516.2	73320.0	2973.0	72.3	71913	71.9
1969	7	2.67	85.77	1,910	wet	18.5	0	0	0	0.60	1783.8	73320.0	2973.0	72.3	71660	71.8
1969	8	0.03	85.80	(364)	wet	18.5	0	0	0	0.63	1873.0	71064.5	2934.0	71.6	69123	71.0
1969	9	0.75	86.55	(81)	wet	18	0	0	0	0.52	1525.7	69439.9	2905.4	71.1	65065	69.7
1969	10	0.11	0.11	375	wet	18.5	0	0	0	0.36	1045.9	68750.4	2893.2	70.9	63381	69.1
1969	11	2.93	3.04	951	wet	18	125	0	0	0.25	723.3	68835.1	2894.7	70.9	63381	69.1
1969	12	0.24	3.28	547	wet	18.5	125	0	0	0.10	289.5	68949.1	2896.7	71.0	63381	69.1
1970	1	2.79	6.07	585	wet	18.5	125	0	0	0.09	260.7	69129.9	2899.9	71.0	63381	69.1
1970	2	0.94	7.01	561	wet	16.5	125	0	0	0.10	290.0	69259.5	2902.2	71.1	63381	69.1
1970	3	8.38	15.39	2,232	wet	18.5	0	0	0	0.19	551.4	70921.5	2931.5	71.6	65065	69.7
1970	4	2.77	18.16	675	wet	18	0	0	0	0.24	703.6	70875.0	2930.7	71.6	65065	69.7
1970	5	0.10	18.26	361	dry	74	0	0	0	0.42	1230.9	69931.1	2914.1	71.3	64223	69.4
1970	6	0.05	18.31	412	dry	71	0	563	563	0.52	1515.3	68193.8	2883.2	70.7	63170	69.0
1970	7	0.19	18.50	629	dry	74	0	1206	1206	0.61	1758.8	65784.0	2839.7	69.9	62117	68.7
1970	8	1.65	20.15	1,676	dry	74	0	1156	1156	0.61	1732.2	64497.8	2816.1	69.5	62117	68.7
1970	9	0.00	20.15	48	dry	71	0	916	916	0.48	1351.7	62207.1	2773.3	68.7	60853	68.2
1970	10	0.02	0.02	(208)	dry	74	0	945	945	0.39	1081.6	59898.5	2729.3	67.9	59590	67.8
1970	11	16.26	16.28	1,332	dry	71	125	0	0	0.26	709.6	60324.9	2737.5	68.0	60221	68.0
1970	12	0.00	16.28	1,509	dry	74	125	0	0	0.09	246.4	61388.5	2757.8	68.4	61485	68.5
1971	1	1.52	17.80	640	dry	74	125	0	0	0.08	220.6	61608.9	2762.0	68.5	61906	68.6
1971	2	1.48	19.28	485	dry	66	125	0	0	0.10	276.2	61626.7	2762.3	68.5	62117	68.7
1971	3	0.85	20.13	788	dry	74	0	0	0	0.21	580.1	61760.6	2764.9	68.5	62327	68.7
1971	4	1.92	22.05	533	dry	71	0	0	0	0.27	746.5	61476.1	2759.5	68.4	62117	68.7
1971	5	2.43	24.48	621	normal	31	0	193	193	0.38	1048.6	60824.5	2747.1	68.2	61696	68.5
1971	6	0.00	24.48	337	normal	30	0	828	0	0.51	1401.0	59730.5	2726.1	67.8	60643	68.2
1971	7	0.52	25.00	569	normal	31	0	1319	0	0.60	1635.6	58632.8	2704.8	67.4	59590	67.8
1971	8	0.55	25.55	347	normal	31	0	1442	0	0.62	1677.0	57271.9	2678.0	66.9	58115	67.3
1971	9	0.00	25.55	(71)	normal	30	0	1470	0	0.51	1365.8	55805.1	2648.8	66.4	56641	66.7
1971	10	3.85	3.85	514	normal	31	0	1269	0	0.35	927.1	55361.0	2639.9	66.2	56220	66.6
1971	11	1.29	5.14	628	normal	30	125	857	0	0.24	633.6	55200.4	2636.6	66.2	56220	66.6
1971	12	22.32	27.46	6,112	normal	31	125	0	0	0.08	210.9	60945.5	2749.4	68.3	62117	68.7

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1972	1	0.00	27.46	220	normal	31	125	0	0	0.08	220.0	60789.6	2746.4	68.2	62117	68.7
1972	2	0.18	27.64	91	normal	28	125	181	0	0.11	302.1	60425.4	2739.4	68.1	61906	68.6
1972	3	0.00	27.64	420	normal	31	0	484	0	0.23	630.1	60184.4	2734.8	68.0	61696	68.5
1972	4	1.01	28.65	(79)	normal	30	0	637	0	0.28	765.7	59309.6	2717.9	67.7	60853	68.2
1972	5	0.73	29.38	480	normal	31	0	1019	0	0.41	1114.3	58644.3	2705.0	67.4	60221	68.0
1972	6	0.46	29.84	320	normal	30	0	1214	0	0.51	1379.5	57554.7	2683.6	67.1	59168	67.6
1972	7	0.00	29.84	(71)	normal	31	0	1855	0	0.63	1690.7	55762.1	2647.9	66.4	57062	66.9
1972	8	0.35	30.19	529	normal	31	0	1983	0	0.59	1562.3	54697.8	2626.4	66.0	54535	65.9
1972	9	0.00	30.19	212	normal	30	0	1985	0	0.49	1287.0	53592.8	2603.9	65.6	52428	65.1
1972	10	1.29	1.29	106	normal	31	0	1334	0	0.36	937.4	52730.4	2586.1	65.2	51234	64.7
1972	11	6.56	7.85	1,150	normal	30	125	518	0	0.22	568.9	53156.5	2594.9	65.4	51831	64.9
1972	12	0.00	7.85	1,457	normal	31	125	0	0	0.09	233.5	54224.0	2616.8	65.8	53060	65.4
1973	1	6.43	14.28	1,443	normal	31	125	0	0	0.07	183.2	55327.8	2639.2	66.2	54324	65.8
1973	2	12.10	26.38	1,496	normal	28	125	0	0	0.09	237.5	56433.3	2661.4	66.6	55687	66.3
1973	3	11.14	37.52	3,344	normal	31	0	0	0	0.15	399.2	59347.1	2718.7	67.7	58536	67.4
1973	4	0.00	37.52	6,185	normal	30	0	0	0	0.26	706.8	64795.2	2821.6	69.6	64012	69.3
1973	5	0.53	38.05	4,327	normal	31	0	0	0	0.44	1241.5	67849.7	2877.1	70.6	67094	70.3
1973	6	0.00	38.05	17	normal	30	0	0	0	0.54	1553.6	66283.1	2848.8	70.1	65573	69.8
1973	7	0.00	38.05	152	normal	31	0	186	186	0.61	1737.8	64480.4	2815.7	69.5	64012	69.3
1973	8	0.59	38.64	544	normal	31	0	276	276	0.58	1633.1	63084.2	2789.8	69.0	62538	68.8
1973	9	0.00	38.64	262	normal	30	0	400	400	0.49	1367.0	61549.2	2760.9	68.5	60853	68.2
1973	10	0.00	0.00	(16)	normal	31	0	417	417	0.40	1104.3	59980.9	2730.9	67.9	59168	67.6
1973	11	4.42	4.42	925	normal	30	125	0	0	0.25	682.7	60068.2	2732.6	68.0	59168	67.6
1973	12	0.93	5.35	85	normal	31	125	0	0	0.11	300.6	59696.6	2725.4	67.8	58958	67.6
1974	1	12.55	17.90	2,322	normal	31	125	0	0	0.08	218.0	61644.5	2762.7	68.5	61064	68.3
1974	2	0.05	17.95	905	normal	28	125	0	0	0.10	276.3	62120.3	2771.7	68.7	61696	68.5
1974	3	7.53	25.48	2,658	normal	31	0	0	0	0.20	554.3	64192.9	2810.4	69.4	63802	69.2
1974	4	1.15	26.63	1,413	normal	30	0	0	0	0.28	786.9	64789.0	2821.4	69.6	64433	69.5
1974	5	0.39	27.02	537	normal	31	0	0	0	0.43	1213.2	64081.8	2808.4	69.3	63591	69.2
1974	6	0.00	27.02	150	normal	30	0	891	891	0.55	1544.6	61766.2	2765.0	68.5	61485	68.5
1974	7	0.29	27.31	356	normal	31	0	1208	1208	0.59	1631.3	59251.8	2716.8	67.7	59168	67.6
1974	8	1.25	28.56	410	normal	31	0	1329	0	0.58	1575.7	58055.1	2693.5	67.2	56851	66.8
1974	9	0.70	29.26	678	normal	30	0	1348	0	0.53	1427.5	57275.6	2678.1	66.9	54956	66.1
1974	10	3.12	3.12	855	normal	31	0	1234	0	0.41	1098.0	57001.5	2672.7	66.8	53692	65.6
1974	11	0.72	3.84	138	normal	30	125	724	0	0.24	641.4	56343.1	2659.6	66.6	52850	65.3
1974	12	5.88	9.72	1,139	normal	31	125	0	0	0.09	239.4	57086.7	2674.4	66.9	53692	65.6
1975	1	1.74	11.46	627	normal	31	125	663	0	0.08	213.9	57343.8	2679.4	67.0	54114	65.8
1975	2	3.13	14.59	653	normal	28	125	0	0	0.09	241.2	57602.6	2684.6	67.1	54535	65.9
1975	3	8.03	22.62	860	normal	31	0	0	0	0.17	456.4	57975.3	2691.9	67.2	54956	66.1
1975	4	4.99	27.61	2,019	normal	30	0	0	0	0.29	780.6	59183.6	2715.5	67.6	56220	66.6
1975	5	0.40	28.01	1,257	normal	31	0	0	0	0.40	1086.2	59323.4	2718.2	67.7	56430	66.6
1975	6	0.00	28.01	(33)	normal	30	0	1041	0	0.51	1386.3	57874.2	2689.9	67.2	54324	65.8
1975	7	0.00	28.01	465	normal	31	0	1789	0	0.61	1640.8	56667.3	2666.0	66.7	51632	64.8
1975	8	0.00	28.01	469	normal	31	0	2393	0	0.58	1546.3	55559.0	2643.8	66.3	48843	63.7
1975	9	0.43	28.44	649	normal	30	0	2133	0	0.51	1348.4	54829.7	2629.1	66.0	46452	62.7
1975	10	0.79	0.79	544	normal	31	0	1569	0	0.39	1025.4	54317.3	2618.7	65.8	44661	61.9
1975	11	3.10	3.89	613	normal	30	125	1317	0	0.26	680.9	54094.4	2614.1	65.8	43664	61.5
1975	12	0.55	4.44	358	normal	31	125	884	0	0.10	261.4	54035.0	2612.9	65.7	43664	61.5
1976	1	0.00	4.44	(359)	normal	31	125	456	0	0.09	235.2	53284.9	2597.5	65.5	42270	60.9
1976	2	12.04	16.48	953	normal	28	125	0	0	0.10	259.8	53825.1	2608.6	65.7	42867	61.1

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1976	3	5.26	21.74	2,811	normal	31	0	0	0	0.18	469.6	56135.6	2655.4	66.5	45258	62.2
1976	4	2.60	24.34	814	normal	30	0	146	0	0.26	690.4	56229.1	2657.3	66.6	45457	62.3
1976	5	0.25	24.59	179	normal	31	0	806	0	0.43	1142.6	55234.5	2637.3	66.2	44262	61.8
1976	6	0.19	24.78	51	normal	30	0	1620	0	0.51	1345.0	53910.5	2610.4	65.7	41872	60.7
1976	7	0.77	25.55	442	normal	31	0	456	0	0.59	1540.1	52781.4	2587.1	65.3	39606	59.6
1976	8	0.00	25.55	583	normal	31	0	456	0	0.56	1448.8	51884.6	2568.4	64.9	37162	58.5
1976	9	8.76	34.31	2,002	normal	30	0	0	0	0.48	1232.8	52623.7	2583.8	65.2	37686	58.7
1976	10	0.60	0.60	113	normal	31	0	456	0	0.39	1007.7	51698.0	2564.5	64.8	36813	58.3
1976	11	0.15	0.75	581	normal	30	125	456	0	0.26	666.8	51457.3	2559.5	64.7	36639	58.2
1976	12	1.30	2.05	141	normal	31	125	456	0	0.10	255.9	51186.3	2553.7	64.6	36290	58.0
1977	1	6.80	8.85	724	normal	31	125	0	0	0.08	204.3	51550.0	2561.4	64.8	36559	58.2
1977	2	0.53	9.38	316	normal	28	125	0	0	0.11	281.8	51431.3	2558.9	64.7	36559	58.2
1977	3	3.08	12.46	371	normal	31	0	0	0	0.17	435.0	51336.3	2556.9	64.7	36559	58.2
1977	4	0.00	12.46	632	normal	30	0	0	0	0.29	741.5	51196.8	2554.0	64.6	36559	58.2
1977	5	5.67	18.13	1,131	dry	74	0	0	0	0.35	893.9	51359.9	2557.4	64.7	36925	58.4
1977	6	0.00	18.13	654	dry	71	0	456	0	0.53	1355.4	50587.4	2541.1	64.4	36421	58.1
1977	7	0.00	18.13	0	dry	74	0	456	0	0.71	1791.4	48722.0	2501.0	63.6	34771	57.3
1977	8	2.87	21.00	305	dry	74	0	456	0	0.61	1525.6	47427.4	2472.7	63.1	33547	56.6
1977	9	0.00	21.00	81	dry	71	0	456	0	0.50	1236.3	46201.0	2445.4	62.6	32357	56.0
1977	10	0.00	0.00	303	dry	74	0	456	0	0.41	1002.6	45427.4	2428.0	62.3	31682	55.6
1977	11	0.39	0.39	0	dry	71	125	456	0	0.33	801.2	44430.2	2405.3	61.8	31024	55.3
1977	12	12.61	13.00	2,595	dry	74	125	0	0	0.12	288.6	46537.5	2452.9	62.7	33377	56.5
1978	1	12.30	25.30	4,107	dry	74	125	0	0	0.09	220.8	50224.8	2533.3	64.3	37292	58.5
1978	2	13.49	38.79	7,160	dry	66	125	0	0	0.10	253.3	56940.4	2671.5	66.8	44222	61.7
1978	3	20.10	58.89	13,358	dry	74	0	0	0	0.21	561.0	69663.4	2909.4	71.2	57044	66.9
1978	4	8.06	66.95	7,827	dry	71	0	0	0	0.25	727.3	73320.0	2973.0	72.3	64180	69.4
1978	5	0.61	67.56	3,529	wet	18.5	0	0	0	0.41	1218.9	73320.0	2973.0	72.3	66544	70.2
1978	6	0.00	67.56	726	wet	18	0	0	0	0.75	2229.7	71798.3	2946.7	71.9	65126	69.7
1978	7	0.06	67.62	336	wet	18.5	0	0	0	0.60	1768.0	70347.7	2921.4	71.4	63766	69.2
1978	8	0.00	67.62	0	wet	18.5	0	0	0	0.64	1881.4	68447.8	2887.8	70.8	61962	68.6
1978	9	2.05	69.67	809	wet	18	0	0	0	0.50	1443.9	67794.9	2876.1	70.6	61380	68.4
1978	10	0.31	0.31	0	wet	18.5	0	0	0	0.50	1438.0	66338.4	2849.8	70.1	60000	67.9
1978	11	7.61	7.92	1,264	wet	18	125	0	0	0.23	655.5	66803.9	2858.2	70.3	60457	68.1
1978	12	3.83	11.75	1,998	wet	18.5	125	0	0	0.09	257.2	68401.2	2886.9	70.8	61380	68.4
1979	1	9.98	21.73	2,527	wet	18.5	125	0	0	0.07	202.1	70582.6	2925.5	71.5	63009	69.0
1979	2	9.23	30.96	2,652	wet	16.5	125	0	0	0.09	263.3	72829.8	2964.6	72.2	62244	68.7
1979	3	10.30	41.26	5,752	wet	18.5	0	0	0	0.18	533.6	73320.0	2973.0	72.3	69915	71.3
1979	4	0.00	41.26	7,409	wet	18	0	0	0	0.27	802.7	73320.0	2973.0	72.3	72236	72.0
1979	5	0.50	41.76	4,092	wet	18.5	0	0	0	0.42	1248.7	73320.0	2973.0	72.3	72113	72.0
1979	6	0.00	41.76	92	wet	18	0	0	0	0.53	1575.7	71818.3	2947.1	71.9	70648	71.5
1979	7	1.23	42.99	745	wet	18.5	0	0	0	0.59	1738.8	70806.0	2929.4	71.5	69671	71.2
1979	8	0.15	43.14	640	wet	18.5	0	0	0	0.58	1684.4	69743.1	2910.8	71.2	67986	70.6
1979	9	0.23	43.37	974	wet	18	0	0	0	0.52	1513.6	69185.5	2900.9	71.0	66308	70.1
1979	10	2.31	2.31	257	wet	18.5	0	0	0	0.42	1203.9	68220.1	2883.7	70.7	64653	69.5
1979	11	0.00	2.31	115	wet	18	125	0	0	0.25	720.9	67471.2	2870.3	70.5	64062	69.3
1979	12	0.94	3.25	192	wet	18.5	125	0	0	0.11	315.7	67204.0	2865.5	70.4	63944	69.3
1980	1	20.97	24.22	6,196	wet	18.5	125	0	0	0.09	257.9	72998.6	2967.5	72.2	65362	69.8
1980	2	26.31	50.53	13,898	wet	16.5	125	0	0	0.11	326.4	73320.0	2973.0	72.3	66308	70.1
1980	3	7.99	58.52	6,090	wet	18.5	0	0	0	0.18	535.1	73320.0	2973.0	72.3	71869	71.9
1980	4	2.77	61.29	6,882	wet	18	0	0	0	0.28	832.4	73320.0	2973.0	72.3	72358	72.0

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)	RELEASES	(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1980	5	1.40	62.69	5,758	wet	18.5	0	0	0	0.37	1100.0	73320.0	2973.0	72.3	71381	71.7
1980	6	0.00	62.69	1,160	wet	18	0	0	0	0.51	1516.2	72945.8	2966.6	72.2	70892	71.6
1980	7	1.43	64.12	813	wet	18.5	0	0	0	0.61	1809.6	71930.7	2949.0	71.9	69915	71.3
1980	8	0.00	64.12	541	wet	18.5	0	0	0	0.60	1769.4	70683.7	2927.3	71.5	68706	70.9
1980	9	0.00	64.12	571	wet	18	0	0	0	0.51	1492.9	69743.8	2910.8	71.2	66544	70.2
1980	10	1.13	1.13	389	wet	18.5	0	0	0	0.39	1135.2	68979.1	2897.2	71.0	64653	69.5
1980	11	0.00	1.13	0	wet	18	125	0	0	0.33	956.1	67880.0	2877.6	70.6	63707	69.2
1980	12	1.01	2.14	161	wet	18.5	125	0	0	0.12	345.3	67552.2	2871.7	70.5	63475	69.1
1981	1	3.50	5.64	507	wet	18.5	125	0	0	0.09	267.1	67648.6	2873.5	70.5	63707	69.2
1981	2	3.46	9.10	1,286	wet	16.5	125	0	0	0.11	307.5	68485.7	2888.4	70.8	64653	69.5
1981	3	4.08	13.18	1,967	wet	18.5	0	0	0	0.19	545.9	69888.3	2913.3	71.3	66071	70.0
1981	4	0.88	14.06	1,304	wet	18	0	0	0	0.29	839.0	70335.2	2921.2	71.4	66544	70.2
1981	5	0.71	14.77	0	dry	74	0	0	0	0.50	1451.8	68809.4	2894.2	70.9	65126	69.7
1981	6	0.00	14.77	441	dry	71	0	714	714	0.57	1649.7	66815.7	2858.4	70.3	63707	69.2
1981	7	0.17	14.94	0	dry	74	0	1247	1247	0.64	1826.5	63668.2	2800.7	69.2	61380	68.4
1981	8	0.50	15.44	261	dry	74	0	1437	1437	0.63	1761.6	60656.5	2743.9	68.2	59313	67.7
1981	9	0.09	15.53	229	dry	71	0	1597	0	0.52	1437.8	59376.7	2719.2	67.7	57494	67.0
1981	10	0.57	0.57	0	dry	74	0	737	0	0.41	1104.0	58198.7	2696.3	67.3	56145	66.5
1981	11	2.61	3.18	489	dry	71	125	472	0	0.26	687.5	57804.2	2688.5	67.1	55920	66.4
1981	12	0.10	3.28	84	dry	74	125	0	0	0.11	301.1	57388.1	2680.3	67.0	55695	66.4
1982	1	3.98	7.26	1,820	dry	74	125	0	0	0.08	201.0	58807.9	2708.2	67.5	57269	66.9
1982	2	4.65	11.91	2,096	dry	66	125	0	0	0.10	273.5	60438.9	2739.7	68.1	59084	67.6
1982	3	18.16	30.07	3,951	dry	74	0	0	0	0.17	476.7	63838.7	2803.9	69.3	62544	68.8
1982	4	2.40	32.47	7,618	dry	71	0	0	0	0.26	720.6	70665.0	2927.0	71.5	69427	71.1
1982	5	0.59	33.06	2,658	normal	31	0	0	0	0.41	1194.2	72098.0	2951.9	71.9	70892	71.6
1982	6	0.20	33.26	272	normal	30	0	0	0	0.49	1452.4	70887.9	2930.9	71.6	69725	71.2
1982	7	0.78	34.04	411	normal	31	0	0	0	0.59	1738.0	69530.2	2907.0	71.1	68413	70.8
1982	8	2.26	36.30	871	normal	31	0	210	210	0.60	1738.4	68422.0	2887.3	70.8	67558	70.5
1982	9	0.10	36.40	459	normal	30	0	461	461	0.49	1426.3	66963.5	2861.1	70.3	66256	70.1
1982	10	1.75	1.75	102	normal	31	0	37	37	0.37	1064.3	65932.8	2842.4	70.0	64565	69.5
1982	11	8.78	10.53	1,379	normal	30	125	0	0	0.22	631.0	66525.3	2853.2	70.2	65275	69.7
1982	12	5.52	16.05	3,583	normal	31	125	0	0	0.09	262.5	69689.4	2909.8	71.2	66837	70.3
1983	1	8.21	24.26	1,013	normal	31	125	0	0	0.08	244.4	70301.5	2920.6	71.4	64979	69.6
1983	2	8.71	32.97	4,769	normal	28	125	0	0	0.10	289.1	73320.0	2973.0	72.3	68137	70.7
1983	3	13.50	46.47	9,623	normal	31	0	0	0	0.18	529.2	73320.0	2973.0	72.3	71625	71.8
1983	4	4.70	51.17	6,097	normal	30	0	0	0	0.23	680.8	73320.0	2973.0	72.3	73231	72.3
1983	5	0.00	51.17	6,908	wet	18.5	0	0	0	0.41	1204.1	73320.0	2973.0	72.3	72358	72.0
1983	6	0.00	51.17	1,407	wet	18	0	0	0	0.51	1510.3	73198.8	2970.9	72.3	71327	71.7
1983	7	0.00	51.17	279	wet	18.5	0	0	0	0.59	1764.7	71694.5	2944.9	71.8	69861	71.2
1983	8	3.65	54.82	1,715	wet	18.5	0	0	0	0.59	1728.7	71662.3	2944.4	71.8	69861	71.2
1983	9	1.15	55.97	595	wet	18	0	0	0	0.53	1551.7	70687.3	2927.4	71.5	67116	70.4
1983	10	3.35	3.35	725	wet	18.5	0	0	0	0.39	1132.9	70261.0	2919.9	71.4	64416	69.5
1983	11	6.04	9.39	2,012	wet	18	125	0	0	0.27	782.5	71347.3	2938.9	71.7	65629	69.9
1983	12	7.66	17.05	0	wet	18.5	125	0	0	0.24	711.2	70492.6	2924.0	71.4	64705	69.6
1984	1	0.06	17.11	1,980	wet	18.5	125	0	0	0.09	266.1	72063.0	2951.3	71.9	65977	70.0
1984	2	0.25	17.36	314	wet	16.5	125	0	0	0.11	318.7	71916.8	2948.8	71.9	65693	69.9
1984	3	0.18	17.54	758	wet	18.5	0	0	0	0.21	631.0	72025.2	2950.7	71.9	65835	69.9
1984	4	0.02	17.56	50	wet	18	0	0	0	0.27	784.9	71272.3	2937.6	71.7	65126	69.7
1984	5	0.00	17.56	357	dry	74	0	37	37	0.48	1398.3	70120.1	2917.4	71.3	64133	69.4
1984	6	0.00	17.56	0	dry	71	0	866	866	0.59	1724.2	67458.9	2870.0	70.5	62032	68.6

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1984	7	1.84	19.40	2,068	dry	74	0	886	886	0.59	1687.6	66879.3	2859.6	70.3	61892	68.6
1984	8	2.23	21.63	1,927	dry	74	0	709	709	0.59	1687.2	66336.1	2849.7	70.1	62171	68.7
1984	9	0.02	21.65	168	dry	71	0	867	867	0.51	1456.2	64109.9	2808.9	69.4	60915	68.3
1984	10	0.00	0.00	177	dry	74	0	849	849	0.36	1011.2	62352.7	2776.1	68.8	59405	67.7
1984	11	2.83	2.83	422	dry	71	125	374	374	0.24	677.4	61527.3	2760.5	68.5	59130	67.6
1984	12	12.77	15.60	2,348	dry	74	125	0	0	0.09	242.9	63433.4	2796.3	69.1	61194	68.4
1985	1	2.02	17.62	639	dry	74	125	0	0	0.08	209.7	63663.7	2800.6	69.2	61613	68.5
1985	2	0.51	18.13	1,283	dry	66	125	0	0	0.10	268.9	64486.8	2815.9	69.5	62590	68.8
1985	3	1.86	19.99	1,636	dry	74	0	0	0	0.18	518.1	65530.7	2835.1	69.8	63707	69.2
1985	4	1.62	21.61	1,997	dry	71	0	0	0	0.30	861.9	66594.9	2854.4	70.2	64842	69.6
1985	5	0.07	21.68	0	normal	31	0	382	382	0.45	1284.5	64897.4	2823.4	69.6	63568	69.2
1985	6	0.38	22.06	0	normal	30	0	1258	1258	0.55	1561.4	62048.0	2770.3	68.6	61334	68.4
1985	7	0.91	22.97	863	normal	31	0	1514	1514	0.61	1689.9	59676.1	2725.0	67.8	60503	68.1
1985	8	0.00	22.97	0	normal	31	0	1554	0	0.65	1765.8	57879.3	2690.0	67.2	58718	67.5
1985	9	0.90	23.87	0	normal	30	0	1466	0	0.53	1417.6	56431.7	2661.3	66.6	56954	66.8
1985	10	0.37	0.37	301	normal	31	0	945	0	0.39	1029.9	55671.7	2646.1	66.4	55073	66.1
1985	11	10.00	10.37	1,667	normal	30	125	0	0	0.25	650.9	56532.8	2663.4	66.7	55740	66.4
1985	12	3.76	14.13	1,111	normal	31	125	0	0	0.10	269.0	57218.8	2677.0	66.9	56550	66.7
1986	1	4.94	19.07	1,177	normal	31	125	0	0	0.10	275.7	57964.1	2691.7	67.2	57359	67.0
1986	2	12.13	31.20	5,838	normal	28	125	0	0	0.11	293.4	63355.7	2794.9	69.1	62869	68.9
1986	3	7.21	38.41	3,721	normal	31	0	0	0	0.21	592.5	66453.2	2851.9	70.1	65977	70.0
1986	4	0.00	38.41	1,231	normal	30	0	0	0	0.28	801.4	66852.8	2859.1	70.3	66402	70.1
1986	5	0.00	38.41	236	normal	31	0	0	0	0.43	1229.4	65828.4	2840.5	69.9	65409	69.8
1986	6	0.00	38.41	0	normal	30	0	74	74	0.61	1741.2	63983.1	2806.5	69.3	63568	69.2
1986	7	0.88	39.29	0	normal	31	0	527	527	0.59	1641.8	61783.3	2765.3	68.6	61613	68.5
1986	8	3.26	42.55	769	normal	31	0	862	862	0.63	1733.9	59925.5	2729.8	67.9	60640	68.2
1986	9	2.74	45.29	141	normal	30	0	743	0	0.45	1217.5	58819.0	2708.4	67.5	59542	67.8
1986	10	0.00	0.00	183	normal	31	0	677	0	0.36	975.0	57995.9	2692.3	67.2	58306	67.3
1986	11	2.40	2.40	264	normal	30	125	331	0	0.26	697.3	57407.6	2680.7	67.0	57494	67.0
1986	12	1.60	4.00	252	normal	31	125	350	0	0.10	273.4	57230.2	2677.2	66.9	57359	67.0
1987	1	1.59	5.59	276	normal	31	125	0	0	0.08	211.5	57138.7	2675.4	66.9	57359	67.0
1987	2	2.66	8.25	1,249	normal	28	125	0	0	0.10	254.2	57980.5	2692.0	67.2	58306	67.3
1987	3	3.90	12.15	1,341	normal	31	0	0	0	0.19	498.0	58792.5	2707.9	67.5	59130	67.6
1987	4	1.58	13.73	1,797	normal	30	0	0	0	0.30	815.1	59744.5	2726.3	67.8	60091	68.0
1987	5	0.28	14.01	281	dry	74	0	414	0	0.40	1090.5	58860.9	2709.2	67.5	59267	67.7
1987	6	0.00	14.01	82	dry	71	0	1369	0	0.53	1433.2	57438.8	2681.3	67.0	57899	67.2
1987	7	0.49	14.50	0	dry	74	0	1760	0	0.60	1600.8	55764.0	2648.0	66.4	56280	66.6
1987	8	0.17	14.67	254	dry	74	0	1820	0	0.59	1570.2	54373.8	2619.8	65.9	54941	66.1
1987	9	0.28	14.95	133	dry	71	0	1758	0	0.50	1304.7	53131.1	2594.3	65.4	53748	65.6
1987	10	5.12	5.12	1,328	dry	74	0	1306	0	0.40	1037.7	53347.3	2598.8	65.5	54013	65.7
1987	11	4.54	9.66	283	dry	71	125	292	0	0.24	634.1	52800.2	2587.5	65.3	53616	65.6
1987	12	4.45	14.11	981	dry	74	125	0	0	0.09	232.9	53349.4	2598.8	65.5	54279	65.8
1988	1	3.79	17.90	805	dry	74	125	0	0	0.09	223.5	53731.9	2606.7	65.6	54808	66.0
1988	2	1.35	19.25	439	dry	66	125	0	0	0.10	271.1	53708.8	2606.2	65.6	54941	66.1
1988	3	1.00	20.25	288	dry	74	0	0	0	0.20	529.1	53393.7	2599.8	65.5	54675	66.0
1988	4	5.50	25.75	1,669	dry	71	0	0	0	0.27	707.1	54284.6	2618.0	65.8	55605	66.3
1988	5	0.48	26.23	436	normal	31	0	474	0	0.41	1070.8	53618.8	2604.4	65.6	54941	66.1
1988	6	0.01	26.24	191	normal	30	0	1279	0	0.52	1351.7	52428.1	2579.8	65.1	53748	65.6
1988	7	0.00	26.24	0	normal	31	0	1910	0	0.70	1800.7	50596.4	2541.3	64.4	51912	64.9
1988	8	2.65	28.89	359	normal	31	0	1810	0	0.59	1494.3	49430.2	2516.3	63.9	50741	64.5

DATE		PRECIPITATION	ACCUMULATED PRECIPITATION (water year oct.-sep)	CALCULATED UNIMPAIRED FLOW	SEASON DEFINITION FOR FISH RELEASES	FISH RELEASE	BBMWD DEMAND (Snowmkg)	MUTUAL DEMAND	MUTUAL RELEASE	ESTIMATED EVAP RATE	EST. EVAP. LOSSES	ADJUSTED E.O.M. STORAGE	DERIVED SURFACE AREA	ADJUSTED STAFF GAGE ELEVATION	HISTORIC E.O.M. STORAGE	HISTORIC STAFF GAGE ELEVATION
YEAR	MONTH	(IN)	(IN)	(AF)		(AF)	(AF)	(AF)	(AF)	(FT/MONTH)	(AF)	(AF)	(AC)	(FT)	(AF)	(FT)
1988	9	0.00	28.89	0	normal	30	0	1688	0	0.55	1376.4	48023.7	2485.8	63.4	49334	63.9
1988	10	0.00	0.00	0	normal	31	0	1686	0	0.45	1116.1	46876.6	2460.5	62.9	48191	63.4
1988	11	2.97	2.97	364	normal	30	125	456	0	0.27	652.0	46433.6	2450.6	62.7	47811	63.3
1988	12	6.43	9.40	0	normal	31	125	0	0	0.14	338.2	45939.4	2439.6	62.5	47314	63.1
1989	1	1.88	11.28	0	normal	31	125	0	0	0.22	536.[illegible]	45246.7	2423.9	62.2	46699	62.8
1989	2	6.39	17.67	2511	normal	28	125	0	0	0.09	218.2	47386.6	2471.8	63.1	48953	63.7
1989	3	2.76	20.43	1732	normal	31	0	0	0	0.22	543.8	48543.8	2497.1	63.6	50094	64.2
1989	4	0.39	20.82	307	normal	30	0	0	0	0.31	774.1	48046.7	2486.3	63.4	49587	64.0
1989	5	1.11	21.93	0	dry	74	0	0	0	0.44	1094.0	46878.7	2460.5	62.9	48445	63.5
1989	6	0.00	21.93	180	dry	71	0	0	0	0.52	1277.0	45710.7	2434.4	62.4	47314	63.1
1989	7	0.00	21.93	0	dry	74	0	0	0	0.79	1923.2	43713.5	2388.8	61.5	45344	62.2
1989	8	0.38	22.31	0	dry	74	0	0	0	0.59	1404.6	42234.9	2354.3	60.9	43903	61.6
1989	9	1.60	23.91	217	dry	71	0	0	0	0.49	1153.6	41227.3	2330.4	60.4	42943	61.2
1989	10	2.61	2.61	0	dry	74	0	0	0	0.39	908.9	40244.4	2306.7	59.9	42004	60.8
1989	11	0.20	2.81	20	dry	71	125	0	0	0.26	599.7	39468.7	2287.8	59.6	41302	60.4
1989	12	0.00	2.81	0	dry	74	125	0	0	0.15	343.2	38926.5	2274.5	59.3	40834	60.2
1990	1	6.70	9.51	517	dry	74	125	0	0	0.07	159.2	39085.3	2278.4	59.4	41068	60.3
1990	2	6.18	15.69	352	dry	66	125	0	0	0.08	182.3	39064.0	2277.9	59.4	41185	60.4
1990	3	2.67	18.36	2475	dry	74	0	0	0	0.20	462.4	41002.6	2325.0	60.3	43183	61.3
1990	4	1.33	19.69	689	dry	71	0	0	0	0.28	651.0	40969.6	2324.2	60.3	43183	61.3
1990	5	0.96	20.65	262	dry	74	0	0	0	0.40	929.7	40227.9	2306.3	59.9	42473	61.0
1990	6	0.20	20.85	333	dry	71	0	0	0	0.53	1222.4	39267.6	2282.9	59.5	41536	60.5
1990	7	0.73	21.58	0	dry	74	0	0	0	0.59	1346.9	37846.7	2247.6	58.8	40142	59.9
1990	8	0.55	22.13	189	dry	74	0	0	0	0.57	1281.1	36680.6	2218.0	58.2	39005	59.4
1990	9	0.00	22.13	0	dry	71	0	0	0	0.49	1086.8	35522.7	2188.1	57.7	37879	58.8
1990	10	0.00	0.00	0	dry	74	0	0	0	0.44	962.8	34486.0	2160.9	57.1	36888	58.3
1990	11	1.77	1.77	0	dry	71	125	0	0	0.35	756.3	33533.7	2135.4	56.6	36009	57.9
1990	12	1.11	2.88	39	dry	74	125	0	0	0.08	170.8	33202.8	2126.5	56.4	35690	57.7

PRECIPITATION: SWRCB Exhibit #1, Report of Investigation, P.7.
CALCULATED UNIMPAIRED FLOW: BBMWD/CITY Exhibit # 7-2 thru 7-7, Simulated model runs
SEASON DEFINITION FOR FISH RELEASE: Derived (see staff report)
BBMWD DEMAND: BBMWD/CITY Exhibit #7-2 thru 7-7, Simulated model runs
MUTUAL DEMAND: BBMWD/CITY Exhibits #7-2 thru 7-7, Simulated Model Runs
MUTUAL RELEASE: Derived, based on current operational policy; SWRCB Exhibit #1, report of Investigation, P.10.
ESTIMATED EVAPORATION RATES: BBMWD?CITY Exhibit #7-2 thru 7-7, Simulated model runs
ESTIMATED EVAPORATION LOSSES: Derived: (evap. rate)x(lake surface area)
ADJUSTED E.O.M. STORAGE: Derived: (previous E.O.M. storage)+(unimpaired flow)-(fish release)-(BBMWD demand)-(Mutual Demand)-(Evap. losses)
DERIVED SURFACE AREA: (surface area)=(26.0139)x(adj. E.O.M. storage)^0.423
ADJUSTED STAFF GAGE ELEVATION: Derived: (gage elevation)=(2.1702)x(adj. E.O.M. storage)^0.313
HISTORIC E.O.M. STORAGE: SWRCB Exhibit #1, Report of Investigation, P.8.
HISTORIC STAFF GAGE ELEVATION: Derived: (gage elevation)=(2.1702)x(historic E.O.M. storage)^0.313