Appendix A
Administrative Civil Liability Complaint No. 262.5-40 and Draft Notice of Cease and Desist Order Regarding Unauthorized Diversion at Lake Arrowhead in San Bernardino County (SWRCB Staff Decision)

State Water Resources Control Board

Alan C. Lloyd, Ph.D.
Agency Secretary

Division of Water Rights
1001 I Street, 14th Floor ♦ Sacramento, California 95814 ♦ 916.341.5300
P.O. Box 2000 ♦ Sacramento, California 95812-2000
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Arnold Schwarzenegger
Governor

In Reply Refer to:
363:262.0(36-11-02)

AUG 01 2005

CERTIFIED

Mary Shaw, General Manager
Lake Arrowhead Community Services District
P.O. Box 700
Lake Arrowhead, CA 92352

Eric L. Garner
Best, Best & Krieger LLP
3780 University Avenue
Riverside, CA 92502-1028

Gentlemen:

ADMINISTRATIVE CIVIL LIABILITY COMPLAINT NO. 262.5-40 AND NOTICE OF CEASE AND DESIST ORDER REGARDING UNAUTHORIZED DIVERSION AT LAKE ARROWHEAD IN SAN BERNARDINO COUNTY

Enclosed is an Administrative Civil Liability (ACL) Complaint and draft Cease and Desist Order (CDO). This letter serves as notice to you of the intent of the State Water Resources Control Board (State Water Board) Division of Water Rights (Division) to proceed with these enforcement actions. Therefore, this matter requires your immediate attention.

The Division received separate complaints from Ted Heyck and the Arrowhead Lake Association (ALA) on March 24, 2003. These complaints contain allegations that the Lake Arrowhead Community Services District (LACSD) does not have water rights to justify diversion of water stored at Lake Arrowhead. The Division conducted an independent investigation regarding these complaints. The Division transmitted an initial staff report to interested parties on February 10, 2004. The Division received numerous comments in response to this report. The Division has completed a review of these comments, and a memorandum containing a final recommendation is enclosed.

The Division has determined that a pre-1914 appropriative right exists that authorizes the diversion of water to storage in Lake Arrowhead to elevation 5106.7 feet above mean sea level for recreational purposes only. No water right exists that authorizes the removal of water from Lake Arrowhead for municipal purposes or the filling of Lake Arrowhead in any one year. Consequently, LACSD's diversion and use of water from Lake Arrowhead for municipal purposes, or any other purpose, is unauthorized and constitutes a trespass against the State of California. LACSD's diversion and use may also be adversely impacting recreational interests at Lake Arrowhead and vested water right holders within the Mojave River watershed and groundwater basin.

Section 1052 of the Water Code provides that any unauthorized diversion or use of water is considered a trespass subject to ACL not to exceed $500 for each day that a trespass occurs. The facts and allegations that support imposition of an ACL are detailed in the enclosed ACL Complaint. You have 20 days from the date of the receipt of this letter to make full payment or request a hearing before the State Water Board pursuant to Water Code section 1055, subdivision (b).

Under California Water Code section 1831, subdivision (a), when the State Water Board determines that any person is violating, or threatening to violate, the prohibition set forth in section 1052 against the unauthorized diversion or use of water, the State Water Board may issue an Order to that person to cease and desist from that violation. The Division is initiating this CDO action against the LACSD, as detailed in the facts and information section of the enclosed draft CDO, because of the LACSD's continued unauthorized diversion.

If the LACSD disagrees with the facts or time schedules for the corrective actions set forth in the enclosed draft CDO, the LACSD may request a hearing before the State Water Board no later than 20 days from the date of receipt of this notice. Please note that unless a written request for hearing signed by or on behalf of the LACSD is delivered to or received by mail by the State Water Board within 20 days after the receipt of this letter, the State Water Board may adopt the CDO, with the statement of facts and information set forth in the enclosed draft CDO, without a hearing. (Wat. Code, § 1834.)

If there are any questions concerning this matter, please telephone Mr. John O'Hagan of my staff at (916) 341-5368.

Sincerely,

Victoria A. Whitney

Victoria A. Whitney
Division Chief

Enclosures:

- Final Report of Complaint Investigation
- Draft Cease and Desist Order
- Administrative Civil Liability Complaint

cc: Theodore Daly Heyck
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Continued next page

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STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

ADMINISTRATIVE CIVIL LIABILITY COMPLAINT

Administrative Civil Liability 262.5 -40

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT

SOURCE: Little Bear Creek tributary to Deep Creek thence Mojave River

COUNTY: San Bernardino County

YOU ARE HEREBY GIVEN NOTICE THAT:

1. The Lake Arrowhead Community Services District (LACSD) is alleged to have violated Water Code section 1052, subdivision (a), which states:

   "The diversion or use of water subject to [division 2 of the Water Code (commencing with section 1000)] other than as authorized in [division 2] is a trespass."

2. Water Code section 1052, subdivision (b), provides that the State Water Resources Control Board (State Water Board) may administratively impose civil liability in an amount not to exceed $500 for each day that a trespass occurs.

3. Water Code section 1055, subdivision (a), provides that the Executive Director of the State Water Board may issue a complaint to any person or entity on whom Administrative Civil Liability (ACL) may be imposed. On May 16, 2002, the State Water Board delegated to the Chief of the Division of Water Rights (Division) the authority to issue an order imposing administrative civil liability when a complaint has been issued and no hearing has been requested within 20 days of receipt of the complaint. (SWRCB Resolution 2002-0106.)

ALLEGATIONS

4. The following facts provide the basis for the alleged trespass:

   a) Initial construction of the Lake Arrowhead dam and reservoir began in the late 19th century to store water for irrigation use within the San Bernardino Valley. The plan for an irrigation project was abandoned prior to 1914 apparently due to problems with financing that were caused by litigation challenging the export of water to San Bernardino Valley. After the recreational potential of the partially completed project was realized, the dam was completed to its current height in about 1923.

   b) Ownership of the dam changed hands several times since the late 19th century. In 1974, a collective of property owners in Arrowhead Woods acquired the dam and formed the Arrowhead Lake Association (ALA) to govern recreational use of the lake. In 1978, the property owners in Arrowhead Woods held an election to form the LACSD to manage a municipal water supply obtained from Lake Arrowhead.

c) On March 24, 2003, Mr. Ted Heyck and the ALA submitted two separate water right complaints alleging that the LACSD did not have the water rights to Lake Arrowhead. Division staff investigated these complaints and released a draft report dated February 10, 2004, based on the evidence available at that time. Division staff determined that a pre-1914 appropriative right for diversion of water to storage at Lake Arrowhead had been perfected. Division staff recognized a pre-1914 right to store water to an elevation of 5085 feet and use the water only for recreational purposes. Division staff did not find a basis of right for diverting water from Lake Arrowhead for consumptive use.

d) All parties to the complaint objected to the Division staff's findings. The LACSD submitted additional historical information to support a basis of right to store water in Lake Arrowhead at its current elevation and a legal argument supporting its position that Water Code section 1706 allows a pre-1914 right for non-consumptive use to be changed to a consumptive use.

e) In a report dated July 18, 2005, Division staff reviewed all new evidence and LACSD's legal argument, but did not change their original conclusion that LACSD has no basis of right to divert water from Lake Arrowhead for consumptive use. However, the Division revised the February 10, 2004 finding that the pre-1914 right did not authorize storage above 5085 feet in elevation. Instead, staff found that a pre-1914 right exists at Lake Arrowhead to store water at the current capacity of Lake Arrowhead for recreational use only. The conclusion did not constitute a recognition of any right to fill the capacity of Lake Arrowhead in any one year. The information, analyses, findings and conclusions contained in the July 18, 2005 report are incorporated herein by reference.

f) Given the above, the LACSD has been diverting and using water from Lake Arrowhead since 1978 without a basis of right. Maximum historical draw from Lake Arrowhead was 3,157 acre-feet in 2002. Due to conservation measures, LACSD's diversions were reduced to 2,565 acre-feet in 2003 and 1,915 acre-feet in 2004. (Lake Arrowhead Community Services District Annual Report 2004.) As a municipal water supplier, LACSD delivers water from Lake Arrowhead for use year-round. LACSD's diversion and use were unauthorized and constituted a trespass against the State. LACSD's annual diversions and use have adversely impacted the recreational interests of Lake Arrowhead property owners and may have adversely impacted downstream water right holders in the Mojave River watershed.

PROPOSED CIVIL LIABILITY

5. The basis of this complaint is the LACSD's unauthorized diversion and consumptive use of the water from Lake Arrowhead reservoir for fiscal years 2002-04. This unauthorized diversion and use of water constituted a trespass within the meaning of Water Code section 1052, subdivision (a).

6. The maximum civil liability that can be imposed by the State Water Board in this matter is $500 for each day in which the trespass occurred. For the past 27 years, the LACSD diverted water from Lake Arrowhead for consumptive use without a basis of right, thereby trespassing against the State.

7. In determining the amount of civil liability, Water Code section 1055.3 requires that the State Water Board consider all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the nature and persistence of the violation, the length of time over which the violation occurs, and any corrective action taken by the violator. In this case, the LACSD has diverted and used water from Lake Arrowhead for consumptive use over a 27-year period without a legitimate basis of right. LACSD's diversions have adversely impacted the recreational interests at Lake Arrowhead by lowering the lake elevation below the elevation that would have existed taking into account annual evaporation and seepage losses. In addition, LACSD's diversions likely have resulted in injury to water right holders in the Mojave River watershed. In 1988, the State Water Board determined that the Mojave River was fully appropriated year-round due to the fact that the

Mojave River Basin already had been overdrafted and any additional appropriations would further deplete the subsurface water in the basin. Similarly, LACSD's diversions likely have further contributed to the state of overdraft, thereby injuring downstream water right holders.

8. While LACSD has initiated studies and reports to find alternate water supplies, LACSD continues to rely on Lake Arrowhead as its primary source of supply. By doing so, LACSD has avoided significant costs. An alternative to illegally diverting the water would be to purchase it. The LACSD completed a Water Demand and Supply Report in October 2003 that identifies a number of alternatives to diverting water from Lake Arrowhead. According to this document, a total reduction in demand or increase in supply of 3,150 acre-feet per annum could be achieved by implementing conservation programs, improving treatment plant efficiency, developing local groundwater supplies, purchasing supplemental water supplies from the Crestline Lake Arrowhead Water Agency and the State Water Project, and utilizing recycled wastewater for golf course irrigation. Table 1-2 of the report divides the various demand reduction or alternative water supply projects into three groups - milestone one, two, and three - and for each group shows the total potential reduction in diversions from Lake Arrowhead (expressed as water production) and the associated costs. Based on that table, the amount of water that could be saved or obtained and the average cost per acre-foot for each group is as follows:

Milestone	Potential Production (ac-ft/yr)	Avg. Cost per ac-ft
1	1,107	$630
2	410	$1,734
3	1,633	$2,683

Using the costs set forth above, the avoided cost for diversion of water from Lake Arrowhead during 2002-04 was:

Year	Diversion (ac-ft)	Weighted Cost per ac-ft for Replacement Water	Approximate Avoided Costs
2002	3,157	$1,840	$5,809,000
2003	2,565	$1,643	$4,215,000
2004	1,915	$1,293	$2,476,000

According to the calculations set forth above, the total avoided cost of water diverted from Lake Arrowhead by LACSD for 2002-04 was approximately $12.5 million. This calculation is conservative because it assumes that for years 2003 and 2004, LACSD could have reduced its diversions by an additional 1,107 acre-feet by implementing less expensive milestone one projects. In fact, LACSD probably had already reduced its diversions in those years by implementing at least some of the projects listed under milestone one. Achieving additional reductions in draw on Lake Arrowhead would probably have required implementing more milestone two or three projects, which are more expensive.

9. Having taken into consideration the factors described above, the Division Chief recommends an ACL in the amount of $182,500. This is equivalent to a $500 liability for each day of unauthorized diversion and use of water that occurred during a one-year period ($500 per day x 365 days). This liability amount is the minimum liability recommended; and the State Water Board may consider a larger liability if this matter goes to hearing. The maximum liability for a 3-year period would be $547,500 ($500 per day x 365 days per year x 3 years).

RIGHT TO HEARING

10. The LACSD may request a hearing on this matter before the State Water Board. Any such request for hearing must be received or postmarked within 20 days of the date this notice is received. (Wat. Code, § 1055, subd. (b).)

11. If the LACSD requests a hearing, it will have an opportunity to be heard and to contest the allegations in this Complaint and the imposition of ACL by the State Water Board. Separate notice setting the time and place for the hearing will be mailed not less than 10 days before the hearing date.

12. If the LACSD requests a hearing, the State Water Board will consider at the hearing whether to impose the civil liability, and if so, whether to adjust the proposed liability within the amount authorized by statute. Based on the evidence received at the hearing, the State Water Board may take any appropriate action in accordance with sections 100, 275, and 1050 et seq. of the Water Code, and with its responsibilities under the public trust doctrine. Any State Water Board order setting ACL shall become final and effective upon issuance.

13. If the LACSD does not wish to request a hearing, please remit a cashier's check or money order within 20 days of the date of this Complaint for the amount of the ACL set forth in paragraph 9 above, to:

State Water Resources Control Board
Division of Water Rights
Enforcement Section
P.O. Box 2000
Sacramento, CA 95812-2000

14. If the LACSD does not request a hearing and does not remit the ACL, the State Water Board may seek recovery of the ACL as authorized by Water Code section 1055.4.

STATE WATER RESOURCES CONTROL BOARD

Victoria A. Whitney

Victoria A. Whitney, Chief
Division of Water Rights

Date: AUG 01 2005

STATE OF CALIFORNIA
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

ORDER WR 2005–00XX

In the Matter of Unauthorized Diversion by the

Lake Arrowhead Community Services District

Cease and Desist Order No. 262.31-18

SOURCE: Little Bear Creek tributary to Deep Creek thence Mojave River

COUNTY: San Bernardino County

The State Water Resources Control Board (State Water Board) is authorized under California Water Code section 1831 to issue a cease and desist order (CDO) when it determines that any person is violating or threatening to violate any of the following:

(1) The prohibition set forth in section 1052 against the diversion or use of water subject to division 2 (commencing with section 1000) of the Water Code other than as authorized by division 2.

(2) Any term or condition of a permit, license, certification, or registration issued under division 2 of the Water Code.

(3) Any decision or order of the board issued under part 2 (commencing with section 1200) of division 2 of the Water Code, section 275, or article 7 (commencing with section 13550) of chapter 7 of division 7 of the Water Code, in which decision or order the person to whom the cease and desist order will be issued, or a predecessor in interest to that person, was named as a party directly affected by the decision or order.

On {DATE}, and in accordance with the provisions of section 1834 of the California Water Code, the State Water Board, Division of Water Rights (Division) provided notice of the CDO against the Lake Arrowhead Community Services District (LACSD) for the violation and threatened violation of the prohibition against unauthorized diversion and use of water.

FACTS AND INFORMATION

The facts and information upon which this CDO is based are as follows:

1. Initial construction of the Lake Arrowhead dam and reservoir began in the late 19th century to store water for irrigation use in the San Bernardino Valley. The irrigation project was later abandoned apparently due to problems with financing that were caused by litigation challenging the export of water to San Bernardino Valley. The dam was later completed to its current height in 1923 after the recreational benefits of Lake Arrowhead were realized.

2. Ownership of the dam changed hands several times since the late 19th century. In 1974, a collective of property owners in Arrowhead Woods acquired the dam and formed the Arrowhead Lake Association (ALA) to govern recreational use of the lake. In 1978, the Arrowhead Woods collective held an election to form the LACSD to manage a municipal water supply obtained from Lake Arrowhead.

3. On March 24, 2003, Mr. Ted Heyck and the ALA submitted two separate water right complaints alleging that the LACSD did not have the water rights to Lake Arrowhead. Division staff investigated these complaints and released a draft report dated February 10, 2004, based on the evidence available at that time. Division staff determined that a pre-1914 appropriative right for diversion of water to storage at Lake Arrowhead had been perfected. However, Division staff

recognized a pre-1914 right to store water only to an elevation of 5085 feet and to use water only for recreational purposes. Division staff did not find a basis of right to divert water for consumptive use. The Division gave the parties an opportunity to comment on the findings and submit any additional evidence supporting their comments.

4. All parties to the complaint objected to Division staff's findings. The LACSD submitted additional historical information to support a claim of right to store water in Lake Arrowhead at its current elevation and legal argument supporting a position that Water Code section 1706 allows a pre-1914 right for non-consumptive use to be changed to a consumptive use.

5. In a report dated July 18, 2005, Division staff reviewed all new evidence and LACSD's legal argument but did not change their conclusion that LACSD has no basis of right to divert water from Lake Arrowhead for consumptive use. Division staff revised, however, their February 10, 2004 finding that the pre-1914 right did not authorize storage above 5085 feet in elevation. Instead, staff found that a pre-1914 appropriative right exists to store water at the current maximum water surface elevation for recreational use only. Division staff's conclusion did not constitute a recognition of any right to fill the capacity of Lake Arrowhead in any one year. The information, analyses, findings and conclusions contained in the July 18, 2005 report are incorporated herein by reference.

6. During an extended period of drought beginning in the late 1990's, LACSD's diversions of water from Lake Arrowhead for domestic use coupled with natural evaporation, seepage losses, and lack of inflow, resulted in extensive draw down of Lake Arrowhead. The recreational and aesthetic values of the lake were severely impaired.

7. A draft Environmental Impact Report for Tentative Tract No. 16185 – Blue Ridge at Lake Arrowhead (SCH# 2003051021) was prepared in October 2004 for the County of San Bernardino. This document contains the following statements:

   a) As of October 2004, the LACSD had approximately 7,800 connections. (pg. 4.5-1)

   b) During the 1990's an average of 127 new connections were added to the LACSD system each year. (Table 4.5-1, pg. 4.5-2)

   c) Ultimate buildout of the Lake Arrowhead community, based on available private land, is expected to be approximately 10,000 connections. (pg. 4.5-8)

8. During the period November 1, 2004 to December 31, 2004, LACSD approved seventeen (17) new connections for sewer and water service even though its basis of right to divert water was under investigation. At this rate, residential use will increase over 20% by the year 2020.

9. Division staff estimates that LACSD's demand in 2020 would be over 3,700 acre feet per annum (afa). Demand at buildout will be about 3,900 afa.

10. The LACSD completed a Water Demand and Supply Report in October 2003 that identifies a number of alternatives to diverting water from Lake Arrowhead. According to this document, a total reduction in demand or increase in supply of 3,150 acre-feet per annum could be achieved by implementing conservation programs, improving treatment plant efficiency, developing local groundwater supplies, purchasing supplemental water supplies from the Crestline Lake Arrowhead Water Agency and the State Water Project, and utilizing recycled wastewater for golf course irrigation. The total cost for such a program is estimated to be $1,838 per acre-foot. Full implementation of such a program may take several years, and even after full implementation the total available supplies will still be almost 20 percent less than total demand for projected growth within the next few years. Moreover, according to the October 2003 report, LACSD proposes to continue to rely on the lake for its water supply in wet and normal years.

11. These facts support the finding that LACSD is currently diverting and using water from Lake Arrowhead storage without authorization, and that LACSD will continue to do so unless the State Water Board takes enforcement action.

IT IS HEREBY ORDERED, pursuant to sections 1831 through 1836 of the Water Code, that:

1. LACSD shall within 60 days of the date of this order, submit a plan to initially reduce and subsequently cease the unauthorized diversion and use of stored water from Lake Arrowhead. The plan must specify deadlines for implementation of corrective actions that will ensure that LACSD reduces and ultimately ceases unauthorized diversion and use of water from Lake Arrowhead as quickly as practicable. All practical measures to reduce demand or increase supplies shall be considered, including a moratorium on new water service commitments. LACSD's plan must identify the minimum lake level(s) that will be maintained until LACSD ceases unauthorized diversion and use of water from Lake Arrowhead. LACSD shall modify the plan in accordance with the Division Chief's direction and implement the final plan after it is approved by the Division Chief. As an alternative to ceasing the diversion and use of water from Lake Arrowhead, the LACSD plan could include a proposal to pump an alternate water supply into Lake Arrowhead that will replace water diverted from Lake Arrowhead to maintain the lake levels that would exist in the absence of LACSD's diversions, provided that applicable water quality requirements would be met.

2. LACSD shall submit the following reports to the Chief of the Division of Water Rights on January 1 and July 1 of each year until such time as the Division Chief provides written notification these reports no longer need to be submitted:

   a) a progress report identifying the conservation measures taken and estimated resulting reduction in total diversion of water from Lake Arrowhead; and

   b) a monthly reservoir operation report for Lake Arrowhead identifying monthly storage elevation, reservoir capacity, change in storage, evaporation loss, bypass or spills, calculated natural inflow, purchase or groundwater inflows, and diversions from the reservoir.

3. LACSD shall immediately implement an interim moratorium on new commitments to provide water service. LACSD shall maintain this moratorium until notified in writing that the Division Chief has approved the plan identified in Item #1.

4. LACSD shall comply with any written directive of the Chief of the Division of Water Rights regarding the unauthorized diversion of water from Lake Arrowhead until such time as the State Water Board directs otherwise.

Upon the failure of any person to comply with a CDO issued by the State Water Board pursuant to chapter 12 of the Water Code (commencing with section 1825), the Attorney General, upon the request of the State Water Board, shall petition the superior court for the issuance of prohibitory or mandatory injunctive relief as appropriate, including a temporary restraining order, preliminary injunction, or permanent injunction. (Wat. Code, § 1845 subd. (a).) Any person or entity that violates a CDO issued pursuant to chapter 12 may be liable for a sum not to exceed one thousand dollars ($1,000) for each day in which the violation occurs. (Wat. Code, § 1846, subd. (b).) Civil liability may be imposed by the superior court or administratively by the State Water Board pursuant to Water Code section 1055.

STATE WATER RESOURCES CONTROL BOARD

Celeste Cantú
Executive Director

Dated:

State Water Resources Control Board

Division of Water Rights
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Alan C. Lloyd, Ph.D.
Agency Secretary

Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Files – 262.0(36-11-02)

FROM: Charles A. Rich
Sr. Water Resources Control Engr.

Dana Heinrich
Staff Counsel

SUBJECT: REVIEW OF NEW EVIDENCE SUBMITTED IN RESPONSE TO THE STAFF REPORT OF INVESTIGATION OF COMPLAINTS BY TED HEYCK AND THE ARROWHEAD LAKE ASSOCIATON AGAINST THE LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT REGARDING WATER RIGHTS TO LAKE ARROWHEAD

DATE: July 18, 2005

INTRODUCTION

This memorandum responds to the May 4, 2004 joint submittal of the Lake Arrowhead Community Services District and Arrowhead Lake Association (LACSD/ALA), and the submittal of Ted Heyck, in response to the State Water Resources Control Board (State Water Board or SWRCB), Division of Water Rights (Division) February 10, 2004 draft report (Staff Report) regarding the subject water right complaint.

The key conclusions of the Staff Report were: 1) a pre-1914 appropriative right had been perfected to divert water to storage at Lake Arrowhead to an elevation of 5085 feet above sea level (ASL) for recreational use; and 2) no pre- or post-1914 appropriative right exists to divert water from Lake Arrowhead for consumptive purposes. These findings were based on the evidence available to Division staff, including the submittals provided by the parties to the complaint. Staff provided the parties to the complaint with an opportunity to review the Staff Report and submit any new evidence that would support different findings should the parties disagree with the findings in the Staff Report.

The LACSD, ALA, and Ted Heyck disagreed with both of staff's conclusions. Mr. Heyck's submittal was very similar in content to the LACSD/ALA submittal and did not contain any substantial additional evidence. The LACSD/ALA submittal contained: (1) additional historical information in support of LACSD and ALA's claim that a pre-1914 water right exists to the current full capacity of the reservoir (Lake level of 5106.7 ASL); and (2) arguments supporting LACSD and ALA's contention that a pre-1914 appropriative right for non-consumptive use (i.e., recreational use) can be changed to consumptive use pursuant to Water Code section 1706, provided that senior right holders are not harmed.

SUMMARY AND CONCLUSIONS

1. The new evidence provided by the parties to the complaint supports a claim of a pre-1914 appropriative right to hold water in storage at the full capacity of Lake Arrowhead for recreational purposes. It bears emphasis that the evidence does not support the finding that the entire capacity of Lake Arrowhead was collected to storage in any one year of diversion. Due to the lack of evidence, staff did not make a finding regarding the total amount diverted to storage in any one year as part of this investigation.

2. No evidence was submitted that would support the finding that water from Lake Arrowhead was used for domestic, municipal, or irrigation purposes either before 1914 or after 1914 in accordance with a plan of development conceived before 1914. Therefore, no pre-1914 appropriative right exists to use water from Lake Arrowhead for consumptive use purposes.

3. The purpose of use of a pre-1914 appropriative right for storage in Lake Arrowhead for recreational purposes cannot be changed to a consumptive use of water pursuant to Water Code section 1706 because such a change constitutes the initiation of a new appropriation. In addition, the change to LACSD's current level of consumptive use likely results in injury to downstream third party right holders and therefore is impermissible.

4. The diversion and use of water by the LACSD from Lake Arrowhead for domestic, municipal, or irrigation purposes is unauthorized and constitutes a trespass against the State of California. Immediate termination of such diversions would, however, adversely impact the health and safety of the LACSD's customers.

RECOMMENDATION

That the LACSD be ordered to take steps to find an alternate source(s) of water such that diversion from Lake Arrowhead for domestic, municipal, or irrigation purposes can be terminated.

STAFF DISCUSSION AND ANALYSIS

Allowable Water Level at Lake Arrowhead Under a pre-1914 Water Right

Staff's original conclusions regarding pre-1914 water rights at Lake Arrowhead were based on the evidence in the complaint record indicating that work on Lake Arrowhead was significantly curtailed after 1911, apparently due to problems with financing that were caused by litigation challenging the export of water to San Bernardino Valley. Staff concluded that, although the owners of the reservoir project clearly initiated a pre-1914 appropriative right for the project as originally planned (i.e., for irrigation of the San Bernardino Valley), completion of the project was abandoned prior to 1914. Consequently, staff concluded that a new plan was created to establish a resort community centered around Lake Arrowhead after the reservoir project was sold to the Arrowhead Lake Company in 1921 and that the raising of the dam and enlargement of the lake after 1914 constituted the initiation of a new appropriation for which a water right permit was required.

Staff concluded further that the pre-1914 appropriative water right that had been perfected was limited to the actual diversion and use that occurred prior to 1914. Staff found that prior to 1914 the dam had been completed to an elevation of 5095 feet ASL (160-foot high) with 10 feet of freeboard or a usable elevation of 5085 feet ASL. The only use of water that had occurred prior to 1914 was recreational use by visitors, construction workers on the project, and a few local residents.

LACSD and ALA argue that abandonment of the original plan to use water for purposes of irrigation was irrelevant because the fundamental plan was to create Lake Arrowhead itself and this plan was never abandoned. The LACSD/ALA joint submittal includes new historical information in support of their assertion that construction of the project continued in a progressive and diligent manner from 1912 to the completion of the dam in the early 1920's. This historical information includes the book, The Saga of the San Bernardino's, by Pauliena B. LaFuze; the book, The San Bernardinos, by John W. Robison; and copies of blueprints of the "Little Bear" Dam (the original name of the Lake Arrowhead Dam) prepared in 1916 and 1919 by F.C. Finkle, the consulting engineer for the project. The LACSD and ALA assert that this new evidence justifies the application to the completed project of the doctrine of progressive use and development (i.e., a dam with a height of 184 feet, water level at 5106.7 feet ASL).

Additionally, the LACSD and ALA provided historical information in support of their contention that the height of the Lake Arrowhead ("Little Bear") Dam was higher than 160 feet in 1912. This information includes: (1) a September 1942 letter from State Engineer Ed Hyatt to Brigadier General J. Pierce (regarding security concerns) indicating that, based on a March 1930 inspection of the dam, "the original dam was constructed to store water to an elevation of 5100 feet in 1906 (dam height of 178 feet) and in 1922 raised 6 feet to store water to the present spillway level;" and (2) a stipulation between San Bernardino County and the ALA which

resolved a protest entered by the ALA regarding water rights application 25185 (Papoose Lake), stating that water had been impounded to an elevation of 5100 feet in 1906. The LACSD and ALA contend "there is no reason why the account of the dam having been constructed to a height of 160 feet in 1912 should be given more evidentiary weight than the account of the dam having been constructed to a height of 178 feet in 1906."

Given that staff has already determined that a pre-1914 right exists at Lake Arrowhead that allows a water level elevation of 5085 feet ASL, the question staff must answer now is whether or not the LACSD/ALA have submitted sufficient new information to justify a pre-1914 water right for a higher water level. There are two avenues by which a higher level can be justified: (1) sufficient new information shows that the height of the dam was greater than 160 feet prior to 1914; or (2) new information shows that the dam was raised after 1914 in accordance with a plan of development conceived before 1914, and therefore the doctrine of progressive use and development applies and justifies a water level commensurate with the final height of the dam (184 feet), which was achieved in the early 1920's.

With respect to (1) above, staff considers the new evidence submitted to be significantly less credible than the drawings prepared by the consulting engineer for the Arrowhead project, F.C. Finkle. Furthermore, LACSD and ALA submitted these drawings prepared by Finkle to show progressive development and as such LACSD and ALA obviously consider the drawings reliable evidence. Therefore staff rejects the LACSD/ALA contention that the height of the dam prior to 1914 was higher than that identified in the 1912 drawing, i.e., 160 feet.

Regarding (2) above, the doctrine of progressive use and development is summarized in SWRCB Order WR 95-10, pp. 15–16, as follows:

> Generally, the measure of an appropriative right is the amount of water that is put to reasonable beneficial use, plus an allowance for reasonable conveyance loss. (Felsenthal v. Warring (1919) 40 Cal.App. 119, 133, 180 P. 67.) The quantity of water to which an appropriator is entitled, however, is not necessarily limited to the amount actually used at the time of the original diversion. Rather, under the doctrine of "progressive use and development", pre-1914 appropriations may be enlarged beyond the original appropriation. (Haight, 194 P. 26 at 28-29; Hutchins at 118; 62 Cal.Jur. at 370.)
>
> Under the progressive use and development doctrine, the quantity of water to which an appropriator is entitled is a fact-specific inquiry. According to Haight, "this right to take an additional amount of water reasonably necessary to meet increasing needs is not unrestricted; the new use must have been within the scope of the original intent, and additional water must be taken and put to a beneficial use in keeping with the original intent, within a reasonable time by the use of reasonable diligence. . . ." (194 P. at 29.) Thus, the progressive use and development doctrine allows an appropriator to increase the amount of water diverted under a pre-1914 right, provided: (a) the increased diversion is

in accordance with a plan of development and (b) the plan is carried out within a reasonable time by the use of reasonable diligence. (Senior v. Anderson (1896) 115 Cal. 496, 503-504, 47 P. 454; Trimble v. Heller (1913) 23 Cal.App. 436, 443-444, 138 P. 376.)

LACSD and ALA do not dispute the finding in the Staff Report that the original plan to develop the project for purposes of irrigating land in the San Bernardino Valley was abandoned. Instead, LACSD and ALA argue that the purpose of the project was to build Lake Arrowhead itself and that the plan to construct the lake was never abandoned. The problem with this argument is that an appropriation must be for a beneficial use, and storing water in a reservoir is not in itself a beneficial use. (*Lindblom v. Round Valley Water Co.* (1918) 178 Cal. 450, 454-456 [173 P. 994, 996-997].) Similarly, under the progressive use and development doctrine, a plan to apply water to a beneficial use must be formulated prior to 1914 and carried out within a reasonable period of time. (*Haight v. Costanich* (1920) 184 Cal. 426, 431-433 [194 P. 26, 28-29].) Although a construction plan by itself would be insufficient to justify application of the progressive use and development doctrine, the documents included in the LACSD/ALA submittal indicate that a new plan was formulated before 1914 to continue to develop Lake Arrowhead for purposes of recreation, which is a beneficial use.

Arrowhead Reservoir and Power Company (ARPC) President James Mooney continued to invest his own funds in the project after 1911. As early as 1913, after difficulties associated with litigation and financing arose, Mr. Mooney "saw the recreational possibilities" of Lake Arrowhead. (Robinson, The San Bernardinos, p. 125.) This is evidence that ARPC changed the plan of development from irrigation in the San Bernardino valley to recreation at the lake. Minor recreational use had been occurring for several years. Therefore it is reasonable to conclude that owners of the project foresaw a new use for the reservoir instead of the original plan, especially in view of the increasing population in the south coastal area coupled with better means of transportation and the desire for recreational opportunities.

LACSD and ALA also submitted evidence that this new plan of development was carried out within a reasonable period of time. Comparison of the May 1919 drawing of the dam prepared by F.C. Finkle, the consulting engineer for the project, to an earlier one of the dam prepared by Finkle in 1912, indicates that construction continued on the dam after 1912 in the form of re-grading the east slope from 2:1 to 3:1. The 1912 drawing shows that this work is proposed and the 1919 drawing shows that the work was completed. The LACSD/ALA also noted an excerpt from page 266 of the book, The Saga of the San Bernardino's, which indicates that work to increase the height of the corewall was done in 1918. Such work can be considered as progressing the project towards its final goal.

After Mr. Mooney's death in 1919, his heirs sold the project and associated property to Morgan Adams and a number of other investors who formed the Arrowhead Lake Company. Apparently, this organization had no intention of supplying irrigation water to the valley below. Instead, they planned on developing a privately owned resort that would generate revenue from

tourism as the number of visitors journeying to the area had increased dramatically, due in part to the improved roads constructed for the development of the project. The Lake Arrowhead Company completed the dam to the current height around 1923. Given the new evidence and drawings contained in the LASCD/ALA submittal, it appears that the Lake Arrowhead Dam and Reservoir was constructed in a progressive fashion in accordance with a revised plan of development initiated prior to 1914. The dam (and associated reservoir) was completed in concert with the original plan of construction, but the lake was used for recreational purposes instead of for irrigation purposes in the San Bernardino Valley. In light of this progressive use and development, staff believes that a pre-1914 appropriative right currently exists for recreational use and to hold water in storage at the current capacity of the reservoir.

Allowable Consumptive Use Under a Pre-1914 Water Right at Lake Arrowhead

While staff believes that the doctrine of progressive use and development can be utilized to justify a pre-1914 appropriative right to hold water in storage at the capacity of Lake Arrowhead for recreational uses, staff does not believe that this same doctrine can be utilized to justify the current diversion of water by the LACSD from the lake. No evidence has been submitted to support the contention that a plan was formulated prior to 1914 to divert water from the lake for consumptive uses such as domestic use, municipal use, or irrigation in the vicinity of Lake Arrowhead, nor has any evidence been submitted that any such plan was implemented within a reasonable period of time. Instead, the only beneficial use of water that occurred in accordance with the doctrine of progressive use and development was a non-consumptive recreational use with losses occurring from evaporation and seepage.

Changing the Purpose of Use Under a Pre-1914 Water Right

ALA and LACSD contend that the holder of a pre-1914 appropriative water right has the absolute right to change the right holder's purpose or place of use provided that senior water right holders are not harmed. If this contention were correct, the pre-1914 right to store water in Lake Arrowhead for purposes of recreation could be converted to the right to use the water in the lake as a source of supply for the Lake Arrowhead community.

Contrary to ALA and LACSD's contention, however, a nonconsumptive use, such as recreation, may not be changed to a consumptive use, such as domestic use or irrigation.[1] In addition, all third party water right holders are protected from injury due to a change, not just third party water right holders that are senior to the right holder seeking to make the change. (*Scott v. Fruit Growers' Supply Co.* (1927) 202 Cal. 47, 55 [258 P. 1095, 1098]; *McKinney v. Smith* (1863) 21 Cal. 374, 382-384.) Thus, assuming for the sake of argument that a change from recreation to consumptive uses were permissible, the current extent of LACSD's consumptive use of water

[1] A use is non-consumptive if substantially all of the water diverted either remains in or is returned to the source.

from Lake Arrowhead is impermissible because, as explained below, this level of consumptive use results in injury to downstream water right holders.

As a general rule, the holder of a pre-1914 appropriative right may change the right holder's point of diversion, purpose of use, or place of use, provided that third party right holders would not be injured by the change. (Wat. Code, § 1706; *Orange County Water District v. City of Riverside* (1959) 173 Cal.App.2d 137, 195-196 [343 P.2d 450, 483-484].) Unlike the holder of a post-1914 permitted or licensed right, the holder of a pre-1914 appropriative right is not required to obtain the State Water Board's approval before making such a change. (See Wat. Code, § 1701.) An appropriative right holder cannot make a change, however, that enlarges the right holder's diversionary entitlement or otherwise amounts to the initiation of a new right, for example by increasing the amount or season of diversion. To initiate a new right, including an expansion beyond what is authorized for an existing pre-1914 appropriation, an appropriator must obtain the State Water Board's approval under the statutory system for water right permits and licenses. (See generally *People v. Shirokow* (1980) 26 Cal.3d 301 [162 Cal.Rptr. 30, 605 P.2d 859].)

For the reasons set forth below, a change from a nonconsumptive to a consumptive use constitutes the initiation of a new right, not a change in an existing right, because such a change necessarily entails a substantial increase in the quantity of water permanently removed from the source. In this regard, a change from a nonconsumptive use to a consumptive use is fundamentally different from a change from one consumptive use to another, or a change from any type of use to a nonconsumptive use.

As ALA and LACSD note in their May 4, 2004 submittal, a pre-1914 water right is the right to use a particular amount of water. The extent of the right is defined by the amount of water reasonably necessary to satisfy the purpose for which the water was first used. (*Ortman v. Dixon* (1859) 13 Cal. 33, 38-39.) Once the right to a given quantity of water has been perfected, the right holder is permitted to change the point of diversion, place of use, or purpose of use, provided that third parties are not injured and the quantity of water diverted and used does not increase. (*City of San Bernardino v. City of Riverside* (1921) 186 Cal. 7, 28-29, 31 [198 P. 784]; *Santa Paula Waterworks v. Peralta* (1896) 113 Cal. 38, 45 [45 P. 168].) In contrast to most types of changes, which can in theory be implemented without increasing the quantity of water diverted and used, a change from a nonconsumptive to a consumptive use necessarily will increase the quantity of water permanently removed from the source. Accordingly, such a change constitutes a new appropriation.

The California courts have not squarely addressed the narrow question whether a pre-1914 right may be changed from a nonconsumptive to a consumptive use. None of the California cases cited by ALA and LACSD involved the approval of that particular type of change, and State Water Board staff is unaware of any such authority. The high courts in two other western states, however, have treated a change from a nonconsumptive to a consumptive use as the initiation of

a new right. In *Featherman v. Hennessy* (1911) 43 Mont. 310 [115 P. 983, 986], the Montana Supreme Court held that a change from power generation to irrigation "resulted in a consumption of the quantity so diverted to the new use, and therefore amounted pro tanto to a new appropriation." Similarly, the Oregon Supreme Court characterized the initiation of diversions later in the year due to a change in crop type as a new and additional appropriation. (*McPhee v. Kelsey* (1903) 44 Or. 193, 198, 201-202 [74 P. 401, 403-404].) The holding in those two cases is persuasive authority.

The State Water Board's regulations governing post-1914 appropriations also are informative. The State Water Board requires separate applications for nonconsumptive and consumptive uses. (Cal. Code Regs., tit. 23, § 686.) Accordingly, the holder of a post-1914 permitted or licensed right seeking to change from a nonconsumptive to a consumptive use would be required to file an application for a new appropriation.

In summary, ALA and LACSD's contention that a nonconsumptive use may be changed to a consumptive use is incorrect. Such a change constitutes the initiation of a new right, which since December 19, 1914, has required a permit from the State Water Board. Moreover, the change from the recreational use of the waters of Lake Arrowhead to the current level of consumptive use likely results in injury to downstream water right holders and therefore is impermissible.

Lake Arrowhead impounds tributaries to the Mojave River. The State Water Board has determined that no water is available for appropriation from the Mojave River System, which is included on the State Water Board's Declaration of Fully Appropriated Stream Systems (FAS). (SWRCB Order WR 98-08, pp. 23, 43.) The basis for the State Water Board's determination, in 1988, that the Mojave River System is fully appropriated was the fact that existing legitimate users of subsurface water in the Mojave River Basin already had overdrafted the basin by approximately 3,600 to 24,000 afa, and any additional appropriations from the river would further deplete the subsurface water in the basin. (SWRCB Decision 1619, pp. 12-13, 16 (1988).) According to the California Supreme Court, the Mojave River Basin went into overdraft after demand exceeded natural supply sometime in the mid-1950's. (*City of Barstow v. Mojave Water Agency* (2000) 23 Cal.4th 1224, 1234 [99 Cal.Rptr.2d 294, 300, [5 P.3d 853, 858].)

Based on the foregoing, any increase in consumptive use of water from Lake Arrowhead above the level of consumptive use that existed before the Mojave River Basin became overdrafted sometime in the mid-1950's probably further contributes to the depletion of subsurface water in the basin, to the injury of downstream users whose rights had vested prior to the increase in consumptive use. For purposes of this report, Division staff did not determine exactly at what point consumptive use of water from Lake Arrowhead exceeded available supply. The record does not contain any actual water use data for years before 1968, but it is likely that consumptive use has increased steadily since the Lake Arrowhead community was established in the 1920's and 1930's. LACSD's Water Master Plan Update, dated April 2002, indicates that annual consumptive water use was approximately 700 afa in 1968-1969, and increased to approximately

2,800 afa in 2000-2001.[2] Consumptive use probably was significantly less than 700 afa at the point when demand exceeded supply in the Mojave River System. At a minimum, any increase above 700 afa likely resulted in injury to downstream users. This figure is well below LACSD's current level of consumptive use.

[2] LACSD's use increased to 3,150 afa in 2002. (Tetra Tech, Inc., Final Report, Lake Arrowhead Community Services District Water Demand and Supply (October 10, 2003).)

Attachment 2 - Email from SWRCB (8/8/05)

Dear Mr. Garner:

I am writing in response to your August 5, 2005 letter to Victoria Whitney regarding the draft cease and desist order issued to the Lake Arrowhead Community Services District (LACSD). I have provided advice to Division staff in connection with the proposed enforcement action against LACSD. I left you a voicemail earlier this afternoon indicating that we were unlikely to be able to provide a written response by tomorrow morning as you requested. In the interests of time, I am providing this response by E-mail.

You asked for confirmation that the interim moratorium on new commitments to provide water service under item # 3 of the draft cease and desist order is not currently in effect. That is correct. The cease and desist order is a draft that serves as notice of a proposed cease and desist order. An interim moratorium will not go into effect unless and until the State Water Board issues a final cease and desist order that imposes an interim moratorium. When a final cease and desist order might be issued will depend on whether LACSD requests a hearing.

You also requested written guidance concerning the proper application of the interim moratorium to various factual situations. We feel that providing the written guidance that you have requested is premature at this point because a final cease and desist order has not been issued yet and it is our understanding that LACSD intends to request a hearing. Staff from the Division's Complaint Unit is willing to meet with you and your client to discuss settlement of the proposed enforcement action. Settlement discussions could include clarifications of or exceptions to the interim moratorium set forth in the draft cease and desist order.

I hope this information is helpful. I will be out of the office Tuesday through Thursday of this week, so if you have further questions, or would like to schedule a meeting with Complaint Unit staff, please contact John O'Hagan.

Sincerely,

Dana Heinrich
Senior Staff Counsel
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Appendix B
Urban Water Management Planning Act

Established: AB 797, Klehs, 1983
Amended: AB 2661, Klehs, 1990
AB 11X, Filante, 1991
AB 1869, Speier, 1991
AB 892, Frazee, 1993
SB 1017, McCorquodale, 1994
AB 2853, Cortese, 1994
AB 1845, Cortese, 1995
SB 1011, Polanco, 1995
AB 2552, Bates, 2000
SB 553, Kelley, 2000
SB 610, Costa, 2001
AB 901, Daucher, 2001
SB 672, Machado, 2001
SB 1348, Brulte, 2002
SB 1384 Costa, 2002
SB 1518 Torlakson, 2002
AB 105, Wiggins, 2003
SB 318, Alpert, 2004

CALIFORNIA WATER CODE DIVISION 6
PART 2.6. URBAN WATER MANAGEMENT PLANNING
CHAPTER 1. GENERAL DECLARATION AND POLICY

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:
(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.
(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.
(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.
(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.
(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.
(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.
(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.
(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.
(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.
(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.
10610.4. The Legislature finds and declares that it is the policy of the state as follows:
(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

CHAPTER 2. DEFINITIONS

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.
10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.
10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.
10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.
10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.
10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.
10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.
10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.
10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS

Article 1. General Provisions

10620.

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d)(1) An urban water supplier may satisfy the requirements of this part by participation in area wide, regional, watershed, or basin wide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621.

(a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

(b) Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(1) An average water year.

(2) A single dry water year.

(3) Multiple dry water years.

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e)(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:
(A) Water survey programs for single-family residential and multifamily residential customers.
(B) Residential plumbing retrofit.
(C) System water audits, leak detection, and repair.
(D) Metering with commodity rates for all new connections and retrofit of existing connections.
(E) Large landscape conservation programs and incentives.
(F) High-efficiency washing machine rebate programs.
(G) Public information programs.
(H) School education programs.
(I) Conservation programs for commercial, industrial, and institutional accounts.
(J) Wholesale agency programs.
(K) Conservation pricing.
(L) Water conservation coordinator.
(M) Water waste prohibition.
(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

(j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand

management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

(k) Urban water suppliers that rely upon a wholesale agency for a source of water , shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water -year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.5. The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities.

10632. The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(f) Penalties or charges for excessive use, where applicable.

(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(h) A draft water shortage contingency resolution or ordinance.

(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

(b) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(e) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Article 2.5 Water Service Reliability

10635. (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

Article 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644. (a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the outstanding elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has filed its plan with the department. The department

shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

CHAPTER 4. MISCELLANEOUS PROVISIONS

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

10657. (a) The department shall take into consideration whether the urban water supplier has submitted an updated urban water management plan that is consistent with Section 10631, as amended by the act that adds this section, in determining whether the urban water supplier is eligible for funds made available pursuant to any program administered by the department.

(b) This section shall remain in effect only until January 1, 2006, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2006, deletes or extends that date.

Appendix C
Cross Reference for DWR

	LACSD 2005 Urban Water Management Plan DWR Guidance Checklist – Relevant State Water Code Sections	
Water Code Section	**Items to Address**	**2005 UWMP Chapter and Section (if applicable)**
10620(d)(1-2)	Describe whether your agency participated in area, regional, watershed or basin wide plan and the anticipated benefits. Describe the coordination of the plan preparation.	NA
10620(f)	Describe water management tools/options to maximize resources and minimize need to import.	Chapter 1 Section 5 Chapter 1 Section 6 Chapter 7
10621(a)	Update UWMP every five years, submit by due date.	Chapter 1 Section 2
10621(b)	Notify cities and counties in service area of opportunity to participate in UWMP update process.	Chapter 3 Section 1
10631(a)	Describe service area information, including population, climate, and other demographic factors.	Chapter 4
10631(b)	Identify and quantify existing and planned water supply sources.	Chapter 5 Section 5.1 to Section 5.1.3.2
10631(b)(1-4)	If groundwater is part of water supply, describe basin management plan, basins, and plans to eliminate overdraft; analyze location, amount and production of past 5 years; analyze location and amount projected to be pumped in next 25 years.	Chapter 5.0 Section 5.1.2
10631(c)(1-3)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Chapter 11 Section 1
10631(d)	Describe opportunities for short- and long-term water exchanges and transfers.	Chapter 5 Section 5
10631(e)(1-2)	Quantify past, current, and future water use by sectors.	Chapter 6
10631(f)	Describe the supplier's water demand management measures, including those currently being implemented or scheduled for implementation.	Chapter 7
10631(g)	Provide an evaluation of the demand management measures described in (f) above that are not currently being implemented or scheduled for implementation.	Chapter 7

	LACSD 2005 Urban Water Management Plan DWR Guidance Checklist – Relevant State Water Code Sections	
Water Code Section	**Items to Address**	**2005 UWMP Chapter and Section (if applicable)**
10631(h)	Describe expected future water supply programs and projects.	Chapter 5 Section 3
10631(i)	Describe opportunities for development of desalinated water.	Chapter 5 Section 6
10631(j) 10631.5	If supplier is a CUWCC member, it is optional to include annual demand management measure reports.	Chapter 7
10631(k)	Projects receiving water from wholesale suppliers.	Chapter 5 Section 5.3.2
10631(k)	Provide written demand projections to wholesaler; receive written quantification of water supply availability from wholesaler.	Chapter 11 Section 2
10632(a)	Provide stages of action to be undertaken in response to water supply shortages.	Chapter 8 First Section
10632(b)	Identify the driest 3-year period, and quantify the minimum water supply available by source for the next three years.	Chapter 8 Section 1
10632(c)	Provide catastrophic supply interruption plan.	Chapter 8 Section 2
10632(d)	List the mandatory prohibitions against specific water use practices during water shortages.	Chapter 8 Section 3
10632(e)	List the consumption reduction methods for the most restrictive water shortage stages.	Chapter 8 Section 3
10632(f)	List the penalties or charges for excessive use.	Chapter 8 Section 3
10632(g)	Provide analysis of impacts of water supply shortages to revenues and expenditures, including measures to overcome these impacts.	Chapter 8 Section 4.1
10632(h)	Attach a copy of draft water shortage contingency resolution or ordinance.	Chapter 8 Section 5
10632(i)	Describe mechanism for determining actual reductions in water use.	Chapter 8 Section 5
10633	Describe coordination effort for water recycling plan.	Chapter 9 Section 1
10633(a)	Describe and quantify wastewater collected and treated, and methods of wastewater disposal.	Chapter 9 Section 2

	LACSD 2005 Urban Water Management Plan DWR Guidance Checklist – Relevant State Water Code Sections	
Water Code Section	**Items to Address**	**2005 UWMP Chapter and Section (if applicable)**
10633(b-c)	Quantify recycled water being discharged and recycled water being used, including type/place/quantity of use.	Chapter 9 Section 2
10633(d-e)	Describe and quantify current and projected uses of recycled water within service area. Compare 2000 UWMP projections with 2005 UWMP actual use (this section not applicable to LACSD).	NA
10633(f)	Describe actions to encourage recycled water use.	Chapter 9 Section 3
10633(g)	Describe plan for optimizing recycled water use.	Chapter 5 Section 3.3
10634	Analyze and describe how water quality affects water management strategies and supply reliability.	Chapter 10
10635(a)	Compare the projected water supply to projected water demand under normal, single dry, and multiple dry water years.	Chapter 11 Section 3
10635(b)	Provide water supply reliability section of UWMP to cities and counties to which the agency provides water supply no later than 60 days after submission of UWMP to DWR.	To Be Provided
10642	Encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area; make UWMP available for public review and hold public hearing (provide notice of hearing).	Chapter 3 Section 2 Appendix J
10644(a)	Provide 2005 UWMP to cities and county no later than 30 days after adoption.	To Be Provided
10645	Make UWMP available for public review no later than 30 days after filing with DWR.	To Be Provided

	LACSD 2005 Urban Water Management Plan DWR Guidance Checklist – DWR Tables		
DWR Table #	**Table Title**	**Report Chapter**	**Report Section, Table or Text**
Table 1	Agency Coordination	3	1
Table 2	Population Projections	4	3
Table 3	Climate Summary	4	4
Table 4	Current and Planned Water Supplies	11	4
Table 5	Groundwater Pump Rights	NA	NA
Table 6	Groundwater Pumping History	5	1.2
Table 7	Groundwater Pumping Projections	5	1.2
Tables 8,9	Dry Year Supply Projections	11	1
Table 10	Factors Affecting Supply	11	1
Table 11	Transfer and Exchange Opportunities	5	5
Table 12	Past, Current, Projected Water Use by Type	6	6.0
Table 13	Sales to Other Agencies	5	5
Table 14	Additional Water Uses (including Unaccounted for Water Use)	6	1
Table 15	Total Water Use	6	1
Table 16	Cost from Non-Implemented DMMs and Other Water Supply Projects	NA	NA
Table 17	Future Water Supply Projects	5	3
Table 18	Desalination Opportunities	5	6
Table 19	Agency Demand Projections Provided to Wholesale Suppliers	11	2
Table 20	Wholesaler Water Supply Projections to Agencies	11	2
Table 21	Wholesale Supply Reliability	11	2
Table 22	Factors Affecting Wholesaler's Supply	11	1
Table 23	Water Shortage Stages and Conditions	8	0
Table 24	Three-Year Estimated Minimum Supply	8	1

	LACSD 2005 Urban Water Management Plan DWR Guidance Checklist – DWR Tables		
DWR Table #	**Table Title**	**Report Chapter**	**Report Section, Table or Text**
Table 25	Preparation Actions for Catastrophe	8	2
Table 26	Mandatory Prohibitions	8	3
Table 27	Consumption Reduction Methods	8	3
Table 28	Penalties and Charges	8	3
Tables 29,30	Fiscal Impacts and Measures to Overcome	8	4
Table 31	Water Use Monitoring Mechanisms	8	5
Table 32	Participating Agencies in Recycled Water	9	1
Table 33	Wastewater Collected and Treated	9	2
Table 34	Disposal of Wastewater	9	2
Table 35a	Recycled Water Uses – Actual	9	2
Table 35b	Recycled Water Uses – Potential	5	2.3 3.3
Table 36	Projected Future Use of Recycled Water in Service Area	5 11	2.3 3.3 4
Table 37	Recycled Water Use – 2000 Projection Compared with 2005 Actual	NA	NA
Table 38	Methods to Encourage Recycled Water Use	9	3
Table 39	Water Supply Changes due to Water Quality	10	
Tables 40-42	Supply vs. Demand – Normal Year	11	5
Tables 43-45	Supply vs. Demand – Dry Year	11	6
Tables 46-57	Supply vs. Demand – Multiple Dry Year	11	7

Appendix D
BMP Activity Reports
Year 2003 and 2004
Publications 2003 and 2004

Reported as of 11/14/05

Water Supply & Reuse

Reporting Unit: **Lake Arrowhead Community Service District**

Year: **2003**

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
Lake Arrowhead	2188	Local Watershed
State Project Water	62	Imported

Total AF: 2250

Reported as of 11/14/05

Accounts & Water Use

Reporting Unit Name:	Submitted to CUWCC	Year:
Lake Arrowhead Community Service District	**10/17/2005**	**2003**

A. Service Area Population Information:

1. Total service area population 12434

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	7335	1712	0	0
2. Multi-Family	0	0	0	0
3. Commercial	104	135	0	0
4. Industrial	0	0	0	0
5. Institutional	28	21	0	0
6. Dedicated Irrigation	79	45	0	0
7. Recycled Water	0	0	0	0
8. Other	0	0	0	0
9. Unaccounted	NA	0	NA	0
Total	7546	1913	0	0

	Metered	Unmetered

Reported as of 11/14/05

Reported as of 11/14/05

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

A. Implementation

1. Based on your signed MOU date, 12/19/2000, your Agency STRATEGY DUE DATE is:	12/19/2002
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	yes
a. If YES, when was it implemented?	12/19/2002
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	

B. Water Survey Data

Survey Counts:	**Single Family Accounts**	**Multi-Family Units**
1. Number of surveys offered:	7346	0
2. Number of surveys completed:	67	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	yes	no
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	yes	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as neccesary; replace leaking toilet flapper, as necessary	yes	no
Outdoor Survey:		
6. Check irrigation system and timers	yes	no
7. Review or develop customer irrigation schedule	yes	no
8. Measure landscaped area (Recommended but not required for surveys)	yes	no
9. Measure total irrigable area (Recommended but not required for surveys)	yes	no
10. Which measurement method is typically used (Recommended but not required for surveys)	Odometer Wheel	
11. Were customers provided with information packets that included evaluation results and water savings recommendations?	yes	no
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	yes	no

a. If yes, in what form are surveys tracked? spreadsheet

b. Describe how your agency tracks this information.

Using Excel spreedsheets - Input previous year water usage compared to survey year usage.

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	20000	5600
2. Actual Expenditures	19690	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 11/14/05

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts?	no
a. If YES, list local jurisdictions in your service area and code or ordinance in each:	
2. Has your agency satisfied the 75% saturation requirement for single-family housing units?	no
3. Estimated percent of single-family households with low-flow showerheads:	11%
4. Has your agency satisfied the 75% saturation requirement for multi-family housing units?	no
5. Estimated percent of multi-family households with low-flow showerheads:	0%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices?	yes
a. If YES, when did your agency begin implementing this strategy?	05/01/2003

b. Describe your targeting/ marketing strategy.

Fairs and booths at community events

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	2000	0
3. Number of toilet-displacement devices distributed:	2000	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	4000	0

6. Does your agency track the distribution and cost of low-flow devices?	yes
a. If YES, in what format are low-flow devices tracked?	Database

b. If yes, describe your tracking and distribution system :

The District uses the billing system data base to track hardware distribution.

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	30000	3000
2. Actual Expenditures	31394	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 11/14/05

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year?	no
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:	
a. Determine metered sales (AF)	
b. Determine other system verifiable uses (AF)	
c. Determine total supply into the system (AF)	
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	0.00
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production?	no
4. Did your agency complete a full-scale audit during this report year?	no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit?	yes
6. Does your agency operate a system leak detection program?	yes

a. If yes, describe the leak detection program:

The District has inspected 30% of the water distribution system for leaks utilizing techniques that are consistant with AWWA's Water Audit and Leak Detection Guidebook.

B. Survey Data

1. Total number of miles of distribution system line.	127
2. Number of miles of distribution system line surveyed.	39

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	36000	42000
2. Actual Expenditures	36000	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 11/14/05

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

A. Implementation

1. Does your agency require meters for all new connections and bill by volume-of-use?	yes
2. Does your agency have a program for retrofitting existing unmetered connections and bill by volume-of-use?	no

a. If YES, when was the plan to retrofit and bill by volume-of-use existing unmetered connections completed?

b. Describe the program:

NA

3. Number of previously unmetered accounts fitted with meters during report year.	0

B. Feasibility Study

1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	no

a. If YES, when was the feasibility study conducted? (mm/dd/yy)

b. Describe the feasibility study:

NA

2. Number of CII accounts with mixed-use meters.	132
3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period.	0

C. Meter Retrofit Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 11/14/05

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	12
2. Number of Dedicated Irrigation Meter Accounts with Water Budgets:	0
3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF):	0
4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF):	0
5. Does your agency provide water use notices to accounts with budgets each billing cycle?	no

B. Landscape Surveys

1. Has your agency developed a marketing / targeting strategy for landscape surveys?	yes
a. If YES, when did your agency begin implementing this strategy?	5/1/2003

b. Description of marketing / targeting strategy:

The District had an extensive public outreach campaign that included direct mailings, quarterly newsletters and advertisement in the local newspaper.

2. Number of Surveys Offered.	132
3. Number of Surveys Completed.	2
4. Indicate which of the following Landscape Elements are part of your survey:	
a. Irrigation System Check	yes
b. Distribution Uniformity Analysis	no
c. Review / Develop Irrigation Schedules	yes
d. Measure Landscape Area	no
e. Measure Total Irrigable Area	no
f. Provide Customer Report / Information	yes
5. Do you track survey offers and results?	yes
6. Does your agency provide follow-up surveys for previously completed surveys?	no

a. If YES, describe below:

C. Other BMP 5 Actions

1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets?	no
2. Number of CII mixed-use accounts with landscape budgets.	0
3. Do you offer landscape irrigation training?	yes
4. Does your agency offer financial incentives to improve landscape water use efficiency?	no

Type of Financial Incentive:	Budget (Dollars/ Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates	0	0	0
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services? yes

a. If YES, describe below:

The District has created many public information documents to educate customers on using water efficiently for irrigation purposes. In 2003 the District developed a comprehensive landscape guide for mountain homes which was mailed to all customers. The District has many brochures and handouts for customers that are available at the District offices. During 2003 the District participated in many community events to aid in the distribution of the irrigation education materials.

6. Do you have irrigated landscaping at your facilities?	yes
a. If yes, is it water-efficient?	yes
b. If yes, does it have dedicated irrigation metering?	no
7. Do you provide customer notices at the start of the irrigation season?	no
8. Do you provide customer notices at the end of the irrigation season?	no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	4300	5300
2. Actual Expenditures	660	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

Reported as of 11/14/05

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

A. Implementation

1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers?	no
a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.	
2. Does your agency offer rebates for high-efficiency washers?	no
3. What is the level of the rebate?	0
4. Number of rebates awarded.	0

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

D. Comments

Reported as of 11/14/05

BMP 07: Public Information Programs

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

The Lake Arrowhead Community Services District's annual public information plan establishes key communication messages and focuses on key communication strategy areas including: 1.Public Information Efforts (information materials and multimedia prsentations) 2. Community Relations (customer participation programs and special events) 3. Media Relations (advertising, press releases and local media contacts) The annual Public Information Plan includes an aggressive Water Conservation Awareness campaign that includes: 1. Quarterly News Letters 2. Intermittent Billing Inserts 3.Regular display ads and advertorials in weekly news paper 4. Regular media press releases 5. Regular presentations to community groups, service clubs and home owners associations 6. Water Conservation Information Booth at community events 7. Town Hall/public outreach meetings to present new water conservation programs and information 8. Information sharing via annual Multi-Water District Meetings

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	yes	52
b. Public Service Announcement	no	0
c. Bill Inserts / Newsletters / Brochures	yes	5
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	no	0
f. Special Events, Media Events	yes	3
g. Speaker's Bureau	no	
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	134989	93200
2. Actual Expenditures	134989	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

   a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

See following attachments for samples of 2003 Public Outreach.

Reported as of 11/14/05

BMP 08: School Education Programs

Reporting Unit:
Lake Arrowhead Community Service District

BMP Form Status:
100% Complete

Year:
2003

A. Implementation

1.Has your agency implemented a school information program to promote water conservation? no

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	no			
Grades 4th-6th	no			
Grades 7th-8th	no			
High School	no			

3. Did your Agency's materials meet state education framework requirements? no

4. When did your Agency begin implementing this program? NA

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/14/05

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use?	yes
2. Has your agency identified and ranked INDUSTRIAL customers according to use?	no
3. Has your agency identified and ranked INSTITUTIONAL customers according to use?	yes

Option A: CII Water Use Survey and Customer Incentives Program

4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option?	yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	104	0	28
b. Number of New Surveys Completed	2	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	yes	no	no
f. Evaluation of all water-using apparatus and processes	yes	no	no
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	no	no	no

Agency CII Customer Incentives	Budget ($/Year)	No. Awarded to Customers	Total $ Amount Awarded
h. Rebates	0	0	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	no
6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	no
7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991.	0
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	0

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	4300	5300
2. Actual Expenditures	660	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/14/05

BMP 09a: CII ULFT Water Savings

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

1. Did your agency implement a CII ULFT replacement program in the reporting year? — No
If No, please explain why on Line B. 10.

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply.

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

NA

2. How does your agency advertise this program? Check all that apply.

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

NA

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP.) — no

2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency? — No

3. What is the total number of customer accounts participating in the program during the last year ? — 0

CII Subsector	Number of Toilets Replaced				
4.	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount	Type Not Specified
a. Offices	0	0	0	0	0
b. Retail / Wholesale	0	0	0	0	0
c. Hotels	0	0	0	0	0
d. Health	0	0	0	0	0
e. Industrial	0	0	0	0	0
f. Schools: K to 12	0	0	0	0	0
g. Eating	0	0	0	0	0

h. Government	0	0	0	0	0
i. Churches	0	0	0	0	0
j. Other	0	0	0	0	0

5. Program design.

6. Does your agency use outside services to implement this program? No

a. If yes, check all that apply.

7. Participant tracking and follow-up.

8. Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program.

a. Disruption to business	0
b. Inadequate payback	0
c. Inadequate ULFT performance	0
d. Lack of funding	0
e. American's with Disabilities Act	0
f. Permitting	0
g. Other. Please describe in B. 9.	0

9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other isues affecting program implementation or effectiveness.

NA

10. Please provide a general assessment of the program for this reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

NA

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor	0	0
b. Materials	0	0
c. Marketing & Advertising	0	0
d. Administration & Overhead	0	0
e. Outside Services	0	0
f. Total	0	0

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution

b. State agency contribution

c. Federal agency contribution

d. Other contribution	
e. Total	0

D. Comments

Reported as of 11/14/05

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential	
a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Non-volumetric Flat Rate
c. Total Revenue from Volumetric Rates	$2243982
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$1971208
2. Commercial	
a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Non-volumetric Flat Rate
c. Total Revenue from Volumetric Rates	$167123
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$70353
3. Industrial	
a. Water Rate Structure	Service Not Provided
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0
4. Institutional / Government	
a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Non-volumetric Flat Rate
c. Total Revenue from Volumetric Rates	$61214
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$17542
5. Irrigation	
a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$122109
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$26476
6. Other	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$37042

d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/14/05

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2. Is this a full-time position?	yes
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?	
4. Partner agency's name:	
5. If your agency supplies the conservation coordinator:	
a. What percent is this conservation coordinator's position?	100%
b. Coordinator's Name	Marc Lippert, Carl Hottenroth, Steve Watt and Administration Staff
c. Coordinator's Title	Interim Water Coservation Coordinators
d. Coordinator's Experience and Number of Years	New positions filled with Treatment Plant Operators with limited water conservation experience.
e. Date Coordinator's position was created (mm/dd/yyyy)	3/1/2003
6. Number of conservation staff, including Conservation Coordinator.	4

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	215958	274363
2. Actual Expenditures	215958	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/14/05

BMP 13: Water Waste Prohibition

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? yes

   a. If YES, describe the ordinance:

   The District has many Ordinances that pertain to Water Conservation.The most up to date Ordinance is NO 48.Below in Section B.2 is a summary of the water use restrictions.

2. Is a copy of the most current ordinance(s) on file with CUWCC? no

   a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

Lake Arrowhead Woods	95

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

   a. Gutter flooding yes

   b. Single-pass cooling systems for new connections no

   c. Non-recirculating systems in all new conveyor or car wash systems no

   d. Non-recirculating systems in all new commercial laundry systems no

   e. Non-recirculating systems in all new decorative fountains yes

   f. Other, please name no

2. Describe measures that prohibit water uses listed above:

   Ordinance 48, Section 2(a)(b), states; For other than Public Use Lands, Irrigation of all landscapes, plants, trees and land should be done between the hours of 6pm and 8am, with the exception of newly seeded plants or other new planting, which may be watered intermittently until rooting is established. Ordinance 48, Section 2(c), states; Customers should refrain from irrigating landscapes on Saturdays and Sundays between Memorial Day and Labor Day, except in the case of newly seeded plants and other new planting, which may be watered intermittently until rooting is established. Ordinance 48, Section 2(d), states; Lawns, Trees, Shrubs and other landscaping should not be watered beyond what is needed for natural growth and to sustain life. Water should not be permitted to pool or collect to the point of run-off. New irrigation systems for both residential and commercial uses should be

installed with the proper systems appropriate to the area and terrain. Any planting within the drip line of any tree should be compatible with the proper needs of the tree. Plantings should be grouped according to their water requirement. Ordinance 48, section 2(e), states; Turf applications in commercial and residential areas should be limited to 30% of the area to be landscaped. Planting of water conserving plants adaptable to the climatic region is encouraged. Ordinance 48, Section 3(a), states; the use of water for any purpose should not result in flooding, run-off in gutters, driveways, streets or adjacent lands. Section 3(b), states; Sidewalks, walkways, driveways, parking areas, patios, porches, verandas, or any like area should not be washed off with water from hoses or by any other means for dust control or any decorative reason. Ordinance 48, Section 3(c), states; Water lines, faucets and other facilities should be maintained so they do not leak water. Ordinance 48, Section 7(c), states; During the Second stage of restriction watering shall be reduced to three times a week at their normal cycles.

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

a. Allow the sale of more efficient, demand-initiated regenerating DIR models. no

b. Develop minimum appliance efficiency standards that:

i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. no

ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. no

c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. no

4. Does your agency include water softener checks in home water audit programs? no

5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement of less efficient timer models? no

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	6000	6000
2. Actual Expenditures	5800	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 11/14/05

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2003**

A. Implementation

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	no	no

Number of Toilets Replaced by Agency Program During Report Year

Replacement Method	SF Accounts	MF Units
2. Rebate	0	0
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	0	0
Total	**0**	**0**

6. Describe your agency's ULFT program for single-family residences.

7. Describe your agency's ULFT program for multi-family residences.

8. Is a toilet retrofit on resale ordinance in effect for your service area? no

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

   a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/14/05

Water Supply & Reuse

Reporting Unit: **Lake Arrowhead Community Service District**

Year: **2004**

Water Supply Source Information

Supply Source Name	Quantity (AF) Supplied	Supply Type
Lake Arrowhead	1599	Local Watershed
State Project Water	565	Imported

Total AF: 2164

Reported as of 11/14/05

Accounts & Water Use

Reporting Unit Name:	Submitted to CUWCC	Year:
Lake Arrowhead Community Service District	**10/17/2005**	**2004**

A. Service Area Population Information:

1. Total service area population 12780

B. Number of Accounts and Water Deliveries (AF)

Type	Metered		Unmetered	
	No. of Accounts	Water Deliveries (AF)	No. of Accounts	Water Deliveries (AF)
1. Single-Family	7402	1605	0	0
2. Multi-Family	0	0	0	0
3. Commercial	104	166	0	0
4. Industrial	0	0	0	0
5. Institutional	28	40	0	0
6. Dedicated Irrigation	79	51	0	0
7. Recycled Water	0	0	0	0
8. Other	0	0	0	0
9. Unaccounted	NA	0	NA	0
Total	7613	1862	0	0

Metered **Unmetered**

Reported as of 11/14/05

Reported as of 11/14/05

BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2004**

A. Implementation

1. Based on your signed MOU date, 12/19/2000, your Agency STRATEGY DUE DATE is:	12/19/2002
2. Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys?	yes
a. If YES, when was it implemented?	06/01/2003
3. Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use surveys?	no
a. If YES, when was it implemented?	

B. Water Survey Data

Survey Counts:	**Single Family Accounts**	**Multi-Family Units**
1. Number of surveys offered:	7413	0
2. Number of surveys completed:	120	0
Indoor Survey:		
3. Check for leaks, including toilets, faucets and meter checks	yes	no
4. Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary	yes	no
5. Check toilet flow rates and offer to install or recommend installation of displacement device or direct customer to ULFT replacement program, as neccesary; replace leaking toilet flapper, as necessary	yes	no
Outdoor Survey:		
6. Check irrigation system and timers	yes	no
7. Review or develop customer irrigation schedule	yes	no
8. Measure landscaped area (Recommended but not required for surveys)	yes	no
9. Measure total irrigable area (Recommended but not required for surveys)	yes	no
10. Which measurement method is typically used (Recommended but not required for surveys)	Odometer Wheel	
11. Were customers provided with information packets that included evaluation results and water savings recommendations?	yes	no
12. Have the number of surveys offered and completed, survey results, and survey costs been tracked?	yes	no

a. If yes, in what form are surveys tracked? spreadsheet

b. Describe how your agency tracks this information.

Spreadsheet comparing year to year consumption.

C. Water Survey Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	5600	13500
2. Actual Expenditures	9600	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 11/14/05

BMP 02: Residential Plumbing Retrofit

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2004**

A. Implementation

1. Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other water use fixtures with their low-flow counterparts?	no
a. If YES, list local jurisdictions in your service area and code or ordinance in each:	
2. Has your agency satisfied the 75% saturation requirement for single-family housing units?	no
3. Estimated percent of single-family households with low-flow showerheads:	31%
4. Has your agency satisfied the 75% saturation requirement for multi-family housing units?	no
5. Estimated percent of multi-family households with low-flow showerheads:	0%

6. If YES to 2 OR 4 above, please describe how saturation was determined, including the dates and results of any survey research.

B. Low-Flow Device Distribution Information

1. Has your agency developed a targeting/ marketing strategy for distributing low-flow devices?	yes
a. If YES, when did your agency begin implementing this strategy?	05/01/2003

b. Describe your targeting/ marketing strategy.

Fairs and booths at various community events

Low-Flow Devices Distributed/ Installed	SF Accounts	MF Units
2. Number of low-flow showerheads distributed:	3700	0
3. Number of toilet-displacement devices distributed:	2500	0
4. Number of toilet flappers distributed:	0	0
5. Number of faucet aerators distributed:	5000	0

6. Does your agency track the distribution and cost of low-flow devices?	yes
a. If YES, in what format are low-flow devices tracked?	Database

b. If yes, describe your tracking and distribution system :

The District uses the billing system data base to track hardware distribution.

C. Low-Flow Device Distribution Expenditures

	This Year	Next Year
1. Budgeted Expenditures	3000	3000
2. Actual Expenditures	2200	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 11/14/05

BMP 03: System Water Audits, Leak Detection and Repair

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2004**

A. Implementation

1. Has your agency completed a pre-screening system audit for this reporting year?	no
2. If YES, enter the values (AF/Year) used to calculate verifiable use as a percent of total production:	
a. Determine metered sales (AF)	
b. Determine other system verifiable uses (AF)	
c. Determine total supply into the system (AF)	
d. Using the numbers above, if (Metered Sales + Other Verifiable Uses) / Total Supply is < 0.9 then a full-scale system audit is required.	0.00
3. Does your agency keep necessary data on file to verify the values used to calculate verifiable uses as a percent of total production?	no
4. Did your agency complete a full-scale audit during this report year?	no
5. Does your agency maintain in-house records of audit results or the completed AWWA audit worksheets for the completed audit?	yes
6. Does your agency operate a system leak detection program?	yes

a. If yes, describe the leak detection program:

The District has inspected 30% of the water distribution system for leaks utilizing techniques that are consistant with AWWA's Water Audit and Leak Detection Guidebook.

B. Survey Data

1. Total number of miles of distribution system line.	127
2. Number of miles of distribution system line surveyed.	39

C. System Audit / Leak Detection Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	42000	48000
2. Actual Expenditures	42000	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 11/14/05

BMP 04: Metering with Commodity Rates for all New Connections and Retrofit of Existing

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2004**

A. Implementation

1. Does your agency require meters for all new connections and bill by volume-of-use?	yes
2. Does your agency have a program for retrofitting existing unmetered connections and bill by volume-of-use?	no

a. If YES, when was the plan to retrofit and bill by volume-of-use existing unmetered connections completed?

b. Describe the program:

NA

3. Number of previously unmetered accounts fitted with meters during report year.	0

B. Feasibility Study

1. Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	no

a. If YES, when was the feasibility study conducted? (mm/dd/yy)

b. Describe the feasibility study:

NA

2. Number of CII accounts with mixed-use meters.	132
3. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period.	0

C. Meter Retrofit Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 11/14/05

BMP 05: Large Landscape Conservation Programs and Incentives

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2004**

A. Water Use Budgets

1. Number of Dedicated Irrigation Meter Accounts:	12
2. Number of Dedicated Irrigation Meter Accounts with Water Budgets:	0
3. Budgeted Use for Irrigation Meter Accounts with Water Budgets (AF):	0
4. Actual Use for Irrigation Meter Accounts with Water Budgets (AF):	0
5. Does your agency provide water use notices to accounts with budgets each billing cycle?	yes

B. Landscape Surveys

1. Has your agency developed a marketing / targeting strategy for landscape surveys?	yes
a. If YES, when did your agency begin implementing this strategy?	05/01/2003

b. Description of marketing / targeting strategy:

The District had an extensive public outreach campaign that included direct mailings, quarterly newsletters and advertisement in the local newspaper.

2. Number of Surveys Offered.	132
3. Number of Surveys Completed.	15
4. Indicate which of the following Landscape Elements are part of your survey:	
a. Irrigation System Check	yes
b. Distribution Uniformity Analysis	no
c. Review / Develop Irrigation Schedules	yes
d. Measure Landscape Area	yes
e. Measure Total Irrigable Area	yes
f. Provide Customer Report / Information	yes
5. Do you track survey offers and results?	yes
6. Does your agency provide follow-up surveys for previously completed surveys?	yes

a. If YES, describe below:

District staff evaluates surveyed sites and does follow up at those sites that do not show realsonable water use reduction following surveys.

C. Other BMP 5 Actions

1. An agency can provide mixed-use accounts with ETo-based landscape budgets in lieu of a large landscape survey program. Does your agency provide mixed-use accounts with landscape budgets?	no
2. Number of CII mixed-use accounts with landscape budgets.	0
3. Do you offer landscape irrigation training?	yes
4. Does your agency offer financial incentives to improve landscape water use efficiency?	no

Type of Financial Incentive:	Budget (Dollars/ Year)	Number Awarded to Customers	Total Amount Awarded
a. Rebates	0	0	0
b. Loans	0	0	0
c. Grants	0	0	0

5. Do you provide landscape water use efficiency information to new customers and customers changing services? yes

a. If YES, describe below:

The District has created many public information documents to educate customers on using water efficiently for irrigation purposes. In 2003 the District developed a comprehensive landscape guide for mountain homes which was mailed to all customers. The District has many brochures and handouts for customers that are available at the District offices. During 2003 the District participated in many community events to aid in the distribution of the irrigation education materials.

6. Do you have irrigated landscaping at your facilities? no

a. If yes, is it water-efficient?

b. If yes, does it have dedicated irrigation metering?

7. Do you provide customer notices at the start of the irrigation season?	no
8. Do you provide customer notices at the end of the irrigation season?	no

D. Landscape Conservation Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	5300	1800
2. Actual Expenditures	6100	

E. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

   a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

F. Comments

Implemented an ET Controller Pilot Program with grant funding provided by the United States Bureau of Reclamation. The District had 17 ET controllers installed at commercial sites in 2004 as part of the ET Controller Pilot Program.

Reported as of 11/14/05

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2004**

A. Implementation

1. Do any energy service providers or waste water utilities in your service area offer rebates for high-efficiency washers?	no
a. If YES, describe the offerings and incentives as well as who the energy/waste water utility provider is.	
2. Does your agency offer rebates for high-efficiency washers?	no
3. What is the level of the rebate?	0
4. Number of rebates awarded.	0

B. Rebate Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no
a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	

D. Comments

Reported as of 11/14/05

BMP 07: Public Information Programs

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2004**

A. Implementation

1. Does your agency maintain an active public information program to promote and educate customers about water conservation? yes

a. If YES, describe the program and how it's organized.

The Lake Arrowhead Community Services District's annual public information plan establishes key communication messages and focuses on key communication strategy areas including: 1.Public Information Efforts (information materials and multimedia prsentations) 2. Community Relations (customer participation programs and special events) 3. Media Relations (advertising, press releases and local media contacts) The annual Public Information Plan includes an aggressive Water Conservation Awareness campaign that includes: 1. Quarterly News Letters 2. Intermittent Billing Inserts 3.Regular display ads and advertorials in weekly news paper 4. Regular media press releases 5. Regular presentations to community groups, service clubs and home owners associations 6. Water Conservation Information Booth at community events 7. Town Hall/public outreach meetings to present new water conservation programs and information 8. Information sharing via annual Multi-Water District Meetings

2. Indicate which and how many of the following activities are included in your public information program.

Public Information Program Activity	Yes/No	Number of Events
a. Paid Advertising	yes	52
b. Public Service Announcement	no	0
c. Bill Inserts / Newsletters / Brochures	yes	5
d. Bill showing water usage in comparison to previous year's usage	yes	
e. Demonstration Gardens	no	
f. Special Events, Media Events	yes	3
g. Speaker's Bureau	no	
h. Program to coordinate with other government agencies, industry and public interest groups and media	yes	

B. Conservation Information Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	93200	72143
2. Actual Expenditures	43000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

   a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

See following attachments for samples of 2004 Public Outreach.

Reported as of 11/14/05

BMP 08: School Education Programs

Reporting Unit:
Lake Arrowhead Community Service District

BMP Form Status:
100% Complete

Year:
2004

A. Implementation

1.Has your agency implemented a school information program to promote water conservation? no

2. Please provide information on your school programs (by grade level):

Grade	Are grade-appropriate materials distributed?	No. of class presentations	No. of students reached	No. of teachers' workshops
Grades K-3rd	no	0	0	0
Grades 4th-6th	no	0	0	0
Grades 7th-8th	no	0	0	0
High School	no	0	0	0

3. Did your Agency's materials meet state education framework requirements? no

4. When did your Agency begin implementing this program? NA

B. School Education Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/14/05

BMP 09: Conservation Programs for CII Accounts

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2004**

A. Implementation

1. Has your agency identified and ranked COMMERCIAL customers according to use?	yes
2. Has your agency identified and ranked INDUSTRIAL customers according to use?	no
3. Has your agency identified and ranked INSTITUTIONAL customers according to use?	yes

Option A: CII Water Use Survey and Customer Incentives Program

4. Is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP 9 under this option?	yes

CII Surveys	Commercial Accounts	Industrial Accounts	Institutional Accounts
a. Number of New Surveys Offered	132	0	0
b. Number of New Surveys Completed	15	0	0
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	0
d. Number of Phone Follow-ups of Previous Surveys (within 1 yr)	0	0	0

CII Survey Components	Commercial Accounts	Industrial Accounts	Institutional Accounts
e. Site Visit	no	no	no
f. Evaluation of all water-using apparatus and processes	no	no	no
g. Customer report identifying recommended efficiency measures, paybacks and agency incentives	no	no	no

Agency CII Customer Incentives	Budget ($/Year)	No. Awarded to Customers	Total $ Amount Awarded
h. Rebates	0	0	0
i. Loans	0	0	0
j. Grants	0	0	0
k. Others	0	0	0

Option B: CII Conservation Program Targets

5. Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	no
6. Does your agency document and maintain records on how savings were realized and the method of calculation for estimated savings?	no
7. Estimated annual savings (AF/yr) from site-verified actions taken by agency since 1991.	0
8. Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991.	0

B. Conservation Program Expenditures for CII Accounts

	This Year	Next Year
1. Budgeted Expenditures	5300	1755
2. Actual Expenditures	6300	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/14/05

BMP 09a: CII ULFT Water Savings

Reporting Unit:
Lake Arrowhead Community Service District

BMP Form Status:
100% Complete

Year:
2004

1. Did your agency implement a CII ULFT replacement program in the reporting year? — No
If No, please explain why on Line B. 10.

A. Targeting and Marketing

1. What basis does your agency use to target customers for participation in this program? Check all that apply.

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

NA

2. How does your agency advertise this program? Check all that apply.

a. Describe which method you found to be the most effective overall, and which was the most effective per dollar expended.

NA

B. Implementation

1. Does your agency keep and maintain customer participant information? (Read the Help information for a complete list of all the information for this BMP.) — no

2. Would your agency be willing to share this information if the CUWCC did a study to evaluate the program on behalf of your agency? — Yes

3. What is the total number of customer accounts participating in the program during the last year ? — 0

CII Subsector	Number of Toilets Replaced				
4.	Standard Gravity Tank	Air Assisted	Valve Floor Mount	Valve Wall Mount	Type Not Specified
a. Offices	0	0	0	0	0
b. Retail / Wholesale	0	0	0	0	0
c. Hotels	0	0	0	0	0
d. Health	0	0	0	0	0
e. Industrial	0	0	0	0	0
f. Schools: K to 12	0	0	0	0	0
g. Eating	0	0	0	0	0

h. Government	0	0	0	0	0
i. Churches	0	0	0	0	0
j. Other	0	0	0	0	0

5. Program design.

6. Does your agency use outside services to implement this program? No

a. If yes, check all that apply.

7. Participant tracking and follow-up.

8. Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the following reasons why customers refused to participate in the program.

a. Disruption to business	0
b. Inadequate payback	0
c. Inadequate ULFT performance	0
d. Lack of funding	0
e. American's with Disabilities Act	0
f. Permitting	0
g. Other. Please describe in B. 9.	0

9. Please describe general program acceptance/resistance by customers, obstacles to implementation, and other isues affecting program implementation or effectiveness.

NA

10. Please provide a general assessment of the program for this reporting year. Did your program achieve its objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and budgeting?

NA

C. Conservation Program Expenditures for CII ULFT

1. CII ULFT Program: Annual Budget & Expenditure Data

	Budgeted	Actual Expenditure
a. Labor	0	0
b. Materials	0	0
c. Marketing & Advertising	0	0
d. Administration & Overhead	0	0
e. Outside Services	0	0
f. Total	0	0

2. CII ULFT Program: Annual Cost Sharing

a. Wholesale agency contribution	0
b. State agency contribution	0
c. Federal agency contribution	0

d. Other contribution	0
e. Total	0

D. Comments

Reported as of 11/14/05

BMP 11: Conservation Pricing

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2004**

A. Implementation

Rate Structure Data Volumetric Rates for Water Service by Customer Class

1. Residential	
a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Non-volumetric Flat Rate
c. Total Revenue from Volumetric Rates	$2152838
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$1989213
2. Commercial	
a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Non-volumetric Flat Rate
c. Total Revenue from Volumetric Rates	$302575
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$70353
3. Industrial	
a. Water Rate Structure	Service Not Provided
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$0
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0
4. Institutional / Government	
a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Non-volumetric Flat Rate
c. Total Revenue from Volumetric Rates	$51520
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$17543
5. Irrigation	
a. Water Rate Structure	Increasing Block
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$79874
d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$26476
6. Other	
a. Water Rate Structure	Uniform
b. Sewer Rate Structure	Service Not Provided
c. Total Revenue from Volumetric Rates	$59700

d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources	$0

B. Conservation Pricing Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	0	0
2. Actual Expenditures	0	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? No

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/14/05

BMP 12: Conservation Coordinator

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2004**

A. Implementation

1. Does your Agency have a conservation coordinator?	yes
2. Is this a full-time position?	yes
3. If no, is the coordinator supplied by another agency with which you cooperate in a regional conservation program ?	no
4. Partner agency's name:	
5. If your agency supplies the conservation coordinator:	
a. What percent is this conservation coordinator's position?	100%
b. Coordinator's Name	Marc Lippert
c. Coordinator's Title	Water Conservation Coordinator
d. Coordinator's Experience and Number of Years	2 years as coordinator
e. Date Coordinator's position was created (mm/dd/yyyy)	03/01/2003
6. Number of conservation staff, including Conservation Coordinator.	4

B. Conservation Staff Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	274363	219755
2. Actual Expenditures	274363	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?	no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Reported as of 11/14/05

BMP 13: Water Waste Prohibition

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2004**

A. Requirements for Documenting BMP Implementation

1. Is a water waste prohibition ordinance in effect in your service area? yes

a. If YES, describe the ordinance:

Ordinance No. 58, The Water Conservation Policy of the Lake Arrowhead Community Services District, Effective June 1, 2004.The District had five previous Ordinances governing water conservation. In order to maximize water savings, provide for mandatory conservation measures during Drought Stages, and create a permanent change in the water-use habits of residents to encourage on-going conservation and the elimination of water waste, a new Ordinance is necessary. The creation of a new Ordinance enabled the District the opportunity to consolidate all previous Ordinances in a new, consistent and comprehensive manner.

2. Is a copy of the most current ordinance(s) on file with CUWCC? no

a. List local jurisdictions in your service area in the first text box and water waste ordinance citations in each jurisdiction in the second text box:

Lake Arrowhead Woods	133

B. Implementation

1. Indicate which of the water uses listed below are prohibited by your agency or service area.

a. Gutter flooding yes

b. Single-pass cooling systems for new connections no

c. Non-recirculating systems in all new conveyor or car wash systems no

d. Non-recirculating systems in all new commercial laundry systems no

e. Non-recirculating systems in all new decorative fountains no

f. Other, please name no

2. Describe measures that prohibit water uses listed above:

This is a summary of the standards for domestic water conservation under the Permanent Water Conservation Policies: 1. Outdoor Cleaning Practices a. There shall be no hose washing of any hard or paved surfaces including, but not limited to sidewalks, walkways, driveways, parking areas, patios, porches, decks and verandas, except that flammable or other dangerous substances may be, if otherwise permitted by law, disposed of by direct hose flushing for the benefit of public health and safety. Sweeping is encouraged for routine maintenance. Washing patios, porches, decks and verandas shall be by bucket and mop or high-pressure washer only. b. No water shall be used to clean, fill or maintain levels in decorative fountains, ponds, lakes or similar structures used for aesthetic purposes unless such water is part of a recirculation system. c. Vehicles may be hand washed using a bucket while parked on residential properties. Rinsing may be by using a leak free hose equipped with a positive shut off nozzle. 2. Hospitality Industry Standards No restaurant, hotel, cafe, cafeteria or other public place where food is sold, served or offered for-sale, shall serve drinking water to any person unless expressly requested. 3. Leak-free Maintenance Standards No Customer of the District shall permit water to leak from any facility on the Customer's premises; failure or refusal to effect a timely repair of any leak of which the Customer knows or has reason to know, shall subject said Customer to all penalties provided herein for a prohibited use of water and enforcement under the District's Rules and Regulations for water service. 4. Irrigation Practices Standards a. Automated irrigation of all landscapes, plants, trees and land may be done only between the hours of 6:00 p.m. and 8:00 a.m., with the exception of newly seeded plants and other new planting, which may be watered intermittently until rooting is established. b. Lawns, trees, shrubs and other landscaping may not be watered beyond what is needed for natural growth and to sustain life. Water may not be permitted to pool or collect to the point of run-off. No Customer shall water or irrigate any lawn, landscape or other area in a manner that causes or allows excess water to flow or run-off onto an adjoining sidewalk, driveway, street, gutter or ditch. c. It is provided further that commercial nurseries, landscape managers and professional gardeners holding a current Business License and acting for or on behalf of a Customer shall be exempt from the provisions of this subsection for the purposes of landscape maintenance, including the application of treatments such as pesticides and fertilizers. They shall, however, be subject to the provisions of this Ordinance when they are acting to set an irrigation system's regular watering schedule on behalf of a Customer. d. The prohibited uses set forth in this subsection do not apply to Recycled or Gray Water. The use of Recycled or Gray Water shall be subject to the requirements and limitations as set forth by the applicable County and State regulatory authorities. e. Between November 30th and March 31st, all outdoor irrigation shall be shut off and irrigation systems shall be winterized to prevent ruptured pipes and leaks. Also included in Ordinance No 58 was a ban on all new turf grass during the third stage of drought.

Water Softeners:

3. Indicate which of the following measures your agency has supported in developing state law:

a. Allow the sale of more efficient, demand-initiated regenerating DIR models. no

b. Develop minimum appliance efficiency standards that:

i.) Increase the regeneration efficiency standard to at least 3,350 grains of hardness removed per pound of common salt used. no

ii.) Implement an identified maximum number of gallons discharged per gallon of soft water produced. no

c. Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban on-site regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater supply. no

4. Does your agency include water softener checks in home water audit programs? no

5. Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement of less efficient timer models? no

C. Water Waste Prohibition Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	6000	12000
2. Actual Expenditures	6650	

D. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

E. Comments

Reported as of 11/14/05

BMP 14: Residential ULFT Replacement Programs

Reporting Unit:	BMP Form Status:	Year:
Lake Arrowhead Community Service District	**100% Complete**	**2004**

A. Implementation

	Single-Family Accounts	Multi-Family Units
1. Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets?	yes	no

Number of Toilets Replaced by Agency Program During Report Year

Replacement Method	SF Accounts	MF Units
2. Rebate	0	0
3. Direct Install	0	0
4. CBO Distribution	1000	0
5. Other	0	0
Total	**1000**	**0**

6. Describe your agency's ULFT program for single-family residences.

ULFT Exchange Program-A one day event for giving out toilets and one day for return approx. a month later

7. Describe your agency's ULFT program for multi-family residences.

None

8. Is a toilet retrofit on resale ordinance in effect for your service area? no

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

na	na

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	60000	23500
2. Actual Expenditures	117000	

C. "At Least As Effective As"

1. Is your AGENCY implementing an "at least as effective as" variant of this BMP? no

a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Lake Arrowhead Community
Services District
P.O. Box 789
Lake Arrowhead, CA 92352

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A Landscape Guide for Mountain Homes Published

The Lake Arrowhead Community Services District has just published *A Landscape Guide for Mountain Homes*. The 32-page Guide gives mountain area homeowners the basic information they need to create water-efficient landscapes at home and to select drought tolerant plants for their yards and gardens.

The Lake Arrowhead Community Services District took the lead in developing and publishing the Guide, but insisted that the content apply mountain-wide. "The area has a large number of microclimates as well as climate variations," explained Carl Hottenroth, LACSD coordinator for the project. "All of the mountain area communities need to conserve water. Over half of the water a typical household uses is used outdoors on landscaping. We felt that this effort should benefit everybody."

The effort has paid off. Four other mountain-area water agencies have opted to participate in the publication, helping to underwrite the overall cost by buying copies for their areas. Those agencies include Big Bear City Community Services District, City of Big Bear Lake Department of Water and Power, Crestline Village Water District, and Running Springs Water District. The Mountain Rim Fire Safe Council, Crest Forest Chapter is also participating. Overall costs including development, photography, and printing of 18,500 will be about $37,000.

After an introduction that contains basic outdoor water conservation information, the Guide's six chapters cover planning, installing, and maintaining a water conserving landscape, including how to design your landscape for function, aesthetics, and for water-efficient irrigation.

Other chapters include "Defensible Space—Landscape to Reduce the Wildfire Threat" and "Maintain Natural Areas through Backyard Forestry," the latter of which addresses issues particular to the San Bernardino Mountains including drought stressed native trees, bark beetles, and reforesting among other topics.

An eight-page plant list gives gardeners three groups of plants to choose from depending on the type of look they prefer, natives, ornamental, or mixed natives and horticulturally adapted plants. There is also a list of local resources where you can get help with your gardening in case your thumb is not quite as green as you thought it was.

A technical committee of 17, many of them volunteers with landscape, irrigation and forestry expertise as well as District staff and consultants partnered to create the Guide in a very short four-month time frame. "There was information on water efficient landscaping available from a variety of sources. We tried not to reinvent the wheel. Where possible we pulled together what was already out there and made sure that it applied to us," continued Hottenroth.

"We owe a debt of gratitude to the University of Nevada Cooperative Extension for allowing us to use material they had generated for their guide for the Lake Tahoe area," added District General Manager Marvin Shaw. "We had a very short timeframe and that put us out in front of the curve. We also had great advice and input from local mountain professionals. We couldn't have done it without them."

Lake Arrowhead
Community Services District

CUSTOMER REPORT

LAKE ARROWHEAD IN CRISIS

Stage Three Drought

The world that we live in today is a world where an ever-increasing population places larger and larger demands on the earth's finite resources. The manner in which we use these resources, from the fuels that heat our homes and power our cars to the water we need to sustain life will determine the kind of world we leave to our children and to future generations.

Water is a precious commodity in southern California. More than 70 percent of California's total precipitation falls in the northern half of the state. Eighty percent of California's water demand is in the south. Southern California largely depends on water imported from northern California and from the Colorado River.

The Lake Arrowhead community receives its water and sewer service through the Lake Arrowhead Community Services District. Lake Arrowhead is currently the only source of water for the District. When the lake is full it holds approximately 47,000 acre-feet of water. To translate this into English, an acre-foot is approximately 326,000 gallons. Within the community, an average household uses one-half acre-foot or about 163,000 gallons of water per year, or 450 gallons of water per day. Last year the District extracted 3,000 acre-feet of water to serve the homes and businesses in Arrowhead Woods. This water use resulted in a four-foot decline in the lake's surface elevation.

The past four years of drought have meant that community water use has had a marked effect on lake levels. The declining lake level, in turn, has had a negative impact on the area's local environment and quality of life.

When the Lake is full, its elevation is 5,106.70 feet above sea level. Last summer, the District entered the summer season at 5,095.55, or more than 11 feet below full. At the end of last summer, the lake level had fallen nine more feet to 5,086.55 feet, or a Stage Three Drought as defined by the District.

What is the District Doing About the Crisis?

On March 25, 2003 the District Board of Directors reaffirmed a Third Stage Drought. Under LACSD ordinances, once a Third Stage Drought is declared, all restrictions that are implemented are kept in place until the lake has recovered to First Stage levels. As a result, even though we have had some rain and snow this winter, the restrictions for a Third Stage Drought apply. We are entering this summer season at a lower lake level than last year. The situation remains critical.

The District is implementing two actions to immediately address the crisis. The first is water conservation the second is increasing the available water supply.

Water conservation is the most immediate, least expensive, and most environmentally sound action available. The goal for this year is to reduce water use by 25%, or 750 acre-feet of water. The District's largest customer, the Lake Arrowhead Resort, will reduce its water use this year by not less than 40%. The Resort is achieving these savings by retrofitting landscaping, fixing or replacing leaking toilets and converting to low flow shower heads.

The conservation program includes providing customers with information and tools to conserve water. A basic brochure includes a card that customers may return to obtain a kit containing indoor and outdoor conserving fixtures from an auto shut off hose nozzle to low flow showerhead and tap aerators.

There are, however, some teeth behind this voluntary conservation program. Tiered-water rates will mean that high volume users will pay at a rate that is three times higher than the average. There is also an enforcement component for those who contravene the District's ordinances regarding water waste. Run off, over spray, and watering during the daytime will provoke a written warning followed by financial penalties for customers who fail to correct a problem.

The District is also publishing a "Landscape Guide for Mountain Homes," tailored to local climate and soil conditions and giving information about retrofitting home landscapes to use less water. It also discusses how home landscaping can reduce wildfire risk to dwellings and structures.

Short Term SUPPLY PROJECTS

The most important step in resolving the crisis is a new District policy to reduce and ultimately eliminate reliance on the lake as the District's sole source of water. This is not a proposal to stop using lake water outright as Lake Arrowhead water is the community's lowest cost, best quality and most reliable supply. However, during drought years, the District's goal is to supply water from alternative sources.

The first new supply project is the drilling of two new wells in partnership with the Lake Arrowhead Country Club. A local well-drilling company, Harich Enterprises, was the successful bidder and drilling is underway with estimates of 150 to 300 acre-feet of new water supply from the project.

The second project is also a partnership with the Country Club. Historically, golf course irrigation has used just under 200 acre-feet of water per year, an impact of four inches to Lake Arrowhead. Engineering design and environmental studies are underway to enable the District to replace this irrigation water with treated wastewater resulting in a net benefit of as much as 200 acre-feet per year.

The third project is a call for proposals from private parties and public agencies to supply new sources of water to the District. The deadline for these proposals is May 30th.

Community-based LONGER TERM SOLUTIONS

Later this year, the District will present plans that will chart a course for the future condition of the lake. The capital facilities and financing plan will evaluate the resources the District will be able to bring to bear on resolving this issue. The Engineering and Feasibility Study will evaluate 12 water supply alternatives the District has identified for feasibility, cost and timing.

The alternatives include additional groundwater, additional surface water from Grass Valley Creek, imported water to be delivered through the Crestline-Lake Arrowhead Water Agency, construction of a new pipeline, and the use of treated wastewater.

This public process will engage all customers and particularly organizations with which the District has established ongoing communications: the Arrowhead Lake Association, Arrowhead Woods Architectural Committee, Chamber of Commerce, Arrowhead Community Task Force, Lake Arrowhead Country Club, and Save our Forest Association among others. Community and customer support is essential to any decision to pay the cost of these alternatives. When public review and comment is completed, the District Board will consider the available information and public input and will make its best determination which programs and capital improvement projects to implement. If, with community support, the Board goes forward, then the District will be able to achieve the goal of less reliance on Lake Arrowhead as its sole source of water supply.

New Connections Need NEW SUPPLIES

In light of the current demands on Lake supplies, the District Board has also authorized its financial consultant, Bartle Wells Associates, to prepare a fiscal impact analysis that will serve as the basis for enacting a "water service connection fee." This fee would be paid by all new water service connections. If approved by the District Board, this fee would mean new connections would pay for a new water supply to serve them.

What are the RULES?

The District has water use rules that apply at all times and are designed to minimize water waste. These include:

- For other than Public Lands, Irrigation of all landscapes, plants, trees and land should be done between the hours of 6 p.m. and 8 a.m., with the exception of newly seeded plants and other new plantings, which may be watered intermittently until rooting is established.
- Public Use Lands including parks, schools and golf courses should be irrigated only between the hours of 10 p.m. and 5 a.m.

- Lawns, trees, shrubs and other landscaping should not be watered beyond what is needed for natural growth and to sustain life. Water should not be permitted to pool or collect to the point of run-off. New irrigation systems for both residential and commercial uses should be installed with the proper irrigation system appropriate to the area and terrain. Any planting within the drip line of any tree should be compatible with the proper needs of the tree. Planting should be grouped according to their water needs.

- The use of water for any purpose should not result in the flooding, run-off in gutters, driveways, streets or adjacent lands.
- Sidewalks, walkways, driveways, parking areas, patios, porches, verandas, or any like areas should not be washed off with water from hoses or by any other means for dust control or any decorative reasons.

- Water lines, faucets and other facilities should be maintained so they do not leak water.
- Customers should refrain from irrigating landscapes on Saturdays and Sundays between Memorial Day and Labor Day, except in the case of newly seeded plants and other new planting, which may be watered intermittently until rooting is established.

Under a THIRD STAGE DROUGHT, the following also apply:

- Watering shall be reduced to three times a week at normal cycles.
- Landscaping for both new and existing homes will be allowed under any of the following circumstances:
  - Low volume irrigation is implemented, (low volume irrigation is defined as not to exceed 0.75 inches per hour or three gallons per minute at the spray head).
  - The new landscaping is to replace the trees and shrubs killed by infestation or drought.
  - The landscaping is to replace existing landscaping with water efficient or drought resistant vegetation.
  - The new landscaping is to comply with erosion and sedimentation control set forth by San Bernardino County Building and Safety.
  - The landscaping is being created to establish defensible space according to standards established by local fire agencies.
  - No turf grass shall be planted (seed or sod), until the lake level has returned to at least first stage of drought level (5,100-5,093.6 feet).

Water Rights Complaints to the State Water Resources Control Board

The District has received numerous inquiries from community groups for information in response to the filing of water rights complaints with the State Water Resources Control Board (State Board) by both the Arrowhead Lake Association (ALA) and one private party.

District is currently implementing or investigating every one of the water supply solutions suggested to the State Board in both complaints. (See Short Term Supply Projects, Community-based Longer Terms Solutions, and Short Term Supply Projects at left.) These actions were planned and underway before the complaints were filed and were a matter of public record. In addition, special efforts were made to make sure ALA was aware of the actions.

The matters in the complaints that remain are the awarding of compensation to boat and dock owners, the water rights of the District, who or what entity should be empowered to control withdrawal of water from the lake, and what the lowest permitted lake levels should be.

These matters are the real substance of the complaints. While compensation to boat and dock owners is likely not within the concern of the State Board, the water right and who should control withdrawals and lake levels may or may not be within the State Board's jurisdiction.

The Lake Arrowhead Community Services District's position is that its right to withdraw water is a pre-1914 right that belongs to the District as the community's water supplier and that through the District, the whole community of District customers has made a significant investment in its water supply system.

Finally, one of the complaints insists that the "Safe Yield" of the lake means that the water level must remain at 5,100 feet or above and that safeguarding this lake level should be under the control of a Watermaster appointed by the State Board.

The District believes that the water system and control of decisions about what happens to the water, to water rates, and protecting the lake should remain in local customer hands. As the public agency charged with the responsibility for providing water and wastewater service to the entire community, the District is not in a position to value or favor any particular group of customer interests over those of any other group.

The District remains concerned about the effects of the complaints, however, on its ability to address the current drought crisis. In addition to the time and resources required to respond to the complaints and the cost of clarifying the water rights matters, these complaints may result in a delay in implementing water supply solutions. This delay could result because uncertainty regarding the District's water right would likely hamper the District's ability to finance new water supply solutions.

ENFORCEMENT

Lake Arrowhead Community Services District is taking a pro-active stance and a leadership role in the goal to eliminate water waste in the community. It is the hope of the District that customers will join with us, voluntarily and actively, to do their part to eliminate water waste. There is, however, an enforcement component for those who contravene the District's ordinances regarding water waste. Run off, over spray, and watering during the daytime will provoke a written warning followed by escalating penalties that may lead to the eventual restriction or termination of water service who fail to correct a problem condition.

The following penalties are universal for contravening the water waste regulations in District ordinances, no matter what drought stage is in effect.

Warning:

For an initial offense, a written warning will be given. An enforcement policy brochure will be left at the customer's residence and followed up with a letter to confirm that the warning and brochure were received. The letter will reiterate the water waste observed, inform the customer that the period to correct the problem is 10 days from the date of the initial warning, and explain further penalties that will be imposed should the situation remain uncorrected. The customer will be phoned to confirm receipt of the letter, reaffirm the correction period and answer any questions.

First Penalty:

Should a customer receiving a warning fail to make corrections or repairs, a penalty of 25% of the affected month's total water bill will be levied. The customer will notified by mail of the fine, informed they have another 10 days to correct the problem, and advised they have the right to hearing in front of the District's General Manager if they dispute the penalty. A phone call will confirm receipt of the letter.

Second Penalty:

If the customer is not responsive to the first penalty and fails to make corrections by the end of the second 10-day time period, a penalty of 50% of the affected month's total water bill will be levied. The customer will notified by mail of the fine, informed they have another 10 days to correct the problem, and advised they have the right to hearing in front of the District's General Manager if they dispute the penalty. A phone call will confirm receipt of the letter.

Third Penalty:

If, at the end of this third 10-day period, the customer has still failed to make corrections or repairs, a penalty of 100% of the affected month's total water bill will be levied. At this time, the customer will again receive both a letter and phone call as under the "Third Penalty" above, but both will detail the District's resolve to proceed with the fourth penalty phase should corrections remain unmade. The customer will be given another ten days to comply.

Fourth Penalty:

Termination of water service.

LACSD Approves NEW BUDGET

Capital Improvements Funded

The District Board of Directors approved a 2003-2004 budget of $14.1 million dollars for the coming fiscal year at its meeting June 24th. The budget included cash flows of $7.9 million with the balance being $2.1 million for depreciation and $4.1 million for new capital expenditures for water and wastewater facilities.

Total revenues of $8.9 million included water and wastewater revenues of $4.1 and $4.7 million respectively as well as $100,000 from services to Deer Lodge Park. This reflected growth of approximately 2% over last year. The increase is attributable to both new customers (1%) and an annual rate increase of 1% that is currently in place.

Operating expenses for these same services, including depreciation, came in at almost $10 million, creating a $1.1 million shortfall not including capital improvements. In recent years, LACSD has been using reserves to fund capital improvements and cover shortfalls caused by increased operating expenses.

The presentation of the budget included a request for a rate increase to both residential and commercial customers of 7% for water, 4% for wastewater, and 3% for services to Deer Lodge Park. The request was based on significant increases to costs over the past five years since the nominal 1–1.5% annual increase was put in place by the Board.

"If you average it out over the past five years, costs have risen 9.9% a year," explained Finance Director Kathryn Cortner. "The greatest increases have come in the past two years as a result of insurance and fuel cost hikes. General liability and workers' compensation costs have almost doubled. Medical insurance is up 65% and many of our vendors have asked for 20% increases to cover increased energy costs. We are also experiencing higher pumping costs for the same reasons–over $300,000 more for energy alone over the past two years."

An average water customer (using 2500 cubic feet of water) will see a $6.44 increase on their bi-monthly bill. Wastewater customers will experience a $2.64 increase. "LACSD is striving to keep rates stable," continued Cortner. "We are constantly looking at ways to save money but there are certain increased costs that are unavoidable."

How Can I FIND OUT MORE about the Draft Report?

The draft report is available to any interested member of the public. Copies of the draft report are available for review at District offices or in other public locations. For a list call (909) 337-8555. The District will also provide, free of charge, a CD-ROM of the report upon request. Copies of the full report are available for the cost of reproduction.

CAN'T ATTEND A SCHEDULED MEETING?

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SPECIAL REPORT

QUESTIONS AND ANSWERS ABOUT THE FUTURE WATER SUPPLIES FOR OUR COMMUNITY

Lake Arrowhead Community Services District

SPECIAL REPORT

Water Demand and Supply Report

QUESTIONS AND ANSWERS ABOUT THE FUTURE WATER SUPPLIES FOR OUR COMMUNITY

What is the DRAFT WATER DEMAND AND SUPPLY REPORT?

The draft report addresses the water management and supply issues facing Lake Arrowhead, evaluates them, considers a variety of approaches and solutions, and provides an analysis of the benefits and draw backs, including costs, of each. This draft is only the first step in a public process.

The draft report was created in the context of a relatively new policy established by the District Board of Directors, a goal of reducing and ultimately eliminating reliance on Lake Arrowhead as the community's sole source of water. The District does not propose to stop using lake water outright. During wet and normal years the community would continue to rely on the lake for its water supply. This is because it is the least cost, best quality and most reliable source of water for the residents of Lake Arrowhead.

However, during periods of less than average rain and snowfall, the District would supply water from alternative sources. The District is seeking to achieve this goal through a cost-effective combined program of water demand management and developing supplemental water supplies.

Why Was the DRAFT WATER DEMAND AND SUPPLY REPORT Needed?

The current four-year drought, together with increased water use, has brought the importance of Lake Arrowhead into sharp focus in the Lake Arrowhead community. Not only is the lake the community's sole source of drinking water, the aesthetic and recreational values inherent in the lake are an important part of the quality of life for both residents and businesses.

A Water Master Plan Update prepared in April concluded that if water supply extractions remained at 2002 levels, approximately 3,150 acre-feet/year, Lake Arrowhead would be over drafted, meaning that more water would be extracted than is naturally replenished.

These conclusions, taken together with the impacts of the current drought on the environment and quality of life, moved the Board of Directors to set new goals for District water management policy. In addition, the District with the assistance of the Stakeholders Advisory Group (SAG) developed a list of potential water supply projects for further examination. Those projects led to this report.

The District Board commissioned the preparation of this report in order to understand the engineering feasibility, costs, available financing, environmental constraints, and effectiveness of the alternative water supply projects.

What Projects Were STUDIED?

Demand for water can be managed in three ways:
- conservation
- the use of recycled water
- achieving greater operational efficiency

The sources of supplemental water evaluated in the draft report are
- groundwater
- surface water supplied from Grass Valley Creek
- importing water through the State Water Project (SWP)

During the course of the investigation the number of alternatives evolved and continues to do so. Some that were considered at the beginning were abandoned and others were and continue to be added. The fifteen projects are described below.

Demand Management Programs

Water Conservation Phase I
Implementation of basic water conservation programs, education, kits, ordinances and enforcement, goal to reduce 25% of total use.

Water Conservation Phase II
Implementation of Phase I plus advanced water conservation programs, including hardware exchanges, water conservation credits

Recycled Water Program Phase I (Grass Valley Basin)
Substitution of non-potable tertiary treated water for lake water for irrigation use in the Grass Valley area

Recycled Water Program Phase II (District-wide)
Substitution of non-potable tertiary treated water for lake water for irrigation use to customers using 5+ acre-feet/year District-wide

Indirect Potable Reuse
Treating wastewater to above drinking water standards and returning it to the surface water system that feeds Lake Arrowhead

Treatment Plant Efficiency Program
Recovering the water currently used to backwash filters at the two water treatment plants and returning it to the water supply

Supplemental Water Supply Programs

Groundwater Development Phase I
Drilling two wells on Lake Arrowhead Country Club (LACC) property to supply the irrigation needs of the golf course and for drinking water supplies

Groundwater Development Phase II
Developing up to four more groundwater wells for drinking water supplies

Surface Water Development Phase I
(Grass Valley Creek)
Optimizing the conveyance system at Grass Valley Creek to ensure the District obtains its full entitlement of 50% or up to 800 acre-feet of the stream flow from the Creek

Surface Water Development Phase II (Las Flores Ranch)
Exchanging water with Las Flores Ranch for its 50% share of the water in Grass Valley Creek

Purchase and Exchange of Non-State Water Project (SWP) Water for SWP Water
Approach One: supplying well water to San Bernardino Valley Municipal Water District (MUNI) in exchange for a like amount of SWP water. This water would be delivered from Lake Silverwood to the District by CLAWA under one of three delivery options that govern the amount of water transferred. These options include deliveries of 565 acre-feet, 1,262 acre-feet, or 1,643 acre-feet and their respective necessary capital improvements.

Approach Two: Buying non-SWP water north of Lake Silverwood and conveying it to Lake Silverwood via the SWP This water would be delivered from Lake Silverwood to the District by CLAWA under one of three delivery options described above.

Purchase SWP Water from MUNI
Purchasing SWP water from MUNI. This water would be delivered from Lake Silverwood to the District by CLAWA under one of three delivery options that govern the amount of water transferred.

Annexation to MUNI
Annexing to MUNI in order to have the benefit of being part of a SWP Contractor and thereby be able to buy both an entitlement to and an annual supply of SWP water. This water would be delivered from Lake Silverwood to the District by CLAWA under one of three delivery options that govern the amount of water transferred.

Annexation to CLAWA
Annexing to CLAWA in order to have the benefit of being part of a SWP Contractor and thereby be able to buy both an entitlement to and an annual supply of SWP water. This water would be delivered from Lake Silverwood to the District by CLAWA under one of three delivery options that govern the amount of water transferred.

Miller Canyon Pipeline Project
Buying SWP water and constructing an intake facility and pipeline to convey the water from Lake Silverwood to the District. Purchase of an entitlement to SWP water would require annexation to CLAWA.

Twelve of the projects studied were found to be feasible and were fully evaluated. The projects that were not pursued for further study included Surface Water Development Phase I (Grass Valley Creek), Surface Water Development Phase II (Las Flores Ranch), and Annexation to MUNI. The reasons for these conclusions are fully elaborated in the Draft Report.

WHAT ACTION Has the District Taken to Date?

The District has already taken seven major actions to reduce demand on the lake and to develop supplemental water supplies.

One–
In December 2002 the District initiated exploratory meetings with the staff of the Crestline-Lake Arrowhead Water Agency (CLAWA). As a result of these meetings and discussions CLAWA has determined that under certain conditions, its water treatment and delivery system has sufficient capacity to deliver water from Lake Silverwood to the District's water distribution system. This option was not considered by SAG.

Two–
In January 2003 the District made a formal request to the Regional Water Quality Control Board (Regional Board) for a Basin Plan amendment that would allow for the implementation of a recycled water project. The current Basin Plan includes a general prohibition that does not allow the discharge of waters that are of a waste origin above the 3,200-foot elevation.

The Regional Board has been very responsive and is working diligently to facilitate the goal of the use of recycled water in the District's service area. The current timeline for presenting a proposed Basin Plan amendment to the Regional Board is this fall. Following action by the Regional Board, the proposed Basin Plan amendment would be subject to final review by the State Water Resource Control Board (State Board) and US Environmental Protection Agency.

Three–
In May of 2003 the District implemented a water management program. To reduce water use, a tiered rate structure and an extensive water conservation program have been implemented. At the time of publication of the draft report, water demand since the beginning of the program is approximately 20% below 2002 levels.

Four–
In June of 2003, the District addressed future water demand by instituting a new water resources fee of $2,650 per household. This new connection fee means that new demand created by development pays for the cost of the supplemental water required to serve it.

Five–
In July of 2003 the District brought two high production groundwater wells on-line to supplement water supplies.

Six–
In July 2003 the San Bernardino Valley Municipal Water District (MUNI) agreed that under certain conditions it would supply State Water Project (SWP) water to the District.

Seven–
At the time of the publication of this report, CLAWA and the District are entering into an agreement to supply SWP water to the District in recognition that approximately 300 homes are located in a portion of the District that is also within CLAWA's boundaries. Under the agreement District would pay regular rates and charges to CLAWA for delivery of approximately 62 acre-feet/year of SWP water, the average annual amount of water used by these homes over the past five years. The District has made financial arrangements for CLAWA to install this water connection as soon as possible.

How Were the Projects EVALUATED?

The method used to compare the projects and rank the projects was a weighted ranking system. Under this system, criteria are developed that affect the feasibility of the projects. In the case of both the water demand management and supplemental supply projects there are six criteria. They include: Cost, Water Quality, Implementation Schedule, Financing, Water Reliability, Risk.

Each project is then given a rank based on a scale of 1 through 5, with a 5 being "best."

The criteria are not of equal importance in evaluating the projects, however. For example, cost will be a very important criterion while reliability will be less important, because water can be stored in Lake Arrowhead. In order to compare the projects, equally it is necessary to weight the 1 through 5 rankings to allow the relative importance of the various criteria to be shown in the final evaluation. The weighting factor is a number between 1 and 10, with 10 being the "most important."

An example of how weighting is used is to imagine a project that is rated a 5 or "best" in the category of cost. Cost is the most important criterion, and ranked 10. In this case the project's score for cost would be 5 multiplied by 10 for a total of 50 points in the cost category.

The total points for the project under each criterion are then added to give a final score for each project alternative.

The CRITERIA weighting—

Cost (10) The magnitude of the project costs are significant as they are expected to affect customer bills and/or property taxes. Therefore, costs are considered very important and the weighting factor for costs will be 10.

Implementation Schedule (7) The speed at which a project can reduce the draw down of the lake is a significant benefit. The implementation schedule will therefore be rated fairly high, with a weighting factor of 7.

Water Reliability (5) Lake Arrowhead provides a large amount of storage and can provide a buffer for seasonal water supplies. Some projects have their own storage components. These factors reduce the critical nature of reliability. There are, however, advantages to dependability, especially during drought years. Water reliability will be rated at a medium level, with a weighting factor of 5.

Water Quality (3) The water quality for each alternative will meet all regulations and requirements for the intended use. Water quality will be rated at a lower level, with a weighting factor of 3.

Financing (7) The ability to finance the larger cost projects would be critical to their implementation, as the District will not be able to pay for them without financing. Therefore financing will be rated highly, with a weighting factor of 7.

Risk (8) Project Risk refers to potential impediments to project completion such as the failure to obtain environmental or institutional permits, gain public acceptance, or experience unanticipated increased costs. It is sometimes difficult to foresee risk and occasionally a project may reach an impasse only after significant resources have been expended. Project Risk is something that is unavoidable for many projects. Risk will be rated at a high level, with a weighting factor of 8.

How Did the Projects COMPARE?

This table shows how the projects compared when they were evaluated and ranked.
In addition, how much water they produce and the estimated cost of that water is included.

Ranking of Projects				Evaluation Criteria						
Rank	Project/Alternative	Production (acre-ft/yr)	Cost/AF	Cost	Schedule	Water Reliability	Water Quality	Finance	Risk	SCORE
	Weighting Factor (Scale–1 through 10)			10	7	5	3	7	8	
1	Treatment Plant Efficiency Improvements	150	$297	5	5	5	4	4	5	190
2	Current Water Conservation Phase I	785	$497	4	5	4	5	5	4	177
3	Water Conservation Phase II	115	$433	4	4	4	5	5	4	170
4	Groundwater Development Phase I Lake Arrowhead County Club Groundwater Project	180	$304	5	5	4	3	4	3	166
5	Recycled Water Program Phase I Grass Valley Basin	200	$1,014	3	4	5	5	4	3	150
6	Groundwater Development Phase II	180	$477	5	3	4	3	4	2	144
7	Recycled Water Program Phase II Landscape Irrigation in District Service Area	200	$1,573	2	3	5	5	4	3	133
8	Indirect Potable Water Reuse Project	1220	$1,429	3	1	5	4	3	1	103
9 (tied)	Import Water Alternative No. 1 Purchase "Non-State Water Project" Water and Exchange for State Water Project	565 1262 1643	$2,528 $2,544 $2,568	2	4	2	1	2	3	99
9 (tied)	Import Water Alternative No. 2 Purchase State Water Project Water from MUNI	565 1262 1643	$2,528 $2,544 $2,568	2	4	2	1	2	3	99
10	Import Water Alternative No. 4 District (Arrowhead Woods) Annexation to CLAWA	565 1262 1643	$7,563 $4,395 $3,821	1	3	2	1	2	1	66
11	Miller Canyon Pipeline Project	3000	$2,277	2	1	2	1	2	1	62

What Are the ENVIRONMENTAL CONSIDERATIONS?

Environmental documentation for the District water supply options would consist of either a California Environmental Quality Act (CEQA) Initial Study or a National Environmental Policy Act (NEPA) Environmental Assessment. For projects in which the stakeholders are both federal and state or local, a combined study would be prepared for review by all stakeholders and the public. These preliminary steps will determine whether a complete Environmental Impact Report (state) or Environmental Impact Study (national) is required. The difficulty of a project obtaining environmental approvals was considered in the evaluation and ranking of all the projects studied.

How Was the COST EVALUATED?

The engineering requirements for each project were explored and estimated capital and operating costs were developed. These estimated costs were amortized over the life of each project and were used to generate a cost comparison, the estimated cost per acre-foot, for each project expressed in 2003 dollars.

Were There OTHER CONSIDERATIONS?

In order to prepare and evaluate the alternatives presented in the draft report, it was also necessary to perform several analyses that required a benchmark lake elevation. These analyses included generating information about the relative costs of the projects, the amount of water they provide, how long they take to implement, and how often they would be used are needed.

For example, the fixed costs of a pipeline that is used only 50% of the time are the same the fixed costs for a pipeline that is used 100% of the time. As a result, the proportional cost of the water delivered is greater because the cost of building the project is spread over a smaller amount of delivered water.

The benchmark used for the purposes of preparing the draft report started with the existing definition of a First Stage Drought, which begins if lake levels fall to an elevation of 5,100 feet. How often any given project would be used has been calculated based on that level, 5,100 feet, plus the amount that the lake loses to evaporation each year or four feet, for a benchmark elevation of approximately 5,104 feet. This benchmark is not a District policy but merely an assumption based on avoidance of a drought condition over a one-year period.

Over the past thirty-five years, lake levels have been at or below this level 50% of the time. For the purposes of the draft report, supply projects were then assumed to be "turned on" or operating anytime the lake level fell below the benchmark elevation. This resulted in an operating frequency of 50% over the lifespan of facilities constructed for any given project. A 50% frequency was used for all supplemental supply projects except for the groundwater projects, where the standards for the efficient operation of wells require that they be used at least 75% of the time.

How Would the DISTRICT PAY for the Projects?

As a Public Agency, the District has a number of project financing options available. It can use revenues and reserves on a Pay-As-You-Go basis or it can borrow using any or all of the several methods available to California water agencies. As a result of a pending challenge of the District's rights to Lake Arrowhead water before the State Water Resources Control Board (State Board), however, the District's ability to borrow may be severely restricted until the challenge is resolved..

Different methods of funding may be appropriate for different projects. For example, cash funding may be the best option for water conservation programs. Other projects, like imported water projects, require substantial capital expenditure, often necessitating more advanced methods of financing.

In addition, the funding and financing methods have legal and practical limitations. Some methods may only be used for capital expenditures while others can be used to pay costs such as water purchases, the cost of required electricity, or operations and maintenance costs.

Possible funding and financing methods include:

Pay-As-You-Go (Cash Basis) Funding
- With Existing Cash Reserves
- With Revenues From Rate Increases
- With Voted Parcel Assessments Collected on The County Assessor's rolls

Public Debt Financing
- Assessment District Bonds
- Revenue-Secured Borrowings (Bonds or Certificates of Participation)
- General Obligation Bonds
- Mello-Roos Community Facilities District Bonds
- Grants and Loans
- Safe Drinking Water Act (Proposition 13) Bonds
- Proposition 50 Grant funds
- USDA loans
- Water and Wastewater State Revolving Fund Loans
- Water Conservation Grants and Loans

The difficulty of a project obtaining financing was considered in the evaluation and ranking of all the projects studied.

What Were the RECOMMENDATIONS of the Report?

Once the projects were ranked, the next step was to review them for how they could be combined in the most cost-effective way to meet the District's goal of reducing or eliminating dependence on Lake Arrowhead as the sole source of water.

The draft report found that the District would require not only demand management but also supplemental water supply projects if it wished to completely eliminate the draft on Lake Arrowhead as it was experienced in 2002, approximately 3,150 acre-feet.

While the estimated cost to significantly reduce reliance on Lake Arrowhead is reasonable, the cost to completely eliminate the use of Lake Arrowhead as a source of water supply is substantial.

As it is unlikely that the District would be able to undertake all projects necessary to meet this goal simultaneously, project phasing was part of the recommendations.

With these factors in mind, the following milestones have been developed as a way of implementing projects that reduce the draft on the lake in a cost-effective and measured way.

Milestone 1
The Milestone 1 projects received rankings of 1, 2,3, and 4 in the weighted evaluation above. They are able to be implemented within the next year and would result in a reduction of the draft on the lake by 1,230 acre-feet or 39%.

The cost of these projects is low when compared to other project alternatives, ranging from an estimated $297 to $497 per acre-foot of water. During the higher cost initial start-up years, implementing these projects would bring the average cost of water to about $502 per acre-foot. This amount compares favorably to a raw water cost of about $411 for SWP water, an amount that covers only the purchase of water and not the charges to deliver and treat it. The impacts to customer bills would be $13.29 per bi-monthly bill or $6.65 per month.

Milestone 2
The Milestone 2 projects are ranked 5 and 6 and have a timeline of up to five years and will reduce the draft on the lake a further 380 acre-feet for a total reduction of 1,610 acre-feet or 52%.

The estimated cost of Milestone 2 projects ranges from $477 to $1,014 per acre-foot. Implementing these projects would bring the average cost for all water to $835 per acre-foot in the early start up years, still less than the cost to buy, treat and deliver SWP water. The cost impacts to customer bills would be $29.07 per bi-monthly bill or $14.54 per month.

Milestone 3
The Milestone 3 project includes either of the following alternatives ranked with tying scores in the evaluation phase. The scores for Purchase and Exchange of Non-SWP Water for SWP Water and Purchase SWP Water from MUNI alternatives were the same for costs, risks, and timelines. These alternatives have been rolled together under the title SWP Purchase/Exchange.

The cost of implementing the Milestone 3 project is considerable. It is a matter for the District Board to decide if eliminating the last 48% of demand on the lake is worth raising the cost of water to such a level. The impact on a customer's bi-monthly bill would be $92.40 or $46.20 per month.

The Milestone 3 project might also require public financing. The District's ability to issue bonds, as stated previously, is hampered until the complaint before the State Board is resolved.

The Milestone 3 project is the remaining project of the projects ranked 7 through 12 that delivers the most water at the lowest risk and on the fastest schedule, even though it is ranked number 9.

While there are two demand management programs that score higher, Indirect Potable Reuse, ranked 8, has both higher risk and would take longer and Recycled Water II, ranked 7, has equal risk and also would take longer.

The Milestone 3 project is ranked higher than both of the other imported water projects, Annexation to CLAWA or the Miller Canyon Pipeline.

Rank	MILESTONE 1 PROJECTS	AF/Y	Cost/AF	Bimonthly Bill Impact
1	Treatment Plant Efficiency Improvements	150	$297	$1.53
2	Current Water Conservation Phase I	785	$497	$9.11
3	Water Conservation Phase II	115	$433	$0.56
4	Groundwater Development Phase I	180	$304	$2.09
	TOTAL	**1,230**		**$13.29**
	TOTAL DRAFT REDUCED	**1,230 (39%)**		**$13.29**

Rank	MILESTONE 2 PROJECTS	AF/Y	Cost/AF	Bimonthly Bill Impact
5	Recycled Water Program Phase I	200	$477	$12.25
6	Groundwater Development Phase II	180	$1,014	$3.53
	TOTAL	**380**		**$15.78**
	TOTAL DRAFT REDUCED	**1,610 (52%)**		**$29.07**

Rank	MILESTONE 3 PROJECTS	AF/Y	Cost/AF	Bimonthly Bill Impact
9	SWP Purchase/Exchange Option Three (1,632 acre-feet available)	1,540	$2,568	$92.40
	TOTAL	**1,540**		**$92.40**
	TOTAL DRAFT REDUCED	**3,150 (100%)**		**$121.47**

Alternatives to Milestone 3
It would be possible, however, to substitute both Recycled Water Phase II and the Indirect Potable Reuse projects for a SWP Purchase/Exchange project. Of the two, Recycled Water Phase II would be the least risky and fastest to implement, factors that cause it to significantly outrank Indirect Potable Reuse despite an estimated higher cost.

A decision to eliminate SWP Purchase/Exchange would mean that the District puts no plan to obtain imported water in place, however, and implies that all future needs will be met from supplies that exist today either in the lake or from groundwater.

It should be remembered that implementation of any of these three projects—SWP Purchase/Exchange, Recycled Water Phase II, and Indirect Potable Reuse—does not preclude pursuing the others, and that the District could decide, if demand grows over time, to do all of them. This is not the case, however, with the imported water projects. Milestone 3—SWP Purchase/Exchange, is mutually exclusive with the remaining two projects.

Why is WATER MEASURED in Acre-feet?

An acre-foot is a convenient way of measuring large amounts of water. It is based on the amount of water required to cover one acre of land with water one foot deep. In everyday language, it is 325,900 gallons.

When water agencies talk about the water they need to supply customers, they use acre-feet in order to avoid numbers in the billions and trillions. For example, the 2002 draft on Lake Arrowhead was about 3,150 acre-feet or 1,026,585,000 gallons.

In Lake Arrowhead, an average customer household uses about one half an acre-foot per year of water.

What Happens NEXT?

The information in the report will be presented to the Lake Arrowhead Community Services District (District) Board of Directors and to Lake Arrowhead residents for review and comment. During this process, the District welcomes comments and input from members of the community and other agencies, which will no doubt allow us to further improve our planning and refine our alternatives.

SAG will be reconvened and asked to review the Water Demand and Supply Report with their constituents. Participation in SAG is open to any interested member of the public.

The report, plus this public comment, will constitute the basis on which the District Board of Directors will make decisions regarding approaches and solutions and the costs to be incurred in implementing such projects.

The District Board will hold a public workshop and three public Board meetings to review the alternatives and recommendations in the draft report and to obtain both comments and suggestions. The District is also providing all customers with a written summary of the draft report and will publish a summary in the Mountain News.

The schedule of meetings for this outreach is:

August 26
Draft Report presented to Board

August 28
Public Workshop, 6:30p.m.
Lake Arrowhead Resort

August 28–September 23
Ongoing meetings with SAG and other community groups

September 23
Deadline for public comments

October 14
Presentation of Final Report to District Board for action

Lake Arrowhead Community Services District

CUSTOMER REPORT

TIME TO WINTERIZE Your Mountain Home

Don't let cold weather catch you unprepared. Every winter, many homeowners face the expense and inconvenience of frozen water pipes. But, you can cross that off your list of winter worries by taking a few simple precautions.

1. Disconnect and drain outdoor hoses. Detaching the hose allows water to drain from the pipe. Otherwise, a single hard, overnight freeze can burst either the faucet or the pipe it's connected to.
2. Insulate pipes or faucets in unheated areas. If you have pipelines in an unheated garage or cold crawl space under the house, wrap the water pipes before temperatures plummet. Hardware or building supply stores will have good pipe wrapping materials available.
3. Seal off access doors, air vents and cracks. Repair broken basement windows. Winter winds whistling through overlooked openings can quickly freeze exposed water pipes. But don't plug air vents your furnace or water heater needs for good combustion.
4. Find the master shutoff. It may be near the water heater or the washing machine. More likely it's where the water line comes into your house from the street. If a pipe bursts anywhere in the house—kitchen, bath, basement or crawl space—this valve turns it off. So find it now and paint it a bright color or hang a tag on it. Be sure everyone in the family knows where it is and what it does.

Vacation Home Owners—
TURN OFF YOUR WATER

Lake Arrowhead homes have two shut off valves–one near the meter and one for the house. If you are going to be away from your mountain home for more than a day or two, turn off both valves then open your indoor taps until all the water drains out of the pipes. Then close the taps and leave both valves turned off. This way your water system will both be turned off and drained.

What if it's too late? What if you wake up to find the pipes are frozen anyway?
During an extended cold spell, it could happen despite precautions. Do you have the plumber's telephone number handy? Write it down now before you need it in an emergency.

If you think you know where the freeze-up occurred and want to try thawing it yourself, do not under any circumstances use a torch with an open flame! The whole house could catch fire. Also, overheating a single spot can burst the pipe. Heating a soldered joint could allow it to leak or come completely apart.

The easiest tool is probably a hair dryer with a low heat setting. Wave the warm air back and forth along the pipe, not on one spot. If you don't have a hair dryer, you can wrap the frozen section with rags or towels and pour hot water over them. It's messy, but it works.

Be careful because the pipe may already be broken. It's not leaking because the water is frozen. But when you thaw it out, water could come gushing out. Be ready to run for the master shutoff valve if necessary. The main thing is to take precautions before winter sets in.

LACSD Offices are Conveniently Located in Lake Arrowhead Village —

Call us at (909) 337-8555 for more information on Erosion Control and Landscaping for Defensible Space or look online at the ***Landscape Guide for Mountain Homes*** at **www.lakearrowheadcsd.com.**

Lake Arrowhead Community
Services District
P.O. Box 789
Lake Arrowhead, CA 92352

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see inside for more
EROSION CONTROL INFORMATION

Prevent Erosion NOW

While winter rains bring relief from drought conditions and this fall's fires, they also carry potential problems. The Lake Arrowhead watershed did not burn during the recent fires but many homeowners fearful of future fires are cleaning up their property in ways that could affect water quality and create the conditions for mudslides.

The removal of dead trees has created a great deal of unprotected hillside with no vegetation to hold the soil in place. These unprotected hillsides are likely targets for severe erosion problems.

In addition, many mountain community homes have steep slope areas. Proper landscaping with plants suited to the condition of the slope and the direction it faces can keep slopes from sliding or eroding.

If you have water running off slopes when you water or when it rains—you have an erosion problem. Erosion is easy to control and critical to the local environment.

Except for a 5-foot clearance around structures, do not strip soils of all surface cover as a part of cleanup after cutting trees or clearing brush. Mountain area properties left in their natural state have a covering of pine needles and leaves. Leave two inches of this covering and the dark layer of decomposing needles and leaves, called duff. If you have bare soil, mulch with a layer of up to two inches of wood or bark chips. This two inch layer helps keep moisture in the soil and will NOT ADD TO ANY FIRE RISK.

Using chipped bark or wood from trees killed by bark beetles as mulch will not cause the infestation to spread or provide a habitat for beetles on your property.

LACSD Maintains Service 24/7 THROUGHOUT FIRE

The Lake Arrowhead Community Services District (LACSD) was 100% operational through the entire period of the Old Fire. Not only did LACSD maintain fireflows to all hydrants within its service area, a skeleton crew of a dozen senior personnel worked around the clock to ensure water and sewer services continued to be operational. Water quality was maintained throughout the emergency and the water supply is and continues to be safe.

Throughout the emergency LACSD maintained 8.2 million gallons in storage and ran 50 generators using both natural gas and 500 gallons of diesel per day to maintain its capacity to produce 7 million gallons per day for firefighting.

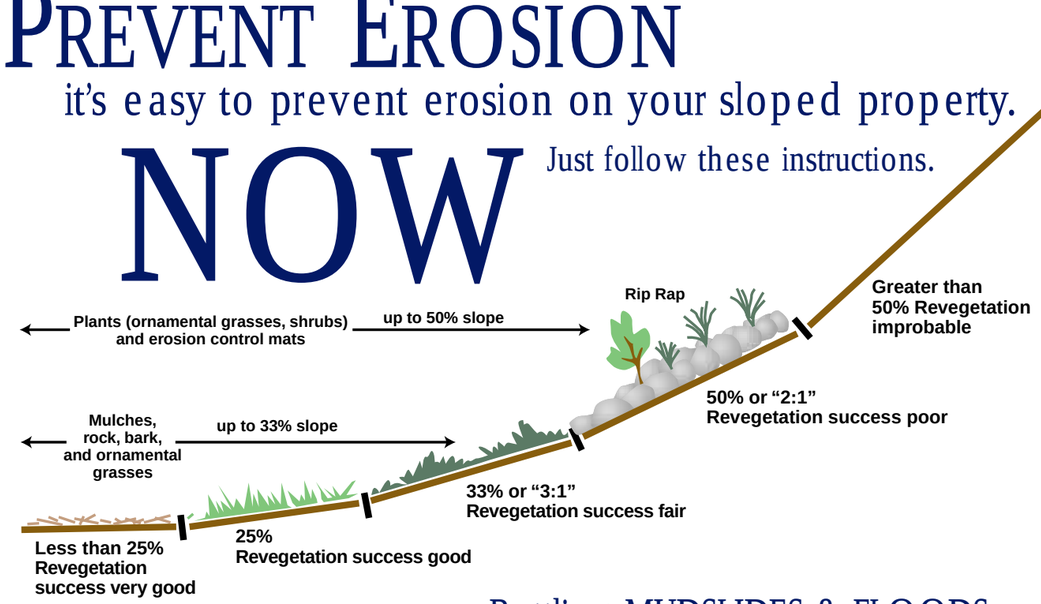
LACSD contributed to the emergency effort in as many ways as it could. "In addition to water available from our system, the community was able to supply firefighting helicopters from the lake itself," commented Marvin Shaw, LACSD General Manager. Finally, despite the disaster, LACSD continued to collect water samples for water quality testing and ensured that the water supply was not only available but that it continued to be safe.

Prevent Erosion

it's easy to prevent erosion on your sloped property.

NOW

Just follow these instructions.



Don't Forget to Plan for Erosion Control ALL YEAR ROUND

Preventing runoff during the spring and summer is equally as important as preventing erosion. A major source of dry season pollution of lakes and streams near urban areas is runoff from landscape watering. This water carries oil and gasoline residue from roadways, fertilizers, pesticides, and other undesirable material as it flows away from our homes and drains into streams and lakes.

Irrigating on slopes can be tricky. Emitters are preferred but require monthly inspections to detect clogging. The freeze/thaw cycle at higher elevations can also damage tubing. Bubblers require less maintenance than drip emitters and may be highly effective. New plants should have earthen dams or watering basins around them to capture the water they receive, train them to have deep roots and prevent runoff.

Remember these simple guidelines:

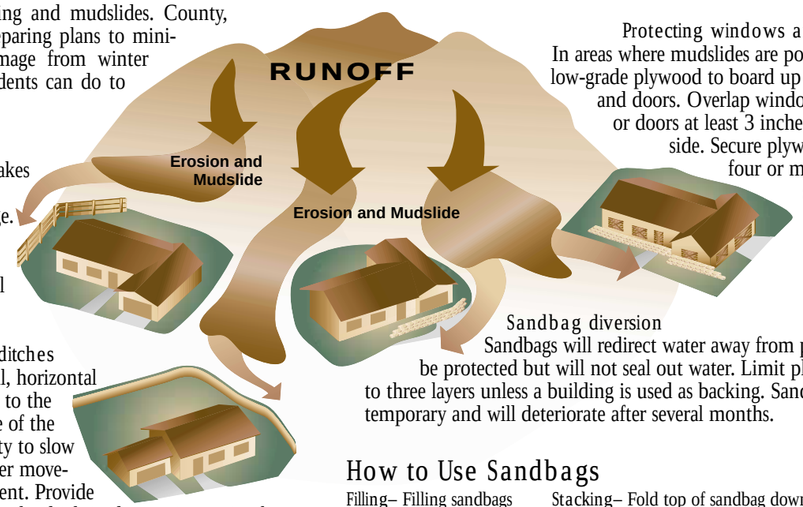
- Train your plants to develop deep roots by watering thoroughly but less often
- Water only early in the morning or late at night
- Avoid watering on windy days
- Adjust sprinklers to water plants and not pavement or driveways
- Water your lawn only when it needs it
- Turn off your sprinklers when it rains
- Fix broken sprinklers
- Fix hoses, coupling, valves and spigots that leak

REMEMBER IT'S WINTER – Your irrigation system should be turned off. See back page for How to Winterize

Battling MUDSLIDES & FLOODS

Recent fires have left behind scorched, exposed hillsides and slopes, setting the stage for floods, mud and debris flows. Although the Lake Arrowhead watershed did not burn, many property owners have cut down dead or dying trees and have cleared their properties of brush. In some cases, they have gone too far and removed all mulch instead of leaving two inches of pine needles or leaves and the layer of protective decomposed material below the needles and leaves, called duff.

This condition can cause flooding and mudslides. County, state and federal officials are preparing plans to minimize injuries and property damage from winter rains. Here are some things residents can do to protect their homes



Wooden deflector walls
Use low-grade lumber. Drive stakes to at least half their length into the ground for proper anchorage. Place deflectors on solid, level soil to prevent erosion. Earth packed behind the deflector will make it stronger.

Diversion ditches
Dig a small, horizontal ditch close to the upper edge of the property to slow water movement. Provide for the ditch to drain into a natural watercourse, street pavement or a well-vegetated area.

Protecting windows and doors
In areas where mudslides are possible use low-grade plywood to board up windows and doors. Overlap windows, vents or doors at least 3 inches on each side. Secure plywood with four or more nails, screws or bolts.

Sandbag diversion
Sandbags will redirect water away from property to be protected but will not seal out water. Limit placement to three layers unless a building is used as backing. Sandbags are temporary and will deteriorate after several months.

How to Use Sandbags

Filling– Filling sandbags is best done with two people. Fill half full with sand if available or local soil will work too.

Stacking– Fold top of sandbag down and rest the bag on its top on the stack. Top should be facing upstream. Stamp the bag into place. Complete each layer before starting the next layer. Stagger the layers. Stack no more than three layers high unless they are against a building or stacked pyramid-style.

Sandbags are available from the San Bernardino County Fire Department at:

301 South Highway 173 • (909) 337-8586
27176 Peninsula Drive • (909) 337-8586

What Kind of SLOPES Do You Have?

Take a look at your slopes. How steep they are will tell you what will work.

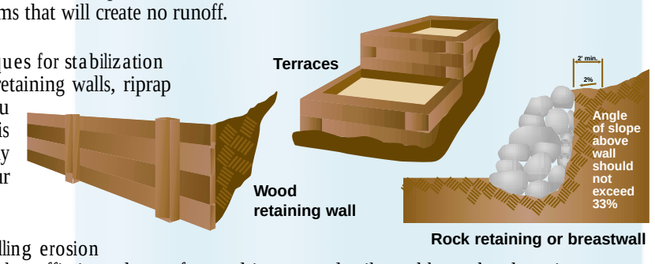
Moderate slopes (less than 33%) have a good chance of success at controlling runoff using plant materials and mulch. Cover bare soils with mulch of bark chips, pine needles, wood chips, and even stones or river rock.

If you choose to landscape, select plants for slope stabilization and use bubblers or drip emitters for irrigation. When watering season starts again, watch the length of time you water and the amount of water delivered. Make sure the plants get only what will soak in.

Slopes between 33% and 50% require special care
Plant slopes that are this steep but be aware you may need to use an erosion control blanket or mats of coconut fiber or jute netting to hold slopes in place until plants can become established.

Once established, the roots of the plants will knit together to hold soils in place and their limbs, leaves and branches will diffuse the force of rain and wind. These steep slopes require irrigation systems that will create no runoff.

Slopes over 50% will require structures or special techniques for stabilization
Wood retaining walls, interlocking concrete blocks, rock retaining walls, riprap (loose rock) areas, and terracing are among the solutions you can choose from. If you choose wood, make sure the wood is treated with a wood preservative to prevent rotting. This may require approval by government agencies, please contact your local Building and Safety office.



Paved driveways are often an important factor in controlling erosion
Paving prevents erosion resulting from snow removal, vehicle traffic in and out of your driveway and soils unable to absorb moisture because they have been compacted by vehicle weight. Small ditches or swales that capture runoff and return precipitation to your landscape should border your driveway.

Choose plants for slope stabilization
Fortunately, there are some very good plants that can grow on steep slopes and stabilize them. Shrubs include bearberry (Arctostaphylos uva-ursi), western redbud (Cercis occidentalis), cotoneaster (Cotoneaster), rockrose (Cistus), juniper (Juniperus), creeping mahonia (Mahonia repens), pyracantha (Pyracantha), rosemary (Rosemarinus spp), and lavender cotton (Santolina). Groundcovers include snow in summer (Cerastium tomentosum), Japanese honeysuckle (Lonicera japonica), Lady Bank's rose (Rosa banksiae), and vinca (Vinca).

DO'S AND DON'TS

Do:

- Try to direct debris flows away from your property.
- Clear a path for debris.
- Place protective measures to divert debris, not dam it.
- Board up windows facing the flow. Work with your neighbors.

Don't:

- Under-rate the power of debris flows.
- Wait until storms arrive to make a plan.
- Try to confine the flows more than is necessary.

Materials
The materials needed are readily available and inexpensive and can be installed with normal household tools: sandbags, sand, lumber and plywood.

Attention Lake Arrowhead Residents— You Can Make A Difference

WHY SAVE WATER?

The world that we live in today is a world where an ever-increasing population places larger and larger demands on the earth's finite resources. The manner in which we use these resources, from the fuels that heat our homes and power our cars to the water we need to sustain life will determine the kind of world we leave to our children and to future generations.

Water is a precious commodity in southern California. More than 70 percent of California's total precipitation falls in the northern half of the state. Eighty percent of California's water demand is in the south. Southern California largely depends on water imported from northern California and from the Colorado River.

In the San Bernardino Mountains, our water supply is extremely limited. The Lake Arrowhead community receives all of its water from Lake Arrowhead. Other mountain communities depend on various sources of supply including groundwater wells and imported water. These sources can also be severely affected by drought and the imported water supply has become increasingly constrained as a result of demands by other regions. Currently, all mountain communities are facing water shortages that make water conservation increasingly important.

Over demands on local water resources have caused many residents to realize that preservation of our mountain environment and quality of life depends substantially on how we manage our limited water resources.

What is the Condition of Lake Arrowhead?

On March 25, 2003 the District Board of Directors reaffirmed a Third Stage Drought. Under LACSD ordinances, once a Third Stage Drought is declared, all restrictions that are implemented are kept in place until the lake has recovered to First Stage levels.

When the lake is full it holds approximately 47,000 acre-feet of water. To translate this into English, an acre-foot is approximately 326,000 gallons. Within the community, an average household uses one-half acre-foot or about 163,000 gallons of water per year, or 450 gallons of water per day.

When the Lake is full, its elevation is 5,106.70 feet above sea level. Last summer, the District entered the summer season at 5,095.55, or more than 11 feet below full. At the end of last summer, the lake level had fallen nine more feet to 5,086.55 feet, or a Stage Three Drought as defined by the District.

Conservation is the Best Short Term Solution

Water conservation is the most immediate, least expensive, and most environmentally sound action available. The goal for this year is to reduce water use by 25%, or 750 acre-feet of water. The conservation program includes providing customers with information and tools to conserve water. A basic brochure includes a card that customers may return to obtain a water conservation kit containing indoor and outdoor conserving fixtures from an auto shut off hose nozzle to low flow showerhead and tap aerators.

The District is also publishing a "Landscape Guide for Mountain Homes," tailored to local climate and soil conditions and giving information about retrofitting home landscapes to use less water. It also discusses how home landscaping can reduce wildfire risk to dwellings and structures.

LACSD is Seeking Long Term Answers

The most important step in resolving the crisis is a new District policy to reduce and ultimately eliminate reliance on the lake as the District's sole source of water. This is not a proposal to stop using lake water outright as Lake Arrowhead water is the community's lowest cost, best quality and most reliable supply. However, during drought years, the District's goal is to supply water from alternative sources.

The first new supply project is the drilling of two new wells in partnership with the Lake Arrowhead Country Club. A local well-drilling company, Hatrich Enterprises was the successful bidder and drilling is underway with estimates of 150 to 300 acre-feet of new water supply from the project.

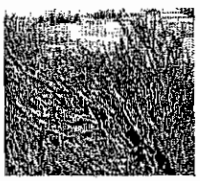
The second project is also a partnership with the Country Club. Historically, golf course irrigation has used just under 200 acre-feet of water per year, an impact of four inches to Lake Arrowhead. Engineering design and environmental studies are underway to enable the District to replace this irrigation water with treated waste water resulting in a net benefit of as much as 200 acre-feet per year.

The third project is a call for proposals from private parties and public agencies to supply new sources of water to the District. The deadline for these proposals is May 30th.

Later this year, the District will present plans that will chart a course for the future condition of the lake. The capital facilities and financing plan will evaluate the resources the District will be able to bring to bear on resolving this issue. The Engineering and Feasibility Study will evaluate 12 water supply alternatives the District has identified for feasibility, cost and timing.

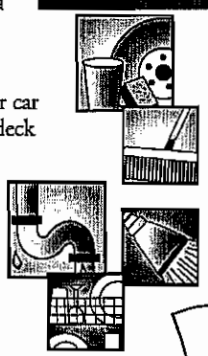
The alternatives include additional groundwater, additional surface water from Grass Valley Creek, imported water to be delivered through the Crestline-Lake Arrowhead Water Agency, construction of a new pipeline, and the use of treated wastewater for landscaping use.

This public process will engage all customers and particularly organizations with which the District has established ongoing communications: the Arrowhead Lake Association, Arrowhead Woods Architectural Committee, Chamber of Commerce, Arrowhead Community Task Force, Lake Arrowhead Country Club, and Save our Forest Association among others. Community and customer support is essential to any decision to pay the cost of these alternatives. When public review and comment is completed, the District Board will consider the available information and public input and will make its best determination which programs and capital improvement projects to implement. If, with community support, the Board goes forward, then the District will be able to achieve the goal of less reliance on Lake Arrowhead as its sole source of water supply.



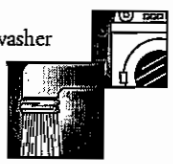
OUTDOORS

1. Turn the hose off when you wash your car
2. Use a broom to clean your driveway, deck or patio
3. Avoid watering on windy days
4. Adjust sprinklers to water plants only
5. Water only when your plants need it
6. Maintain your watering system



INDOORS

7. Fix leaks and drips
8. Take shorter showers
9. Fill your dishwasher or clothes washer before you run it
10. Don't let the tap run when you use a sink



The Lake Arrowhead Community Services District is committed to preserving Lake Arrowhead's quality of life, mountain lifestyle, and local environment by reducing our use of water from Lake Arrowhead.

Lake Arrowhead

Community Services District

WHAT ARE THE RULES?

Basic Rules

Lake Arrowhead Community Services District is taking a pro-active stance and a leadership role in the goal to eliminate water waste in the community. It is the hope of the District that customers will join with us, voluntarily and actively, to do their part to eliminate water waste. There is, however, an enforcement component for those who contravene the District's ordinances regarding water waste. Run off, over spray, and daytime watering will provoke a written warning followed by escalating penalties that may lead to the eventual restriction or termination of water service who fail to correct a problem condition.

The Lake Arrowhead Community Services District has water use rules that apply at all times and are designed to minimize water waste. These include:

- For other than Public Lands, irrigation of all landscapes, plants, trees and land should be done between the hours of 6:00 p.m. and 8:00 a.m., with the exception of newly seeded plants and other new plantings, which may be watered intermittently until rooting is established.
- Public Use Lands including parks, schools and golf courses should be irrigated only between the hours of 10:00 p.m. and 5:00 a.m.
- Lawns, trees, shrubs and other landscaping should not be watered beyond what is needed for natural growth and to sustain life. Water should not be permitted to pool or collect to the point of run-off. New irrigation systems for both residential and commercial uses should be installed with the proper irrigation system appropriate to the area and terrain. Any planting within the drip line of any tree should be compatible with the proper needs of the tree. Plantings should be grouped according to their water needs.
- The use of water for any purpose should not result in flooding, run-off in gutters, driveways, streets or adjacent lands.
- Sidewalks, walkways, driveways, parking areas, patios, porches, verandas, or any like areas should not be washed off with water from hoses or by any other means for dust control or any decorative reasons.
- Water lines, faucets and other facilities should be maintained so they do not leak water.
- Customers should refrain from irrigating landscapes on Saturdays and Sundays between Memorial Day and Labor Day, except in the case of newly seeded plants and other new plantings, which may be watered intermittently until rooting is established.

No turf grass shall be planted (seed or sod) until the lake level has returned to at least a First Stage Drought.

Third Stage Drought Rules

- Watering shall be reduced to three times a week at normal cycles.
- Landscaping for new and existing homes will be allowed only under the following circumstances:
  - low volume irrigation is implemented (.75 inches or three gallons per minute at the spray head)
  - new landscaping is to replace trees and shrubs killed by infestation and drought
  - landscaping is to replace existing landscaping with water-efficient or drought resistant vegetation.
  - new landscaping is to comply with erosion and sedimentation control set forth by San Bernardino County Building and Safety
  - landscaping is being created to establish defensible space according to standards established by local fire agencies

LACSD Customers

Want a Home Water Conservation Kit or Landscape Guide for Mountain Homes?

Call 337-8555

Ad 2003

Homes and Businesses Weigh in for Water Savings

LAKE ARROWHEAD'S HOME AND BUSINESS OWNERS HAVE PROVEN THAT WATER CONSERVATION CAN MAKE A REAL DIFFERENCE. FROM SMALL TO LARGE, THESE FOUR HOMES AND FOUR BUSINESSES HAVE SAVED A TOTAL OF ALMOST 7 MILLION GALLONS OF WATER, MORE THAN 21 ACRE-FEET.

Lake Arrowhead Village has made a 23% reduction in use this year over 2002.

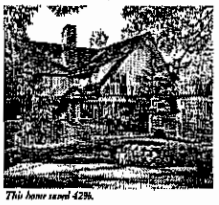
HOMEOWNERS TAKE THE CHALLENGE

"This was our very first survey," explains LACSD Water Conservation Coordinator Marc Lippert. "We gave the homeowner a projection of their water bills for the next five years and they were shocked. They decided they would rather retrofit their property to save water and make an investment in their home than simply waste both water and money."

This home saved 39%.

This Cedar Ridge home was retrofitted with water conserving plants and irrigation systems. The results are proof that their investment is paying off. Water use for the spring and summer was cut by 39%, or more than 279,000 gallons. "Their investment is already beginning to pay itself off," continued Lippert. Three years from now they will have recovered what they spent on the complete retrofit and begin to realize a savings bonus. Meanwhile, they've increased the value of their home."

"Many residents don't realize that their landscapes can do with a lot less water," explained Lippert. Two examples resulted in savings of 42% and 38% respectively. "We did audits on both these homes," said Lippert. "The audits showed the homeowners how by changing their watering schedules, cutting back in some areas, replacing worn sprinklers and adjusting for overspray and stopping leaks, they could make real savings."



This home saved 42%.

Not only have these homeowners cut their bills with almost no outlay of cash, they have also helped the community by leaving 190,740 gallons in the lake for future use.

Audits are an important part of LACSD's outreach to the community. Water conservation staff will survey your home, indoors and outdoors for ways you can save. "We check for leaks, make sure the toilet tanks are working properly, retrofit showerheads and faucets inside. When we move outside, we look at a number of factors. First, is the landscape getting an appropriate amount of water?"

This home saved 38%.

In the case of one of the largest home landscapes in the LACSD service area, the solution was simple. Cut the water for landscaping in half. "Sometimes the services people use to maintain their property are not paying attention to the irrigation clocks. This landscape was being over watered to the point where it was a problem for the health of some of the plants. We reset the clocks right then and there and they've saved 38%."

The landscape audits are free and LACSD has completed 82 so far this season. "We expect to keep doing audits until it snows," concluded Lippert. "We want as many people as possible to be ready for next spring." The total water saved by these homes is 9 million gallons.

LACSD is also offering a free landscaping workshop for those residents who'd like to plan their own water conserving landscape. Tom Ash, a consultant to water agencies throughout the southwestern U.S., will lead this hands on look at what you can do in your own back yard.

The first session to be held November 1st, will explain how to plan a landscape for your home and property. The second, on November 15th, will give participants all the information they need to do the installation. Plant selection, irrigation systems, and making a scale plan will all be covered.

"My grass has been dead for two years," added LACSD General Manager Marvin Shaw. "This workshop will help me make a plan so I can install my new landscape next spring."

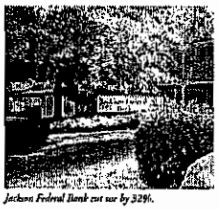
BUSINESS HAS A BOTTOM-LINE MOTIVATION

"We couldn't afford not to do it," explains Lake Arrowhead Village Property Manager Laurie McDaniel. "Our landscape contractor really bent over backwards to help us achieve these savings and keep of property looking great." The Village changed sprinkler heads, replaced high water use groundcovers with low water use plantings and bark mulch. "We've proved that if you are a little bit creative, you can still have a beautiful landscape and use less water." The savings for the season are 36%. "We love the look and we love the money we've saved even more," she concluded. The Village's savings add up to almost 1 million gallons of water not used this summer.

The Resort has saved 23%.

One of the largest commercial customers, the Lake Arrowhead Resort has made a 23% reduction in use this year over 2002. It's a big difference, more than 1.6 million gallons. The program includes retrofitting toilets with tank banks as well a comprehensive year long toilet tank leak detection program where leaking toilets are replaced with low flush fixtures. All showerheads have also been replaced with 187 1.5 gallon per minute fixtures. The Resort also has a "Be Green" program. Under the program, Resort restaurants serve water only upon request and guests are asked to request changes of linens instead of expecting daily automatic changes.

Outdoor irrigation has been severely cut back, too. "Public and staff awareness has been a big factor. They are our eyes and ears for identifying leaking toilets and dripping faucets. There's also heightened awareness in the kitchen," explained Resort Rooms Manager Hans Rasmussen. "We're not as far as we would like to be but we're definitely going down the right road. LACSD been very helpful and supportive." What's ahead at the Resort? "Right now LACSD is helping us look into using gray water from the laundry for irrigation."



Jackson Federal Bank cut use by 32%.

Jackson Federal Bank in Blue Jay is another LACSD customer whose landscape watering costs have dropped. The bank cut use by 32%. "We did several things to achieve the savings. First of all we changed our sprinkler heads to low flow and instead of planting color beds this year, we used bark mulch," explained Manager Pat Pearson. The difference is more than 60,000 gallons.

The Saddleback Inn and Raven's Nest Restaurant have participated in LACSD's commercial customer programs. "We helped them with a survey earlier in the year," added Marc Lippert. "We installed pre-rinse valves in the restaurant for dishwashing and they participate in the 'water only on request' program." Inn owners also installed low flow showers. Use is down 19%, almost 170,000 gallons.

The Saddleback Inn and Raven's Nest have saved 19%.

Recently LACSD water conservation staff assisted Camp Commerce complete a retrofit of all units with showerhead and faucet aerators in all bathrooms and faucet aerators in all kitchens. Another large commercial customer, the UCLA Conference Center is replacing fixtures and will complete a landscape survey looking forward to greater savings next summer.

Lake Arrowhead

Community Services District

DISTRICT-WIDE PROGRAM WORKS

Everybody has been doing their part and conservation is over 100 million gallons for this water season. A community-wide effort is the only way for a water conservation program to really succeed. Here are the major things we've done this year to help every customer save water.

Tiered Rate Structure

Tiered or conservation rates have been shown to be effective in providing an incentive to change water use behavior. In May 2003 LACSD implemented rate structure that preserved the existing rates up to 2,300 gallons per week or approximately .37 acre-feet/year. This amount represents an approximate 25% reduction in the current average use per household of .5 acre-feet/year. As use goes above this level, water rates increase exponentially, with the top rates more than 300% above former rates.

Top Water Users

LACSD's 2002 records confirmed that almost 700 of approximately 7,500 residential users used more than 50% of the total water provided by LACSD, the majority for landscape irrigation. A special program to reach this targeted group included direct mail and individual water use counseling. Calls from the mailing and outreach calls to top users resulted in 82 surveys completed this watering season.

Homeowners' Associations

Homeowners' Associations constitute some of LACSD's largest residential users, primarily irrigating common area landscaping. LACSD has made presentations to seven homeowners associations regarding immediate implementation of landscape watering reductions and scheduled surveys where required.

Residential Customers

LACSD has implemented a full marketing and public information campaign to reach all residents and has gone beyond persuasion to give residents specific tools including complete water conservation kits, to use in their efforts to save water. LACSD also published "*A Landscape Guide for Mountain Homes*" and sent copies to all customers.

Large Commercial Customers

LACSD has conducted outreach to all of the largest commercial customers, offering landscape surveys and supplying interior fixtures including low flow showerheads and toilet tank banks where appropriate. More than 16 pre-rinse valves were installed in restaurants.

Conservation Ordinances and Enforcement

During the watering season there is a full-time enforcement staff person whose first function is education, offering site surveys and homeowner interviews. Between 250 and 300 customers were reached in this way over the summer. Failure to correct water waste problems results first in a warning letter and then in subsequent letters and then in a series of escalating fines. One hundred thirty warning letters were written. In only three instances has the customer failed to correct problems and received a penalty.

What Comes Next?

This fall is warm and residents continue to water their lawns—so it's important to stay focused on saving water. Tree removal has also caused power outages that cause many irrigation timers to default to factory settings—so make sure you reset your timers every time there's a power outage.

LACSD has also received a Bureau of Reclamation grant for $35,000 to implement a pilot program for irrigation timers that are controlled by actual weather data broadcast to them from a satellite. The controllers, called ET (evapotranspiration) controllers have been ordered and the first 85 users will have controllers installed this winter. LACSD is applying for a second grant to extend the program to even more customers next summer once the initial pilot program period is completed.

CALL FOR A WATER SURVEY

(909) 337-8555

Ad-2003

Lake Arrowhead

Community Services District

YOU Can Make A DIFFERENCE

We'd like to help you get started.

The Lake Arrowhead Community Services District is committed to preserving Lake Arrowhead's quality of life, mountain lifestyle, and local environment by reducing our use of water from Lake Arrowhead. The first part of that effort is a water conservation campaign to fight the effects of the ongoing drought. The second is to find other reliable sources of water to depend on.

We have launched a water conservation campaign to help our customers save water and protect the environment. We have identified your household as a year-round residence and are providing you with this FREE LACSD Water Conservation Kit.

This kit contains:

1 low flow showerhead
(saves 2 gallons or more per minute)

1 kitchen sink aerator
(saves about 2.2 gallons per minute)

1 bathroom sink aerator
(saves about 2 gallons per minute)

2 toilet tank leak detector dye tablets
(repairing a leaking toilet saves up to 200 gallons a day)

1 toilet tank bank
(saves 1 quart/flush)

2 hose washers
(saves 1 quart/minute)

1 hose shut off nozzle
(saves 5 gallons/minute)

By using this kit your four-person household can easily save up to 1,200 gallons per week. Instructions are included with most items. The showerhead and kitchen faucet aerators are simple fixtures that can be screwed on by hand in place of your existing ones.

For information on where to get another kit, please call LACSD at 337-8555

2003

YOU Can Make A DIFFERENCE

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The Lake Arrowhead Community Services District is committed to preserving Lake Arrowhead's quality of life, mountain lifestyle, and local environment by reducing our use of water from Lake Arrowhead. The first part of that effort is a water conservation campaign to fight the effects of the ongoing drought. The second is to find other reliable sources of water to depend on.

We have launched a water conservation campaign to help our customers save water and protect the environment. Just fill out this card and we'll send you our Water Conservation Kit.

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(saves 2 gallons or more per minute)

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1 hose shut off nozzle
(saves 5 gallons/minute)

By using this kit your four-person household can easily save up to 1,200 gallons per week.

Yes, I want to save water.

Send me an LACSD Water Conservation Kit.

Name

Delivery Address

Phone Number

Lake Arrowhead

Community Services District

For information on where to get another kit, please call LACSD 337-8555

2003

YOU Can Make a BIG DIFFERENCE

How much can you really save? Check you water bill and see what your use is. Follow our tips and the average family of four will save:

Outdoors	Gallons/week Saved
Follow our tips: Reduce lawn size; Change watering patterns; Maintain your system; Change high water use to low water use plants	
Reduce 300 gallons/day to 200 gallons/day	700
Car washing *(based on saving half the water, 75 gallons x 1 time/week)*	75
Driveway cleaning *(using a broom saves 150 gallons x 1/2 time/week)*	75
Water saved outdoors	**850**
Indoors	
Repair leaks and drips *(1 leaking/dripping faucet @ 20 gallons day)*	140
5 minute shower *(instead of 10 minute shower @ 4 gallons/minute 5-minute shower with low flow showerhead @ 2 gallons/minute saves 30 gallons/shower x 4 people x 7 days)*	840
Turn water off while brushing teeth *(2 gallons/day x 4 people x 7 days)*	56
Turn water off while shaving *(4 gallons/day x 7 days)*	28
Toilet tank bag *(12 flushes/day at 1 quart each x 7 days)*	21
Running dishwasher only when full *(15 gallons/1 load per week)*	15
Shut off tap while hand washing dishes *(10 gallons/time x 1 time/week)*	10
Wash only full loads of laundry *(48 gallons x 1 less load/week)*	48
Water saving faucet aerators *(based on saving 2.8 gallons/minute @ 15 minutes/day 7 days/week)*	294
Water saved indoors for a family of four	**1,452**
Total water saved	**2,302 gallons**

Lake Arrowhead

YOU Can Make a DIFFERENCE

Community Services District

Your Guide to Saving Water at Home

The Situation is CRITICAL

Most people in Southern California realize we live in a dry area. In the San Bernardino Mountains, our water supply is extremely limited. The Lake Arrowhead Community Services District (LACSD) gets its water from Lake Arrowhead. Recent years of drought have seriously reduced the lake level and caused residents to realize that Lake Arrowhead and its preservation are an important part of our mountain quality of life.

Other mountain communities depend on well water, streams that run in wet periods, and imported water purchased through the Crestline Lake Arrowhead Water Agency (CLAWA) and they are also facing shortages.

Today, LACSD is studying ways we might reduce our dependency on Lake Arrowhead and supplement our water supply from other sources including wells and imported water. These sources of supply are also uncertain. Droughts and demands by other regions have reduced supplies from Northern California and the Colorado River.

The situation today is critical. Even while LACSD is confident that other sources of supply will eventually reduce our dependency on Lake Arrowhead, we must begin to save water immediately. The quickest, most certain way to do this is to conserve water at home.

Every year an average four person year-round household in Lake Arrowhead uses about 4,200 gallons a week in the warm months and 2,100 gallons per week in the cool months. We are asking everyone to reduce their use by a minimum of 25%—about 1,050 gallons a week for an average household—this spring and summer.

A little less than half of the water you use is used inside your home and this brochure will show you how to save water by changing how you use it to wash, cook, and clean. The rest of the water you use is used outdoors. We want you to save water outdoors, too.

Saving water outdoors does not mean that you should stop watering your garden unless a drought emergency is declared and LACSD requires you to do so. In that case, LACSD will let you know what restrictions you must follow. Otherwise, watering trees and shrubs is important because it helps reduce the fire risk around your home. Wise watering can also help drought stressed trees on your property resist insects and disease. We are asking, however, that you change your gardening and watering practices to conserve. This brochure will also give you basic information on wise water use outdoors.

Besides, saving the Lake and helping our local environment, there's another reason to use water responsibly. Saving water will save you money. Recently, LACSD has introduced a tiered rate structure. The American Water Works Association defines average water use as about 74 gallons per day per person not including outdoor landscaping use. That means a family of four would use about 2,100 gallons of water per week indoors. The new rate structure preserves the old rates to a level of about 2300 gallons per week. What this means is that if you use more, you will pay a markedly increased rate for that water.

By implementing water conservation measures both indoors and outdoors you can keep your water bills at the lower levels of the new rate structure. But conserving water is more important than just saving money. Conserving water means you are doing your part to help stabilize the level of Lake Arrowhead, and by doing so, helping to preserve our local environment and quality of life.

"We are asking everyone to reduce their use by a minimum of 25%"

Saving Water OUTDOORS

The following are basic ways you can save water around your home. Water use for each activity is based on averages and average fixtures. Actual amounts may vary.

Landscaping

(300 gallons/day in spring, summer, and fall)

Learn How to Water Your Landscape

Lawns, shrubs, ground covers, and trees all need different amounts of water applied differently.

Trees and shrubs can usually get by with deep watering, not sprinkling, applied to their root zones once a week for about 10 minutes. Make sure they get adequate water in the spring to encourage deep roots and make sure you water trees inside their drip lines—the area below the spread of their branches. Build a four to six inch earthen dam around the root zones of both trees and shrubs to hold the water so it soaks in rather than running off.

During a drought crisis, LACSD does not allow the planting of new lawns. If you have an existing lawn, consider replacing it with low water use groundcover. If you have a lawn, it should be watered no more than twice a week for about five minutes. If it wilts (see number 6 below), then increase water by two minutes. If you don't have an automatic sprinkler system, use a kitchen timer to help you keep track.

These quantities are based on normally draining soil and a sprinkler or watering fixture that will fill a tin can placed on the ground in the area to be watered to a depth of one inch in 15 minutes.

1. Get to know how plants signal for water
   Some plants lose their gloss and start to droop a little before wilting. The time to water is when the plants need it, rigid watering schedules waste water.
2. Split your watering time
   If water flows away instead of soaking in, split the water time into two sessions to allow the soil to absorb the water. Where soil is sandy, water may percolate below the root zone. Compensate by watering for half the time, twice as often so water stays in the root zone.
3. Avoid watering on windy days
   When you water on windy days much of the water evaporates or blows away.
4. Avoid watering in the middle of the day
   Water early in the morning before 6:00 a.m. Morning is the best time because it prevents the growth of fungus. During the high water use months of July and August early morning watering avoids the peak-demand use period of the day. When you water during the cool parts of the day more water soaks in instead of evaporating.
5. Adjust sprinklers to water plants only
   Watering driveways, patios or roadways is a waste of water and money. Make sure that coverage is even so that you don't have to drown one area in order to get enough water on another.
6. Water your lawn only when it needs it
   Test for watering by stepping on the grass. Does it spring back when you raise your foot? If the answer is yes, it doesn't need water.
7. Turn off your sprinklers when it rains
   For residents that can't be home to do this, automatic rain switches are available at hardware stores.
8. Use a kitchen timer
   It will help you to remember to turn sprinklers off if you do not have an automatic system.
9. Maintain your watering system
   Broken sprinkler heads spew water that doesn't benefit your plants. Risers that are too low can be blocked by neighboring plants and not reach them. Hoses, couplings, valves, and faucets that leak not only create large puddles but waste your watering dollars.

What About Drought Stressed Native Trees?

Drought stressed native trees may benefit from deep watering. Build an earthen dam around the base of the tree at the drip line. Using a soaker hose, deep water the tree at a low rate for 24 hours about once per month. There is no clear evidence that this will prevent infestation by bark beetles.

Change Your Landscape to Use Less Water

1. Train your plants to develop deep roots
   Water thoroughly but infrequently. Make sure that plants are deep watered in the spring, even when it is cool so that they will develop deep roots and need less water in the summer. Deeper roots allow plants to use moisture deep in the ground. Plants will be healthier and stronger. Water retaining soils added to your garden soils will help water get to plant roots and reduce runoff.
2. Mulch around trees and shrubs
   Mulching discourages weeds and slows evaporation when you water your plants.
3. Plant trees and shrubs that use less water
   There are many types of shrubs, and trees that use very little water. Choose them for your garden. Consider eliminating your lawn or reducing its size and planting low water use ground cover and shrubs instead.

Around the House

Car Washing (150 gallons/1 washing)

1. Turn the hose off when you wash your car
   Wet the car down and turn off the hose. Soap down your car using a bucket of soapy water. Use the hose to quickly rinse it. Use an auto shut off nozzle when washing your car.

Driveway Cleaning (150 gallons/cleaning)

2. Use a broom to clean your driveway
   Instead of using a hose, use a broom to clean sidewalks, patios, and driveways.

Saving Water INDOORS

Shower (40 gallons/10 minutes)

1. Take shorter showers
   At a minimum of 4 gallons per minute, showers use a lot of water. Limiting your showers to the time it takes to soap up and rinse off can cut your shower time by more than half.
2. Install water saving shower heads
   Low-flow showerheads cut the amount of water used to 2 gallons per minute while still giving you a refreshing shower. They're easy to install.
3. Bath (20 gallons)
   Take baths. Even a full bath uses less water than the average shower. Baths are relaxing too.

Brushing Teeth (2 gallons/day)

4. Turn off the water when you brush your teeth
   Before brushing, wet your brush and fill a glass for rinsing after.

Toilet (5 gallons/flush)

5. Check your toilet for leaks
   A leaking toilet can waste 20 gallons a day. To check for leaks, put a little food coloring in the tank. If, after a few minutes, you can see the color in the bowl without flushing, you have a leak that needs repair.
6. Stop using your toilet as a wastebasket
   Each flush can use up to 7 gallons of water.
7. Put a plastic bottle or toilet tank bag in the tank
   Weight a quart plastic bottle with water. Place it in the toilet tank away from the mechanism. The bottle will displace water and save on each flush and the toilet will still work properly.

Shaving (5 gallons/day)

8. Turn off the water while shaving
   Put some water in the bottom of the sink to rinse your razor, rather than leaving the water running.

Dishwasher (15 gallons/load, 4 loads per week)

9. Fill your dishwasher before you run it
   When you wait until the load is full, you save water.

Washing Dishes By Hand (20 gallons)

10. Don't leave the tap running for rinse water
    If you have a double sink, fill the second one with rinse water. If you have a single sink, save the washed dishes in a rack and rinse them all at once with a sprayer or pan of water.

Clothes Washer (48 gallons/load, 5 loads per week)

11. Choose your water level for each load
    Adjust your washer for each load. Small loads need less water. If your washer has only one water level, wait for a full load before you do your laundry.

Running The Tap (5 gallons/minute)

12. Keep a bottle of drinking water in the fridge
    Refrigerated water is colder than tap water and on a hot day, it's more refreshing.
13. Don't let the tap run when you wash vegetables
    Rinse vegetables in a bowl or pan of clean water.
14. Install water saving faucet aerators
    Water saving faucet aerators can reduce water flow to 2.2 gallons per minute or less while still providing good pressure and flow.

Leaks (10-40 gallons/day)

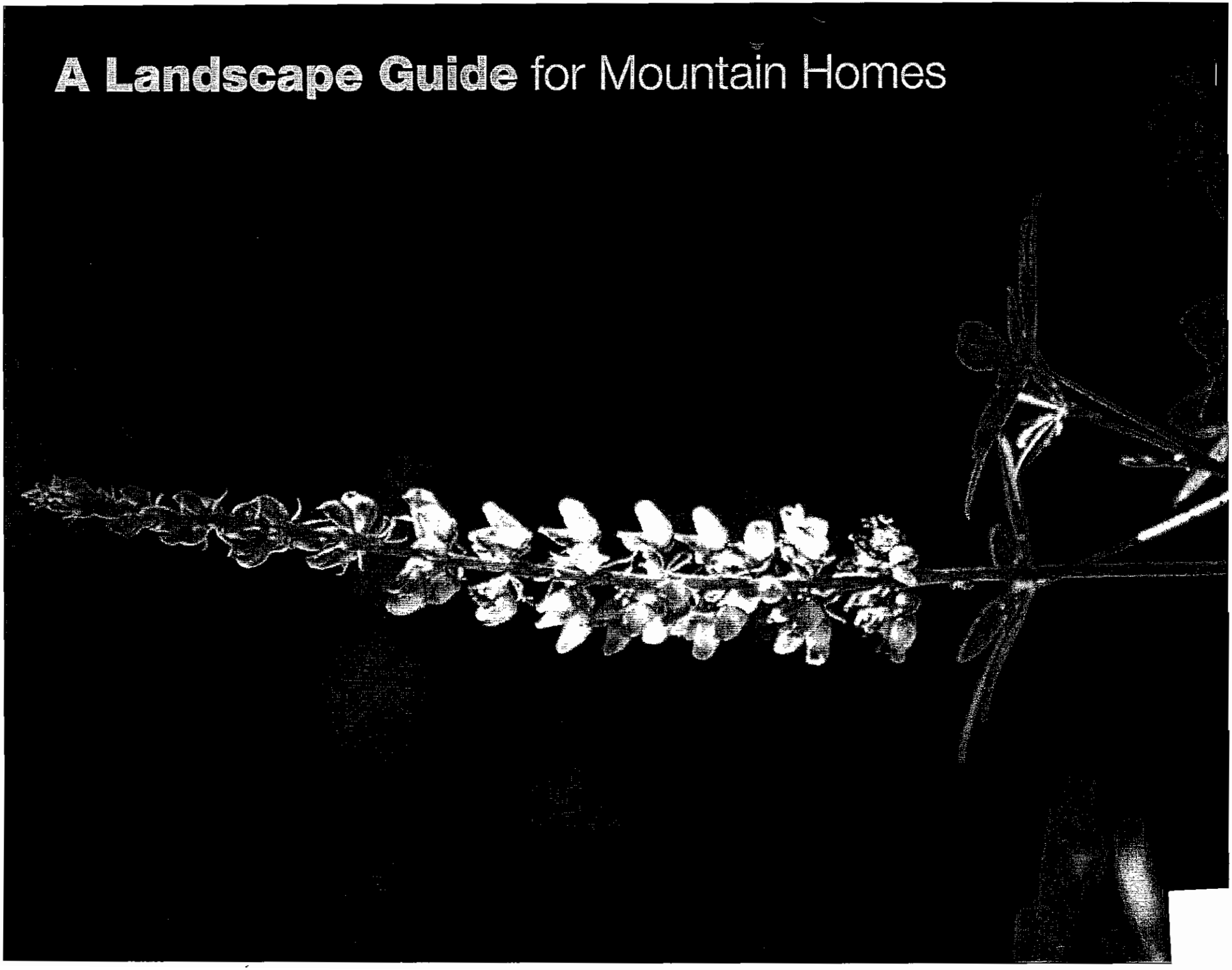
15. Stop those drips
    A slow drip can waste up to 20 gallons a day.
16. Look for hidden leaks
    If you suspect you have a hidden leak, call us at 337-8555, and we'll help you test your system.

Lake Arrowhead Community Services District

Water Management Department
P.O. Box 789
Lake Arrowhead, CA 92352
(909) 337-8555

Lake Arrowhead Community Services District

A Landscape Guide for Mountain Homes



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Introduction

The world that we live in today is a world where an ever-increasing population places larger and larger demands on the earth's finite resources. The manner in which we use these resources, from the fuels that heat our homes and power our cars to the water we need to sustain life will determine the kind of world we leave to our children and to future generations.

Recently, Californians have learned first hand that our electric utilities can be over-taxed and at times may not be as able to meet our demands as we have come to expect. We are also facing a similar situation with our water supply.

Where does our water come from?

Water is a precious commodity in southern California. More than 70 percent of California's total precipitation falls in the northern half of the state. Eighty percent of California's water demand is in the south. Southern California largely depends on water imported from northern California and from the Colorado River.

In the San Bernardino Mountains, our water supply is extremely limited. Lake Arrowhead households get all of their water from Lake Arrowhead. Big Bear Department of Water and Power and Big Bear City Community Services District customers have water that comes from wells. Crestline Village Water District and Running Springs Water District provide a combination of well water and water imported through the Crestline-Lake Arrowhead Water Agency. Both local and imported sources can be severely affected by drought and imported water supplies have become increasingly uncertain as a result of demands by other regions. Currently, all mountain communities are facing water shortages that make water conservation increasingly important.

Over demands on local water resources have caused many residents to realize that preservation of our mountain environment and quality of life depends substantially on how we manage our limited water resources.

Conservation must become a way of life

The situation today is critical. Even while local water agencies are confident that they will be able to meet demand through a combination of new supplies and changing the ways we use our existing resources, we must begin to save water immediately. The quickest, most certain way to do this is to conserve water at home.

Less than half of the water you use is used inside your home. The rest is used outdoors, mostly in watering home landscaping. Much of this water is wasted due to poor planning, inappropriate plant choices and inefficient watering practices. Most families can reduce water use by simply changing habits and learning to reduce water waste inside and outside our homes.

There are many ways to save water outdoors

Every one has opportunities to save water. We may choose different methods, depending on our individual circumstances.

Here are some ways we can choose to save water on our landscapes:

- scale back and limit landscaping to creating a defensible space (see Chapter Four: Defensible Space)
- reduce or replace lawn areas with spaces like patios and walkways or by planting groundcovers
- review, repair and retrofit irrigation systems so they are water efficient and deliver only water that is needed
- re-landscape with plants that use less water and retrofit or install appropriate irrigation to match (See Chapter Six)

Start TODAY

Eliminating waste is easy and pays off immediately. Chapter Three: Maintain Your Landscape gives many instructions for how good maintenance practices can result in major water use reductions. The ways in which a small change in behavior can make a large difference in water savings are almost endless. For a look at a typical house and how much water can be saved by simple changes, visit the virtual house: www.h2ouse.org

A Quick Guide to Saving Water Outdoors

Outdoor water use accounts for more than half the water used by an average household. Landscaping in mountain communities uses about 300 gallons/day in spring, summer and fall. Use this guide to make immediate water savings.

Car Washing
(150 gallons/1 washing)

1. Turn the hose off when you wash your car

Wet the car down and turn off the hose. Soap down your car using a bucket of soapy water. Use the hose to quickly rinse it. Use an auto shut off nozzle when washing your car.

Driveway Cleaning
(150 gallons/cleaning)

2. Use a broom to clean your driveway

Instead of using a hose, use a broom to clean sidewalks, patios, and driveways.

Leaks (10-40 gallons/day)

3. Stop those drips and leaks

A slow drip can waste up to 20 gallons a day.

Change Your Landscape to Use Less Water

1. Train your plants to develop deep roots

Water thoroughly but infrequently. Make sure that plants are deep watered in the spring, even when it is cool so that they will develop deep roots and need less water in the summer. Deeper roots allow plants to use moisture deep in the ground. Plants will be healthier and stronger. Some trees may require deep watering year round.

2. Mulch Around Trees and Shrubs

Mulching discourages weeds and slows evaporation when you water your plants.

3. Keep Your Soil in Shape

Soil amendments can benefit your plants both by providing nutrients and by changing the composition of the soil so it holds water better. Improving your soil needs to be done regularly, including the areas around existing plants and shrubs.

4. Use plants, trees and shrubs that use less water

There are many types of shrubs and trees that use very little water. Choose them for your garden. Consider eliminating your lawn or reducing its size and planting low water use ground cover and shrubs instead.

Learn How to Water Your Landscape (300 gallons/day)

As you will learn in this guide, lawns, shrubs, ground covers, and trees all need different amounts of water, applied differently.

Existing trees and shrubs can usually get by with deep watering, applied to their root zones once a week for about five minutes, depending, of course on the amount of water your watering system delivers. Make sure they get adequate water in the spring to encourage deep roots and make sure you water trees at their drip lines—the area below the spread of their branches. Build a four to six inch earthen dam around the root zones of both trees and shrubs to hold the water so it soaks in rather than running off. Run off means you need to change your watering practices and times.

During a drought crisis, most mountain community water agencies do not allow the planting of new lawns. If you have an existing lawn, consider replacing it with low water use groundcover. If you have a lawn, it should be watered no more than twice a week for about ten minutes. If it wilts (see number 6 below), then increase water by two minutes. If you don't have an automatic sprinkler system, use a kitchen timer to help you keep track.

1. Get to know how plants signal for water
Some plants lose their gloss and start to droop a little before wilting. The time to water is when the plants need it. Learn to use your automatic timers so you can adjust watering schedules for cooler, wetter weather.

2. Split your watering time
If water runs off instead of soaking in, split the water time into two sessions to allow the soil to absorb the water. Where soil is sandy, water may percolate below the root zone. Compensate by watering for half the time, twice as often so water stays in the root zone.

3. Avoid watering on windy days
When you water on windy days (a breeze stronger than 5 to 7 miles per hour), much of the water evaporates or blows away.

4. Avoid watering in the middle of the day
Water before 6:00 a.m. Many mountain water agencies require that commercial landscape watering be complete by 5:00 a.m. and home landscape watering by 8:00 a.m. Morning is the best time because it prevents the growth of fungus. When you water during the cool parts of the day more water soaks in instead of evaporating.

5. Adjust sprinklers to water plants only
Watering driveways, patios or roadways is a waste of water and money. Make sure that coverage is even so that you don't have to drown one area in order to get enough water on another.

6. Water your lawn only when it needs it
Test for watering by stepping on the grass. Does it spring back when you raise your foot? If the answer is yes, it doesn't need water. Look at the color of your lawn in the early evening. If it is off-color, light green to yellow, then it needs water.

7. Turn off your sprinklers when it rains
For residents that can't be home to do this, automatic rain sensors are available at nurseries and irrigation supply stores.

8. Use a kitchen timer
It will help you to remember to turn sprinklers off if you do not have an automatic system. Flow restrictors may also be available at some nurseries and irrigation supply stores.

Maintain Your Watering System

Broken sprinkler heads spew water that doesn't benefit your plants. Risers that are too low can be blocked by neighboring plants and not reach them. Replace old or worn irrigation fixtures—an emitter or sprinkler with a damaged head or an opening that is worn, even to a very small degree, can increase the amount of water being delivered 4% or more. Hoses, couplings, valves, and faucets that leak not only create large puddles but waste your watering dollars.

What About Drought Stressed Native Trees?

Water native trees suffering from drought twice a month until they recover. During dry periods, continue watering once a month. Ideally, water should penetrate soil in the drip zone, the area under the spread of a tree's branches, to a depth of 18 inches. Depending on the type of soil and slope of your property, this will take 12 to 24 hours using a soaker hose snaked under the drip line of the trees. Don't keep the soil saturated. Let it dry out between waterings. Don't sprinkle or spray. Spraying tree bark with water can encourage fungus.

CHAPTER ONE: Plan Your Landscape

Overview

The Landscape Guide for Mountain Homes is designed to provide basic information that will help develop a water-efficient landscape that meets your goals for recreation, beauty, and maintenance. While most of the Guide deals with the man-made landscape around your home, much of the land that surrounds people's homes is natural and not part of the developed landscape under discussion.

These natural areas are very important to our mountain environment and quality of life, so we have devoted an entire chapter (see Chapter Five) to the backyard forestry that falls under our responsibility as mountain dwellers.

The Guide is also meant to help you make decisions about your landscape whether you are planning a new landscape or retrofitting an existing landscape to be more water-efficient.

There are seven basic steps in planning a water-efficient landscape.

1. Understanding climate is the first step

Climate determines many factors in planning a landscape. Climate determines which plants will survive in your area and how much water they will need. All mountain communities exist in a specific climate. The short growing seasons, low winter temperatures, shallow soils over rocks, limited rainfall and heavily wooded spaces are the factors that the mountain communities have in common. Generally, the mountains' evapotranspiration rate, or moisture loss from both soils and plants over a year, ranges from 40-49 inches per year to 50-59 inches per year, depending on whether the local area is considered wet or dry. Rainfall ranges from 21 to 60 inches per year. Average rainfall is about 44 inches per year.

Sunset Books, publisher of the Sunset Western Garden Book, defines the higher elevations of our mountain climate as Zone 2 (four to six month growing season, historic lows of -3°F to -34°F) and the balance as Zone 3 (five to seven month growing season, historic lows of 13°F to-24°F). In addition, some of Lake Arrowhead's north shore and communities at lower elevations like Crestline can use plants rated for Zone 4. These designations can be useful when researching plants that will grow in your home landscape.

Local landscape specialists have identified many specific locales whose climate differs enough to affect what will and will not grow. These areas, called microclimates, are important to consider throughout the planning process.

2. Identify any microclimates

Canyons direct winds and affect ground temperatures. Open areas will raise overall temperatures—wooded areas can be 10°F cooler on a hot day. Higher elevations shorten the growing season. Streams create damp or wet environments where plants that like it wet can thrive. The orientation of buildings or slopes also creates microclimates. North- and east-facing slopes or sides of buildings get less sunlight. They are wetter and cooler than south-facing or west-facing areas.

Often native vegetation will tell you about the immediate microclimate. Jeffrey pine and manzanita grow in dry areas, for example, and alders, cedars, dogwoods and willows in wet areas.

3. Think about what you want from your landscape

Start by determining what you want the landscape to do for you in terms of practicality, versatility and enjoyment. Consider including room for entertaining or recreation, some space for pets, gardening or privacy. A view may be important. Your children or grandchildren may need a yard for play.

To get the process started, make a list of the things that are important. A rough drawing may help visualize the ideas. Good planning is necessary to avoid costly mistakes and to insure that the end product will meet the needs on your list and be both aesthetically pleasing and have minimal negative impact on the environment and natural resources. A typical list might include:

- patio for summer barbecues
- privacy from the roadway
- area for growing flowers in summer
- space for badminton with the kids
- view into the garden
- plants that will attract birds

4. Evaluate your site

The plan for a new home will be different than the plan for an existing home but the principles are the same. Existing homes often have special trees or valued shrubs. These existing items will help to determine where other plants and features will go.

To get started, answer the following questions:

- Where are the sunny spots (south- and west-facing) and where are the shady parts (north- and east-facing) of your site?
- Are there slopes? If so, what direction do they face?
- Are there protected areas or areas exposed to strong winds?
- What kind of soil is there? How deep is it and how fast does it drain?
- Where is it important to have a view?
- What areas need a screen for privacy?
- How much gardening and/or maintenance do you want to do?

5. Make your plan

Using the list of items that are important and the list of site characteristics combine the two and begin the process of creating a site plan.

Make a drawing that shows:

- the outline of your property with approximate distances
- the footprint of your house and any other buildings with their approximate sizes
- the location of any paved areas
- the location of existing plants and trees
- the location of slopes
- the locations of the sunny and shady areas
- location of highly exposed and protected areas
- the direction of north

This drawing need not be elaborate or exactly to scale. It is meant to serve as a working plan that will help you to visualize the finished product.

Next draw in the areas that are important to you as you defined them above. Use pencil, you may change your mind about where things will go as you work out your plan but for now choose the locations that seem to work best to you. Think about where the doors and windows of your house are when you choose locations. Things you might put on the plan are:

- places to sit (sunny or shady, flat or sloped?)
- places to entertain (sunny or shady, close to house doors?)
- places to play (sunny or shady?)
- where are the windows in relation to what you'd like the view to be
- places to garden (sunny, near the patio, front or back door?)

This drawing will help you make sure that important aspects of the project aren't forgotten.

ABOUT SLOPES:

The removal of dead trees has created a great deal of unprotected hillside with no plantings to hold the soil in place. These unprotected hillsides are likely targets for severe erosion problems. In addition, many mountain community homes have steep slope areas. Proper landscaping with plants suited to the condition of the slope and the direction it faces can keep slopes from sliding or eroding.

6. Choose and locate your plants

The Guide has an entire chapter on plants that will grow in mountain areas and how to choose them, including a plant list (see Chapter Six). A visit to one of the local nurseries will also be beneficial. There are several general principles that are important to think about when selecting and locating plants in your landscape.

The most important concept to remember is *hydrozoning*.

Hydrozoning means grouping plants with like water needs together. The lowest water use plants in one area, the medium water use plants in another. Sun, shade and wind also affect these hydrozones. For example, you might have several different hydrozones in your landscape:

- low water use plants in a shady area
- low water use plants in a sunny area
- medium water use plants in a shady area
- medium water use plants in a sunny area
- low water use plants in a protected area
- medium water use plants in a windy area

Select plants suitable for the zones found in your landscape. Hydrozones will make it possible to design an irrigation system that will be efficient and save water.

Make sure you pay attention to *topography.*

When you add slopes to the equation, you might also add these hydrozones to your plan:

- slope plantings in a sunny area
- slope plantings in a windy area
- slope plantings in a shady area

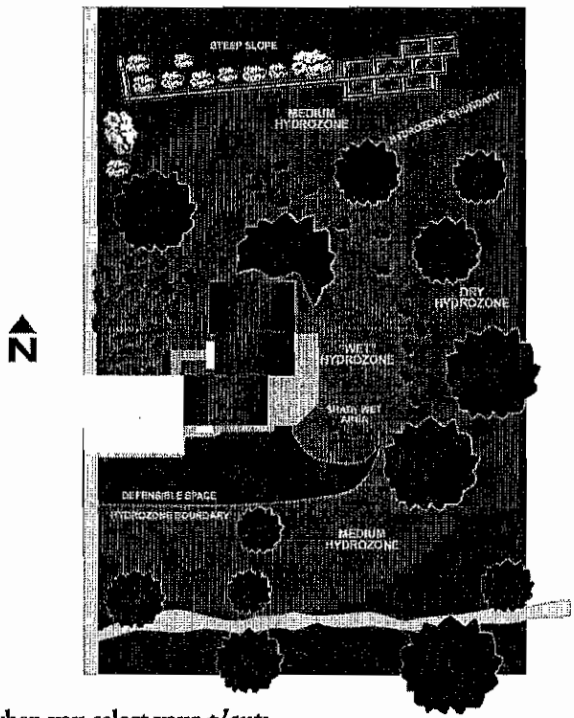
Pay attention to the *soil.*

In heavy clay soil, certain plants will require soil amendments in order to be able to grow. All plants will benefit from amending the soils with nutrients and amendments that help the soil retain moisture.

Limit the area designated for lawn.

Consider retrofitting your landscape to eliminate or minimize your lawn. A lawn might be useful as a play area for children but less thirsty shrubs and groundcovers can be used for most other purposes. Use a patio or deck for a resting or entertaining place for adults,

At this point, your drawing should look something like the example shown here.



Consider design when you select your *plants.*

The Guide takes three different approaches to choosing and locating plants. The first is to choose native plants which reflect the feel and appearance of natural wooded areas but which also provide for defensible space and some ornamental values like flowers. These plants generally require the least water, fertilizer, and maintenance. The second is to provide you with a mixed plant list which includes native species widely adapted for garden use that often have a more ornamental character that native plants alone, as well as other plants from dry climates that have been adapted for garden use. The third list includes more traditional ornamental plants often popular for mountain settings.

If you want to minimize the amount of time you must spend on your landscape, consider beds of uniform types of groundcovers and massed shrubs. This style of massed planting forms patterns that are derived from the color and character of the foliage and flowers. Effects are created by varying height, and focal points are achieved by saving the showiest plantings for concentrated areas.

7. Design your irrigation system

All plants, no matter how drought tolerant they are, need water. The most drought tolerant plants need water only during the first and sometimes during the second season they are being established. After that many can survive on what they get in the form of rain and snow.

Efficient watering means delivering the right amount of water to the right place at the right time. Installing the most water efficient irrigation system possible will save you time and money later.

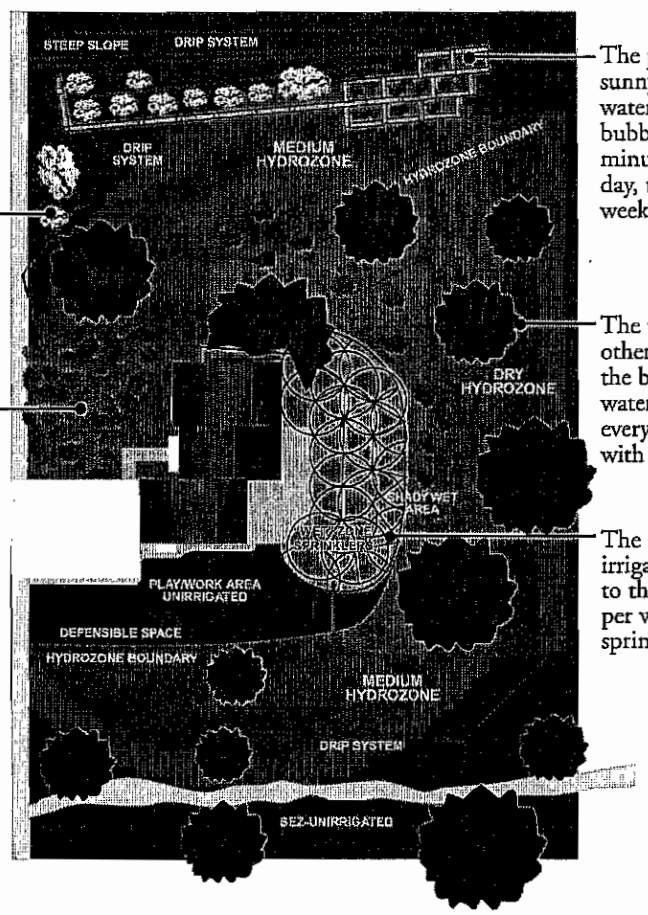
If you are not familiar with the different types of equipment, consult with a nursery or landscape professional.

When planning an irrigation system:

- Each hydrozone should be on a different line or station of your irrigation system
- Use the right type of equipment to deliver water most efficiently to different types of plants

- Drip emitters or bubblers are the best choices for trees and shrubs. They apply water at a slow rate directly to the root zone, so less water is lost to evaporation and runoff
- Various types of emitters and micro spray devices can be used for groundcover. Make sure spray areas overlap properly to avoid dry spots
- Larger coverage spray heads or rotors are required for lawn areas. They should be spaced so that each spray circle overlaps the one next to it, creating an even pattern to avoid brown spots or overwatering to compensate for dry spots. Use quarter and half circle spray heads to avoid watering walkways, driveways, roads, and non-turf areas
- Irrigating on slopes can be tricky. Emitters are preferred but require monthly inspections to detect clogging. The freeze/thaw cycle at higher elevations can also damage tubing. Depending on the steepness and the height of slopes, bubblers may work well. In a few cases spray heads may be necessary
- Match irrigation patterns, frequency of watering, and length of watering cycle to the plant's needs and the soil's ability to absorb the water. This will conserve water by preventing runoff
- Irrigation systems with automatic timers that allow for separate programming of each hydrozone can be of great assistance in controlling and monitoring the amount of water going to plants. Automatic timers are also easy to change as weather patterns change. Ideally, consult with a landscape professional and choose a system with rain switch and water budget features

This general example plan has five separate irrigation zones. While this is just an example and your actual landscape needs may vary, here is what the zones look like in spring and fall with the irrigation plan in place:



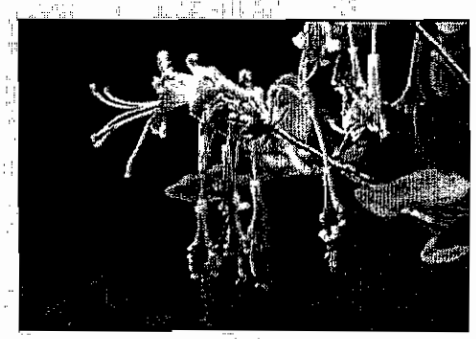
The plants on the sunny slope are watered using bubblers for five minutes twice a day, two days per week

The shrubs in the front yard are watered once a week with bubblers

The trees and other shrubs in the back yard are watered once every two weeks with bubblers

The groundcover is irrigated once per week with drip

The lawn is irrigated two to three times per week with sprinklers



During a very hot summer, more irrigation will be required.

8. Choose Your Plants

The Landscape Guide for Mountain Homes lists several hundred plants you can use to save water in your water-efficient mountain landscape. They are arranged in three groups (see Chapter Six) to help you design your landscape for the effect you want to create. Their water needs, characteristics, and size are also included for your information. Where possible, photographs have been included.

CHAPTER TWO: Installing Your Landscape

Now that you have a plan and a list of plants, it is time to make your plans a reality. The key is to start at the beginning and do things one step at a time. This is the time to consult local nurseries and landscape professionals. Have them look over your plan and your list of plants. They will tell you if the sprinklers, bubblers, and emitters you have selected are right for the plants you have picked. A professional can also give you advice about how to install your landscape. They will carry many of the plants you will want for your landscape.

The following six steps are listed in chronological order. You may want to phase them in over time.

1. Build Your Hardscape

Build any new structures first. Any new walkways, decks, patios, fences or retaining walls should be built before planting begins. This will prevent damage to the irrigation system and plants.

2. Improve Your Soil

Soils found in most mountain communities contains only a thin layer of organic material and are deficient in plant nutrients. Lack of organic material means that water does not soak in well nor does it hold the moisture that does soak in. Soils may be heavily acidic because of the natural addition of pine needles. They may be excessively loose, fine grained, or sandy.

Plants do better in well-prepared soils. If your soil drains too fast (too much sand) or too slow (too much clay), is too acidic, too alkaline, or lacks nutrients, you can improve it with soil amendments. Always blend amendments with the natural soil to the depth of the roots of the plants you intend to put there: eight to 12 inches for groundcover, and at least 18 inches for shrubs.

There are two types of soil amendments: non-chemical and chemical. The non-chemical type is mixed into the landscape soil to increase water-holding capacity and improve soil structure. Examples include composts, aged manures, and nursery mixes. In addition to improving the qualities of the soil to promote plant growth, they also add some nutrients.

Chemical amendments add nutrients to soil or change the soil's chemistry so plants will be healthier. Soils are usually common over a moderately large geographical area. As a result, ask your local nursery about the soil in your area.

After plants are planted, use mulch to protect the soil (See item six, page 9).

3. Install Your Irrigation

Many publications give step by step instructions for installing and assembling irrigation systems. Talk to professionals where you buy your materials or call or write any of the appropriate organizations listed in the resources section of this publication for help.

There are basically two major types of irrigation systems. They are not mutually exclusive but can be used in combination with each other.

Rigid Pipe

This type of system is almost always operated by an automatic controller, through a series of valves that turn the various underground lines on and off. Along the lines, various types of sprinklers deliver water. This water delivery is almost always measured in gallons per minute.

Lawns are watered using pop up sprinklers or rotors set in full, half, or quarter circle spray patterns. Low growing shrubs and groundcovers are watered with either bubblers that can be set to a trickle or a small spray. Where bubblers can not be placed at the root zones of taller shrubs, spray heads that are elevated on posts or impact sprinkler heads are used. The critical factor is getting the right fixture in the right place delivering the right amount of water.

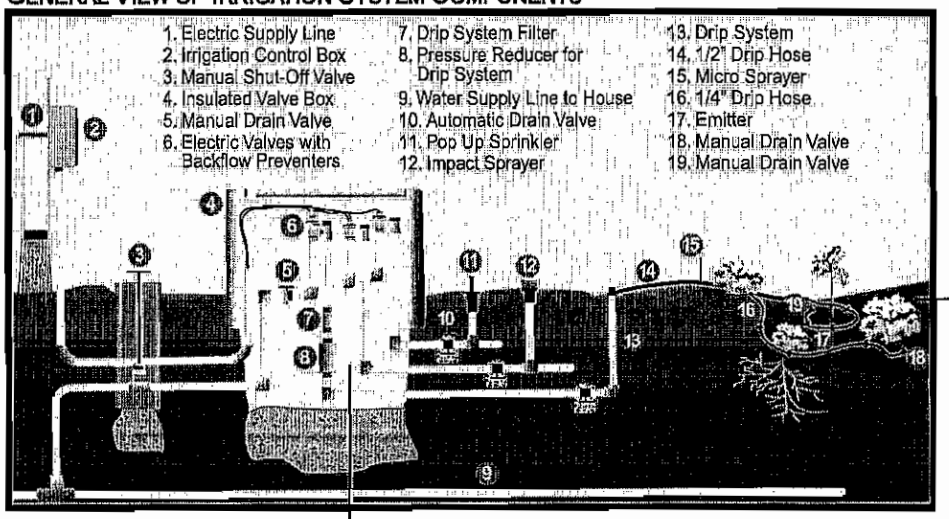
As noted in the Planning sections above, spray heads should be designed so the spray pattern provides uniformly overlapping coverage. That way you won't have dry spots and be tempted to over water just to make sure the dry spots get adequate water. Often rigid pipe/high pressure systems are preferred by homeowners because they require less maintenance once installed and the equipment is more easily able to survive extremes of climate. This type of system can have valves dedicated to large drip hoses to which emitters and quarter inch lines to individual plants are attached.

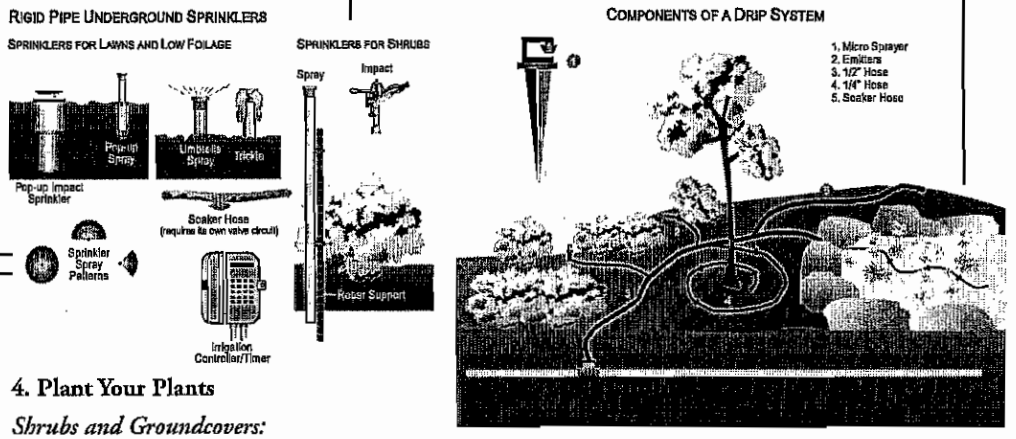
Drip Irrigation

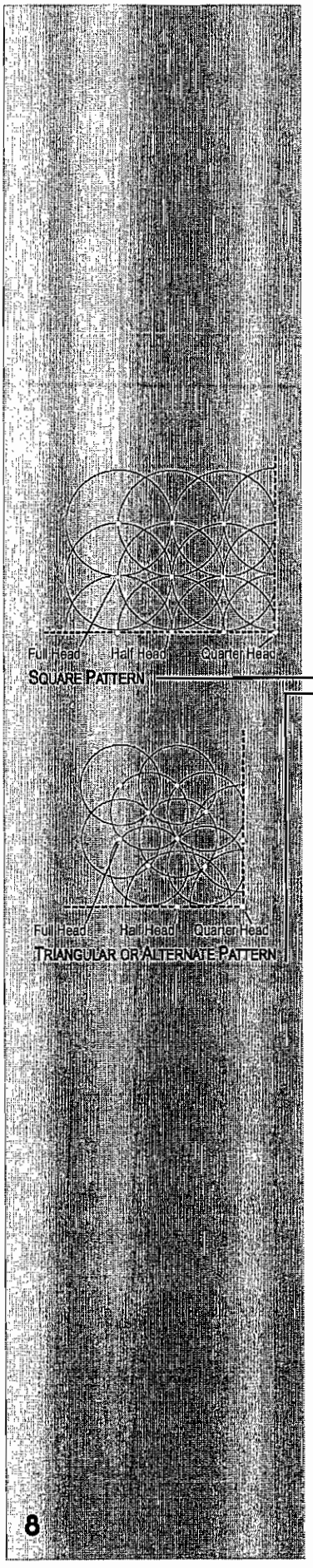
Drip systems are almost always used to water shrubs and trees rather than lawns. They save by delivering exactly what the plant needs to the exact root zone of the plant. Emitters deliver water in gallons per hour, ranging from one half to five gallons per hour, so make sure the emitters you choose are suitable for the plants they will be watering.

Many drip systems are easily expandable and flexible, allowing you to change locations and fixtures easily. The downside is that they require regular checking for clogged emitters. They can be damaged by rodents or by heavy snows if they are located on slopes. A drip system requires a thorough annual review and maintenance.

General View of Irrigation System Components







4. Plant Your Plants

Shrubs and Groundcovers:

Plants and shrubs come in all kinds of containers from plastic and peat to no containers at all, called bare root. There are several basic tips for planting, no matter what type of plant you have purchased:

- The hole for the plant should be one and one half times as deep and twice as wide as the root ball of the plant
- Make sure the soil in the hole is moist and the edges of the hole are broken enough to permit the roots to penetrate it. Add some loose backfill soil to the bottom of the hole
- Water the hole and let it drain
- When plant roots have been tightly bound by their nursery containers, gently loosen roots at the bottom and sides before planting
- Plant the plant so the top of the root ball will be even with the soil surface. Take settling of loose soil into account
- Fill the hole with soil and firm it as you fill
- Form a watering basin by building a soil ridge around the planting hole. Watering basins make sure the water you apply soaks down around the plant's roots instead of running off
- Water the new plant slowly and thoroughly. Many gardeners apply a diluted mixture of vitamin B1, available at nurseries, to newly transplanted plants

Trees:

The proper spacing, planting and maintenance of mountain landscape trees are critical. Even the experienced gardener seldom plants new trees. Most of us will want to seek some advice from a nursery or landscape professional prior to tree planting. In addition, it is very important to consider the positioning and spacing of trees to create defensible space around your home, space that can halt the progress of an approaching fire (see Chapter Four).

If you are planting trees in natural areas on your property, please refer to Chapter Five: Maintain Natural Areas through Backyard Forestry.

Planting a tree is similar to other types of plants but on a grander scale. The same rules apply for digging the hole, dig to twice the width and one and one half times the depth of the size of the rootball.

Once the hole is dug, build a mound of soil in the bottom of the hole. The rootball will be set on top of the mound. The correct height for the mound will allow the top of the rootball to be at grade.

Some trees will require staking. If staking is going to be installed, the following tips will help you do it properly:

- Three stakes should be anchored in the hole in which you plant the tree, or if the tree is very small, a minimum of one foot from the trunk
- Stakes should be spaced evenly to form the shape of a triangle, supporting the trunk on all sides, no matter which way winds blow
- Make the stakes as short as possible, but high enough to hold the tree upright under calm conditions. The trees top should return to vertical when the wind stops blowing. Allowing the tree to bend with the wind will help the tree develop a strong trunk
- Tie the tree at just one level, near the top of the stakes
- Provide flexible movement at the tying point, not allowing the tree to contact the stakes
- Remove the stakes as soon as the tree is able to stand on its own

Snow poses other challenges to newly planted trees and shrubs. Contact your local nursery professional for tips on protection from snow weight and damage.

Lawns:

Many of us who have lived in a city environment are used to having a large green expanse of lawn. Some mountain residents find a lawn out of place in the natural forested setting of our mountain communities.

During a serious drought condition, most mountain community water agencies do not permit the installation of any new lawn areas. Check your local agency for turf restrictions. These restrictions may include no new turf at all, limits on turf areas to 1,000 square feet or less, or limits on turf to 30% or less of landscaped area.

Lawns use twice as much water as other types of landscape plantings. As a result, keep turf areas to a minimum, that is, limit turf to areas that are needed for play or recreation. The use of water conserving groundcovers and shrubs and outdoor recreation alternatives such as patios and decks are encouraged.

A healthy lawn that uses the least amount of water possible relies on training the roots of the grass to grow deep. In this way, the frequency of watering can be reduced and turf will stay green and healthy.

To plant a healthy lawn:

- Prepare the soil by adding organic amendments to loosen heavy soils, provide good drainage, and to allow loose sandy soils to retain water better
- Include starter fertilizer when you amend the soil to provide extra nitrogen
- Till amendments and fertilizer thoroughly into the soil to a depth of eight inches, the root zone needed to establish a healthy lawn
- Rake to level and remove dirt clods
- Roll with a water-filled roller, to compact loose surfaces
- Plant seed or lay sod
- Water lightly, and then roll again

5. Keep good records

Keep records of the planting dates and particulars of trees and shrubs. Make a map of irrigation pipelines, valves, sprinklers, bubblers, and emitters as you installed them. If you have an automatic watering system, make sure you show where the electric wires that serve the valves are.

6. The magic of mulching

Mulching—spreading organic material over the ground around trees and shrubs—decreases the amount of water plants need by keeping the soil underneath cool on hot days and by reducing evaporation. In the winter, a layer of mulch can protect plant roots and stems during a severe freeze. In the summer, mulching can help keep weeds in check. Mulch also helps soil remain easy to cultivate, limits erosion, and reduces runoff—important for preserving the water quality of mountain streams and lakes.

Wood or bark chips are in abundant supply in the wake of tree removal. Other mulches include shredded bark or cocoa, composted lawn clippings, decorative gravel, peat moss, permeable plastic sheeting, or rocks. If pine needles are used, limit the depth to between one and two inches, more is a fire hazard and less will not prevent runoff and protect soil. Keep pine needles at least two feet from any structures and remove them if they are under decks.

Mulch should be placed several inches away from tree trunks and should extend several feet outward. For shrubs and flowerbeds, cover the soil surrounding the plant. Re-apply as needed each spring.

Dark colored mulches work best at keeping sunlight from soil. Apply mulch approximately two to six inches deep, depending on the specific use, or use a black permeable plastic fabric underlay. Never use solid plastic as an underlay material.

CHAPTER THREE: Maintain Your Landscape

Water conserving landscapes generally need less maintenance than thirsty landscapes. There is less weeding because of mulching. There is more groundcover and less lawn, so there is less mowing. Healthy plants are more likely to be able to resist pests. Fertilizing once in the spring and once in the fall should be sufficient.

1. Learn how to water your landscape

Lawns, shrubs, groundcovers, and trees all need different amounts of water, applied differently.

Make sure new plants get enough water to be established. Make sure that plants are deep watered in the spring, even when it is cool so that they will develop deep roots and need less water in the summer. Deeper roots allow plants to use moisture deep in the ground. Plants will be healthier and stronger. Mulch around trees and shrubs. Mulching discourages weeds and slows evaporation when you water your plants.

Existing trees and shrubs can usually get by with deep watering, applied to their root zones once a week for about five minutes, depending, of course on the amount of water your watering system delivers. Make sure they get adequate water in the spring to encourage deep roots and make sure you water trees at their drip lines—the area below the spread of their branches. Build a four to six inch earthen dam around the root zones of both trees and shrubs to hold the water so it soaks in rather than running off. Run off means you need to change your watering practices and times.

Most lawns will do adequately during a drought with watering no more than twice a week for about ten minutes. If your lawn wilts (see below), then increase water by two minutes. If you don't have an automatic sprinkler system, use a kitchen timer to help you keep track.

Get to know how plants signal for water

Some plants lose their gloss and start to droop a little before wilting. The time to water is when the plants need it. Learn to use your automatic timers so you can adjust watering schedules for cooler, wetter weather.

Stop runoff

If water flows away instead of soaking in, split the watering time into two sessions to allow the soil to absorb the water. Where soil is sandy, water may percolate below the root zone. Compensate by watering for half the time, twice as often, so water stays in the root zone. The water holding capacity of soil can be greatly improved by using soil amendments. Heavy clay soil will absorb more water and sandy soil will hold more water in the root zone.

Train your plants to develop deep roots

Water thoroughly but infrequently. Make sure that plants are deep watered in the spring, even when it is cool so that they will develop deep roots and need less water in the summer. Deeper roots allow plants to use moisture deep in the ground. Plants will be healthier and stronger. Some trees may require deep watering year round.

Avoid watering on windy days

When you water on windy days (a breeze stronger than 5 to 7 miles per hour), much of the water evaporates or blows away.

Avoid watering in the middle of the day

Water before 6:00 a.m. Many mountain water agencies require that commercial landscape watering be complete by 5:00 a.m. and home landscape watering by 8:00 a.m. Morning is the best time because it prevents the growth of fungus. When you water during the cool parts of the day more water soaks in instead of evaporating.

Adjust sprinklers to water plants only

Watering driveways, patios or roadways is a waste of water and money. Make sure that coverage is even so that you don't have to drown one area in order to get enough water on another.

Water your lawn only when it needs it

Test for watering by stepping on the grass. Does it spring back when you raise your foot? If the answer is yes, it doesn't need water. Look at the color of your lawn in the early evening. If it is off-color, light green to yellow, then it needs water.

Turn off your sprinklers when it rains

For residents that can't be home to do this, automatic rain sensors are available at nurseries and irrigation supply stores.

Use a kitchen timer

It will help you to remember to turn sprinklers off if you do not have an automatic system. Flow restrictors may also be available at some nurseries and irrigation supply stores. Consider installing a water efficient automated system.

What About Drought Stressed Native Trees?

Water native trees suffering from drought twice a month until they recover. During dry periods, continue watering once a month. Ideally, water should penetrate soil in the drip zone, the area under the spread of a tree's branches, to a depth of 18 inches. Depending on the type of soil and slope of your property, this will take 12 to 24 hours using a soaker hose snaked under the drip line of the trees. Don't keep the soil saturated. Let it dry out between waterings. Don't sprinkle or spray. Spraying tree bark with water can encourage fungus. If you have a large property and an automated irrigation system, consider putting these trees on the system and controlling how much water they get using a soil moisture sensor.

2. Maintain your irrigation system

Broken sprinkler heads spew water that doesn't benefit your plants. Risers that are too low or too high don't place the water where it is needed. Hoses, couplings, valves, and faucets that leak not only create large puddles but waste your watering dollars.

Take time to examine your irrigation system at least once a month. Check for:

- broken sprinkler heads
- clogged sprinkler heads
- sunken sprinkler heads
- sprinkler heads knocked sideways (off vertical) by animals, play or garden equipment
- mismatched sprinkler heads
- clogged emitters in drip irrigation and bubblers
- sprinklers that over spray onto driveways and roadways

Replace old or worn irrigation fixtures—an emitter or sprinkler with a damaged head or an opening that is worn, even to a very small degree, can increase the amount of water being delivered 4% or more.

Brown spots or dying vegetation can be a result of several causes: animal damage, disease, over fertilizing. Brown spots can also be a sign that a part of your irrigation system is not working properly.

Every winter, most mountain communities experience some freezing and thawing. Winterize your irrigation system by draining it prior to the coldest part of the winter, when rain and snow will provide your plants with water. Turn off your automatic timer.

3. Take care of your plants

Groundcovers:

- Keep weed-free until established. Weeds compete for water and nutrients when groundcover is new but groundcover will generally smother weeds once established
- Prune to remove dead foliage and to stimulate new growth
- Fertilize lightly spring and fall
- Many groundcovers can and should be trimmed back lightly in the early spring and mulch added to the soil in the area to minimize weeds and decrease evaporation

Shrubs:

- Mulch to reduce weed growth and water loss
- Rejuvenate soil with soil amendments in areas near plants, taking care not to injure roots
- Prune to remove dead or diseased wood or old growth or to direct new growth
- Fertilize lightly spring and fall

Trees:

- Keep turf grass and other vegetation at least 20 inches away from tree trunks
- Remove stakes as soon as trees can stand on their own
- Mulch (start several inches from the trunk) to reduce weed growth and water loss
- Prune deciduous trees in winter months when dormant to remove dead or diseased wood or direct growth

4. Control erosion and runoff

The removal of dead trees has created a great deal of unprotected hillside with no vegetation to hold the soil in place. These unprotected hillsides are likely targets for severe erosion problems. In addition, many mountain community homes have steep slope areas. Proper landscaping with plants suited to the condition of the slope and the direction it faces can keep slopes from sliding or eroding.

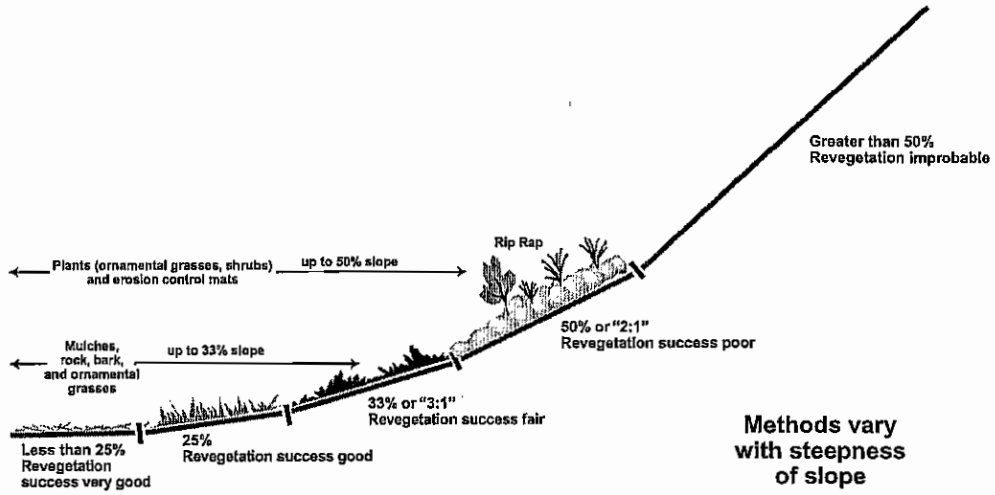
If you have an eroding slope on your property, take steps to control runoff and prevent further erosion. If you have water running off slopes when you water or when it rains—you have an erosion problem. Erosion is easy to control and critical to the local environment.

Preventing runoff is equally as important as preventing erosion. A major source of dry season pollution of lakes and streams near urban areas is runoff from landscape watering. This water carries oil and

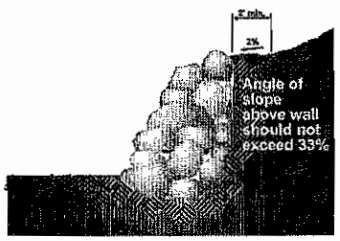
gasoline residue from roadways, fertilizers, pesticides, and other undesirable material as it flows away from our homes and drains into streams and lakes.

Irrigating on slopes can be tricky. Emitters are preferred but require monthly inspections to detect clogging. The freeze/thaw cycle at higher elevations can also damage tubing. Bubblers require less maintenance than drip emitters and may be highly effective. New plants should have earthen dams or watering basins around them to capture the water they receive, train them to have deep roots and prevent runoff.

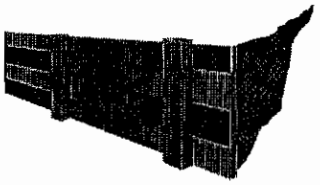
Take a look at your slopes. How steep they are will tell you what will work.



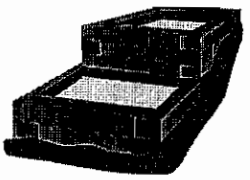
Strategies for Steep Slopes



Rock retaining or breastwall



Wood retaining wall



Terraces

Moderate slopes (less than 33%) have a good chance of success at controlling runoff using plant materials and mulch.

Cover bare soils with mulch of bark chips, pine needles, wood chips, and even stones or river rock. Choose plants for slope stabilization and water using bubblers or drip emitters. Watch the length of time you water and the amount of water delivered. Make sure the plants get only what will soak in.

Between 33% and 50%, slopes require special care.

You may need to use an erosion control blanket or mats of coconut fiber or jute netting to hold slopes in place until plants can become established. Once established, the roots of the plants will knit together to hold soils in place and their limbs, leaves and branches will diffuse the force of rain and wind. These steep slopes require irrigation to be applied so there will be no runoff.

Slopes over 50% will require structures or special techniques for stabilization. Wood retaining walls, interlocking concrete blocks, rock retaining walls, riprap (loose rock) areas, and terracing are among the solutions you can choose from. If you choose wood, make sure the wood is treated with a wood preservative to prevent rotting.

Paved driveways are often an important factor in controlling erosion. Paving prevents erosion resulting from snow removal, vehicle traffic in and out of your driveway and soils unable to absorb moisture because they have been compacted by vehicle weight. Small ditches or swales that capture runoff and return precipitation to your landscape should border your driveway.

Fortunately, there are some very good plants that can grow on steep slopes and stabilize them (see Chapter Six). Shrubs include bearberry *(Arctostaphylos uva-ursi)*, western redbud *(Cercis occidentalis)*, cotoneaster *(Cotoneaster)*, rockrose *(Cistus)*, juniper *(Juniperus)*, creeping mahonia *(Mahonia repens)*, pyracantha *(Pyracantha)*, rosemary *(Rosemarinus spp)*, and lavender cotton *(Santolina)* (see Plant List). Groundcovers include snow in summer *(Cerastium tomentosum)*, Japanese honeysuckle *(Lonicera japonica)*, Lady Bank's rose *(Rosa banksiae)*, and vinca *(Vinca)*.

CHAPTER FOUR: Defensible Space— Landscape to Reduce the Wildfire Threat

Create defensible space for fire safety

Much of the San Bernardino Mountains area is at risk for wildfire. Evaluate the risk of wildfire in your area and take steps to reduce that risk. If a major wildfire were burning within a mile of your house and strong winds were blowing, would the landscape around your home provide receptive fuel for burning embers or would it tend to be a place where embers drop and go out? Would firefighters have enough open space around all sides of your house to defend it?

Most people realize that homes located in or adjacent to wildland vegetation are at risk for damage from wildfire. However, few people recognize that homes located in urbanized areas are also threatened.

During intense wildfires, burning pinecones, branches and other material can be carried a half-mile or more beyond the fire front. As a result, showers of embers are produced. If these embers land in spots where there are easily ignited fuels such as wood shingle roofs, trash piles and dried grass, new fires can start.

Consequently, homes located in the urbanized portions of mountain communities, blocks away from wildland vegetation, are also at risk.

The 3 R's of defensible space

Use these 3 R's as your guidelines for creating defensible space around your home. Look at the vegetation around your and your neighbors' homes. Work together to create defensible space.

Remove:
- Remove dead vegetation
- Remove ladder fuels
- Remove firewood piles from near the house

Reduce:
- Break up dense shrub fields and thick tree cover
- Prune dead wood from shrubs
- Remove low tree branches
- Reduce the amount of highly flammable native vegetation

Replace:
- Replace highly flammable plant material with less flammable, low growing species within 30 feet of your house

Improve fire safety without creating bare ground, which leads to erosion and water quality degradation. It is also important to follow any local regulations when creating defensible space. For example, the Arrowhead Woods Architectural Committee (AWAC) and the County of San Bernardino both have regulations pertaining to fuel reduction requirements. (see the sidebar on page 16 for the AWAC requirements).

How to create effective defensible space

In designing or redesigning your landscaping, you should make the areas closest to your house lean, clean and green—that is reduce the amounts of fuel, clean away dead or high risk vegetation, and keep the areas closest to your home well-maintained, green and healthy.

Many people find this fits their other landscape objectives as well. The area closest to the house is where you entertain guests, eat outside in good weather, or enjoy a lawn or flower garden. A paved driveway and deck or patio is usually in this area. If they're constructed of nonflammable material, they'll meet the criteria for defensible space.

Many homes are located adjacent to forests or brush fields or on steep vegetated slopes, which are areas of high wildfire hazard. They need both the lean, clean and green zone (the first 30 feet) and outer defenses as well. The remainder of this chapter gives detailed instructions on how to create effective defensible space in these high hazard areas.

Step One: Determine your defensible space

To determine the appropriate defensible space for your property, three factors will influence how much you'll need.

Highly flammable wildland vegetation (grass, shrubs or trees) growing on or adjacent to your property, will mean you'll need more defensible space. You'll also need more if there are steep adjacent slopes. Calculate your needed defensible space using the chart on the next page.

If the recommended distance goes beyond the property boundaries, contact the adjacent property owner, and work cooperatively to create defensible space. The effectiveness of defensible space increases when property owners work together. Do not implement defensible space practices on neighboring properties without first securing permission. The County Assessor's office can provide assistance if the owners of adjacent parcels are unknown.

What is defensible space?

The term defensible space is used to describe an area of reduced wildfire threat around a home. You can modify your landscape to create defensible space by altering vegetation to increase its moisture content, decrease overall volume, and altering the arrangement and height of plant material. It is also important to ensure adequate space for firefighters to operate safely. These practices can make the difference between a structure surviving a wildfire or being destroyed. Often, the area where you create defensible space is simply your own backyard.

Factors affecting how easy it will be to create your own defensible space are:

- the size of your property
- types of vegetation
- accessibility
- slopes and steepness

In some instances, a homeowner may already have an effective defensible space in place that requires only minimal additional work in order to contribute substantially to protecting a home from wildfire.

RECOMMENDED DEFENSIBLE SPACE DISTANCES			
WILDLAND VEGETATION TYPE	Flat to Gently Sloping 0-20%	Moderately Steep 21-40%	Very Steep 41+%
	DISTANCE REQUIREMENTS		
GRASSES, WEEDS	30 feet	100 feet	100 feet
SHRUBBY UNDERGROWTH	100 feet	200 feet	200 feet
FORESTED AREAS (PINE NEEDLE UNDERSTORY)	30 feet	100 feet	200 feet

IF YOU LIVE IN AN URBAN AREA WITH PLANTED LANDSCAPE, USE THE "GRASSES, WEEDS" CATEGORY ABOVE TO CALCULATE YOUR DEFENSIBLE SPACE.

Once the recommended distance is determined, temporarily mark the outer boundary with strips of cloth tied to trees or shrubs. The land located within this designated boundary is the defensible space you need.

Step Two: Make a list of what you need to do and do it

Clean Up

Look around, is there any dead vegetation in your defensible space zone?

Dead vegetation includes dead trees and shrubs, dead branches lying on the ground or still attached to plants, dried grass and flowers, dropped leaves and needles, and firewood. Dead vegetation should be removed from the defensible space area. Two important exceptions are pine needles covering bare soil and downed trees embedded in the ground.

Pine needles should be removed to a thickness of between one and two inches—more is a hazard and less promotes erosion. Be careful not to remove the duff area, the dark brown zone beneath the needles where the needles have begun to decompose. Remove all pine needles under decks and within two feet of any structure. Leave fallen trees embedded in the ground but remove their exposed branches.

Break up the canopy

Within your defensible space area is there a dense, continuous cover of shrubs or tree canopies? Sometimes wildland plants grow as an uninterrupted layer of vegetation as opposed to patchy or widely spaced plants. The more continuous and dense the vegetation, the greater the threat of wildfire. If the branches of neighboring trees or shrubs touch without large openings between them, break them up. There are two types of dense, continuous vegetation that homeowners are likely to encounter in the mountain areas, brush fields and crowded stands of coniferous trees.

Brush fields

Create a separation between shrubs based on shrub height and steepness of slope. The separation between individual or small groups of shrubs on flat to gently sloping terrain should be twice the height of remaining shrubs.

For example, if the shrub height is four feet, then the recommended separation should be eight feet (2 x 4 foot shrub height = 8 foot separation). Separation is measured from the edge of the canopy of one shrub to another, not from trunk to trunk. The separation between shrub canopies should increase as the steepness of slope increases. (see the defensible space diagram)

Crowded stands of trees

In many areas of the San Bernardino Mountains, coniferous trees occur in dense, overcrowded stands where their branches are touching or interwoven. These conditions contribute to the risk of uncontrollable and sometimes catastrophic crown fire (wildfire burning through the tree canopies, independent of the understory vegetation). To address this problem, create a separation between trees within the defensible space area. This is typically accomplished through tree removal or thinning of the stands (see the defensible space diagram).

Make sure there are no ladder fuels within your defensible space

Sometimes plants can provide uniform vegetation (fuel) from ground level to the treetops. Serving like rungs of a ladder, they can carry flames from fuels burning at ground level, such as excess pine needles, to taller fuels such as shrubs, which ignite still taller fuels such as tree branches.

The ladder fuel problem can be remedied by raising the height of the upper fuel layer by removing lower tree branches or reducing the height of lower fuel layers by pruning or removing tall shrubs or small trees (see the defensible space diagram).

Within the defensible space area, a vertical separation between fuel layers of at least three times the height of the lower fuel layer is recommended. If a shrub growing adjacent to a pine tree were three feet high, the right separation would be nine feet (3 feet x 3 = 9 feet). You could remove the lower tree branches or reduce the height of the shrub, or both.

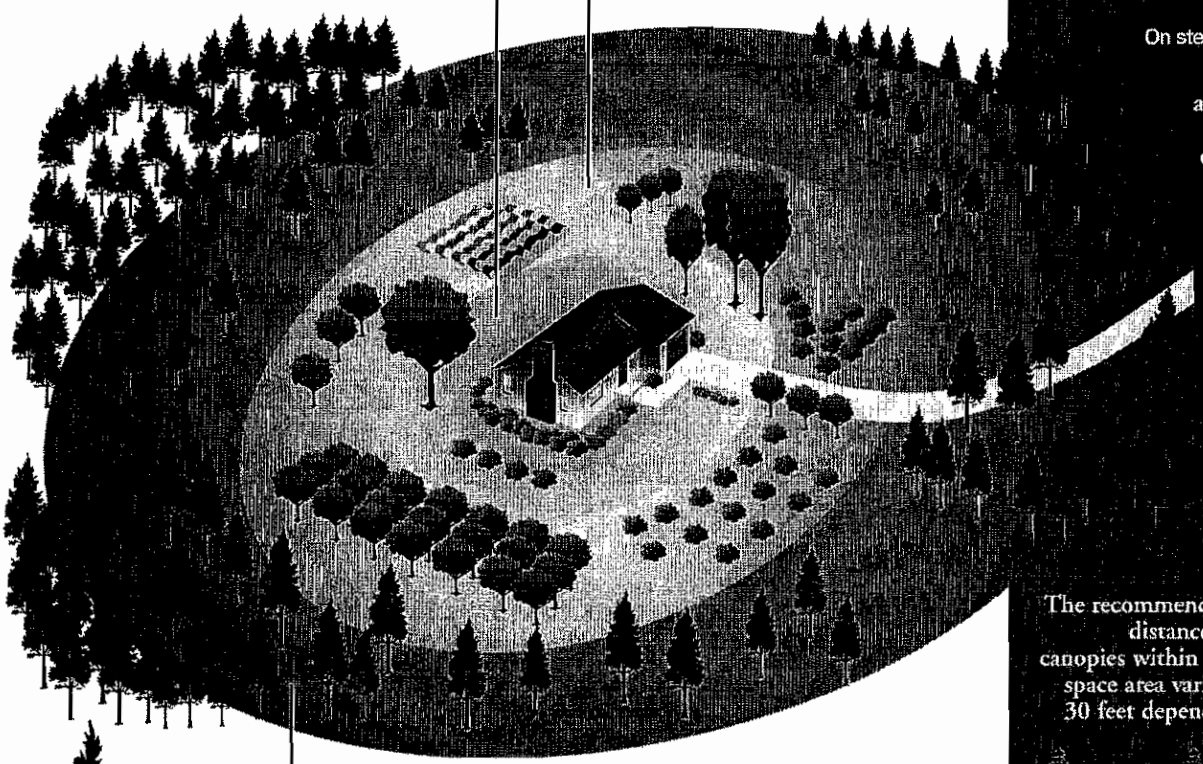
Landscaping in Wildfire-Prone Areas

Zone 1: "Defensible Space"

30' min. on level ground
100' by law in some areas
200' on slopes of 40°

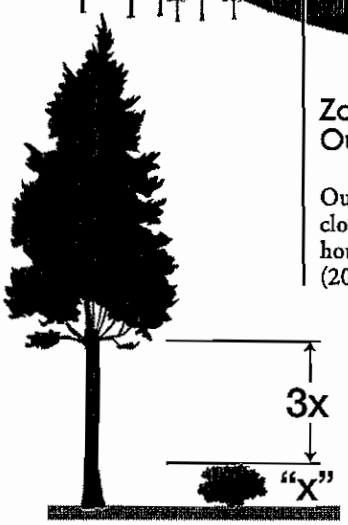
Zone 2: The Mid-Zone

30'-70' min. on level ground



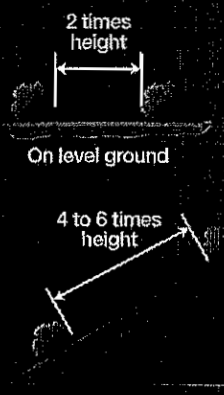
Zone 3: Outermost Zone

Outer perimeter no closer than 70'-100' from house on level ground (200' is better)



Removal of ladder fuels should provide a separation of three times the height of the lower fuel layer.

Ladder fuels are created when vegetation of different heights is close enough to allow a surface fire to become a crown fire.

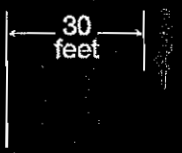


Maintain adequate space between ornamental or wild shrubs.

The recommended separation distance between tree canopies within the defensible space area varies from 10 to 30 feet depending on slope.

Flat to Gently Sloping
0-20%

Moderately Steep
21-40%



Very Steep
41+%

Some local homeowners associations and public agencies have requirements for fuel reduction. The following are those for the Arrowhead Woods Architectural Committee (AWAC):

AWAC Fuel Reduction Requirements

Within 10 feet of roads and driveways to property lines or up to 100 feet, whichever is less:

- Remove all dead burnable fuels, ground debris, logs, snags, dead trees, dead branches in bushes and trees, grass four inches high and higher, pine needles down to two inches deep. Stack cut logs or firewood 30 feet from any structure.
- Thin shrubs to spacing of eight to 12 feet between individual plants or groups of two or three plants.
- Thin trees less than six inches in diameter to spacing of six to eight feet apart. Removing live trees more than six inches diameter requires AWAC approval.
- Trim trees taller than 45 feet so that no portion of any branch is less than 12 to 15 feet above the ground. Trees less than 45 feet should be trimmed up one-third of their height. Branches should be trimmed to the trunk. Trim complete branches where any part is less than 10 feet from a chimney opening. Any tree trimming requires AWAC approval.
- Tree litter should be chipped or removed to the landfill transfer station within one week so that it does not aggravate fire conditions or create a forest insect problem. A licensed sprayer should be employed to spray green pine or fir logs and trimmed pine and fir tree trunks. Cut pine, fir and cedar stumps should be treated with a quarter inch layer of borax powder within two hours of cutting.

Exceptions to this practice are:

- removal of lower tree branches should not exceed half of the tree's total height
- lower tree branches should be removed to at least seven feet in height when no understory vegetation is present
- lower branches on shrubs taller than three feet should be removed to provide at least 12 inches of separation from the ground

Step Three: Choose plants for defensible space areas

Once you have accomplished the steps above, you may want to go further and plant to enhance your defensible space. This can be fundamental to the effectiveness of the defensible space you are creating. In addition to meeting other needs such as providing shade, adding color, and controlling erosion—landscape plants used in high wildfire hazard areas should possess desirable fuel characteristics.

Unfortunately, there are no fireproof plants. Any plant can burn during extreme fire conditions. There are, however, important differences in flammability. Some plants are more difficult to ignite, burn more slowly, produce less heat, and have shorter flame length.

Plants that have the following characteristics are likely to be more fire resistant.

High moisture content:

These plants are more difficult to ignite and burn more slowly. Green, healthy and actively growing herbaceous plants (grasses, groundcovers and flowers) have a much greater moisture content than woody plants (shrubs and trees).

When dried out, however, herbaceous plants possess much lower moisture content than woody plants. If kept green throughout the fire season by irrigation, grasses and flowers are usually more desirable than woody plants in the defensible space area. Mow them down when they dry out.

Low growing habit:

Plants that grow close to the ground usually produce shorter flames and have less fuel than taller plants. Select plants that grow to a height of less than 18 inches at maturity, or can be readily maintained at this height by pruning.

Low fuel volume:

Plant species produce highly variable volumes of fuel. Select plants that produce small amounts of vegetation and have stems and branches less than half inch in diameter.

Desirable chemical content:

Avoid selecting plants with resinous, oily or waxy plant parts such as juniper, manzanita, sagebrush, and arborvitae. These evergreen plants possess an undesirable chemical content that increases their flammability. Where fire hazard ratings for landscape plants were available, they are listed in the plant list in Chapter Six.

Step Four: Maintain for fire safety

Again—lean, clean and green—should be your watchwords. Keep your landscape lean by reducing, removing or replacing most flammable vegetation within your defensible zone. Keep it clean—make sure there is no accumulation of dead vegetation or other flammable debris. Keep it green—make sure plants are healthy, well watered and green during the fire season.

The manner in which plants are maintained is just as important as plant selection. For example, plants identified as having a lower fire risk than others can be a hazard without proper irrigation, pruning and removal of dead leaves and branches. Likewise, the risk associated with high-hazard plants can be reduced through appropriate cultural practices.

Creating a defensible space should not be viewed as a one shot effort. Maintaining an effective defensible space is an ongoing process.

Step Five: Integrate defensible space and water quality protection

When creating a defensible space around your home be aware of water quality concerns. If misapplied, defensible space practices can encourage erosion. Incorporate the following erosion control concepts into your defensible space plan:

- don't remove all vegetation from the defensible space zone
- if plant removal results in patches of exposed soil, revegetate with appropriate plants
- when breaking up dense, continuous brush fields on steep slopes, create groups or islands of shrubs staggered horizontally across the slope to prevent run off
- pine needles should be removed to a thickness of between one and two inches—more is a hazard and less promotes erosion
- when removing vegetation, leave the roots to hold the soil, especially on slopes and try to minimize soil disturbance

CHAPTER FIVE: Maintain Natural Areas through Backyard Forestry

Recently the forest in the San Bernardino Mountains has undergone unprecedented change as a result of bark beetle attacks on aging trees, severely stressed by drought. This situation is worse because the forest is overstocked with trees as a result of a variety of factors. Significant numbers of trees in the pine species have died and additional trees will die over the next few years.

The result is that the character of the forest we know and love will change. Our forest will succeed from one dominated by pine trees to one dominated by firs, cedars, and oaks in many areas. While reaction to the loss of so many trees may be to step in and replant, it is important to stop and understand that the character of the forest we create today will be the forest for future generations.

The forest we leave our children should avoid the mistake of overstocking, or too many trees in too little space. It should also strive to create a natural character, apart from the garden areas around our homes where ornamentals are suitable. Reforesting should be limited to species that will not need supplemental water or fertilizer to thrive.

The edges of our mountain communities blend into the edges of the forest. What we do in the urban part of the forest has an effect on the forest as a whole. Before making decisions about whether and what to replant, consider the following:

- Are there still enough trees on my property?
- Are the trees that are left the species I want?
- Do the trees have enough room to grow to maturity?
- Are there trees too close to buildings, driveways, and roads?
- Where should I plant new trees?
- When I consider defensible space, how would new trees fit in? (See Chapter Four)

Maintain your native vegetation

One of the reasons people live in mountain communities is the scenic beauty. Lakes, slopes, seasonal changes and ecosystems make this one of the most beautiful places in the world. Native plants including trees, shrubs, wildflowers and grasses, are a major part of this inherent beauty.

Beyond the importance of native vegetation for beauty, native plants are also critical to the habitat of animals that live in the mountains. Native vegetation lessens the impact of human activities. Buildings, roads, traffic and people can affect the forest ecosystem in negative ways. When we choose to maintain native vegetation on our properties, in addition to the gardens and defensible areas we create around our homes, we reduce human impact on the ecosystem.

The value of native vegetation to the ecosystem is paralleled in many ways by its economic value to human residents. A forested landscape with a diverse complement of native plants makes property attractive and desirable, affecting property value.

How much native vegetation do you have on your property? If you have recently built a new home, are there plants in the areas that weren't disturbed by vehicles or equipment during construction? Are there trees, shrubs, or other plants that appear to be in their natural state? This is your native vegetation.

How healthy is your native vegetation? Has it been damaged by human activities or pests? If so, you can care for it so it remains a viable part of your landscape.

Check the health of your native vegetation

Basic growth requirements for plants are sunlight, water, nutrients and space. When all of these are available, plants are usually healthy. To tell if a plant's needs are being met, look at the plant's appearance. Leaf color, leaf size and the amount of foliage are good indicators of plant health.

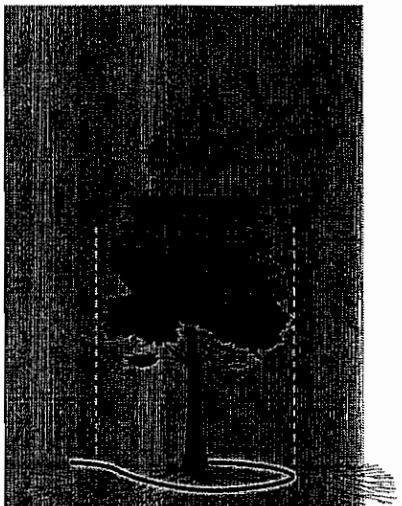
Normal foliage color of mountain natives varies among species, from pale yellow-green to deep forest-green to blue-green. Compare the plants on your property with the same species on similar sites. Lighter, yellowish color often means a root problem, drought, soil compaction, poor nutrition or disease.

Browning or reddening of plant foliage in patches is often a sign of insects, foliage disease or a broken branch. Widespread or complete color change of a tree is often a sign of damage to the growing layer just under the bark, the result of insects feeding in this layer or heat, drought or fungi.

Healthy plants have fuller, or thicker, foliage than stressed plants. A plant with thinning foliage is under stress. Unless the stress is identified and eliminated, the plant continues to decline, or it succumbs to secondary problems like insects or disease.

Recommendations for healthy vegetation

Maintenance practices like watering, fertilizing and staking are typically not necessary for most mountain area native plants. In fact, they can harm plants that aren't used to them. What's important is to prevent damaging native plants, directly by physical contact, or indirectly by altering their growing site.



Soak drought-stressed trees periodically

Water native trees suffering from drought twice a month until they recover. During dry periods, continue watering once a month. Ideally, water should penetrate soil in the drip zone, the area under the spread of a tree's branches, to a depth of 18 inches. Depending on the type of soil and slope of your property, this will take 12 to 24 hours using a soaker hose snaked under the drip line of the trees. Don't keep the soil saturated. Let it dry out between waterings. Don't sprinkle or spray. Spraying tree bark with water can encourage fungus. If you have a large property and an automated irrigation system, consider putting these trees on the system and controlling how much water they get using a soil moisture sensor.

Avoid physical damage

Physical damage is the most obvious and easiest to avoid. Avoid striking plants with vehicles, snow removal equipment is a prime culprit. Plan ahead and locate driveways away from vegetation. You can also damage trees by using them as utility poles or fence or signposts.

Although not visible, most of a plant lies 12 to 18 inches below the ground. A plant's root system is often as wide as the crown of the plant. Any ground disturbing work under the crown may damage or injure the root system. Keep this in mind when digging or excavating. Trenches and slope cuts should be located well outside a plant's drip line to avoid damage to the root system.

Roots are susceptible to damage indirectly from soil erosion, soil compaction or addition of new soil on top of the old. These activities make it difficult for roots to grow; they're deprived of necessary air and water.

Bark beetles and other pests

Bark beetles occur naturally in our mountain area. The current infestation is unprecedented in southern California. They enter trees through the bark and breed in this area, eventually killing the tree.

There are no effective pesticides that can be applied from the air, as beetles must come into contact with the chemical when entering or leaving the trunk bark. Widespread control by clearing stands of trees adjacent to infected areas is made unfeasible by the beetles' ability to fly as much as eight miles in a single flight. An infested tree will begin to show brown needles and often have globs of sap on the trunk. The natural breakdown of insecticides requires that the trees be resprayed every six to 12 months as long as the outbreak lasts.

Even if the trees receive sufficient water in coming seasons, bark beetles will continue to damage and kill more of the pine forest. Giving supplemental water to high value trees on your property may help them resist but there is no guaranteed protection. Pesticides Astro®, Dragnet®, and Sevin® are licensed for use against bark beetles in California and have been shown effective against western pine beetles. The trunk and large branches must be thoroughly treated to a height of 30 feet up the trunk and the treatment must be repeated annually while trees are stressed.

There are other native inhabitants, such as parasitic dwarf mistletoe and root-decay fungi that make a living at the expense of local trees. In wild forest areas, these organisms serve important ecological functions. However, when they do their work in home landscapes where individual plants have high value, they can become pests and may require control to protect plants. Human activities and long term drought conditions often weaken plants, predisposing them to harm by pests.

Application of pest control chemicals and fungicides must be done with care and often only can be done by licensed professionals. They should be used only as a part of an integrated approach to plant health. A preferred approach is to plant pest resistant species and create a healthy environment for plants with appropriate watering, fertilizing, and pruning. Remove weeds by mowing or hoeing. Encourage natural pest predators such as birds and ladybugs.

Contact your local state forestry office for control recommendations if you suspect a forest pest affects your trees.

Fertilizing

Unlike plants in the landscaped area of your property, native vegetation rarely needs fertilization. Native vegetation gets its nutrients from the natural forest mulch that covers the soil and slowly decomposes, releasing nutrients. Often it is better to maintain a two to three inch layer of leaves in the landscape than it is to apply manufactured fertilizers. Fertilize plants only when they need it and with great care to ensure that no fertilizer escapes in runoff. New native plants may benefit from fertilization if the soil has been disturbed or in nutrient poor soils when you are trying to get a young plant established.

Prune for health and safety

The best time to prune conifers is late fall or winter. Prune only to create a defensible zone (see Chapter Four), to remove damaged or diseased branches, to eliminate limbs in walkways, or to provide for fire safety. If a young conifer has a forked top, prune out one of the two tops or leader.

Deciduous trees are pruned in the fall after a few hard frosts or in early spring before buds show evidence of swelling. Prune broken limbs whenever they are found. Do not leave long branch stubs, they will not heal and will leave trees open to infectious diseases.

General pruning tips

- Do not top trees or leave flat tops
- Do not cut into the branch collar. The branch collar determines the angle of the cut
- Do not leave stubs
- Do not paint or seal wounds or cuts

Thin trees as necessary

Trees suffer when light, water, nutrients and growing space is limited or there are too many trees sharing the resources. Overcrowding weakens trees and makes them susceptible to attacks from insects and disease. These reasons plus the need to create defensible space make removal of trees growing too close together desirable. Using the guidelines described below, select trees for removal that are deformed, have a thin crown or dead top, or show evidence of disease, insect damage or mechanical damage.

When thinning these smaller trees, consider the following:

- young, vigorous trees grow fastest and with best form if they have 10 to 15 feet of growing space around them
- trees are best located at least 10 feet from buildings and pavement
- trees growing beneath other trees often cannot develop well, so removal should be considered
- trees under power lines are likely to be topped or removed in the future
- mature trees thrive with 18 to 24 feet of growing space around them

Keeping a mix of plant species with varying age on your property lessens the chances of severe insect or disease problems. Species diversity also provides better habitat for wildlife.

Replanting natural areas

If you decide to plant new trees in the forested area on your property, remember a tree will eventually require a distance of 18 to 24 feet from other trees, measuring from trunk to trunk. This will provide it with enough room to grow without undue competition from other trees for water, nutrients and light.

Replacement trees may be planted closer together, say nine feet apart, if you are committed to thinning them as they grow larger. This closer spacing will allow for unexpected loss and keep invasive brush at bay. Manage new stands by thinning and pruning. Thin trees less than six inches in diameter to ever increasing spacing. Continue this practice until trees in maturing stands are spaced a minimum of 18 to 24 feet apart. Always avoid planting trees within ten feet of pavement or structures.

The primary reason to replant conifers on your property is to replace an aesthetic wildland forest environment where tree removal has degraded this landscape value. When planting to reforest try to plant to assure pleasing timbered vistas and choose species that will blend well with surviving native stands.

Trees recommended by the California Department of Forestry and Fire Protection for reforesting efforts include:

Conifers:

- White fir *(Abies concolor)*
- California incense cedar *(Calocedrus decurrens)*
- Coulter pine *(Pinus coulteri)*
- Jeffrey pine *(Pinus jeffreyi)*
- Sugar pine *(Pinus lambertiana)*
- Ponderosa pine *(Pinus ponderosa)*
- Bigcone Douglas fir *(Pseudotsuga macrocarpa)*
- Giant sequoia *(Sequoiadendron giganteum)*

Broadleaf:

- Pacific dogwood *(Cornus nuttalli)*
- California black oak *(Quercus kelloggi)*
- Canyon live oak *(Quercus chrysolepsis)*
- Interior live oak *(Quercus wislizenii)*

Big Bear Only:

- Western juniper *(Juniperus occidentalis)*
- Pinyon pine *(Pinus monophylla)*
- Lodgepole pine *(Pinus murrayana)*

ABOUT PINES:

Some mountain residents may be surprised, in light of the bark beetle infestation, to see the California Department of Forestry and Fire Protection recommend pines in the list on the left. Pines have been included for two reasons:

First: the recommendation to plant pines is based on the assumption that you will be raising native trees from seedlings, perhaps in pots for the first few years. Bark beetles will not attack these young trees (trunks less than two inches in diameter) and by the time the trees are beginning to mature, the current infestation will have subsided. Bark beetles are a natural part of the forest environment and will never vanish entirely. The current infestation is a result of a combination of factors, including the overstocked number of trees, and large area tree mortality is occurring because the pines are extremely drought stressed.

Second: native species listed to the left, including the pines, are the trees best suited to this climate and ecosystem. They are also the trees best suited to resist all native insects and diseases, not just bark beetles. They will also provide the best habitat and food source for native wildlife. If non-native trees are used to replace native trees in areas of high mortality, the fundamental make up of the mixed conifer forest that currently covers the mountain top will be changed. It will be changed not only for the relatively short period of our lifetime, but as many trees live hundreds of years, it will be changed for generations to come.

CHAPTER SIX: Choose Plants for an Integrated Landscape

Choose plants for aesthetics, water requirements and other objectives.

The criteria for choosing specific plants should include watering requirements, aesthetics, proven adaptability to thrive in the mountain environment, usefulness in achieving defensible space or erosion control, as well as suitability to the specific microclimates such as sun, shade, temperature and moisture conditions found on your property.

Planting recommendations are much different today than those of even a year ago. Dead trees are everywhere across the face of our local mountains. Bark beetles have attacked drought stressed pine trees. The local mountains will continue to take on a completely new appearance over the next few years.

There will be a strong need, from both a psychological and a practical standpoint to replant and fill voids. We must exercise some restraint and not act hastily in making these landscape decisions (see Chapter Five: Maintain Natural Areas through Backyard Forestry).

Mountain water agencies urge residents to view this catastrophe as an opportunity to examine our properties from a different perspective. Recreating our forest environment goes beyond replacing tree for tree or filling in the emptiness with color, and must include landscaping for water conservation, environmental protection, and defensible space.

Decisions made today about what we plant in natural areas will have an impact on the local environment for generations. In home gardens and landscapes, our choices are critical to water conservation and reducing or eliminating runoff.

The following planting list strives to be inclusive rather than exclusive. It has been developed in consultation with mountain area landscape professionals and nurserymen, the Arrowhead Woods Architectural Committee, the California Department of Forestry and Fire Protection, and horticulturists with extensive experience in the area of water conserving landscapes.

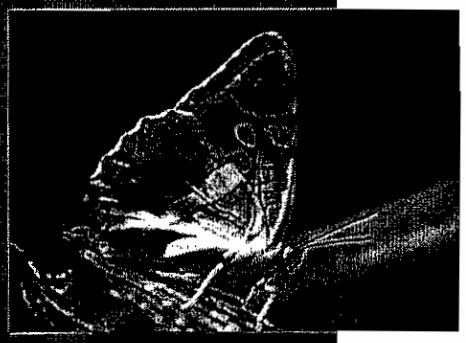
The plant list is organized into three sections that may help you with the design process. The first section presents California native plants that can be useful when your landscaping goal is to reflect the character of the forest around your home.

The second list includes native species widely adapted for garden use that will grow in mountain environments and that generally require less water and care than traditional ornamental species. It also includes other plants from dry climates adapted for garden use. Plants from this list can also be combined with many of the native species to achieve more diversity in your landscape.

The third section presents highly ornamental plants that are often popular for mountain area gardens but generally require more water, fertilizer, and ongoing care than native species.

The lists also comments when plants are easily available but also includes some harder-to-get native plants suitable for revegetating natural areas. Plants for fire-resistant landscapes have also been included. There are few plants that are not low to medium water use and few that have anything but a low to moderate fire hazard. Certain plants that use more water and have higher fire hazard have been included for use in wet microclimates.

There is no such thing as the perfect tree or plant and all landscape materials will have advocates and detractors. The list included here is a work in progress and is intended to assist homeowners with choosing suitable plants. Please consult with local nursery professionals for an even greater selection of the plants that are appropriate for our local mountainscape.



Plan before you buy

Plants are the heart and soul of the landscape. They provide practical, economic, aesthetic and environmental value to property. Exercise care and foresight when selecting plants for specific locations. Reduce the wildfire threat by creating defensible space (Chapter Four) and control erosion by providing plant cover that protects and holds soil in place (Chapter Three).

If you design your new landscape or refurbish an existing landscape according to the suggestions outlined in this guide, you'll have a carefully worked out plan before you select plants. Your plan will note:

- slopes where erosion control is needed
- microclimates like heavily shaded or very sunny areas
- areas of native vegetation to be preserved
- defensible space around your home and other structures

Don't begin buying plants until you have created a landscape plan and pay attention to grouping plants with like water needs together.

Use accent plants sparingly

Accent plants should be planted in borders, entryways, flowerbeds and other similar locations to provide color, diversity or ornamental qualities to a landscape dominated by native or adapted landscape selections. Accent plants should only be used in the wet area of your defensible space.

Group plants into moisture zones

Placing plants that require moist soil conditions in a wet area avoids the constant battle of keeping the site in an altered condition so plants can live. Areas that have dry soils do best when planted with species that thrive in dry conditions.

Matching plant moisture needs with microclimates (shady, sunny, wet, dry) lets you create hydrozones that reduce maintenance requirements and use the least water while being the most efficient. In addition, group plants with similar moisture requirements. Specific valves of your irrigation system will serve each of these moisture zones or hydrozones (See page six).

For example, using the principles of defensible space, the 30-foot zone nearest your home should be the wettest, and might have a small lawn or beds of groundcover, flower beds, deciduous trees, perennials and shrubs. These wet zone plants will require water about twice a week in summer and once a week in spring and fall.

Further away from structures, you may have dry soils with established native vegetation such as pines, firs, cedars, oaks, or manzanita. Select from plants that use low amounts of water when adding to this area. A separate irrigation line can be run through this zone, programmed to irrigate as little as once every two weeks once new plants are established.

A third zone needing its own irrigation valve or suitable drip emitters is the transition area between wet and dry zones, suitable for plants having medium water requirements, usually needing irrigation about once a week in summer.

Consider mature height and spread

Select plants that mature to a height and spread desired. When you ignore mature height and spread, plants may overgrow their intended space, causing damage to structures, maintenance problems and competition with other plants for space, nutrients and water. The heights and spreads in this plant list can be used only as guidelines as elevation can greatly affect the mature size of some species. If you aren't sure, ask your nursery professional before you buy.

Make sure what you choose is practical

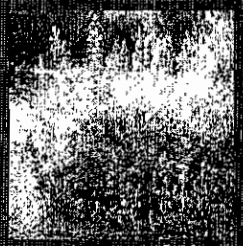
Is the plant suitable for the site? Will it block views? How fast will it grow into adjacent areas? Will it serve its intended use? Will trees provide shade where needed? For example, deciduous trees are a good choice along the southeast, south and southwest walls of a house. They provide shade in the summer and allow sunlight to warm the house in the winter.

Limit the size of lawns

Consider retrofitting your landscape to eliminate or minimize your lawn. Lawns should be used as an small accent area or play zone, with your remaining landscaped area planted with more resource-efficient groundcovers and shrubs. Several mountain water agencies have restrictions regarding the planting of lawns (see Chapter Two).

Maximum water conservation is achieved when lawns are irrigated separately from trees and shrubs with carefully timed sprinkler irrigation.. When severe drought restrictions are in place and lawn watering is prohibited, some lawns will go dormant, turn brown, but not die. Fescues and some bluegrasses may regain their normal color as soon as they receive an adequate amount of water.

NATIVE


Salvia spp

Arctostaphylos pungens

Arctostaphylos uva-ursi

Atriplex canescens

Arctostaphylos densiflora 'Howard McMinn'

Character:
E: Evergreen
D: Deciduous
A: Annual
B: Biennial
P: Perennial

Fire Hazard:
L: Low
M: Medium
H: High
U: Unknown

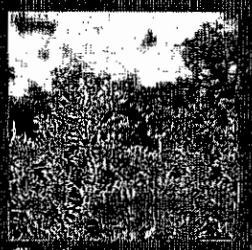
H_2O:
VL: Very low moisture zone
L: Low moisture zone
M: Medium moisture zone
H: High moisture zone

botanical name	common name	character	height/ spread	light	H_2O	fire hazard	comments
Flowers, Vines, and Groundcover							
Aquilegia spp	columbine	D, P	6-48" tall	☀	M	L	generally available, lacy foliage, beautiful pastel flowers, will re-seed. Replace every three years
Armeria maritima	sea pink, common thrift	E, P	6-12" tall/ to 1ft spread	☀	M	L	generally available, white-pink flowers
Aster spp	true aster	D, P	6-36" tall	☀	M	L	many varieties, showy flowers, divide yearly
Heuchera sanguinea	alumroot, coral bells	P	1.5-2.5' tall	☀	M	L	generally available
Linum lewisii	Lewis flax	D, P			M	L	generally available
Mahonia repens	creeping barberry	E	4-8" tall/ 1-3' spread	☀	L	L	to 7000', generally available, bristle-tipped leaves, yellow flowers, blue berries
Muhlenbergia rigens	deer grass	E, P	2-3' tall/ 2-3' spread	☀	L		generally available, holds green color in summer
Penstemon heterophyllus	foothill penstemon	D	1-1.5' tall/ 1-2' spread	☀	L	L	to 5500', generally available, spike-like clusters of rosy lavender to gentian blue flowers, sometimes called Blue Bedder penstemon
Salvia sonomensis	creeping sage	E	9-12" tall/ 3-4' spread	☀	L		generally available, violet blue flowers, will grow on slopes, in rock gardens, light pruning
Sphaeralcea ambigua rugosa	apricot mallow	D, P	1.5-3' tall/ 1.5-3' spread	☀	L		generally available, yellow stems, light gray green leaves, apricot-colored flowers
Shrubs							
Amelanchier alnifolia	western serviceberry	D	15-30' tall	☀	M	U	generally available, flowers, fall color, many species and cultivars available
Amorpha californica	false indigo	D	4-9' tall/ 3-6' spread	☀	M		slender shrub, heavily-scented foliage, spreading root system, red-purple flower clusters
Apocynum androsaemifolium	spreading dogbane		8-16" tall/ 1-3' spread	☀	L		light green leaves, pink flowers, perennial herb dies back to ground
Apocynum pumilum	mountain dogbane		6-12" tall/ 1-2' spread	☀	L		to 7000', light green leaves, pink flowers, perennial herb dies back to ground
Arctostaphylos 'Emerald Carpet'	manzanita	E	9-14" tall/ to 6' spread	☀	VL	L	generally available, small pink flowers
Arctostaphylos densiflora 'Howard McMinn'	manzanita	E	5-6' tall/ 6-7' spread	☀	L	M	generally available, white or pink flowers
Arctostaphylos glandulosa	eastwood manzanita	E	4-8' tall/ 4-8' spread	☀	L	H	to 6000', smooth red brown bark, gray-green leaves, white flowers, edible red berries, excellent erosion control
Arctostaphylos patula	greenleaf manzanita	E	3-6' tall/ 5-10' spread	☀	L	H	bright green foliage, rooting red-brown branches, pinkish flowers
Arctostaphylos pringlei drupacea	pink-bracted manzanita	E	6-12' tall/ 5-10' spread	☀	L	H	smooth red-brown bark, gray-green leaves, pink flowers, edible red fruit attracts wildlife
Arctostaphylos pungens	Mexican manzanita	E	6-9' tall/ 6-8' spread	☀	L	H	to 7000', erect, bright to dull green foliage, red-brown bark, white flowers
Arctostaphylos uva-ursi	bearberry, kinnikinnick	E	6-12" tall/ 1-15' spread	☀	L	L	generally available, excellent but slow to establish, bright green leaves, white-pink flowers
Artemisia tridentata	great basin (big) sagebrush	E	1.5-9' tall/ 1.5-9' spread	☀	L	H	generally available, gray-green aromatic foliage, prominent shrub of Great Basin desert
Atriplex canescens	four-wing saltbush	E	3-6' tall/ 4-8' spread	☀	L	VL	generally available, space plants four feet apart, good in clipped and unclipped hedges, fire retardant, narrow gray leaves, use in mass plantings
Atriplex hymenelytra	desert holly	E	1-3' tall/ 1-3' spread	☀	VL	L	generally available, whitish bark with silver, deeply toothed leaves, Christmas holly look only white, much used for decoration, short-lived
Atriplex lentiformis	quail bush	D	3-10' tall/ 6-12' spread	☀	L		generally available, densely branches, oval bluish gray leaves, useful hedge where salt tolerant plant needed

botanical name	common name	character	height/ spread	light	H_2O	fire hazard	comments
Atriplex lentiformis breweri	Brewer saltbush	E/D	5-7' tall/ 6-8' spread	☼	L	VL	generally available, space plants four to six feet apart, can be hedge sheared, fire retardant, like quail bush but no spines
Brickellia californica	California brickellbush		1.5-3' tall/ 1.5-3' spread	☼	L		somewhat straggly, aromatic, yellowish-white flowers, good for erosion control
Ceanothus cordulatus	snow bush, mountain whitehorn	E	3-6' tall/ 6-8' spread	☼	L	U	small gray-green leaves, stiff white branches, white flower clusters, no water after first year, lives to 10 years
Ceanothus cuneatus	common buckbrush	E	3-10' tall/ 3-10' spread	☼	L	U	to 6000', rigid branches, small gray-green leaves, white flowers, no water after first year, lives to 10 years
Ceanothus greggii perplexans	cupleaf ceanothus	E	3-6' tall/ 3-6' spread	☼	L	U	to 7000', generally available, erect, rigidly-branched, gray bark, thick yellow-green leaves, white flowers, no water after first year, lives to 10 years
Ceanothus pinetorum	kern ceanothus	E	6-48" tall/ 2-12' spread	☼	L	U	above 5400', rooting red-brown branches, dark green leaves, whitish blue flowers, no water after first year, lives to 10 years
Ceanothus prostratus	squaw carpet	E	6-12" tall/ 3-8' spread	☼	L		to 6500', excellent groundcover, thick light green leaves, blue flowers, no water after first year, lives to 10 years
Ceanothus thyrsiflorus	blue blossom	E	6-21' tall/ 8-30' spread	☼	L		generally available, light to dark blue flower spikes, no water after first year, lives to 10 years
Cercis occidentalis	western redbud	D	6-15' tall/ 4-10' spread	☼	VL		to 5000', generally available, showy magenta-pink flowers preceed light green leaves, multi-trunked small tree or shrub
Cercocarpus betuloides	birch-leaf mountain mahogany	E	6-21' tall/ 6-21' spread	☼	VL		to 6000', generally available, spreading branches, small leaves, showy feathery white seeds
Cercocarpus ledifolius	curl-leaf mountain mahogany	E	6-27' tall/ 6-27' spread	☼	L	H	4000'-9000', red-brown furrowed bark, leathery narrow leaves, showy feathery white seeds
Chamaebataria millefolium	fern bush, desert sweet	D	1.5-6' tall/ 1.5-6' spread	☼	L		fragrant fern-like foliage, white flowers, Sierra native
Chrysolepis castanopsis sempervirens	bush chinquapin	E	1-8' tall/ 3-12' spread	☼	L	H	above 6000', low spreading round-topped shrub, yellow-green foliage
Chrysothamnus nauseosus	(rubber) rabbitbrush	D	1-1.5' tall/ 1-2' spread	☼	L	H	above 6000', white branches, bright green narrow leaves, yellow flowers in fall, deep penetrating roots
Chrysothamnus viscidiflorus	sticky rabbitbrush		1-2.5' tall/ 1-3' spread	☼	L		white branches, sticky bright green leaves, fall yellow flowers
Corylus cornuta californica	western hazelnut	D	5-12' tall	☼	M		below 7000', small spreading multi-trunked shrub, bright yellow leaves in fall, small tasty nuts
Eriodictyon trichocalyx	yerba santa		2-7' tall/ 2-7' spread	☼	L		aromatic sticky dark green leaves, white flowers, invasive roots
Eriogonum fasciculatum polyfolium	California buckwheat	E	8-20" tall/ 1-2' spread	☼	L	U	to 7000', gray-green leaves, white flowers, widespread species, mountain source recommended
Eriogonum umbellatum	sulfur-flowered buckwheat	E	8-24" tall/ 1-1.5' spread	☼	L	U	generally available, cushion plant, gray foliage, showy yellow flowers
Eriogonum wrightii subscaposum	Wright's buckwheat		4-10" tall/ 1-1.5' spread	☼	L	U	mat plant, dense small gray leaves, pink flowers, mountain source recommended
Eriophyllum lanatum obovatum	woolly sunflower		8-16" tall/ 6-18in spread	☼	L		white-haired leaves, showy yellow flowers
Euphorbia palmeri	wood spurge		4-14" tall/ 6-12" spread	☼	L		soft medium green leaves, inconspicuous flowers
Fallugia paradoxa	apache plume	E/D	3-8' tall	☼			generally available, flowers like single white roses
Fremontodendron californicum	flannel bush	E	4-12' tall/ 6-15' spread	☼	VL	H	to 7000', generally available, spreading branches, very showy yellow flowers, bristly seed capsules

Ceanothus prostratus

Cercocarpus betuloides


Chrysothamnus nauseosus

Eriogonum fasciculatum polyfolium

Fremontodendron californicum

Cercis occidentalis

NATIVE

Garrya elliptica

Juniperus californica

Mahonia aquifolium

Penstemon spectabilis

Prunus ilicifolia

Ribes aureum

botanical name	common name	character	height/ spread	light	H_2O	fire hazard	comments
Garrya elliptica	pale silk tassel	E	4-8' tall/ 4-8' spread		L	H	generally available, can eventually reach tree-like proportions, dark green leaves with undulating margins, long showy white catkin-like flowers
Garrya flavescens	pale tasselbush, ashy silktassel	E	4-9' tall/ 4-9' spread		L	H	stiff, gray-green leaves, long silky catkins
Holodiscus microphyllus	ocean spray	D	1-6' tall/ 2-8' spread		L		above 5500', generally available, spreading branches, white flower clusters
Juniperus californica	California juniper	E	3-12' tall/ 3-10' spread		L	H	to 5000', generally available, fine scale-like bright green foliage, blue to brown-red berries
Juniperus osteosperma	Utah juniper	E	9-18' tall/ 8-15' spread		L	H	fine scale-like light yellow green foliage, red-brown berries
Limonium latifolium	sea lavender, statice	D	to 2.5' tall/ 1-3' spread		L	L	generally available, bluish to white or pink flowers
Mahonia aquifolium	Oregon grape	E	3-6' tall/ 3-6' spread		M	L	to 7000', generally available, glossy spine-tipped dark green leaves, purplish, bronzy winter leaves, yellow flowers, blue fruit, native to northern California, Oregon state flower
Mahonia nervosa	longleaf mahonia, dwarf Oregon grape	E	to 2' tall		M	U	spreads by underground stems, leaves cluster at stem tips, makes good cover, low barrier planting, yellow flowers in upright clusters April-June, blue berries
Penstemon spectabilis	showy penstemon	E	2-4' tall/ 2-4' spread		L	L	to 6000', generally available, likes disturbed sites, lavender-purple and blue flowers
Prunus ilicifolia	hollyleaf cherry	E	15-20' tall		M	H	generally available, medium deep green rigid, twisted leaves with spines on margins, showy creamy white flowers in spring, good for hedges, erosion control
Purshia glandulosa	antelope bush, bitterbrush		2-8' tall/ 2-8' spread		L	H	much branched dark green small-leaved shrub, creamy yellow flowers
Rhamnus californica	coffeeberry	E	3-15' tall/ 3-15' spread		L	U	generally available, spreading or upright, large berries green to red to black when ripe, many cultivars, size and spread vary
Rhamnus crocea	redberry, holly leaf buckthorn	E	2-5' tall		M		generally available, leaves glossy dark to pale green above often finely toothed, tan to golden below, small bright red fruit in fall
Ribes alpinum	alpine currant	D	4-5' tall			U	generally available, attractive berries, good hedge plant
Ribes aureum	golden currant	D	3-6' tall		L	U	generally available, attractive berries, small bright yellow spicy fragrant flowers
Ribes nevadense	mountain pink	D			M	U	
Ribes roezlii	Sierra gooseberry	D	1-4' tall/ 1-4' spread		L	U	small leaves, spiny branches, purplish flowers, purple berries
Rubus leucodermis	western raspberry		3-6' tall/ 5-10' spread		L	L	some erect, some sprawling, rooting prickly stems, white flowers, red-purple or black edible berries
Sambucus caerulea	blue elderberry	D	4-10' tall		M	U	clusters of blue to black berries in fall, usually covered with whitish powder, used in jams and jellies
Symphoricarpos albus	common snowberry	D	2-6' tall		M	U	pink flowers in May-June, white berries from late summer through winter
Symphoricarpos mollis	creeping snowberry	D	1-1.5' tall/ 1-4' spread		M	U	low trailing plant, soft medium green leaves, pink flowers, white berries
Trichostema parishii	Parish's (mountain) blue curls	E	2-5' tall/ 2-5' spread		L		to 6000', yellow green narrow leaves, spikes of blue flowers with pink wool on stems
Zauschneria californica	California fuschia	E/D, A	6-24" tall/ 6-24" spread		L	L	generally available, trailing branches, gray green leaves, scarlet flowers, best from mountain source, attracts birds
Trees							
*Abies concolor**	white fir		60-200' tall		M		large, very symmetrical tree, slower growing in California gardens, bluish green

botanical name	common name	character	height/ spread	light	H_2O	fire hazard	comments
Acer circinatum	vine maple	D	5-35' tall		M	L	in shade can become sprawling and vine-like with spectacular fall color, can be espaliered, single trunked small tree in full sun
Alnus rhombifolia	white alder	D	50-90' tall/ to 40' spread		H	L	generally available, tall straight light gray trunk, open rounded crown, small persistent cones attractive in winter, seeks water, plant away from sewer lines
Arbutus menziesii	madrone	E	20-100' tall		L		generally available, smooth reddish brown bark that peels in strips, white to pink flowers at branch tips in spring, red and orange berries, broad round head of foliage
*Calocedrus decurrens**	California incense-cedar	E			M	H	generally available
*Cornus nuttallii**	pacific dogwood, western dogwood	D	15-50' tall/ to 20' spread		M		to 6500', gray-barked branches, leaves green above, grayish green beneath, decorative red to orange red fruit in buttonlike clusters, white flower bracts, do not injure bark, reacts unfavorably to routine garden watering, fertilizing, pruning
Heteromeles arbutifolia	toyon	E	6-25' tall		VL	M	generally available, thick leathery glossy green leaves, dark red winter berries attract birds
*Juniperus occidentalis***	western juniper	E	75-100' tall		L	H	above 7000', generally available, red bark, fine scalelike leaves
Lithocarpus densiflorus	tanoak, tanbark oak				L		generally available
*Pinus coulteri**	coulter pine	E	40-80' tall		L	H	to 6000', generally available, large spread, long needles, large sharp heavy cones (hazardous)
*Pinus jeffreyi**	Jeffrey pine	E	70-120' tall		L	H	above 6000', vanilla-like bark odor, appears similar to ponderosa pine
*Pinus lambertiana**	sugar pine	E	to 200' tall		M	H	avoid currants and goose berries nearby as they are hosts to white pine blister rust
*Pinus monophylla***	singleleaf pinyon pine	E	10-25' tall		L	H	above 7000', generally available, edible nuts, wildlife value, good for harsh sites, rock gardens
Pinus monticola	western white	E			M	H	
*Pinus murrayana***	lodgepole pine	E	45-120' tall		M	H	above 7000', cornflake-like bark, high elevation sites, lower on north slopes with cold air drainage
*Pinus ponderosa**	ponderosa pine	E	50-150' tall		L	H	
Populus tremuloides	quaking aspen	D	20-60' tall		M	L	invasive in lawns, trunk and limbs smooth, pale gray green to whitish, dainty, light green, round leaves that flutter and quake in slightest air movement, brilliant golden yellow fall color, needs moist soil
*Pseudotsuga macrocarpa**	big cone spruce	E	to 60' tall		M	H	generally available, cones four to seven and a half inches
*Quercus chrysolepis**	canyon live oak	E	20-60' tall		VL	U	to 6500', generally available, short trunk, spreading branches, egg-shaped acorns
Quercus douglasii	blue oak	D	20-50' tall		VL	H	generally available, light gray bark, blue green leaves, fall color
*Quercus kelloggii**	California black oak	D	30-80' tall		L	H	generally available, long-lived hardy shade tree, stout spreading branches, susceptible to interior rot, attacked by fruit tree leaf roller
Quercus lobata	valley oak	D	40-70' tall/ 50-80' spread		L		generally available, limbs often picturesquely twisted
*Quercus wislizenii**	interior live oak	E	30-75' tall		L		short trunk, broad rounded crown, long pointed acorns
*Sequoiadendron giganteum**	big tree, giant sequoia	E	150-300' tall		M		generally available, trunk to 30 feet, fine foliage texture, not locally native but grows well
Umbellularia californica	California bay, Oregon myrtle	E	to 75' tall/ to 100' spread		L		generally available, deep green to deep yellow green leaves that are aromatic when crushed, can be used as a substitute for bay leaf in cooking, typically grow only to 25 feet in gardens, often multitrunked

**** suitable for reforesting***
***** suitable for reforesting (Big Bear only)***

Calocedrus decurrens

Heteromeles arbutifolia

Quercus douglasii

Quercus lobata

Umbellularia californica

Character:
E: Evergreen
D: Deciduous
A: Annual
B: Biennial
P: Perennial

Fire Hazard:
L: Low
M: Medium
H: High
U: Unknown

H_2O:
VL: Very low moisture zone
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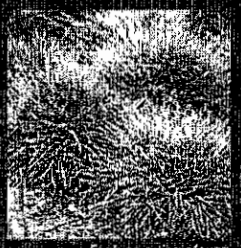
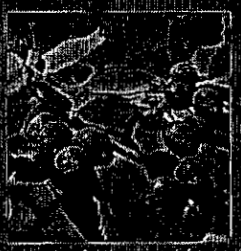
M: Medium moisture zone
H: High moisture zone

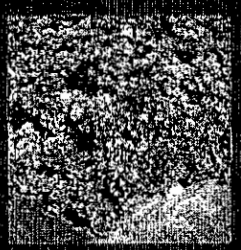
MIXED

Achillea spp

Cerastium tomentosum


Festuca ovina glauca


Amelanchier utahensis


Artemisia spp

botanical name	common name	character	height/ spread	light	H_2O	fire hazard	comments
Flowers, Vines, and Groundcover							
Achillea spp	yarrow	E	6-48" tall/ to 2' spread		L	L	generally available, many varieties, foliage gray-green to dark green, small to very large flowers, white, yellow, pinks
Ajuga reptans	carpet bugle	E, P	6-18" tall/ 6-18" spread		M		generally available, many varieties, showy flowers in spring, dark green mat of lustrous leaves
Cerastium tomentosum	snow-in-summer	E, P	6-9" tall/ 2-3' spread		M		generally available, silvery gray foliage, snowy white masses of flowers in summer, can look shabby in cold winters, revives quickly in spring
Festuca ovina glauca	blue fescue	E, P	4-10" tall		L	L	generally available, tufted clumping grass
Helianthemum nummularium	sunrose	E, P	6-8" tall/ 2-3' spread		L	L	generally available, good in rock gardens, many types with different flower colors
Linum perenne	blue flax	D, P	to 2' tall			L	escapes, most vigorous blue-flowered flax with stems to 2 ft., usually leafless below, branching clusters of light blue flowers, profuse from May-Sept., flowers close in shade or late in the day, self-sows freely
Lupinus polyphyllus	lupine	D, P	1.5-4' tall		M	L	blue, purple or red flowers
Lupinus spp	lupines	D			M	L	generally available, many natives available for higher elevations, for cultivars check cold tolerance
Parthenocissus quinquefolia	Virginia creeper				M		generally available, big, vigorous, clings or runs over ground, fence, trellis, good ground cover on slopes, can control erosion
Parthenocissus tricuspidata	Boston ivy				M		generally available, glossy leaves variable in shape, fast, dense, even wall cover
Rosmarinus officinalis 'Prostratus'	dwarf rosemary	E	1-2' tall/ 4-8' spread		L	M	generally available, pale lavender flowers
Verbena rigida	verbena	E/D, P/A	1-1.5' tall/ 3-4' spread		L		generally available, lilac to purple flowers in summer
Vinca spp	periwinkle	E, P			M		generally available, used as ground covers, pattern plantings, rough slopes and unused areas, can be extremely invasive in sheltered & forested areas, out-competing native & cultivated plants, shades of blue or white flowers, variegated foliage
Shrubs							
Amelanchier utahensis	Utah serviceberry	D	3-15' tall/ 3-10' spread		M	U	to 7000', small gray-green leaves, white flowers, yellow-orange fruit attracts wildlife
Artemisia stellerana	beach wormwood, old woman, dusty miller	E	1-2.5' tall/ 2-2.5' spread		L	L	woolly whitish leaves, yellow flowers
Berberis thunbergii & Cultivars	Japanese barberry	D	4-6' tall		L		generally available, new foliage marbled bronzy red and pinkish white, deepening to rose and bronze, colors best in full sun or lightest shade
Buddleia davidii	common butterfly bush	D	3-10' tall		L	U	generally available, small fragrant flowers attract butterflies, cut back in spring
Cistus ladanifer	crimson-spot rockrose	E	3-5' tall/ 3-5' spread		VL	M	generally available, large 3" wide white flowers with red spots, dark green leaves with lighter green beneath, useful in big rock gardens, erosion control, fire resistant, can be left unwatered once established
Cistus salviifolius	sage leaf rockrose	E	to 2' tall/ to 6' spread		VL	L	generally available, small light gray green leaves, white 1 1/2" flowers with yellow spots, very profuse, good bank or ground cover, fire resistant, can be left unwatered once established
Cistus villosus	rockrose	E	3-5' tall/ 3-5' spread		VL	L	generally available, oval 1-3" long leaves densely covered with down, large purplish pink flowers, fire resistant, can be left unwatered once established

Character:
E: Evergreen
D: Deciduous
A: Annual
B: Biennial
P: Perennial

Fire Hazard:
L: Low
M: Medium
H: High
U: Unknown

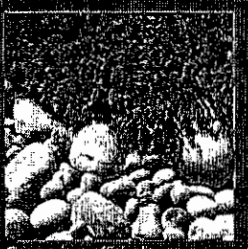
H_2O:
VL: Very low moisture zone
L: Low moisture zone
M: Medium moisture zone
H: High moisture zone

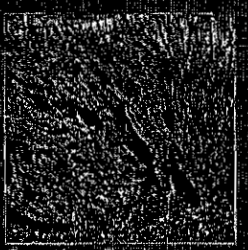
botanical name	common name	character	height/ spread	light	H_2O	fire hazard	comments
Cotoneaster spp	cotoneaster	E/D	3-20' tall	☼	L	L	generally available, many varieties, range from ground covers to small shrubs, to tall-growing shrubs, spring bloom, flowers white or pinkish
Gaillardia grandiflora	blanket flower	D, A	2-4' tall/ 2-3' spread	☼	L	L	generally available, large yellow to orange blooms June through frost, can be planted on slopes for erosion control
Hypericum 'Hidcote' (H. patulum 'Hidcote')	St. Johnswort		to 4' tall		M	H	best in mild, moist areas, most kinds stand some drought but are better with water, flowers yellow, blooms all summer
Hypericum 'Rowallane'	St. Johnswort	E	3-6' tall			H	best in mild, moist areas, most kinds stand some drought but are better with water, flowers bright yellow
Hypericum beanii (H. patulum henryi)	Henry St. Johnswort	E	to 4' tall	☼	M	H	generally available, best in mild, moist areas, most kinds stand some drought but are better with water, flowers brilliant golden yellow
Hypericum calycinum	Aaron's beard, creeping St. Johnswort	E	to 1' tall	☼	M	U	generally available, best in mild, moist areas, stand some drought but are better with water, leaves green in sun, yellow green in shade, flowers bright yellow, takes poor soil, will control erosion on hillsides, can invade unless confined
Hypericum coris	St. Johnswort	E	6-12" tall			H	generally available, best in mild, moist areas, most kinds stand some drought but are better with water, flowers yellow
Hypericum kouytchense	St. Johnswort		1.5-2' tall/ 2-3' spread			H	generally available, best in mild, moist areas, most kinds stand some drought but are better with water, wide, pointed oval leaves, flowers golden yellow
Hypericum moseranum	gold flower	E	to 3' tall		M	H	best in mild, moist areas, most kinds stand some drought but are better with water, leaves blue green beneath, flowers golden yellow
Kniphofia uvaria	red hot poker	E/D	2-6' tall/ to 2' spread	☼	L	L	generally available, many hybrids, yellow to orange flower stalks, cut back ragged foliage in fall
Lilac spp	lilac	D	3-20' tall/ to 20' spread	☼	M	U	generally available, many varieties, flowers blue, purple, violet or white
Photinia fraseri	fraser photina	E	to 10' tall/ to 10' spread	☼	M		generally available, white flowers attractive to birds
Prunus glandulosa	(pink) dwarf flowering almond	D	to 6' tall/ to 6' spread			L	pink or white flowers appear before leaves
Pyracantha spp	firethorn	E		☼	L		generally available, variety of landscape uses, most have thorns, glossy green leaves, oval or rounded at ends, clustered flowers are fragrant, dull creamy white, fruit vary in color, size, season, and duration, keep away from lawn sprinklers
Rosa banksiae	Lady Banks' rose, banksia rose	E			L		leaves are divided into 3-5 leaflets, rich glossy green, stems are relatively free of thorns, showy yellow or white flowers
Rosmarinus officinalis 'Tuscan Blue'	rosemary	E	2-6' tall	☼	L	H	generally available, rigid upright branches to 6' tall grow directly from base of plant, leaves are rich green, flowers blue violet
Santolina chamaecyparissus	gray lavender cotton	E	1-2' tall/ 2-3' spread	☼	L		generally available, gray leaves, yellow flowers, clip back to one foot yearly
Santolina virens	green lavender cotton	E	1-2' tall/ 2-3' spread	☼	L	L	generally available, deep green leaves with bright yellow flowers
Spiraea bumalda 'Anthony Waterer'	dwarf red spiraea	D	2-3' tall		M	U	generally available, rounded, dense, narrow oval leaves 1-4" long, with maroon tinge, flowers bright carmine in flat-topped clusters, prune late winter, early spring

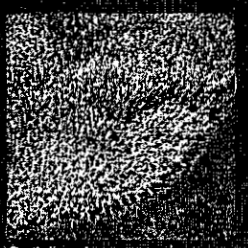
Cotoneaster spp

Pyracantha spp

Rosa banksiae


Rosmarinus officinalis 'Prostratus'


Rosmarinus officinalis 'Tuscan Blue'


Santolina chamaecyparissus

MIXED

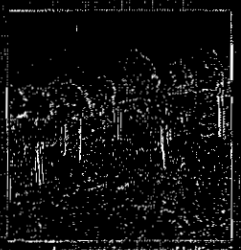
Cedrus deodara

Prunus virginiana

Cedrus atlantica

Pinus brutia

Pinus eldarica


Lonicera japonica 'Halliana'

botanical name	common name	character	height/ spread	light	H_2O	fire hazard	comments
Spiraea bumalda 'Goldflame'	goldflame spiraea	D	3-4' tall		M	U	generally available, new leaves bronze, turning yellow as they expand, flowers rosy red, prune late winter, early spring
Spiraea douglasii	western spiraea	D	4-8' tall		M	U	suckering shrub with 1.5-3" leaves of dark green, velvety white beneath, useful in large-scale native plantings near creeks, flowers pale pink to deep rose in dense, steeped, 8" long clusters at ends of branches
Viburnum rhytidophyllum	leatherleaf viburnum	E	6-15' tall		M	U	generally available, narrow, upright, leaves narrowish, deep green and wrinkled above, densely fuzzy underneath, flowers off-white in clusters, fruit scarlet, turning black
Yucca glauca	small soapweed	E	to 2.5' tall/ to 3' spread	☼	L	L	generally available, stemless or short stemmed, leaves 1-2.5' long, summer flowers greenish white in tall narrow clusters
Trees							
Cedrus atlantica	atlas cedar				M	H	generally available
Cedrus deodara	deodar cedar				L	H	generally available
Cedrus libani	cedar of Lebanon					H	
Celtis occidentalis	common hackberry	D	to 50' tall/ to 50' spread	☼	L		generally available, deep rooting
Celtis reticulata	western hackberry	D	25-30' tall/ 25-30' spread	☼	L		generally available, worthwhile ornamental tree, with somewhat pendulous branches, strongly veined oval leaves with toothed margins, tiny red or brown berries eaten by birds
Pinus albicaulis	whitebark	E	20-40' tall	◐	M	H	low growing, prostrate to semi upright
Pinus brutia (Pinus halepensis brutia)	calabrian pine	E	30-80' tall		L	H	
Pinus eldarica	eldarica pine	E	30-80' tall		L	H	generally available
Prunus lauroceracus	English laurel	E	to 30' tall/ to 30' spread	◐	M		generally available, leaves leathery, glossy dark green, flowers creamy white, small black fruit, fast-growing and greedy, difficult to garden under or around
Prunus virginiana	chokecherry	D	20-25' tall		M	L	
Pseudotsuga menziesii	Douglas fir	E	70-250' tall	◐	M	H	generally available, pyramidal when young, dark green to blue green needles 3", reddish brown cones with three-pointed bracts, pretty spring growth

ORNAMENTAL

Flowers, Vines, and Groundcover							
Alcea rosea (Althaea rosea)	hollyhock	B/P	to 9' tall				generally available, big, rough, roundish heart shaped leaves more or less lobed, single, semi-double, or double flowers in white, pink, rose, red, purple, creamy yellow, apricot
Campsis radicans (Bignonia radicans)	common trumpet creeper	D	to 40' tall		L		generally available, orange-scarlet trumpet shaped flowers
Delphinium belladonna		P	3-4' tall		M		sturdy, bushy, deeply cut leaves, short stems, airy flower clusters
Delphinium elatum	candle delphinium, candle larkspur	P	3-6' tall		M		Siberian species with small dark or dull purple flowers
Delphinium grandiflorum (D. Chinese)	Chinese or bouquet delphinium	P	to 1' tall		M	L	short-lived, bushy, branching
Digitalis ferruginea	rusty foxglove	B/P	to 6' tall		M	L	very leafy stems, leaves deeply veined, flowers long, yellowish, netted with rusty red, in long dense spikes

botanical name	common name	character	height/ spread	light	H_2O	fire hazard	comments
Digitalis grandiflora	yellow foxglove	B/P	2-3' tall		M	L	hairy tooth leaves wrap around stem, large flowers, yellowish marked with brown
Digitalis mertonensis	foxglove	P	2-3' tall		M	L	spikes of odd yet attractive coppery rose
Digitalis purpurea	common foxglove	B/P	4'+ tall		M	L	clumps of large, woolly light green leaves, stem leaves short stalked, becoming smaller toward top of plant, leaves are source of digitalis, valued but highly poisonous medicinal drug, flowers pendulous, purple
Lonicera japonica 'Halliana'	Hall's Japanese honeysuckle	E	to 15' tall		M	H	generally available, sweet fragrant white flowers
Lotus argophyllus	silver-leaved lotus		1-3" tall/ 6-36" spread	☼	L	L	to 7000', small silver-satiny leaves run along ground, small yellow with brown flowers
Lupinus Russell Hybrids	Russell lupines	D	4-5' tall	☼	M	L	generally available, flowers of many colors, dwarf varieties available, striking border
Oenothera berlandieri	Mexican evening primrose	E, P	to 1' tall/ 2-3' spread	☼	L	L	generally available, pink flowers
Phlox divaricata	phlox, wild or wild sweet Williams	P	to 1' tall	☼	M	L	generally available, flowers bluish to pinkish-blue to white, good in rock gardens
Rosa hybrids	rose	D, P		☼	M		generally available, some varieties including Lady Banks rose and Cecile Brunner rose can use very little water, many roses will tolerate low to moderate water once established, need winter protection where temperatures are below 10°F regularly
Wisteria sinensis	Chinese wisteria	D, P			M		generally available, can be trained into a big shrub or multi-stemmed small weeping tree, prune every winter
Shrubs							
Hemerocallis cultivars	daylily	E/D	1-6' tall/ 1-2' spread	☼	M	L	generally available, many types and sizes with many different flower colors
Miscanthus sinensis	maiden grass, eulalia	D	3-4' tall/ 3-4' spread	☼	M	H	generally available, flowers silver color
Prunus cerasifera 'Thundercloud'	purple-leaf plum	D	to 20' tall/ to 20' spread			U	generally available, dark coppery leaves, flowers light pink to white, sometimes sets good crop of red fruit
Rhododendron spp	azalea	E/D			M		generally available
Rhododendron spp	rhododendron	E/D			M		generally available
Viburnum carlcephalum	fragrant snowball	D	8-10' tall/ 4-5' spread		M	U	leaves dull grayish green, downy beneath, flowers long-lasting, waxy white, fragrant, no fruit, showy as common snowball but has added fragrance
Viburnum macrocephalum macrocephalum (V. m. 'Sterile')	Chinese snowball	E	12-20' tall		M	U	broad, rounded habit, leaves oval to oblong, dull green, big rounded flower clusters are composed of sterile flowers, no fruit, spectacular bloom clusters
Viburnum opulus	European cranberry bush	D	10-20' tall		L	U	lobed, maple shaped dark green leaves, turn red in fall, flower clusters white, rimmed with sterile white flowers in lace cap effect, large red, showy fruit
Viburnum opulus 'Roseum' (V. o. 'Sterile')	common snowball	D	10-15' tall		L	U	composed entirely of sterile flower clusters that resemble snowballs, no fruit
Viburnum plicatum plicatum (V. tomentosum 'Sterile')	Japanese snowball	D	to 15' tall/ to 15' spread		M	U	oval, dark green, strongly veined leaves, turn purplish red in fall, snowball clusters of white sterile flowers, borne in opposite rows along horizontal branches
Viburnum plicatum tomentosum	doublefile viburnum	D	to 15' tall/ to 15' spread		M	U	flat flower clusters edged with sterile flowers in lace cap effect, fruit red, showy, not always profuse

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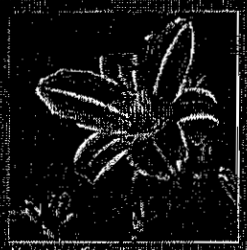
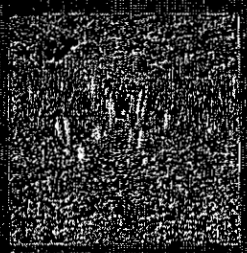
Wisteria spp

Oenothera berlandieri



Hemerocallis cultivars



Lupinus spp

Delphinium belladonna

Character:
E: Evergreen
D: Deciduous
A: Annual
B: Biennial
P: Perennial

Fire Hazard:
L: Low
M: Medium
H: High
U: Unknown

H_2O:
VL: Very low moisture zone
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ORNAMENTAL

Albizia julibrissin

Gleditsia triacanthos

Koelreuteria paniculata

Acer platanoides

Betula pendula

Prunus persica

botanical name	common name	character	height/ spread	light	H_2O	fire hazard	comments
Trees							
Acer palmatum	Japanese maple	D	to 20' tall		M		generally available, many stemmed, delicate, fall color
Acer platanoides	Norway maple	D	16-60' tall/ 20-60' spread		M		generally available, many varieties and sizes, showy clusters of greenish yellow spring flowers
Acer saccharum	sugar maple	D	to 60' tall/ to 60' spread		M		generally available, 'green mountain' is most drought resistant variety, all have spectacular fall color
Albizia julibrissin	silk tree, mimosa	D	to 40' tall/ to 60' spread		L		generally available, pink fluffy flowers
Betula albo-sinensis	birch	D	to 100' tall		H		grown chiefly for beautiful pinkish brown to coppery bark covered with gray powdery bloom
Betula jacquemontii	birch	D			H		tall, narrow tree with brilliant white bark
Betula nigra	river birch, red birch	D	50-90' tall		H		generally available, pyramidal form, young bark pinkish, very smooth and shining, older trees flake and curl in cinnamon brown to blackish sheets, diamond shaped leaves are bright glossy green above, silvery below, needs ample moisture
Betula occidentalis (B. fontinalis)	birch	D	12-15' tall		H	U	bark smooth, shiny, cinnamon brown, leaves turn pale clear yellow in fall, it likes moisture but needs good drainage as well
Betula papyrifera	canoe birch, paper birch	D	to 100' tall		H	U	generally available, trunk creamy white, bark peels in papery layers
Betula pendula	European white birch	D	30-40' tall/ to 20' spread		H		generally available, frequently planted deciduous tree, delicate and lacy, bark on young trees is golden brown, on trunk and main limbs becomes white, marked with black clefts, oldest bark at base is blackish gray, rich green diamond shaped glossy leaves
Ginkgo biloba	maidenhair tree	D	35-80' tall		M	U	generally available, bi-lobed leaves, avoid female trees as fruit smells
Gleditsia triacanthos	honey locust	D	35-70' tall		L		generally available
Koelreuteria paniculata	goldenrain tree	D	20-35' tall/ 10-40' spread		M		generally available, yellow flower
Laburnum spp	goldenchain tree	D, P			M	U	generally available, bark green, leaves bright green, flowers yellow, sweet pea shaped, in hanging clusters
Picea pungens	Colorado spruce	E	80-100' tall		M		very stiff, regular, horizontal branches forming broad pyramid, foliage varies in seedlings from dark green through all shades of blue green to steely blue
Picea pungens 'Glauca'	Colorado blue spruce	E			M		positive gray blue color
Prunus persica	peach		15-25' tall/ 15-25' spread		M		generally available
Prunus persica nucipersica	nectarine		15-25' tall/ 15-25' spread		M		generally available
Prunus spp (edible)	apricot	D	4-6' tall/ 6-8' spread		M		generally available
Prunus spp (edible)	cherry	D	20-35' tall		M	L	generally available
Prunus spp (edible)	plum		15-20' tall		M		generally available
Prunus spp (edible)	prune				L		generally available

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RESOURCE LIST

Local Resources

Local resources are always better able to help you. They know the local climate, soils, growing conditions. The nurseries are also committed to stocking drought-tolerant and horticulturally adapted native plants.

Landscape Guide for Mountain Homes Participants:

Agua Fria Hardware & Nursery
Ed & Jan Thompson
26890 Hwy 189
Blue Jay, CA 92317
(909) 337-2114

David D. Davis & Associates
Irrigation Consultants • Planning • Water Management
David D. Davis
P.O. Box 5037
Crestline, CA 92325-5037
(909) 338-4372

Carl Hausmann Landscape Construction
Carl Hausmann
Licensed Landscape Contractor
#C-27-241123
P.O. Box 715
Lake Arrowhead, CA 92352
(909) 337-8043

Mountain View Landscaping
Zan J. Zak, III
Licensed Landscape Contractor
#511979C27
P.O. Box 486
Cedar Glen, CA 92321
(909) 337-7456

Village Nursery & Landscaping
Forrest E. Connolly
Licensed Landscape Contractor
#278088 C29 & C27
26415 Hwy 18
Rim Forest, CA (ZIP)
Landscaping: (909) 337-5410
Nursery: (909) 337-1688

Other Local Resources:

Arrowhead Gardens
Landscaping and Nursery
Karen C. Brule
Licensed Landscape Contractor
#331952 C27
181 N. St. Hwy 173
Cedar Glen, CA 92321
(909) 337-6241

Bear Valley Nursery
41505 Big Bear Boulevard
Big Bear Lake, CA 92315

Butcher's Block and Building Materials
41860 Big Bear Boulevard
Big Bear Lake, CA 92315
(909) 866-5761

Cedar Glen Trading Post
28946 Hook Creek Road
P.O. Box 669
Cedar Glen, CA 92321
(909) 337-3310

John Cousino Landscaping
Licensed Landscape Contractor
#656981 C27
(Address)
(909) 867-4483

Deer Lick Lumber
32770 Hilltop Boulevard
Running Springs, CA 92382
(909) 867-2262

Eminger's Mountain Nursery
41223 Big Bear Boulevard
Big Bear Lake, CA 92315
(909) 878-3381

Hunter's Nursery and Garden Center
42132 Fox Farm Road
Big Bear Lake, CA 92315
(909) 866-2547

JHAS Incorporated
Landscape Architects
James Hess
P.O. Box 346
Skyforest, CA 92385-0346
(Toll Free) (866) 879-9762

La Rosa Hardware and Supply
217 West Big Bear Boulevard
Big Bear City, CA 92314
(909) 585-2737

Lake Drive Hardware
23895 Lake Drive
P.O. Box 3305
Crestline, CA 92325

Lenoch Mountainscapes
P.O. Box 133326
Big Bear Lake, CA 92315
(909) 584-2545

NativeScapes
P.O. Box 1684
Big Bear City, CA 92314
(909) 878-0050

R.A.C. Landscaping
P.O. Box 121224
Big Bear City, CA 92314
(909) 866-1446

Riffenburgh Lumber Company Incorporated
42800 Big Bear Boulevard
Big Bear Lake, CA 92315

Rim Forest Lumber
26491 Pine Avenue
P.O. Box 108
Rim Forest, CA 92378
(909) 337-6262

Aaron Scullin
Consulting Arborist
P.O. Box 3341
Running Springs, CA 92382
(909) 867-3827
Skyline Landscaping
Bernie Kerkvliet
Landscape Contractor
#C-27-338084
P.O. Box 471
Cedar Glen, CA 92321
(909) 337-5862

Stalcup Landscape Innovations, Inc.
P.O. Box 888
Big Bear Lake, CA 92315
(909) 866-9696

Steve's Nursery
556 1/2 Springy Path
Crestline, CA 92325
(909) 338-3888

TSL Landscape and Maintenance
P.O. Box 2325
Big Bear, CA 92314
(909) 585-2334

Additional Native Plant Resources:

If you are interested in adding native plants to your garden that are not easily available, these resources will be able to help you.

California Native Plant Society
1722 J Street, Suite 17
Sacramento, CA 95814
Phone: (916) 447-2677
Fax: (916) 447-2727
www.cnps.org

Mockingbird Nurseries, Inc.
1670 Jackson Street
Riverside, CA 92504
Open to public by appt. only
Mon-Fri: 7:30 a.m.-4 p.m.
(909) 780-3571

Rancho Santa Ana Botanic Garden
1500 N. College Avenue
Claremont, CA 93013
(909) 625-8767

Tree of Life Nursery
33201 Ortega Highway
San Juan Capistrano, CA 92693
Phone: (949) 728-0685
Fax: (949) 728-0509
Round House/Public Hours:
Friday: year-round
Saturdays: Feb, Mar, Apr, Oct, Nov-9:00 a.m. to 4:00 p.m.
www.treeoflifenursery.com

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Technical Committee:

Volunteers:

Jim Asher - Forester
Glenn Barley - California Department of Forestry and Fire Protection
Forrest and Heather Connolly - Village Nursery
David D. Davis - David D. Davis & Associates
Lois Mayo - Arrowhead Woods Architectural Committee
Ed and Jan Thompson - Agua Fria Hardware and Nursery
Victoria Wood - Agua Fria Hardware and Nursery
Zan J. Zak - Mountain View Landscaping

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Ryan Ethridge - LACSD Water Management Department
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Marc Lippert - LACSD Water Management Department
Marvin Shaw - General Manager, LACSD

Consultants:

Dawn Hassett - Geographics, Public Outreach Consultant
Bob Perry - Perry & Associates
Rod Riggs - Riggs & Riggs - LACSD Public Information Consultant

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Publisher:

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(909) 337-8555

Participating Agencies:

Big Bear City Community Services District
(909) 585-2565

City of Big Bear Lake Department of Water and Power
(909) 866-5050

Crestline Village Water District
(909) 338-1727

Mountain Rim FireSafe Council
Crest Forest Chapter

Running Springs Water District
(909) 867-2766

For comments, suggestions,
or additional copies, please call
(909) 337-8555

Lake Arrowhead

Community Services District

Lake Arrowhead Community Services District
ANNUAL REPORT
2004

WATER Supply Achievements

In 2004, LACSD made significant progress to resolve water supply issues facing the community including:

- Reducing the draw on Lake Arrowhead by 39%
- Securing a medium-term imported water supply
- Moving forward with use of recycled water

Draw on Lake

LACSD Secures Medium-Term

LACSD Moves Forward with

Lake Arrowhead
Community Services District

ANNUAL REPORT 2004

Arrowhead Reduced 39%

LACSD has implemented programs and projects that have reduced the draw on Lake Arrowhead by 39% from the highest water use year of 2002. This reduction exceeds District projections under the Water Demand and Supply Final Report completed in 2003. The report was prepared to develop a plan for meeting LACSD's policy to reduce and ultimately eliminate dependence on the lake as the community's sole source of water supply, adopted in 2003.

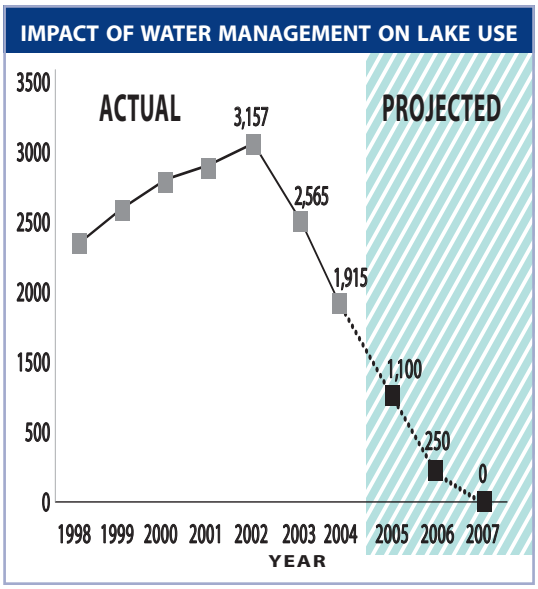
Significant progress has been made to reduce and ultimately eliminate reliance on Lake Arrowhead as the community's sole source of water supply. When it is plentifully available, LACSD will continue to use lake water as it is the community's least costly and highest quality water resource, however, six years of drought have resulted in historically low lake levels, creating an unacceptable negative effect on the quality of life in our community.

In 2003, LACSD completed the Water Demand and Supply Final Report, an engineering review of the feasibility of available alternatives to diversify the community's water supply. The Stakeholders' Advisory Committee (SAG) also reviewed that report. As a result, the LACSD Board approved actions on programs and projects to reduce the draw on the lake by 50%.

Those programs and projects for 2004 included:

- water conservation
- development of three new groundwater wells
- small amounts of imported water

The 2004 goal of reducing lake draw by 1,161 acre-feet was exceeded. Reductions beyond an initial 50% of the supply as described in the Report were not within the financial capacity of LACSD without supplemental financing. As a result, LACSD began work to plan for the Supplemental Water Supply Fee (see Community section on next page).



Imported Water Supply

LACSD sought and received the cooperation of neighboring water agencies for an agreement to buy up to 10,000 acre-feet of imported water. The San Bernardino Valley Municipal Water District (MUNI) has agreed in principle, to sell the water to Crestline Lake Arrowhead Water Agency (CLAWA) for delivery to LACSD through CLAWA's system. This imported water project will be one of the projects financed through the Supplemental Water Supply Fee approved by LACSD in the fall of 2004.

Conversations initiated in 2003 led to a 2004 agreement with LACSD's neighboring water agencies—San Bernardino Valley Municipal Water District (MUNI) and Crestline Lake Arrowhead Water Agency (CLAWA)—to help the Lake Arrowhead community resolve the water supply crisis brought to a head by six years of severe drought.

The proposed 10-year agreement will allow CLAWA to buy approximately 1,500 acre-feet of water per year from MUNI for delivery to LACSD. The transfer was required because while CLAWA had the capacity to treat and deliver water to LACSD, it did not have the right to sell State Water Project Water to LACSD. On the other hand, MUNI, unlike most other State Water Project contractors, was able to sell water to non-member agencies and had the resources available to do so. The resulting Principles of Agreement is subject to certain conditions, including both CLAWA and MUNI meeting the needs of their existing customers first.

Required environmental studies will examine the impacts of the water purchase, the construction of a new turnout in CLAWA's system, a new 6,000-foot pipeline, and a new one million-gallon storage tank. Construction is scheduled to be complete and water deliveries begun by the end of 2005.

Recycled Water Program

LACSD sought and received permission from state and federal officials for an amendment to the Water Quality Control Plan that will allow the use of recycled water for outdoor irrigation use in the Lake Arrowhead community. Recycled water will be one of the projects financed through the Supplemental Water Supply Fee approved by LACSD in the fall of 2004.

State and federal water quality regulations previously prohibited the use of treated wastewater, or recycled water, for outdoor irrigation in LACSD's service area and other portions of the western San Bernardino Mountains at elevations above 3,200 feet. In 2004, in response to LACSD's request, state and federal officials approved an amendment to the Water Quality Control Plan for the Lahontan Region which allows certain exemptions. As a result, LACSD's recycled water projects are now allowable.

LACSD contracted with Tetra Tech, Incorporated, an environmental and engineering consulting firm, to perform preliminary engineering design, environmental review and permitting for permits that will entitle LACSD to supply recycled water for outdoor irrigation throughout its service area.

The consultant has completed both the Preliminary Design Report and project environmental documentation. If the first phase of the recycled water project maintains its present implementation schedule, recycled water will be available for delivery to the Grass Valley and surrounding areas for the 2007 irrigation season.

WORKING Together to Succeed

Six years of drought brought the community together to resolve the crisis. LACSD reached out to customers to seek their support for short and long term solutions. The community responded by strongly supporting new measures, for example:

- Community-wide water conservation efforts worked to save 19%
- 83% of customers met mandatory water conservation goals of 25% reduction
- A new Supplemental Water Supply Fee was approved
- Hundreds of customers participated in stakeholder and community meetings to help formulate new recommendations for water management and supply

Water Conservation Works,

Community and LACSD Work

Lake Arrowhead
Community Services District

ANNUAL REPORT 2004

19% Saving Achieved

Water conservation has achieved an overall 19% reduction in water use throughout LACSD through an aggressive campaign that included mandatory conservation, public outreach, and water conserving hardware programs. Customers overwhelmingly responded to the program with 83% achieving the goal of 25% reduction in water use over 2002.

LACSD began studying mandatory water conservation in late 2003 as it became clear that the severe drought showed no signs of slacking and the scientific community began to offer evidence that the drought sequences in the U.S. southwest regions were likely to be longer and more severe than previously thought.

LACSD convened the Water Conservation Stakeholders Group consisting of members of the community; landscape, forestry and flood control professionals; conservation experts, staff and consultants to review the practices of other water agencies and to draft a mandatory water conservation ordinance. Ordinance 58 was based in part on practices implemented in the last prolonged southern California drought by the communities of Los Angeles, Santa Barbara, and San Diego.

The ordinance called for the implementation of various levels of conservation tied to lake levels. Upon its passage, the ordinance required a 25% mandatory reduction in use for all customers, conforming to the third stage drought being experienced in the community. The program was proposed to the public through a series of public outreach meetings and direct mail prior to its adoption by the LACSD Board. Since the ordinance went into effect on June 1, 2004, a 19% reduction has been achieved. LACSD received a total of 640 variance requests, 590 of which were granted for a total of 8% of all customers. Only 17% of all customers have failed to comply, and most were able to correct their non-compliance following a warning.

Water conservation activities included public outreach meetings, direct mailings, widespread advertising, and the initiation of two new hardware programs. In 2004, LACSD, with funding through the Bureau of Reclamation, began a new landscape irrigation pilot program. The program began with the installation of a weather station to measure evapotranspiration. This weather station measured how hot and dry the weather is and broadcasts a signal that regulates the amount of water delivered by the computers inside individual irrigation controllers hooked up to the system. This year 59 controllers were installed and evaluations of their effectiveness are currently underway.

In addition, LACSD introduced an Ultra Low Flush Toilet (ULFT) program, holding two events that supplied 1,000 ULFTs to replace ordinary, older, high volume toilets in the community.

Together to Resolve Crisis

LACSD and the community have worked together to resolve the water supply crisis resulting from six years of drought. Primary activities include:

- The Stakeholders Advisory Group helped to identify and recommend water supply options to the LACSD Board and has been reconvened to help LACSD examine water resource planning alternatives for recycled water and indirect potable reuse.
- The Water Conservation Stakeholder's Group helped to draft the Mandatory Conservation Ordinance.
- LACSD and the Arrowhead Lake Association initiated a new cooperative relationship to resolve water rights issues regarding Lake Arrowhead.
- The LACSD Board adopted the Supplemental Water Supply Fee to pay for projects that could potentially eliminate the community's dependence on Lake Arrowhead as the community's sole source of water supply. The public was asked to protest if they disagreed and 13% did so.

Water policy is contentious. LACSD has instituted significant changes and uncommonly ambitious goals that directly impact our customers. In an effort to inform and obtain balanced input from customers LACSD has reached out on issues of concern using as many tools as possible, including :

- Town Hall and public outreach meetings to present proposals and solicit input from the public
- Quarterly direct mail newsletters
- Q&A Fact Sheets on issues of concern
- Media press releases
- Regular presentations to community groups, service clubs and Homeowners Associations.

In addition, the public has been formally engaged in an advisory capacity in the following ways:

- The Stakeholders Advisory Group helped to identify and recommend water supply options to the LACSD Board, the majority of which were adopted by the Board. and has been reconvened to help LACSD examine all water resource alternatives including:
  - recycled water for outdoor irrigation
  - indirect potable reuse, a project that would treat wastewater to above drinking water standards and return it to Lake Arrowhead where it would blend with water in the lake and eventually be re-treated and re-used as drinking water
- The Water Conservation Stakeholder's Group helped to draft the Mandatory Conservation Ordinance.

Finally, LACSD made its best effort to engage the full spectrum of customers using a scientific survey. The results gave LACSD high marks for approval and indicated strong support for moving forward with a supplemental water supply plan. While no one likes the idea of paying higher fees, the community has accepted the action to pay for a 10-year program to import State Water Project water and construction of capital improvements such as water recycling and additional groundwater wells.

LACSD has fostered and maintains professional working relationships with community organizations such as the Arrowhead Lake Association, the Arrowhead Woods Architectural Committee and others.

One example of the success of these efforts is the current status of the water rights complaints filed two years ago with the State Water Resources Control Board against LACSD over the rights to the water in Lake Arrowhead. These complaints were filed by the Arrowhead Lake Association (ALA) and Mr. Ted Heyck, now a member of the LACSD Board of Directors.

The complaints disputed LACSD's right to withdraw water from Lake Arrowhead. The resulting inquiry put all rights to water above an elevation of 5,085 feet in question. (Lake Arrowhead is considered full at 5,106 feet.) The consequences are that water above the 5,085 foot level could be required to be spilled over the dam or that it could be claimed by any other holder of water rights in the Mojave River basin, potentially thousands of other entities. Today, the District and the ALA are working cooperatively together to resolve the dispute.

MANAGING Costs

LACSD took a variety of steps to manage costs including:

- Increasing productivity to hold staffing levels steady despite increased activity
- Commissioning an independent audit of management practices
- Ensuring that future developments pay the full cost of their own water supply

Productivity Holds

New Policy to

Lake Arrowhead Community Services District

ANNUAL REPORT 2004

Non-Water Costs Down

LACSD took a number of direct actions to manage costs outside of the cost of new water supply development. This included undergoing an independent expert management audit, holding staffing levels steady despite increased work activity through reorganization, reassignment of personnel, and increasing productivity.

In 2004 LACSD updated its Financial Master Plan and increased rates commensurate with its expenses and to maintain compliance with mandated bond covenants. Assuring financial responsibility and cost-effectiveness is a primary focus of LACSD Management. LACSD's financial practices have been independently reviewed and affirmed by independent auditors and by an American Water Works Association (AWWA) Peer Review Team (Qualserve). This year the LACSD also received the California State Finance Officers Award for Outstanding Financial Reporting.

LACSD is continually reviewing and assessing all of its management practices and operations to be certain that we are managing public dollars well. In pursing our goal of cost effective operations, LACSD faces significant challenges. Examples include the following:

- The cost of doing business in California's regulatory climate is high and increasing
- LACSD is pursuing an entirely new enterprise–the planning and implementation of its water resources program and accompanying capital improvements
- LACSD's demand management programs reduce water deliveries and corresponding revenue

The following is a sample of specific initiatives to improve our organization's efficiency and cost effectiveness:

Staffing

In 2004, total staffing did not increase although LACSD is performing a greater number of services. Certain activities, such as the water conservation program have been staffed by reassigning existing personnel. Other water resource program activities that require technical expertise such as water resources planning and groundwater development have relied on the use of outside consultants.

Improved Productivity

LACSD has realized improved productivity and work performance. Examples include the following:

- A permanent reduction of the number of supervisor positions
- A reduction in Workers Compensation costs
- LACSD has received the California Water Environmental Association (CWEA) Safety Award for least number of accidents and injuries in the workplace
- LACSD has received the CWEA Award for Best Wastewater Treatment Plant in recognition of the operation of the Grass Valley Wastewater Treatment Plant

Management Audit, Strategic Plan and Benchmarking

An American Water Works Association (AWWA) management and operations audit (QUALSERVE) was completed last year. This audit helps the District to compare its effectiveness to other agencies.

LACSD is also implementing benchmarking. Benchmarks are quantified performance measurements that will enable LACSD to compare, analyze and improve productivity and the quality of service provided to our customers.

Supply New Construction

In 2003, LACSD established a Water Resource Fee to ensure that new construction paid for the cost of new water resources to serve it. In 2004, LACSD went even further in the case of new subdivisions. Guidelines adopted by the Board now require developers of subdivisions to fully fund and construct water supply facilities, most probably groundwater wells, before they can begin project construction.

In 2004, there were 70 new water service connections within LACSD. The amount of water used by these homes averages 1/3 of an acre-foot per year, or approximately 108,000 gallons. The cumulative impact of all the new connections last year was approximately 23 acre-feet of water. If this water were supplied from Lake Arrowhead it would be an amount equal to less than 1/3 of an inch.

In 2003, the LACSD Board reviewed the impact of new construction on lake levels. They found that over the past ten years, home building has ranged from 80 new connections per year in heavy years to 40 connections in slow years. They decided that rather than create severe restrictions on property rights and also certain hardship in the economy of the mountain communities for such a small gain in lake elevation, they would instead enact a water resources fee. This fee of $3,072 was intended to ensure that existing customers would not pay the costs for additional water supply but that new development would provide the funding needed to secure a water supply to serve it.

Last year, the LACSD Board went one step further. The issue of subdivisions was dealt with as a revision to the new policy. Today, builders and developers must perform a Water Supply Study that estimates the costs of supplying 100% plus of the water needs of the new project. If the study meets with LACSD's approval, the developer must then pay for and construct the new supply identified in the study. This ensures that such developments will not increase demands on existing resources.

CORE Responsibilities

LACSD operates and maintains a system that delivers water and sewer service to the Lake Arrowhead community 24 hours a day, seven days a week. Each year, that work requires that we meet our core responsibilities effectively and efficiently. These important core responsibilities include:

- Protecting public health and safety
- Developing and maintaining infrastructure
- Customer service
- Assuring financial responsibility and cost-effectiveness
- Complying with regulations
- Safeguarding the environment

Responsiveness

Public Health & Safety

Infrastructure

Safeguarding the Environment

Responding to Customers

Lake Arrowhead Community Services District

ANNUAL REPORT 2004

Protecting Public Health and Safety

Our most important responsibility is to protect public health by providing customers with safe and reliable supplies of water and, collection, treatment and disposal of wastewater. LACSD also shares responsibility for public safety in that we provide water for fire protection. LACSD has provided all of these services without mishap or interruption, including uninterrupted service throughout the "Old Fire" during which time the District operated without SCE electrical service for 13 days.

Developing and Maintaining Infrastructure

The cost of developing, maintaining and upgrading infrastructure is high. The following has been accomplished:

Stand-By Power Generation

All water system pumps are supported by emergency, stand-by generators. This past year six new generators were purchased and installed. An additional mobile generator was purchased and during the high fire hazard season LACSD maintains two rental generators to support the Bernina Water Treatment Plant during emergencies.

Water Delivery System

A total of 13,850 lineal feet of water pipeline was installed. Other accomplishments are:

- Leak Repairs–272
- Leak Detection–199,360 lineal feet
- Valve Maintenance Performed–1,063

Wastewater Collection System

LACSD rehabilitated and replaced wastewater collection lines. A total of 2,421 lineal feet of pipeline was replaced and 6,600 lineal feet of slip-lining was completed. Other accomplishments are:

- Manhole Rehabilitation–70
- Wastewater Line Cleaning–353,079 lineal feet
- Wastewater Pipe Repairs–28 repairs–343 lineal feet replaced
- Wastewater TV Inspection–41,096 lineal feet.

Groundwater Wells

Three new groundwater wells were completed in 2004. This was accomplished with the assistance and cooperation of the Lake Arrowhead Country Club and grant funding from the U.S. Bureau of Reclamation.

CLAWA Connection

A connection to the Crestline Lake Arrowhead Water Agency (CLAWA) system was completed in late 2003. This connection, together with an agreement with CLAWA enables the Arrowhead Woods service area to receive State Water Project Water to supply LACSD for deliveries to the "Overlap Area," an area within CLAWA's service area that is actually supplied with water through LACSD facilities.

District Offices

An earlier plan to construct a new administrative office was cancelled. This decision has enabled LACSD to focus its limited resources on the more immediate water management needs of the community. It also enabled LACSD to develop a facilities plan to house all equipment, materials and personnel, other than treatment plant personnel, in one facility and thereby improve the efficiency of our operations.

Customer Service

A survey of customer's opinions and preferences indicates that 76.4% of customers are "satisfied" with the District. While this result is positive it does indicate room for improvement. This survey is one of several initiatives being pursued by the District to understand customer's preferences and improve services. Other examples include the following:

District Personnel

LACSD's greatest asset is its employees. Excellent customer service is highly valued and is pursued on a daily basis by employees. Mistakes and mishaps do occur. New situations arise. Management and staff continue to focus significant attention and training to maintain and improve service to our customers.

Responsiveness

It is LACSD's objective to respond to all inquiries and requests for information in a timely manner. When LACSD receives an inordinate number of requests more time can be required. However, under all circumstances, it is LACSD's practice to respond to all customer requests in a timely manner as is possible.

Improved Communications Systems

Improved telephone and computer systems are now in place that increase the efficiency and speed of customer communications:

- Customers are able to directly contact the staff person who can best respond to their inquiry
- The general business line is answered personally
- Customer Service Representatives are professionally trained and are apprised of current developments and are able to respond to a full breadth of customer inquiries
- Off-hour and emergency service call service and procedures have been improved to be more user friendly
- LACSD's website provides comprehensive and timely information on a level that is unmatched by comparably-sized agencies

Improved Billing System

LACSD has purchased and implemented a new billing system that improves customer service:

- New billing statements are easier to read and provide each customer timely information about their water use, enabling them to better manage their water demand
- Electronic bill paying services are now available to customers

Complying with Regulations

Compliance with federal, state and local regulations governs most LACSD activities. District regulatory compliance is professionally managed. For example, the recently completed regulatory amendment to allow for the use of recycled water in our service area was accomplished in a remarkably short period of time.

LACSD conducts water quality testing for an increasingly diverse water supply. Each year, customers receive a Consumer Confidence Report that details the content and safety of their water supply.

In addition, the new supplemental water supply projects require a high level of environmental study and compliance. These projects are moving forward at a fast pace while meeting the highest environmental standards.

Safeguarding the Environment

Many LACSD activities ranging from the maintenance of the community's wastewater collection, treatment and disposal systems to our public education efforts to institute Best Management Practices for outdoor landscaping safeguard the environment and protect our watersheds.

For More Information

Anyone who would like more information is encouraged to visit our website at lakearrowheadcsd.com, call (909) 336-7100, or visit our office located in Lake Arrowhead Village. All meetings of the LACSD Board of Directors are open to the public. Meetings are usually held on the second and fourth Tuesday of every month.

HISTORY of Lake Arrowhead

Lake Arrowhead's history began in 1891 when a group of Ohio businessmen acquired the land and began to build a dam to create a reservoir to bring water to southern California's lowlands. The Arrowhead Reservoir Company was formed with James Morris Gamble, of Proctor and Gamble, as President. Over the next 32 years, a series of new owners raised the dam to 185 feet, creating the lake we see today. A court decision kept the water from being exported and in 1921, the Arrowhead Lake Company, a corporation formed by a group of Los Angeles businessmen, including J.V. Van Nuys, and John O'Melveny, bought the lake and the surrounding properties.

The Arrowhead Utility Company was formed in 1923 by the Arrowhead Lake Company. During its first year of operation, the utility served 103 domestic customers. Today, the Lake Arrowhead Community Services District (LACSD), formed in 1976, serves approximately 7,500 water customers.

LACSD is a self governed Special District responsible for water supply to Lake Arrowhead, and wastewater services to Blue Jay, Cedar Glen, Crest Park, Deer Lodge Park, Lake Arrowhead, Rimforest, Skyforest and Twin Peaks. Most of these areas lie within the Lake Arrowhead and Grass Valley watersheds.

Lake Arrowhead
Community Services District

ANNUAL REPORT 2004

Dam Construction

Lake Arrowhead Village

Early Lakeside Homes

First Years of the Lake

Water Service

The major source of water for the Lake Arrowhead community is Lake Arrowhead. The lake contains approximately 47,000 acre feet of relatively high quality water and has a surface area of approximately 780 acres.

Lake Arrowhead is an artificial lake impounded by a 185 foot high dam constructed between 1905 and 1915. The Arrowhead Lake Association is the owner and operator of the lake and supporting facilities. In 1975 a new dam was constructed downstream to provide stability for the original dam. The construction of the new dam has guaranteed the existence of Lake Arrowhead and therefore an important source of water supply for LACSD.

Lake Arrowhead water is of relatively high quality, but requires treatment by filtration and disinfection to meet the State and Federal drinking water regulations.

Some water is also provided by groundwater wells and water is also purchased from the State Water Project. This water is treated to meet drinking water standards before delivery to customers.

The water service area is smaller than the wastewater service area and covers approximately 4,900 acres and includes the geographic area known as Arrowhead Woods. The LACSD water system includes 18 water storage reservoirs, 9 pressure tanks, and 22 water pumping stations, as well as 250 miles of water mains. There are many challenges in delivering water to our customers. For example, our service and planning area consists of mountainous terrain where about 40% of the land has slopes of more than 30% grade. In addition, the ground underneath the surface is mostly dense, fractured and jointed granite.

Wastewater Service

LACSD owns and operates an extensive wastewater collection, treatment and effluent disposal system. Portions of the system date back to the 1920's. Two drainage basin areas distinguish the collection system; the Lake Arrowhead Basin and the Grass Valley Basin.

LACSD maintains approximately 300 miles of sewers. As a result of the steep local topography, the collection system uses 21 lift stations to transport wastewater from both the basins through the system to the treatment facilities. The largest of the lift stations may pump up to 4.0 million gallons per day while the smallest may only move 500 gallons per day.

The two wastewater facilities are the Willow Creek and Grass Valley Wastewater Treatment Plants (WWTP). Treated wastewater is conveyed from the Willow Creek WWTP to the Grass Valley WWTP for eventual disposal through a 10-mile outfall to a percolation site near Hesperia. The treated wastewater is then percolated into the ground water basin where eventually it is pumped and treated and used for domestic water supply. LACSD receives no revenue for this wastewater.

Maintenance and operation of the system is an around-the-clock endeavor. An upgrade of the wastewater treatment facilities to tertiary standards is now being implemented.

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Lake Arrowhead Community Services District

CUSTOMER REPORT

LACSD Moves Ahead with Water Supply Plan

Imported Water

All of the agencies concerned, LACSD, the Crestline Lake Arrowhead Water Agency (CLAWA) and the San Bernardino Valley Municipal Water District (MUNI) have approved the principles for CLAWA's purchase of water from MUNI and its transfer to LACSD.

LACSD and CLAWA have hired Science Applications International Corporation (SAIC) to perform the environmental studies that will allow LACSD to begin purchasing water from CLAWA by next year. The cost of the project to study the environmental impacts of the water purchase and the construction of a turnout, new 6,000 foot pipeline, and one million gallon storage tank will be shared by both agencies.

SAIC will review the imported water project for impacts to environmental resources. The work is expected to be complete next March.

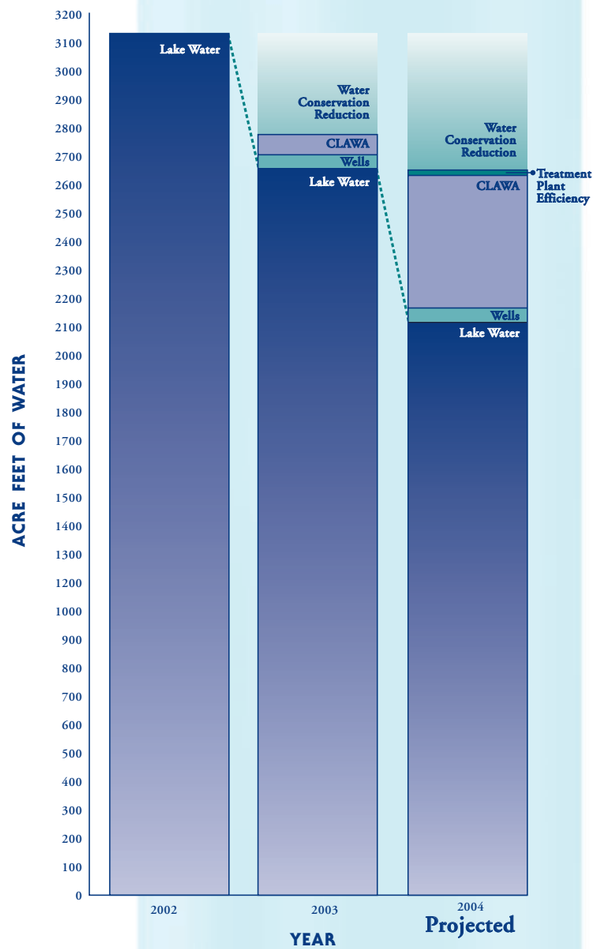
Groundwater Wells

LACSD has completed three new wells, bringing the total wells LACSD now has to five. While the new wells have been tested and are functional, they will not be connected by year end.

Recycled Water Under Environmental Review

The implementation of the first phase of a recycled water program for LACSD is undergoing the preliminary phases of environmental review. Tetra Tech, the engineering company the developed LACSD's Final Water Demand and Supply Report last year, is undertaking preliminary design, environmental review, and permitting. The project requires complex review and permitting by many public agencies but is moving steadily forward.

CHANGING WATER SUPPLY

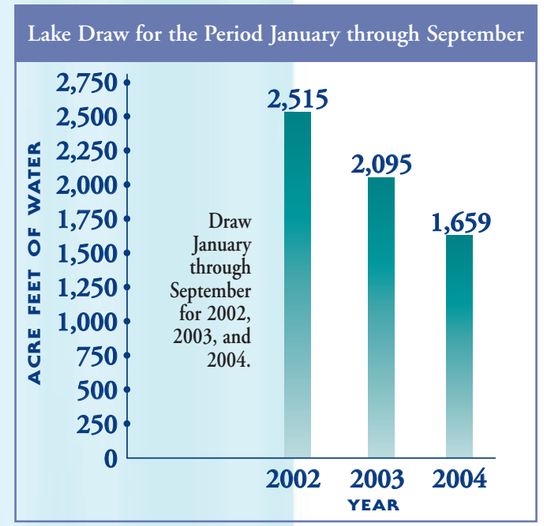


REMEMBER IT'S WINTER – Your irrigation system should be turned off.

Lake Arrowhead Community
Services District
P.O. Box 700
Lake Arrowhead, CA 92352

PRESORTED
STANDARD
U.S. POSTAGE
PAID
S M SYSTEMS INC

Major REDUCTION in Lake Draw



For the period January through September 2004 the total draw on Lake Arrowhead was 1659 acre-feet. This is a 34% reduction in lake draw, compared to the same period January through September 2002.

Forty-two percent of the drop in demand on the lake is attributable to water conservation, 52% to State Water Project water purchased through the Crestline Lake Arrowhead Water Agency (CLAWA), 5% is attributable to new groundwater wells, and 1% to water treatment plant efficiency programs.

The CLAWA water includes 62 acre-feet per year supplied to serve customers that are in an area served by LACSD but within the CLAWA service area. The balance of the water from CLAWA is a one-time purchase.

This year-to-date reduction means that LACSD is on track to reduce its use of lake water by more than one third.

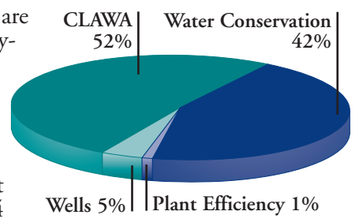
SAG Reconvened to Study Best Use of Wastewater

Last fall the LACSD Board accepted the majority of recommendations from the Stakeholder's Advisory Group (SAG) on how to decrease the communities demand for lake water by 50%. Those methods, studied in the Final Water Demand and Supply Report, included a variety of projects including water conservation, wells, water treatment plant efficiency projects, imported water, and a phase one recycled water program that would supply approximately 200 acre-feet of water per year.

Those projects are all now underway. The means to reduce demand on the lake was defined in the report as requiring some combination of projects that would supply an additional 1,500 or more acre-feet of water to LACSD on a permanent basis. Under consideration are an expanded recycled water program, or an indirect potable reuse project, groundwater wells, and permanent imported water supply.

LACSD has reconvened the SAG to further study these remaining alternatives, their environmental feasibility, their cost, and their financing. The first SAG meeting is scheduled for early next year. Interested members of the public that want more information or to participate in the SAG, please call 336-7100.

Mandatory Conservation UPDATE



Lake Arrowhead residents are supporting the community-wide mandate to save water four to one. Based on billings at September 30th, 83% have met the 25% reduction standard. Since the ordinance went into effect on June 1, 2004 a 20% reduction has been achieved.

Ordinance No. 58, LACSD's mandatory water conservation policy, set up a formula that requires residents to save water in a serious drought. Those standards are tied to the lake level.

The conservation is measured against the water used during 2002. In 2003, the Board of Directors declared a Third Stage Drought to be in effect and that status has not changed.

Section seven of the ordinance provides for a variance procedure. The purpose of this variance procedure is to acknowledge special circumstances such as the need for additional water to irrigate drought stressed trees, medical needs, or additional household members. To date LACSD has received approximately 640 variance requests. Of those approximately 590 have been granted for a total of approximately 8% of all customers.

LACSD Open House
Saturday, November 27
LACSD Offices @ Lake Arrowhead Village
10 a.m.–noon

Protect Your Home From Potential Sewer Backups

Blockages and sewer backflows are an unfortunate but recurring challenge in the operation of a wastewater system. Several factors contribute to the cause of a sewer backup. Some are the result of behavioral and environmental factors, including:

- Tree roots
- Customer disposal of Fats, Oil, and Grease
- Topography and slope of the pipelines and the properties served

Others relate to characteristics of the system such as:

- Age and deterioration of sewer pipelines
- Multiple connections to a single lateral
- Absence of outdoor sewer backflow prevention devices on individual properties

For example, tree roots are a major cause of sewer link blockage. Roots enter the collection system through joints between pipes, cracks, and holes in the pipeline. The current persisting drought has significantly contributed to elevating this risk. Trees are capable of sending roots far beyond their driplines in search of water. Trees that are drought stressed have caused many instances of both lateral sewer service and main sewer pipeline blockages. In addition, once extended into the vicinity of sewer service facilities, roots will remain and seek water even once rainfall returns to normal.

Lake Arrowhead's steep topography also causes backups. Wastewater, travelling by gravity flow down a steep slope picks up speed. When fast moving wastewater travelling downhill meets a sewer line that serves a flat portion of the landscape with consequently slower flows, backflow occurs in the flatter line until the flows can stabilize.

What Has LACSD Done to Date?

LACSD has designed all improvements to the sewer system to minimize the risks of backflows. However, much of the system is more than 50 years old. In addition, many older homes have sewer connections that were installed without meeting adequate standards or being inspected.

In order to better manage the fiscal risks associated with such claims, in 2001-2002 LACSD instituted a program to require new construction, renovations on existing properties, and construction to replace a sewer service lateral to provide for Anti-Flooding Devices.

In addition, as LACSD undertakes repairs to the system and normal capital improvements to replace aging facilities, it corrects in adequate early engineering wherever it is found.

Are You Potentially at Risk for Sewer Backflows?

An audit, now completed, has designated premises as potentially "at risk" if they have one or more of the following conditions:

- topography and location of sewer lines being likely to cause backflows due to steepness of slopes or pipelines serving steep slopes meeting sewer lines serving flat areas
- buildings where there is a plumbing drain outlet at an elevation that is 48" or less above the ground surface of the next upstream manhole.

LACSD has identified 1,059 properties as potentially at risk and may require an Anti-Flooding Device.

Why Launch a Program?

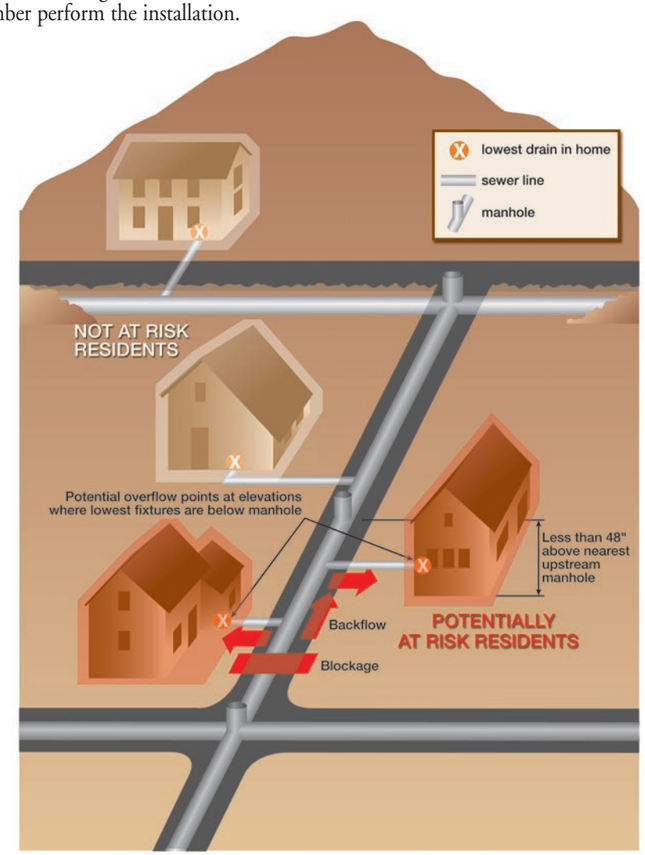
Not only are sewer backflows unpleasant, they can also be very destructive.

According to the California Sanitation Risk Management Association (CRSMA), an insurer of 23 local providers, LACSD's liability claims for sewer backups are well below the organization's overall rate for such claims. However, two developments have brought the need to address sewer backups to the forefront. First, six years of drought has increased root intrusion into the wastewater collection system, which has increased the potential for blockages and backups. Second, CSRMA has raised the cost of deductible payments for sewer backups from $10,000 to $50,000 per occurrence.

However, too many factors beyond LACSD's control continue to contribute significantly to damage associated with sewer backflows.

LACSD wants to encourage owners of at risk properties to install an Anti-Flooding Device.

This winter, customers identified by the audit as at risk for backflows will be contacted by LACSD. The letter will offer a free on-site inspection to confirm the situation, locate the best place for installing an Anti-Flooding Device, provide a list of locations where the equipment is available for purchase, and supply specification drawings for its installation. LACSD recommends that a licensed plumber perform the installation.



IMPORTANT EROSION CONTROL TIP: Leave mulch—up to 2"of pine needles or leaves—on the ground to help water soak in and prevent runoff.

Vacation Homeowners— TURN OFF YOUR WATER

Lake Arrowhead homes have two shut off valves—one near the meter and one for the house. If you are going to be away from your mountain home for more than a day or two, turn off both valves then open your indoor taps until all the water drains out of the pipes. Then close the taps and leave both valves turned off. This way your water system will both be turned off and drained.

Everyone Should Winterize Now

Don't let cold weather catch you unprepared. Every winter, many homeowners face the expense and inconvenience of frozen water pipes. You can cross that off your list of winter worries by taking a few simple precautions.

1. Disconnect and drain outdoor hoses. Detaching the hose allows water to drain from the pipe. Otherwise, a single hard, overnight freeze can burst either the faucet or the pipe it's connected to.
2. Insulate pipes or faucets in unheated areas. If you have pipelines in an unheated garage or cold crawl space under the house, wrap the water pipes before temperatures plummet. Hardware or building supply stores will have good pipe wrapping materials available.
3. Seal off access doors, air vents and cracks. Repair broken basement windows. Winter winds whistling through overlooked openings can quickly freeze exposed water pipes. But don't plug air vents your furnace or water heater needs for good combustion.
4. Find the master shutoff. It may be near the water heater or the washing machine. More likely it's where the water line comes into your house from the street. If a pipe bursts anywhere in the house—kitchen, bath, basement or crawl space—this valve turns it off. So find it now and paint it a bright color or hang a tag on it. Be sure everyone in the family knows where it is and what it does.

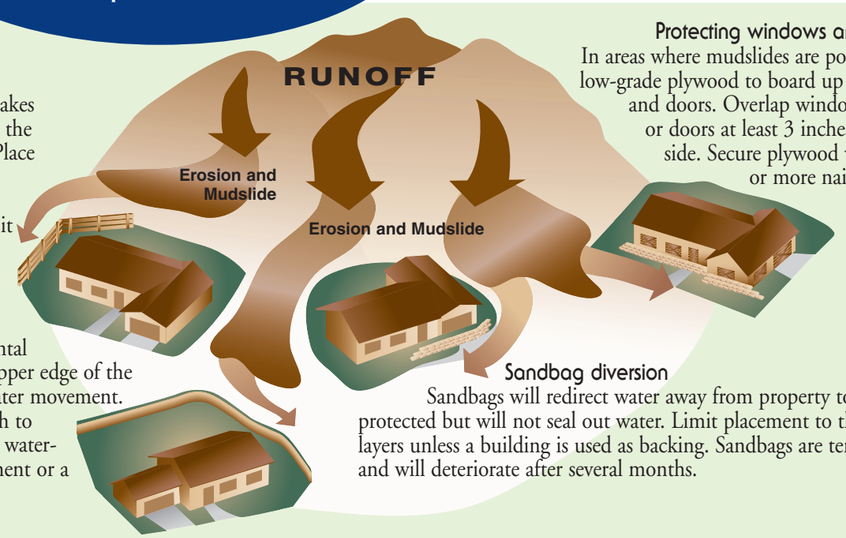
Battling MUDSLIDES & FLOODS

Last year's fires have left behind scorched, exposed hillsides and slopes, setting the stage for floods, mud and debris flows. Although the Lake Arrowhead watershed did not burn, many property owners have cut down dead or dying trees and have cleared their properties of brush. In some cases, they have gone too far and removed all mulch instead of leaving two inches of pine needles or leaves and the layer of protective decomposed material below the needles and leaves, called duff.

This condition can cause flooding and mudslides. County, state and federal officials are preparing plans to minimize injuries and property damage from winter rains. Here are some things residents can do to protect their homes.

Wooden deflector walls
Use low-grade lumber. Drive stakes to at least half their length into the ground for proper anchorage. Place deflectors on solid, level soil to prevent erosion. Earth packed behind the deflector will make it stronger.

Diversion ditches
Dig a small, horizontal ditch close to the upper edge of the property to slow water movement. Provide for the ditch to drain into a natural watercourse, street pavement or a well-vegetated area.



Protecting windows and doors
In areas where mudslides are possible use low-grade plywood to board up windows and doors. Overlap windows, vents or doors at least 3 inches on each side. Secure plywood with four or more nails, screws or bolts.

Sandbag diversion
Sandbags will redirect water away from property to be protected but will not seal out water. Limit placement to three layers unless a building is used as backing. Sandbags are temporary and will deteriorate after several months.

How to Use Sandbags

Filling– Filling sandbags is best done with two people. Fill half full with sand if available or local soil will work too.

Stacking– Fold top of sandbag down and rest the bag on its top on the stack. Top should be facing upstream. Stamp the bag into place. Complete each layer before starting the next layer. Stagger the layers. Stack no more than three layers high unless they are against a building or stacked pyramid-style.

DO'S AND DON'TS

Do:
- Try to direct debris flows away from your property.
- Clear a path for debris.
- Place protective measures to divert debris, not dam it.
- Board up windows facing the flow. Work with your neighbors.

Don't:
- Under-rate the power of debris flows.
- Wait until storms arrive to make a plan.
- Try to confine the flows more than is necessary.

Materials
The materials needed are readily available and inexpensive and can be installed with normal household tools: sandbags, sand, lumber and plywood.

Lake Arrowhead Community Services District

CUSTOMER REPORT

LACSD Board Proposes ACTION to Secure Supplemental Water Supply

The Lake Arrowhead Community Services District has a policy to reduce and ultimately eliminate reliance on Lake Arrowhead as the community's sole source of water supply. The purpose of this goal is to prevent falling lake levels from having a negative effect on our community's quality of life and the local environment and to guarantee a dependable supply of water for the future.

The Board of Directors of the Lake Arrowhead Community Services District is proposing the funding of a water purchase and projects that will enable LACSD to fully implement this policy.

One of the central features of the proposal is a 10 to 15-year agreement to purchase up to 10,000 acre-feet of water from the San Bernardino Valley Municipal Water District (MUNI) through the Crestline Lake Arrowhead Water Agency (CLAWA). The agreement would allow LACSD to take an average of 1,500 acre-feet of water per year.

LACSD's existing projects are on track to reduce demand on the lake by nearly 40% by 2005. New projects will bring 1,900 acre-feet of water to the community. Taken together these projects will achieve LACSD's policy of reducing and ultimately eliminating the community's reliance on the lake as its sole source of water supply.

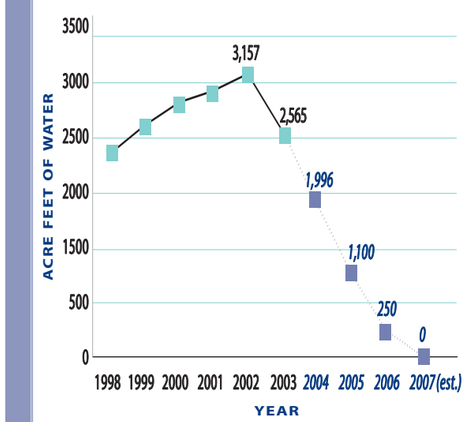
Achieving a complete reduction of demand on the lake within three years sets a new standard in California for responding to a water supply crisis. Metropolitan Water District of Southern California, with 27 southern California member water agencies has set an 18 year benchmark for completion of large scale water supply projects at a local level.

EXISTING PROJECTS	2003 AF/Y	2004 AF/Y	2005 AF/Y	2006 AF/Y	2007 AF/Y
Water Conservation Phase I	484	630	630	630	630
Water Conservation Phase II		63	115	115	115
Treatment Plant Efficiency			150	150	150
CLAWA 62 AF/Y Overlap Area	62	62	62	62	62
Groundwater Phase I*	46	150	150	150	150
Groundwater Phase II*		50	100	150	150
Imported Water *(one time purchase)*		206			
TOTAL EXISTING PROJECTS	**592**	**1,161**	**1,207**	**1,257**	**1,257 AF/Y**

NEW PROJECTS	2003 AF/Y	2004 AF/Y	2005 AF/Y	2006 AF/Y	2007 AF/Y
Recycled Water Phase I*			0	0	200
Four Groundwater Wells*			50	150	200
Imported Water Project			800	1,500	1,500
TOTAL NEW PROJECTS			**850**	**1,650**	**1,900 AF/Y**
TOTALS	**592**	**1,161**	**2,057**	**2,907 AF/Y**	**3,157 AF/Y**

**For more detailed descriptions of these projects, see table on page 3.*

LACSD FORECAST—
IMPACT OF WATER MANAGEMENT ON LAKE USE



Why is LACSD Acting Now?

The Lake Arrowhead community, like many regions in the southwestern United States, is in its sixth year of drought. On May 2nd, referring to the growing evidence that drought is the norm in the west, a New York Times investigation stated "Continuing research into drought cycles over the last 800 years bears this out, strongly suggesting that the relatively wet weather across much of the west during the 20th century was a fluke. ...States that depend on Colorado River water are preparing for the possibility of water shortages for the first time since the Hoover Dam was built... The uncertainty has local, state and federal officials along the 1,450-mile river scurrying to secure water allotments while also preparing for the worst."

In this climate of continuing severe drought and uncertainty, Colorado River water users are likely to begin to turn very quickly to those who have not fully used their State Water Project allotments to make up shortfalls.

If LACSD acts in July to establish funding, it will be in time to meet the County deadline to begin collecting the needed revenues on non-property tax bills to implement all of the projects—not just the imported water project—this year.

Recent survey research conducted by LACSD revealed that 88% of property owners support either taking action to refill the lake (63%) or ensure that it does not fall any lower (25%) even though they were told it would cost money to do so. Furthermore, customers at all levels of water use supported the capital amounts they would have to pay to move forward with this project.

In order to fulfill its policy of reducing and ultimately eliminating reliance on Lake Arrowhead as the community's sole source of water supply, LACSD is proposing to act as quickly as possible to secure the resources that this multi-agency cooperative agreement represents.

What HAPPENS After 15 Years?

The purchase of imported water over a 10 to 15-year period will create the conditions for LACSD to find a permanent solution to its water supply needs.

A 10 to 15-year contract will give the community the time to develop its groundwater resources in a responsible manner, ensuring that they do not become over drawn and learning how much of our total supply groundwater can be over the long term. It will also provide the time to extend a recycled water program throughout the entire community or to pursue the community and environmental approvals required to implement an indirect potable reuse project, or to implement a combination of both approaches.

Why Doesn't the Water GO TO the Lake?

Lake Arrowhead water is of exceptionally high quality. Runoff from rain and snow that feeds the lake passes through areas with relatively low level of development. In addition, the depth of the lake helps to keep the water quality high.

The lake is governed by water quality regulations. These regulations say that water added to streams and lakes must be of comparable quality to the natural or typical waters already present.

A common indicator of water quality is Total Dissolved Solids (TDS), sometimes called salts. Federal and state drinking water quality regulations recommend a TDS goal of 500 parts per million (ppm) with and acceptable range of 1,000 ppm or 1,500 ppm short term. The TDS of Lake Arrowhead water ranges from 50 to 85 ppm. Popular bottled waters like Evian contain as much as 300 ppm of TDS. Water from the State Water Project taken at Lake Silverwood is between 300 and 400 ppm. Water from groundwater wells has a TDS of 200 ppm. As a result, water regulations prohibit putting either groundwater or State Water Project water directly into Lake Arrowhead.

Customers may notice that water supplied from new sources tastes slightly different.

Lake Arrowhead Community
Services District
P.O. Box 700
Lake Arrowhead, CA 92352

PRSRT STD
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PAID
Riverside, CA
Permit No. 3037

A Cooperative SOLUTION

LACSD's neighboring water agencies, CLAWA and MUNI, have come together to assist our community with a proposed 10 to 15-year contract for up to 10,000 acre-feet of water.

Various water purchase and annexation proposals were studied in the final Water Supply and Demand Report. The Report revealed that while CLAWA had capacity to deliver water to LACSD, it did not have the right to sell State Water Project water to LACSD. MUNI on the other hand, unlike other State Water Project Contractors, can sell water and have water resources available to assist LACSD. Both have worked hard with LACSD to come up with a three party agreement that will deliver water belonging to MUNI to LACSD through CLAWA.

How Would the Imported Water Contract WORK?

1. CLAWA buys up to 10,000 acre-feet from MUNI, leaving the water in a "storage account" where it can withdraw water for up to 10 to 15 years.
2. CLAWA pays MUNI for the water at today's water prices.
3. CLAWA takes delivery of the water before it actually gets to MUNI, by withdrawing water from MUNI's annual allocation of State Water Project water through Lake Silverwood.
4. As CLAWA withdraws water from its "storage account" the price is adjusted according to the prices for State Water Project water at the time the water is taken. If prices have gone up, CLAWA pays more. If prices have gone down, CLAWA gets a credit. If a credit remains after all the water is withdrawn from the "storage account," CLAWA gets a refund.
5. LACSD signs a 10-year agreement, which could be extended for an additional 5 years, with CLAWA.
6. When LACSD asks for water, CLAWA takes the water, treats it for use as drinking water, transports it through its transmission system to LACSD's distribution system for delivery to customer's homes.
7. LACSD pays for the water as it is taken. The cost is whatever CLAWA paid for the water plus CLAWA's charge to pump, store, treat, and deliver the water in addition to a nominal markup to cover the cost of CLAWA using its own funds to pay for the water up front.
8. CLAWA, MUNI, and LACSD will comply with all applicable environmental regulations and required permits.
9. State Water Project water deliveries would be made using the existing capacities of CLAWA and MUNI.

What are the CONDITIONS?

There are several conditions attached to the agreement:

1. The amount of water available in the State Water Project varies from year to year. The quantity taken from MUNI's annual State Water Project allocation for this contract can not exceed 15% of MUNI's annual allocation or 3,000 acre-feet, whichever is less.
2. The total amount of water CLAWA can take out of Lake Silverwood, including both its own State Water Project allocation and water from MUNI can not exceed 5,800 acre-feet.
3. The amount of water LACSD can take from CLAWA is limited by the two conditions above and the capacity available in CLAWA's own water system, after it has taken care of the needs of its own customers.
4. LACSD's taking of the water is limited by its own needs and capacity to accept the water.
5. LACSD must prepay for a minimum of 800 acre-feet per year for the first two years and 700 acre-feet thereafter. Payments for water not used will be carried forward to future deliveries.
6. CLAWA will adjust its charges for delivering the water to reflect higher or lower energy costs based on a mutually agreed to index.
7. CLAWA will pass along supplemental charges or credits to LACSD as water prices fluctuate and MUNI charges or credits CLAWA.
8. If energy or water costs increase beyond a mutually agreed upon upper limit, LACSD will have the right to renegotiate the minimum payment portion of the contract.
9. CLAWA may borrow from its "storage account" with MUNI to supplement its own allocation of State Water Project water if it doesn't have enough water to serve its own customers. The effect could be to reduce the amount of water available to LACSD in a given year but LACSD would not be required to pay for water not available in that year. CLAWA will pay back the borrowed water in a future year or reduce LACSD's repayment obligation a like amount.

What Would the NEW PROJECTS COST and What Would they Pay for?

There will be an annual cost of approximately $1.8 million to buy water (see description of pricing in "How Would the Proposed Imported Water Contract Work?" on the left). In addition, the district will fund a combination of two or more of the following water projects.

Project	Description	Cost
LACSD Pipelines and Storage	Two turnouts to connect to CLAWA, 3,000 lineal feet of 12-inch underground pipeline, one million gallon storage tank	$3,835,000
Recycled Water Phase I	2.5 miles of 12-inch pipeline to serve as backbone of recycled water system	$6,168,000
Four Groundwater Wells*	Engineering, well drilling development, water testing, treatment	$1,300,000
Recycled Water Phase II	12.5 miles of 4-inch pipeline to serve residential and commercial customers	$13,447,000
Indirect Potable Reuse	Highly treated wastewater to above drinking water standards and returned into Lake Arrowhead	$7,250,000
Total Capital Costs		**$32,000,000**

**More groundwater wells may be drilled in addition to the four listed here.*

How do we know the Water Price is FAIR?

LACSD has contracted with Bookman-Edmonston Engineers to undertake due diligence on the water pricing and charges proposed in the agreement.

These projects are fully discussed in the LACSD Water Supply and Demand Report available online at www.lakearrowheadcsd.com or at the district office.

Saving Water INDOORS

Shower (40 gallons/10 minutes)

1. Take shorter showers
At a minimum of 4 gallons per minute, showers use a lot of water. Limiting your showers to the time it takes to soap up and rinse off can cut your shower time by more than half.

2. Install water saving shower heads
Low-flow showerheads cut the amount of water used to less than 2 gallons per minute while still giving you a refreshing shower. They're easy to install.

3. Bath (20 gallons)
Take baths. Even a full bath uses less water than the average shower. Baths are relaxing too.

Brushing Teeth (2 gallons/day)

4. Turn off the water when you brush your teeth
Before brushing, wet your brush and fill a glass for rinsing after.

Toilet (2 gallons/day)

5. Check your toilet for leaks
A leaking toilet can waste 20 gallons a day. To check for leaks, put a little food coloring in the tank. If, after a few minutes, you can see the color in the bowl without flushing, you have a leak that needs repair.

6. Stop using your toilet as a wastebasket
Each flush can use up to 7 gallons of water.

7. Put a plastic bottle or toilet tank bag in the tank
Weight a quart plastic bottle with water. Place it in the toilet tank away from the mechanism. The bottle will displace water and save on each flush and the toilet will still work properly.

Shaving (5 gallons/day)

8. Turn off the water while shaving
Put some water in the bottom of the sink to rinse your razor, rather than leaving the water running.

Dishwasher (15 gallons/load, 4 loads per week)

9. Fill your dishwasher before you run it
When you wait until the load is full, you save water.

Washing Dishes By Hand (20 gallons)

10. Don't leave the tap running for rinse water
If you have a double sink, fill the second one with rinse water. If you have a single sink, save the washed dishes in a rack and rinse them all at once with a sprayer or pan of water.

Clothes Washer (48 gallons/load, 5 loads per week)

11. Choose your water level for each load
Adjust your washer for each load. Small loads need less water. If your washer has only one water level, wait for a full load before you do your laundry.

Running The Tap (5 gallons/minute)

12. Keep a bottle of drinking water in the fridge
Refrigerated water is colder than tap water and on a hot day, it's more refreshing.

13. Don't let the tap run when you wash vegetables
Rinse vegetables in a bowl or pan of clean water.

14. Install water saving faucet aerators
Water saving faucet aerators can reduce water flow to less than 2 gallons per minute while still providing good pressure and flow.

Leaks (10-40 gallons/day)

15. Stop those drips
A slow drip can waste up to 20 gallons a day.

16. Look for hidden leaks
If you suspect you have a hidden leak, call us at 337-8555, and we'll help you test your system.

How Much Water CAN YOU SAVE?

How much can you really save? Check your water bill and see what your use is. Follow our tips and the average family of four will save:

	Gallons/week SAVED
Outdoors	
Follow our tips: Reduce lawn size; Change watering patterns; Maintain your system; Change high water use to low water use plants — Reduce 300 gallons/day to 200 gallons/day	700
Car washing (based on saving half the water, 75 gallons x 1 time/week)	75
Driveway cleaning (using a broom saves 150 gallons x 1/2 time/week)	75
Water saved outdoors	**850**
Indoors	
Repair leaks and drips (1 leaking/dripping faucet @ 20 gallons day)	140
5 minute shower (instead of 10 minute shower @ 4 gallons/minute 5-minute shower with low flow showerhead @ 2 gallons/minute saves 30 gallons/shower x 4 people x 7 days)	840
Turn water off while brushing teeth (2 gallons/day x 4 people x 7 days)	56
Turn water off while shaving (4 gallons/day x 7 days)	28
Toilet tank bag (12 flushes/day at 1 quart each x 7 days)	21
Running dishwasher only when full (15 gallons/1 load per week)	15
Shut off tap while hand washing dishes (10 gallons/time x 1 time/week)	10
Wash only full loads of laundry (48 gallons x 1 less load/week)	48
Water saving faucet aerators (based on saving 2.8 gallons/minute @ 15 minutes/day 7 days/week)	294
Water saved indoors for a family of four	**1,452**

TOTAL WATER SAVED 2,302 gallons

Get Water Conservation Information
(909) 336-7140
Free Home Water Survey
Information on Water Saving Fixtures

Lake Arrowhead Community Services District

CUSTOMER REPORT

MANDATORY CONSERVATION for the LAKE ARROWHEAD COMMUNITY

New Ordinance Inside

Tools to Help You Conserve

We have produced this summary of the ordinance, variance procedures, and penalties so that you can learn and understand the new rules. We are also providing all customers with a letter that gives them their 2002 water use, water use last year, and tells them how much they have to save to comply with the new rules. You can also get this information through online account services at www.lakearrowheadcsd.com.

Finally, we have included water conservation information to help you meet the 25% goal. Our water conservation staff is also ready to help. Call 336-7140 and we will be happy to schedule a home water survey to show you how you can save. There are also water saving fixtures like showerheads and faucet aerators available. This summer we will also be sponsoring an Ultra Low Flow Toilet exchange. Our staff can also help you buy a water saving automatic irrigation controller for your outdoor landscaping.

What is the Situation?

Six years of serious drought have reduced the level of Lake Arrowhead and caused residents to realize that Lake Arrowhead and its preservation are an important part of our quality of life. In 2003, the Board of Directors of the Lake Arrowhead Community Services District (LACSD) adopted a policy to reduce and ultimately eliminate dependency on the lake for our community's sole source of water supply. The policy not only seeks to protect quality of life and the local environment, it also seeks to guarantee a dependable supply for the future.

As a part of that policy and as a result of the continuing drought, LACSD implemented a water conservation program that together with new imported and groundwater supplies, reduced demand on the lake by almost 20% in 2003.

In 2004, however, with less than half the annual average rainfall, LACSD understood that the coming watering season would further lower lake levels. While LACSD is implementing new water resources programs and projects that together will reduce demand on the lake by 50%, those reductions can not be completed in time to make a difference this year. LACSD is also vigorously pursuing new imported water supplies, new groundwater wells, and water recycling options. These projects are currently beyond the financial capacity of LACSD without generating funds through a public financing. Plans for such a financing are underway.

Why Mandatory Conservation?

In the meantime as summer arrives, LACSD is predicting reductions of 30% to 35% from new programs and projects for this year. More is required. LACSD studied drought ordinances from a number of communities and began to formulate, with a stakeholder advisory group, an approach to mandatory water conservation standards for our community. Survey research has shown that 77% of customers favor mandatory conservation in our current circumstances. Recently, the public was asked to comment through a public meeting.

On April 27, 2004, the Board passed the Water Conservation Policy of the Lake Arrowhead Community Services District. The Ordinance becomes effective June 1, 2004. It includes rules for water use called Permanent Water Conservation Policies. It also provides for mandatory levels of conservation which are linked to persistent drought and falling lake levels. These Mandatory Water Conservation Phases apply to everyone.

What is Required?

Last year, the Board declared a Third Stage Drought and that declaration is still in effect. It means that even though conservation and winter rain have raised the lake level to 5,090 feet as of April 27, 2004, by the end of the summer the lake is expected to fall below the 5,087 level and is considered a Third Stage Drought.

This means customers must conserve 25%. The Ordinance establishes a Base Year against which to measure this required conservation. The Base Year is 2002, the year of highest water use in the community. The Ordinance also provides a "floor" below which you will not be asked to conserve further. In no case will customers be required to conserve to use less than 19 CCF (hundred cubic feet) or 14,212 gallons per two-month billing cycle.

Are There Exceptions?

We understand that this Base Year will not work for everyone and that the past two years may have brought change to many households. As a result, we have provided for variances under those circumstances (see story inside).

What are the RULES?

Permanent Water Conservation Policies Applicable to All Customers

Outdoor Cleaning

- No hose washing of hard or paved surfaces including, but not limited to sidewalks, walkways, driveways, parking areas, patios, porches, decks and verandas. Sweeping is encouraged for routine maintenance. Washing patios, porches, decks and verandas shall be by bucket and mop or high-pressure washer only.

Vehicle Washing

- Vehicles may be hand washed using a bucket while parked on residential properties. Rinsing may be by using a leak free hose equipped with a positive shut off nozzle, but not in a manner that causes or allows excess water to flow or runoff onto an adjoining sidewalk, street, gutter or ditch.

Restaurants

- Water served on request only

No Leaks Allowed

Irrigation Practices

- Home watering only between the hours of 6:00 p.m. and 8:00 a.m., with the exception of newly seeded plants and other new planting, which may be watered intermittently until rooting is established.
- Lawns, trees, shrubs and other landscaping may not be watered beyond what is needed for natural growth and to sustain life. Water may not be permitted to pool or collect to the point of runoff. No customer shall water or irrigate any lawn, landscape, or other area in a manner that causes or allows excess water to flow or runoff onto an adjoining sidewalk, driveway, street, gutter or ditch.

Mandatory Water Conservation Phases During Drought

The following lake levels will define the presence of a drought condition in the Lake Arrowhead community and require all customers to save a mandated proportion of water based on 2002 water use:

Drought Stages	Lake Levels	Required Conservation
First Stage Drought	5 ,100–5,093.6 feet	10%
Second Stage Drought	5,093.6–5,087 feet	15%
Third Stage Drought	Below 5,087 feet	25%

In no case will customers be required to conserve to use less than 19 CCF (hundred cubic feet) per two month billing cycle.

Under a Third Stage Drought, No New Landscaping Except:

a. Low volume irrigation is implemented; (low volume irrigation is defined as not to exceed 0.75 inches per hour or three gallons per minute at the spray head).
b. The new landscaping is to replace the trees and shrubs killed by infestation or drought.
c. The landscaping is to replace existing landscaping with water efficient or drought resistant vegetation.
d. The new landscaping is to comply with erosion and sedimentation control set forth by San Bernardino County Building and Safety.
e. The landscaping is being created to establish defensible space according to standards established by local fire agencies.
f. The new landscaping is based on a plan to install water efficient or drought resistant vegetation.
g. No turf grass shall be planted (seed or sod), until the Third Stage Drought is declared over.

Monitoring and Penalties

Water use and conservation will be monitored through field inspections and meter readings and the LACSD billing system. Customers who fail to conserve or who violate regulations will be subject to the following penalties:

Violations	Penalties
First Violation	Warning letter
Second Violation	25% surcharge of affected water bill
Third Violation	50% surcharge of affected water bill
Fourth Violation	100% surcharge of affected water bill
Further Violations	Installation of flow restrictor or water turn off by LACSD

Saving Water OUTDOORS

The following are basic ways you can save water around your home. Water use for each activity is based on averages and average fixtures. Actual amounts may vary.

Landscaping

(300 gallons/day in spring, summer, and fall)

Learn How to Water Your Landscape

Lawns, shrubs, ground covers, and trees all need different amounts of water applied differently.

Trees and shrubs can usually get by with deep watering, not sprinkling, applied to their root zones once a week for about 10 minutes. Make sure they get adequate water in the spring to encourage deep roots and make sure you water trees inside their drip lines—the area below the spread of their branches. Build a four to six inch earthen dam around the root zones of both trees and shrubs to hold the water so it soaks in rather than running off.

During a drought crisis, LACSD does not allow the planting of new lawns. If you have an existing lawn, consider replacing it with low water use groundcover. If you have a lawn, it should be watered no more than twice a week for about five minutes. If it wilts (see number 6 below), then increase water by two minutes. If you don't have an automatic sprinkler system, use a kitchen timer to help you keep track.

These quantities are based on normally draining soil and a sprinkler or watering fixture that will fill a tin can placed on the ground in the area to be watered to a depth of one inch in 15 minutes.

1. Get to know how plants signal for water
   Some plants lose their gloss and start to droop a little before wilting. The time to water is when the plants need it, rigid watering schedules waste water.
2. Split your watering time
   If water flows away instead of soaking in, split the water time into two sessions to allow the soil to absorb the water. Where soil is sandy, water may percolate below the grass root zone. Compensate by watering for half the time, twice as often so water stays in the root zone.
3. Avoid watering on windy days
   When you water on windy days much of the water evaporates or blows away.
4. Avoid watering in the middle of the day
   LACSD allows watering only between 6 p.m. and 8 am. Early morning is the best time because it prevents the growth of fungus. During the high water use months of July and August early morning watering avoids the peak-demand use period of the day. When you water during the cool parts of the day more water soaks in instead of evaporating.
5. Adjust sprinklers to water plants only
   Watering driveways, patios or roadways is a violation of the Ordinance and a waste of water and money. Make sure that coverage is even so that you don't have to drown one area in order to get enough water on another.
6. Water your lawn only when it needs it
   Test for watering by stepping on the grass. Does it spring back when you raise your foot? If the answer is yes, it doesn't need water.
7. Turn off your sprinklers when it rains
   For residents that can't be home to do this, automatic rain switches are available at hardware stores.
8. Use a kitchen timer
   It will help you to remember to turn sprinklers off if you do not have an automatic system.
9. Maintain your watering system
   Broken sprinkler heads spew water that doesn't benefit your plants. Risers that are too low can be blocked by neighboring plants and not reach them. Hoses, couplings, valves, and faucets that leak not only create large puddles but waste your watering dollars.

Change Your Landscape to Use Less Water

1. Train your plants to develop deep roots
   Water thoroughly but infrequently. Make sure that plants are deep watered in the spring, even when it is cool so that they will develop deep roots and need less water in the summer. Deeper roots allow plants to use moisture deep in the ground. Plants will be healthier and stronger. Water retaining soils added to your garden soils will help water get to plant roots and reduce runoff.
2. Mulch around trees and shrubs
   Mulching discourages weeds and slows evaporation when you water your plants.
3. Plant trees and shrubs that use less water
   There are many types of shrubs, and trees that use very little water. Choose them for your garden. Consider eliminating your lawn or reducing its size and planting low water use ground cover and shrubs instead.

Around the HOUSE

Car Washing

(150 gallons/1 washing)

1. Use an automatic shut-off nozzle
   The Ordinance requires you to use an automatic shut-off nozzle. Wet the car down then soap down your car using a bucket of soapy water. Use the hose to quickly rinse it.

Driveway Cleaning

(150 gallons/cleaning)

2. Use a broom to clean your driveway
   The Ordinance does not allow driveway washing. Instead of using a hose, use a broom to clean sidewalks, parking areas and driveways.

Do You Need A Variance?

If you believe you need a variance, you can apply in writing using a form that will be available May 3, 2004 online and at the LACSD office.

You submit the completed form to staff who will review it to see if your request meets any of the following guidelines:

- Demonstration through water use records that water conservation practices have been fully implemented
- Additional members being added to household
- Additional structures or landscaping being added after the Base year
- Changes in vacancy factors in housing, including part-time to full-time and prolonged absence
- Water uses during new construction
- Water use necessary for medical treatment to sustain life
- Adjustments to water use caused by emergency health or safety hazards
- For businesses, adding employees or expanding
- For businesses, when reductions would lead to unemployment
- Landscaping to control erosion, create a fire safe landscape, retrofit landscaping to reduce water use, or reforestation
- Watering added after the Base Year consumption to preserve pine trees

What Happens if You Get a Variance?

Households receiving a variance will be assigned a water budget based on the number of people in the household and the outdoor landscaped area. The water budget is based on the American Water Works Association standard of 74 gallons per person per day for a non-conserving household. Outdoor use is based on the evapotranspiration rate for Lake Arrowhead and a landscape no larger than 2/3 of any property. Once you are assigned a water budget, you will be expected to conserve at the level appropriate for the Drought Stage.

What Happens if Your Variance Request is Refused?

You can appeal to the Lake Arrowhead Community Services District Board of Directors.

How Long Does It Take?

The Ordinance states that it will be the goal of the District that application for a variance to the Board will be processed within 30 days of the applicant's initial written request.

Are Variances Public?

Variances that are granted will be forwarded to the Board monthly and will be made available to the public through the publishing of Board meeting materials on the LACSD website. Where privacy laws or other legal requirements apply, the name, address, and any other identifying information will be withheld from the report.

When Does a Variance Take Effect?

A variance takes effect as of the date the written application was submitted.

What are the Standards for New Construction?

All new construction and additions to buildings that add 500 square feet or more will be subject to a water budget as a condition of providing water (see What Happens if You Get A Variance on opposite page). Properties with water budgets will be expected to conserve at the level appropriate for the Drought Stage.

What About New Customers?

New customers will be subject to a water budget (see What Happens if You Get A Variance on opposite page). Properties with water budgets will be expected to conserve at the level appropriate for the Drought Stage.

How Much Water
CAN YOU SAVE?

How much can you really save? Check you water bill and see what your use is. Follow our tips and the average family of four will save:

Outdoors	Gallons/week Saved
Follow our tips:	
Reduce lawn size	
Change watering patterns	
Maintain your system	
Change high water use to low water use plants	
Reduce 300 gallons/day to 200 gallons/day	700
Car washing *(based on saving half the water, 75 gallons x 1 time/week)*	75
Driveway cleaning *(using a broom saves 150 gallons x 1/2 time/week)*	75
Water saved outdoors	850
Indoors	
Repair leaks and drips *(1 leaking/dripping faucet @ 20 gallons day)*	140
5 minute shower *(instead of 10 minute shower @ 4 gallons/minute 5-minute shower with low flow showerhead @ 2 gallons/minute saves 30 gallons/shower x 4 people x 7 days)*	840
Turn water off while brushing teeth *(2 gallons/day x 4 people x 7 days)*	56
Turn water off while shaving *(4 gallons/day x 7 days)*	28
Toilet tank bag *(12 flushes/day at 1 quart each x 7 days)*	21
Running dishwasher only when full *(15 gallons/1 load per week)*	15
Shut off tap while hand washing dishes *(10 gallons/time x 1 time/week)*	10
Wash only full loads of laundry *(48 gallons x 1-less load/week)*	48
Water saving faucet aerators *(based on saving 2.8 gallons/minute @ 15 minutes/day 7 days/week)*	294
Water saved indoors for a family of four	1,452
Total water saved	**2,302 gallons**

Lake Arrowhead

YOU Can Make a DIFFERENCE

Community Services District

Mandatory Conservation for the Lake Arrowhead Community

What is the
SITUATION?

Six years of serious drought have reduced the level of Lake Arrowhead and caused residents to realize that Lake Arrowhead and its preservation are an important part of our quality of life. In 2003, the Board of Directors of the Lake Arrowhead Community Services District (LACSD) adopted a policy to reduce and ultimately eliminate dependency on the lake for our community's sole source of water supply. The policy not only seeks to protect quality of life and the local environment, it also seeks to guarantee a dependable supply for the future.

Today, water conservation is an important part of an overall program of groundwater wells, and recycled and imported water projects that is rapidly reducing demand on the lake.

In 2003, LACSD implemented a water conservation program that together with new imported and groundwater supplies, reduced demand on the lake by almost 20%.

In 2004, however, with less than half the annual average rainfall, LACSD understood that more was required.

LACSD studied drought ordinances from a number of communities and began to formulate, with a stakeholder advisory group, an approach to mandatory water conservation standards for our community. Survey research has shown that 77% of customers favor mandatory conservation in our current circumstances.

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Get Water Conservation Information
(909) 336-7140
- Free Home Water Survey
- Information on Water Saving Fixtures

"The policy not only seeks to protect quality of life and the local environment, it also seeks to guarantee a dependable supply for the future."

Saving Water OUTDOORS

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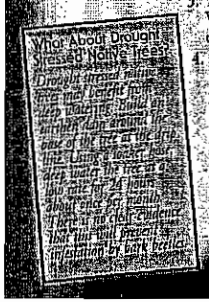

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2. **Mulch around trees and shrubs**
   Mulching discourages weeds and slows evaporation when you water your plants.
3. **Plant trees and shrubs that use less water**
   There are many types of shrubs, and trees that use very little water. Choose them for your garden. Consider eliminating your lawn or reducing its size and planting low water use ground cover and shrubs instead.

Around the House

Car Washing (150 gallons/1 washing)

1. **Use an automatic shut-off nozzle**
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Driveway Cleaning (150 gallons/cleaning)

2. **Use a broom to clean your driveway**
   The Ordinance does not allow driveway washing. Instead of using a hose, use a broom to clean sidewalks, parking areas and driveways.

Saving Water INDOORS

Shower (40 gallons/10 minutes)

1. **Take shorter showers**
   At a minimum of 4 gallons per minute, showers use a lot of water. Limiting your showers to the time it takes to soap up and rinse off can cut your shower time by more than half.
2. **Install water saving shower heads**
   Low flow showerheads cut the amount of water used to less than 2 gallons per minute while still giving you a refreshing shower. They're easy to install.
3. **Bath (20 gallons)**
   Take baths. Even a full bath uses less water than the average shower. Baths are relaxing too.

Brushing Teeth (2 gallons/day)

4. **Turn off the water when you brush your teeth**
   Before brushing, wet your brush and fill a glass for rinsing after.

Toilet (5 gallons/flush)

5. **Check your toilet for leaks**
   A leaking toilet can waste 20 gallons a day. To check for leaks, put a little food coloring in the tank. If, after a few minutes, you can see the color in the bowl without flushing, you have a leak that needs repair.
6. **Stop using your toilet as a wastebasket**
   Each flush can use up to 7 gallons of water.
7. **Put a plastic bottle or toilet tank bag in the tank**
   Weight a quart plastic bottle with water. Place it in the toilet tank away from the mechanism. The bottle will displace water and save on each flush and the toilet will still work properly.

Shaving (5 gallons/day)

8. **Turn off the water while shaving**
   Put some water in the bottom of the sink to rinse your razor, rather than leaving the water running.

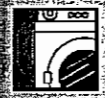
Dishwasher (15 gallons/load, 4 loads per week)

9. **Fill your dishwasher before you run it**
   When you wait until the load is full, you save water.

Washing Dishes By Hand (20 gallons)

10. **Don't leave the tap running for rinse water**
    If you have a double sink, fill the second one with rinse water. If you have a single sink, save the washed dishes in a rack and rinse them all at once with a sprayer or pan of water.

Clothes Washer (48 gallons/load, 5 loads per week)



11. **Choose your water level for each load**
    Adjust your washer for each load. Small loads need less water. If your washer has only one water level, wait for a full load before you do your laundry.

Running The Tap (5 gallons/minute)

12. **Keep a bottle of drinking water in the fridge**
    Refrigerated water is colder than tap water and on a hot day, it's more refreshing.
13. **Don't let the tap run when you wash vegetables**
    Rinse vegetables in a bowl or pan of clean water.
14. **Install water saving faucet aerators**
    Water saving faucet aerators can reduce water flow to less than 2 gallons per minute while still providing good pressure and flow.

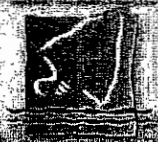
Leaks (10-40 gallons/day)

15. **Stop those drips**
    A slow drip can waste up to 20 gallons a day.
16. **Look for hidden leaks**
    If you suspect you have a hidden leak, call us at 337-8555, and we'll help you test your system.

Lake Arrowhead
Community Services District

Water Management Department
P.O. Box 789
Lake Arrowhead, CA 92352
(909) 337-8555

Lake Arrowhead



Community Services District

Lake Arrowhead

PERMANENT WATER CONSERVATION POLICIES

APPLICABLE TO ALL CUSTOMERS

Community Services District

What Are the Rules?

The Lake Arrowhead Community Services District has water use rules that apply at all times and are designed to minimize water waste. These include:

Outdoor Cleaning

- No hose washing of hard or paved surfaces including, but not limited to sidewalks, walkways, driveways, parking areas, patios, porches, decks and verandas. Sweeping is encouraged for routine maintenance. Washing patios, porches, decks and verandas shall be by bucket and mop or high-pressure washer only.

Vehicle Washing

- Vehicles may be hand washed using a bucket while parked on residential properties. Rinsing may be by using a leak free hose equipped with a positive shut off nozzle, but not in a manner that causes or allows excess water to flow or runoff onto an adjoining sidewalk, street, gutter or ditch.

Restaurants

- Water served on request only.

No Leaks Allowed

Irrigation Practices

- Home watering only between the hours of 6:00 p.m. and 8:00 a.m., with the exception of newly seeded plants and other new planting, which may be watered intermittently until rooting is established.
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Mandatory Water Conservation Phases During Drought

The following lake levels will define the presence of a drought condition in the Lake Arrowhead community and require all customers to save a mandated proportion of water based on 2002 water use:

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In no case will customers be required to conserve to use less than 19 CCF (hundred cubic feet) per two month billing cycle.

Conservation Policies Card - 2004

Under a Third Stage Drought, No New Landscaping Except:

Third Stage Drought in Effect

a. Low volume irrigation is implemented; (low volume irrigation is defined as not to exceed 0.75 inches per hour or three gallons per minute at the spray head).

b. The new landscaping is to replace the trees and shrubs killed by infestation or drought.

c. The landscaping is to replace existing landscaping with water efficient or drought resistant vegetation.

d. The new landscaping is to comply with erosion and sedimentation control set forth by San Bernardino County Building and Safety.

e. The landscaping is being created to establish defensible space according to standards established by local fire agencies.

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g. No turf grass shall be planted (seed or sod), until the Third Stage Drought is declared over.

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Water use and conservation will be monitored through field inspections and meter readings and the LACSD billing system. Customers who fail to conserve or who violate regulations will be subject to the following penalties:

Violations	Penalties
First Violation	Warning letter
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Third Violation	50% surcharge of affected water bill
Fourth Violation	100% surcharge of affected water bill
Further Violations	Installation of flow restrictor or water turn off by LACSD

If you have any questions please call:

Lake Arrowhead Community Services District
Phone: (909) 337-8555
Fax: (909) 337-3145

Lake Arrowhead

Community Services District

MANDATORY CONSERVATION
REQUIRES YOU TO SAVE

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The Lake Arrowhead Community Services District has water use rules that apply at all times and are designed to minimize water waste. These include:

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Mandatory Water Conservation Phases During Drought

The following lake levels will define the presence of a drought condition in the Lake Arrowhead community and require all customers to save a mandated proportion of water based on 2002 water use:

Drought Stages	Lake Levels	Required Conservation
First Stage	5,100–5,093.6 feet	10%
Second Stage	5,093.6–5,087 feet	15%
Third Stage	Below 5,087 feet	25%

In no case will customers be required to conserve to use less than 19 CCF (hundred cubic feet) per two month billing cycle.

Under a Third Stage Drought, No New Landscaping Except:

Third Stage Drought in Effect

a. Low volume irrigation is implemented, (low volume irrigation is defined as not to exceed 0.75 inches per hour or three gallons per minute at the spray head).

b. The new landscaping is to replace the trees and shrubs killed by infestation or drought.

c. The landscaping is to replace existing landscaping with water efficient or drought resistant vegetation.

d. The new landscaping is to comply with erosion and sedimentation control set forth by San Bernardino County Building and Safety.

e. The landscaping is being created to establish defensible space according to standards established by local fire agencies.

f. The new landscaping is based on a plan to install water efficient or drought resistant vegetation.

g. No turf grass shall be planted (seed or sod), until the Third Stage Drought is declared over.

Monitoring and Penalties

Water use and conservation will be monitored through field inspections and meter readings and the LACSD billing system. Customers who fail to conserve or who violate regulations will be subject to the following penalties:

Violations	Penalties
First Violation	Warning letter
Second Violation	25% surcharge of affected water bill
Third Violation	50% surcharge of affected water bill
Fourth Violation	100% surcharge of affected water bill
Further Violations	Installation of flow restrictor or water turn off by LACSD

CUSTOMER NOTIFICATION

Date: _____ Time: _____

Posted by: _____

A reminder from the Lake Arrowhead Community Services District.

This notice has been posted because the following misuse of water was observed:

- ☐ Watering between 8:00 a.m.-6:00 p.m.
- ☐ Hosing down pavement
- ☐ Water running while car washing
- ☐ Broken sprinkler head
- ☐ Excessive run off
- ☐ Other _____

Lake Arrowhead is our sole source of water in the Lake Arrowhead community. As you already know, the past few years of drought have decreased lake levels to an all time low.

The Situation is CRITICAL

Today– a Third Stage Drought is in effect. Under our ordinances, the violation above makes you liable for a first violation surcharge of 25% of your current water bill.

- ☐ This notice was left by a volunteer as a friendly reminder. Correct the situation and there will be no further action.
- ☐ This notice was left by an LACSD employee. You can expect a phone call and letter. You have 10 days from today to correct the situation. Subsequent water waste will result in application of the surcharge. Further violations will lead to increasing surcharges and can result in service termination.

See Inside for Water Conservation Information

Lake Arrowhead

Community Services District

What is the Situation?

Six years of serious drought have reduced the level of Lake Arrowhead and caused residents to realize that Lake Arrowhead and its preservation are an important part of our quality of life. In 2003, the Board of Directors of the Lake Arrowhead Community Services District (LACSD) adopted a policy to reduce and ultimately eliminate dependency on the lake for our community's sole source of water supply. The policy not only seeks to protect quality of life and the local environment, it also seeks to guarantee a dependable supply for the future.

Today, water conservation is an important part of an overall program of groundwater wells and recycled and imported water projects that is rapidly reducing demand on the lake.

In 2003, LACSD implemented a water conservation program that together with new imported and groundwater supplies, reduced demand on the lake by almost 20%.

In 2004, however, with less than half the annual average rainfall, LACSD understood that more was required.

LACSD studied drought ordinances from a number of communities and began to formulate, with a stakeholder advisory group, an approach to mandatory water conservation standards for our community. Survey research has shown that 77% of customers favor mandatory conservation in our current circumstances.

On April 27, 2004, the Board of Directors passed the Water Conservation Policy of the Lake Arrowhead Community Services District. It includes rules for water use called Permanent Water Conservation Policies. It also provides for mandatory levels of conservation which are linked to persistent drought and falling lake levels. These Mandatory Water Conservation Phases apply to everyone.

Join us in this effort. If you have any questions feel free to call (909) 336-7140.

Lake Arrowhead

Community Services District

Keep Your Green

Better Yard. Less Water.

Attend the Free Landscaping Workshop at LACSD

Saturday March 20, 2pm–4pm
Willow Creek Board Room
840 Willow Creek Road

Lake Arrowhead
Community Services District

Call (909) 337-8555 to Register

March 2004 - Ad

WATER CONSERVATION FAIR

Saturday May 8th
10 a.m. to 4 p.m.
Lake Arrowhead Village

Water Saving Products & Services:

- Hot Water Recirculation
- Artificial Turf
- Waterless Car Washing
- Drought Tolerant Landscaping
- Fire Safety

Find Out About the New Ordinance

Free Conservation Kits & Landscape Guides

Lake Arrowhead
Community Services District

For more information call 336-7140

May 2004 Ad

DRY
CLEANER

Company coming and just look at that driveway. Dirt everywhere. Now where's that hose? HEY—wait a minute! There's a drought. Cleaning your driveway uses 150 gallons of water. Over a year that's enough water for one family for a month. Face it—a broom does a good job, it's just easier to hose it down instead of sweeping. What are you afraid of? A little cardiovascular work out on the business end of this dry cleaning device is good for the old ticker and it probably wouldn't hurt the posterior to get a little exercise either. Remember, no pain, no gain. **You can be a good guy and get into shape at the same time.**

You want to conserve. We can help.
Call us at (909) 336-7140.

Lake Arrowhead
Community Services District

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT
P.O. Box 700 • Lake Arrowhead, CA 92352 • (909) 337-8555

Make a DIFFERENCE

SAVE Over 9,000 Gallons of Water Per Year!

with a FREE ULTRA-LOW FLUSH TOILET

WHEN

Saturday, August 28th, 2004
10 a.m. to 2 p.m.

WHERE

Mary Putnam Henck
Intermediate School
730 Rhine Road
Lake Arrowhead, CA 92352

Mary Putnam Henck Intermediate School will benefit from the proceeds of this program.

4 EASY Participation Steps

1 Do You Qualify?

You must live in Lake Arrowhead Woods and pay your water bill to Lake Arrowhead Community Services District.

Customers who have replaced their old toilets with 1.6 gallon per flush toilets will not be eligible.

2 Pick Up New Toilets

You must bring a current water bill and photo ID. Niagara Flapperless 1.6 gallons per flush water-saving toilets, wax ring and installation instructions included.

Huge 11" x 20" footprint designed to cover replacements and will fit both 10" and 12" rough-ins.

Limit: Up to two toilets per household.

3 Install New Toilets

Installation is the responsibility of the customer and must be completed by Saturday, September 18th.

4 Recycle Old Toilets

Return old toilets on Saturday, September 18th between 10 a.m. and 2 p.m. to the same location.

For more information call ConserVision at (800) 366-6995.

Lake Arrowhead Community Services District

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT
P.O. Box 700 • Lake Arrowhead, CA 92352 • (909) 337-8555

Flier 2004

EVERY DROP COUNTS

We're part of the solution—

Lake Arrowhead is experiencing an extreme drought.
We are doing our part to conserve by changing linens and towels only when our guests request it.

If you would like fresh towels—

please place your used towels on the floor or in the tub. Otherwise hang them from the rod or on the rack.

If you would like fresh linens—

place this card on top of your bed. Otherwise we will make your bed with your existing linens.

Lake Arrowhead

YOU can make a DIFFERENCE—
thank you for helping to preserve our mountain environment.

Table Tent - Room ~~Restaurant~~ 2004

EVERY DROP COUNTS

We're part of the solution—

Lake Arrowhead is experiencing an extreme drought.
We are doing our part to conserve by serving water only when our customers request it.

If you would like water, please ask your server.

Lake Arrowhead
Community Services District

Table Tent –
Restaurant
0004

Fall 2004 Water Conservation Check Up

SUMMER IS OVER— HOW HAVE WE DONE SO FAR?

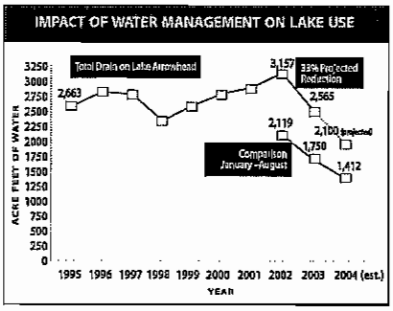
Major Reduction in Lake Draw

For the period January thru August 2004 the total draw on Lake Arrowhead was 1,412 acre/feet. This is a 33% reduction in lake draw, compared to the same period January through August 2002.

Forty-four percent of the drop in demand on the lake is attributable to water conservation, 51% to water purchased from CLAWA, 4% is attributable to new wells, and 1% to water treatment plant efficiency programs.

The CLAWA water includes 62 acre-feet per year supplied to serve customers that are in an area served by LACSD but within the CLAWA service area. The balance of the water from CLAWA is a one-time purchase.

This year-to-date reduction means that LACSD is within range of reaching its 2004 goal of reducing draw on the lake by 1,161 acre feet total—or 37% for the year.



Mandatory Water Conservation Works

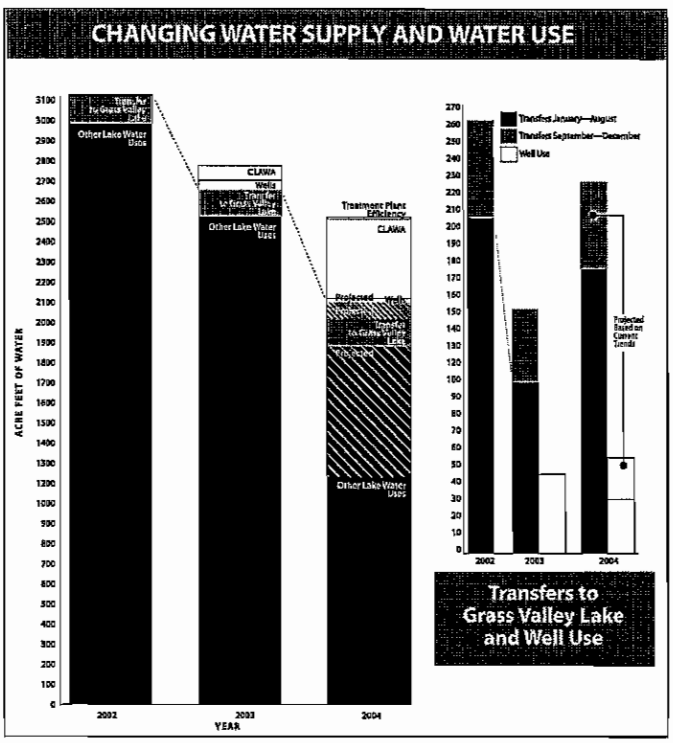
Lake Arrowhead residents are supporting the community-wide mandate to save water four to one. At the end of August about 2,475 customers had received bills that would impose penalties under the community's new mandatory conservation rules and 2,055 (83%) met the 25% reduction standard with only 420 failing, or 17%, to comply and many of those very close. Since the ordinance went into effect on June 1, 2004 a 20% reduction has been achieved.

Ordinance No. 58, LACSD's mandatory water conservation policy, set up a formula that requires residents to save water in a serious drought. Those standards are tied to the level of water in Lake Arrowhead.

Drought Stages	Lake Level	Required Conservation
First Stage	5,100–5,093.6 feet	10%
Second Stage	5,093.6–5,087 feet	15%
Third Stage	Below 5,087 feet	25%

The conservation is measured against the water used during 2002. In 2003, the Board of Directors declared a Third Stage Drought to be in effect and that status has not changed.

Section seven of the ordinance provides for a variance procedure. The purpose of this variance procedure is to acknowledge special circumstances such as the need for additional water to irrigate drought stressed trees, medical needs, or additional household members. To date LACSD has received approximately 500 variance requests. Of those approximately 450 have been granted for a total of approximately 6% of all customers.



Hardware Programs Make a Big Difference

This year the trend continued. This spring, LACSD set up a state certified weather station to record evapotranspiration data, or how fast plants use water under daily weather conditions.

On March 11, 2004, the District installed the first weather station with the assistance of Lake Arrowhead Country Club as well as the assistance of the Department of Water Resources. This enabled the District to become part of the statewide California Irrigation Management Information System (CIMIS) to receive reference evapotranspiration (Eto) data and to create historical ET data for the Lake Arrowhead area. This fall a second weather station is scheduled to be installed at the UCLA Conference Center.

ET Controllers and New Weather Station

Officials from the Department of Water Resources said it was the quickest implementation of an ET weather station they had seen statewide. Under a grant from the Federal Bureau of Reclamation, LACSD purchased irrigation controllers, called ET controllers, that operate based on real time data broadcast from the new weather station.

The purpose of the Pilot ET Controller Program is to field test, under local conditions, the effectiveness, reliability and potential water savings that could result from the district-wide implementation of an ET controller program.

Training workshops were conducted for all interested landscapers who wanted to assist in the installation of the ET controllers as part of this pilot program. To date there are 60 ET controllers installed throughout the community, 43 for residential landscapes and 17 for commercial landscapes.

Ultra Low Flush Toilet Demand Outstrips Supply

Community volunteers and students from Mary Putnam Henck Middle School helped LACSD with its first Ultra Low Flush Toilet (ULFT) distribution program. ULFT exchange programs have been evaluated and implemented at most water districts nationwide. Water savings for ULFT programs are one of the best-documented hardware replacement measures associated with water conservation.

On August 28, 2004 LACSD distributed 518 toilets, 200 more than is typical for a community of a similar size. The customer demand for toilets exceeded the available supply. In addition to supplying toilets the District also provided 400 low flow showerheads, 400 bathroom sink aerators and 200 hose shutoff nozzles.

Lake Arrowhead

Community Services District

Water Conservation At a Glance

Mandatory 25% Water Conservation

2,475 bills to date

83% Achieved 25% reduction (2,055)
17% Not in compliance (420)

Water Conservation Program Activities

1 Weather station installed
2 ET Controller installation training workshops held
43 Residential ET irrigation controllers installed
17 Commercial ET irrigation controllers installed
518 Ultra Low Flush Toilets distributed
400 Bathroom sink aerators distributed
400 Low flow showerheads distributed
200 Hose shut off nozzles distributed
62 Indoor and outdoor water audits conducted
97 First incident water use violators cited
8 Second incident water use violators cited
3 Third incident water use violators cited

Public Education

3 Water conserving landscaping workshops
4 Direct mailings
X Homeowners Association meeting workshops
X Event participation
20 Water conservation newspaper ads

LACSD Staff Become Certified Water Auditors

Last year, at the start of LACSD's new water conservation program, a critical program component was to provide indoor and outdoor water use audits to customers. The technique proved particularly effective with most of those audited able to reduce their landscape water use by 50% or more.

Based on that success, LACSD water conservation staff attended and graduated from a Landscape Irrigation Auditor class at UC Riverside to become certified Auditors. As a result, now LACSD staff is able to conduct home water audits without having to use outside consultant services. Since the start of this irrigation season the Water Conservation staff has conducted 62 indoor/outdoor surveys.

Citations Down Over 2003

In 2003, water conservation staff counseled more than 250 residents about water waste face to face and conducted a substantial direct mail and advertising campaign to make residents water wise. Staff issued 130 citations, 3 of which proceeded beyond the warning stage.

The message seems to have sunk in. This year total citations were down to 97 total at the end of August. Violations include daytime irrigation, hosing down driveways and runoff. Of those, only eight failed to correct the problem and were issued second offense citations and three of the eight failed to correct and received third offense citations.

Penalties for violating the provisions of the Ordinance are:

Violations	Penalties
First	A written warning will be mailed to the customer, with information on water conservation to allow the customer time to take corrective action prior to the issuance of penalties.
Second	Surcharge of 25% of the affected bi-monthly water bill.
Third	Surcharge of 50% of the affected bi-monthly water bill
Fourth	Surcharge of 100% of the affected bi-monthly water bill
Fifth	Termination of water service

Fall Ad - 2004

(*) Not final version

QA | FACT SHEET

FREQUENTLY ASKED QUESTIONS ABOUT TREES IN THE MOUNTAIN AREAS

Q Will watering my trees prevent bark beetles from killing them?

A The simple answer is no. Watering is not a guarantee that your tree will survive a bark beetle attack. Under the current epidemic, even healthy trees with sufficient water may be attacked and overcome by the shear number of attacking beetles. Trees under stress due to overcrowding (too many trees in one area), drought or a combination are more susceptible to attack, so supplemental watering in unusually dry years *may* help the tree fight off an attack.

Q Since there's no guarantee, should I water my trees at all?

A Native trees under normal conditions will not need supplemental watering. Even in mild drought years, these trees are well adapted to the dry southern California climate. Trees stressed by very dry years and overcrowded trees competing for the limited water supply may benefit from additional water.

Q If I water, what trees should I water?

A Watering should be limited to select high value trees. These are the few trees that you most want to protect due to shading, aesthetics, or cost of removal. On a typical 1/10-acre lot that may mean only 1-3 trees will be selected for supplemental watering.

Q In which months should I water my trees?

A The most important period for trees to receive water is in the spring and early summer. Watering in late summer and fall does not provide a significant benefit to the trees. Remember native trees are well adapted to the long dry summers and fall of our mountain climate.

Q How much should I water?

A The goal is to soak the ground to a depth of 1-2 feet at the drip-line (a circle around the tree at the ends of the branches) without creating surface run off. The LACSD in consultation with Foresters and Arborists have determined that 300 gallons per month will provide sufficient *supplemental* water for a typical native tree.

Q If a little water may be good, wouldn't a lot be better?

A No, too much water can actually be harmful to the tree. Too much water can promote disease and reduce the available oxygen to the root system. Trees actually take up oxygen though their roots as well as water and water-logged soils limit space available for oxygen.

Q What is the best way to apply the water?

A A soaker hose laid out at the drip-line is an effective means of applying water. Pressure should be set so the water will soak into the soil without running off. Driving pipes into the ground may put water below the surface, but it tends to concentrate the water in one area and not distribute it evenly across the root system.

Q Should seedlings be watered differently?

A Yes, native tree seedlings may need supplemental watering for the first year or two. Form a dirt berm below or around the tree so it will hold moisture around the tree. 2-3 gallons applied once every week or two will be sufficient to keep the tree in good health.

Lake Arrowhead Community Services District

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(909) 337-8555

2004

FACT SHEET Q&A

Lake Arrowhead Community Services District

Q What is the long-term answer to the health of my trees?

A Reducing the number of trees to a healthy level. Historically, large, widely spaced trees dominated the mountain forest. Over the years, trees have been allowed to grow almost unchecked resulting in far too many trees growing in a given area. In many areas, the number of trees present is 10 times the number of healthy trees the land can support.

Something to think about: If 1,000 gallons of water is available to the trees in a particular area and the available water is divided between 4 trees, each tree would get 250 gallons. However, if you divide the 1,000 gallons between 40 trees, each one only gets 25 gallons.

While removing trees is hard for some to do, in many cases, it is the best thing for the health of your trees and the health of the overall forest stand. Healthy spacing should be 25-30 feet between trees. Consult with a qualified Registered Professional Forester or Certified Arborist for further information.

Q What can I spray my trees with to protect them from bark beetles?

A Research by the U.S. Forest Service has shown that two products are effective in preventing bark beetle attacks, even so, **we cannot guarantee protection.** The two products are Carbaryl (Sevin) and Permethrin (Dragnet or Astro), which should always be applied according to manufacturer directions and by a professional Pest Control Applicator.

Resources for additional information:

www.calmast.org
www.fire.ca.gov/ResourceManagement/so_cal_beetle_infest.asp
http://ceres.ca.gov/foresteward/pdf/treenote13.pdf

MAST
Mountain Area Safety Taskforce

AARON M. SCULLIN
CONSULTING ARBORIST, Inc.
U.S. Horticulturist • Landscape Contractor Lic. #761283 • Pest Control Lic. #34149 • ISA 8313

ARROWHEAD WOODS
ARCHITECTURAL COMMITTEE

Q-A | Fact Sheet

Questions & Answers About The Supplemental Water Supply Fee

Some of our customers have called or written with questions about the Supplemental Water Supply Fee appearing on their property tax bill. We wanted to take this opportunity to share our answers with the larger community. If you would like more information about the fee, call us at (909) 336-7100 or look on our website at www.lakearrowheadcsd.com.

Q How was my fee calculated and what will it be used for?

A There are two parts to the fee. The first part is the "capital fee." For this portion of the fee you would pay $215 for each water meter you have. The money collected would pay for cost constructing the new facilities. Examples of facilities are pipelines, valves, turn-outs, recycled water system improvements, drilling of wells, pumps, and other equipment costs.

The second part is the "commodity fee." This would pay the cost of the imported water. This portion of the fee was based on how much water you used in the 2003 calendar year. For your current property tax bill, the amount of the fee was based on your water use for the 2003 calendar year.

Q Does the amount of the fee remain the same year after year?

A No. The "commodity fee" portion of your bill will be revised each year based on your actual water use during the previous year. For your next year property tax bill, the amount of the fee will be based on your water use during the 2004 calendar year.

In addition, the total fee may be increased by up to 2% per year. This year the total amount of the fee was $3,250,000. Next year it may be increased by 2%, ($65,000) for a total of $3,331,000. The purpose of an increase (not to exceed 2%) is to pay for anticipated increases in energy costs of pumping imported water to our service area and to pay for anticipated increases in the cost of constructing facilities over the next 15 years.

Q How long will the fee be in place?

A The fee will be in place for 15 years.

Q Is the amount of the Supplemental Water Supply Fee on my property tax bill an annual amount or a bi-annual amount?

A The amount appearing on your property tax bill is the annual amount due. The payments are due to the County of San Bernardino in two payment installments on the due dates included on your tax bill.

Q Why did the District use 2003 water consumption as the base year for the calculation of the fee?

A The highest water consumption year in our community was 2002. Early in 2003, the District began its Water Conservation program and customer's water use was decreased. Using 2003 as the base year is the most equitable basis available to the District to determine customer's current fee amount. Using 2003 as the base year is also the most practical alternative. In order to apply the fees to the tax roll, many steps must be completed in advance. These steps include the computation of water consumption, allocation of the fee and conversion of this information into a format acceptable to and approved by the County. By using the calendar year water use information, enough time is allowed to compile the consumption data and calculate the fee to be placed on the tax rolls.

Q What if I did not own my home for all or part of 2003?

A In all cases, the fee is based on twelve months worth of usage, regardless of homeownership. To ensure a consistent and proportionate application of the fee, the District has based the "commodity" portion of the fee on the prior twelve months water use. This requirement applies regardless of special circumstances, including a change of ownership. If a new owner uses less water than the previous owner, their fee will more than likely be reduced the following year.

Lake Arrowhead Community Services District

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(909) 337-8555

2004

QA | FACT SHEET

QUESTIONS & ANSWERS ABOUT NEW CONSTRUCTION

Q What is the impact of new construction on Lake Arrowhead?

A In 2003, there were 74 new water service connections in the Arrowhead Woods area. The amount of water used by these homes averages 1/3 of an acre-foot per year or 108,633 gallons per year.

The cumulative impact of all the new connections last year was approximately 25-acre-feet of water. If this water were supplied from Lake Arrowhead it would be an amount equal to about 1/3 of an inch of lake surface elevation.

Over the past 10 years, home building has ranged from 80 connections in heavy years to 40 connections in slow years.

Q What has the Board done to manage the impact of new construction?

A The LACSD Board reviewed this information and in June 2003 took action. They decided that rather than cause certain economic hardship and restrict property rights for very little gain, they would instead enact a water resources fee. This fee of $3,072 means that new construction would pay for all capital costs of a supplemental water supply to serve it. This fee is paid by all persons seeking a connection to the water system. It is paid in addition to all other existing fees for new service. The total fees for a typical new water connection service are:

Water	5/8" Potable Meter	$1,290.13
	Administrative & Capacity	$3,777.00
	1" Fire Meter (If required)	$1,413.50
	Water Resources Fee	$3,072.00
Sewer	Administrative & Capacity (1 to 74 Fixture Units)	$5,087.00
	Connection/Inspection	$ 30.00
Total New Construction Fees		$14,669.63

In April 2004 the Board instituted strict, mandatory water budgets for all new construction. Mandatory landscaping standards for new construction have also been developed and forwarded to the local land use agency, the County of San Bernardino, for its consideration.

The Board is also undertaking programs and projects that, when completed, will reduce demand on the lake by 50%. It is further planning for projects that will reduce the remaining 50% of demand to meet the Board's policy and stated goal of reducing and ultimately eliminating reliance on Lake Arrowhead as the community's sole source of water supply. Any additional costs for projects to achieve the complete reduction of demand will be borne by all customers, including new construction.

This does not mean that LACSD proposes to stop using lake water outright. Lake water is the community's best and least expensive water supply. These new programs and projects simply mean that during dry years and prolonged drought, the Lake Arrowhead community will have other resources to draw on to avoid adversely affecting the local environment and the community's quality of life.

Q Why hasn't the LACSD Board of Directors enacted a building moratorium?

A New construction and remodeling is an important part of our community. Many jobs of mountain area families depend on the work generated as a consequence of construction, sale of building materials, sale of fixtures and materials, and the services that support new residents.

In addition, the property that is being built on is part of the original Arrowhead Woods, an area which is completely subdivided and which consists of about 7,500 lots which have homes on them and 2,400 parcels which remain unbuilt. To restrict the property rights of a minority of owners who have not built seemed to confer preferential treatment on those property owners with existing homes.

Finally, if the water were to come from the lake, the annual effect of 1/3 inch seemed very small in terms of the problems faced by the Lake Arrowhead community regarding the water resources needed to create a global solution for the declining lake level.

Lake Arrowhead Community Services District

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(909) 337-8555

2004

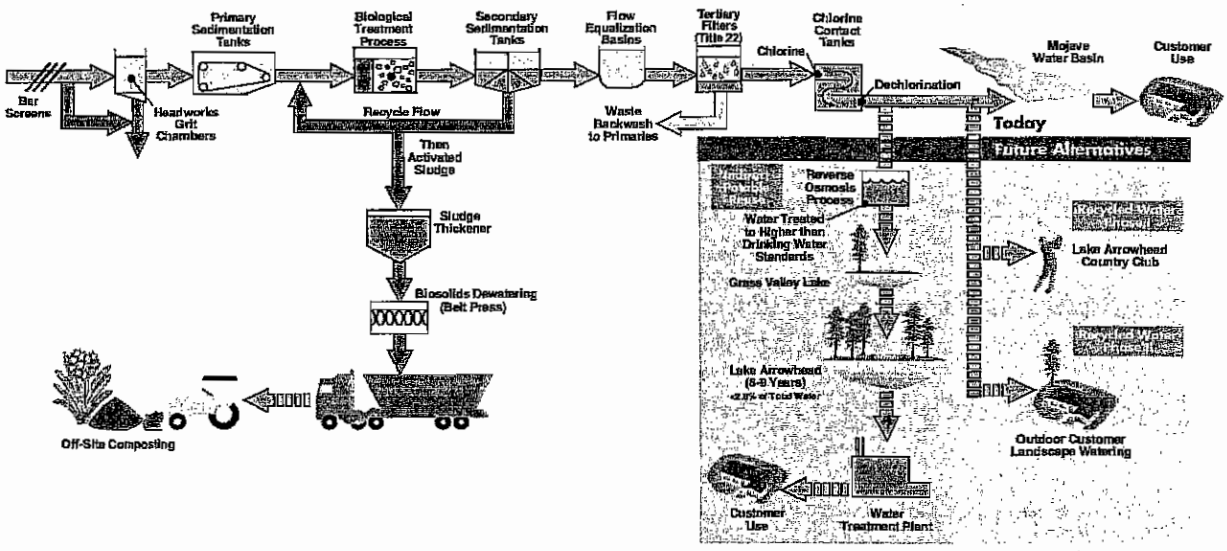
Q&A | Fact Sheet

Recycled Water

Q What is recycled water?

A Recycled water is wastewater that has been highly treated in a six step process to a level that allows it to be used for non-drinking water uses such as outdoor landscape irrigation. As landscape irrigation accounts for more than 50% of domestic use, recycled water can play an important role in reducing demand for water. These are the steps in the recycled water process:

- Wastewater is collected from homes and businesses
- Wastewater goes through screening and grit removal
- Aeration basin with special bacteria breaks down solids
- Solid matter settles out of wastewater
- Wastewater is purified with filtration and disinfection
- The newly purified water is recycled through a system of pipes separate from the water and wastewater system to sites for landscape use



Q Why is recycled water a good solution?

A Treated wastewater is LACSD's most reliable water resource. LACSD currently produces between 1,500 and 1,700 acre-feet of treated wastewater. An acre-foot is equal to approximately 326,000 gallons. This is high quality, advanced secondary treated (nitrogen removal) wastewater now being disposed of downstream and used at no cost by residents of the high desert for drinking water and irrigation.

Q Is LACSD implementing a recycled water program?

A LACSD is implementing a program that proposes to use recycled water for the irrigation of the Lake Arrowhead Country Club (LACC) golf course first and then throughout the District. A description of this program is included in the Water Demand and Supply Final Report. LACSD has also enacted rules and regulations (Ordinance #56) which mandate use of recycled water by customers when and where it is made available.

Q Why hasn't LACSD implemented a recycled water program before now?

A Federal and state laws administered by the State Water Resources Control Board, Lahontan Region (Regional Board) prohibits our use of this water because the rules governing discharge of waters of a waste

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origin is not permitted in locations above 3,200 feet in elevation. The reason for this rule was to prevent wastewater from being discharged upstream of a fresh water source and contaminating it.

To overcome regulatory obstacles that prohibit use of recycled water LACSD is working with the Regional Board staff to revise the Regional Board Basin Plan to allow the use of recycled water in the Lake Arrowhead community.

In January 2003, LACSD made a formal request for a Basin Plan amendment that would allow the discharge of waters that are of a waste origin above the 3,200-foot elevation. This change would allow LACSD to implement its recycled water program.

In early September the Regional Board voted in agreement with LACSD's request. Numerous members of the Lake Arrowhead community generously contributed to this effort. This amendment is now subject to final review by the State Water Resource Control Board (State Board) and US Environmental Protection Agency. We anticipate receiving these approvals in 2004.

While the Basin Plan amendment process is underway, LACSD is proceeding with all other tasks necessary to implement a recycled water program.

Q Is the golf course the only use for recycled water?

A Significant progress is being made toward the use of recycled water for outdoor irrigation, however more remains to be done. It is estimated that the Recycled Water Phase I project will deliver up to 200 acre-feet of LACSD's total 1,500 to 1,700 acre-feet of treated wastewater per year. The location of the golf course and the amount of water it uses makes it an excellent first use.

LACSD's longer term goal is to beneficially use 100% of this resource. Alternatives that are being further evaluated are:

- district-wide implementation of recycled water for outdoor irrigation, the Recycled Water Phase II program
- an indirect potable reuse program

Indirect potable reuse was recommended to the LACSD Board of Directors by the Stakeholders' Advisory Group when they studied the water supply alternatives proposed by the Water Demand and Supply Final Report. A detailed description of both of these programs is included in the report. A summary comparing the two is shown below.

	Production (acre-ft/yr)	Cost/AF
Recycled Water Phase II	250	$1,466
Indirect Potable Reuse	1220	$814

Indirect potable reuse adds several steps to the treatment process. The Grass Valley Wastewater Treatment Plant would be upgraded to include tertiary filtration, reverse osmosis or microfiltration, and improved disinfection. This water would be of near distilled water quality, far exceeding drinking water standards and purer than the water that is currently in Lake Arrowhead. The water treated in this manner would then be returned to the lake via Grass Valley Lake.

Research is now underway to see if customers will support an indirect potable reuse project. Ultimately, the community will decide how it prefers to use this resource.

Q/A | Fact Sheet

Water Conservation

Q What is LACSD's Water Conservation Program?

A LACSD has a comprehensive water conservation program consisting of the following:

- regulations prohibiting water waste
- an enforcement program
- a tiered rate structure to charge more per unit for high water users and deter waste
- public education, marketing, and advertising to encourage water conserving behavior
- commercial customer programs to retrofit water fixtures and irrigation systems
- indoor and outdoor free home surveys
- publications including A Landscape Guide for Mountain Homes to help customers save water outdoors

In addition, LACSD has targeted the highest water users with direct mail and telephone calls to persuade them to participate in the free home water use surveys and reduce consumption.

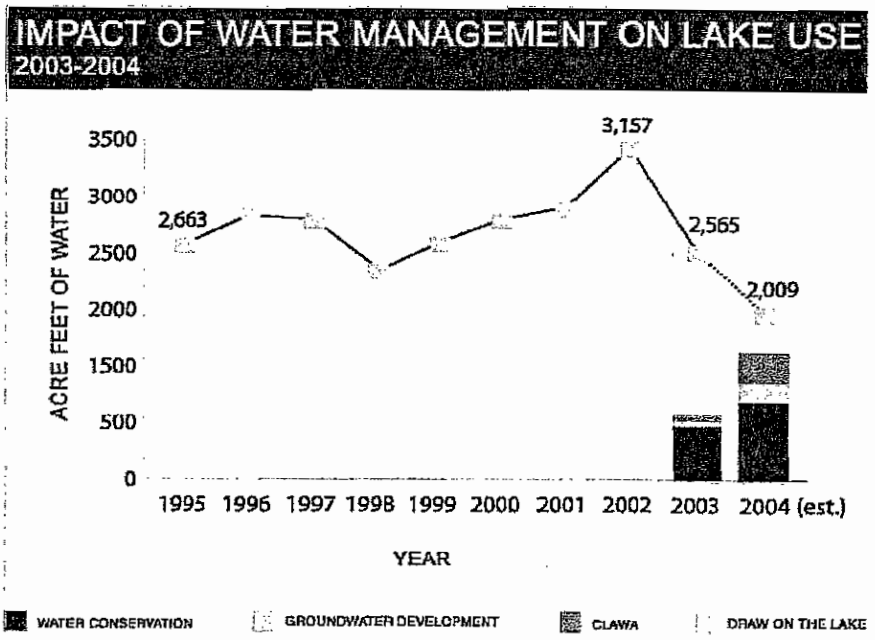
During the home water use survey, available to all customers, we check for leaks, make sure toilet tanks work properly, and provide low flow showerheads and faucet aerators. Outdoors, we look for leaks, check the condition and function of sprinkler heads, and recommend landscape watering adjustment to appropriate levels. Actual water savings resulting from surveys have been as much as 50%.

Q Is water conservation working?

A In 2003, the community's water conservation efforts resulted in an approximate reduction of 157 million gallons, or 484 acre feet, in water use compared to 2002. Water conservation is one of several water demand management programs LACSD is implementing to reduce demand on the lake by reducing the amount of water removed from the lake for either domestic or irrigation use.

Here are the figures so far:

	Acre-Feet
Water Reduction for 2003 (as of December 30)	592
Less water supplied by new groundwater wells	46
Less State Water Project water delivered by agreement With the Crestline Lake Arrowhead Water Agency	62
Subtotal	484
TOTAL Water Reduction from Conservation	484



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2004

FACT SHEET Q&A

Lake Arrowhead Community Services District

Q Does LACSD have mandatory water conservation?

A The term "mandatory water conservation" has been discussed in our community; but as yet there is no community-wide understanding of what it means. To some it means stopping all outdoor watering. To others it means restricting days on which watering outdoors is allowed. And to others still, it means telling customers they must reduce consumption by a certain amount and fining them if they fail to comply based on water meter readings.

LACSD does have some elements of its water conservation program that are mandatory. These include the current tiered rate structure and the program of existing ordinances that defines water waste and sets specific penalties.

In 2003 LACSD hired a full-time enforcement person during the watering season who patrolled to note and take action on outdoor waterwaste. This staff member responded to water waste problems, notified customers and helped to educate them about how to change their water use. This past watering season between 250 and 300 customers were contacted. Only eight of these customers failed to correct noted problems and proceeded to a penalty phase in the process.

Finally, it is important to understand that as a public agency, public safety must be LACSD's first concern. Mandatory conservation that would stop outdoor watering would contribute to an increased fire risk in our community. LACSD's position is that our role is to help prevent a catastrophic forest fire in the Lake Arrowhead community. Due to the numbers of standing dead trees and highly-combustible living trees in our community our water conservation program must not exacerbate the current fire hazard. Instead we have a policy of educating people to landscape for both water conservation and reduced fire risk.

Q How much water can we save through conservation?

A LACSD is on track to permanently reduce water use in our community by approximately 25%. The specific programs described above will be continued and new ones, including the three below, are being added.

ET Controller Pilot Program – This is a field test of the effectiveness, reliability and potential water savings that could result from implementation of ET Controller technology. LACSD has received a $35,000 federal grant to implement this program and is applying for a second grant to extend the program to a greater number of customers.

An ET irrigation controller is the state of the art technology for managing and controlling landscape irrigation. It works by automatically adjusting irrigation output to match current (daily) weather conditions. When an ET irrigation controller is installed at a residence or business it is also connected by a wireless communication system to a local weather station or satellite weather information service. In this way an ET irrigation controller is able to receive daily information about local weather conditions. An ET irrigation controller processes this weather information and then automatically adjusts (increases or decreases) the amount of water applied on any given day. By automatically adjusting the amount of water applied to landscaping an ET irrigation controller maximizes the efficiency of an irrigation system while also ensuring that all plants receive an adequate amount of water. Field tests conducted in other areas have documented that ET irrigation controllers can significantly reduce water use.

Ultra-Low Flush Toilet (ULFT) Replacement Program – In 2004 LACSD will introduce an ULFT program. Water savings for ULFTs are probably one of the best-documented hardware replacement water conservation measures available to any community.

Landscape Standards – Last year LACSD published A Landscape Guide for Mountain Homes to help area residents conserve water in their landscape practices and cope with the devastation brought about by increasing fire risk and the bark beetle infestation. In addition to low water use landscaping, the Landscape Guide includes large sections on landscaping for fire safety and erosion control. **In 2004 LACSD will propose mandatory landscape standards for new construction and remodeling.**

Q&A | Fact Sheet

Water Demand Management and Supply Solutions

Q What is LACSD's policy regarding use of lake water?

A The Lake Arrowhead Community Services District (LACSD) understands that Lake Arrowhead is vital to our quality of life and the economic well being of every resident and business owner in our community. Historically, the lake has also served as our sole source of water supply.

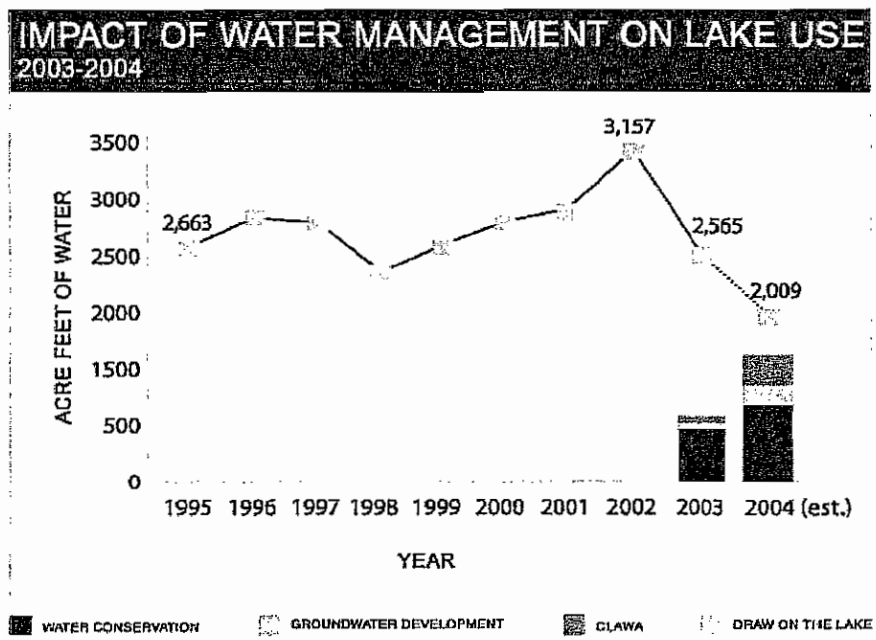
LACSD is working to improve the condition of the lake by implementing specific programs and capital improvement projects that enable our community to reduce and ultimately eliminate its reliance on the lake as its sole source of water supply.

We do not propose to stop using lake water outright. During wet and normal years, when the level of the lake is restored, the Lake Arrowhead community would continue to rely on the lake for its water supply. This is because it is the least cost, best quality and most reliable source of water for the residents of Arrowhead Woods. However, during drought conditions such as the recent severe four-year drought, it is our goal to supply water to the Lake Arrowhead Community from alternative sources.

Q What is LACSD doing right now about water supply?

A In October 2003 LACSD adopted a new water management plan for the Lake Arrowhead community, the Water Demand and Supply Final Report. The Board also adopted water management and supply programs that will reduce the community's use of lake water by approximately 50%. These programs are all underway.

Water Supply Project	Production (acre-ft/yr)	Cost/AF	Status
CLAWA 62 AF/Y	62		Complete
Treatment Plant Efficiency Improvements	150	$297	Underway
Water Conservation Programs - Phase I	630	$620	Conservation saving year one = 484 AF
Water Conservation Programs - Phase II	115	$523	ET controller and Ultra low flush toilet programs underway
Groundwater Development - Phase I	150	$364	Complete
Recycled Water Program - Phase I	200	$1,014	Regional Board forwarded amendment to State and Federal Agencies; Responses pending, engineering underway
Groundwater Development - Phase II	210	$409	New well sites being identified, preliminary engineering underway
TOTAL Production	1517		



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FACT SHEET Q&A

Lake Arrowhead Community Services District

Q What are LACSD's ultimate goals for water supply?

A Additional water supply projects have been evaluated that, if implemented, would eliminate reliance on the lake. Following the recommendations of the Stakeholders' Advisory Group, LACSD is further evaluating both an imported water and indirect potable reuse project.

These projects are currently beyond the financial means of LACSD without a financing mechanism such as an Assessment District or bonds. As a result, there will likely be an election to find out if residents are willing to pay for the cost of these additional water supply projects. LACSD intends to propose such a financing measure during 2004.

Q How were the goals for water supply determined?

A In August 2003 LACSD published a draft report evaluating six demand management and nine water supply projects. The LACSD Board asked for community input and also asked a Stakeholders' Advisory Group (SAG) to evaluate the report.

The SAG members reviewed in detail all program, capital project and financing alternatives. The SAG then unanimously recommended a combination of programs and capital projects that included water conservation, new wells, efficiency projects at the water treatment plants, imported water, and an indirect potable reuse project to treat wastewater to standards higher than those for drinking water and return it to the surface water system that feeds Lake Arrowhead.

In October the LACSD Board of Directors adopted the Water Demand and Supply Final Report and accepted the SAG recommendations with one qualification, that one of the projects recommended by the SAG, the "Indirect Potable Reuse" program be further researched and public opinion surveyed.

If you wish to review a complete copy of the Water Demand and Supply Final Report including all appendices and the SAG report, this information is available to you on our website at lakearrowheadcsd.com or at our offices located in the Lake Arrowhead village across from the Stater Brothers Market. You may also purchase a copy for the cost of its reproduction.

Q Who was represented on the SAG?

A The SAG included interested members of the public and designated representatives of many community groups. The community groups include Arrowhead Communities Task Force (ACT), Arrowhead Lake Association (ALA), Arrowhead Woods Architecture Committee (AWAC), Association of Building Contractors, Lake Arrowhead Chamber of Commerce, Lake Arrowhead Country Club, Landscapers Group, Protect Lake Arrowhead Now (PLAN), Rim of the World Association of Realtors, San Bernardino Mountains Land Trust, Save Our Forest Association (SOFA) and the Sierra Club. The recommendations of SAG were unanimous.

Q What comes next?

A LACSD is pursuing federal and state grants and low interest loans in an effort to offset the cost of improvements that will reduce demand on the lake by the first 50%. Research is beginning into whether customers are willing and able to pay for additional water supplies to reduce demand on the lake by a further 50%. This research will also address attitudes toward a possible indirect potable re-use project that would treat wastewater to standards above both drinking water regulations and lake water quality and return the highly treated water back into Lake Arrowhead.

These programs and capital improvement projects for 2004 share a common goal, to reduce and ultimately eliminate our reliance on Lake Arrowhead and to prevent falling lake levels from having a negative impact on our community's quality of life while guaranteeing a dependable water supply for the future.

Q&A | Fact Sheet

Mandatory Water Conservation and Variances

Q How Will I Know How I am Doing With Water Conservation?

A We are providing all customers with a letter that gives them their 2002 water use, water use last year, and tells them how much they have to save to comply with the new rules. You can also get this information through online account services at www.lakearrowheadcsd.com.

Q How Much Do I Have to Save?

A The following lake levels will define the presence of a drought condition in the Lake Arrowhead community and require all customers to save a mandated proportion of water based on 2002 water use:

Drought Stages	Lake Level	Required Conservation
First Stage	5,100–5,093.6 feet	10%
Second Stage	5,093.6–5,087 feet	15%
Third Stage	Below 5,087 feet	25%

At this time, the LACSD Board has declared a Third Stage Drought to be in effect and 25% conservation is required.

Q What are the Penalties?

A Customers who fail to conserve or who violate regulations will be subject to the following penalties:

Violations	Penalties
First	Warning letter
Second	25% surcharge of affected water bill
Third	50% surcharge of affected water bill
Fourth	100% surcharge of affected water bill
Further	Installation of flow restrictor or water turn off by LACSD

Q How Will the Ordinance be Enforced?

A Water use and conservation will be monitored through field inspections and meter readings and the LACSD billing system.

Q Can I Apply for a Variance?

A If you believe you need a variance, you can apply in writing using a form that will be available May 3, 2004 online and at the LACSD office. You submit the completed form to staff who will review it to see if your request meets the guidelines.

Q What are the Guidelines for Variances?

A Everyone's circumstances are different but the following are general guidelines that LACSD will be using to grant variances:

- Demonstration through water use records that water conservation practices have been fully implemented
- Additional members being added to household
- Additional structures or landscaping being added after the Base year
- Changes in vacancy factors in housing, including part-time to full-time and prolonged absence
- Water uses during new construction
- Water use necessary for medical treatment to sustain life
- Adjustments to water use caused by emergency health or safety hazards
- For businesses, adding employees or expanding
- For businesses, when reductions would lead to unemployment
- Landscaping to control erosion, create a fire safe landscape, retrofit landscaping to reduce water use, or reforestation
- Watering added after the Base Year consumption to preserve pine trees

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FACT SHEET Q&A

Lake Arrowhead Community Services District

Q What Happens if You Get a Variance?

A Households receiving a variance will be assigned a water budget based on the number of people in the household and the outdoor landscaped area. The water budget is based on the American Water Works Association standard of 74 gallons per person per day for a non-conserving household. Outdoor use is based on the evapotranspiration rate for Lake Arrowhead and a landscape no larger than 2/3 of any property. Once you are assigned a water budget, you will be expected to conserve at the level appropriate for the Drought Stage.

Q What Happens if Your Variance Request is Refused?

A You can appeal to the Lake Arrowhead Community Services District Board of Directors.

Q How Long Does It Take?

A Staff will review your application and respond within five working days or less. If you disagree with the staff response, you may appeal to the Board of Directors. The Ordinance states that it will be the goal of LACSD to process variances within 30 days of the applicant's initial written request.

Q Are Variances Public?

A Variances that are granted will be forwarded to the Board monthly and will be made available to the public for viewing at the District offices.

Q When Does a Variance Take Effect?

A A variance takes effect as of the date the written application was submitted.

Q What are the Standards for New Construction?

A All new construction and additions to buildings that add 500 square feet or more will be subject to a water budget as a condition of providing water (see What Happens if You Get A Variance Above). Properties with water budgets will be expected to conserve at the level appropriate for the Drought Stage.

Q What About New Customers?

A New customers, those with no water use history in 2002, will be subject to a water budget (see What Happens if You Get A Variance Above). Properties with water budgets will be expected to conserve at the level appropriate for the Drought Stage.

Q Does the New Ordinance Affect Real Estate Transactions?

A No. New customers will receive a water budget (see above What About New Customers).

Q Does the New Ordinance Provide for a Building Moratorium?

A The LACSD Board of Directors considered the effect of new construction on lake level by first investigating the average water use of new homes. That water use was found to be approximately one-third of an acre-foot per year, less than the average of one-half acre foot per year used by older existing homes with less water efficient fixtures. For example, last year, there were a total of 74 new connections within the LACSD water service area. Taken cumulatively, the total impact of the water use of these new homes would be approximately .3-inch per year of lake level. Instead of limiting the ability of property owners to build on their property and causing economic hardship to those employed in construction, in June of 2003 the Board addressed future water demand by instituting a new water resources fee of $2,650 per household. This new connection fee means that new demand created by development pays for the cost of the supplemental water required to serve it.

Q/A | Fact Sheet

Water Supply to the Lake Arrowhead Country Club (LACC)

Q What is the LACSD Water Management Plan for the LACC?

A LACSD is working to implement three water management goals in cooperation with the LACC. The goals are:

- develop, manage and utilize groundwater underlying LACC lands
- utilize recycled water for golf course irrigation
- maintain LACC water service in adherence to existing contracts

LACSD's purpose is to ensure the reasonable and beneficial use of water resources for all members of the Lake Arrowhead community while recognizing the existing water rights of the LACC. As a result, LACSD is working hard to implement a water management plan for LACC that maximizes the amount of groundwater transferred while fully meeting irrigation needs with recycled water.

Q Why is LACSD developing groundwater wells at LACC?

A Scientific studies and well production records show that the groundwater in this area is the least expensive source of supplemental water that is immediately available to the Lake Arrowhead community.

In 2003 LACSD completed two groundwater wells. The agreement that covers the drilling of the first two wells is called the Agreement For Water Service And Well Drilling (Well Agreement) and covers only the drilling of the first two wells. These wells are providing groundwater, instead of lake water, to irrigate the golf course in keeping with LACSD's goal of reducing reliance on Lake Arrowhead as the sole source of water supply for customers. The other benefit of the Well Agreement is that surplus water pumped from the wells, that is not needed for irrigation water service, will be delivered into LACSD's water system, without charge, providing additional water supply to all customers.

In 2004 two additional District groundwater wells are scheduled to be completed. One of the two wells is proposed to be located on the LACC golf course. The groundwater produced from these wells will be used for irrigation of the golf course and for domestic water supplies (drinking water) for Lake Arrowhead residents.

Q Will LACC use recycled water for irrigation?

A LACSD proposes to provide recycled water for golf course irrigation at LACC. All LACSD customers are subject to provisions of the California Constitution and California law as well as LACSD Ordinance #56 which provides that customers can be required to use recycled water if certain conditions are met.

LACSD applied for permission to use recycled water in January 2003 and the Regional Board, a State agency, supported the application. It is now before the applicable federal and state regulatory agencies. Those approvals are expected later in 2004. LACSD is preparing environmental studies and permitting work to implement recycled water at LACC and throughout the district as soon as approvals are received.

Q What is LACSD's obligation to provide water service to LACC?

A LACSD's predecessors, including the Arrowhead Utility Company (AUC), entered into agreements in 1964 and 1978 which provide special terms for irrigation water service to LACC. LACSD became obligated to adhere to those agreements when it took over the former AUC back in 1978. These agreements remain the basis under which LACSD provides water to the LACC today.

Agreements by public agencies do not simply expire when new directors or boards are installed. As a result, LACSD is still bound by the previous agreements and can only negotiate changes to them with the cooperation and consent of LACC.

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Q&A Regarding Well Drilling by Arrowhead Woods Residents

Q: Is Well Drilling by Homeowners Allowed in Arrowhead Woods?

Almost no homeowners in Arrowhead Woods are allowed to drill groundwater wells. There are two ways in which this prohibition was enacted. The first was that the grant deed reserved or withheld the water rights at the time the property was conveyed to the owner.

The second was that the property, when it was developed was in a tract governed by CC&Rs which prohibit the installation or use of any structure designed for the extraction of water. These CC&Rs have been recorded on the title to the property. The tracts affected include: 6189, 6397, 6489, 6583, 6855, 6489, 6782, 7074, 7201, 7272, 7415, 7417, 7513, 7514, 7515, 7710, 7776, 7891, 7911, 7933, 7982, 7983, 7985, 8053, 8232, 8385, 8490, 9785-1, 9790, 9972, 9973, 10198-1, 10836 and 10944.

Q: How Do the Grant Deeds Restrict Well Drilling?

The reservations of water rights in the grant deeds are very similar to each other. The language reserving/withholding the water right generally provides as follows:

"{Property owner}...does hereby GRANT, subject to all...reservations herein set forth...

Excepting, and particularly reserving and withholding from the grant and conveyance by this instrument made and effected, the following:

All the water and water rights in, under or flowing over said premises, or appurtenant thereto, or to any part thereof, including the right to develop water thereon, transport, and/or export water therefrom."

Q: How Do the CC&Rs Restrict Well Drilling?

The language in the CC&Rs generally provides as follows:

"No derrick or other structure designed for use in boring, mining or quarrying for water, oil or natural gas, or precious minerals shall be erected, maintained or permitted upon any lot in said Tract."

Q: How Do I Know Which Applies to Me?

Refer to your title documents. You should find a reference to either a grant deed restriction or to CC&Rs. Title documents evidencing the applicable restriction are available through the County of San Bernardino.

Q: Why Do These Restrictions Exist?

Groundwater basins are complicated networks of sources of water which flow toward the lowest point. In Lake Arrowhead, because the entire groundwater basin is fractured granite, it is impossible to know for certain how the hydrodology works. It is generally assumed, however, that precipitation falls as rain or snow and soaks into the ground below the surface. There it collects and flows toward the lowest point of permeable soil. At that level, it travels along underground until it encounters a non-permeable barrier, such as an underground fault or large fracture. At that point it can either rise to the surface as a spring, where it may flow to the surface and become tributary to a creek, stream, and eventually a lake—or it can cross the barrier by travelling along it downstream until it finds a crack through which it can pass to carry on its downward journey. It is assumed that most of the groundwater in our area flows toward Lake Arrowhead and much of it supplies water to the lake. The notable exception is the part of the community where groundwater flows toward Grass Valley into either Grass Valley Creek or Grass Valley Lake.

These are sources of water for our entire community. The uncontrolled drilling of groundwater wells can affect these drainages and underground water travel patterns and thereby the flow of water into these destination bodies of water.

The original founders of Lake Arrowhead were wise enough to see that the good of all the property owners depended on controlling and managing the groundwater resources for everyone's benefit and so they prevented groundwater well drilling to individual property owners.

ARROWHEAD WOODS
ARCHITECTURAL COMMITTEE

P.O. Box 2026 • Lake Arrowhead, CA 92352 • phone: (909) 336-2755 • fax: (909) 336-1016

2004

Q&A Who Enforces the Prohibition in Wells?

The Arrowhead Woods Architectural Committee (AWAC) is a California Nonprofit Mutual Benefit Corporation with the authority to enforce the Covenants, Conditions and Restrictions ("CC&Rs") in Arrowhead Woods. The CC&Rs are protective convenants to ensure that the zoning, setbacks, minimum house size and other consideration will be observed. The restrictions in the CC&Rs, which can be enforced by AWAC, include the prohibition against the extraction of water.

The County of San Bernardino Department of Health is the other agency charged with protecting this resources by its authority to issue permits to applicants for wells. This agency will issue permits only where the applicant has no grant deed restriction against it. Drilling of a well without a permit is against the law.

ARROWHEAD WOODS
ARCHITECTURAL COMMITTEE

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Appendix E
Resolution 2005-04 SWP Transfer Agreement

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT

M E M O R A N D U M

DATE: **June 28, 2005**

TO: **BOARD OF DIRECTORS**
Lake Arrowhead Community Services District

FROM: _____
MARVIN SHAW, General Manager

SUBJECT: **ADOPTION OF RESOLUTION NO. 2005-04 - A RESOLUTION OF THE BOARD OF DIRECTORS OF THE LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT APPROVING A MITIGATED NEGATIVE DECLARATION FOR THE STATE WATER PROJECT WATER TRANSFER AND INFRASTRUCTURE IMPROVEMENTS PROJECT, ADOPTING A MITIGATION MONITORING AND REPORTING PLAN, AND APPROVING THE STATE WATER PROJECT WATER TRANSFER**

A. RECOMMENDATION

Adopt Resolution No. 2005-04.

B. REASON FOR RECOMMENDATION

The adoption of Resolution No. 2005-04 will approve the Mitigated Negative Declaration for the State Water Project Water Transfer and Infrastructure Improvements Project, adopt a Mitigation Monitoring and Reporting Plan and approve the State Water Project Water Transfer.

C. BACKGROUND INFORMATION

To ensure a reliable source of water supply for the Arrowhead Woods community and to maintain the integrity of Lake Arrowhead, it is the District's policy to reduce and ultimately eliminate reliance on Lake Arrowhead as the community's sole source of water supply. This does not mean that the District would stop using lake water outright. Water supplied from Lake Arrowhead is the community's least cost, best quality and most reliable source of water supply. However, during drought conditions, as the community experienced during the past six years, it is the District's goal to supply water from alternative sources of water supply.

The proposed project includes the one-time purchase of 8,000 acre-feet of water by the Crestline Lake Arrowhead Water Agency (CLAWA) from the San Bernardino Valley Municipal Water District (SBVMWD) ("Purchased Water") and a 15-year agreement between the District and CLAWA to take delivery of the Purchased Water, in annual increments. It also includes capital improvements necessary to deliver and store the Purchased Water. These improvements include one turnout facility to connect the CLAWA main water distribution line (located on Rim of the World Drive) to the District's water distribution system, a one million gallon, above ground storage tank (located on a .25 acre site located northeast of Crest Fern Drive) and approximately 5,373 lineal feet of 12-inch, underground water pipeline. For a more detailed description of the proposed project, please see Attachment 1. - Initial Study/Mitigated Negative Declaration, Section 2.0 "Project Description."

The Purchased Water would be extracted from Lake Silverwood, treated and delivered by CLAWA to the District. In turn, the District would deliver the Purchased Water to its Arrowhead Woods customers.

The institutional agreements, environmental documents and District Resolution required to approve and implement the proposed project are provided as attachments to this Memorandum and are more fully described below.

INSTITUTIONAL AGREEMENTS

During 2004, the District, together with CLAWA, and the SBVMWD developed Principles of Agreement for Crestline-Lake Arrowhead Water Agency to Purchase, Treat and Deliver Potable Water to Lake Arrowhead Community Services District (Principles of Agreement) to cooperatively implement the proposed project. On June 22, 2004 the District Board of Directors approved the Principles of Agreement and, authorized District representatives to prepare agreements consistent with the Principles of Agreement for consideration by the Board of Directors and to undertake any necessary environmental review.

The Principles of Agreement is not a binding contractual commitment; rather, it sets forth the general terms and conditions for proceeding with the proposed project to purchase, treat and deliver State Water Project water, for use by District customers. The approval of the Principles of Agreement enabled the parties to: (i) complete required environmental review; (ii) initiate permitting processes; and (iii) negotiate final terms and conditions of a binding agreement. A copy of the Principles of Agreement is provided in Attachment 1 – Initial Study/Mitigated Negative Declaration, "Appendix A."

Some of the key provisions of the Principles of Agreement are as follows:

- CLAWA would purchase up to 10,000 acre-feet of water from SBVMWD for the account of LACSD. (Please note that at the District's request, the proposed amount of water to be purchased is at 8,000 acre-feet.)

- CLAWA would withdraw water from the storage account by taking deliveries from SBVMWD's annual allocation of State Water Project (SWP) water through CLAWA's existing turnout in Lake Silverwood.

- CLAWA would treat the water for potable consumption; transport the treated water through CLAWA's transmission system; and deliver the treated water to LACSD's water distribution system for use by LACSD customer's in lieu of water from Lake Arrowhead.

- The proposed term of the LACSD/CLAWA agreement would be 10 years, with a potential right to renew or extend for an additional five years, as necessary to withdraw all of the water remaining in CLAWA's storage account with SBVMWD.

- The quantity of water taken from the storage account, treated and delivered into LACSD's retail system would be limited by: (a) the quantity of water CLAWA would be entitled to withdraw from its storage account pursuant to its agreement with SBVMWD; (b) the capacity available in CLAWA's facilities, in excess of the capacity used by CLAWA to service the needs of its own customers; and (c) LACSD's consumptive needs and system capacity available to accept water.

- CLAWA would anticipate having sufficient unused capacity available in its system to supply the LACSD with at least 1,000 acre-feet of water per year.

- LACSD would pay for the water, which it actually receives, from CLAWA, at the agreed unit price per acre-foot of water delivered.

- The unit price charged to LACSD would be the sum of the following per acre foot of water: (a) CLAWA's charge for treating, transporting and delivering water; (b) SBVMWD's charge to CLAWA per acre foot for the purchase and storage of the water, adjusted for storage and evaporative losses; and (c) CLAWA's "markup" on SBVMWD's charge, for the use of CLAWA's funds to purchase and store the water for resale to the LACSD.

- CLAWA and LACSD will coordinate in preparing and certifying any related environmental documentation required under the California Environmental Quality Act (CEQA).

- Compliance with the requirements of CEQA will be a condition precedent to the arrangements described in the Principles of Agreement.

During the past year, District staff and legal counsel, Mr. Andrew Hitchings of the firm Somach, Simmons & Dunn have met with representatives of CLAWA and SBVMWD to discuss and to prepare two agreements: Agreement for the Sale, Treatment and Delivery of Water (Attachment 2) and, Water Purchase and Exchange Agreement (Attachment 3).

The parties to the first agreement (Agreement for the Sale, Treatment and Delivery of Water) are the District and CLAWA. If approved, this Agreement would be a binding, contractual agreement to pay for the purchase, treatment and delivery of 8,000 acre-feet of State Water Project water.

The parities to the second agreement (Water Purchase and Exchange Agreement) are CLAWA and SBVMWD. This agreement is provided as background information. If this agreement were approved, CLAWA would purchase 8,000 acre-feet of State Water Project water from SBVMWD. After adjusting for storage and evaporative losses (5% of the water purchased) CLAWA would deliver 7,600 acre-feet of water to the District.

ENVIRONMENTAL DOCUMENTS

California public agencies are required to comply with the requirements of CEQA. On July 27, 2004 the Board of Directors authorized the approval of an agreement with the firm of Science Applications International Corporation (SAIC) to provide environmental compliance services for the proposed project.

To comply with the requirements of CEQA, the District and CLAWA each assumed the role of Co-Lead Agency under CEQA and, together with SAIC prepared the Initial Study/Mitigated Negative Declaration (Attachment 1) and the Mitigation Monitoring and Reporting Program (Attachment 4) for the proposed project.

A detailed description the proposed project is provided in Section 2.0 of the Initial Study/Mitigated Negative Declaration. An analysis of the potential impacts of the proposed project is provided in Section 3.0 with the conclusion that there is no substantial evidence that the proposed project may have a significant effect on the environment with the incorporation of the mitigation measures provided.

The Initial Study/Mitigated Negative Declaration was circulated for public review during a 30-day period (December 10, 2004 through January 8, 2005). All comments received, as well as the responses to comments are incorporated in the document as Appendix G and Appendix H, respectively.

RESOLUTION NO. 2005-04

At the June 28, 2005 Board of Directors meeting, District staff will recommend to the Board of Directors approval of RESOLUTION NO. 2005-04. This Resolution contains the findings that are required to comply with the requirements of CEQA and for the District Board of Directors to approve the Agreement for the Sale, Treatment and Delivery of Water.

Final approval and implementation of the project requires action by the CLAWA and SBVMWD Board of Directors. The District understands that the Board of Directors of each agency will consider the above agreements and environmental documentation in a timely manner.

D. FISCAL INFORMATION

The total price for the purchase, treatment and delivery of the State Water Project water through the CLAWA system is estimated to be between $24.5 million and $29 million. The actual cost will depend primarily on changes in energy costs during the term of the agreement.

E. ATTACHMENTS

Attachment 1: Initial Study/Mitigated Negative Declaration

Attachment 2: Agreement for the Sale, Treatment and Delivery of Water

Attachment 3: Water Purchase and Exchange Agreement

Attachment 4: Mitigation Monitoring and Reporting Program

Attachment 5: Resolution No. 2005-04 - A Resolution of the Board of Directors of the Lake Arrowhead Community Services District Approving A Mitigated Negative Declaration for the State Water Project Water Transfer and Infrastructure Improvements Project, Adopting A Mitigation Monitoring and Reporting Plan, and Approving the State Water Project Water Transfer

The Attachment:

"Initial Study/Mitigated Negative Declaration

April 2005"

Was distributed at the Regular Meeting of the Board of Directors on June 14, 2005. Copies may be requested at the District Office at 28200 State Highway 189, Suite O3-160, in the Lake Arrowhead Village.

AGREEMENT FOR THE SALE, TREATMENT AND DELIVERY OF WATER

This Agreement is made this ____ day of _____, 2005, by and between the Lake Arrowhead Community Services District ("LACSD") and the Crestline-Lake Arrowhead Water Agency ("CLAWA").

RECITALS

A. LACSD is an independent special district of the State of California located in the San Bernardino Mountains. LACSD provides retail water service to customers located within its boundaries.

B. Lake Arrowhead is located within the boundaries of LACSD and serves as a primary source of the water which LACSD supplies to its customers. During the recent drought and also during previous periods of drought, the surface level of Lake Arrowhead dropped significantly, which has prompted the LACSD to investigate alternative water supplies and thus reduce its reliance on Lake Arrowhead to satisfy consumptive demands within its service area.

C. CLAWA is one of twenty-nine (29) water purveyors in the State of California ("State Water Contractors") which have entered into contracts with California's Department of Water Resources ("DWR") to obtain imported water from the State Water Project ("SWP"). The quantity of SWP water allocated to CLAWA each year is calculated by DWR in accordance with the terms of CLAWA's contract with DWR. CLAWA takes delivery of its SWP water at Silverwood Lake, a water storage reservoir on the East Branch of the SWP which is owned and operated by DWR. CLAWA then treats that water at CLAWA' s water treatment plant located near the southerly shore of Silverwood Lake and pumps the treated water uphill for delivery and distribution to CLAWA's wholesale and retail customers located within CLAWA's service area.

D. San Bernardino Valley Municipal Water District ("SBVMWD") is also a State Water Contractor which receives imported water from the SWP. SBVMWD takes delivery of its SWP water in the San Bernardino Valley, after it flows out of Silverwood Lake and through the Devil Canyon hydropower plant, which is another facility on the East Branch of the SWP owned and operated by DWR. SBVMWD is billed by DWR for the water it receives, as set forth in SBVMWD's contract with DWR, but receives credit for the value of the power generated by the water which flows through the Devil Canyon hydropower plant for delivery to SBVMWD.

E. CLAWA has negotiated an agreement with SBVMWD (the "SBVMWD Agreement") for the purchase of 8,000 acre-feet of imported SWP water from SBVMWD's 2005 allocation from DWR, for the benefit of LACSD. A copy of the SBVMWD Agreement is attached hereto as Exhibit "A." Upon execution of this Agreement and the SBVMWD Agreement, and pursuant to the terms of the SBVMWD Agreement, CLAWA will purchase the water from SBVMWD in 2005 and allow the purchased water to be delivered to SBVMWD in exchange for the right to subsequently take a total of 7,600 acre-feet of water ("Exchange Water") from DWR's annual allocation of SWP water to SBVMWD over a period of ten or more years. The Exchange Water taken by CLAWA will be treated for domestic consumption and delivered to LACSD as an alternative source of supply to address consumptive demands within LACSD's service area. CLAWA's treatment and delivery of this Exchange Water to LACSD will allow LACSD to reduce the quantity of water taken from Lake Arrowhead during the term of this Agreement to satisfy the consumptive demands of LACSD's customers.

F. The purpose of this Agreement is to provide for CLAWA's treatment, delivery and sale of Exchange Water to LACSD according to the terms hereinafter set forth. Nothing herein shall affect LACSD's right to continue receiving water service from CLAWA for property located within the boundaries of both LACSD and CLAWA (the "Overlap Area"), in accordance with the Agency's rules and regulations applicable to water service within the Agency's boundaries.

TERMS AND CONDITIONS

1. Term. This Agreement shall be effective upon execution of this Agreement by all of the parties hereto, and upon execution of the SBVMWD Agreement by all of the parties thereto. This Agreement shall remain in effect until expiration of the SBVMWD Agreement, and until all other obligations set forth in this Agreement (including payment and adjustment obligations) have been satisfied. All such obligations are expected to be satisfied by December 31, 2020, or by the extension of such date as necessary or appropriate to deliver to LACSD all of the water contemplated in this Agreement, following any necessary environmental review of such term extension.

2. Definitions. The following terms shall have the following meanings as used herein:

(a) "Exchange Water" means water which CLAWA takes from the annual allocation of SWP Water to SBVMWD pursuant to the SBVMWD Agreement for the benefit of LACSD.

(b) "Replacement Water" means water which CLAWA takes from its own allocation of SWP Water for treatment, storage and delivery to LACSD to replace Exchange Water which CLAWA previously took from SBVMWD pursuant to the SBVMWD Agreement and used within CLAWA's own service area.

(c) "Water Delivery Facilities" means the LACSD-ROW Turnout hereinafter described in Paragraph No. 3, the backflow prevention assembly to be installed immediately downstream therefrom, appurtenant piping and fittings, and approximately 5,375 lineal feet of 12-inch diameter pipeline from the turnout to LACSD's existing retail water system, as needed for CLAWA to deliver Exchange Water and/or Replacement Water to LACSD. The Water Delivery Facilities do not include the one million gallon reservoir which

LACSD also intends to construct on an unpaved 0.25 acre site, which is located north east of Crest Fern Drive.

3. Construction of LACSD-ROW Turnout. Within sixty (60) days after the effective date of this Agreement or within sixty (60) days after conclusion of legal proceedings challenging this Agreement, if filed, LACSD will deposit with CLAWA the sum of $140,000 to pay for CLAWA's cost of designing and constructing a 1,500 gallon-per-minute wholesale water service turnout including meter, valve, and piping within an underground vault on a CLAWA-approved site in the Burnt Mill area, to be acquired by LACSD and conveyed to CLAWA at no charge to CLAWA (the "LACSD-ROW Turnout"). The deposit will be applied to CLAWA's actual expenses incurred in designing and constructing the turnout, including 15% of those actual costs to cover CLAWA's overhead and expense in administering the construction contract. If the amount of the deposit is insufficient to cover such costs, CLAWA will invoice LACSD for the difference, and LACSD agrees to pay the invoice within 45 days after receipt. If the amount of the deposit exceeds such costs, CLAWA will refund the difference to LACSD within 45 days after completion of construction. The LACSD-ROW Turnout will be owned, operated and maintained by CLAWA. All facilities constructed by LACSD on the outlet side of the turnout to accept the delivery of water through the turnout will be designed, constructed, owned, operated and maintained by LACSD, including an approved backflow prevention assembly on the site.

4. Construction of Water Delivery Facilities. Upon the effective date of this Agreement or upon the conclusion of legal proceedings challenging this Agreement, if filed, LACSD will provide for the design and construction of the Water Delivery Facilities, except for the LACSD-ROW Turnout which shall be designed and constructed by CLAWA. All such facilities on the discharge side of the LACSD-ROW Turnout shall be designed, constructed, owned, operated and maintained by LACSD as part of its retail water system. The piping from the LACSD-ROW Turnout to LACSD's retail system shall have sufficient capacity to accommodate a flow of at least 1,500 gallons per minute through the turnout. Construction of the Water Delivery Facilities shall be scheduled for completion within 12 months after the

effective date of this Agreement or within 12 months after the conclusion of legal proceedings challenging this Agreement, if filed; provided, however, that this 12 month period for completion is conditioned upon construction activities being performed in accordance with the requirements of the County of San Bernardino, including, but not limited to, the requirement that improvements located in the County of San Bernardino's roadway right-of-ways can generally only be completed during the period of April 15 through October 15 of each year.

5. Minimum Purchase Requirement. LACSD agrees to purchase from CLAWA at least 640 acre-feet of Exchange Water or Replacement Water, or a combination thereof, in each of the first two calendar years following completion of the Water Delivery Facilities, and at least 560 acre-feet of such water in each subsequent year, up to an aggregate total of 7,600 acre-feet of such water, provided however that

(a) LACSD shall not be required to purchase from CLAWA in any year a quantity of such water which exceeds the quantity that CLAWA makes available to LACSD for purchase in that year;

(b) LACSD shall have the option of declining delivery of any portion of its minimum purchase quantity in any year, in which event the dollar amount paid by LACSD to CLAWA for the water purchased by LACSD but not taken by LACSD in that year shall be retained by CLAWA as a credit to be applied by CLAWA to LACSD's next subsequent purchase of such water in excess of the minimum purchase requirement in any subsequent year;

(c) for water purchased by LACSD in any year in excess of its minimum purchase requirement in that year, the excess quantity purchased shall be applied

to its minimum purchase requirement in the immediately succeeding year or years;

(d) should the adjustments to the price charged to LACSD per acre-foot of water, as set forth in Paragraph No. 6 of this Agreement, result in a purchase price for any year which exceeds $2,700 per acre-foot, CLAWA and LACSD agree to adjust the minimum purchase quantity downward as necessary to limit LACSD's total payment obligation in that year to the product of (1) the minimum purchase requirement for that year, and (2) $2,700. The quantity not purchased as a result of that reduction instead shall be added to the balance of the water to be subsequently purchased by LACSD pursuant to this Agreement.

6. Purchase Price. For each acre-foot of Exchange Water and/or Replacement Water which LACSD purchases from CLAWA pursuant to this Agreement, LACSD will pay to CLAWA a purchase price equal to the sum of the following:

(a) $2,000 for the treatment, storage, transportation and delivery of the water, including the use of capacity in CLAWA' s facilities; provided that beginning on January 1, 2006, and on January 1 of each subsequent year, this component of the charge will be adjusted as follows:

$363 of this component of the price, which reflects CLAWA's average cost of pumping energy per acre-foot during fiscal year 2003-2004, will be

adjusted upward or downward to reflect the cost of pumping energy per acre foot calculated as the total pumping energy cost incurred by CLAWA for the previous fiscal year divided by the total number of acre feet drawn by CLAWA from Lake Silverwood for the same time period.

(b) $100 to compensate CLAWA for the use of CLAWA's money to purchase water from SBVMWD for ultimate exchange and delivery to LACSD.

(c) $527.19, which is the price per acre-foot which CLAWA must pay to SBVMWD for the right to receive a total of 7,600 acre-feet of Exchange Water back from SBVMWD during the term of the SBVMWD Agreement; provided, however, that as an adjustment is made in the price per acre-foot which SBVMWD charges to CLAWA for such water pursuant to Paragraph No. 5 of the SBVMWD Agreement, resulting in an additional charge or a credit to CLAWA, the same adjustment in the price per acre-foot will be made in the price per acre-foot which LACSD must pay to CLAWA for the purchase of Exchange Water or Replacement Water from CLAWA. If such adjustment in the purchase price results in a refund to CLAWA, CLAWA will make a corresponding refund to

LACSD within 30 days after receipt from SBVMWD. Conversely, if such adjustment results in an invoice from SBVMWD for payment of an additional charge, CLAWA will send a corresponding invoice to LACSD for payment of the additional charge, and LACSD agrees to pay the invoiced amount to CLAWA within 30 days after the date of the invoice. If LACSD purchases Replacement Water from CLAWA, in lieu of Exchange Water, the adjustment to the purchase price charged to LACSD shall be identical to the adjustment to the purchase price which CLAWA paid to SBVMWD for the Exchange Water being replaced.

7. Billing and Payment. By October 1 of each year, LACSD will provide CLAWA with a preliminary estimate of the quantity of Exchange Water which LACSD would like to receive during the subsequent calendar year. LACSD may thereafter revise its request for such water, in writing to CLAWA, until the following March 1. By January 30 of each year in which LACSD is required to purchase Exchange Water and/or Replacement Water pursuant to this Agreement, LACSD will deposit with CLAWA an amount of money equal to one-half of the purchase price per acre-foot of water as described in Paragraph No. 6 of this Agreement (not including the adjustment thereafter made in the purchase price as set forth in Subparagraph No. 6(c)) times the minimum purchase quantity of water for that year as set forth in Paragraph No. 5; and by June 30 of that year LACSD will deposit with CLAWA the remainder of the total estimated purchase price for that year. The deposit shall be applied to the purchase price of water thereafter delivered to LACSD through the LACSD-ROW Turnout, until fully depleted. Once each month, near the end of the month, CLAWA will examine (or "read") the meter

installed in the LACSD-ROW Turnout to determine the quantity of Exchange Water and/or Replacement Water delivered through the LACSD-ROW Turnout since the date of the previous meter reading, and will provide LACSD with a statement setting forth the quantity of water delivered since the date of the previous meter reading, the corresponding charge for the water delivered, and the remaining credit balance (if any) on deposit with CLAWA. If the statement reveals an additional payment to be made by LACSD for water delivered, after the credit balance has been fully depleted, LACSD agrees to pay the amount due within 30 days after receipt of the statement. LACSD shall have the right at any time to request an independent test of the meter, to determine its accuracy, by posting a deposit with CLAWA in the amount estimated by CLAWA to be necessary to remove the meter and conduct the test. LACSD agrees to pay actual costs incurred, with an increase in the deposit or a refund as appropriate to reflect such costs. If the test reveals that the meter is accurate within a tolerance of 2%, plus or minus, the meter will be returned to service and no adjustment will be made in previous invoices. If the test reveals an inaccuracy of more than 2%, the meter will be replaced at CLAWA's expense and an adjustment will be made in previous invoices to fairly estimate the appropriate charge for Exchange Water and/or Replacement Water actually delivered to LACSD, as set forth in CLAWA's rules and regulations for water service.

8. Use by CLAWA. CLAWA shall have the right, in any year, to utilize Exchange Water to satisfy consumptive needs within CLAWA's own service area, and in a subsequent year to replace the Exchange Water used in CLAWA's service area with an equal quantity of water to be supplied to LACSD from CLAWA's allocation of water from the SWP ("Replacement Water"). In the event that CLAWA's use of Exchange Water within its own service area in any year reduces the quantity of Exchange Water available for purchase by LACSD in that year to a quantity less than LACSD's minimum purchase requirement for the year, LACSD's minimum purchase requirement for the year shall be reduced to the quantity actually made available by CLAWA in that year for purchase by LACSD. Conversely, in a subsequent year if CLAWA offers to provide LACSD with Replacement Water, in lieu of

Exchange Water, such Replacement Water shall be treated the same as Exchange Water for purposes of calculating LACSD's minimum purchase requirement as set forth herein. In lieu of CLAWA providing Replacement Water to LACSD, LACSD and CLAWA may agree to reduce LACSD's repayment obligations under this Agreement in an amount commensurate with the payments that would otherwise be due and payable for the Exchange Water that CLAWA utilizes to satisfy consumptive needs within CLAWA's own service area.

9. Operating Committee. CLAWA and LACSD acknowledge the need for coordination and mutual cooperation in scheduling the timing, flow rate and quantities of water to be delivered through the LACSD-ROW Turnout. Therefore, CLAWA and LACSD each agree to form an Operating Committee consisting of at least one designee, in each case appointed by that party's General Manager, to develop and keep current an operating plan designed to accomplish the purposes set forth herein, consistent with other system demands. The operating plan shall be consistent with CLAWA's operational procedures and criteria for the use of purveyor turnouts as they may be revised from time to time. CLAWA and LACSD further agree that their respective General Managers and/or consultants will meet as necessary to discuss mutual accommodations that may be necessary in order to deal with operational constraints. Each party shall bear its own costs for participating in, and performing any functions as part of, this Operating Committee, and in performing all other aspects of administering this Agreement. No later than January 31 of each year, the Operating Committee will prepare a written report setting forth the annual quantity of water delivered pursuant to this Agreement, the total payments made therefor, and the remaining quantity of water to be delivered.

10. Water Quality. CLAWA represents that the water made available to LACSD through the LACSD-ROW Turnout will be treated for domestic consumption and will be of the same quality as that supplied to other CLAWA customers for domestic consumption. No other representations are made with regard to the water quality. LACSD will be exclusively responsible for obtaining approval from the State Department of Health Services for the introduction of CLAWA water into LACSD's domestic water system, and from the Lahontan

Regional Water Quality Control Board for the discharge of sewage effluent derived from CLAWA water.

11. Mutual Indemnification. CLAWA and LACSD each agree to indemnify, defend and hold the other party harmless from any claim of loss or liability for damage to person or property arising out of or resulting from the indemnifying party's acts or omissions in the performance of this Agreement. In the event of a third party loss caused by the negligence, wrongful act or omission of the parties to this Agreement, each party shall bear financial responsibility in proportion to its percentage of fault as judicially determined or as otherwise agreed between them.

12. Condition Precedent. This Agreement shall not take effect unless and until the SBVMWD Agreement is executed by all the parties thereto.

13. Amendment. This Agreement may be amended upon approval by the governing boards of CLAWA and LACSD, by separate instrument executed in writing.

14. Legal Proceedings. In the event of any legal proceedings to construe or enforce the provisions of this Agreement, the prevailing party shall be entitled to reimbursement of costs and reasonable attorneys fees.

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the date first above written.

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT

By: _____
President, Board of Directors

Date: _____

ATTEST:

Secretary

CRESTLINE-LAKE ARROWHEAD WATER AGENCY

By: _____
President, Board of Directors

Date: _____

ATTEST:

Secretary

WATER PURCHASE AND EXCHANGE AGREEMENT

This Agreement is made this _____ day of _____, 2005, by and between the San Bernardino Valley Municipal Water District ("SBVMWD") and the Crestline-Lake Arrowhead Water Agency ("CLAWA").

Recitals.

A. The Department of Water Resources of the State of California ("DWR") owns and operates the State Water Project ("SWP") and has entered into contracts with twenty-nine (29) water purveyors ("State Water Contractors" or "Contractors") for the annual delivery of water from the SWP to those Contractors.

B. SBVMWD and CLAWA are both State Water Contractors which receive an annual allocation of water from the SWP pursuant to their respective contracts with DWR. SBVMWD's contract with DWR provides for the delivery of 102,600 acre-feet of water per year from the SWP (SBVMWD's "Table A Amount"), and CLAWA's contract with DWR provides for the delivery of 5,800 acre-feet of water per year from the SWP (CLAWA's "Table A Amount").[1]

C. CLAWA's contract with DWR authorizes the use of water which CLAWA receives from the SWP only within CLAWA's boundaries. CLAWA's boundaries were originally approved by DWR to include the area surrounding Lake Arrowhead which currently receives water service from the Lake Arrowhead Community Services District. However, this area (the "Lake Arrowhead Exclusion Area") was ultimately excluded from

[1] The quantity of SWP water actually delivered to each Contractor varies from year to year based upon a number of factors, including hydrologic conditions within the SWP watershed, the ability of the SWP to capture and store runoff, and each Contractor's request for water in any given year. In most years, Contractors are allocated less than their Table A Amounts; in some years, Contractors have the opportunity to receive more than their Table A Amounts.

CLAWA's boundaries when CLAWA was formed, and therefore does not receive any SWP water allocated to CLAWA pursuant to CLAWA's Table A Amount.

D. SBVMWD's contract with DWR (specifically, paragraph 15(a) thereof) authorizes the use of the water which it receives from the SWP outside of SBVMWD's boundaries so long as such use does not materially impair SBVMWD's capacity to make payment to DWR as required by its contract with DWR.

E. The SWP water which SBVMWD receives pursuant to its contract with DWR flows through Lake Silverwood, a reservoir of the SWP, then through the Devil Canyon power plant, also a facility of the SWP, en route to the delivery structures ("turnouts") which supply SWP water to SBVMWD south of Devil Canyon. SBVMWD receives credit on its annual invoice from DWR for the value of energy generated at the Devil Canyon power plant due to SWP water delivered to SBVMWD through its turnout south of Devil Canyon. The amount of the power generation credit per acre foot of water delivered to SBVMWD each year is calculated by DWR and is reflected in Table B-17 of DWR's Bulletin 132, prepared and published by DWR each year.

F. The SWP water which CLAWA receives pursuant to its contract with DWR also flows through Lake Silverwood en route to CLAWA's turnout in Lake Silverwood.

G. SBVMWD has agreed to sell to CLAWA, and CLAWA has agreed to purchase from SBVMWD, 8,000acre-feet of SBVMWD's 2005 allocation of water from the SWP for use, via exchange, within the Lake Arrowhead Exclusion Area pursuant to the terms hereinafter set forth.

H. The purpose of this Agreement is to set forth in writing the terms of the purchase and sale and for the use of that water, via exchange, outside of the boundaries of SBVMWD.

Terms

1. Purchase by CLAWA. SBVMWD agrees to sell to CLAWA, and CLAWA agrees to purchase from SBVMWD, 8,000 acre-feet of water from SBVMWD's allocation of SWP water in calendar year 2005. Although sold by SBVMWD and purchased by CLAWA, this water will be delivered to SBVMWD in 2005 for use by SBVMWD as SBVMWD deems appropriate, consistent with its normal annual operations.

2. Exchange By SBVMWD. In return for the 8,000 acre-feet of SWP water purchased by CLAWA but delivered to SBVMWD in 2005, CLAWA shall have the right to take a total of 7,600 acre-feet of water ("Exchange Water") from SBVMWD's annual allocation of SWP water, beginning in calendar year 2005, upon the terms set forth in this Agreement. SBVMWD and CLAWA shall keep an account ("Exchange Account") of the quantity of Exchange Water which CLAWA is entitled to take pursuant to this Agreement, and the balance remaining in the Exchange Account each time CLAWA withdraws Exchange Water from the Exchange Account.

3. Annual Withdrawals from the Exchange Account. By October 1 of each year, CLAWA will confer with SBVMWD and provide DWR with a schedule showing the total quantity of Exchange Water, by month, which CLAWA intends to take from SBVMWD's allocation of SWP water in the next subsequent year. The schedule may be revised until March 1 of the following year, or thereafter during the course of the year as mutually agreed between

CLAWA, SBVMWD and DWR. However, CLAWA's right to take Exchange Water as set forth in the proposed schedule shall be limited as follows:

(a) The total quantity of Exchange Water which CLAWA may take in any calendar year shall not exceed 15% of the SWP water allocated to SBVMWD in that year, unless approved in advance by SBVMWD.

(b) CLAWA shall not take Exchange Water in quantities or rates of flow which, when added to the water taken by CLAWA from its own allocation of SWP water in any year, exceed the total quantity or rate of flow which would cause CLAWA to be in violation of its contract with DWR.

(c) If any calendar year is determined by DWR to be critically dry, CLAWA will be entitled to take only that quantity of Exchange Water which SBVMWD determines that it can spare from its allocation of SWP water for that year without impairing SBVMWD's ability to satisfy the needs of its own customers, after conferring with CLAWA in good faith.

4. Place of Use. The Exchange Water delivered to CLAWA will be supplied by CLAWA to the Lake Arrowhead Community Services District for use within the Lake Arrowhead Exclusion Area; provided, however, that in any year CLAWA will be entitled to utilize the Exchange Water within its own boundaries to satisfy the consumptive needs of customers within its boundaries, and thereafter either (a) replace the Exchange Water utilized within its own boundaries with an equal quantity of SWP water allocated to CLAWA, for use

within the Lake Arrowhead Exclusion Area, or (b) reduce the quantity of water which the Lake Arrowhead Community Services District must purchase from CLAWA, pursuant to separate agreement between CLAWA and that District.

5. Purchase Price. Within 15 days after execution of this Agreement by all parties hereto, CLAWA will pay to SBVMWD the amount of $3,794,640 (which is the Total Equivalent Unit Charge to SBVMWD of $474.33 per acre-foot for SWP water delivered to SBVMWD as reflected in Table B-24 of DWR's Bulletin 132-04 **[Confirm Reference Table]** times 8,000 acre-feet) plus the amount of $212,040 (which is the value of the hydropower generation credit per acre-foot of water delivered through the Devil Canyon power plant as reflected in Table B-17 of DWR's Bulletin 132-04, or $27.90 per acre-foot, times 7,600 acre-feet). The sum of these two charges equals a total payment of $4,006,680. Upon receipt of this payment, SBVMWD shall provide notice to DWR that CLAWA has purchased 8,000 acre-feet of water from SBVMWD's 2005 allocation of SWP water from DWR, which shall entitle CLAWA to subsequently take Exchange Water from SBVMWD's annual allocations of SWP water in an aggregate quantity not to exceed 7,600 acre-feet, pursuant to the terms of this Agreement. As CLAWA subsequently takes such Exchange Water, an adjustment shall be made in the amount paid to SBVMWD by CLAWA to reflect (a) the Total Equivalent Unit Charge reflected in Table B-24 (or a corresponding table) of DWR's Bulletin 132 **[Confirm Reference Table]** for the year in which the Exchange Water is taken, times the number of acre-feet of Exchange Water taken by CLAWA in that year; and (b) the value of the hydropower generation credit per acre foot of water that would have been delivered to SBVWMD through the Devil Canyon power plant in that year (if not taken by CLAWA as Exchange Water) as reflected in Table B-17 of DWR's Bulletin 132 for the year in which the Exchange Water is taken, times the

number of acre-feet of Exchange Water taken by CLAWA in that year. The appropriate adjustments shall be made by SBVMWD and CLAWA within 60 days after DWR publishes its Bulletin 132 reflecting the Total Equivalent Unit Charge per acre-foot and the Devil Canyon power generation credit per acre-foot for the year in which the Exchange Water was taken by CLAWA. If any such adjustment results in an extra charge to CLAWA, SBVMWD will send an invoice to CLAWA for the amount of the additional charge, and CLAWA will pay the amount due within 30 days after the date of the invoice. If the adjustment results in a refund of a portion of the amount previously paid by CLAWA to SBVMWD pursuant to this Agreement, CLAWA will send an invoice to SBVMWD for a refund of that amount, and SBVMWD will pay the amount due within 30 days after the date of the invoice. Any amounts due by either CLAWA or SBVMWD which are not paid when due will accrue interest at the rate of 1% per month until paid. In the event of disagreement between CLAWA and SBVMWD as to any amounts due under this Agreement, CLAWA and SBVMWD agree to confer in good faith to resolve such disagreement amicably, without waiving any of the legal equitable rights which either may have against the other.

6. DWR's Charges to SBVMWD. SBVMWD will remain responsible for payment of DWR's charges for water purchased by CLAWA but delivered to SBVMWD in 2005 for use within its service area and for Exchange Water thereafter delivered to CLAWA from SBVMWD's annual allocation of SWP water, as provided in SBVMWD's contract with DWR.

7. Term. CLAWA anticipates taking all of its Exchange Water prior to December 31, 2015. However, in the event that CLAWA does not take all of its Exchange Water by then, CLAWA will have the option to continue taking Exchange Water until its

Exchange Account is fully depleted, which is expected to occur by December 31, 2020. If CLAWA has not taken all of its Exchange Water by December 31, 2020, CLAWA and SBVMWD agree to perform any necessary environmental review of an appropriate term extension to provide for delivery of any water remaining in the Exchange Account. Following any such environmental review, the term of this Agreement will be extended accordingly by written agreement signed by the parties hereto. The term of this Agreement will expire when CLAWA has taken all of its Exchange Water contained in the Exchange Account and all of the other obligations set forth herein have been satisfied.

8. Indemnification of DWR In the event any claim against DWR or any of its officers or employees for liability arising under this Agreement, or out of actions undertaken pursuant to this Agreement, for which CLAWA and SBVMWD may be responsible, CLAWA and SBVMWD agree to indemnify, defend and hold DWR and its officers and employees harmless from such claim.

9. Mutual Indemnification. CLAWA and SBVMWD each agrees to indemnify, defend and hold the other party harmless from any claim of loss or liability for damage to person or property arising out of or resulting from the indemnifying party's acts or omissions in the performance of this Agreement. In the event of a third party loss caused by the negligence, wrongful act or omission of the parties to this Agreement, each party shall bear financial responsibility in proportion to its percentage of fault as judicially determined or as otherwise agreed between them.

10. No Detriment to Other State Water Contractors. CLAWA and SBVMWD agree that DWR has the authority to limit the delivery of Exchange Water to CLAWA in any

year as deemed necessary or appropriate by DWR in order to satisfy DWR's other obligations to deliver SWP water to Contractors.

11. Compliance with All Laws. CLAWA will assume responsibility to ensure compliance with such laws as may apply to the implementation of this Agreement, including without limitation the California Environmental Quality Act, and for securing such consents or permits as may be required therefor. SBVMWD agrees to cooperate with CLAWA in achieving such compliance.

12. Attorneys Fees and Costs. In the event of legal action to interpret or enforce the provisions of this Agreement, the prevailing party shall be entitled to reimbursement of reasonable attorneys fees and costs incurred in such action, as determined by a court or as agreed between the parties.

IN WITNESS WHEREOF, the parties have executed this Agreement effective as of the date first above written.

CRESTLINE-LAKE ARROWHEAD WATER AGENCY

By:_____
President, Board of Directors

(Date)_____

ATTEST:

_____
Secretary

SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT

By:_____
President, Board of Directors

(Date) _____

ATTEST:

_____
Secretary

MITIGATION MONITORING AND REPORTING PROGRAM

INTRODUCTION

Crestline-Lake Arrowhead Water Agency (CLAWA) and Lake Arrowhead Community Services District (LACSD) have each assumed the role of Co-Lead Agency under the California Environmental Quality Act (CEQA) and prepared this Initial Study/Mitigated Negative Declaration for the proposed project (Project). LACSD is a self-governed special district responsible for water supply to the unincorporated areas surrounding Lake Arrowhead, California. Currently, LACSD uses water from Lake Arrowhead to serve the majority of its customers. The Board of Directors of the LACSD has adopted the goal of reducing and ultimately eliminating reliance on Lake Arrowhead as the community's sole source of water and the purpose of the Project is to support and facilitate LACSD's goal to reduce, and ultimately eliminate, reliance on water from Lake Arrowhead. LACSD, CLAWA, and San Bernardino Valley Municipal Water District (SBVMWD) have developed Principles of Agreements to cooperatively implement the Project.

Project Description Summary

The Project would include the one-time purchase of up to a total of 10,000 acre-feet (AF) of water ("Purchased Water") by CLAWA from SBVMWD. The Project would also include a 10 to 15-year agreement to take delivery of the Purchased Water, in annual increments, at CLAWA's State Water Project (SWP) turnout in Lake Silverwood. The Purchased Water would be used after treatment by CLAWA and delivery to LACSD. The Project would also include limited infrastructure improvements to deliver the Purchased Water to LACSD and to store the Purchased Water.

Project Location

Regionally, the Project is located in San Bernardino County. The facility improvements would be located in the Lake Arrowhead Community north of State Highway 18 and west of State Highway 173 along Rim of the World Drive, Burnt Mill Road and Crest Fern Drive, as well as on a private parcel in a private residential community adjacent to Crest Fern Drive.

HISTORY OF ENVIRONMENTAL DOCUMENTATION

The following environmental documentation was previously prepared for the proposed Project:

1. This Initial Study/Mitigated Negative Declaration was prepared and circulated for public review during a 30-day period (December 10, 2004 through January 8, 2005).

2. A Notice of Intent to Adopt a Mitigated Negative Declaration was circulated with the Initial Study/Mitigated Negative Declaration and published in the Mountain News on December 9, 2004 and the San Bernardino County Sun on December 10, 2004. The Notice of Intent to Adopt a Mitigated Negative Declaration advised that the LACSD public hearing would be held on March 8, 2005 at 7:00 p.m. and the CLAWA public hearing date and location were to be determined.

3. The Initial Study/Mitigated Negative Declaration was filed with the State Clearinghouse on December 10, 2004.

4. The Initial Study/Mitigated Negative Declaration and Notice of Intent to Adopt a Mitigated Negative Declaration were provided to the San Bernardino County Clerk on December 9, 2004 and posted on December 15, 2004.

5. On February 28, 2005, commenters, the County of San Bernardino, the State Clearinghouse, and other agencies (including trustee agencies) and parties to which the Notice of Intent to Adopt a Mitigated Negative Declaration was provided, were provided a notice of the change of LACSD's public hearing date (rescheduled to April 12, 2005 at 7:00 p.m.).

6. On March 4, 2005, commenters, the County of San Bernardino, the State Clearinghouse, and other agencies (including trustee agencies) and parties to which the Notice of Intent to Adopt a Mitigated Negative Declaration was provided, were provided a notice of the change of LACSD's public hearing time (rescheduled to April 12, 2005 at 8:30 a.m.).

7. Responses to comments received were prepared and related changes to the document completed.

8. On April 7, 2005 commenters, the County of San Bernardino, the State Clearinghouse, and other agencies (including trustee agencies) and parties to which the Notice of Intent to Adopt a Mitigated Negative Declaration was provided, were provided a notice advising that public meetings (rather than hearings) would be held by LACSD on May 10, 2005 (8:30 a.m.) and May 24, 2005 (7:00 p.m.), and by CLAWA on June 2, 2005 (2:00 p.m.). The notice also advised that the previously scheduled April 12, 2005 hearing was cancelled.

9. On May 3, 2005, commenters, the County of San Bernardino, the State Clearinghouse, and other agencies (including trustee agencies) and parties to which the Notice of Intent to Adopt a Mitigated Negative Declaration was provided, were provided a notice advising that public meetings would be held by LACSD on June 14, 2005 (8:30 a.m.) and June 28, 2005 (7:00 p.m.), and by CLAWA on July 7, 2005 (2:00 p.m.). The notice also advised that all previously scheduled public meetings were cancelled.

10. LACSD held a public meeting on June 14, 2005 providing the LACSD Board of Directors with the Final Mitigated Negative Declaration as an information item.

11. LACSD held a second public meeting on June 28, 2005 and adopted the Final Mitigated Negative Declaration on TBD.

12. CLAWA held a public meeting on July 7, 2005 and adopted the Final Mitigated Negative Declaration on TBD.

CEQA REQUIREMENTS FOR MITIGATION MONITORING AND REPORTING PROGRAMS

CEQA requires that when a public agency makes findings required under paragraph (1) of subdivision (a) of Section 15091 relative to an EIR or adopted a Mitigated Negative Declaration in conjunction with approving a project that the agency adopt a program for reporting or monitoring mitigation measures that were adopted or made conditions of the approval of the project (*CEQA Guidelines Sections 15091(a) and 15097(a).* The purpose of the monitoring or reporting program is to ensure that the mitigation measures identified in an EIR or Mitigated Negative Declaration to mitigate or avoid significant environmental effects are implemented. The agency may choose whether its program will monitor mitigation, report on mitigation, or both. "Reporting" generally consists of a written compliance review that is presented to the decision making body or authorized staff person. "Monitoring" is generally an ongoing or periodic process of project oversight.

Format of the MMRP

The MMRP is presented in a tabular format on the following pages. The table presents the adopted mitigation measures for the Project's potentially significant impacts. Additionally, mitigation measures were adopted to further reduce less than significant impacts. Potential impacts are organized according to the resource that would be affected. Adopted mitigation measures are listed for each potential impact. The monitoring program lists the party responsible for implementing the measure, along with the timing of the measure.

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Table 1. Mitigation Monitoring and Reporting Program

Impact	*Adopted Mitigation Measures*	*Monitoring Program*
BIOLOGICAL RESOURCES		
Although no significant impacts to the southern rubber boa are anticipated, mitigation measures are provided to further reduce noise and construction-related less than significant impacts.	**BIO-1** 1) To reduce noise and construction-related impacts to the southern rubber boa potentially in the vicinity of the new water tank site, LACSD will ensure that construction activities occur outside of the restricted period of October 1 through November 15 and March 1 through May 31. 2) If it is not feasible to restrict the period of construction as identified in 1) above, then LACSD will conduct a pre-activity survey for the boa immediately prior (within one week) to construction at the proposed water tank site in order to verify that the southern rubber boa is not present in the vicinity of the proposed tank site. The pre-activity survey will be conducted by a qualified biologist in consultation with the California Department of Fish and Game (CDFG) and extend 50 feet beyond the maximum footprint of construction. Any southern rubber boas found will be relocated to adjacent areas (a qualified biologist will obtain a California Endangered Species Act [CESA] Permit) and placed under a rock or log outside of the construction corridor, but within 150 feet of the original point of discovery. **BIO-2** LACSD will ensure that all vehicles, equipment, and personnel will be confined to a previously disturbed construction corridor at the proposed tank site and any authorized staging/parking areas. LACSD will also ensure that, at the conclusion of construction activities, all equipment and extra materials are removed from the site, and leaf litter and other organic debris cleared out for construction of the underground tank is saved and replaced following construction.	**Responsibility:** LACSD is responsible for implementing and verifying that implementation is completed. **Timing:** Prior to, during, and at the conclusion of construction.

Table 1. Mitigation Monitoring and Reporting Program
(continued)

Impact	*Adopted Mitigation Measures*	*Monitoring Program*
BIOLOGICAL RESOURCES		
	BIO-3 LACSD will ensure that a qualified biologist is present during the initial ground disturbance for all construction activities at the tank site to check for southern rubber boas and other wildlife. Any individual animals that are observed will be safely removed by the biologist out of the path of construction equipment. All trenches or holes will be regularly inspected for southern rubber boas and other wildlife and any observed will be safely removed by the onsite biologist for release outside of the construction corridor. The trenches and holes will also be inspected prior to backfilling. Routine checks will occur throughout the day and the biologist will be available at all times during construction activities. **BIO-4** LACSD will ensure that any construction debris at the tank site that could potentially be used as cover (e.g., up-rooted tree stumps) for southern rubber boa or other wildlife is stored off site or disposed of at the end of each day.	
Although no eagle or raptor nests were identified at the proposed water tank site, temporary noise associated with construction at this location and along the pipeline route and turnout site could disturb nesting birds in the vicinity. This would be a potentially significant impact.	**BIO-5** 1) LACSD and CLAWA will ensure that all construction would occur outside of the raptor breeding season (March 1 through July 1). 2) If it is not feasible to restrict the period of construction as identified in 1) above, LACSD and CLAWA will perform pre-construction nesting surveys no earlier than three days prior to construction. Surveys would include all areas within 100 feet of the construction area. If nesting birds are located within 100 feet of planned construction areas, no construction activity will occur until a qualified biologist identifies that active nesting is no longer occurring.	**Responsibility:** LACSD and CLAWA are responsible for implementing and verifying that implementation is completed. **Timing:** Prior to and during construction.

Table 1. Mitigation Monitoring and Reporting Program
(continued)

Impact	*Adopted Mitigation Measures*	*Monitoring Program*
BIOLOGICAL RESOURCES		
If the above ground tank is constructed, the proposed Project would require the removal of a total of 16 trees, 8 of which have a dbh of six inches or greater, at the water tank site. The proposed Project would require the removal of up to 22 mature trees if the underground tank is constructed. Impacts would be potentially significant.	**BIO-6** LACSD will avoid mature trees at the tank site to the maximum extent possible. For mature trees that cannot be avoided, LACSD will ensure a mitigation replacement ratio of 1:1 for all mature trees that will be removed as part of the Project (i.e., 8 trees would be planted if the above ground tank is constructed and 22 trees would be planted if the underground tank is constructed), develop a mature tree removal and replacement plan approved by the County of San Bernardino, and complete post-project monitoring to achieve the expected success ratio.	**Responsibility:** LACSD is responsible for implementing and verifying compliance with the mitigation measure. **Timing:** During and after construction.
Although no significant sedimentation impacts to the drainage located adjacent to the pipeline route on Burnt Mill Road are anticipated, these mitigation measures are provided to further reduce the less than significant impacts.	**BIO-7** LACSD will implement sediment control measures when working within 100 feet of the drainage. Such measures will include the installation of temporary berms and sedimentation traps (i.e., silt fencing, straw bales, and sand bags). See also Mitigation Measure GEO-1 below.	**Responsibility:** LACSD is responsible for implementing and verifying that implementation is completed. **Timing:** During construction.
CULTURAL RESOURCES		
Although impacts to cultural resources are considered less than significant, a mitigation measure is provided in the event that cultural resources are encountered during construction.	**CR-1** LACSD and CLAWA will ensure that construction/excavation activities will be temporarily redirected until a qualified archaeologist assesses the nature of the cultural remains. If the remains are intact and significant, a qualified archaeologist, who will recover and analyze a representative sample of the impacted materials, will conduct a data recovery investigation. Resources considered significant would be avoided or subject to a data recovery program. In the event that unknown, potential human remains are encountered during grading, clearing, grubbing, and/or construction activities associated with the project, all excavation and ground disturbing work on or adjacent to the project site	**Responsibility:** CLAWA and LACSD are responsible for implementing and verifying that implementation is completed. **Timing:** During and after construction.

Table 1. Mitigation Monitoring and Reporting Program
(continued)

Impact	*Adopted Mitigation Measures*	*Monitoring Program*
CULTURAL RESOURCES		
	(or area of discovery) shall be stopped immediately in the vicinity. Pursuant to Public Resources Code Section 5097.98, the County Coroner shall be contacted. If the Coroner determines that the remains are prehistoric, the Native American Heritage Commission (NAHC) shall be notified to identify the most likely descendant (MLD) of the deceased. The Native American MLD shall make recommendations to the landowner in identifying the appropriate treatment and disposition of the remains and any associated grave goods. If the NAHC is unable to identify a Native American MLD, or the Native American MLD fails to make a recommendation within 24 hours after being notified by the commission, or the landowner rejects the recommendation of the MLD and mediation by the NAHC fails to provide measures acceptable to the landowner, the remains shall be reburied with appropriate dignity on the property in a location not subject to further subsurface disturbance. The Morongo Band of Mission Indians will receive a copy of any cultural resources report subsequently issued on the project.	
GEOLOGY AND SOILS		
Project construction would include grading at the tank site and construction along the pipeline alignment would include excavations, stockpiling of soil, pipeline installation, trench backfilling, and recompaction. In the event that the tank is buried, substantially more soil would be excavated and temporarily stored on-site, resulting in an increased potential for erosion and off-site siltation of downstream drainages. In the absence of onsite erosion control measures during grading and construction, short-term erosion and sedimentation is considered a potentially significant impact.	GEO-1 LACSD and CLAWA will ensure that the Project will comply with San Bernardino County and Regional Water Quality Control Board, Lahontan Region requirements. This would include the preparation of an approved Erosion and Sediment Control Plan (as required by San Bernardino County) and a Stormwater Pollution Prevention Plan (SWPPP), as required by the Regional Water Quality Control Board, Lahontan Region, identifying erosion and sediment control measures (i.e., Best Management Practices) to minimize surface runoff during construction including the items listed below.	**Responsibility:** CLAWA and LACSD are responsible for implementing and verifying that implementation is completed. **Timing:** Prior to, during and after construction.

Table 1. Mitigation Monitoring and Reporting Program
(continued)

Impact	*Adopted Mitigation Measures*	*Monitoring Program*
GEOLOGY AND SOILS		
	a) Temporary berms and sedimentation traps (i.e., silt fencing, straw bales, and sand bags), will be installed in association with Project grading at the tank site to minimize erosion of soils and sedimentation of downstream drainages. The sedimentation traps will be cleaned periodically and the silt will be removed and disposed of in a location approved by San Bernardino County. b) Nonpaved areas will be revegetated or restored (e.g., geotextile binding fabrics) within four weeks of grading, to minimize erosion and to re-establish soil structure and fertility. Revegetation will include fast-growing vegetation that would quickly stabilize exposed ground surfaces. c) Runoff at the tank site will not be directed across exposed slopes. All surface runoff will be conveyed in accordance with the site grading/drainage plans approved by Building and Safety, San Bernardino County Department of Land Use Services. d) All excavated material will either be used as backfill or removed from the site and properly disposed, per direction of San Bernardino County, with no permanent sidecasting within or adjacent to the site.	
Strong seismically induced ground shaking could occur at the tank site and pipeline alignment. Impacts are considered potentially significant.	GEO-2 LACSD will ensure that the new one-million-gallon tank and pipeline associated with the Project shall be constructed in accordance with the provisions of the Uniform Building Code and California Code of Regulations, Title 8, Construction Safety Orders.	**Responsibility:** LACSD is responsible for implementing and verifying that implementation is completed.

Table 1. Mitigation Monitoring and Reporting Program
(continued)

Impact	*Adopted Mitigation Measures*	*Monitoring Program*
GEOLOGY AND SOILS		
		Timing: During construction.
Soils beneath the proposed tank site and pipeline route are generally sandy and not prone to expansion. However, clay rich soils that may be prone to expansion could be encountered in relatively flat areas. Such expansive soils could result in damage to the tank and/or pipeline in these areas. Impacts are considered potentially significant.	**GEO-2** LACSD will ensure that the new one-million-gallon tank and pipeline associated with the Project shall be constructed in accordance with the provisions of the Uniform Building Code and California Code of Regulations, Title 8, Construction Safety Orders.	**Responsibility:** LACSD is responsible for implementing and verifying that implementation is completed. **Timing:** During construction.
If an underground tank is approved for construction, burying the tank would result in completion of a large excavation, with temporary steep slopes. Such slopes would potentially be subject to failure if oversteepened, which in turn may result in health and safety impacts to on-site workers. This is a potentially significant impact.	**GEO-2** LACSD will ensure that the new one-million-gallon tank and pipeline associated with the Project shall be constructed in accordance with the provisions of the Uniform Building Code and California Code of Regulations, Title 8, Construction Safety Orders.	**Responsibility:** LACSD is responsible for implementing and verifying that implementation is completed. **Timing:** During construction.
HAZARDS AND HAZARDOUS MATERIALS		
During construction it would be necessary to close one lane of Rim of the World Drive, Burnt Mill Road, and Crest Fern Drive. Lane closures and the encroachment of construction equipment into roadways could result in inadequate emergency access and interfere with an emergency response/evacuation plan. Impacts are considered potentially significant. The italicized portion of the mitigation measure identified here (TRANS-2) mitigates this impact.	**TRANS-2** LACSD and CLAWA will direct the contractor to limit the use of State Highway 173 between State Highway 189 and North Bay Road as a haul route. *LACSD and CLAWA will direct the contractor to prepare and implement a construction traffic management plan that defines how traffic operations will be managed and maintained on roadways during each phase of construction, including any detours, signage, lane closures, or utility relocation work. The construction traffic management plan will specify necessary lane closures, detours, any signage/lighting, flaggers, and other traffic control measures needed to avoid accidents and provide access to residents and emergency response vehicles during construction.*	**Responsibility:** CLAWA and LACSD are responsible for implementing and verifying that implementation is completed. **Timing:** Prior to and during construction.

Table 1. Mitigation Monitoring and Reporting Program
(continued)

Impact	*Adopted Mitigation Measures*	*Monitoring Program*
HAZARDS AND HAZARDOUS MATERIALS		
The Project construction area is located within Fire Safety Area 1. Construction activities, particularly welding activities (i.e., welding of tank segments at the new tank site), would have the potential to ignite surrounding vegetation. This is a potentially significant impact.	**HAZ-1** CLAWA and LACSD will ensure that construction activities will comply with the construction guidelines for Fire Safety Area 1 as set forth by San Bernardino County. LACSD will obtain a Welding Permit from the San Bernardino County Fire Department for welding activities at the tank site and welding activities will be done in accordance with the Uniform Fire Code. The UFC requires an inspection of the work area prior to welding activity to ensure the area is clear of combustibles and that fire extinguishers are verified as operable and available. The UFC also requires a fire watch during welding activities and for a minimum of 30 minutes after the conclusion of the activity.	**Responsibility:** CLAWA and LACSD are responsible for implementing and verifying that implementation is completed. **Timing:** Prior to and during construction.
HYDROLOGY AND WATER QUALITY		
Although no significant impacts to groundwater recharge and groundwater quality are anticipated, a mitigation measure is provided to further reduce less than significant impacts associated with mass loading of salts and other contaminants.	**HYDRO-1** LACSD will continue the implementation of existing groundwater monitoring programs to assess changes in groundwater quality and provide the Regional Water Quality Control Board, Lahontan Region with the results of the water quality monitoring as required and implement corrective action as needed.	**Responsibility:** LACSD is responsible for implementing and verifying that implementation is completed. **Timing:** During operation.
Project construction could result in changes in drainage patterns which could result in off-site erosion or sedimentation. This impact includes impacts to the drainage located adjacent to the pipeline on Burnt Mill Road. This is a potentially significant impact.	**BIO-7** LACSD will implement sediment control measures when working within 100 feet of the drainage. Such measures will include the installation of temporary berms and sedimentation traps (i.e., silt fencing, straw bales, and sand bags). **GEO-1** LACSD and CLAWA will ensure that the Project will comply with San Bernardino County and Regional Water Quality Control Board, Lahontan Region requirements. This would include the preparation of an approved Erosion and Sediment Control Plan (as required by San Bernardino County) and a Stormwater Pollution	**Responsibility:** LACSD and CLAWA are responsible for implementing and verifying that implementation is completed. **Timing:** Prior to, during and after construction.

Table 1. Mitigation Monitoring and Reporting Program
(continued)

Impact	*Adopted Mitigation Measures*	*Monitoring Program*
HYDROLOGY AND WATER QUALITY		
	Prevention Plan (SWPPP), as required by the Regional Water Quality Control Board, Lahontan Region, identifying erosion and sediment control measures (i.e., Best Management Practices) to minimize surface runoff during construction including the items listed below. a) Temporary berms and sedimentation traps (i.e., silt fencing, straw bales, and sand bags), will be installed in association with Project grading at the tank site to minimize erosion of soils and sedimentation of downstream drainages. The sedimentation traps will be cleaned periodically and the silt will be removed and disposed of in a location approved by San Bernardino County. b) Nonpaved areas will be revegetated or restored (e.g., geotextile binding fabrics) within four weeks of grading, to minimize erosion and to re-establish soil structure and fertility. Revegetation will include fast-growing vegetation that would quickly stabilize exposed ground surfaces. c) Runoff at the tank site will not be directed across exposed slopes. All surface runoff will be conveyed in accordance with the site grading/drainage plans approved by Building and Safety, San Bernardino County Department of Land Use Services. d) All excavated material will either be used as backfill or removed from the site and properly disposed, per direction of San Bernardino County, with no permanent sidecasting within or adjacent to the site.	

Table 1. Mitigation Monitoring and Reporting Program
(continued)

Impact	*Adopted Mitigation Measures*	*Monitoring Program*
HYDROLOGY AND WATER QUALITY		
The proposed Project includes the construction of pipeline and a one-million-gallon water tank located in residential areas that, if failed, could increase flood related hazards and result in potentially significant impacts. The primary cause of such failure would be a severe seismic event.	**GEO-2** LACSD will ensure that the new one-million-gallon tank and pipeline associated with the Project shall be constructed in accordance with the provisions of the Uniform Building Code and California Code of Regulations, Title 8, Construction Safety Orders.	**Responsibility:** LACSD is responsible for implementing and verifying that implementation is completed. **Timing:** During construction.
NOISE		
Due to the substantial noise increase that could occur during construction activities and the close proximity of surrounding residences (particularly at the new tank site), noise impacts during construction are considered potentially significant.	**NOISE-1** LACSD and CLAWA will ensure that construction activities occur on weekdays only between the hours of 7 a.m. and 7 p.m. Construction will not occur on weekends or legal holidays. **NOISE-2** LACSD and CLAWA will ensure that all construction equipment is fitted to the extent possible with sound reducing mufflers and other equipment. The equipment shall be maintained according to the manufacturer's specifications in order to minimize sound levels. **NOISE-3** LACSD and CLAWA will ensure that equipment is positioned and operated with the intent of minimizing the noise created. Where feasible, equipment will be not operated simultaneously. **NOISE-4** LACSD and CLAWA will ensure that residents are given notice of the expected duration of noise generation and other disruption during the course of the Project.	**Responsibility:** LACSD and CLAWA are responsible for implementing and verifying that implementation is completed. **Timing:** Prior to and during construction.

Table 1. Mitigation Monitoring and Reporting Program
(continued)

Impact	*Adopted Mitigation Measures*	*Monitoring Program*
TRANSPORTATION/TRAFFIC		
If Project construction traffic were to be concentrated during peak traffic hours it could contribute to traffic congestion on State Highway 18, a potentially significant impact.	**TRANS-1** LACSD and CLAWA will ensure that no trucks used as part of construction shall exceed a kingpin to rear-axle distance of 38 feet.	**Responsibility:** LACSD and CLAWA are responsible for implementing and verifying that implementation is completed. **Timing:** Prior to and during construction.
During Project construction just over 1 mile of pipeline will be laid within or adjacent to roadways. During construction it will be necessary to close one lane of Rim of the World Drive, Burnt Mill Road, and Crest Fern Drive. Lane closures and the encroachment of construction equipment into roadways could result in traffic hazards and would decrease access to homes and businesses accessed from these roads, a potentially significant impact. In addition, due the size of construction vehicles and the design of State Highway 173, use of this route would also be a potentially significant impact.	**TRANS-2** LACSD and CLAWA will direct the contractor to limit the use of State Highway 173 between State Highway 189 and North Bay Road as a haul route. LACSD and CLAWA will direct the contractor to prepare and implement a construction traffic management plan that defines how traffic operations will be managed and maintained on roadways during each phase of construction, including any detours, signage, lane closures, or utility relocation work. The construction traffic management plan will specify necessary lane closures, detours, any signage/lighting, flaggers, and other traffic control measures needed to avoid accidents and provide access to residents and emergency response vehicles during construction. **TRANS-3** LACSD and CLAWA will require that the construction contractor provide weekly updates regarding construction schedules and partial road closures to the local police and fire jurisdiction as well as the United States Postal Service, school bus operators, and refuse companies.	**Responsibility:** LACSD and CLAWA are responsible for implementing and verifying that implementation is completed. **Timing:** Prior to and during construction.

Table 1. Mitigation Monitoring and Reporting Program
(continued)

Impact	*Adopted Mitigation Measures*	*Monitoring Program*
TRANSPORTATION/TRAFFIC		
	TRANS-4 LACSD and CLAWA will require the construction contractor to notify all residents and businesses whose homes and businesses are accessed via the affected portions of Rim of the World Drive, Burnt Mill Road, and Crest Fern Drive a minimum of one week before beginning construction. **TRANS-5** LACSD and CLAWA will require that the construction contractor post warning signs and construct barriers to prevent pedestrians and vehicles from inadvertently entering construction areas.	
UTILITIES		
Although currently there is no indication that the soils at the tank site are contaminated, in the absence of soil testing, impacts associated with the disposal of excavated soils (if an underground tank is approved for construction) are considered potentially significant.	**UTIL-1** LACSD will ensure that excavated soil will be tested as required by an accepting facility to rule out the presence of contaminants prior to disposal.	**Responsibility:** LACSD is responsible for implementing and verifying that implementation is completed. **Timing:** During construction.

RESOLUTION NO. 2005-04

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT APPROVING A MITIGATED NEGATIVE DECLARATION FOR THE STATE WATER PROJECT WATER TRANSFER AND INFRASTRUCTURE IMPROVEMENTS PROJECT, ADOPTING A MITIGATION MONITORING AND REPORTING PLAN, AND APPROVING THE STATE WATER PROJECT WATER TRANSFER

WHEREAS, it is the goal of the Board of Directors of the Lake Arrowhead Community Services District ("LACSD") to reduce, and ultimately eliminate, LACSD's reliance on water from Lake Arrowhead; and

WHEREAS, to facilitate this goal, LACSD, Crestline-Lake Arrowhead Water Agency ("CLAWA") and San Bernardino Valley Municipal Water District ("SBVMWD") have developed a plan and draft agreement ("Principles of Agreements") to cooperatively implement a project for this purpose; and

WHEREAS, the Principles of Agreement include a one-time purchase of up to a total of 10,000 AF of water ("Purchased Water") by CLAWA from SBVMWD and a 10 to 15-year agreement to take delivery of the Purchased Water, in annual increments, at CLAWA's State Water Project ("SWP") turnout in Lake Silverwood (hereinafter, the "Project"); and

WHEREAS, the Principles of Agreement have been memorialized in a final agreement between the parties; and

WHEREAS, the Board of Directors of LACSD, in conjunction with CLAWA as co-lead agencies, has determined that the Project is considered a project pursuant to the requirements of the California Environmental Quality Act (Public Resources Code section 21000 et seq.) ("CEQA") and prepared an initial study to determine potential environmental impacts; and

WHEREAS, on the basis of the initial study, which indicated that all potential environmental impacts from the Project were less than significant or could be mitigated to a level of insignificance, LACSD staff, along with its co-lead agency CLAWA, determined that a Mitigated Negative Declaration ("MND") should be prepared; and

WHEREAS, the MND was prepared pursuant to CEQA, the State CEQA Guidelines and LACSD and CLAWA's Local CEQA Guidelines; and

WHEREAS, the MND was made available to the public and all interested agencies for review and comment by publishing notice of its availability in the San Bernardino County Sun on December 10, 2004 and the Mountain News on December 9, 2004, newspapers of general

circulation, and by submission to the State Clearinghouse for review on and about December 10, 2004, and circulated for a period of 30 days pursuant to State CEQA Guidelines; and

WHEREAS, a public meeting of the Board of Directors to consider the MND, the initial study, a mitigation monitoring and reporting plan and the Project was held on June 14, 2005; and

WHEREAS, the Board of Directors received, considered and responded to comments, including oral comments received from the public and other interested agencies on the MND; and

WHEREAS, the Board of Directors has carefully reviewed the MND and all other relevant information contained in the record regarding the Project; and

WHEREAS, all other legal prerequisites to the adoption of this Resolution have occurred.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Lake Arrowhead Community Services District as follows:

SECTION 1. Compliance with the California Environmental Quality Act. As co-lead agency for the Project, the Board of Directors has reviewed and considered the information contained in the Mitigated Negative Declaration, the initial study, and the administrative record for the Project, including all oral and written comments received during the comment period. The Board of Directors finds that the Mitigated Negative Declaration and initial study contain a complete and accurate reporting of the environmental impacts associated with the Project. The Board of Directors finds that the Mitigated Negative Declaration, initial study and administrative record have been completed in compliance with CEQA, the State CEQA Guidelines, and LACSD's Local CEQA Guidelines. The Board of Directors further finds that all potential impacts in the final agreement have been fully analyzed in the Mitigated Negative Declaration.

SECTION 2. Findings on Environmental Impacts. Based on the Mitigated Negative Declaration, the initial study, and the administrative record including all written and oral evidence presented to the Board of Directors, the Board of Directors finds that all environmental impacts of the Project are either insignificant or can be mitigated to a level of insignificance pursuant to the mitigation measures outlined in the Mitigated Negative Declaration and the initial study. The Board of Directors further finds that there is no substantial evidence in the administrative record supporting a fair argument that the Project may result in significant environmental impacts. The Board of Directors finds that the Mitigated Negative Declaration contains a complete, objective and accurate reporting of the environmental impacts associated with the Project and reflects the independent judgment of the Lake Arrowhead Community Services District.

SECTION 3. Adoption of Mitigated Negative Declaration. The Board of Directors hereby approves and adopts the Mitigated Negative Declaration

SECTION 4. Adoption of Mitigation Monitoring and Reporting Program. The Board of Directors hereby approves and adopts the Mitigation Monitoring and Reporting Program prepared for the Project.

SECTION 5. Approval of Project. The Board of Directors hereby approves the Project.

SECTION 6. Notice of Determination. The Board of Directors directs staff to file a Notice of Determination with the San Bernardino County Clerk within five (5) working days of Project approval by the Board of Directors for LACSD.

SECTION 7. Custodian of Records. The documents and materials that constitute the record of proceedings on which these findings have been based are located at 28200 State Highway 189, Building O3, Suite 160, Lake Arrowhead, California The custodian for these records is the General Manager of the Lake Arrowhead Community Services District

SECTION 7. Execution of Resolution. The President of the Board of Directors shall sign this resolution and the Secretary of the Board of Directors shall attest and certify to the passage and adoption thereof.

ADOPTED by the Board of Directors of the Lake Arrowhead Community Services District at a regular meeting held on June 28, 2005, by the following votes:

AYES:
NOES:
ABSTENTIONS:
ABSENT:

LAKE ARROWHEAD COMMUNITY
SERVICES DISTRICT

_____
Bruce Field, President of the Board of Directors

of the Lake Arrowhead Community Services District

ATTEST:

_____
P.M. McGonigle, Secretary of the
Lake Arrowhead Community Services
District

(SEAL)

Appendix F
District Disaster Preparedness Plan
and
Wild Land Fire Policy

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT

POLICY AND PROCEDURES

WILD LAND FIRE POLICY

Introduction

This document describes the Lake Arrowhead Community Services Districts Wild Land Fire Policy.

Purpose and Scope

Wild fires are a fact of life in the San Bernardino mountain community of Lake Arrowhead. This document focuses on the water Districts role in providing water to fight a wild fire. The following plan is intended to be a guide for District personnel working during a fire event.

BACKGROUND INFORMATION

The Lake Arrowhead Community Services District is located in an alpine forest. The topography of the area combined with narrow winding roads and the dense vegetation make the area dangerous during wild fire season. The District has the responsibility to supply water for fire protection inside its bounties and will need to be staffed during any fire emergency on the mountain. Safety of its personnel is the highest concern to the District. To meet both the safety priority and the water supply needs during a fire emergency the following plan has been written and reviewed to give you guidelines on what to do if you are working around a fire area.

On October 20, 1991, a major wildland/urban interface fire burned out of control in the Oakland Hills area of California. Burning embers carried by high wind from the perimeter of a small duff fire ignited overgrown

vegetation and led to the further ignition of tree crowns and combustible construction materials of adjacent homes. The fire burned for only four days, during that time the fire killed 25 people, injured 150 others, destroyed nearly 2,449 single-family dwellings and 437 apartment units, burned 1,600 acres, and did an estimated 1.5 billion in damage.

The Oakland Hill Fire is a good study for this District; the area is in many ways just like this area. The area's topography is much like the District's with steep slopes of 30 percent and narrow winding roads. The Oakland water system in the area of the fire had eleven pressure zones with storage of 400,000 to one million gallons of water. Pumping stations linked the reservoirs, and the draw down from the reservoirs activated them. However there was no auxiliary power supply.

Eight pumping stations and ten reservoirs were lost in the first hour of the fire due the power disruptions to the pumping stations. By 5 p.m. on the first day of the fire, 10 key reservoirs were dry. It is estimated that more than 20 million gallons of water were used to extinguish this fire.

On October 26, 2003 a grass fire burned out of control in Old Waterman Canyon. The fire named the "Old Fire" burned out of control for over ten days, burning over ninety thousand acres of land. The fire burned through power lines causing a power failure that lasted thirteen days in the District. District staff manned the treatment facilities twenty four hours a day during the emergency period.

Several lessons were learned during the Old Fire and from the Oakland Hills Fire that have been addressed in this policy.

Updated: June 2005

PRE EVENT PREPARATION

Identification of risks

The District's topography requires the use of eleven separate pressure zones to deliver water to all of its service area. Seventeen pump stations maintain both pressure and water flow service these areas. The pumps in these stations are all powered using electricity to drive the pumps. Without power,

water flow and pressure is the area affected will start to be impacted. The District has eleven back up power generators to move water to the upper reaches of the gravity zones. This will supply the majority of the District with water during a region wide power failure. There will be some areas that will run low or out of water during a prolong power outage.
The areas that do not have back up power supply are the Lakewood tract, the Summit Pump House, the Castlegate Pump House, the Zion Pump house and the Polar Pump House.

Many of the District's pump station are located on narrow roads making access difficult with any large vehicle. This presents problems with transporting a generator unit into the area during any emergency. Open access and regress would need to be addressed before committing any personnel or equipment to these areas during any fire emergency.

Emergency supplies

The District maintains a supply of bottled water at both of the wastewater treatment plants. This water can be distributed to other locations as needed for drinking water. All District facilities maintain a stock of non-perishable foods for feeding staff in the event of natural disasters.

Emergency equipment

The District has several pieces of equipment that can be used during an emergency situation. A trailer mounted 6" trash pump capable of pumping 1,500 gallons per minute, a 2,000-gallon water truck, a 3,500-gallon tank truck, and 1,000 gallon and 700 gallon hydro-jet trucks. This equipment could all be used to supply water on an emergency basis.

Facilities fire safety

The District's facilities are maintained with fire safety in mind. Flammable materials are stored in proper containers and vegetation is kept green or is cut away from the buildings. The District Staff routinely inspects the facilities for safety problems and makes corrections as they are found. The Treatment Facilities are constructed of material that will help prevent combustion during a wildfire incident. The Wastewater plants have an

outside irrigation system that can be used to prevent the spread of fire into the plant grounds.

EVACUATION AND WORK PLAN

Routes out of area

A wildfire evacuation plan must be flexible due to the nature of a wildfire. Weather conditions, the size of the fire, topography and location of the fuel burning will all have a marked effect on how we will evacuate. The time to evacuate is before the fire has reached your area. This means that if a fire has developed into a large wildfire we must keep track of its movements. Be prepared to evacuate facilities and ready the facilities for the oncoming fire.

The best way to ready any facility for a wildfire is the pre fire maintenance we already are doing. Keep the area clear of combustible material and the grounds neat. Before evacuating close all doors and windows. This will keep flying ash and embers out of the structure. Window blinds should be lowered and closed to reduce the radiant heat build up as the fire approaches.

Before leaving the work site make sure you have checked out with your supervisor, they need to account for all personnel present at the site before the fire evacuation. Know were you are going before you leave and report it to your supervisor. Let the supervisor know how to get in touch with you once you have reached your destination.

Have several routes planed for leaving the area. The local roads are narrow and will become very congested with people trying to get out while fire equipment is trying to get in. Routes that can get you to the main state highways with out going through the Village or Blue Jay will be the best. (See map attached)

Shelter in place

The need to "Shelter in Place" may be the only option we have if the fire closes off evacuation routs. Shelter in place is just what it sounds like, stay

where you are and take shelter. This is not a recommended alternative to a safe evacuation plan. You must choose a safe location to shelter; a building that cannot burn and protects you from heat is the best location. The Grass Valley Plant would be the safest building (masonry block with a concrete roof) the District has for a shelter in a firestorm. Any building that is used to shelter in must be able to withstand the heat and flames of the fire without combusting. The building must have a large cleared area around it and must have noncombustible roofing material. Windows of the building must be shut and should be covered with a material that is heat resistant.
When sheltering in place be, sure to let officials know were you are and that you can not evacuate. As soon as the firestorm passes contact fire officials let them know the situation; report any injuries and fire conditions around the building.

WORK STAFF DURING FIRE EVENT

Minimum staffing required

The District plans to safely staff the water plants during the fire event. Each plant can monitor and control the outlining pump houses. This will be important information for the emergency personnel fighting any large fire in the area. Phones lines need to be kept open to the Emergency Operations Center (EOC) to allow the Incident Commander (IC) to gather any information he may need. Personnel staffing the plants must maintain contact with emergency personnel to stay informed of the fire situation and evacuation plans for their own safety.

Due to the safety concerns during any emergency incident the District personnel will work in a minimum pairing of two. During this incident you may be assigned to any District department based of the need of the District.

Hooking up electrical equipment will require several employees to keep the time frame in the field to a minimum. Because this effort requires two vehicles a minimum of four employees are required for this operation.

The locations with SCADA control will remained staffed around the clock during the incident. All systems will be consistently monitored and up dates will be relayed as requested by the EOC. This staffing pattern will require a minimum of six employees to cover the District treatment facilities.

Operations staff shall maintain the required Department of Health Services and the Regional Water Quality Control Boards monitoring analysis. All plant operations require two operators at each facility during the emergency. Samples will be taken to the District Laboratory or an outside laboratory to ensure the drinking water compliance requirements.

How and when to report

All District employees need to check with their supervisors to get assignment during this type of emergency. Employees are expected to either report to work, if safe to do so or contact their supervisor using the District's phone system. The District requires all employees to report or notify the district of their status during any emergency. Once you have been notified of an emergency and you have taken care of the safety needs of your family the District needs you to check in.

Working in a fire zone

The District will be working closely with Fire officials during any major wildfire near or in the District's boundaries. They will require actuate up to date information on the status of the District water supply abilities. To provide them with this information and to manage the District's water supply requirements during the incident the District's facilities will require round the clock staffing.

Maximum workday

The stress caused by working long hours can lead to poor decisions being made and increase the likely hood of injuries. To avoid this we will go to a maximum twelve-hour workday as soon as possible during the incident. Employees who cannot safely make it back home will sleep in areas away from the actual work process.

COMMUNICATIONS

Employee responsibility

Employees working in the District during the incident will maintain contact with their supervisors at all times when responding to a call notify your supervisor or District Base that you on in route to a call at a given address. When you arrive you again notify Base that you are on scene. When you have finished the task you will call in and get a new assignment or be told to report back to your assigned location. This reporting procedure will be logged during any emergency event for the safety of all District staff. Make sure you understand all directions given and someone always knows your location.

Car to car radio system

The District's radio relay station may be out of service during any emergency event. All of the District's radios have a car-to-car mode; this is either Mode 2 or Mode B on the front of the radio. If the relay station is out use this method of communication.

HOUSING STAFF AT THE WORK SITE

Meals

Due to the risks involved with traveling in a wild land fire area employees may be required to remain at District facilities. Each of the facilities are to be stocked with enough supplies to feed the employees, assigned for three days. Each of the facilities has stand by power units and cooking facilities.

Sleeping areas

During an emergency operation period, keeping personnel fit for duty will require rest periods for each individual. The facilities will set up rest areas to allow staff to sleep in quiet areas away from the work area. The Treatment Plants all store chlorine gas; the sleep areas must remain as far from these locations as possible. Each facility will maintain enough cots and sleeping material to house half of the assigned staff.

DISTRICT RESOURCES

The District has two water treatment facilities capable of producing a combined 4800 gallons a minute (7MGD) of potable water. The Cedar Glen Plant has back up power facilities in place. This facility produces 1400 gallons per minute (2 MGD). The Bernina Facility will require the Mechanical staff contacting a supplier and connecting generators into the Plant's power system. The water is pumped from the plants into storage tanks in the lower pressure zone (Zone One) of the District. This zone has a storage capacity of four million gallons. There are five pump houses that pump from Zone One to the District's Zone Two reservoir sites. Zone Two has a storage capacity of three million gallons in nine different sites. Zone Two pumps into pressure Zone Three consisting of several small hydro tanks. The hydro tanks storage capacity is between 2,500 and 3,000 gallons. There is one Zone Four reservoir site near the top of the Cedar Ridge Estates. This tank has a storage capacity of 300,000 gallons.
The water pumping facilities all are supplied power by Southern California Edison for their operation. Nine of the pump houses Amador, Banff, Brentwood, Cedar Glen, Cedar Ridge, Kodiak, Potomac, Shasta and Spyglass have emergency back up generators. In previous power failures some of the hydro zones have lost pressure and water service. During fire conditions this would keep the fire department from making a defensive stand in these areas. The District's IC will have the responsibility of maintaining a log of fueling and equipment checks at these sites during the emergency.

Each reservoir generally has a hydrant from the small hydro tank and gravity feed hydrant from the reservoir its self. Gravity flow of the existing water in the tank will not be affected by power outages.

The District has two mobile generator units that can supply electrical power to the pump houses in the event of power loss. The Pump Houses have a "quick connect" box to allow for easy hook up of the generator units. This hook up process still takes 30-45 minutes for the connection. This time frame would prevent District personnel from supplying power to a Pump House in a fire zone.

The District has several pieces of equipment that can be used during an emergency situation. A trailer mounted 6" trash pump capable of pumping 1,500 gallons per minute, a 2,000-gallon water truck, a 3,500-gallon tank

truck, and 1,000 gallon and 700 gallon hydro-jet trucks. This equipment could all be used to supply water on an emergency basis.

The 2,000-gallon water truck that can be used to wet down a large area before the fire can burn through. This would only be done with the knowledge of fire personnel and only with trained staff.

APPENDIX A
District Water Pumping Locations

1. Amador	26564 Amador Ln.
2. Annidale	250 Brentwood Dr.
3. Banff	29083 Banff Dr.
4. Bernina	27166 Bernina Dr.
5. Brentwood	386 Brentwood Dr.
6. Castlegate	384 Terrace Rd.
7. Cedar Ridge	551 Cumberland Dr.
8. Cumberland	201N. Cumberland Dr.
9. Kodiak	1298 Kodiak Dr.
10.Lakewood	
11.Matterhorn	27380 Matterhorn Dr.
12.Mittry	364 Mittry Ln.
13.North Shore	1105 Hospital Rd.
14.Polar	27755 Polar Dr.
15.Potomac	28923 Potomac
16.Shasta	242 Shasta Dr
17.Spyglass	26215 Spyglass
18.Summit	330 Summit Rd.
19.Wabash	28635 Stonehill
20.Zion	28700 Zion Dr.

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT

STANDARD OPERATING PROCEDURES

DISASTER PREPAREDNESS PLAN

The following procedures are to be used by all District personnel in the event of a disaster. In the event of a disaster, all personnel have a responsibility to respond to work and provide assistance to protect and repair facilities, distribution/collection lines, etc. In addition, as employees of a public agency, District personnel have a responsibility to assist other local agencies and the community at large. This later responsibility is coordinated through the Emergency Operations Center (EOC) and the Mountains Mutual Aid Association.

The following is a summary of topics discussed in this SOP:

1. Which Personnel are to Respond
2. When and How Personnel are to Respond
3. Evaluation of Damage, and Repair
4. District's Involvement with the EOC.
5. Preparing the District for Disaster
6. Consideration for Employees and their Families
7. Chlorine Gas Leaks
8. Fires
9. Chemical Spills
10. Utility Failures
11. Earthquakes

In addition, appendices are presented for:

A. Cl_2 Gas Leak Response Procedures
B. Cl_2 Gas Leak Repair and Detection Procedures
C. Disaster Training

1. WHICH PERSONNEL ARE TO RESPOND

In the event a disaster strikes (such as an earthquake of damaging proportions or flooding) **all** employees have a responsibility to respond. What this means is discussed below.

NOTE: There are considerations that must be made for an employee's family and home. These considerations are discussed in Section 6 of this SOP.

The particulars of response are discussed below.

2. WHEN AND HOW PERSONNEL ARE TO RESPOND

Assuming your home and family are secure, and, obviously, assuming you are uninjured, all employees are expected to either phone in or respond to their Department. If you can not reach your Supervisor or Department Head, leave a message of the department's voice mail stating were you can be reached and when you will be in to help.

a) Major Disaster

If the disaster has resulted in major damage, all District employees should make every effort to phone in or respond to their Department directly.

It is possible that phone lines will be damaged or jammed. In that case, the only way to respond will be to come to your Department.

b) Moderate Disaster

In the event of a moderate disaster, where no major damage has occurred, all personnel must either contact their supervisor or respond directly to their Department, if at all possible.

The treatment Plants could potentially become a hazardous location if a chlorine leak was to occur. Therefore, use caution when responding to the treatment facilities. **Never enter an area where a chlorine leak is expected, by yourself.**
At the Bernina Plant respond to the area between the Clarifier Building and the Pump House. Check the windsock to make sure the wind will not carry the Chlorine gas to your area. There is an air pack

stored in the Clarifier Building if the air packs in the Operations Building can not be reached.

At the Grass Valley Facility meet at the Flagpole at the top of the plant. A spare pack is stored in the plant lab for emergency use.

3. EVALUATION OF DAMAGE, AND REPAIR OF DISTRICT FACILITIES

The first responsibility of personnel responding to their Department, will be to evaluate damage to facilities (treatment plants, pump stations, lift stations, water tanks, water lines, sewer lines, etc.) and to report any damage to their Supervisor or Department Head.

Equally urgent is to contact the Emergency Operations Center (EOC) by either phone or radio (CB). The purpose of this contact is to first, report any damage that the District may have incurred, and second, to determine if the presence of the District staff EOC member is necessary at the EOC. The reporting to the EOC should be kept brief and be through the highest ranking employee available. This second item is discussed further in Section 4 below.

One individual will be designated to monitor calls and to communicate with District staff in the field and the EOC if necessary.

Using teams of two, District facilities will be evaluated as follows:

TEAM	FACILITIES
Operations	Plant Sites Pump Stations Lift Stations Water Storage Reservoirs
Maintenance	Sewer Lines Water Lines

One Department might need the assistance of another.

Evaluations should parallel a daily check of the facilities. Obvious structural damage should be noted, and the proper equipment operation should be

confirmed. Do not put yourself in danger by entering a building that is not structurally sound. Be careful of areas that have standing water because live power lines may also be down. Even if power is down, it may come back on unexpectedly.

Major damage endangering the community should be radioed in immediately. If outside assistance is required, this information will be relayed to the EOC so that appropriate action may be taken.

Following an initial evaluation, staff members on site, must rank the damaged areas and develop a priority listing. Personnel and resources, as available, will be deployed to correct the damage in the order ranked.

4. DISTRICT'S INVOLVEMENT WITH THE EOC.

In the event of a disaster, District personnel have a role not only in protecting and repairing District facilities, but also in assisting other public agencies and the community at large.

District personnel can assist other local agencies in many ways. While in the field evaluating damage, District personnel can notify other agencies of problems under their jurisdiction via the Emergency Operations Center (EOC). District personnel may also be called upon to assist other agencies.

5. PREPARING EACH FACILITY FOR DISASTER

All District facilities must be prepared for fire, earthquake, floods and vandalism. To the extent possible, the District must also be able to supply employees with their basic needs while the disaster is ongoing. Items such as food, water, clothing, cooking/eating utensils, and bedding will be kept on site at each facility.

a) "Proofing" the District's Facilities

Fire "proofing" each facility involves good housekeeping, good preventative maintenance and common sense. Good housekeeping will assist in removing flammable materials from ignition sources.

Good preventative maintenance greatly reduces the possibility of fire due to an electrical short or flammable fluid leak.

Earthquake "proofing" includes strapping down or otherwise securing items, which may topple in the event of an earthquake. Some of these items might be shelving, water heaters, laboratory equipment, and gas cylinders and associated equipment.

Vandal "proofing" is accomplished by making sensitive areas inaccessible. Locking doors and gates and generally maintaining security at all facilities is the best away of accomplishing this.

b) **Ability to Sustain Crew Three Days Without Incoming Provisions**

Throughout the District, there will be "Emergency Provisions" that will contain food, water and other necessary items. See facility maps for locations. Normally, these provisions should sustain the District crews for about three days.

6. THE DISTRICT'S CONSIDERATION FOR EMPLOYEES AND THEIR FAMILIES

If after a Disaster your home is uninhabitable, or not secure, bring your family with you when responding to the your Department. The District, through the EOC will have the most up to date information regarding shelters, food and water supplies, medical services, etc. The District will assist in seeing that your family members are taken to appropriate locations and receive appropriate care.

7. CHLORINE GAS LEAKS

This section discusses procedures to be used when dealing with CL_2 gas handling activities or leaks.
The following is a listing of activities, problems, and emergencies involving CL_2 handling:

a) Cylinder Loading and Unloading
b) Changing CL_2 Cylinders
c) Leak from Pigtail or Pipe

d) Leak from Pigtail Threads
e) Leak from Cylinder Valve Packing Nut
f) Leak from Regulator Manifold
g) Leak from Container Valve Seat
h) Leak from Container Valve Inlet Threads
i) Leak due to Container Valve Broken Out
j) Leak due to Container Valve Blown Out
k) Leak due to Fusible Plug Blown Out
l) Leak from Fusible Plug Threads
m) Leak through Fusible Metal of Plug
n) Leak from Container Side Wall Rupture

For each type of activity/problem/emergency see the CL_2 Leak Response for appropriate notification and evacuation response. (Appendix A)

For a CL_2 Leak repair and detection, as relates to the above activities / problems / emergencies, see Appendix B.

For CL_2 Leak training, as relates to the above activities / problems / emergencies, see Appendix C.

8. FIRE

Fires that may occur at any facility are classified as follows:

a) Small Local Fires
b) Large Fires
c) Extensive Fire or Explosion
d) Wild Land Fire

a) Small Local Fires

Small Local Fires should be extinguished immediately. They usually do not require notification other than reporting the incident to a supervisor after the fact.

If a small local fire develops into a large fire, see below.

b) **Large Fire**

If a Large fire cannot be extinguished immediately, contact the fire department using 9-1-1 and follow the procedures indicated in the Fire Safety SOP.

Evacuate people from the immediate area and notify the appropriate individuals in other facilities to standby in the event those facilities need to be evacuated.

c) **Extensive Fire or Explosion**

Immediately contact the Fire Department using 9-1-1 and follow the procedures indicated in the Fire Safety SOP.

Alert all employees in the area to evacuate. All personnel will evacuate to a designated area or as directed by the fire department.

d) **Wild Land Fire**

Report any fire spotted in the forest area using 9-1-1. Never assume someone else has called it in.

Prepare the facilities for evacuation before the fire gets too close to the facilities. Stay informed of the fire fighting efforts in the area; do not allow yourself to get trapped by the fire or the fire fighting equipment.

Each facility has its own evacuation plan. Follow that plan and stay in contact with other employees in the area.

For more information on In-house Fire Response, see the Fire Safety SOP.

9. CHEMICAL SPILLS OR LEAKS

Treatment Plants store some hazardous chemicals in large quantities. Should a large leak or a rupture develop in a holding tank, the following corrective actions are to be taken:

a) Contain the spill with sandbags or dirt if any secondary containment fails.

b) Report spill to your Supervisor or Department Head.

c) Pump standing solution into temporary holding tanks, if possible or necessary.

d) Dilute spill area with water if possible, and if it can be done without spreading the original spill.

e) Repair tank if possible.

10. UTILITY FAILURES

a) Power Outages, Facilities With Standby Generators

The wastewater treatment plants and most lift stations have standby generators that will handle normal operations of all equipment.

Emergency power generators are checked for proper operation during preventative maintenance. If a generator is found to be inoperative during maintenance, and if repairs can not be made immediately, a rental generator must be brought on site until repairs are made. The following discussion applies to the rare case when a generator fails to operate during an actual power outage.

If the generator fails and power is out, evaluate the situation carefully:

1) If the power outage length is expected to be greater than a facility's wet well and collection system detention time, (threatening overflow) then a vacuum truck should be brought in, if this is a feasible remedy.
2) If the stand-by generator cannot be repaired immediately, make arrangements to bring in a rental generator as soon as possible if this will minimize raw sewage overflow and/or treatment process bypassing.

3) Leave this unit on-site until the stand-by generator is repaired.

b) **Power Outages, Facilities Without Standby Generators**

The water treatment plant and most pump stations do not have standby generators or emergency pumping capability. If a power outage effects these facilities, evaluate the situation carefully.

The District's priority will be to serve the maximum number of customers possible during any power failure, and to service critical areas such as medical facilities. On a case by case basis, the District will develop a strategy for providing such service.

The District will develop its strategy by first contacting Edison to determine the estimated time power will be out, then determining how much storage capacity the District has left in any one zone, as finally determining the availability of standby generators. If necessary and feasible, the District will deploy emergency power to the most critical areas.

c) **Phone Outages**

In the event of a phone outage, we have radios for communication. Many of our alarms will be out of service so we will have to make frequent checks of the pump stations and the lift stations. The District radios have the ability to be used without the radio repeater by using the, "B" or second channel.

11. EARTHQUAKES

The following steps should be taken after a strong earthquake has occurred:

a) All designated employees should either call in or come in.

b) The plants, pump stations, lift stations, water storage tanks, collection and distribution lines should be evaluated for damage immediately.

c) Make any necessary emergency repairs. Use outside help if necessary.

See Appendix F for a more complete discussion on how District personnel are to respond to such a disaster.

DISASTER PREPAREDNESS PLAN

APPENDIX A

CL_2 GAS LEAK RESPONSE PROCEDURES

The following procedures are to be used by personnel for notifying: other staff, emergency response personnel, and the public of a possible or imminent CL_2 danger, and evacuating the plant and the surrounding area if necessary.

The following is discussed in this appendix:

1. How to respond
2. How to determine the rating of a leak,
3. Response procedures when the plant is fully staffed,
4. Response procedures when only one Operator is on duty, or plant is unmanned,
5. Plant notification procedures, and
6. Outside emergency response summary.

1. HOW TO RESPOND

Initial response to a CL_2 gas leak is determined by the staffing situation of the plant.

If the plant is fully staffed, then the full response procedures as described in this appendix may be followed from the onset.

If there is only one Operator on duty, then assistance must be obtained before any rudimentary investigation is made or corrective action is taken. Once a rating is determined, appropriate help may be brought in, and then the full response procedures may be followed.
If the plant is unmanned, then special provisions must be made for initial personnel, Police, or Fire response. Once personnel are on site, a rating determination may be made and appropriate help may be brought in. Then the full response procedures may be followed.

2. DETERMINING THE RATING OF A LEAK

A chlorine gas leak emergency condition may be determined by observation of the problem or response to an alarm.

If an accident such as dropping and/or damaging a cylinder, knocking a valve off, or breaking off a pig tail occurs, leave the area with haste. Commence with the appropriate notification and repair procedures.

If a gas leak is suspected either by sight, smell, or in response to a detector alarm, proceed with caution. Circumstance will dictate the most appropriate method for investigation, however the following are general precautions, which should be observed:

a) Do not investigate an area suspected of containing a gas leak without assistance from another person.

b) Never enter an area suspected of containing a gas leak without an air pack.

c) Both persons involved in investigating a gas leak should leave the area immediately upon discovery of an "A" or "B" rated leak to prepare for appropriate notification and repair procedures.

d) In responding to a gas leak alarm, assume a rating "A" condition exists until proven otherwise. Upon confirmation, advise Fire and Police Departments so that appropriate notification may be made to the adjacent neighborhood.

3. CL_2 GAS LEAK EMERGENCY RESPONSE PROCEDURES WHEN THE PLANT IS FULLY STAFFED

Emergency response procedures related to chlorine are summarized into four (4) rating categories, "A - D" ("A" being the most critical). These ratings are described below and are related to activities or problems listed in the Chlorine Leak Response Table. (Appendix A)

The following describes emergency response for each rating category, to be used when the plant is fully staffed.

a) **Rating "A"**

Rating "A" is the most serious type of response. This response relates to a problem involving a badly damaged cylinder valve, fusible plug, or container sidewall leak, which can not be contained immediately.

A rating "A" condition is determined by observing the problem directly, or responding to a chlorine detector alarm and confirming the condition. Note that a chlorine alarm should be confirmed to be due to an "A" condition before notifying Fire and Police Departments.

When a Rating "A" chlorine leak occurs, immediate notification must be made to the building to evacuate the plant and immediately to County Communications via 9-1-1, who will in turn notify Fire, Police, and/or Haz-Mat personnel.

All employees not involved in emergency response will evacuate to the designated site at the plant. This is the staging area for emergency response personnel.

Employees involved with gas leak response will coordinate with their Supervisor or Department Head. A designated employee will coordinate between the Fire, Police, and the Haz-Mat team.

b) **Rating "B"**

Rating "B" is the second most serious type of response. This response relates to a problem involving a damaged cylinder valve or fusible plug, which appears to be containable.
A Rating "B" condition is determined by observing the problem directly, or responding to a chlorine detector alarm and confirming the Rating "B" condition.

When a Rating "B" chlorine leak occurs immediate notification must be made to evacuate the plant, if necessary, and to County Communications via 9-1-1 to have fire and police to standby for the possible need to evacuate the adjacent neighborhood.

Designated gas leak response employees will don protective gear and air packs. See Appendix C for further details.

All other employees will evacuate to immediately outside the plant gate and will standby for further instructions.

Employees involved with gas leak response will coordinate with their supervisor or superintendent. A designated employee will coordinate between the District crews and Fire and Police if needed.

NOTE: A RATING "B" SITUATION CAN BECOME A RATING "A" SITUATION RAPIDLY.

c) Rating "C"

Rating "C" is a standby type of response. This response relates to a problem involving a leaking pigtail, piping, regular manifold, or cylinder valve packing nut, which can be contained with little difficulty.

When a Rating "C" chlorine leak occurs immediate notification must be made to the entire facility. Facility staff will be advised of the possible need to evacuate the plant should the condition worsen.

No one other than emergency response personnel will be allowed down into the Cl_2 area. All other plant employees not directly involved in leak repair will immediately report to plant administrative building.

When the leak is stopped and all gas has cleared, the administration building will be advised and activities will return to normal.

d) Rating "D"

Rating "D" is a courtesy notification to plant staff that chlorine cylinders are being off loaded or changed over.

In either case, prior to the activity the plant administration building must be notified, plant staff will be alerted to the situation and will be advised to stay clear of the chlorine handling area until an "all clear" indication is given.

4. RESPONSE PROCEDURES WHEN ONLY ONE OPERATOR IS ON DUTY OR PLANT IS UNMANNED

NOTE: There are specific procedures that must be followed by Fire, Police, and personnel when responding to Gas Leak alarms during unmanned or partially manned hours.

a) Need for Investigation Response Assistance

If notified of a chlorine leak alarm by the answering service during partially manned or unmanned hours, immediately contact a Supervisor, Department Head or other plant operator before responding. If a response person cannot be contacted, call County Communications via 9-1-1 and notify them of possible chlorine gas leak situation. Request Fire Department as backup. Emphasize that the extent of problem has not yet been determined.

In the event a chlorine leak occurs or is suspected when only one Operator is on duty; investigation backup must be summoned immediately.

1) If the problem is known to be an "A", "B", or "C" Rating and investigation is not necessary, call for help and initiate complete response as described in (b) below.

2) If there is a gas leak alarm, or if gas is detected by sight or smell, immediately get help before further investigating the problem.

3) If an "A" or "B" Rating leak is suspected, then get investigation assistance from the Fire Department if that is substantially quicker than waiting for another employee.

b) Investigation to Determine Rating

If while alone on duty you suspect a leak or receive a chlorine leak alarm, obtain backup before proceeding.

If safe, call for backup from a supervisor, Department Head or other trained District employee.

When backup arrives, put on air packs and investigate the problem.

Just before going into the plant, advise the District's answering service that you are responding to a Chlorine leak alarm. Tell them if you don't call back in 10 minutes, to call for emergency assistance.

If responding from home, call for backup before leaving for the Plant. Meet at the designated meeting sites, if safe. Proceed as above.

c) **Complete Response Assistance**

Once the overall rating is determined, call in help for complete response as follows:

1) Rating "A" and "B" Response

Immediate notification must be made to County Communications via 9-1-1 to have emergency services stand-by for possible appropriate notification of the adjacent neighborhood. This message will immediately be related to Fire and Police. (Note: if any other personnel are in the plant, they must be evacuated immediately).

Have the District's Answering service contact the appropriate Operations Supervisor and Operations Superintendent immediately if not already present. In addition, at least one other designated gas leak response employee must be contacted, if not already present. The emergency callout list will be used for this purpose.

The Operator will don protective gear and an air pack. When assistance arrives either from fire or other designated gas leak response personnel, closer assessment of the situation will be made, as appropriate.

Once adequate personnel are at the plant site, response procedures described for full staff response should be followed as closely as possible.

2) Rating "C" Response

Call in a second gas leak response employee if not already present.

Once the second employee arrives, notify the answering service that you are about to execute a minor gas leak repair. Tell them that if you do not report back in within a specified period of time to first call you back and then if they get no response, contact the fire department to respond.

5. PLANT NOTIFICATION

The Plant paging system will be used to alert plant employees of a need to take special precautions or evacuate the plant.

Paging system speakers are located throughout all the plants.

NOTE: There is also a dedicated chlorine alarm and lights that will be activated when chlorine detectors sense chlorine gas in the atmosphere.

6. OUTSIDE EMERGENCY RESPONSE SUMMARY

The following is a summary of response to be made by outside emergency services.

a) COUNTY COMMUNICATIONS (911)

County Communications will be called by District personnel.

Upon receipt or a chlorine leak or alarm:

1) Consult emergency callout list for names, phone numbers and/or pager numbers of response personnel.

2) Contact response person and inform them of the condition.

3) Follow response persons instructions for obtaining backup person.

4) Have Emergency Service Agencies stand-by for possible response and/or appropriate notification of the adjacent neighborhood.

b) **Fire Department**

The Fire Department will be asked to assist the District in the event of a chlorine leak. The level of involvement will be related to the magnitude of the leak. Assistance may range from standing by to appropriate notification of the adjacent neighborhood evacuation.

c) **Police Department**

The Sheriff/Police Departments involvement is limited to public notification, highway closures etc.

DISASTER PREPAREDNESS PLAN

APPENDIX B

CHLORINE LEAK REPAIR AND DETECTION PROCEDURES

The following procedures are to be used by personnel for executing leak repairs and for detecting the extent of a chlorine gas cloud following a chlorine leak emergency.

1. GAS LEAK REPAIR PROCEDURES

For minor, Rating "C", leaks and Rating "D" responses follow the instructions indicated in the Hazardous Material Handling Safety SOP.

For major, Rating "A "and "B" Leaks, follow the instructions in the Chlorine Institute Emergency Kit "A" and "B" Manuals as appropriate. The Emergency Kit equipment will be required to contain most Rating "A" and "B" emergency leaks.

The Emergency Kit instruction manuals appears in the Hazardous Material Handling Safety SOP.

2. GAS LEAK DETECTION PROCEDURES

Two types of chlorine detection devices are used.

Fixed equipment is used to detect leaks within the cylinder storage buildings and chlorinator rooms. These detectors are used for initiating initial response as discussed in Appendix B.

Bottles of ammonium hydroxide are used to detect the extent of a chlorine gas cloud, if appropriate.

3. DESIGNATED GAS LEAK RESPONSE PERSONNEL

The following is a listing, by job classification of designated gas leak response personnel:

TYPE OF RESPONSE	DESIGNATED EMPLOYEE
Response Director	Operations Superintendent, Operations Supervisor or other designated employee.
Leak Repair	All Operations Department Personnel

DISASTER PREPAREDNESS PLAN

APPENDIX C

DISASTER TRAINING

Personnel will be trained and will periodically drill disaster response procedures. Training and drills will be as follows:

1. Rating "A" and "B" Gas Leak Repair
2. Rating "A" and "B" Gas Leak Evacuation
3. Extensive Fire or Explosion Evacuation

1. RATING "A" AND "B" GAS LEAK REPAIRS

Once each quarter designated gas leak response personnel will practice various types of leak repair. This repair will be performed in complete protective clothing and SCBA equipment.

2. RATING "A" AND "B" GAS LEAK EVACUATION

Twice each year, once with the fire and police departments, all employees will participate in a simulated gas leak response / evacuation exercise.

Gas leak response personnel, and the response director will all actively play out their assigned rolls. (Along with fire and police personnel if applicable.) Other personnel will practice evacuation.

3. EXTENSIVE FIRE OR EXPLOSION EVACUATION

Twice each year, once with the Fire Department, all employees will participate in a simulated extensive fire or explosion evacuation exercise.

At this time other fire response activities will be practiced. See the Fire Safety SOP, for training.

4. EARTHQUAKE TRAINING

At least once per year employees shall participate in an Earthquake Drill.

Appendix G
Ordinance 58

ORDINANCE NO. 58

AN ORDINANCE OF THE BOARD OF DIRECTORS OF THE LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA

THE WATER CONSERVATION POLICY OF THE LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT EFFECTIVE JUNE 1, 2004

This Ordinance shall be known as the Water Conservation Policy of the Lake Arrowhead Community Services District.

WHEREAS, it is hereby declared that because of the conditions prevailing in the Lake Arrowhead Community where the community is dependent for the majority of its water supply on water from Lake Arrowhead and additionally that Lake Arrowhead itself is a vital factor in the community's quality of life and economic well-being; the Board of Directors of the Lake Arrowhead Community Services District (District), having adopted a policy to reduce and ultimately eliminate its reliance on the lake as its sole source of water supply that requires the water resources available to the community be put to the maximum beneficial use to the fullest extent possible and that water waste, unreasonable use or unreasonable method of use be prevented, and the conservation of water is to be exercised with a view to the interests of the District's customers.

WHEREAS, the three purposes of this Ordinance are, first, to provide for mandatory water conservation under the declaration of a drought condition in order to minimize the effect of a shortage of water to the Customers of the District. Second, by means of this Ordinance, to adopt provisions that will change the water-use habits of Customers to significantly reduce the consumption of water for the long term, thereby extending the available water required for the Customers of the District while reducing the hardship of the District and the general public to the greatest extent possible. And Third, by means of this Ordinance, to consolidate all of the water conservation policies of the District in one Ordinance.

WHEREAS, this Ordinance is adopted pursuant to: (a) Water Code Section 350 et seq. which authorizes the District to declare a Drought Stage condition and authorizes the adoption of regulations and restrictions on the delivery and consumption of water; and (b) Water Code Sections 375 et seq. and 1009 which both authorize the District to adopt a water conservation program to reduce the quantity of water in order to conserve the District's water supply.

WHEREAS, this Ordinance shall be effective on June 1, 2004. Within 10 days after its adoption, this Ordinance shall be published in the local newspaper. This Ordinance was introduced in a meeting of the Board of Directors held on April 27, 2004, following a public hearing, notice of which was published in the local newspaper once a week for two successive weeks on April 15, 2004 and April 22, 2004. Upon the effective date of this Ordinance, this

Ordinance shall supercede and otherwise have control over the following ordinances: Ordinance Numbers 48, 49, 51, 52, and 53 ("Previous Ordinances"). Upon the effective date of this Ordinance the previous ordinances shall be of no further force or effect.

The Board of Directors of the Lake Arrowhead Community Services District does hereby ordain as follows:

SECTION 1
DEFINITIONS

The following words and phrases, whenever used in this Ordinance, shall be construed as defined in this Section unless from the context a different meaning is intended, or unless a different meaning is specifically defined within individual Sections of this Ordinance:

a. "Base" means the amount of water used on a Customer's premises during the corresponding billing period in 2002. Any Customer who was not a Customer on the premises for which service was billed by the District during the Base period or in the case of new construction, shall be assigned a Base according to the water budget method described in Section 9 subsection C. The District shall have the further discretion to adjust such Base in the event such Customer's use of the premises is substantially different from the previous use thereof during the Base period.

b. "Billing Unit" means the unit used to apply water rates for purposes of calculating commodity charges for Customer water use and equals one hundred (100) cubic feet (CCF) or seven hundred forty-eight (748) gallons of water.

c. "Board" means Board of Directors of the Lake Arrowhead Community Services District

d. "Certificated Water Service Area" means the geographical area for which the District supplies water, commonly referred to as the Arrowhead Woods area.

e. "Conservation Phase" means that level of mandatory water conservation presently required from Customers pursuant to this Ordinance.

f. "Customer" means any person, persons, entity, association, corporation or governmental agency supplied with water service by the District within the Certificated Water Service Area.

g. "District" means the Lake Arrowhead Community Services District.

h. "General Manager" means the General Manager of the Lake Arrowhead Community Services District.

i. "Gray Water" is defined under California law as untreated wastewater which has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and which does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. Gray water includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs but does not include wastewater from kitchen sinks or dishwashers.

j. "Hardscape" refers to all impermeable surfaces included as a permanent part of a Customer's landscaping including erosion control installations, sidewalks,

driveways, decorative paving and patios.

k. "His" as used herein includes masculine or feminine, as appropriate.

l. "Ordinance" means the Water Conservation Policy of the Lake Arrowhead Community Services District.

m. "Section" means a Section of this Ordinance unless some other ordinance or statute is specifically mentioned.

n. "Recycled Water" under California law means water, which, as a result of treatment of waste, is suitable for a directly beneficial use or a controlled user that would not otherwise occur and is therefore considered a valuable resource.

SECTION 2
AUTHORIZATION

The General Manager and his designees are hereby authorized and directed to immediately implement the applicable provisions of this Ordinance upon the effective date hereof.

SECTION 3
APPLICATION

The provisions of this Ordinance shall apply to all Customers and property served by the District within the District's Certificated Water Service Area boundaries.

SECTION 4
PERMANENT WATER CONSERVATION POLICIES APPLICABLE TO ALL CUSTOMERS

Pursuant to the Recitals above, this Water Conservation Policy requires the following restrictions on water use based on the declaration that water use in contravention of these practices constitutes water waste or unreasonable methods of use.

A. OUTDOOR CLEANING PRACTICES

1. There shall be no hose washing of any hard or paved surfaces including, but not limited to sidewalks, walkways, driveways, parking areas, patios, porches, decks, and verandas, except that, flammable or other dangerous substances may be, if otherwise permitted by law, disposed of by direct hose flushing for the benefit of public health and safety. Sweeping is encouraged for routine maintenance. Washing patios, porches, decks and verandas shall be by bucket and mop or high-pressure washer only.

2. No water shall be used to clean, fill or maintain levels in decorative fountains, ponds, lakes or similar structures used for aesthetic purposes unless such water is part of a recirculation system.

3. Vehicles may be hand washed using a bucket while parked on residential properties. Rinsing may be done by using a leak free hose equipped with a positive shut off nozzle, but not in a manner that causes or allows excess water to flow or runoff onto an adjoining sidewalk, street, gutter or ditch.

B. HOSPITALITY INDUSTRY STANDARDS

No restaurant, hotel, cafe, cafeteria or other public place where food is sold, served or offered for sale, shall serve drinking water to any person unless expressly requested.

C. LEAK-FREE MAINTENANCE STANDARDS

No Customer of the District shall permit water to leak from any facility on the Customer's premises; failure or refusal to effect a timely repair of any leak of which the Customer knows or has reason to know shall subject said Customer to all penalties provided herein for a prohibited use of water and enforcement under the District's Rules and Regulations for water service.

D. IRRIGATION PRACTICES STANDARDS

1. Automated irrigation of all landscapes, plants, trees and land may be done only between the hours of 6:00 p.m. and 8:00 a.m., with the exception of newly seeded plants and other new planting, which may be watered intermittently until rooting is established.

2. Lawns, trees, shrubs and other landscaping may not be watered beyond what is needed for natural growth and to sustain life. Water may not be permitted to pool or collect to the point of run-off. No Customer shall water or irrigate any lawn, landscape, or other area in a manner that causes or allows excess water to flow or run-off onto an adjoining sidewalk, driveway, street, gutter or ditch.

3. It is provided further that commercial nurseries, landscape managers and professional gardeners holding a current Business License and acting for or on behalf of a Customer shall be exempt from the provisions of this subsection for the purposes of landscape maintenance, including the application of treatments such as pesticides and fertilizers. They shall, however, be subject to the provisions of this Ordinance when they are acting to set an irrigation system's regular watering schedule on behalf of a Customer.

4. The prohibited uses set forth in this subsection do not apply to Recycled or Gray Water. The use of Recycled or Gray Water shall be subject to the requirements and limitations as set forth by the applicable County and State regulatory authorities.

5. Between November 30th and March 31st, all outdoor irrigation shall be shut off and irrigation systems shall be winterized to prevent ruptured pipes and leaks.

E. PENALTIES

The penalties for violations of the above permanent water conservation standards shall be the same as for violations under Section 7.

SECTION 5
DECLARATION OF DROUGHT

As of the effective date of this Ordinance, the District is currently under the declaration of a Third Stage Drought. As of the effective date of this Ordinance, the Board of Directors further hereby declares a Third Stage Drought exists which requires implementation of Water Conservation Phase Three.

In addition to the continuous conservation measures set forth in Section 4, which shall be in effect as of the effective date of this Ordinance, the Board may declare a Drought Stage condition to prevail whenever it finds that the lake levels have fallen to levels commensurate with the declaration of a drought.

The Board may declare a Drought Stage condition in the event the following lake levels are determined to exist or are predicted to occur during the balance of the calendar year, based on lake level elevations at the end of the winter season, March 31st, and based on the previous year's District-wide water use:

First Stage Drought	5 ,100 – 5,093.6 feet
Second Stage Drought	5,093.6 – 5,087 feet
Third Stage Drought	Below 5,087 feet

This declaration of a Drought Stage and the definition of a Drought Stage shall cause a mandatory Water Conservation Phase commensurate with the severity of the drought to be enacted. No Customer of the District shall make, cause, use or permit the use of water from the District for any residential, commercial, industrial, agricultural, governmental or any other purpose in a manner contrary to any provision of this Ordinance or in an amount in excess of that use permitted by the Water Conservation Phase then in effect. For the purposes of this Ordinance, any use of water on the subject property shall be imputed to the Customer, including without limitation any use by a tenant or by an employee, agent, contractor or other entity or individual.

Such regulations shall thereafter remain in place during the period of the emergency and until the Board determines that the District's water supply has been replenished or augmented adequately and declares the applicable Water Conservation Phase to be over.

Such Water Conservation Phase regulations may include, but shall not be limited to, the responses set forth in Section 6.

SECTION 6
MANDATORY WATER CONSERVATION PHASES

A Drought Stage will be proclaimed by the Board by implementing the applicable notice and hearing requirements and through an advertisement which appears a minimum of one time in the local newspaper and on the District's website.

Once a Drought Stage has been proclaimed, the public will continue to be advised of that Drought Stage and any subsequent Stages proclaimed by the Board through local and regional newspapers, billing notices, the District's website, the Arrowhead Lake Association office, and other applicable notice and hearing procedures. In addition, the District will post "Water Watch" public advisory signs at various locations throughout the Lake Arrowhead area. The Customer percentage curtailment provisions shall take effect with the first full billing period commencing on or after the effective date of the public proclamation.

A. WATER CONSERVATION PHASE ONE

In a First Stage Drought, Water Conservation Phase One requires all Customers to conserve 10% of the amount used during the Base period as defined in this Ordinance. The District shall provide on-going notification to the public so that proper measures can be taken to prepare landscapes for more severe drought conditions.

B. WATER CONSERVATION PHASE TWO

In a Second Stage Drought, Water Conservation Phase Two requires all Customers to conserve 15% of the amount used during the Base period as defined in this Ordinance.

C. WATER CONSERVATION PHASE THREE

1. General Provisions

In a Third Stage Drought, Water Conservation Phase Three requires all Customers to conserve 25% of the amount used during the Base period as defined in this Ordinance.

2. Specific Provisions

New landscaping for both new and existing homes will be limited to the following circumstances:

a. Low volume irrigation is implemented; (low volume irrigation is defined as not to exceed 0.75 inches per hour or three gallons per minute at the spray head).
b. The new landscaping is to replace the trees and shrubs killed by infestation or drought.
c. The landscaping is to replace existing landscaping with water efficient or drought resistant vegetation.

d. The new landscaping is to comply with erosion and sedimentation control set forth by San Bernardino County Building and Safety.
e. The landscaping is being created to establish defensible space according to standards established by local fire agencies.
f. The new landscaping is based on a plan to install water efficient or drought resistant vegetation.
g. No turf grass shall be planted (seed or sod), until the Third Stage Drought is declared over.

D. EXEMPTIONS

1. Minimum Limits

No customer shall be required to conserve to reduce water use below 19 CCF per billing period.

2. Public Health and Safety

The prohibited uses of water provided for by this Ordinance are not applicable to that use of water for essential government services such as police, fire and other similar emergency services or for water needed to support a specific medical treatment required to sustain life. A determination that water is needed to support a specific medical treatment shall be made in accordance with the variance procedures set forth in this ordinance.

SECTION 7
FAILURE TO COMPLY UNDER MANDATORY CONSERVATION

A. PENALTIES

The penalties for failure to comply with this ordinance shall be cumulative within the separate provisions of either the Permanent Water Conservation Policies Applicable to All Customers or the Mandatory Water Conservation Phases, but shall not be taken cumulatively between the two categories of regulations. The violations of any of the provisions of this Ordinance shall be as follows:

1. For the first violation by any Customer of any of the provisions of this Ordinance, the District shall issue a written notice of the fact of such violation to the Customer.

2. For a second violation by any Customer of any of the provisions of this Ordinance within a calendar year, the District shall issue a written notice of the fact of such violation to the Customer and a surcharge in the amount of 25% of the water consumption charges for the billing period.

3. For a third violation by any Customer of any of the provisions of this Ordinance within a calendar year, the District shall issue a written notice of the fact of such

violation to the Customer and a surcharge in the amount of 50% of the water consumption charges for the billing period.

4. For a fourth violation by any Customer of any of the provisions of this Ordinance within a calendar year, the District shall issue a written notice of the fact of such violation to the Customer and a surcharge in the amount of 100% of the water consumption charges for the billing period.

5. After a fourth violation of any of the provisions of this Ordinance, the District shall issue a written notice of the fact of such violation to the Customer and may install a flow restricting device of one gallon per minute (1 GPM) for services up to one and one-half inch (1-1/2") size and comparatively-sized restrictors for larger services or terminate a Customer's service, in addition to the financial surcharges provided for herein, upon a prior determination that the Customer has repeatedly violated this Ordinance or District rules regarding the conservation of water and that such action is reasonably necessary. A fee of $150 shall be charged to the Customer's account for the installation of a flow restrictor or the termination of service.

The water restrictor may be removed or water service restored after the Customer demonstrates that the cause of the violation has been corrected and that all fines, fees and surcharges have been paid.

The above penalties shall be applied in addition to the current charges of the District for Customer water consumption, including tiered rates applying to higher levels of water consumption.

B. VARIANCES

Variances to this Ordinance shall be addressed using the same procedures as those in place in the District's Rules and Regulations. The variance procedures are as follows:

When any person claims special circumstances and is of the opinion that a variance is necessary or that any provisions of any ordinances, resolutions, rules and regulations of the District is unjust or inequitable as applied to his facilities or property, and that such special circumstances make his facilities or property different from any other facilities or properties which are subject to the provision disputed, that person may file a written statement with the District stating the special circumstances, citing the provision disputed and requesting suspension or modification of that provision as applied to his facilities or property.

If the General Manager or his/her designee agrees in whole or in part with the allegations, the District may suspend or modify the provision disputed, as applied to such facilities or property, to be effective as of the date of the written statement and continuing to a specified date or during the period of these special circumstances.

Any affected person may appeal the decision of the General Manager or his/her designee to the Board of Directors. The decision of the Board of Directors shall be final for all purposes.

The following guidelines are offered for the granting of variances by the General Manager or his/her designee:

- Demonstration by 2002 and prior year water use records that water conservation practices have been fully implemented
- Additional members being added to household
- Additional structures or landscaping being added after the Base year
- Changes in vacancy factors in housing, including part-time to full-time and prolonged absence
- Water uses during new construction
- Water use necessary for medical treatment to sustain life
- Adjustments to water use caused by emergency health or safety hazards
- For businesses, adding employees or expanding
- For businesses, when reductions would lead to unemployment
- Landscaping to control erosion, create a fire safe landscape, retrofit landscaping to reduce water use, or reforestation
- Watering added after the Base Year consumption to preserve pine trees

It will be the goal of the District that application for a variance to the Board will be processed within 30 days of the applicant's initial written request.

Variances granted to applicants shall use the Water Budget method described under Section 9, Subsection C to determine a new Base period.

SECTION 8
GENERAL PROVISIONS

A. ENFORCEMENT

The Lake Arrowhead Community Services District shall enforce the provisions of this Ordinance.

SECTION 9
NEW CONSTRUCTION WATER USE STANDARDS

A. STATEMENT OF PRINCIPLE

Landscape water use accounts for more than 50% of all domestic water use. As a result, the District requires, as a condition of providing service, new construction to conform to a Water Budget, which includes an allowance for the people occupying a residence in addition to an allowance for outdoor landscaping. The District provides guidelines to Customers on how to achieve this water budget in landscaping design and practice as well as how to landscape for erosion control and fire safety.

B. APPLICATION

Where new construction or a renovation adding 500 or more square feet to an existing building footprint occurs, the District will require the setting of a Water Budget as a condition of providing service.

C. WATER BUDGET

The household will be assigned a Water Budget based on the number of persons in the household and whether they are full-time or part-time residents. The standard for indoor use will be based on the American Water Works Association standard of 74 gallons per person per day. The landscape will be assigned a Water Budget based on the total landscaped area, not to exceed two-thirds of the area of the property not including buildings (see attached table) and the evapotranspiration rate for the Lake Arrowhead area. This water budget will form the basis of billing and surcharges for water use.

D. ENFORCEMENT

Customers exceeding the allotted budget for their landscape will be considered in violation of this Ordinance.

E. PENALTIES

The penalties for violations of the above permanent water conservation standards shall be the same as for violations under Section 7 above.

SECTION 10
SEVERABILITY

If any Section, subsection, clause or phrase in this Ordinance or the application thereof to any person or circumstances is for any reason held invalid, the validity of the remainder of the Ordinance or the application of such provision to other persons or circumstances shall not be affected thereby. The Board hereby declares that it would have passed this Ordinance and each Section, subsection, sentence, clause, or phrase thereof, irrespective of the fact that one or more Sections, subsections, sentences, clauses, or phrases or the application thereof to any person or circumstance be held invalid.

ADOPTED by the Board of Directors of the Lake Arrowhead Community Services District at a Regular Meeting held on April 27, 2004, by the following votes:

AYES:	***Field, Heyck, Keefe, Kendrick & Whitney***
NOES:	***None***
ABSTENTIONS:	***None***
ABSENT:	***None***

Bruce Field, President of the Board of Directors of the Lake Arrowhead Community Services District

ATTEST:

P.M. McGonigle, Secretary of the Lake Arrowhead Community Services District

(SEAL)

Appendix H
Draft Water Shortage Contingency Resolution

DRAFT

DRAFT RESOLUTION NO. 20XX-XX

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA ADOPTING A WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, the State of California requires under Water Code Section 10632 that the District adopt a draft water shortage contingency resolution or ordinance identifying the stages of action to be undertaken by the District in response to water supply shortages, including up to a 50% reduction in water supply; and

WHEREAS, historically Lake Arrowhead has served as the District's primary source of water supply; and

WHEREAS, the Board of Directors adopted a policy statement to reduce and ultimately eliminate reliance on Lake Arrowhead as its sole source of water supply – the purpose of this policy is to stabilize the level of Lake Arrowhead with a goal to maintain the lake at an elevation of 5,100 foot elevation (ALA Datum) to balance the use of the lake for consumptive and recreational uses by Arrowhead Lake Association (ALA) members; and

WHEREAS, the District and the ALA entered into an agreement that would accomplish the goal of maintaining the lake at or above the 5,100 foot elevation (Refer to Attachment 1); and

WHEREAS, in October 2003, the District accepted as complete the Lake Arrowhead Community Services District Water Demand and Supply Report which identifies projects that when taken together will reduce the demand on Lake Arrowhead by up to 100%; and

WHEREAS, the District Board of Directors authorized the implementation of Milestone I and II projects identified in the October 2003 Water Demand and Supply Report that when taken together will reduce the District's reliance on surface water diversions from Lake Arrowhead by 48%; and

WHEREAS, the District has completed the Milestone I projects including the adoption of the District's Water Conservation Ordinance No. 58 (a Milestone I project) mandating a 25% reduction in customer usage during a third stage of drought, five groundwater wells, and the water treatment plant efficiency program; and

WHEREAS, the District is in the process of the development of the Milestone II projects including recycled water and additional groundwater wells; and

WHEREAS, the Board of Directors authorized the implementation of a Milestone III project that will reduce the District's reliance on Lake Arrowhead by an additional 52% by entering into an agreement with the Crestline Lake Arrowhead Water Agency (CLAWA) for the purchase of State Water Project water from San Bernardino Valley Municipal Water District treated and transported through CLAWA (Milestone III project); and

DRAFT

WHEREAS, this Resolution was taken under consideration by the District Board of Directors during its Regular Meeting on [INSERT DATE], at which time the Board provided customers and the community with the opportunity to provide public comments and testimony. Notice of the time and date of the Regular Meeting was given in accordance with the requirements of California law for the posting of the notice and agenda for such a Regular Meeting.

THE BOARD OF DIRECTORS OF THE LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT DOES HEREBY RESOLVE AS FOLLOWS:

1. Incorporation of Recitals The Recitals set forth above are incorporated herein and made an operative part of this Resolution.

2. Water Demand and Supply Report This resolution hereby acknowledges the formal adoption as complete the October 2003 Water Demand and Supply Report.

3. Notice This Resolution was introduced at a meeting of the District Board of Directors held on [INSERT DATE], the notice of which was given in accordance with the requirements of California law for the posting of the notice and agenda for such a Regular Meeting.

4. Effective Date This Resolution shall be effective upon adoption.

ADOPTED by the Board of Directors of the Lake Arrowhead Community Services District at a Regular Meeting held on [INSERT DATE] by the following votes:

AYES:
NOES:
ABSTENTIONS:
ABSENT:

_____
[INSERT NAME], President of the Lake Arrowhead Community Services District and of the Board of Directors thereof.

ATTEST:

_____
[INSERT NAME], Secretary of the Lake Arrowhead Community Services District and of the Board of Directors thereof.

The attached Agreement was prepared by representatives of the Lake Arrowhead Community Services District (LACSD) and representatives of the Arrowhead Lake Association (ALA) and subsequently ratified by their respective Boards of Directors.

The LACSD took action to ratify the Agreement in a closed Board Meeting on Friday, November 4, 2005 and the ALA took action to ratify the Agreement on Saturday, November 5, 2005.

Affirmed this date at the offices of the Arrowhead Lake Association at 870 Highway 173, Lake Arrowhead, California 92352.

Bruce Field, President
Lake Arrowhead Community Services District

11/11/05
Date

Charles C. Klein, President
Arrowhead Lake Association

11/11/05
Date

Lake Arrowhead Community Services District ("LACSD") and Arrowhead Lake Association ("ALA") enter into the following Memorandum of Understanding ("MOU") and agree to the following terms and conditions:

1. ALA recognizes that LACSD is the owner of a valid pre-1914 right to divert water from Lake Arrowhead for consumptive purposes, and LACSD recognizes that ALA is the owner of a valid pre-1914 right to divert water to create Lake Arrowhead for recreational purposes.

2. Without quantifying or otherwise limiting LACSD's pre-1914 right, and notwithstanding any right that may be acknowledged by the SWRCB, LACSD agrees that beginning in January 2007, LACSD will limit its diversions from the Lake to 1,555 afy on a long-term average basis. This amount will be inclusive of all withdrawals from the Lake, whether for domestic or irrigation purposes. For purposes of this MOU, "long-term average" means a rolling average over a period of the previous ten (10) years. The amount of the "long-term average" may be adjusted upward or downward by mutual agreement of LACSD and ALA based on information that is collected and analyzed. LACSD agrees that if the level of the Lake reaches 5,103, LACSD's withdrawals shall be limited according to a mutually agreeable schedule that will take in to account the month of the year and whose goal will be to ensure that withdrawals for that year are limited to no more than 1,555 afy.

3. ALA and LACSD agree that their mutual goal is to maintain the level of the Lake at or above 5,100 feet (ALA datum).

4. LACSD currently has in place a medium-term solution designed to accomplish the parties' mutual goal of maintaining the level of the Lake at or above 5,100 feet. In order to accomplish this goal on a long-term basis, the parties will work together to formulate and implement a physical solution that creates a permanent and reliable source of supplemental water. In order to obtain a permanent and reliable source of supplemental water, LACSD will use best efforts to obtain an entitlement of water from State Water Project Contractors. LACSD will further use best efforts to formulate and implement measures to achieve the goal of maintaining the level of the Lake at or above 5,100 feet.

5. ALA agrees to withdraw its Notice of Intent to Appear, all written testimony, all exhibits, and any other evidence or policy statements from the State Board Enforcement hearing on Cease and Desist Order 262.31-18 and Administrative Civil Liability Complaint No. 262.5-40. ALA further agrees to support LACSD's position in the hearing.

6. ALA agrees that if the Lake is operated and managed in the manner expressed herein, ALA will not allege injury to downstream users or environmental interests.

7. This Agreement shall be specifically enforceable in Superior Court for the County of Riverside. Specifically, the parties shall consent and submit to the jurisdiction of the Court maintaining continuing jurisdiction over the case City of Barstow, et al. vs. City of Adelanto, et al., Case No. 208568 for the purpose of administration and enforcement of this Agreement. Such submission shall be solely for the purpose of enforcement and administration of this Agreement. LACSD acknowledges that it is already subject to the jurisdiction of the Court in that case.

(The intent paragraph is not to give the Mojave Water Agency authority over this agreement.)

ALA PREZ. 11/3/05

Mary Anne ALA SECRETARY 11/3/05

LACSD / DIRECTOR 11-3-05

LACSD / GM 11-3-05

LACSD V. PRES. 11/3/05

LACSD PRES. 11/11/05

RVPUB\JNW\703065.1

Appendix I
Comments Received on November 22,2005 Draft

The attached Agreement was prepared by representatives of the Lake Arrowhead Community Services District (LACSD) and representatives of the Arrowhead Lake Association (ALA) and subsequently ratified by their respective Boards of Directors.

The LACSD took action to ratify the Agreement in a closed Board Meeting on Friday, November 4, 2005 and the ALA took action to ratify the Agreement on Saturday, November 5, 2005.

Affirmed this date at the offices of the Arrowhead Lake Association at 870 Highway 173, Lake Arrowhead, California 92352.

Bruce Field, President
Lake Arrowhead Community Services District

11/11/05
Date

Charles C. Klein, President
Arrowhead Lake Association

11/11/05
Date

COMMENT FROM JOHN RUTLEDGE ON 11/21/05:

1) ADD THIS PAGE TO THE ALA/LACSD MOU IN APPX H.

Ryan Gross

From: Norm Caouette [ncaouette@MojaveWater.org]
Sent: Wednesday, November 30, 2005 12:14 PM
To: rgross@lakearrowheadcsd.com
Subject: Draft 2005 UWMP

Mr. Gross –

The copy of your draft UWMP delivered to MWA seems to be missing page 39. Could you please email or fax me a copy of the page?

Norman T. Caouette
Assistant General Manager
Mojave Water Agency
22450 Headquarters Drive
Apple Valley, CA 92307-4304
(760) 946-7009
(760) 240-2642 (Fax)

Ryan Gross

From: Ryan Gross
Sent: Wednesday, December 07, 2005 12:42 PM
To: Mark V
Subject: Comments from Mary Ann Dickinson

Mark,
I received the following verbal comments from Director Dickinson regarding the Draft 2005 UWMP:

"Expand explanation of Tables 11.3, 11.4 and 11.5 to show the make up of the supply totals."

This email to be included in Appendix I: Comments received on November 22, 2005 Draft UWMP.

Ryan Gross, P.E.
District Engineer
Lake Arrowhead CSD
Direct: 909.336.7137
Efax: 909.494.9559

Lake Arrowhead
Community Services District

November 18, 2005

To: Distribution

Re: Lake Arrowhead Community Services District Draft 2005 Urban Water Management Plan

California State Law requires that the Lake Arrowhead Community Services District (District) prepare and submit an updated 2005 Urban Water Management Plan (UWMP) by December 31, 2005. As you may be aware the District is currently engaged with the State Water Resources Control Board (SWRCB) regarding water rights. At this time the SWRCB process is not concluded and given these circumstances the District has given its best effort to prepare its 2005 UWMP and to disclose the pending water rights issues.

Attached for your review and comment is a draft copy of the District's 2005 UWMP. Please provide any comments you may have in writing no later than Wednesday, December 7, 2005. Written comments should be directed to Ryan Gross, District Engineer and mailed or delivered to:

Lake Arrowhead Community Services District
Engineering Department
PO Box 700
201 Cumberland
Lake Arrowhead, CA 92352

Comments may also be emailed to rgross@lakearrowheadcsd.com. For additional information please contact me at (909) 336-7137.

Sincerely,

Ryan Gross, P.E.
District Engineer

Mark - Here are my comments.
12-5-05

Attachments: 1) Draft 2005 Urban Water Management Plan

Water / Wastewater Systems
P.O. Box 700
Lake Arrowhead, CA 92352
(909) 336-7100
(909) 337-3145 Fax

DRAFT

2005
URBAN WATER MANAGEMENT PLAN

For The

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT

Lake Arrowhead

Community Services District

November 16, 2005 Draft

LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT
2005 URBAN WATER MANAGEMENT PLAN
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Disclosure Statement
Regarding Water Rights Complaints Against
Lake Arrowhead Community Services District

State Water Resources Control Board (SWRCB) Staff Decision Regarding Water Rights – On August 1, 2005, the Lake Arrowhead Community Services District (District) received documents from the SWRCB, Subject: "Administrative Civil Liability (ACL) Complaint NO. 262.5-40 and Notice of Cease and Desist Order Regarding Unauthorized Diversion at Lake Arrowhead in San Bernardino County" (SWRCB Final Staff Report). A public hearing was conducted on November 8 and 9, 2005 by the SWRCB. At the time this plan was circulated by the District a second public hearing continuance was scheduled, if necessary, to take place on November 28, 2005.

The District understands that the SWRCB Final Staff Report, including the Cease and Desist Order would not take effect unless and until the SWRCB issues a final decision. If the Cease and Desist Order, in its present form, were adopted by the SWRCB the District would be required to prepare a plan to locate and fund new sources of water supply to replace all water that it would otherwise supply from Lake Arrowhead. The District would be required to submit such a plan within 60 days of receiving a final Cease and Desist Order from the SWRCB. A copy of the SWRCB Staff Decision is included in Appendix A.

The Urban Water Management Plan (UWMP) for the District was drafted from April 2005 through November 2005. This plan complies with the requirements of the Urban Water Management Planning Act (Act). The plan is based upon the best information available at the time the UWMP was prepared. Pending the outcome of the SWRCB proceedings, the District will, if appropriate, prepare a revised UWMP, conduct the appropriate public hearing and ask the Board of Directors to adopt the revised plan. When there is a material development in this matter the public will be notified and District Staff will request guidance and direction from the District Board of Directors as to how and when to revise this document.

1.0 Executive Summary

1.1 Purpose

The Urban Water Management Planning Act (Act) requires urban water suppliers in California providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) of water annually to prepare and adopt an Urban Water Management Plan (Plan or UWMP) once every five years. The Lake Arrowhead Community Services District's (LACSD or District) current UWMP was adopted by the District Board of Directors in 2000. It is the District's understanding that the 2000 UWMP satisfied the state requirements in effect at that time; however, the plan was not submitted to the California Department of Water Resources (DWR). The UWMP is a useful water resource planning document; however, it is not a substitute for the District's Water and Wastewater Facilities Master Plan which is scheduled to be updated in Fiscal Year 2005-06.

1.2 Public Participation and Agency Coordination

The public participation requirements of the Urban Water Management Planning Act have been met with the necessary local organizations and agencies contacted regarding the preparation of this plan.

In addition to the public participation requirements referenced above, the District has and continues to actively encourage community participation in its on-going water management activities and specific water related projects. The District's public participation programs include mailings, public meetings, and web-based communication. The District's water conservation program involves a variety of public awareness programs. The District has regularly scheduled Board of Director's meetings that include extensive public comment on water issues.

Water policy is contentious. The District has instituted significant changes and uncommonly ambitious goals that directly impact our customers. In an effort to inform

and obtain balanced input from customers the District has reached out on issues of concern using as many tools as possible, including:

- Town Hall and public outreach meetings to present proposals and solicit input from the public
- Quarterly direct mail newsletters
- Q&A Fact Sheets on issues of concern
- Media press releases
- Regular presentations to community groups, service clubs and homeowners associations.

In addition, the public has been formally engaged in an advisory capacity in the following ways:

- The Stakeholders' Advisory Group (SAG) helped to identify and recommend water supply options to the LACSD Board, the majority of which were adopted by the Board, and has been reconvened to help LACSD examine other water resource alternatives including the expanded use of recycled water for outdoor irrigation.
- The Water Conservation Stakeholders' Advisory Group helped to draft the District's Mandatory Water Conservation Ordinance No. 58.

Finally the District made its best effort to engage the full spectrum of customers using a scientific survey. The results gave the District high marks for approval and indicated strong support for moving forward with a supplemental water supply plan. While no one likes the idea of paying higher fees, the community has accepted the action to pay for a 10-15 year program to import State Water Project (SWP) water and construction of capital improvements such as water recycling and additional groundwater wells.

The District has fostered and maintains professional working relationships with community organizations such as the Arrowhead Lake Association (ALA), the Arrowhead Woods Architectural Committee (AWAC) and others.

1.3 Service Area

The District is a self governed independent Special District responsible for providing water services to its certificated water service area also known as the Arrowhead Woods and wastewater services within the Districts sanitation boundary including the communities of Lake Arrowhead, Cedar Glen, Blue Jay, Twin Peaks, Deer Lodge Park, Rim Forest, Crest Park and Sky Forest. The boundaries for the wastewater service area are larger than the boundaries for the water service area, in other words there are some areas to which the District provides wastewater service but not water service. The water system boundary is geographically and geopolitically limited and encompasses approximately 4,900 acres ~~and~~ which is essentially the same boundary as that of the community known as the Arrowhead Woods. plus about 40 acres in Cedar Glen.

1.4 Water Supply Sources and Reliability

The District currently has three sources of water for potable use to serve its certificated water service area also known as the Arrowhead Woods; (1) surface water from Lake Arrowhead, (2) State Water Project (SWP) water delivered by Crestline Lake Arrowhead Water Agency (CLAWA) and, (3) groundwater from five District owned wells located in the Grass Valley Basin. With respect to the District's use of water supplied from Lake Arrowhead please refer to the "Disclosure Statement Regarding Water Rights Complaints against Lake Arrowhead Community Services District" at the front of this report.

In October 2003, the District Board of Directors accepted the Water Demand and Supply Report (Tetra Tech 2003) and adopted the goal of reducing and ultimately eliminating reliance on Lake Arrowhead as the community's sole source of water. The District does not propose to stop using lake water outright. During wet and average water years the community would continue to rely on the lake for at least a part of its water

supply. This is because water from Lake Arrowhead is the community's least cost, best quality and most reliable source of water.

The Water Demand and Supply Report (Tetra Tech 2003) outlined the development of a series of three milestone projects that would allow the District to meet the goal of reducing and ultimately eliminating the draft from the lake in a cost-effective and measured way. The progress of these projects is outlined in section five of this report. The projects detailed in the Water Demand and Supply Report includes:

Milestone 1 Projects

- Treatment Plant Efficiency Improvements
- Water Conservation Programs, Phase I
- Water Conservation Programs, Phase II
- Groundwater Development Phase I
- CLAWA 162 acre feet per year (AFY) Supplemental Supply

Milestone 2 Projects

- Recycled Water Program Phase I
- Groundwater Development Phase II

Milestone 3 Projects

- SWP Water Purchase/Exchange.

1.5 Water Use

Should be based on what is withdrawn from the Lake

A determination of the existing water use was made based on District records and indicates that in the year 2004 approximately 7,600 connections used 2,469 AF of water. Based on a projected annual average increase of one percent in water delivered to the District's distribution system, water demand is estimated to grow to approximately 3,000 acre feet per year (AFY) in the year 2025 (Refer to Section 11.4).

How do you explain that demand had already climbed to 3157 AFY in 2002? This is greater than your projection of 3,000 AFY in 2025. Doesn't make sense.

As of September 30, 2005 actual water delivered to the District's distribution system was 1,675 AF. For the same period in 2004 actual water delivered to the District's distribution system was 1,758 1661 AF. This is a ~~4.7%~~ 3.8% increase ~~reduction~~ in the amount of water delivered to the District's distribution system from 2004 to 2005. As described in this report, the District is continuing its efforts to reduce demand for water.

1.6 Water Demand Management Measures

The District began studying mandatory water conservation in late 2003 as it became clear that the severe drought showed no signs of slacking and the scientific community began to offer evidence that the drought sequences in the US, southwest regions were likely to be longer and more severe than previously thought. The District convened the Water Conservation Stakeholders' Advisory Group (SAG) consisting of members of the community, landscape, forestry and flood control professionals, who? conservation experts, District staff and consultants to review the practices of other water agencies and to draft a mandatory water conservation ordinance. The District's Ordinance No. 58 is based in part on practices implemented in the last prolonged southern California drought by the communities of Los Angeles, Santa Barbara and San Diego.

The ordinance called for the implementation of various levels of conservation tied to lake levels. Upon its passage, the ordinance required a 25% mandatory reduction in use for all customers, conforming to the third stage drought being experienced in the community. The program was proposed to the public through a series of public outreach meetings and direct mail prior to its adoption by the District Board of Directors.

Water conservation activities included public outreach meetings, direct mailings, widespread advertising, and the initiation of two new hardware programs. In 2004, The District, with funding through the Bureau of Reclamation, began a new landscape irrigation pilot program. The program began with the installation of a California Irrigation Management Information System (CIMIS) weather station to measure evapotranspiration. This weather station measured how hot and dry the weather is and broadcasts a signal that regulates the amount of water delivered by the computers inside

individual irrigation controllers hooked up to the system. In 2004, 59 controllers were installed and evaluations of their effectiveness are currently underway. In addition the District introduced an Ultra Low Flush Toilet (ULFT) program, holding two events that supplied 1,000 ULFTs to replace ordinary, older, high volume toilets in the community.

The Urban Water Management Planning Act requires the suppliers to review for possible implementation fourteen specified demand management measures also known as Best Management Practices (BMPs). The District is currently implementing twelve of the fourteen BMP's. Full implementation of all applicable BMPs will assist in reducing the volume of water used in the District's service area.

1.7 Water Shortage Contingency Plan

The District has in place Ordinance No. 58 adopted April 27, 2004 which provides for water shortage management related to droughts. In addition to Ordinance No. 58 the District has a Disaster Preparedness Plan which identifies actions which will take place in the event of a catastrophic event as well as a draft water shortage contingency resolution that identifies stages of action to be undertaken in response to water supply shortages including up to a 50% reduction in water supply (Refer to Section 8.0).

It is difficult to precisely gauge the revenue and expenditure impacts of implementation of the water shortage contingency plan. A review of the impacts on the District's revenues and expenditures that may occur in the event of a water shortage was made. Based on the District's current reserves, it appears the District will be able to withstand the financial impacts of the implementation of a water shortage emergency plan.

1.8 Recycled Water

There is presently no recycled water use in the District's service area. Between 1994 and 2004 the District treated an average annual wastewater flow of 1.32 million gallons per day (mgd) or 1,479 AFY. The District currently produces between 1,500 and 2,000 AFY of treated wastewater that is conveyed through an outfall pipeline to the

District's disposal facility in the City of Hesperia. This disposal site consists of groundwater recharge into the Mojave Basin.

In the past, Federal and state laws, administered by the State Water Resources Control Board, Lahontan Region (Regional Board) prohibited the use of recycled water in the District service area because the rules governing discharge of waters of a waste origin were not permitted to be used in locations above 3,200 feet in elevation.

In January 2003, The District made a request for a Basin Plan amendment that would allow the discharge of waters that are of waste origin above 3,200-foot elevation. In early September 2003, the Regional Board recommended approval of the Basin Plan Amendment. The amendment was reviewed and approved by the State Water Resources Control Board and the US Environmental Protection Agency in 2004. These changes have allowed the District to proceed with the implementation of a recycled water program which when completed will supply approximately 1 mgd of recycled water for outdoor irrigation in the Grass Valley Basin.

The District currently operates two wastewater treatment plants; 1) the Grass Valley Wastewater Treatment Plant (GVWWTP) and, 2) the Willow Creek Wastewater Treatment Plant (WCWWTP). The District is currently designing improvements to the wastewater treatment process at the GVWWTP so that the effluent will qualify as "recycled" water that can be beneficially used in the District's service area for outdoor irrigation.

1.9 2005 Urban Water Management Plan Adoption

This 2005 Urban Water Management Plan is scheduled to be adopted by the District Board of Directors and submitted to the California State DWR and the County of San Bernardino in December 2005.

2.0 Introduction

Urban water suppliers are required by the Urban Water Management Planning Act to update their UWMP and submit a complete plan to the California Department of Water Resources (DWR) every five years. An UWMP is required in order for a water supplier to be eligible for DWR administered State grants, loans and drought assistance. This UWMP has been prepared by the District in conformance with the California Urban Water Management Planning Act. This Plan is a revision and update of the District's 2000 UWMP that was adopted by the District Board of Directors in December 2000.

The Act requires water suppliers in California, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 AFY of water to prepare and adopt a specific plan every five years which defines their current and future water use, sources of supplies and its reliability, and existing conservation measures.

2.1 Purpose and Organization of this Report

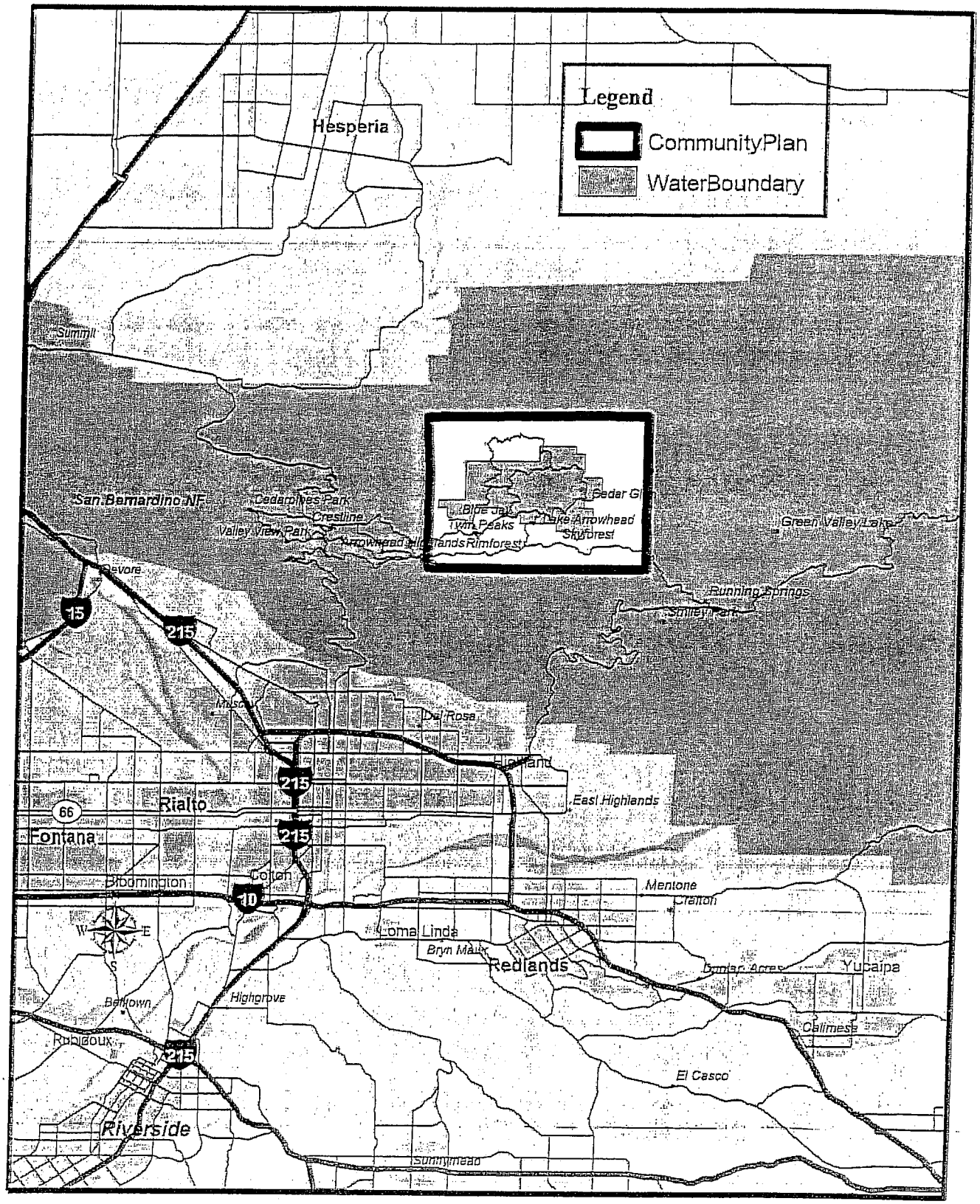
Throughout this report actual wording of specific California Water Code sections are included in *italicized* text for reference. The full text of the Urban Water Management Planning Act is included in Appendix B. Also included in Appendix C of this report is a table that enables the reader to cross reference the specific sections of the Urban Water Management Planning Act to the information provided in this report.

2.2 Background of the Lake Arrowhead Community Services District

The District is located approximately 90 miles east of Los Angeles on the North Slope of the San Bernardino Mountains in southern California. The general location of the District is shown in Figure 2.1.

In 1891 a group of Ohio businessmen acquired the area known today as Lake Arrowhead for construction of a reservoir to supply irrigation water to the San Bernardino Valley. The Arrowhead Reservoir Company was formed in 1891 with James Morris Gamble, of Proctor and Gamble, as President. In 1891 the company commenced construction of a dam at the east end of Little Bear Valley.

Figure 2.1: LACSD Location/Vicinity Map



In 1905 the property was transferred to the Arrowhead Reservoir and Power Company (ARPC), for the purpose of using the water for power generation. The ARPC constructed a 185 foot high semi-hydraulic earth filled dam between 1895 and 1915. The dam was completed in 1915, creating the basin that would become present day Lake Arrowhead. As a result of a court decision which prevented delivery of the stored water to customers outside the natural watershed area, the ARPC ceased its operations in 1921.

In 1921, the Arrowhead Lake Company, a corporation formed by a group of Los Angeles businessmen, including J.V. Van Nuys, and John O'Melveny, bought Little Bear Lake and the surrounding properties, changing the name to Lake Arrowhead and Arrowhead Woods respectively. The name was derived from a rock formation in the shape of an arrowhead on the face of the San Bernardino Mountains above Arrowhead Hot Springs. During the ownership by the Arrowhead Lake Company, approximately 20% of the land nearest the lake was developed, and a nine-hole golf course was built on the site of the present day Lake Arrowhead Country Club (LACC).

The Arrowhead Utility Company (AUC) was formed in 1923 by the Arrowhead Lake Company. During its first year of operation, the AUC served 103 domestic water customers.

In 1971, as a result of the Sylmar Earthquake, the California Department of Water Resources, Division of Safety of Dams, ordered that all hydraulic-fill dams in the State of California be tested and evaluated for seismic stability. After an evaluation was done of the existing dam, it was determined that a second dam should be constructed to ensure safety.

The Lake Arrowhead Community Services District was formed March 16, 1978 under the Community Services District Law (California Government Code 61000) for the purpose of purchasing a privately owned water system serving properties in the community of Arrowhead Woods, which surrounds Lake Arrowhead. The District is a self governed Special District responsible for supplying water to customers within its certificated water service area, also known as the Arrowhead Woods. With respect to the

District's use of water supplied from Lake Arrowhead please refer to the "Disclosure Statement Regarding Water Rights Complaints against Lake Arrowhead Community Services District" at the front of this report.

On June 7, 1983, voters approved the annexation of the Lake Arrowhead Sanitation District, which was governed by the Board of Supervisors of San Bernardino County (the "County") and operated under the County's Special Districts Department, to the District to provide wastewater services. On July 1, 1983, the District assumed control and operation of the Lake Arrowhead Sanitation District. This resulted in the expansion of the District to its current boundaries. The District currently provides wastewater services within the District's sanitation boundary which includes the communities of Lake Arrowhead, Cedar Glen, Blue Jay, Twin Peaks, Deer Lodge Park, Rim Forest, Crest Park and Sky forest.

On April 1, 1995, the District assumed ownership and control of the Deer Lake Water Corporation, which provides water to the residents of the area known as Deer Lodge Park (DLP). DLP is outside of the District certificated water service area and is supplied with water from wells within DLP and water purchased from CLAWA. There is no physical connection between the District's water distribution system inside of its certificated water service area and the DLP water distribution system.

3.0 Agency Coordination and Public Participation

3.1 Agency Coordination

Water Code section 10620
(d)(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

Several agencies and organizations had the opportunity to review this UWMP. The following agencies were provided with draft copies of the UWMP in November 2005 and invited and encouraged to submit written comments on the Plan:

Alpine Water Users Association
Arrowhead Lake Association
Arrowhead Manor Water Company
Arrowhead Woods Architectural Committee
Arrowhead Villas Mutual Services Company
Big Bear Community Services District
Burnt Mill Canyon Mutual Water
California Department of Water Resources
City of Big Bear Lake Department of Water & Power
County of San Bernardino Land Use Department
County of San Bernardino Special Districts Department
Crestline Lake Arrowhead Water Agency
Crestline Village Water District
Mojave Water Agency
Running Springs Water District
San Bernardino Valley Municipal Water District
Skyforest Mutual Water Company
Strawberry Lodge Mutual Water Company
State Water Resources Control Board

Additionally, the various water agencies/organizations in the community meet quarterly and an update on the District's draft of the plan was presented to the members of the Multi-Water District Group on October 10, 2005.

3.2 Public Participation

Water Code section 10642
Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

The District's Board of Directors has been provided with monthly updates on the information used to prepare this UWMP beginning in April 2005. Each month an

information item about the report was placed upon the public board meeting agenda. Each month a presentation was given at the public, scheduled board meeting, with an opportunity for comment from the board and the public.

During 2003, the Stakeholders' Advisory Group (SAG) was re-established by the District's Board of Directors for the purpose of obtaining input from the Lake Arrowhead Community with respect to the Water Demand and Supply Draft Report (Tetra Tech 2003). In October 2003, the District Board of Directors accepted the SAG Report to the LACSD Board Concerning the 2003 Water Demand and Supply Report (SAG 2003).

On September 28, 2004 the Board requested that the SAG be re-convened to participate in the District's water resource planning and advise the board on aspects of water supply concerns of the District in general. On November 9, 2004 the Board authorized the SAG to further study and review alternatives for treated wastewater (Recycle Phase I and II) as well as to seek methods for broader community participation.

In November 2005 copies of the plan were made available at the following locations: (a) the Public Library in Blue Jay, California, (b) the offices of the District in Lake Arrowhead, California and, (c) the Districts internet web site (http://www.lakearrowheadcsd.com/).

In addition, the District's broader public participation program includes several means of obtaining input from the community, including mailings, public meetings, and web based communication (Refer to Appendix D, BMP #7).

A public hearing was scheduled for December 13, 2005. Prior to the hearing, notice of the time and place of hearing was published within the jurisdiction of the publicly owned water supplier pursuant to section 6066 of the Government Code.

4.0 Service Area

Water Code section 10631
A plan shall be adopted in accordance with this chapter and shall do all of the following: (a) Describe the service area of the supplier; including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

4.1 Service Area Description

The District is a self governed independent Special District responsible for providing water services to within its certificated water service area also known as the Arrowhead Woods and wastewater services within the Districts sanitation boundary including the communities of Lake Arrowhead, Cedar Glen, Blue Jay, Twin Peaks, Deer Lodge Park, Rim Forest, Crest Park , Crest Park and Sky Forest.

The service area boundaries for the wastewater system are larger than the service area boundaries for the water system, in other words there are some areas to which the District provides wastewater service but not water service. The water system boundary encompasses approximately 4,900 acres and is essentially the same boundary as that of the community known as the Arrowhead Woods. The Arrowhead Woods boundary and the District's certificated water service area are one in the same. The District's certificated water service area is shown in Figure 4.1.

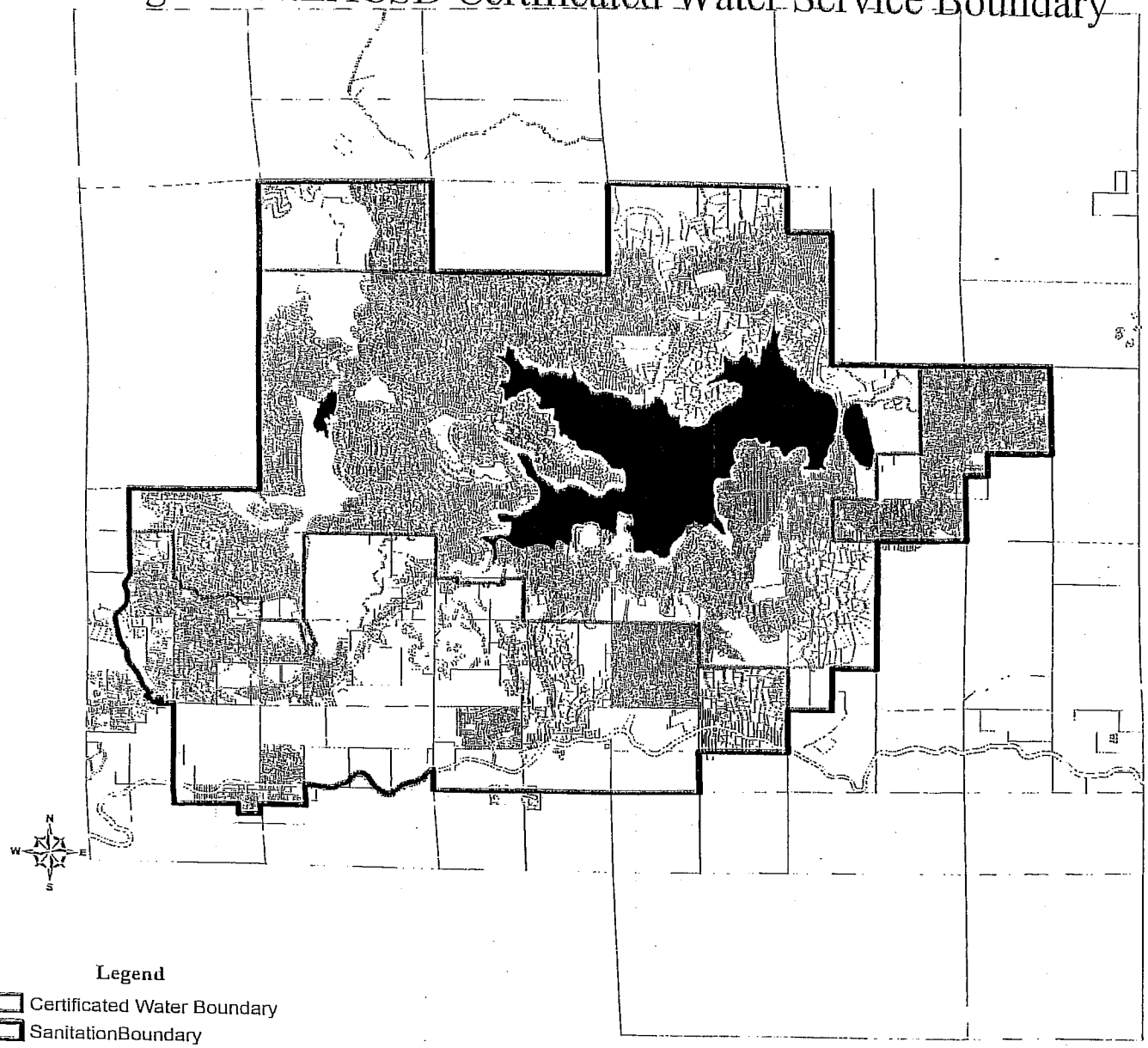
Not completely true

The District encompasses approximately 15 square miles and currently serves approximately 7,700 water customers and 10,600 wastewater customers. The District is located in the San Bernardino Mountains 23 miles north of the City of San Bernardino and approximately 90 miles east of Los Angeles.

Lake Arrowhead, when full, has a surface area that is approximately 780 acres with a capacity of approximately 47,000 AF of water. The watershed or drainage area for the Lake Arrowhead basin consists of approximately 4,350 acres of hilly mountainous area. The major streams that flow into Lake Arrowhead are Little Bear Creek, Blue Jay Creek, Burnt Mill Creek and Fleming ~~Canyon~~ Creek. In addition, drainage flows from Grass Valley Lake are at times diverted to Lake Arrowhead through an interconnecting tunnel.

Orchard Creek
Cumberland Creek

Figure 4.1:LACSD Certificated Water Service Boundary



few creeks have sediment basins - only Orchard & Cumberland on the Southshore

Development in the San Bernardino Mountains is naturally constrained by the rugged terrain, limited access, and lack of support infrastructure, as well as by planning and resource protection polices that place much of the area off limits to significant development. A significant amount of the mountain region surrounding the Lake Arrowhead watershed is National Forest and is devoted to natural resource protection along with recreational use.

Lake Arrowhead includes commercial areas oriented to tourists and seasonal residents as well as year-round residents. The rainy season typically begins in October and runs through April. Average annual precipitation during the period 1968 through 2003 was 40 inches (Bookman-Edmonston 2004). The climate supports abundant forest and ground cover vegetation. Primary run-off into the lake is channeled through creeks where de-silting basins are provided and maintained at a point prior to the entrance into Lake Arrowhead. The average annual temperature in the area is 50 degrees Fahrenheit and ranges from 5 to 100 degrees Fahrenheit.

The area known as Deer Lodge Park (DLP) is outside of the District's certificated water services boundaries. There is no physical connection between the District's water distribution system within its certificated water service area and the DLP water distribution system. All water sold in DLP is either produced from existing DLP groundwater wells or purchased from CLAWA. The District has consulted with the DWR and it is the understanding of the District that DLP is outside the scope of this 2005 UWMP. The District only maintains the DLP system infrastructure and billing. The District does not supply water to DLP.

4.2 Location and Contact Information

The District offices are located at 28200 State Highway 189, Suite S-100, and PO Box 700, Lake Arrowhead, California 92352. The phone number is (909) 336-7100. The District website address is www.lakearrowheadcsd.com.

4.3 Population Projections

Lake Arrowhead is a mountain resort area with the lake being the focal point, providing recreational opportunities in the form of boating, fishing and swimming. The land use is primarily made up of full-time and part-time residences.

The District water service area lies within what the U.S. Census Bureau refers to as the Lake Arrowhead Census Data Place (CDP). Census data is broken down into census blocks which do not match the District's certificated water service area boundary. The Census Tract Blocks in relation to the Districts certificated water service area are represented graphically in Figure 4.2. It should be noted that the census block group boundaries approximate but do not match the District's certificated water service area boundaries.

Table 4.1 lists the years 1990 and 2000 Census data for the Lake Arrowhead CDP. The Census block groups are larger than the District's certificated water service area, and therefore, the population data listed in Table 4.1 represents a larger number than the actual population within the District's water service area. The average annual growth rate in the Lake Arrowhead CDP for the years 1990 to 2000 was 3.9%.

The Draft Lake Arrowhead Community Plan (SB County 2005) forecasts for the years 2005 to 2030 an average annual population growth rate of 2.2% in the Community Plan Area which is similar to but not identical to the District's certificated water service area boundary. To develop a growth forecast within the District's certificated water service area the District considered the following in addition to the Draft Lake Arrowhead Community Plan:

- Average annual increase of 4.4% in full-time residents for the Lake Arrowhead CDP from 1990 to 2000 (Source: US Census Bureau). In 1990 the ratio of full time to part time was 2,981/9,759 (30.6% Full Time) and in 2000 the ratio was 4,292/10,983 (39.1% Full Time)

- Average annual increase of 1% in the number of new residential and commercial water connections in the District's water service area or Arrowhead Woods from 1995 to 2004 (Source: LACSD)
- Total decline of 8% in school enrollment for the entire Rim of the World Unified School District from 1997 to 2004 (Source: Rim of the World Unified School District). Rim of the World Unified School District serves the communities of Crestline, Lake Arrowhead, Running Springs and numerous small communities in between.

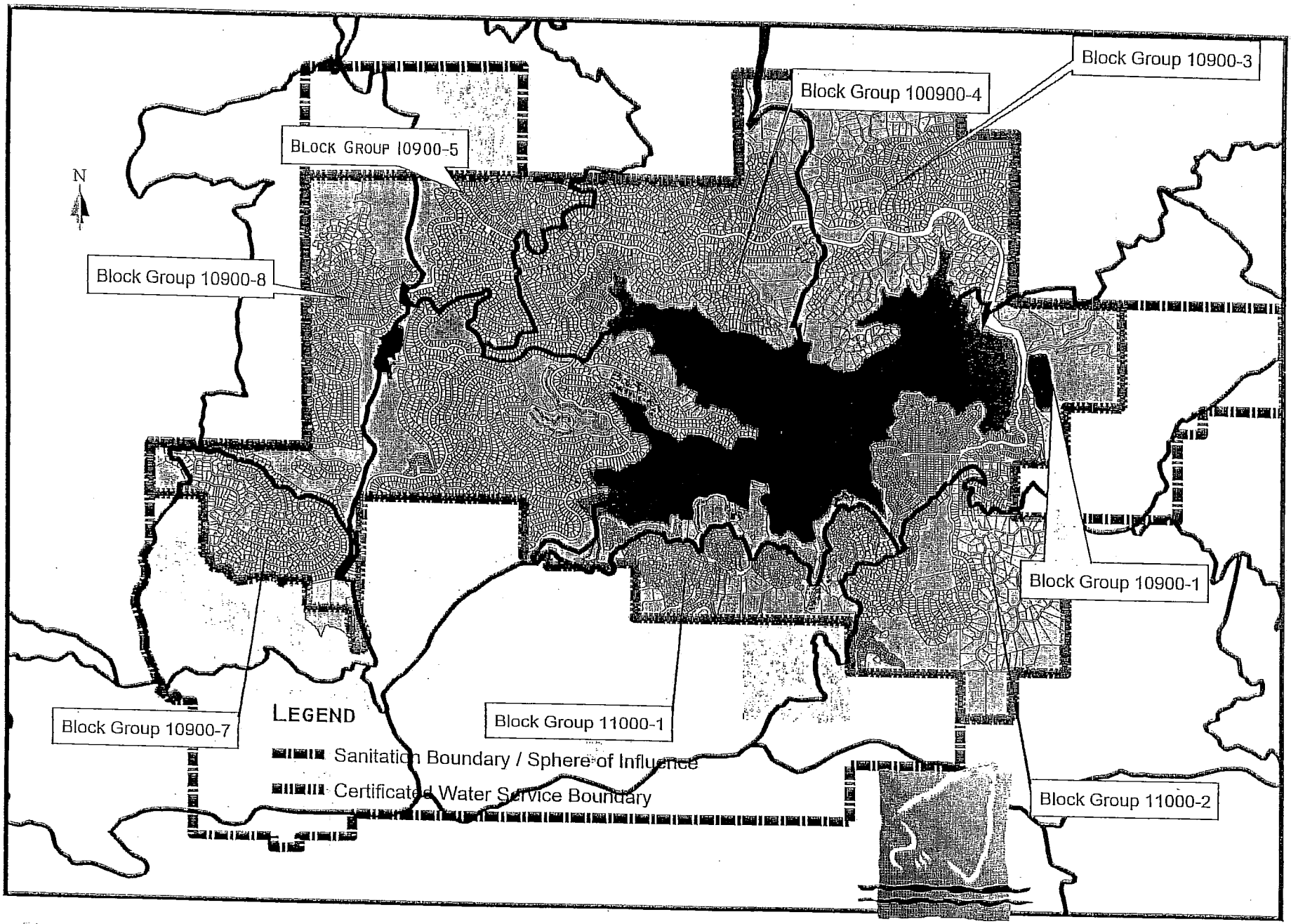
By taking into account all of the above information this plan assumes an annual average population growth rate of 2% per year for the Lake Arrowhead CDP. Population projections to the year 2025 have been made by applying the 2% average annual population growth rate to the 2000 census data for the Lake Arrowhead CDP and are listed in table 4.1.

Table 4.1: Historical and Projected Population for Lake Arrowhead Census Data Place*

		1990 Census Category P001	2000 Census Category P1	Annual Growth	Annual % Increase	% Change (10 yr)	Projected Population (2% per year)				
							2005	2010	2015	2020	2025
Block Group 1	Census Tract 109	1,130	1,296	17	1.5%	15%	1,431	1,580	1,744	1,926	2,126
Block Group 3	Census Tract 109	772	977	21	2.7%	27%	1,079	1,191	1,315	1,452	1,603
Block Group 4	Census Tract 109	872	1,482	61	7.0%	70%	1,636	1,807	1,995	2,202	2,431
Block Group 5	Census Tract 109	537	1,054	52	9.6%	96%	1,164	1,285	1,419	1,566	1,729
Block Group 6	Census Tract 109	1,372	1,668	30	2.2%	22%	1,842	2,033	2,245	2,479	2,737
Block Group 1	Census Tract 110	1,086	1,485	40	3.7%	37%	1,640	1,810	1,999	2,207	2,436
Block Group 2	Census Tract 110	702	874	17	2.5%	25%	965	1,065	1,176	1,299	1,434
TOTALS ALL BLOCKGROUPS											
OF THE CDP		6,471	8,836	237	3.7%	37%	9,756	10,771	11,892	13,130	14,496
Lake Arrowhead CDP		6,539	8,934	240	3.7%	37%	9,864	10,890	12,024	13,275	14,657
Block Group 7, Census Tract 109		1,637	1,790	15	0.9%	9%	1,976	2,182	2,409	2,660	2,937
Block Group 8, Census Tract 109			770	77			850	939	1,036	1,144	1,263
Block Group 4, Census Tract 110		412	450	4	0.9%	9%	497	549	606	669	738
Total for all Block Groups											
representing Grass Valley		2,049	3,010	96	4.7%	47%	3,323	3,669	4,051	4,473	4,938
Total Lake Arrowhead CDP											
And Grass Valley Blocks		8,588	11,944	336	3.9%	39%	13,187	14,560	16,075	17,748	19,595

**NOTE: Census Block Group Boundaries do not match the LACSD Certificated Water Service Boundary (Refer to Figure 4.2).*

Figure 4.2: LACSD Census Blocks and Water Service Boundaries



4.4 Climate

Lake Arrowhead has a unique climate for southern California in that the area has four distinct seasons. Summers in the Lake Arrowhead area are generally 20 degrees cooler than the Valley floor with summer highs generally in the 80's. In winter, night time temperatures regularly drop below freezing but usually return back above freezing in the morning with an average winter high in the 50's. Average annual precipitation during the period 1968 through 2003 was approximately 40 inches (Bookman-Edmonston 2004). Average evapotranspiration, precipitation and temperature for the area are listed in Table 4.2.

Table 4.2: Climate Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total/Average
Average Evapotranspiration[1]	1.8	2.6	4.6	6.0	7.0	7.6	8.1	7.4	5.4	4.1	2.4	1.8	59
Average Precipitation (inches)[2]	8.1	9.3	7.7	2.3	1.2	0.2	0.1	0.2	1.0	2.0	3.4	5.0	40
Average High Temperature (°F)[2]	45	48	53	60	67	77	67	64	60	65	53	46	59
Average Low Temperature (°F)[2]	30	30	32	35	41	49	45	43	39	42	34	30	38

1) Source: Lake Arrowhead CIMIS Station #128
2) Source: Lake Arrowhead Fire Station #1, Archive Data UC Davis

4.5 Water Treatment and Distribution System

Currently the District has three sources of water for potable use; (1) surface water from Lake Arrowhead, (2) groundwater from five District owned wells in the Grass Valley basin and, (3) SWP water delivered by CLAWA. With respect to the District's use of water supplied from Lake Arrowhead please refer to the "Disclosure Statement Regarding Water Rights Complaints against Lake Arrowhead Community Services District" at the front of this report.

Surface water from Lake Arrowhead is coagulated, filtered and disinfected at the Bernina and Cedar Glen Water Treatment Plants (WTP). Water from wells in the Grass Valley Basin is treated at the Grass Valley well head treatment plant. SWP water is treated and delivered to the District's distribution system by CLAWA.

The Bernina WTP has a permitted treatment capacity of 5 mgd and receives lake water through an intake located in North Bay. The Cedar Glen WTP has a permitted treatment capacity of 2 mgd and receives lake water through an intake located on the south shore of the lake ~~in~~ near Emerald Bay.

The total permitted treatment capacity of the District's potable water system is 7 mgd. The current average daily demand on the water system is 2.3 mgd. However, because the residential makeup of the District is highly seasonal, daily demand increases during weekends and holidays. Summer holiday peak daily demand can reach 6 mgd while mid winter daily demand drops to approximately 1.2 mgd.

In addition to the two water treatment plants, the District maintains 18 water storage reservoirs, 9 pressure tanks, 19 water pumping stations and approximately 125 miles of water distribution pipelines.

4.6 Wastewater Collection and Treatment System

The District owns and operates a wastewater collection, treatment and effluent disposal system. Two drainage basins distinguish the collection areas, the Lake Arrowhead Basin and the Grass Valley Basin.

The District has approximately 350 miles of sewer pipelines, 10,000 manholes, 21 lift stations and currently operates two wastewater treatment plants; 1) the Grass Valley Wastewater Treatment Plant (GVWWTP) and, 2) the Willow Creek Wastewater Treatment Plant (WCWWTP). Treated effluent is currently conveyed from these treatment plants through a 10-mile outfall pipeline to a disposal site near Hesperia where the effluent is percolated into the Mojave groundwater basin.

5.0 Water Supply Sources

Water Code Section 10631
(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan: (1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management. (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as over drafted or has projected that the basin will become over drafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. (3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records. (4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

In October 2003, the District Board of Directors accepted the Water Demand and Supply Report (Tetra Tech 2003) and adopted the goal of reducing and ultimately eliminating reliance on Lake Arrowhead as the community's sole source of water. The District does not propose to stop using lake water outright. During wet and average water years the community would continue to rely on the lake for at least a part its water supply. This is because water from Lake Arrowhead is the community's least cost, best quality and most reliable source of water.

The Water Demand and Supply Report (Tetra Tech 2003) outlined the development of a series of three milestone projects that would allow the District to meet the goal of reducing and ultimately eliminating the draft from the lake in a cost-effective and measured way. The progress of these projects is outlined in section five of this report. The projects detailed in the report include:

Milestone 1 Projects

- Treatment Plant Efficiency Improvements
- Water Conservation Programs, Phase I
- Water Conservation Programs, Phase II
- Groundwater Development Phase I
- CLAWA I 62 AFY Supplemental Supply

Milestone 2 Projects

- Recycled Water Program Phase I
- Groundwater Development Phase II

Milestone 3 Projects

- SWP Water Purchase/Exchange

The SAG helped to identify and recommend water supply options to the District Board of Directors, the majority of which were adopted by the Board.

The following sections describe the Districts existing, planned and potential future sources of water supply.

5.1 Existing Sources

Currently the District has three sources of water for potable use; (1) surface water from Lake Arrowhead, (2) groundwater from five wells in the Grass Valley basin and, (3) SWP water delivered by CLAWA. With respect to the District's use of water supplied from Lake Arrowhead please refer to the "Disclosure Statement Regarding Water Rights Complaints against Lake Arrowhead Community Services District" at the front of this report.

5.1.1 Surface Water

From its inception, the area commonly known as the Arrowhead Woods has relied entirely on withdrawals from Lake Arrowhead to meet demands for water supply. Lake Arrowhead was created by the construction of an earth fill dam on the ~~Deep~~ Little Bear Creek drainage in 1915. When full, the reservoir has a capacity of approximately 47,000 AF. Lake Arrowhead is filled from precipitation and surface runoff via Orchard Creek, Fleming Creek, Burnt Mill Creek and Little Bear Creek as well as subsurface springs. also Orchard Cr. & Cumberland Cr.

It is the District's policy to reduce and ultimately eliminate reliance on Lake Arrowhead as the community's sole source of water supply. This does not mean that the

District would stop using lake water outright. Water supplied from Lake Arrowhead is the community's least cost, best quality and most reliable source of water supply. However, during drought conditions, as the community experienced during the past six years, it is the District's goal to supply water from alternative sources of water supply. The purposes of this policy are to ensure a reliable source of water supply for the Arrowhead Woods community and to maintain the integrity of Lake Arrowhead. With respect to the District's use of water supplied from Lake Arrowhead please refer to the "Disclosure Statement Regarding Water Rights Complaints against Lake Arrowhead Community Services District" at the front of this report.

5.1.2 Groundwater

The California Department of Water Resources (DWR) has not identified the Lake Arrowhead or Grass Valley groundwater basins in its Bulletin No. 118. These basins are not adjudicated or over drafted.

For fiscal year 2005-2006 the District has a project budgeted to begin ground and surface water monitoring activities. These activities include a proposal to develop a groundwater and surface water monitoring plan. District staff intends to begin implementation of this project in January 2006 following completion of the Urban Water Management Plan. The District is in consultation with the United States Geological Survey (USGS) and the United States Bureau of Reclamation (USBR) to collaborate development of this groundwater and surface water monitoring and management program.

Groundwater resources are limited in the Lake Arrowhead area. The geology in the Lake Arrowhead area is primarily made up of fractured granite. Groundwater in granitic mountain areas occurs where there are open fractures in the rock and it is difficult to estimate the true production of water from this type of geology.

The Lake Arrowhead area is located in the San Bernardino Mountains. The Lake Arrowhead area has been subdivided into multiple hydrologic subunits (Refer to Figure

5.1). The subunits are named according to the major surface water drainage feature in the subunit. The boundaries of the subunits represent surface water drainage areas.

The Lake Arrowhead basin is generally defined as the watershed around Lake Arrowhead. The Grass Valley Basin is located to the West of Lake Arrowhead. The relative location of the Grass Valley basin to the Lake Arrowhead basin is shown in Figure 5.1. The Grass Valley and Lake Arrowhead basins are not identified by the DWR as basins with a water shortage or overdraft. The basins are not adjudicated and the basins currently do not have a groundwater management plan associated with them.

The Grass Valley Basin is a hydrologic subunit of the Lake Arrowhead watershed separated from the other subunits by surface water drainage divides (GeoScience 2005). The drainage area for the Grass Valley Basin is approximately 2.6 square miles (Tetra Tech 2003).

In 2003 and 2004 the District sited and drilled five municipal groundwater wells in the Grass Valley basin. Based upon preliminary pump test data, it appears that the wells will have an average annual production capacity of up to 200 AFY. Production of water from groundwater wells in fractured granite is difficult to estimate and the true production of water from the District's wells in the Grass Valley Basin will not be known until the wells have operated continuously for several years.

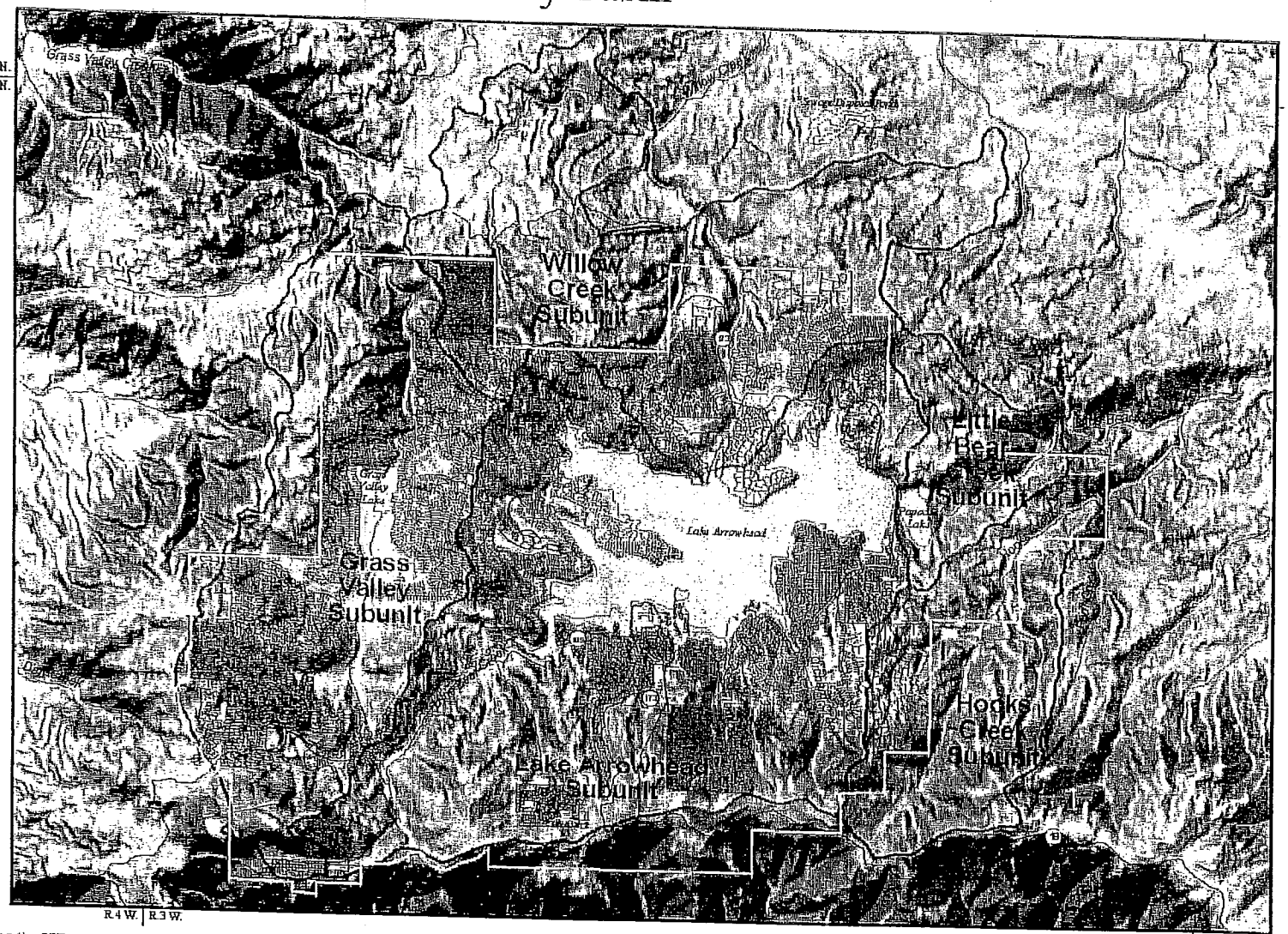
A drinking water source assessment for each of the wells has been completed as per the California Department of Health Services (DHS) Drinking Water Source Assessment and Protection (DWSAP) Program for the District (GeoScience 2005). The District received permits to deliver groundwater to the District's potable water distribution system from DHS for Wells 1, 2, 3 and 4 on September 27, 2005.

Table 5.1 shows the actual amount of water pumped from groundwater wells for 2003 and 2004 as well as an estimate of projected future production from planned District groundwater wells for the years 2010, 2015, 2020 and 2025.

Table 5.1: Groundwater Production (AFY)

	2003	2004	2005	2010	2015	2020	2025
Grass Valley Basin	45	45	100	200	200	300	325
Lake Arrowhead Basin	-	-	-	100	200	300	325
Total	45	45	100	300	400	600	650
% of Total Water Supply	2%	2%	4%	12%	15%	21%	22%

Figure 5.1: Grass Valley Basin



HYDROLOGIC SUBUNITS
IN THE
LAKE ARROWHEAD AREA

EXPLANATION

- Hydrologic Subunit Boundary and Designation
- Lake Arrowhead Community Services District Boundary
- State Highway
- Parcel Boundary
- Surface Water
- Creek, Stream or River

Map and by: DWB
Map Projection:
UTM Zone 11, NAD27
Central Meridian: -117 degrees

NORTH
0 2000 4000 Feet

4-JAN-05

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5.1.3 State Water Project (SWP) Water

State Water Project (SWP) water is currently being supplied to the Arrowhead Woods community from the Crestline Lake Arrowhead Water Agency (CLAWA) Overlap Agreement, also known as CLAWA I, which was brought on line in 2003. A second source of SWP water is the CLAWA and San Bernardino Valley Municipal Water District (SBVMWD or MUNI) project which has been approved by the three agencies (LACSD, CLAWA and SBVMWD). This second source is also known as the CLAWA II and is scheduled to be on-line in 2007.

5.1.3.1 CLAWA I

In 2003 the District and CLAWA identified 436 parcels that include 298 residences which are located within the boundaries of the Arrowhead Woods certificated water service area and the CLAWA water service area commonly referred to as the Overlap Area. Based upon historical consumption records, these residences consume an estimated 62 AFY of potable water.

In July 2003 the District and CLAWA entered into an agreement regarding a SWP water supply for the Overlap Area. Under this agreement, the District pays regular rates and charges to CLAWA for delivery of approximately 62 AFY, an amount equal to the average annual use of the homes in the Overlap Area. The agreement also addresses delivery of water to satisfy previous use within the Overlap Area as well as advance deliveries for future use in the Overlap Area. The agreement states:

> "Nothing herein shall prevent the Agency (CLAWA) from delivering such water to the District to satisfy previous use within the Overlap Area, or from providing advance deliveries to the District for future use within the Overlap Area, if approved by the Agency."

CLAWA at its sole discretion shall determine if, when and under what circumstances that the District may take delivery of such water to satisfy previous use

within the Overlap Area, or from providing advance deliveries to the District for future use within the Overlap Area.

5.1.3.2 CLAWA II

In 2005, the District, CLAWA and the San Bernardino Valley Municipal Water Agency (SBVMWD) entered into agreements to deliver SWP water to the District (Refer to Appendix E). The project encompasses a one-time purchase of 8,000 AF of water by CLAWA from SBVMWD and a 10-15 year agreement between the District and CLAWA to take delivery of 7,600 AF of SWP water, in annual increments. The purchased water will be extracted from Lake Silverwood, treated and delivered by CLAWA to the District. In turn, the District would deliver the purchased SWP water to its Arrowhead Woods customers. The project also includes certain capital improvements to deliver and store the water.

On June 28, 2005 the Board of Directors adopted a resolution approving the agreement between CLAWA and SBVMWD for the sale, treatment and delivery of SWP water. On July 7, 2005 the CLAWA Board of Directors approved the agreement and on July 20, 2005 the SBVMWD Board of Directors approved the agreement. The agreement is included in Appendix E.

The Agreements include the following:

A. LACSD agrees to purchase at least 640 AF of SWP Water per year for the first two calendar years.
B. In subsequent years the LACSD will purchase at least 560 AF of SWP Water per year up to an aggregate of 7,600 AF;
C. LACSD will have the option to decline delivery of the minimum purchase quantity of SWP Water in any year in which case CLAWA will retain the amount paid for the purchased water as a credit toward any purchase of water above the minimum purchase in subsequent years;
D. Water purchased in any year in excess of the minimum purchase of SWP Water, the excess quantity purchased will apply to the minimum purchase for subsequent years;

E. CLAWA has the right in any year to utilize the SWP Water to satisfy consumptive needs in their own service area. In the event that CLAWA's use of water reduces availability of SWP Water below the minimum purchase amount, the amount of SWP Water available to LACSD for that year will become the minimum purchase amount for that year;

The agreement provides for the District to receive all the water it purchases. The District anticipates it will utilize 100% of the purchased water during the 10-15 year term of the agreement. If for any reason the water is not delivered during the 10-15 year term the agreements may be extended accordingly to the requirements of California Environmental Quality Act (CEQA).

5.2 Planned Future Water Supplies

Water Code section 10631
(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

Table 5.2 in Section 5.4 shows to the extent practicable the existing and future sources of water available to the District. The quantities of surface water are given in ranges because there is no practicable method to predict their availability in the future. CLAWA I is an assumed potential reserve fund of SWP water and will be drawn as needed if available on an annual basis to offset surface water diversions from Lake Arrowhead. With respect to the District's use of water supplied from Lake Arrowhead please refer to the "Disclosure Statement Regarding Water Rights Complaints against Lake Arrowhead Community Services District" at the front of this report.

Please refer to Table 11.2 in Section 11.4 of this plan which includes an estimated scenario for projected water demand and supply to the year 2025.

5.2.1 Groundwater

It is important to note that the geology underlying the District is entirely made up of fractured bedrock and it is difficult to estimate the sustainable yield of the groundwater basin. The District has done several studies including the Geohydrologic Evaluation of the Maximum Perennial Yield of the Groundwater Basin in the Lake Arrowhead Area (GeoScience 2005) and Exploration for Bedrock Groundwater Resources: Phase I (BCI Geonetics 1993). Based on these studies and knowledge of well drilling in the region and adjoining water districts the District's present goal is to develop an additional 450 AFY of groundwater supply for a total of 650 AFY.

The District has conducted several studies of potential new groundwater well sites. The District's most recent study, Evaluation of Potential Groundwater Production Targets in the Lake Arrowhead Area (IWR 2004) has identified 16 new areas for potential groundwater well drilling within the boundaries of the District. The environmental work for developing these additional groundwater wells is anticipated to begin in 2006 and is included in the District's Fiscal Year 2005-2006 budget. Table 5.1 shows the anticipated groundwater production and timeline. At this time the District does not have the means to project groundwater production for normal, single dry and multiple dry water years.

On August 23, 2005 the District Board of Directors approved the issuance of a Request for Proposals (RFP) for private and public entities to provide supplemental water supplies to the District. The proposals will be evaluated according to the criteria described in the RFP and in the Water Demand and Supply Report (Tetra Tech 2003).

5.2.2 State Water Project Water

Refer to Section 5.1.3.2

5.2.3 Recycled Water Phase I

In July 2005, the District began the final engineering phase of the Recycled Water Phase I project which includes improvements to the GVWWTP that will increase the quality of water discharged by the plant and increase plant capacity by approximately 1.0 mgd. The result of the planned improvements is up to 1.0 mgd of effluent meeting Title 22 recycled water standards for outdoor irrigation within the Districts service area.

For clarification, the Recycled Water Phase I project is made up of three distinct capital improvement projects: 1) Grass Valley Wastewater Treatment Plant Improvements (upgrade and expansion), 2) Recycled Water Storage and Delivery and, 3) Lake Arrowhead Country Club (LACC) Golf Course On-site Retrofits.

The first of these three projects, the Grass Valley Wastewater Treatment Plant Improvement Project is an upgrade of the plant from advanced secondary treatment to tertiary treatment (approximately 1 mgd) and expansion of the plants total wastewater treatment capacity. The second project, the Recycled Water Storage and Delivery consists of one, one million gallon storage tank, up to 14,000 lineal feet of 14-inch pipe and pump station to convey recycled water from the GVWWTP to the LACC golf course. The third project, the LACC Golf Course On-site Retrofits consists of modifications to the existing, golf course irrigation system which includes but is not limited to backflow protection, separation of potable and recycled water systems, tagging and signage, setbacks and perimeter protection improvements.

It is the District's understanding that these improvements are necessary to comply with regulatory requirements during extreme wet weather events when emergency discharges are made to Grass Valley Creek and the Hillside Ponds. In addition to complying with a current cease and desist order, Title 22 recycled water will be made available for use during the irrigation season within the District's service area. The Recycled Water System Phase I project is expected to be completed and on-line for the irrigation season in 2008.

5.3 Potential Future Sources

The District's potential future sources are water supply projects and water supply programs that may be undertaken by the District to meet the total projected water use. The District is evaluating additional water supply projects and during the next 15 years one or more of the following projects may be implemented:

1) Additional groundwater beyond 650 AFY
2) Additional SWP water beyond CLAWA I and CLAWA II
3) Additional recycled water beyond 200 AFY

These potential future water supply projects are not factored into current projections. Projections will be revised if and when any of the potential future water supply projects are adopted for implementation by the District. The following sections describe each of these potential future water supply projects.

5.3.1 Groundwater

Referring to Section 5.2.1, the District will have an on-going effort to continue to develop groundwater for use in the District's water service area.

5.3.2 SWP Water

On September 13, 2005, the District's Board of Directors authorized the firm of Bookman-Edmonston to prepare a plan in response to the SWRCB Final Staff Report. As a part of the scope of work for this plan, Bookman-Edmonston will evaluate potential alternatives for importing State Water Project water involving one or more of the following agencies:

- California Department of Water Resources
- Crestline Lake Arrowhead Water Agency (CLAWA)
- Metropolitan Water District of Southern California (Metropolitan)
- Mojave Water Agency (MWA)

The addendum will consider the District's potential recycled water availability, an analysis of potential recycled water customers, a preliminary design of the infrastructure needed to serve them and off-season recycled water storage evaluation. Results of the Recycled Water Phase II study should be available in early 2006.

The Board of Directors also reconvened the Stakeholders' Advisory Group (SAG) to meet in a public forum to review and comment on the preparation of this addendum report, and if possible, provide their recommendations to the Board of Directors. Participation in the SAG is open to any interested member of the public.

5.4 Summary of Existing and Planned Future Sources

Table 5.2 lists the existing and planned sources of water supply described in the previous sections. Potential future water supply projects are not factored into current projections. Ranges of estimated supply are included in Table 5.2. The District cannot provide totals at this time due to the uncertainty of the District's right to surface water diversions from Lake Arrowhead. Refer to Table 11.2 in Section 11.4 of this plan for an estimated scenario of projected water demand and supply.

Table 5.2: Existing and Planned Sources of Water (AFY)

Water Supply Sources	2005	2010	2015	2020	2025
Surface Water[1]	2,450[5]	240-2,400	240-2,500	240-2,600	240-2,800
Groundwater[2]	115	25-300	25-400	25-600	25-650
SWP Water (CLAWA I)	0-62	0-565	0-565	0-565	0-565
SWP Water (CLAWA II)[3]	0	0-1,500	0-1,500	0-1,500	0-1,500
Recycled Water (projected use)[4]		200	200	200	200

(1) It is the District's goal to limit surface water diversion to maintain the level of Lake Arrowhead at or above 5,100 feet (ALA Datum). With respect to the District's use of water supplied from Lake Arrowhead please refer to the "Disclosure Statement Regarding Water Rights Complaints against Lake Arrowhead Community Services District" at the front of this report.

(2) Assuming additional 450 AFY of additional groundwater in increments for a total of 650 AFY.

(3) Delivery of SWP water is variable as defined in section 5.1.3.2.

(4) Recycled Water Phase I is projected to begin production of 200 AFY of recycled water in 2008.

(5) Lake was in overflow condition allowing for a larger extraction of surface water in 2005.

5.5 Opportunities for Exchange or Transfer

Water Code section 10631
(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

There are no opportunities for exchange or transfer at this time or in the near future. If the need arises the District will look in to opportunities for exchange or transfer.

5.6 Development of Desalinated Water

Water Code section 10631(i)
(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

There are currently no opportunities for development of desalinated water within the District's service area.

6.0 Water Use by Customer Type

Water Code section 10631
(e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses: (A) Single-family residential. (B) Multifamily. (C) Commercial. (D) Industrial. (E) Institutional and governmental. (F) Landscape (G) Sales to other agencies. (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof. (2) Agricultural. (3) The water use projections shall be in the same five-year increments described in subdivision (a).

The District customers are primarily single family residence, with a small number of institutional, commercial, and irrigation accounts. Past, present and future metered water use by customer type is presented in Table 6.1. Future water use is projected assuming a 1% per year increase in water demand (Refer to Section 11.4).

Table 6.1: Metered Potable Water Use by Customer Type- Past, Current and Future

	2000		2005		2010		2015		2020		2025	
Water Use Sectors[1]	No. of Accounts	Metered Sales (AF)	No. of Accounts	Metered Sales (AF)	No. of Accounts	Metered Sales (AF)	No. of Accounts	Metered Sales (AF)	No. of Accounts	Metered Sales (AF)	No. of Accounts	Metered Sales (AF)
Residential	7,109	1,789	6,637	1,615	6,933	1,877	7,245	1,972	7,573	2,073	7,918	2,179
Commercial	106	453	695	169	726	196	758	206	793	217	829	228
Institutional	26	41	154	38	161	44	168	46	176	48	184	51
Landscape Irrigation	78	73	232	56	242	65	253	69	264	72	276	76
Total	7,293	2,357	7,717	1,878	8,062	2,182	8,425	2,293	8,806	2,410	9,207	2,533

(1) Water use by sector is estimated from historical data

6.1 Additional Water Uses and Losses

The District does not sell potable water to other agencies. Additional water uses for the District include the following: 1) transfer of untreated surface water from Lake Arrowhead to Grass Valley Lake primarily for irrigation at the LACC Golf Course, 2) water used to backwash water treatment filters, and 3) unaccounted for system losses. The transfer of untreated surface water from Lake Arrowhead to Grass Valley Lake for landscape irrigation is expected to be replaced by recycled water in the year 2008.

These additional uses will change over time. During the next 20 years the District has several programs planned, these include the following: 1) Treatment plant efficiency program, 2) Recycled water Phase I and II, 3) Program to reduce unaccounted for system losses to 5% by the year 2010. Table 6.2 is a summary of these additional uses and losses as well as the expected results of the programs to be completed in the future.

Table 6.2: Additional Water Uses and Losses – AFY

Additional Water Uses	2000	2005	2010	2015	2020	2025
Raw Water (LACC Irrigation)[1]	182	50	0	0	0	0
Recycled Water[2]	0	0	200	200	200	200
Additional Water Losses						
WTP Filter Backwash[3]	269	80	70	70	65	65
Unaccounted losses[4]	n/a	308	115	121	127	134
Total Additional Water Uses and Losses	451	438	385	391	392	399

(1) Assumes Recycled Water Phase I replaces use of raw water for LACC irrigation by 2008
(2) LACSD operations data and projections
(3) Defined as the amount of water delivered to the potable water delivery system less the amount of metered deliveries.
(4) Assumes 14% unaccounted for water loss. It is the Districts goal to achieve less than 5% unaccounted for loss by 2010.

(3)?

Table 6.3 lists total water use which represents the sum of the water use by customer type listed in Table 6.1 plus the additional water uses and losses listed in Table 6.2 projected to the year 2025. Future water use is projected assuming a 1% per year increase in water demand (Refer to Section 11.4).

Table 6.3: Total Water Use – AFY

Year	2000	2005	2010	2015	2020	2025
Total Water Use	2,807	2,316	2,567	2,684	2,802	2,932

7.0 Water Demand Management Measures

Water Code section 10631
(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (2) A schedule of implementation for all water demand management measures proposed or described in the plan.(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan. (4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand. (g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (j) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to that council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

The Urban Water Management Planning Act requires a description of 14 specified demand management measures. Those measures are also described in the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding (MOU) as Best Management Practices (BMPs) for managing water supplies. Urban water suppliers that are members of the CUWCC and submit annual reports to that council in accordance with the Memorandum of Understanding Regarding Urban Water Conservation in California (CUWCC 1991) may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of this section of the California Water Code.

In December 2000, the District became a signatory to the CUWCC and began implementing the BMPs. The District's annual reports identifying water demand management measures currently being implemented or scheduled for implementation are included in Appendix D. The BMPs are practices and/or policies with a proven record of effectiveness in reducing water use. The BMP measures are:

1. Water Survey Programs for Single-Family Residential and Multi-Family Residential Customers
2. Residential Plumbing Retrofits
3. System Water Audits, Leak Detection and Repair

4. Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections to Include a Meter
5. Large Landscape Conservation Programs and Incentives
6. High-Efficiency Washing Machine Rebate Programs
7. Public Information Programs
8. School Education Programs
9. Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts
10. Wholesale Agency Assistance Programs
11. Conservation Pricing
12. Conservation Coordinator
13. Water Waste Prohibitions
14. Residential ULFT Replacement Program

The District's water conservation program currently includes all of the BMPs above with the exception of BMP 10. BMPs 6 and 8 are included in the fiscal year 2005-2006 budget for possible implementation. BMP 10 does not apply to the District. The District is also looking into expanding its programs within the existing BMPs, such as adding mandatory landscape standards for all new construction and remodels. The District is continuing in its efforts to expand all water conservation practices in its service area (Refer to Appendix D).

In addition to the BMPs, State law requires that land use planning jurisdictions enact a landscape water conservation ordinance consistent with the state's Model Landscape Ordinance, or one that uses a water budget approach, or one that has rules and regulations without tracking usage. The District lies within the jurisdiction of San Bernardino County, which maintains a landscape conservation ordinance. In addition, the District's Ordinance No. 58 also provides requirements promoting efficient landscape design, limiting irrigation hours and specifying turf application limitations. The District's Ordinance No. 58 (Refer to Appendix G) established drought stages and mandatory water conservation restrictions as well as permanent water conservation policies and penalties.

Southern California's recent six-year drought cycle caused numerous problems for the community. The two most critical problems resulting from the drought were historically low lake levels and drought-stressed trees that succumbed to bark beetle infestation. In 2003, with limited water supplies and increasing demands, water conservation quickly became a necessary tool for communities throughout the western United States. This is particularly true for the Lake Arrowhead area, which up until 2004, relied on Lake Arrowhead as its sole source of water supply.

Water conservation is the most immediate, most environmentally sound, and one of the least expensive courses of action available to the District. The addition of supplemental water supplies to reduce the community's reliance on Lake Arrowhead has not changed the need for the community to embrace ongoing water conservation efforts as an integral part of the community lifestyle.

Below is an overview of the District's existing Water Conservation Program and water use reductions achieved over the past two years:

Lake Arrowhead Community Services District

Water Conservation Program

The District developed and implemented a Water Conservation Program in early 2003. The purpose of the program is to maximize the amount of water conserved in the Lake Arrowhead Community. This program will be a permanent fixture in the community for years come. These are the main components:

- **Focused Water Conservation Services**
  Water conservation programs marketed directly to individual customers with the greatest potential to reduce water use in the Lake Arrowhead community.

- **Community-Wide Water Conservation Services**
  Services and public information programs dedicated to the promotion of community-wide conservation.

- **Enforcement**
  Programs and services dedicated to the enforcement of existing district rules and regulations, which encourage efficient water use and prohibit the wasting of water.

Existing District employees were recruited to staff the Program. Program staff has been working in coordination with stakeholder groups, other District employees and community volunteers to develop and implement the Program.

Community awareness and support of water conservation measures is vital to the success of all Program efforts. The Stakeholders' Advisory Group Water Conservation Committee (Committee) and other stakeholder groups have met as needed with District staff to assist with and provide advice in the development and implementation of water conservation measures.

In September 2004, Governor Schwarzenegger signed AB 2717, a bill which asks the California Urban Water Conservation Council (CUWCC) to set up a stakeholder Landscape Task Force to look at landscape water issues statewide and to make recommendations for improvements. The Landscape Task Force is composed of representatives from water agencies, landscape contractors, the green industry, cities and counties, environmental groups, and state and federal agencies. In December 2004, The CUWCC sent a letter inviting the District to contribute and participate with the AB 2717 Landscape Task Force. In February 2005, the Board approved District staff to proceed with participation in the AB 2717 Landscape Task Force.

Staff, together with the Water Conservation Stakeholders Group prepared "Mandatory In March 2004, District Landscape Standards." The District does not have the legal authority to implement mandatory landscaping standards; however, the County of San Bernardino (the local land use authority) does have the legal authority to implement such standards for all new building construction and remodeling. For this reason, the District developed standards that were forwarded to the County of San Bernardino for their consideration. As of this date, there is no substantive progress to

report concerning if and when the County of San Bernardino would implement these standards.

Landscaping standards are one of the greatest challenges that the District faces. The implementation of mandatory landscape standards is needed if the District is to achieve its long-term water demand management goals. Being a participant in the AB 2717 Landscape Task Force program, the District will have the greatest possible opportunity to advocate legislation that may authorize water agencies to implement landscape standards that are appropriate to our community's needs and water supply limitations.

8.0 Water Shortage Contingency Plan

Water Code section 10632
The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier: (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

In October 2003, the District Board of Directors accepted the Water Demand and Supply Report (Tetra Tech 2003) and adopted the goal of reducing and ultimately eliminating reliance on Lake Arrowhead as the community's sole source of water. The District does not propose to stop using lake water outright. During wet and average water years the community would continue to rely on the lake for at least a part of its water supply. This is because water from Lake Arrowhead is the community's least cost, best quality and most reliable source of water. The October 2003 Water Demand and Supply Report is a plan for implementing supplemental water supplies and reducing demand on surface water diversions from Lake Arrowhead. Taken together, the projects identified in the Plan will reduce the District's dependence on the lake by up to 100%.

The Water Demand and Supply Report (Tetra Tech 2003) outlined the development of a series of three milestone projects that would allow the District to meet the goal of reducing and ultimately eliminating the draft from the lake in a cost-effective and measured way. The progress of these projects is outlined in Section 5.0 of this report.

The stages of action to be undertaken by the District in response to a water supply shortage, including up to a 50% reduction in the District's primary source of water supply (Lake Arrowhead) include but are not limited to the following:

1. Water Conservation 25% Mandatory Reduction in Usage - The District's annual water consumption is projected to be approximately 2,900 AF by the year 2025 based on a projected 1% per year increase in the number of new water connections. The District's current Ordinance No. 58 requires up to a 25% mandatory reduction in water use for all customers when defined drought stages are in effect. Following adoption of the 2005 UWMP the District Ordinance No. 58 will be updated to comply with this plan.

2. Supplemental Water Supplies - To achieve an additional 25% or more reduction in demand on surface water diversions from the District's primary source of water supply (Lake Arrowhead), the District has in place or is in the process of putting in place the following projects:

    a. Import SWP water (Refer to Section 5.1.3). SWP water has been secured from two sources. One source is the CLAWA Overlap Agreement (CLAWA I). This is a permanent source that was brought on line in 2003 and currently supplies 62 AFY. A second source of SWP water is the CLAWA/SBVMWD Project (CLAWA II). This is a medium term (10 to 15 year) source of SWP water which will supply up to 1,500 AFY. Agreements to implement this project have been approved and the project is on schedule to deliver SWP water in 2006.

    b. Initially utilize 200 AFY of groundwater supplied from District-owned groundwater wells in the Grass Valley Basin (Refer to Section 5.1.2). Additional well development projects are planned to produce up to a total of approximately 650 AFY.

    c. Utilize recycled water for outdoor irrigation which will reduce demand by up to 200 AFY (Refer to Section 5.2.3). The Recycled Water Phase I project is scheduled to be online in 2008.

The above programs will allow the District to continue serving its customers in response to a water supply shortage, including up to a 50% reduction in the District's primary source of water supply (Lake Arrowhead). With respect to the District's use of water supplied from Lake Arrowhead please refer to the "Disclosure Statement Regarding Water Rights Complaints against Lake Arrowhead Community Services District" at the front of this report.

The District is in the process of developing an operating criteria in conjunction with District stakeholders for managing the level of Lake Arrowhead which is consistent with finding alternative supplies of water and demand reductions to reduce usage on Lake Arrowhead by more than 50%.

The water shortage contingency plan for the District is a combination of supplemental water supplies, voluntary conservation efforts through general education and awareness followed by exercise of mandatory conservation as conditions require. Supplemental water supply sources, voluntary water conservation efforts in addition to mandatory conservation are intended to reduce water demand by more than 50%.

8.1 Estimate of Minimum Water Supply for Next Three Years

Water Code section 10632
(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

The multiple dry water year period used for this report is the period from October 1999 through September 2002. During this period precipitation in the area ranged from a low of 8.75 inches in water year 2001-2002 to 22.10 inches in water year 2000-2001. Table 8.1 lists the historical water supply during the three year historic dry period for calendar years 2000 through 2002. It should be noted that this is the driest three year period on record in the District since 1903.

Table 8.1: Historic Three-Year Dry Sequence Water Supply – AFY

Source	2000	2001	2002
Surface Water from Lake Arrowhead[1]	2,821	2,947	3,157

1) See Dislcosure Statement Regarding Water Rights Complaint Against Lake Arrowhead Community Services District.

2) Surface water from Lake Arrowhead for a normal year will be based on Lake operating criteria.

Table 8.2 shows how the District intends to use alternative supplemental sources of water during each of the next three water years. Water supply is given as a range in Table 8.2. Actual water supply will be based on: (1) operating criteria for surface water diversions from Lake Arrowhead that is currently being developed by stakeholders of the

District, (2) actual yield of groundwater wells, (3) availability of State Water Project water and, (4) the amount of recycled water usage.

Table 8.2: Three-Year Estimated Minimum Water Supply – AFY

Source	Normal	2006	2007	2008
Surface Water from Lake Arrowhead[1]	240-2,400	240-2,500	240-2,500	240-2,500
Groundwater	25-650	25-200	25-200	25-200
SWP Water (CLAWA I)[2]	0-565	0-565	0-565	0-565
SWP Water (CLAWA II)[2]	0-1,500	0-1,500	0-1,500	0-1,500
Recycled Water[3]	200	200	200	200

1) See Dislcosure Statement Regarding Water Rights Complaint Against Lake Arrowhead Community Services District.
2) Interruptable supply.
3) Recycled water for outdoor irrigation to reduce demand on potable supply.

8.2 Catastrophic Supply Interruption Plan

Water Code section 10632
(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

The District addresses three categories of catastrophic events: 1) Regional Power Outages, 2) Wildfires and, 3) Earthquakes. The primary effect on the District during any of these events is a loss of power to the water treatment plants and the wastewater delivery and treatment systems. At this time approximately 85% of the District's water systems are equipped with emergency power generation that will supply power during a catastrophic event. The remainder of the facilities are equipped to be supported by portable power generation and in the event of a catastrophic event the District would acquire and connect these portable units to supply power to keep the water supply system in operation.

The Districts Disaster Preparedness Plan and Wild Land Fire Policy (Refer to Appendix F) identify the specific actions which will take place in the event of a catastrophic emergency. The District also has an Emergency Operations Plan that provides a detailed plan for the evaluation and mitigation of the water distribution system in the case of a major earthquake. The plan outlines the specific sequence of events in

order to bring back on line facilities as resources allow and detailed instructions for emergency operations of each facility.

District Ordinance No. 58 (Refer to Appendix G) enables the District to declare a water shortage emergency whenever the District Board of Directors finds that the ordinary requirements of its customers cannot be satisfied without depleting the District's water supply to the extent there would be insufficient water for human consumption, sanitation and/or fire protection. This ordinance allows the Board of Directors to adopt such emergency regulations and restrictions on water delivery and consumption of water as are necessary to address the situation.

8.3 Water Conservation Measures, Prohibitions, Penalties and Consumption Reduction Methods

Water Code section 10632
(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning. (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply. (f) Penalties or charges for excessive use, where applicable.

Table 8.3 lists the District's mandatory prohibitions against specific water use practices during water shortages and stages when they become mandatory.

Table 8.3: Mandatory Prohibitions

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Limitations for both new and existing homes regarding landscaping and irrigation	Third Stage
Irrigation between the hours of 6:00 p.m. and 8:00 a.m.	All Stages
Between November 30th and March 31st, all irrigation shall be shut off	All Stages
No run off in gutters, driveways, sidewalks, or streets	All Stages
No hose washing of hard or paved surfaces including sidewalks, walkways, driveways, and patios	All Stages

Table 8.4 presents the District's consumption reduction methods which reduce water use that are included in the District's Ordinance No. 58. The third stage level in conjunction with the supplemental programs listed above are intended to produce more than a 50% reduction in water demand.

Table 8.4: Consumption Reduction Methods

Consumption Reduction Methods	Stage When Method Takes Effect	Estimated Reduction (%)
Mandatory Conservation[1]	Stage One	10%
Mandatory Conservation[1]	Stage Two	15%
Mandatory Conservation[1]	Stage Three	25%
Supplemental Water Supplies[2]	As Necessary	>50%

1) Refer to District Ordinance No. 58 for detail.
2) Refer to Section 8.0.

Effective July 1, 2003 a Water Conservation Tiered Rate structure was adopted. Table 8.5 lists the penalties and charges for excessive use along with the stage when they take effect. Penalties for failure to comply with the Permanent Water Conservation Policies or the Mandatory Water Conservation Phases are further defined in District Ordinance No. 58 (Refer to Appendix G).

Table 8.5: Penalties and Charges

Penalties or Charges	Stage When Penalty Takes Effect
Surcharge 25% of affected month's water bill	Second offense
Surcharge 50% of affected month's water bill	Third offense
Surcharge 100% of affected month's water bill	Fourth offense
Installations of a flow restriction devi~~s~~ce.	Fifth offense

c

8.4 Analysis of Revenue Impacts of Reduced Sales during Shortages

Water Code section 10632
(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments

8.4.1 Analysis of Measures to Overcome Revenue Impacts during Shortages

The District adopted Water Conservation Tiered Rate Pricing in 2003 to offset the reduced revenues from reduced water commodity sales due to permanent Water Conservation measures that were adopted in 2003 and to encourage Water Conservation. The example below shows that the District implemented a rate structure that addresses the finances necessary to continue to operate at average water levels.

Sales in fiscal year 02/03 were $3.9 million. With a 6% rate increase on 7/1/03 and a 7% increase on 6/1/04, reduction in the first 10 units in tier one to 7 units yielding an additional $300,000 in revenues, and a 1% growth rate, that today we should be at $4.8 million in revenues. Total revenues including tiered rates are estimated at approximately $4.8 million for the fiscal year ending 6/30/05 even though water consumption has decreased more than 20% since 2002 during the same time frame. Table 8.6 lists the current Water Conservation pricing in effect at the time this plan was prepared:

Price per H-F would be helpful & revealing

Table 8.6: Water Conservation Pricing

Tier	Pricing Per 100 Cubic Feet
1 (0 to 700 cubic feet)	$0.61
2 (800 to 2,500 cubic feet)	$3.57
3 (2,600 to 5,000 cubic feet)	$4.76
4 (5,100 to 10,000 cubic feet)	$5.95
5 (10,100 to 20,000 cubic feet)	$7.95
6 (20,100 cubic feet and above)	$10.72

The District's current fees and charges are collected through customers' bi-monthly bills. The amount of current fees and charges collected on the bi-monthly bill are not sufficient to fund the cost of the (a) the short-term (10-15 year) agreement for water purchase from SBVMWD, treated and transported through CLAWA to District customers and (b) the planning and implementation of a permanent Milestone III capital improvement projects a described in the Lake Arrowhead Community Services District Water Demand & Supply Final Report and (c) Recycled Water. To establish a stream of revenue that is necessary to fund these water purchases and water supply projects the District evaluated a proposal to collect such fees through the San Bernardino County tax

rolls. Pursuant to Government Code Section 61621 et seq. and Health and Safety Code Section 5470 et seq., the District is authorized to prescribe and collect rates or other charges for the services and facilities furnished by it, and may elect to have such charges collected on the tax rolls. The District implemented the procedures for adoption of the proposed fee under Article 13D, Section 6 of the California Constitution (Proposition 218). On August 7, 2004, the District Board of Directors adopted the proposed fee, with only 900 or 12% of the affected customers protesting the fee. The objective of the fee is to diversify the District's water supply to fulfill its goal to eliminate reliance on the lake as the community's sole source of water supply.

The District carries reserves in the water system accounts, including a Rate Stabilization Fund. The balance of reserves the District has is maintained primarily for facility repair and replacement. Flexibility would exist to draw upon these reserves under a shortage crisis to handle extreme fluctuations in revenue and expenses.

8.5 Water Shortage Contingency Resolution and Use Monitoring Procedure

Water Code section 10632
(h) A draft water shortage contingency resolution or ordinance. (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

The District's Water Conservation Policy is included as Ordinance No. 58 in Appendix G. This ordinance authorizes the District Board of Directors to declare a water shortage emergency and adopt regulations and restrictions on the delivery and consumption of water. The District has also drafted an additional water shortage contingency plan resolution (Refer to Appendix H). This draft resolution contains stages of action to be undertaken by the District in response to water supply shortages as detailed in Section 8.0 of this plan.

All of the District's accounts are metered. Individual consumption can be measured on a bi-monthly basis. Water production records are recorded daily and can be compared against historical data for the same time period to ascertain the effectiveness of consumption reduction methods. Table 8.7 lists the District's water use monitoring mechanisms.

Table 8.7: Water Use Monitoring Mechanisms

Mechanisms for determining actual reductions	Type and quality of data expected
Daily Monitoring of Water Production	Production in mgd and A-F
Bi-Monthly meter reading	Individual consumption in ccf and A-F

9.0 Recycled Water Plan

Water Code section 10633
The plan shall provide, to the extent practicable, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following: (a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal. (b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project. (c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use. (d) A description and quantification of the potential uses of recycled water , including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses. (e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision. (f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water , and the projected results of these actions in terms of acre-feet of recycled water used per year. (g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

9.1 Coordination

The District provides both water and wastewater services to its customers, therefore, all coordination of water and wastewater are functions of the District.

9.2 Wastewater Quantity, Quality and Current Uses

Between 1994 and 2004 the District treated an average annual wastewater flow of 1.32 mgd (1,479 AFY). The District currently produces between 1,500 and 2,000 AFY of treated wastewater. Table 9.1 lists the actual quantities of wastewater collected in the year 2000 as well as the projected amounts of wastewater quantities for the years 2005 through 2025.

Table 9.1: Wastewater Quantities

Calendar Year	Average Daily Flow (mgd)[1]	Acre Feet per Year (afy)
2000	1.3	1,456
2005	1.6	1,792
2010	1.8	2,016
2015	2.0	2,240
2020	2.2	2,464
2025	2.5	2,800

(1) *Recycled Water Phase 2 Draft Technical Memorandum No. 1*, TetraTech, July 2005

In the past, Federal and state laws, administered by the Regional Water Quality Control Board, Lahontan Region (Regional Board) prohibited the use of recycled water in the District service area because the rules governing discharge of waters of a waste origin were not permitted to be used in locations above 3,200 feet in elevation. Therefore, the District has not had any uses for recycled water.

In January 2003, The District made a request for a Basin Plan amendment that would allow the discharge of waters that are of waste origin above the 3,200-foot elevation. In early September 2003, the Regional Board recommended approval of the Basin Plan Amendment. The amendment was reviewed and approved by the State Water Resources Control Board and the US Environmental Protection Agency in 2004. These changes have allowed the District to proceed with the implementation of a recycled water program which when completed will initially supply approximately 1 mgd of recycled water for outdoor irrigation in the Grass Valley Basin.

The District has approximately 350 miles of sewer pipelines, 21 lift stations and currently operates two wastewater treatment plants; 1) the Grass Valley Wastewater Treatment Plant (GVWWTP) and, 2) the Willow Creek Wastewater Treatment Plant (WCWWTP). Treated effluent is currently conveyed from these treatment plants through a 10-mile outfall pipeline to a disposal site near Hesperia where the effluent is percolated into the Mojave groundwater basin.

The District currently does not utilize recycled water in its service; however, the District is currently designing improvements to the wastewater treatment process at the GVWWTP so that the effluent will qualify as "recycled" water that can be beneficially used in the District's service area for outdoor irrigation. This project is expected to be completed in 2008. Initially recycled water will be utilized in the Grass Valley area for outdoor irrigation at the Lake Arrowhead Country Club Golf Course and Grass Valley Park. Potential future uses include high irrigation demand areas throughout the District's service area.

On October 24, 2003 the Board of Directors accepted as complete LACSD Water Demand and Supply Final Report (Tetra Tech 2003). On January 11, 2005, the Board of Directors authorized Tetra Tech to prepare an addendum to that report. The addendum will evaluate the expanded use of recycled water for outdoor irrigation in the District's service area.

9.3 Incentives to Encourage Recycled Water Use

Incentives to encourage recycled water use will be developed as implementation of the District's recycled water program progresses. Examples of incentives that may be considered by the District are that the District funds the cost of; (1) on-site retrofits for recycled water use, (2) monitoring, enforcement and training for recycled water use, and (3) delivery of recycled water at a reduced rate or a rate less than that of potable water.

10.0 Water Quality

Water Code section 10634
The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

The District has three sources of water for potable use; (1) surface water from Lake Arrowhead, With respect to the District's use of water supplied from Lake Arrowhead please refer to the "Disclosure Statement Regarding Water Rights Complaints Against Lake Arrowhead Community Services District" at the front of this report. (2) Groundwater from five wells in the Grass Valley basin and, (3) SWP water delivered by CLAWA.

The quality of water from Lake Arrowhead is very good and it is anticipated that there will be no change. Influent turbidities rarely exceed 1.0 nephelometric turbidity units (NTU's) and final water turbidities normally range from 0.02 to 1.0 NTU's. With the exception of two constituents, turbidity and bacteria, the untreated lake water meets or exceeds the State's primary and secondary regulations for finished water (2001 Watershed Sanitary Survey).

The water quality of the groundwater produced from the five wells in the Grass Valley Basin upon treatment meets or is below maximum contaminant levels (MCL).

11.0 Water Supply Reliability

The Urban Water Management Planning Act requires urban water suppliers to assess water supply reliability that compares the total projected water use with the expected water supply over the next 20 years in 5-year increments. The Act also requires an assessment for an average water year, single dry water year and multiple dry water years. This chapter presents the reliability assessment for the District's service area.

In general, water supply reliability is not an issue for the District in average and single dry water years. With respect to multiple dry water years, the Lake Arrowhead community has experienced multiple dry water year events such as those that occurred in the 1930's, 1960's, 1980's and most recently 1999-2003. For the period between 1999 and 2003 annual precipitation in the Lake Arrowhead was 50% of an average water year. The result of lower precipitation, increased consumption, and natural evaporation resulted in a significant drop in the level of the surface of Lake Arrowhead over several years.

In response to the most recent multiple dry water year period (1999 – 2003) and a corresponding low lake level, the District Board of Directors adopted a policy to reduce and ultimately eliminate reliance on Lake Arrowhead as the community's sole source of water supply. This does not mean that the District would stop using lake water outright. Water supplied from Lake Arrowhead is the community's least cost, best quality and most reliable source of water supply. However, during drought conditions, as the community experienced during the past six years, it is the District's goal to supply water from alternative sources of water supply. The purposes of this policy are to ensure a reliable source of water supply for the Arrowhead Woods community and to maintain the integrity of Lake Arrowhead.

11.1 Reliability of Supply

Water Code section 10631
(c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (1) An average water year. (2) A single dry water year. (3) Multiple dry water years. For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

The purpose of this section is to describe the reliability of the District's water supply and vulnerability to seasonal or climatic shortage. Seasonal shortages are based upon the precipitation patterns of individual watersheds and may vary substantially from one year to the next.

Table 11.1 lists historical water supply reliability data for an average water year, single dry water year and multiple dry water years as defined below.

Table 11.1: Historical Water Supply Reliability – AFY

	Average Water Year	Single Dry Water Year	Multiple Dry Water Years			
Source	1987-1988	2001-2002	1999	2000	2001	2002
Surface Water from Lake Arrowhead	2,500	3,157	2,546	2,821	2,947	3,157
% of Normal	100%	126%	102%	113%	118%	126%

Single dry and multiple dry water years are usually based on historic records of annual runoff from a particular watershed. To understand whether runoff is above or below average for seasons and longer timescales the State DWR defines an average, single dry and multiple dry water year period as follows:

runoff is not the same as precipitation

- Average water year is defined by DWR as the median runoff over the previous 30 years or more. An average water year is a year in the historical sequence that most closely represents median runoff levels and patterns. Average annual precipitation in the Lake Arrowhead area during the period 1968 through 2003 is 40 inches according to the Lake Level Analysis (Bookman-Edmonston, 2004). For the purposes of this report, an average water year is considered to be one in which there is 40 inches of precipitation. The last water year in which the area received 40 inches of precipitation was 1987-88 2002-2003 (41.57") same as above
- Single dry water year is generally considered to be the lowest annual runoff for a watershed since the water year beginning in 1903. In water year 2001-2002 there was approximately 8.75 11.61 inches of precipitation from October 2001 until September 2002 in the Lake Arrowhead area. This is considered the single dry water year for the purposes of this report.

- Multiple dry water year periods are generally considered to be the lowest average runoff for consecutive multiple dry year periods (three years or more) for a watershed since 1903. In the Lake Arrowhead area, the most recent multiple dry water year period occurred between October 1999 through September 2003 when precipitation ranged from a low of 8.75 inches to a high of 22.1 inches.

Currently the District has three sources of water for potable use; (1) surface water from Lake Arrowhead, (2) Groundwater from five wells in the Grass Valley basin and, (3) SWP water delivered by CLAWA. The District also has plans for reducing demand on the potable water system by implementing recycled water for outdoor irrigation (Refer to Section 5.2.3).

The reliability of surface water from Lake Arrowhead varies depending on rainfall amounts that are extremely variable and tend to be cyclic with wet and dry periods about every five to eight years. The climate supports abundant forest and ground cover vegetation. Primary runoff into the lake is channeled through creeks where de-silting basins are provided and maintained at a point prior to the entrance into the lake. Future reliability of surface water from Lake Arrowhead depends on the outcome of the water rights complaint against the District. **With respect to the District's use of water supplied from Lake Arrowhead please refer to the "Disclosure Statement Regarding Water Rights Complaints against Lake Arrowhead Community Services District" at the front of this report.**

No

At this time, the long term reliability of the groundwater wells is not known. Based on other wells in the region, the production may vary depending on the long-term weather patterns. If a sustained drought is experienced, well production may decline or be stopped. To a lesser extent, it is possible that the water production may be impacted by seasonal weather patterns.

In general, SWP water reliability is dependent on the reliability of the SWP and the availability of CLAWA system facilities to treat and convey the water. With respect to SWP water, the reliability of the quantity of water available from the SWP can vary

significantly from year to year. The State periodically assesses reservoir levels, precipitation levels, and snow pack to estimate the water that will be available in the SWP. Over the life of the SWP, the SWP has delivered, on average, a little over 70 percent of the requested water. In 1977, the most significant drought year, only 19 percent of the requested water was actually delivered. In 1976 and 1977, the most significant two year drought period, the SWP delivered an average of 48 percent of requested deliveries. Reliability would also depend on CLAWA's ability to treat and convey SWP water to the District.

In July 2005, the District began the final engineering phase of the Recycled Water Phase I project which includes improvements to the GVWWTP that will increase the quality of water discharged by the plant and increase plant capacity by approximately 1.0 mgd. The result of the planned improvements is up to 1.0 mgd of effluent meeting Title 22 recycled water standards for outdoor irrigation within the Districts service area. The District plans to use recycled water to offset demand on the potable water system. Recycled water is very reliable because it depends on the production of wastewater.

11.2 Wholesale Water Reliability

Water Code section 10631
(k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water -year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

State Water Project (SWP) water is being supplied to the District's service area from two sources. One source of SWP water, the Crestline Lake Arrowhead Water Agency (CLAWA) Overlap Agreement (CLAWA I), was brought on line in 2003. A second source of SWP water is the CLAWA and San Bernardino Valley Municipal Water District (SBVMWD or MUNI) project which has been approved by the three agencies (District, CLAWA and SBVMWD) and is on schedule to deliver water in 2006. This second source is also known as the CLAWA II. Refer to Section 5.1.3.1 and 5.1.3.2 for more information on CLAWA I and CLAWA II.

Wholesale water reliability is dependent upon the reliability of SWP water and the availability of CLAWA system facilities to treat and convey the water. With respect to SWP water, the reliability of the quantity of water available from the SWP can vary from year to year. The State periodically assesses reservoir levels, precipitation levels, and snow pack to estimate the water that will be available in the SWP.

The District receives SWP water under two agreements. The amount of water available to the District is adjustable on an annual basis. Probable supplies of SWP water are based upon 72% of the total annual allocation being available 50% of the time. At the time this report was prepared the District requested but was not able to receive additional information on the reliability of SWP water from its wholesaler, CLAWA.

11.3 Water Service Reliability

Water Code section 10635
(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during average water, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a average water water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

The following sections compare current and projected water supply and demand. This information is based on continued commitment to conservation programs, use of groundwater and SWP water in the District's service area as well as the use of recycled water for outdoor irrigation beginning in 2008. Active water efficiency improvements and additional water supply will be necessary to meet the District's projected water demand.

An assessment of the reliability of the District's water service to its customers during average, dry and multiple dry water years is contained in the following sections. This water supply and demand assessment compares the total water supply sources available to the District with the total projected water demand over the next 20 years, for an average water year, a single dry water year, and multiple dry water years which are defined in Section 11.1.

11.4 Projected Water Supply and Demand

For the purposes of this plan projected water demand estimates are based on the following:

- Population (Refer to Section 4.3)
- Demand Management Measures (Refer to Section 7.0)
- Recycled Water Use (Refer to Section 9.0)
- Number of Water Service Connections.

With respect to the number of new water service connections from the years 1995 to 2004, the District experienced an average annual increase in the number of new water connections of 1% in the District's water service area or Arrowhead Woods.

Based on all these factors the District estimates that water demand will increase at a rate of 1% per year from 2006 to 2025. Projected water demand and supply totals are calculated based on an assumed 1% per year increase in total water demand from the base year 2004 through 2025. For planning purposes and to comply with the requirements of the Urban Water Management Planning Act Table 11.2 lists an example of one potential scenario that estimates the Districts projected water demand and supply totals to the year 2025. Figure 11.1 is a graphic representation of that potential scenario.

The scenario described in Table 11.2 is not cast in stone. For example it projects water supplied by what is referred to as CLAWA I & II. Provided here is a more detailed description of the water supply referred to as CLAWA I. In July 2003 the District and CLAWA entered into an agreement regarding a water supply for the Overlap Area (CLAWA I). Under this agreement, the District pays regular rates and charges to CLAWA for delivery of approximately 62 AFY, an amount equal to the average annual use of the homes in the Overlap Area. The agreement also addresses delivery of water to satisfy previous use within the Overlap Area as well as advance deliveries for future use in the Overlap Area. The agreement states:

"Nothing herein shall prevent the Agency (CLAWA) from delivering such water to the District to satisfy previous use within the Overlap Area, or from providing advance deliveries to the District for future use within the Overlap Area, if approved by the Agency."

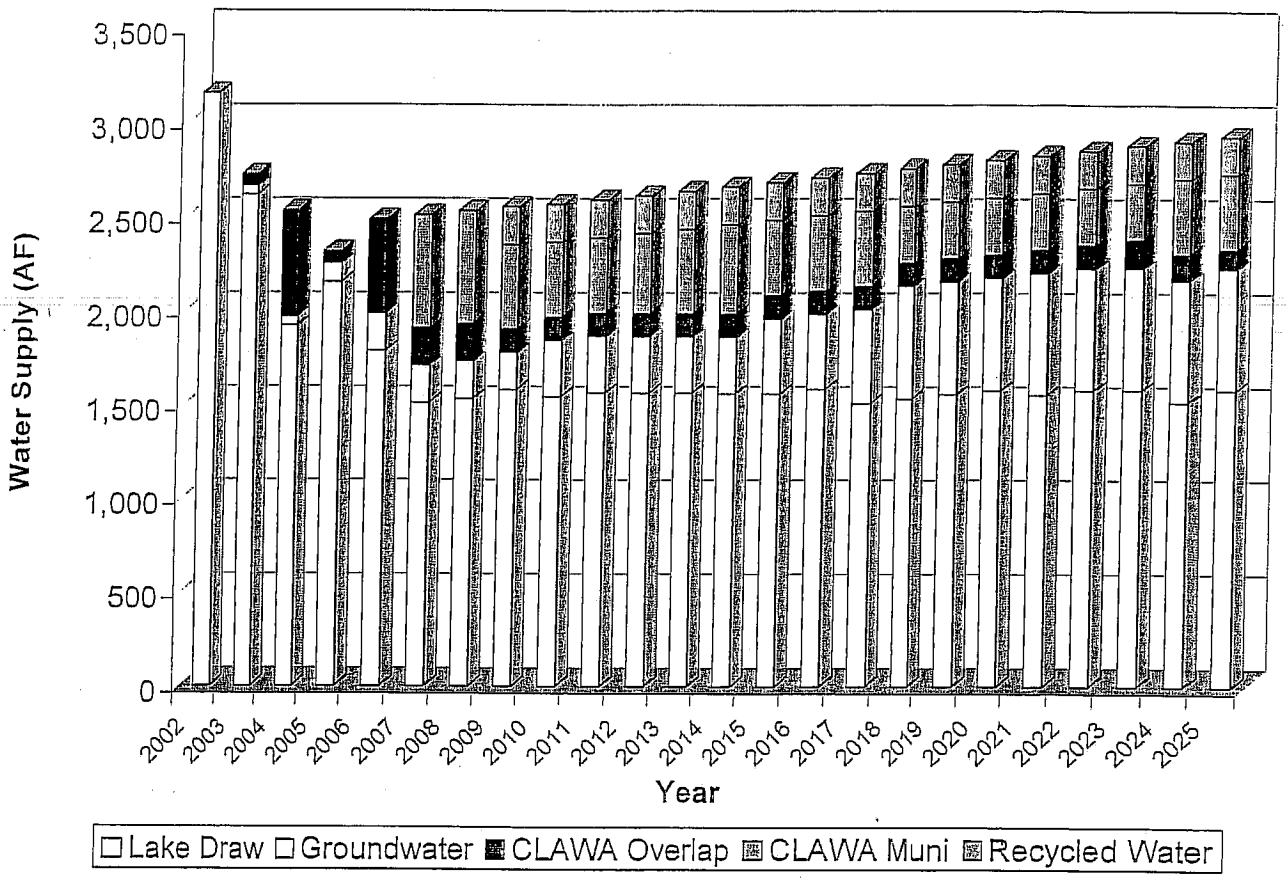
The CLAWA, at its sole discretion, shall determine if, when and under what circumstances that the District may take delivery of such water to satisfy previous use within the Overlap Area, or from providing advance deliveries to the District for future use within the Overlap Area. The District provided CLAWA with a draft copy of this plan on September 20 and October 24, 2005.

Table 11.2: Estimated Scenario for Projected Water Demand and Supply to 2025

	Demand (AF)					Supply (AF)					
Year[1]	Delivered to Distribution[2]	Transfer to Grass Valley Lake[3]	Recycled Water Irrigation	Plant Backwash & Utility Water	Total Demand	Lake Draw	Groundwater	CLAWA Overlap[4]	CLAWA Muni[5]	Recycled Water[6]	Total Supply
2000	2,370	182	0	269	2,821	2,821	0	0	0	0	2,821
2001	2,583	200	0	165	2,947	2,947	0	0	0	0	2,947
2002	2,565	261	0	330	3,157	3,157	0	0	0	0	3,157
2003	2,250	150	0	326	2,726	2,619	45	62	0	0	2,726
2004	2,164	205	0	163	2,532	1,922	45	565	0	0	2,532
2005	2,186	50	0	80	2,316	2,154	100	62	0	0	2,316
2006	2,208	200	0	80	2,488	1,788	200	500	0	0	2,488
2007	2,230	200	0	80	2,510	1,510	200	200	600	0	2,510
2008	2,252	200	0	80	2,532	1,532	200	200	600	0	2,532
2009	2,274	0	200	80	2,554	1,579	200	125	450	200	2,554
2010	2,297	0	200	70	2,567	1,542	300	125	400	200	2,567
2011	2,320	0	200	70	2,590	1,565	300	125	400	200	2,590
2012	2,343	0	200	70	2,613	1,563	300	125	425	200	2,613
2013	2,367	0	200	70	2,637	1,562	300	125	450	200	2,637
2014	2,390	0	200	70	2,660	1,560	300	125	475	200	2,660
2015	2,414	0	200	70	2,684	1,559	400	125	400	200	2,684
2016	2,438	0	200	70	2,708	1,583	400	125	400	200	2,708
2017	2,463	0	200	70	2,733	1,508	500	125	400	200	2,733
2018	2,487	0	200	70	2,757	1,532	600	125	300	200	2,757
2019	2,512	0	200	70	2,782	1,557	600	125	300	200	2,782
2020	2,537	0	200	65	2,802	1,577	600	125	300	200	2,802
2021	2,563	0	200	65	2,828	1,553	650	125	300	200	2,828
2022	2,588	0	200	65	2,853	1,578	650	125	300	200	2,853
2023	2,614	0	200	65	2,879	1,579	650	150	300	200	2,879
2024	2,641	0	200	65	2,906	1,516	650	140	400	200	2,906
2025	2,667	0	200	65	2,932	1,582	650	100	400	200	2,932
					Average	1,555	Total	3,102	7,600		

1) 2000 to 2004 are actual data.
2) Assumes 1% annual increase from 2005 to 2025. Includes customer sales plus unaccounted losses.
3) Non potable water transferred to Grass Valley Lake from groundwater wells or raw water from Lake Arrowhead.
4) Interruptible supply. Assumes 3,102 AF available through 2025 (1,800 AF to satisfy previous use in CLAWA Overlap area plus 62 AFY).
5) Interruptible supply. State Water Project water delivered by CLAWA (7,600 AF over 15 years).
6) Recycled water system scheduled to be on line in 2009 to supply irrigation demand at LACC.

Figure 11.1: LACSD Water Supply Source Projection



11.5 Projected Average Water Year Supply and Demand

Table 11.3 compares the projected average water year supply to projected average water year use over the next 20 years in five year increments using 2004 as the base year. Average water year projections are based on an assumed 1% per year increase in total demand from 2004 to 2025 and include non-potable water transfers to Grass Valley Lake as well as water treatment plant backwash and utility water.

Table 11.3: Projected Average Water Year Supply and Demand Comparison

Year	2010	2015	2020	2025
Supply totals	2,567	2,684	2,802	2,932
Demand totals	2,567	2,684	2,802	2,932
% of year 2004	101%	106%	111%	116%

11.6 Projected Single Dry Water Year Supply and Demand Comparison

Water use patterns change during dry years. During dry water years some water agencies cannot provide their customers with 100% of what they deliver during average water years. One way to analyze the change in demand is to document expected changes to water demand by sector assuming increasing demand due to increased irrigation needs and demand reductions resulting from rationing programs and policies. Table 11.4 compares the projected single dry water year supply to projected single dry water year demand over the next 20 years. It is assumed for the purposes of this report that during a single dry water year that water conservation will result in a 5% reduction in the projected demand for that year.

Table 11.4: Projected Single Dry Water Year Supply and Demand Comparison

Year	2010	2015	2020	2025
Supply totals	2,439	2,550	2,662	2,785
Demand totals[1]	2,439	2,550	2,662	2,785
% of year 2004	96%	101%	105%	110%

1) Assuming 5% reduction in demand from water conservation.

11.7 Projected Multiple Dry Water Year Supply and Demand

Because supply and demand will vary during the 20-year projection, the Urban Water Management Planning Act requires UWMPs to project the impact of multiple dry water year periods on water supply and demand for each 5-year period during the 20-year projection. The projections of a multiple dry water year periods compare projected supply and demand during the following periods; 2006 to 2010, 2011 to 2015, 2016 to 2020 and 2021 to 2025. Table 11.5 lists these projections. The assumptions that have been made for these multiple dry water year scenarios are as follows:

- Surface water diversions from Lake Arrowhead are minimized
- Supplemental water supplies are maximized

- Recycled water becomes available for outdoor irrigation in the Grass Valley Basin in 2008
- Water conservation in each year of the multiple dry water year scenarios results in a 5% reduction in the projected total demand for that year as listed in Table 11.3

Table 11.5: Multiple Dry Water Year Projected Supply and Demand Comparison

Year	2006	2007	2008	2009	2010
Supply totals	2,363	2,384	2,405	2,427	2,439
Demand totals	2,363	2,384	2,405	2,427	2,439
% of year 2004	93%	94%	95%	96%	96%

Year	2011	2012	2013	2014	2015
Supply totals	2,461	2,483	2,505	2,527	2,550
Demand totals	2,461	2,483	2,505	2,527	2,550
% of year 2004	97%	98%	99%	100%	101%

Year	2016	2017	2018	2019	2020
Supply totals	2,573	2,596	2,620	2,643	2,662
Demand totals	2,573	2,596	2,620	2,643	2,662
% of year 2004	102%	103%	103%	104%	105%

Year	2021	2022	2023	2024	2025
Supply totals	2,686	2,711	2,735	2,760	2,785
Demand totals	2,686	2,711	2,735	2,760	2,785
% of year 2004	106%	107%	108%	109%	110%

12.0 Adoption and Implementation

Water Code 10642
Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies.

Section 10642 of the Urban Water Management Planning Act requires urban water suppliers to make the Plan available for public review and hold a public hearing prior to adopting the Plan. The Draft Plan was distributed for review and comment beginning on November 18, 2005. A public hearing is scheduled to be held on December 13, 2005. This Plan is also scheduled to be adopted on December 13, 2005 by the District Board of Directors Resolution No. 2005-07.

Appendix J

Resolution 2005-06, Adopting the 2005 UWMP

RESOLUTION 2005-06

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, ADOPTING THE 2005 URBAN WATER MANAGEMENT PLAN

WHEREAS, on January 31, 1986 the Lake Arrowhead Community Services District submitted its Urban Water Management Plan (UWMP) document to the California Department of Water Resources (DWR) in response to the Urban Water Management Act (AB797) of 1983, the first update to the Plan was submitted in July 1991, the second update to the Plan was submitted in July 1996, and the third update of the plan was completed in January 2001 but not submitted to DWR.

WHEREAS, this 2005 update is submitted pursuant to Section 10621 (a) of the California Water Code Division 6, Part 2-6 Urban Water Management Planning, which states that "Each urban water supplier shall update its plan at least once every five years."

WHEREAS, the Board of Directors and public was provided with a copy of the draft 2005 UWMP for review beginning on November 18, 2005 and reviewed the draft 2005 UWMP at a Public Hearing held on December 13, 2005.

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the Lake Arrowhead Community Services District does hereby adopt the 2005 Urban Water Management Plan.

ADOPTED by the Board of Directors of the Lake Arrowhead Community Services District at a regular meeting held on December 13, 2005, by the following votes:

AYES:	**Dickinson, Goss, Heyck, Keefe & Sievers**
NOES:	**None**
ABSTENTIONS:	**None**
ABSENT:	**None**

LAKE ARROWEHEAD COMMUNITY
SERVICES DISTRICT

Mary Ann Dickinson

Mary Ann Dickinson, President of the Board of Directors of the Lake Arrowhead Community Services District

ATTEST:

P.M. McGonigle

P.M. McGonigle, Secretary of the Lake Arrowhead Community Services District

(SEAL)