

**2005  
URBAN WATER MANAGEMENT PLAN**

**For The**

**LAKE ARROWHEAD COMMUNITY  
SERVICES DISTRICT**

**Lake Arrowhead**



Community Services District

**Adopted December 13, 2005**

**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 encompasses approximately 4,900 acres and is essentially the same boundary as that of the community known as the Arrowhead Woods.

### **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 I - 62 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**

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).

As of November 30, 2005 actual water delivered to the District's distribution system was 1,994 AF. For the same period in 2004 actual water delivered to the District's distribution system was 2,039 AF. This is a 2.2% 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, 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 1921, 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	County of San Bernardino Land Use Department
Arrowhead Lake Association	County of San Bernardino Special Districts Department
Arrowhead Manor Water Company	Crestline Lake Arrowhead Water Agency
Arrowhead Woods Architectural Committee	Crestline Village Water District
Arrowhead Villas Mutual Services Company	Mojave Water Agency
Big Bear Community Services District	Running Springs Water District
Burnt Mill Canyon Mutual Water	San Bernardino Valley Municipal Water District
California Department of Water Resources	Skyforest Mutual Water Company
City of Big Bear Lake Department of Water & Power	Strawberry Lodge Mutual Water Company

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**

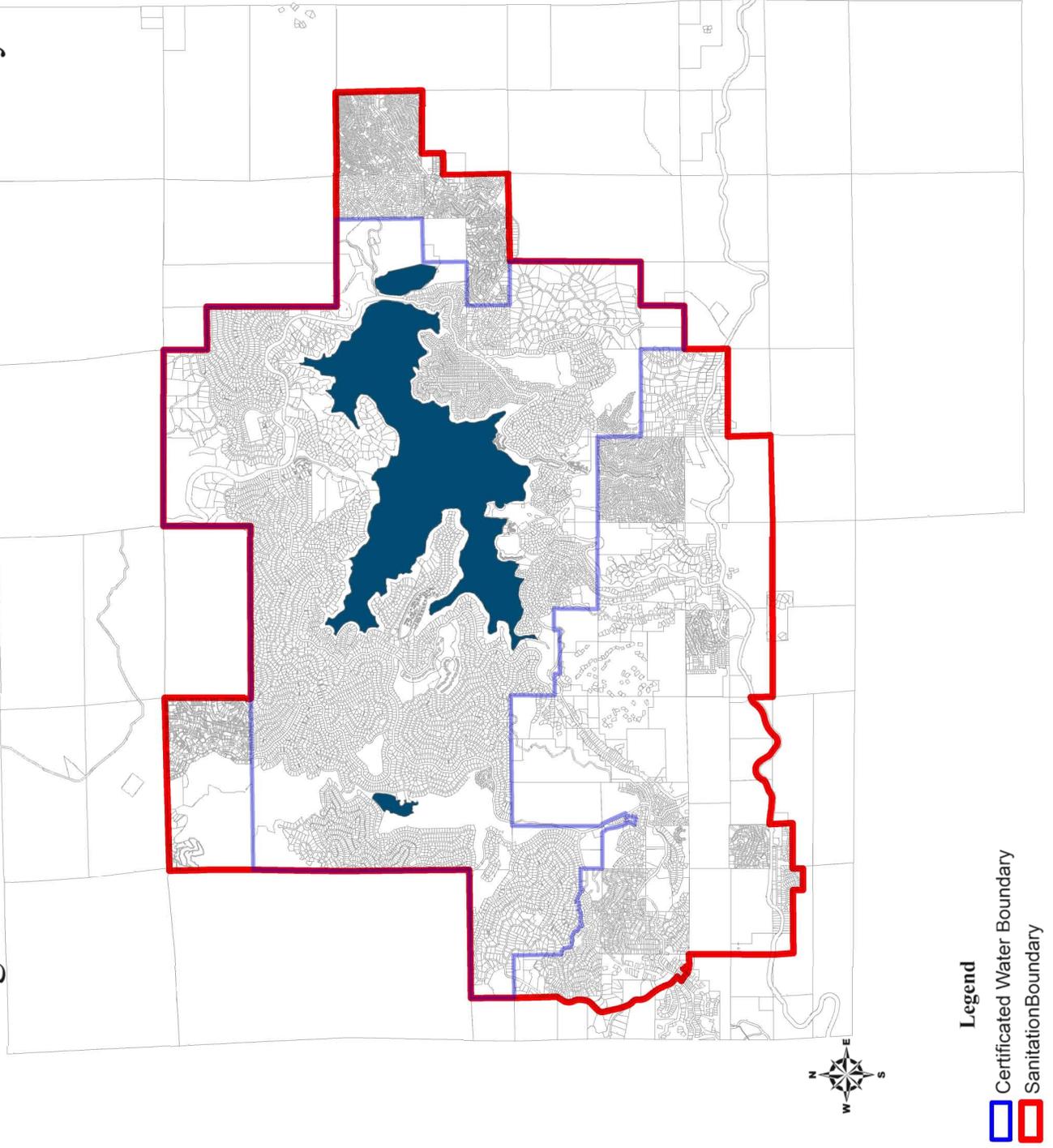
The District is a self governed independent Special District responsible for providing water services to within its certificated water service area also known as the Arrowhead Woods and wastewater services within the Districts sanitation boundary including the communities of Lake Arrowhead, Cedar Glen, 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 essentially one in the same. The District's certificated water service area is shown in Figure 4.1.

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, Orchard Creek, Cumberland Creek, Burnt Mill Creek and Fleming Creek. In addition, drainage flows from Grass Valley Lake are at times diverted to Lake Arrowhead through an interconnecting tunnel.

Figure 4.1: LACSD Certificated Water Service Boundary



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 policies 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 several creeks some of which 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](http://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 District's 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.

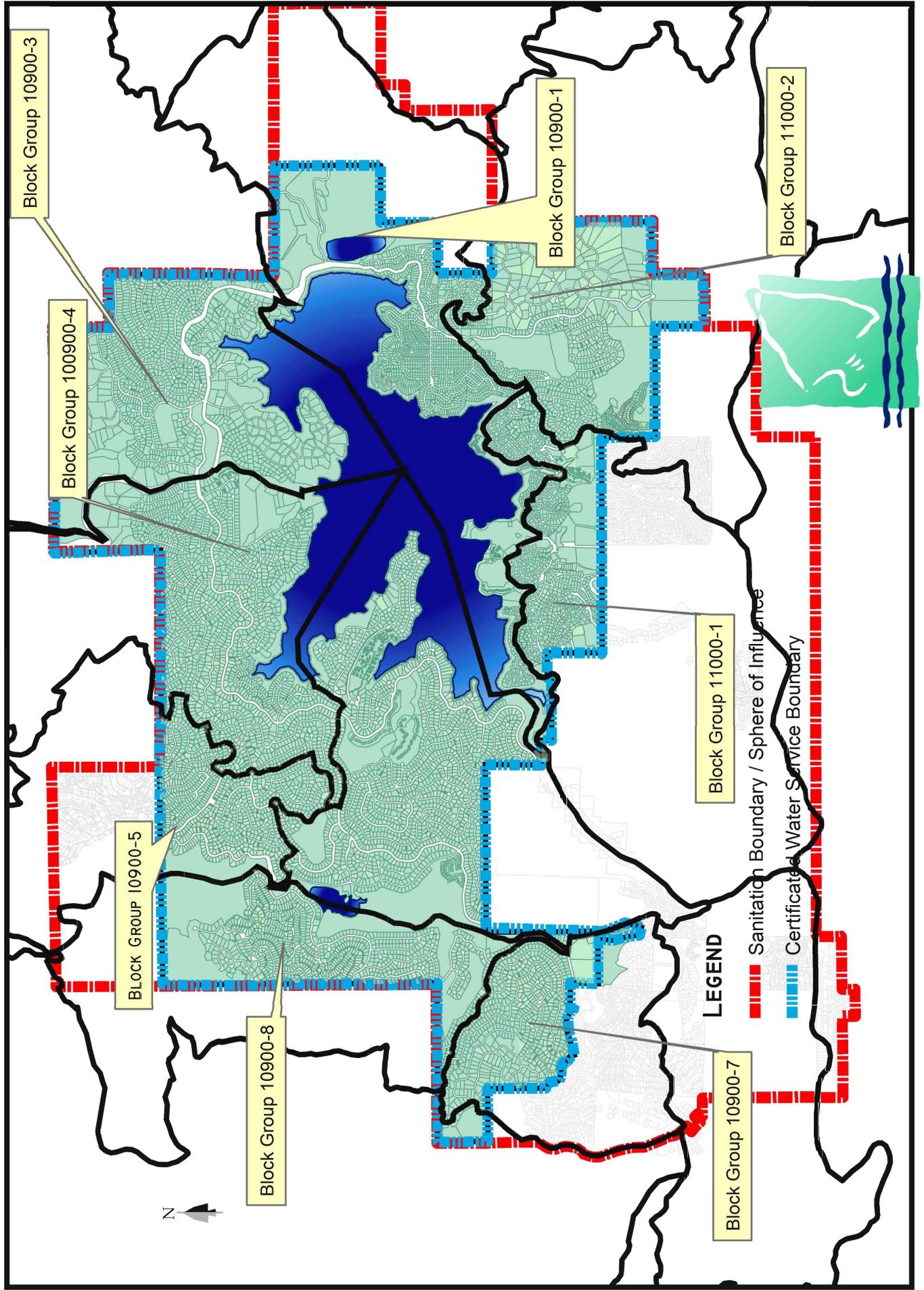
By taking into account all of the above information this plan assumes an annual average population growth rate of 2% per year for the Lake Arrowhead CDP. Population projections to the year 2025 have been made by applying the 2% average annual population growth rate to the 2000 census data for the Lake 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
<b>TOTALS ALL BLOCKGROUPS OF THE CDP</b>		<b>6,471</b>	<b>8,836</b>	<b>237</b>	<b>3.7%</b>	<b>37%</b>	<b>9,756</b>	<b>10,771</b>	<b>11,892</b>	<b>13,130</b>	<b>14,496</b>
<b>Lake Arrowhead CDP</b>		<b>6,539</b>	<b>8,934</b>	<b>240</b>	<b>3.7%</b>	<b>37%</b>	<b>9,864</b>	<b>10,890</b>	<b>12,024</b>	<b>13,275</b>	<b>14,657</b>
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
<b>Total Lake Arrowhead CDP And Grass Valley Blocks</b>		<b>8,588</b>	<b>11,944</b>	<b>336</b>	<b>3.9%</b>	<b>39%</b>	<b>13,187</b>	<b>14,560</b>	<b>16,075</b>	<b>17,748</b>	<b>19,595</b>

**\*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 <sup>1</sup>	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) <sup>2</sup>	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) <sup>2</sup>	45	48	53	60	67	77	67	64	60	65	53	46	59
Average Low Temperature (°F) <sup>2</sup>	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 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 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 Little Bear 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, Orchard Creek, Cumberland Creek, Fleming Creek, Burnt Mill Creek and Little Bear Creek as well as subsurface springs.

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 groundwater 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.

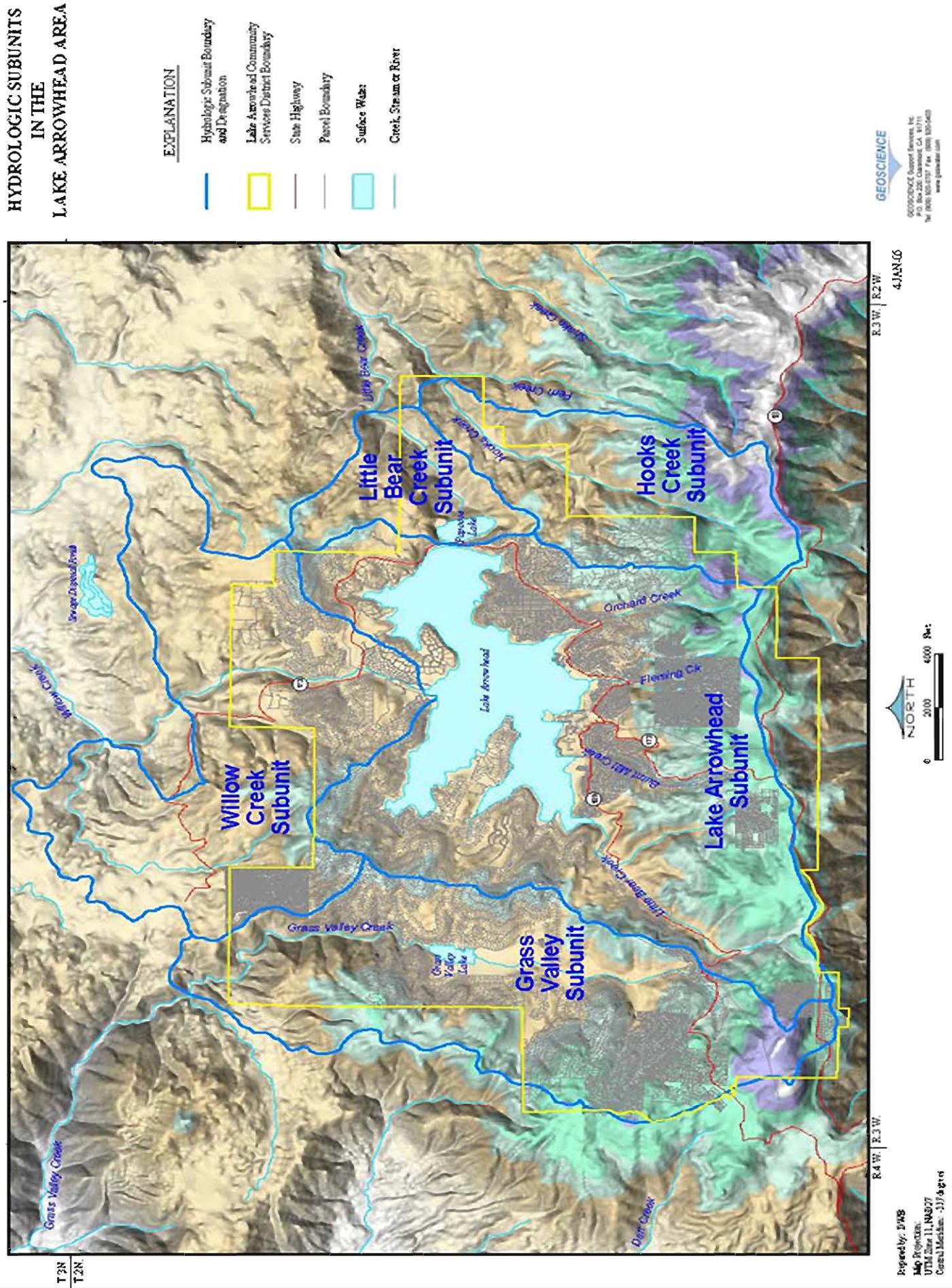
A drinking water source assessment for each of the wells has been completed as per the California Department of Health Services (DHS) Drinking Water Source Assessment and Protection (DWSAP) Program for the District (GeoScience 2005). The District received permits to deliver groundwater to the District's 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)

	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>
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



### **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 District's service area. Due to the limited outdoor irrigation season in the District, Recycled Water Phase I will contribute 200 AFY to the water supply annually.

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)
- San Bernardino Valley Municipal Water District (SBVMWD).

In general, the District is undertaking an analysis that identifies if and under what circumstances any one or more of the above agencies could, in any manner, provide water service to the District that would in whole or in part satisfy the requirements described in the SWRCB Final Staff Report. It is the District's understanding that this could involve any one or more of the following governmental reorganization alternatives:

- Establishment of the District as a State Water Project Contractor
- Annexation or consolidation to or with CLAWA
- Annexation to a Metropolitan member agency such as the Inland Empire Utilities Agency, or establishment of the District as a Metropolitan Member Agency
- Annexation or consolidation to or with MWA
- Annexation or consolidation to or with SBVMWD.

As the District undertakes this analysis, the District understands that it is timely and appropriate to consult with the Local Agency Formation Commission (LAFCO) to correctly understand and evaluate the feasibility of any one or combination of these water supply alternatives, to the extent that their implementation would require a governmental reorganization(s). It is the District's intention to accurately consider applicable state laws and LAFCO requirements.

### **5.3.3 Recycled Water Phase II**

On October 24, 2003 the District Board of Directors accepted as complete the 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.

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)

<b>Water Supply Sources</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>
Surface Water <sup>1</sup>	2,450 <sup>5</sup>	240-2,400	240-2,500	240-2,600	240-2,800
Groundwater <sup>2</sup>	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) <sup>3</sup>	0	0-1,500	0-1,500	0-1,500	0-1,500
Recycled Water (projected use) <sup>4</sup>		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

Water Use Sectors <sup>1</sup>	2000		2005		2010		2015		2020		2025	
	No. of Accounts	Metered Sales (AF)										
Residential	7,085	1,789	7,551	1,615	7,915	1,797	8,298	1,889	8,701	1,985	9,125	2,087
Commercial	104	453	105	169	106	188	107	198	108	208	109	218
Institutional	26	41	29	38	30	42	31	44	32	46	33	49
Landscape Irrigation	78	73	79	56	80	63	81	66	82	69	83	73
Total	7,293	2,357	7,764	1,878	8,131	2,090	8,517	2,197	8,923	2,309	9,350	2,426

(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<sup>1</sup>, 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

<b>Additional Water Uses</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>
Raw Water (LACC Irrigation) <sup>(1)</sup>	182	50	0	0	0	0
Recycled Water <sup>(2)</sup>	0	0	200	200	200	200
<b>Additional Water Losses</b>						
WTP Filter Backwash <sup>(3)</sup>	269	80	70	70	65	65
Unaccounted losses <sup>(4)</sup>	n/a	308	115	121	127	134
<b>Total Additional Water Uses and Losses</b>	<b>451</b>	<b>438</b>	<b>385</b>	<b>391</b>	<b>392</b>	<b>399</b>

(1) Assumes Recycled Water Phase I replaces use of raw water for LACC irrigation by 2008

(2) Recycled Phase I estimated to come on line 2008.

(3) LACSD operations data and projections

(4) Defined as the amount of water delivered to the potable water delivery system less the amount of metered deliveries.

Assumes 14% unaccounted for water loss. It is the Districts goal to achieve less than 9% unaccounted for loss by 2010.

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

<b>Year</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>
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. 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 <sup>1</sup>	2,821	2,947	3,157

1) See Disclosure Statement Regarding Water Rights Complaint Against Lake Arrowhead Community Services District. 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 <sup>1</sup>	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) <sup>2</sup>	0-565	0-565	0-565	0-565
SWP Water (CLAWA II) <sup>2</sup>	0-1,500	0	0-1,500	0-1,500
Recycled Water <sup>3</sup>	200	0	0	200

1) See Disclosure 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 PM and 8:00 AM.	All Stages
Between November 30 <sup>th</sup> and March 31 <sup>st</sup> , 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 <sup>1</sup>	Stage One	10%
Mandatory Conservation <sup>1</sup>	Stage Two	15%
Mandatory Conservation <sup>1</sup>	Stage Three	25%
Supplemental Water Supplies <sup>2</sup>	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 device.	Fifth offense

#### 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:

Table 8.6: Water Conservation Pricing

Tier	Pricing Per 100 Cubic Feet	Pricing Per Acre Foot
1 (0 to 700 cubic feet)	\$0.61	\$266
2 (800 to 2,500 cubic feet)	\$3.57	\$1,555
3 (2,600 to 5,000 cubic feet)	\$4.76	\$2,074
4 (5,100 to 10,000 cubic feet)	\$5.95	\$2,592
5 (10,100 to 20,000 cubic feet)	\$7.95	\$3,463
6 (20,100 cubic feet and above)	\$10.72	\$4,670

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 as 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

<b>Mechanisms for determining actual reductions</b>	<b>Type and quality of data expected</b>
Daily Monitoring of Water Production	Production in mgd
Bi-Monthly meter reading	Individual consumption in ccf

## 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

<b>Calendar Year</b>	<b>Average Daily Flow (mgd)<sup>1</sup></b>	<b>Acre Feet per Year (afy)</b>
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

Source	Average Water Year	Single Dry Water Year	Multiple Dry Water Years			
	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:

- Average water year is defined by DWR as the median precipitation and 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.
- Single dry water year is generally considered to be the lowest annual precipitation and runoff for a watershed since the water year beginning in 1903. In water year 2001-2002 there was approximately 8.75 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).

Historically, surface water from Lake Arrowhead has been a reliable source of water for the District. The level of 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 in some cases de-silting basins are provided and maintained at a point prior to the entrance into the lake. Future availability 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.**

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 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 District's 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.”

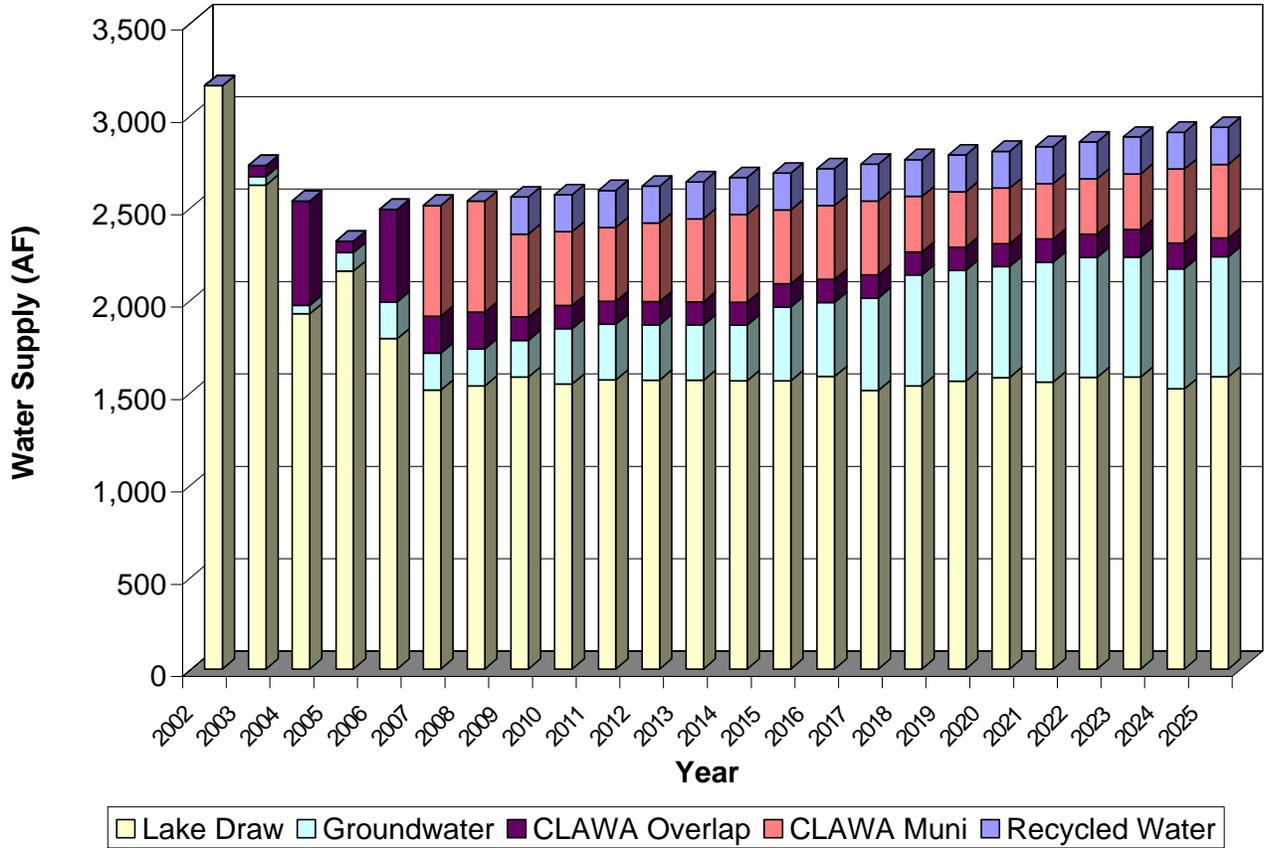
The CLAWA, at its sole discretion, shall determine if, when and under what circumstances that the District may take delivery of such water to satisfy previous use within the Overlap Area, or from providing advance deliveries to the District for future use within the Overlap Area. The District provided 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

Year <sup>1</sup>	Demand (AF)					Total Demand	Lake Draw	Supply (AF)				
	Delivered to Distribution <sup>2</sup>	Transfer to Grass Valley Lake <sup>3</sup>	Recycled Water Irrigation	Plant Backwash & Utility Water	Groundwater			CLAWA Overlap <sup>4</sup>	CLAWA Muni <sup>5</sup>	Recycled Water <sup>6</sup>	Total Supply	
2000	2,370	182	0	269	2,821	<b>2,821</b>	0	0	0	0	2,821	
2001	2,583	200	0	165	2,947	<b>2,947</b>	0	0	0	0	2,947	
2002	2,565	261	0	330	3,157	<b>3,157</b>	0	0	0	0	3,157	
2003	2,250	150	0	326	2,726	<b>2,619</b>	45	62	0	0	2,726	
2004	2,164	205	0	163	2,532	<b>1,922</b>	45	565	0	0	2,532	
2005	2,186	50	0	80	2,316	<b>2,154</b>	100	62	0	0	2,316	
2006	2,208	200	0	80	2,488	<b>1,788</b>	200	500	0	0	2,488	
2007	2,230	200	0	80	2,510	<b>1,510</b>	200	200	600	0	2,510	
2008	2,252	200	0	80	2,532	<b>1,532</b>	200	200	600	0	2,532	
2009	2,274	0	200	80	2,554	<b>1,579</b>	200	125	450	200	2,554	
2010	2,297	0	200	70	2,567	<b>1,542</b>	300	125	400	200	2,567	
2011	2,320	0	200	70	2,590	<b>1,565</b>	300	125	400	200	2,590	
2012	2,343	0	200	70	2,613	<b>1,563</b>	300	125	425	200	2,613	
2013	2,367	0	200	70	2,637	<b>1,562</b>	300	125	450	200	2,637	
2014	2,390	0	200	70	2,660	<b>1,560</b>	300	125	475	200	2,660	
2015	2,414	0	200	70	2,684	<b>1,559</b>	400	125	400	200	2,684	
2016	2,438	0	200	70	2,708	<b>1,583</b>	400	125	400	200	2,708	
2017	2,463	0	200	70	2,733	<b>1,508</b>	500	125	400	200	2,733	
2018	2,487	0	200	70	2,757	<b>1,532</b>	600	125	300	200	2,757	
2019	2,512	0	200	70	2,782	<b>1,557</b>	600	125	300	200	2,782	
2020	2,537	0	200	65	2,802	<b>1,577</b>	600	125	300	200	2,802	
2021	2,563	0	200	65	2,828	<b>1,553</b>	650	125	300	200	2,828	
2022	2,588	0	200	65	2,853	<b>1,578</b>	650	125	300	200	2,853	
2023	2,614	0	200	65	2,879	<b>1,579</b>	650	150	300	200	2,879	
2024	2,641	0	200	65	2,906	<b>1,516</b>	650	140	400	200	2,906	
2025	2,667	0	200	65	2,932	<b>1,582</b>	650	100	400	200	2,932	
					<b>Average</b>	<b>1,555</b>	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 demand 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. The reader should refer to Table 11.2 for a breakdown of the sources of supply that make up the supply totals in Table 11.3.

Table 11.3: Projected Average Water Year Supply and Demand Comparison

Year	2010	2015	2020	2025
Supply totals <sup>1</sup>	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%

1) Refer to Table 11.2 for a break down of supply totals by source.

### 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	Demand (AF)					Supply (AF)						% of Year 2004
	Delivered to Distribution	Transfer to Grass Valley Lake	Recycled Water Irrigation	Plant Backwash & Utility Water	Total Demand	Lake Draw	Groundwater	CLAWA Overlap	CLAWA Muni	Recycled Water	Total Supply	
2010	2,182	0	190	67	2,439	1,289	300	150	500	200	2,439	96%
2015	2,294	0	190	67	2,550	1,300	400	150	500	200	2,550	101%
2020	2,411	0	190	62	2,662	1,212	600	150	500	200	2,662	105%
2025	2,534	0	190	62	2,785	1,285	650	150	500	200	2,785	110%

### 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
- The amount of Lake Draw would increase proportionally if the amount of groundwater, CLAWA Overlap and CLAWA Muni supplies listed in Table 11.5 were not available
- 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	Demand (AF)					Supply (AF)						% of Year 2004
	Delivered to Distribution	Transfer to Grass Valley Lake	Recycled Water Irrigation	Plant Backwash & Utility Water	Total Demand	Lake Draw	Groundwater	CLAWA Overlap	CLAWA Muni	Recycled Water	Total Supply	
2006	2,097	190	0	76	2,363	1,863	200	300	0	0	2,363	93%
2007	2,118	190	0	76	2,384	1,384	200	300	500	0	2,384	94%
2008	2,139	190	0	76	2,405	1,405	200	300	500	0	2,405	95%
2009	2,161	0	190	76	2,427	1,127	200	400	500	200	2,427	96%
2010	2,182	0	190	67	2,439	939	300	500	500	200	2,439	96%
2011	2,204	0	190	67	2,461	1,661	300	300	0	200	2,461	97%
2012	2,226	0	190	67	2,483	1,183	300	300	500	200	2,483	98%
2013	2,248	0	190	67	2,505	1,205	300	300	500	200	2,505	99%
2014	2,271	0	190	67	2,527	1,127	300	400	500	200	2,527	100%
2015	2,294	0	190	67	2,550	950	400	500	500	200	2,550	101%
2016	2,317	0	190	67	2,573	1,673	400	300	0	200	2,573	102%
2017	2,340	0	190	67	2,596	1,096	500	300	500	200	2,596	103%
2018	2,363	0	190	67	2,620	1,020	600	300	500	200	2,620	103%
2019	2,387	0	190	67	2,643	943	600	400	500	200	2,643	104%
2020	2,411	0	190	62	2,662	862	600	500	500	200	2,662	105%
2021	2,435	0	190	62	2,686	1,536	650	300	0	200	2,686	106%
2022	2,459	0	190	62	2,711	1,061	650	300	500	200	2,711	107%
2023	2,484	0	190	62	2,735	1,085	650	300	500	200	2,735	108%
2024	2,509	0	190	62	2,760	1,010	650	400	500	200	2,760	109%
2025	2,534	0	190	62	2,785	935	650	500	500	200	2,785	110%

## **12.0 Adoption and Implementation**

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### ***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. 2005-06. A copy of this resolution is included in Appendix J.